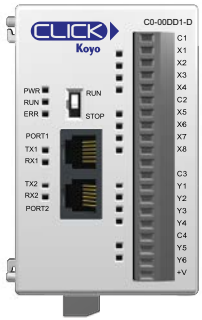
SPECIFICATIONS

In This Chapter...

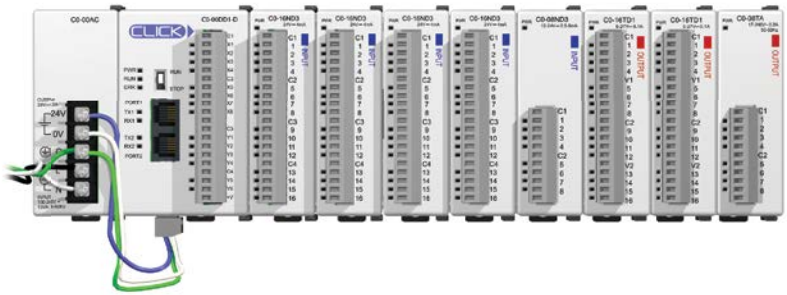
Overview of PLC System

The CLICK PLC family of components is designed to combine practical PLC features in a compact and expandable design, with a simple-to-use philosophy. A powered CLICK PLC unit by itself can be used as a complete PLC system with built-in I/O points, or the system can be expanded with the addition of up to eight I/O modules. The CLICK PLC system does not require a mounting base. The CLICK PLC and I/O modules are connected together via an expansion port on the right side of the PLC case. A variety of I/O modules are available for flexible and optimal system configuration. The CLICK PLC supports a very simple but useful instruction set. There are 21 easy-to-use instructions that cover most applications that are suitable for this class of PLC.

Use a CLICK PLC unit as a stand-alone controller...



or, expand the system by installing up to eight additional I/O modules.



NOTE: *It is not necessary to use the CLICK PLC with a CLICK power supply. An alternately regulated, properly-sized 24VDC power source can be used to power the PLC and can also provide 24VDC to any optional I/O modules used in the CLICK PLC hardware configuration. Please refer to the Power Budgeting section later in this chapter for details on choosing the correct size power supply.*

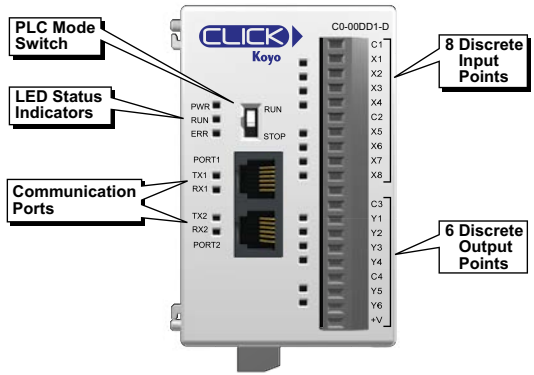
PLC Units

All CLICK PLC units offer the same instruction set, and support all optional I/O modules. The six types of PLC units available are listed in the table below.

PLC Types	Discrete I/O		Analog I/O		Communication Ports			Battery Backup	RUN time Edit
	Inputs	Outputs	Inputs	Outputs	Port 1	Port 2	Port 3		
Basic	8	6	N/A	N/A	RS-232	RS-232	N/A	N/A	N/A
Standard	8	6					RS-485	Yes	
Analog	4	4	2	2			RS-485		
Ethernet Basic	8	6	N/A	N/A	Ethernet		N/A		Yes
Ethernet Standard	8	6					RS-485		
Ethernet Analog	4	4	2	2					
			4	2					

Basic PLC Units

The Basic CLICK PLC units are available with different combinations of built-in I/O (i.e. DC input/DC output, DC input/relay output, and AC input/relay output).



Built-in I/O (Basic PLC Units)

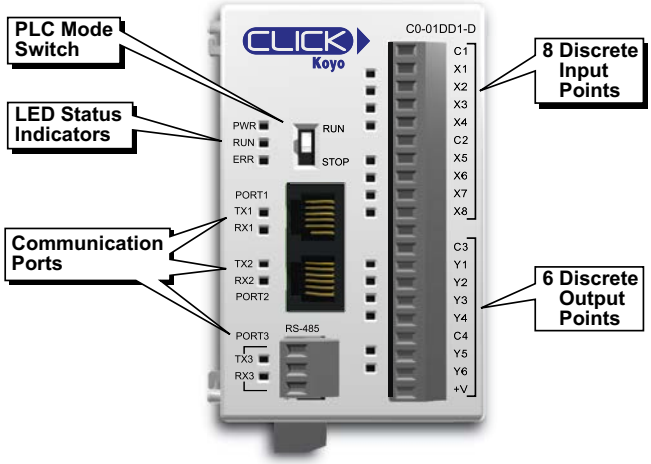
There are four different configurations of I/O types available for the Basic CLICK PLC units. The table below lists the part numbers showing the various I/O configurations.

Basic PLCs			
Part Number	Discrete Input Type	Discrete Output Type	External Power
C0-00DD1-D	8 DC (sink/source)	6 DC (sink)	24VDC (required for all PLC units)
C0-00DD2-D		6 DC (source)	
C0-00DR-D		6 Relay	
C0-00AR-D	8 AC		

Standard PLC Units

The Standard CLICK PLC units are available with different combinations of built-in I/O types (i.e. DC input/DC output, DC input/relay output, and AC input/relay output).

They also have an RS-485 port for Modbus RTU and ASCII communications, and the battery backup feature which will retain the data in SRAM for 3 years.



Built-in I/O (Standard PLC Units)

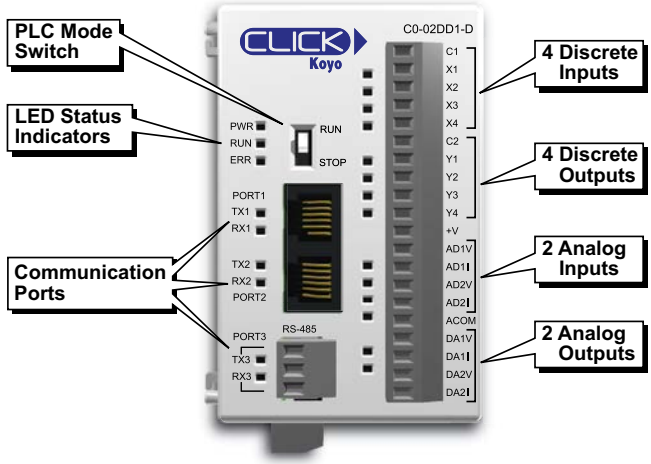
There are four different configurations of I/O types available for the Standard CLICK PLC units. The table below lists the part numbers showing the various I/O configurations.

Standard PLCs			
Part Number	**Discrete Input Type**	**Discrete Output Type**	**External Power**
C0-01DD1-D	8 DC (sink/source)	6 DC (sink)	24VDC (required for all PLC units)
C0-01DD2-D		6 DC (source)	
C0-01DR-D		6 Relay	
C0-01AR-D	8 AC		

Analog PLC Units

The Analog CLICK PLC units are available with different combinations of DC in, DC sinking, sourcing or relay out, and analog in and out.

They also have an RS-485 port for Modbus RTU and ASCII communications, and the battery backup feature which will retain the data in SRAM for 3 years.



Built-in I/O (Analog PLC Units)

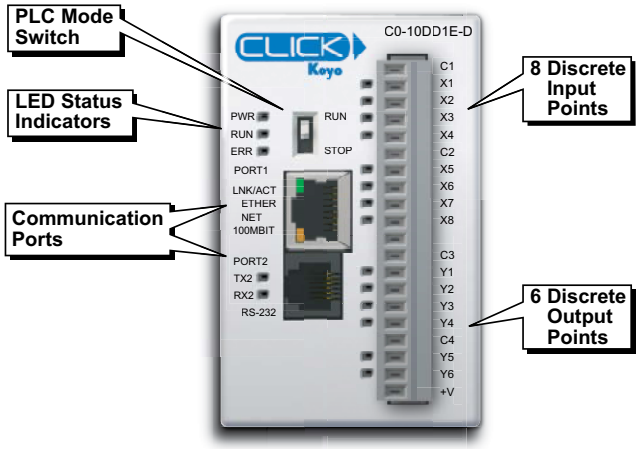
There are three different configurations of I/O types available for the Analog CLICK PLC units. The table below lists the part numbers showing the various I/O configurations.

Analog PLCs					
Part Number	**Discrete Input Types**	**Discrete Output Types**	**Analog Input Types**	**Analog Output Types**	**External Power**
C0-02DD1-D	4 DC (sink/ source)	4 DC (sink)	2 channel; voltage (0–5 VDC) / current (4–20 mA); selectable separately per channel, 12-bit	2 channel; voltage (0–5 VDC) / current (4–20 mA); selectable separately per channel, 12-bit	24VDC (required for all PLC units)
C0-02DD2-D		4 DC (source)			
C0-02DR-D		4 relay			

NOTE: *There is a dedicated terminal for each voltage or current type, but you must also select the voltage or current type in the CLICK programming software. See the Analog I/O Configuration section in Chapter 3.*

Ethernet Basic PLC Units

The Ethernet Basic CLICK PLC units are available with different combinations of built-in I/O types, e.g. DC input /DC output, DC input/relay output, and AC input/relay output. Four types of Ethernet Basic PLC units are available.



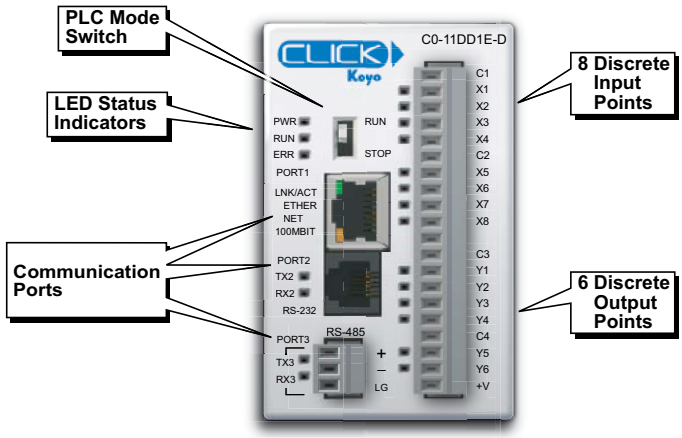
Built-in I/O (Ethernet Basic PLC Units)

There are four different configurations of I/O types available for the Ethernet Basic CLICK PLC units. The table below lists the part numbers showing the various I/O configurations.

Ethernet Basic PLCs			
Part Number	**Discrete Input Type**	**Discrete Output Type**	**External Power**
C0-10DD1E-D	8 DC (sink/source) 4 points High-Speed	6 DC (sink)	24VDC (required for all PLC units)
C0-10DD2E-D		6 DC (source)	
C0-10DRE-D		6 Relay	
C0-10ARE-D	8 AC		

Ethernet Standard PLC Units

The Ethernet Standard CLICK PLC units are available with different combinations of built-in I/O types, e.g., DC input /DC output, DC input/relay output, and AC input/relay output.



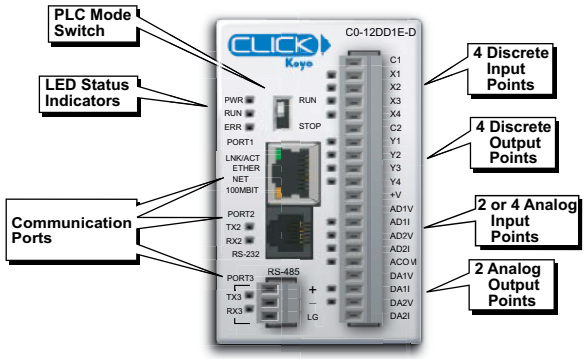
Built-in I/O (Ethernet Standard PLC Units)

There are four different configurations of I/O types available for the Ethernet Standard CLICK PLC units. The table below lists the part numbers showing the various I/O configurations.

Ethernet Standard PLCs			
Part Number	**Discrete Input Type**	**Discrete Output Type**	**External Power**
C0-11DD1E-D	8 DC (sink/source) 8 points High-Speed	6 DC (sink)	24VDC (required for all PLC units)
C0-11DD2E-D		6 DC (source)	
C0-11DRE-D		6 Relay	
C0-11ARE-D	8 AC		

Ethernet Analog PLC Units

The Ethernet Analog CLICK PLC units are available with different combinations of built-in I/O types, e.g., DC input /DC output, DC input/relay output, and AC input/relay output, and analog in and out.



Built-in I/O (Ethernet Analog PLC units)

There are twelve different configurations of I/O types available for the Ethernet Analog CLICK PLC units. The table below lists the part numbers showing the various I/O types.

Ethernet Analog PLCs					
Part Number	**Discrete Input Types**	**Discrete Output Types**	**Analog Input Types**	**Analog Output Types**	**External Power**
C0-12DD1E-D*	4 DC (sink/source) 4 points High-Speed	4 DC (sink)	2 channel; voltage (0–5 VDC) / current (4–20 mA); selectable separately per channel, 12-bit	2 channel; voltage (0–5 VDC) / current (4–20 mA); selectable separately per channel, 12-bit	24VDC (Required for all PLC units)
C0-12DD2E-D*		4 DC (source)			
C0-12DRE-D*		4 relay			
C0-12ARE-D*	4 AC				
C0-12DD1E-1-D	4 DC (sink/source) 4 points High-Speed	4 DC (sink)	4 channel; current (0–20 mA), 12-bit	2 channel; current (4–20 mA), 12-bit	
C0-12DD2E-1-D		4 DC (source)			
C0-12DRE-1-D		4 relay			
C0-12ARE-1-D	4 AC				
C0-12DD1E-2-D	4 DC (sink/source) 4 points High-Speed	4 DC (sink)	4 channel; voltage (0–10 VDC), 12-bit	2 channel; voltage (0–10 VDC), 12-bit	
C0-12DD2E-2-D		4 DC (source)			
C0-12DRE-2-D		4 relay			
C0-12ARE-2-D	4 AC				

* *These four PLC units require that you select I/O as voltage or current type in the CLICK programming software. See the Analog I/O Configuration section in Chapter 3.*

Communication Ports

The Basic CLICK PLC units have two built-in RS-232 serial communications ports. Standard and Analog PLC units also have an additional RS-485 port. All CLICK Ethernet PLC units have one built-in Ethernet communication port and one RS-232 serial communication port. Ethernet Standard and Ethernet Analog PLC units also have an additional RS-485 port. See Chapter 4: *Communications* for details on the proper use of these ports.

Memory

All CLICK PLC units have a non-volatile FLASH ROM to store the downloaded ladder program and project file. The FLASH ROM will retain the ladder program even with power removed from the PLC module.

The CLICK PLC units make use of data registers to store values and conditions that are used during program execution. This data is stored in the SRAM memory. It is volatile memory, but is backed up by a super capacitor. The super capacitor is a special type of capacitor that is designed to provide power to volatile memory like the SRAM when the power to the PLC is off. However, it will not back up the memory for an extended time. In the case of the CLICK PLC, the super capacitor will back up the SRAM for the following period after the power is shut off. Once the super capacitor is discharged, all data in the SRAM is cleared when the CLICK PLC is powered up the next time.

CLICK PLC Unit	Backup Period by the Super Capacitor
Basic PLC units Standard PLC units Analog PLC units	7 days
Ethernet Basic PLC units Ethernet Standard PLC units Ethernet Analog PLC units	1 hour

(Standard, Analog and Ethernet PLC Units Only)

Standard, Analog and all Ethernet PLC units have a battery backup feature that will retain data in the SRAM for three years. Use part number D2-BAT-1 as the replacement battery.

Refer to the PLC Unit Specifications section later in this chapter for more PLC information.

I/O Modules

A variety of I/O modules is available for the CLICK PLC System. Up to 8 I/O modules can be connected to a CLICK PLC unit to expand the system I/O count and meet the needs of a specific application. Complete I/O module specifications and wiring diagrams can be found later in this chapter. Here are the I/O modules that are supported by the CLICK PLC system at this time.

Discrete Input Modules

C0-08ND3

C0-08ND3-1

C0-16ND3

Discrete Input Modules		
Part Number	Input Type	Voltage Ratings
C0-08ND3	8 DC (Sink/Source)	12–24VDC
C0-08ND3-1	8 DC (Sink/Source)	3.3–5 VDC
C0-16ND3	16 DC (Sink/Source)	24VDC
C0-08NE3	8 AC/DC (Sink/Source)	24 VAC/VDC
C0-16NE3	16 AC/DC (Sink/Source)	24 VAC/VDC
C0-08NA	8 AC	100–120 VAC

C0-08NE3

C0-16NE3

C0-08NA

Specialty Modules

Specialty Modules		
Part Number	Input Type	Voltage Ratings
C0-08SIM	8, Toggle Switch	N/A
C0-04POT	4, Potentiometer	N/A

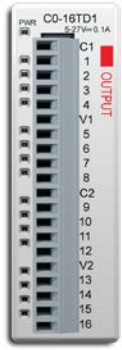
C0-08SIM

C0-04POT

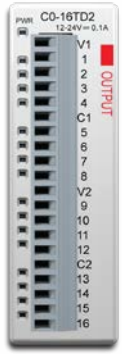
Discrete Output Modules

C0-08TD1

C0-08TD2

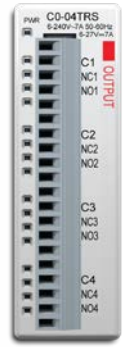


C0-16TD1

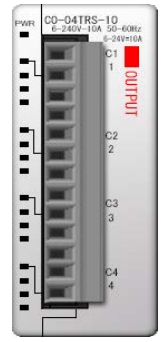


C0-16TD2

C0-08TA

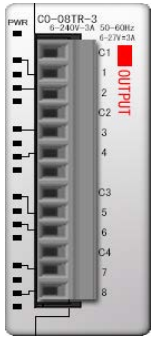


C0-04TRS



C0-04TRS-10

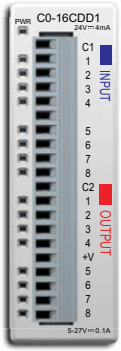
C0-08TR



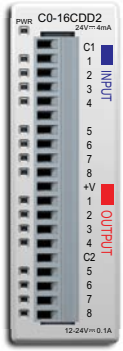
C0-08TR-3

Discrete Output Modules		
Part Number	**Output Type**	**Voltage/Current Ratings**
C0-08TD1	8 DC (Sink)	3.3–27 VDC / 0.3 A
C0-08TD2	8 DC (Source)	12–24 VDC / 0.3 A
C0-16TD1	16 DC (Sink)	5–27 VDC / 0.1 A
C0-16TD2	16 DC (Source)	12–24 VDC / 0.1 A
C0-08TA	8 AC	17–240 VAC / 0.3 A
C0-04TRS	4 Relay	6–27 VDC / 7A 6–240 VAC / 7A
C0-04TRS-10	4 Relay	6–24 VDC / 10A 6–240 VAC / 10A
C0-08TR	8 Relay	6–27 VDC / 1A 6–240 VAC / 1A
C0-08TR-3	8 Relay	6–27 VDC / 3A 6–240 VAC / 3A

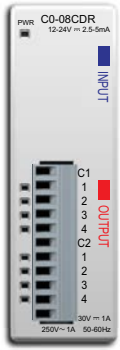
Discrete Combo I/O Modules



C0-16CDD1



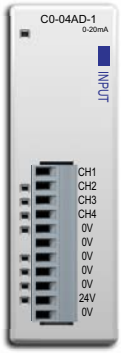
C0-16CDD2



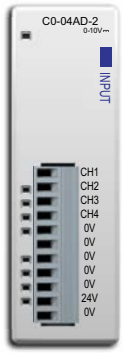
C0-08CDR

Discrete Combo I/O Modules				
Part Number	**Input Type**	**Input Voltage**	**Output Type**	**Output Voltage / Current Ratings**
C0-16CDD1	8 DC (sink/source)	24VDC	8 DC (sink)	5–27 VDC / 0.1 A
C0-16CDD2	8 DC (sink/source)	24VDC	8 DC (source)	12–24 VDC / 0.1 A
C0-08CDR	4 DC (sink/source)	12–24 VDC	4 (relay)	6.25–24 VDC / 1A 6–240 VAC / 1A

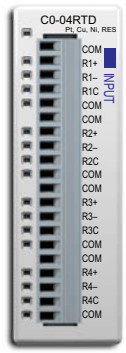
Analog Input Modules



C0-04AD-1



C0-04AD-2

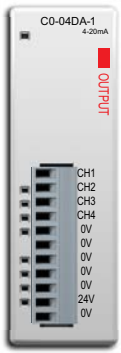


C0-04RTD

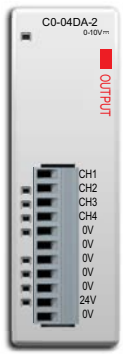
C0-04THM

Analog Input Modules		
Part Number	**Analog Input Types**	**External Power Required**
C0-04AD-1	4 channel, current (0–20 mA), 13-bit	24VDC
C0-04AD-2	4 channel, voltage (0–10 V), 13-bit	24VDC
C0-04RTD	4 channel RTD input (0.1 degree °C/°F resolution), or resistive input (0–3125 Ω, 0.1 Ω or 0.01 Ω resolution)	None
C0-04THM	4 channel thermocouple input (0.1 degree °C/°F resolution), or voltage input (-156.25 mV to 1.25 V, 16-bit)	None

Analog Output Modules



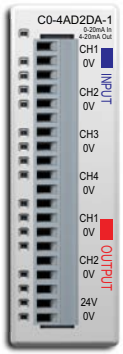
C0-04DA-1



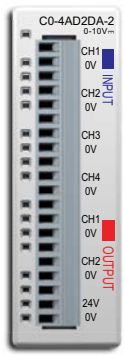
C0-04DA-2

Analog Output Modules		
Part Number	**Analog Output Types**	**External Power Required**
C0-04DA-1	4 channel, current sourcing (4–20 mA), 12-bit	24VDC
C0-04DA-2	4 channel, voltage (0–10 V), 12-bit	24VDC

Analog Combo I/O Modules



C0-4AD2DA-1



C0-4AD2DA-2

Analog Combo I/O Modules			
Part Number	**Analog Input Type**	**Analog Output Type**	**External Power Required**
C0-4AD2DA-1	4 channel, current (0–20 mA), 13-bit	2 channel, current sourcing (4–20 mA), 12-bit	24VDC
C0-4AD2DA-2	4 channel, voltage (0–10 V), 13-bit	4 channel, voltage (0–10 V), 12-bit	24VDC

Power Supply

Two types of 24VDC power supplies are available for the CLICK PLC family. They are designed to attach to the left side of the CLICK PLC, creating a compact footprint. They are identical except for the output current rating. The 24VDC power is wired from the DC output terminals of the power supply to a removable power terminal block located on the bottom of the CLICK PLC unit.

CLICK 24VDC Power Supply Ratings	
Part Number	**Output Current**
C0-00AC	0.5 A
C0-01AC	1.3 A

C0-00AC

The C0-00AC is a low-cost solution for applications requiring only minimal I/O and power consumption. This power supply will not support a fully-populated CLICK PLC system with all possible I/O module combinations.

C0-01AC

The C0-01AC is designed to support a fully-populated CLICK PLC system with all possible I/O module combinations with no concerns of exceeding the power budget.

Please refer to the Power Supply Specifications section later in this chapter for specification details.

NOTE: *It is not mandatory to use one of the above CLICK power supplies for the CLICK PLC system. A properly-sized and rated 24VDC power supply, such as some of those offered by Automationdirect.com, can also be used to power a CLICK PLC system.*

12 VDC-to-24VDC Converter		
Part Number	**Input Voltage**	**Output Current**
PSP24-DC12-1	9.5–18 VDC	1.0 A @ 24VDC

PSP24-DC12-1

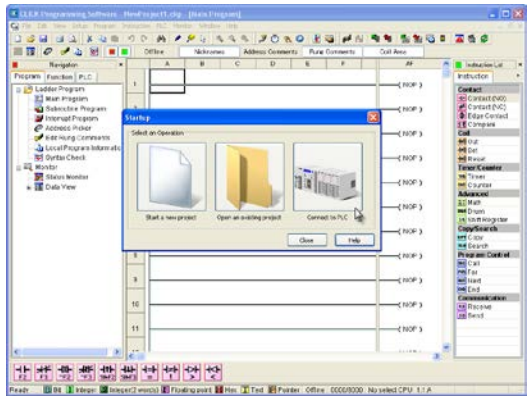
With this DC-DC converter you can operate the CLICK PLC with 12VDC input power.

To select a power supply to use with your CLICK PLC system, you need to consider the total PLC system's power budget. Please refer to the Power Budget section of this chapter for details.

Programming Software

The CLICK PLC Programming Software, which can be downloaded free from the Automationdirect.com web site (Downloads/Software), is designed to provide simple and fast application development of ladder logic programming.

These are some of the features that help make this happen:



- The Navigation window allows organization of the ladder logic programs used in your project and access to the functions, settings and configurations used to work with your project.
- The Instruction List window displays all available CLICK PLC instructions, allows you to drag and drop the instruction into your ladder logic program, and then enter any values and/or parameters required for the particular instruction.
- You can add Subroutine and Interrupt programs separately from the main ladder logic program. This allows you to manage your ladder logic programs in a simple, structured environment and, at the same time, aid in trouble-shooting your program.
- The Data View Monitor window configurations are saved with your project. This allows quick access to the same set of memory addresses that may have been set up for viewing during testing of your program.
- The graphical represented System Configuration dialog box allows checking the PLC system configuration. A Power Budget calculation feature is included. Refer to the Power Budgeting section later in this chapter for additional details.
- The Address Picker window allows quick selection of any memory address to be placed in the ladder logic program. Refer to the programming software online help for additional details.
- The PLC module Firmware can be updated from the programming software within 2 minutes.

PC Requirements

Check our online webstore for current operating system requirements:
http://www.automationdirect.com

Data Types, Memory, and Numbering System

The following section explains how the CLICK PLC handles the available data types, memory addressing, and I/O numbering.

Data Types

The CLICK PLC supports the following data types. On the CLICK PLC programming software, each data type is indicated with a small icon.

Data Type	S/W Icon	Data Ranges
Bit		0, 1
Integer (Single Word)		-32,768 to 32,767
Integer2 (Double Word)		-2,147,483,648 to 2,147,483,647
Floating Point		-3.4028235E+38 to 3.4028235E+38
HEX (Hexadecimal)		0000h to FFFFh (The HEX data type requires the 'h' after the value.)
Text (Single Character)		Single ASCII character (ASCII code: 00h to FFh.)
ASCII Code		ASCII code $00 to $FF (The ASCII Code data type requires the '$' before the value.)

NOTE: *The CLICK PLC does not support Octal or BCD numbering systems (data types).*

Memory Types

The following is the list of the memory types that the CLICK PLC system supports. See the memory map later in this chapter.

Memory Type	Symbol	Data Type	S/W Icon	Definition
Input Point	X	Bit		The Discrete Input points are represented by the "X" symbol.
Output Point	Y			The Discrete Output points are represented by the "Y" symbol.
Control Relay	C			The Control Relay bits are represented by the "C" symbol. These internal bits are typically used for ladder program control. They do not represent any real world inputs or outputs.
Timer	T			The Timers are represented by the "T" symbol. The Timer status bit is used to indicate when the Current Value of the timer equals its Preset Value.
Counter	CT			The Counters are represented by the "CT" symbol. The Counter status bit is used to indicate when the Current Value of the counter equals its Preset Value.
System Control Relay	SC			The internal System Control Relays, represented by the "SC" symbol, are pre-defined bits which represent the status of specific system functions.
Data Register	DS	Integer		Single word integer data registers are represented by the "DS" symbol.
	DD	Integer2		Double word integer data registers are represented by the "DD" symbol.
	DH	HEX		Single word Hex data registers are represented by the "DH" symbol.
	DF	Floating Point		Data Floating Point registers are IEEE format Real number values represented by the "DF" symbol as 32-bit words.
Input Register	XD	HEX		The Input Registers, represented by the "XD" symbol, contain groups of Discrete Input points in a 16-bit word format. XD0 is a Hexadecimal representation of X1-X16, XD1 of X101-X116, etc.
Output Register	YD			The Output Registers, represented by the "YD" symbol, contain groups of Discrete Output points in a 16-bit word format. YD0 is a Hexadecimal representation of Y1-Y16, YD1 of Y101-Y116, etc.
Timer Register	TD	Integer		The Timer Registers, represented by the "TD" symbol, contain the corresponding Timer's accumulative value in a 16-bit data register.
Counter Register	CTD	Integer2		The Counter Registers, represented by the "CTD" symbol, contain the corresponding Counter's accumulative value in a 32-bit data register.
System Data Register	SD	Integer		The internal System Data Registers, represented by the "SD" symbol, are pre-defined words which represent the status of specific system functions.
Text	TXT	Text		The Text data registers, represented by the "TXT" symbol, are used to store and manipulate ASCII text data.

Memory Types (cont'd)

Pointer Addressing

The CLICK PLC allows the use of Pointer Addressing for flexibility in programming. The Copy instruction supports Pointer Addressing in the single copy mode. The Pointer is always assigned as a DS memory type and is designated as a Pointer by placing the DS memory type in square brackets, such as [DS1]. Pointer Addressing uses the Pointer's data value to point to a memory location within the range of one of the eligible memory types. Pointer Addressing can be used with the DS, DD, DF, DH, XD, YD, TD, CTD and TXT data register memory types.

Pointer Addressing is also sometimes referred to as Indirect Addressing. One of the many uses for Pointer Addressing would be to perform lookup in tables. An application example might be determining the number of gallons in a horizontal tank when the liquid level is known. The gallons could be determined by a rather complex math formula, but a simpler approach would be to pre-calculate the number of gallons at several uniform levels, and place these values into a table of data registers that can be accessed using Pointer Addressing.

Pointer Addressing Example

DS1 = 100; data register DS1 is assigned the value of 100.

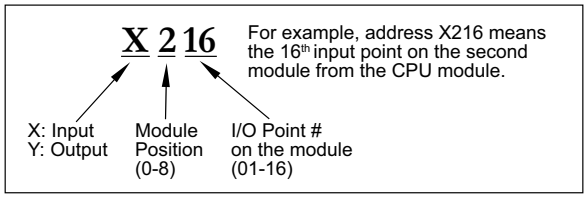
Then the use of DD[DS1] would be the same as showing DD100.

As the value in DS1 is changed, the result would then point to a different DD data register.

In the example, data register DS1 is called a Pointer. Only a DS memory type can be used as a pointer. As mentioned before, the use of the [square brackets] around DS1 in the data register reference DD[DS1] is how the Pointer Addressing is designated.

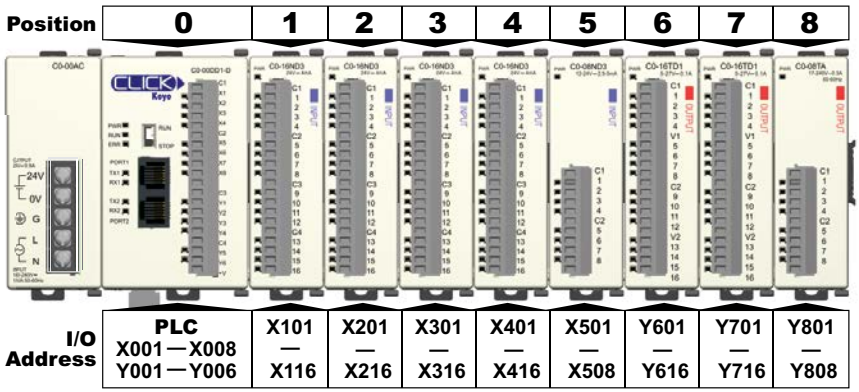
I/O Numbering System

The CLICK PLC uses decimal numbers for the input (X) and output (Y) addressing.

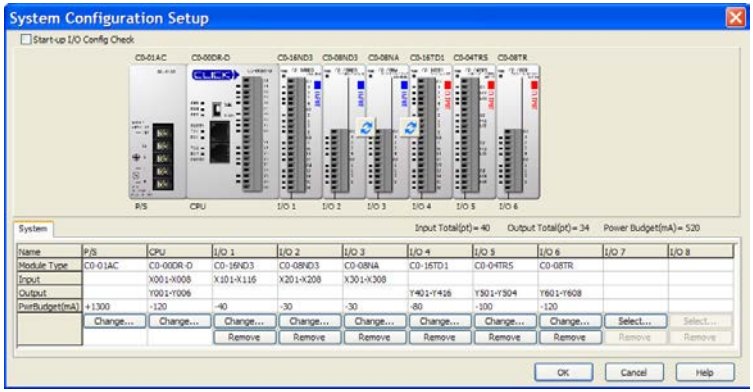


Module Location

Please refer to the following diagram to understand the module position and I/O numbering.



Addressing can be checked by using the System Configuration window from within the CLICK programming software. From the Setup pulldown menu, select System Configuration; otherwise, from the Navigation window select the Function tab, and under PLC configuration, double click on System Configuration.



PLC Operation

Introduction

Achieving proper control of your equipment or process requires a thorough understanding of how the CLICK PLC controls all aspects of system operation. There are three main areas to understand before you create your application program:

- PLC Operating System – the PLC manages all aspects of system control. A quick overview of all the steps are provided in the next section.
- PLC Operating Modes – The two primary modes of operation are Stop mode and Run mode.
- PLC Memory Map – CLICK PLCs offer a wide variety of resources, such as timers, counters, inputs, etc. The Memory Map section shows the organization and availability of these data types.

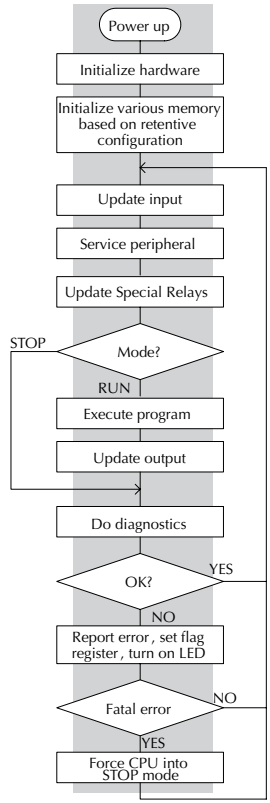
PLC Operating System

At powerup, the CLICK PLC initializes the internal electronic hardware. Memory initialization starts with examining the retentive memory settings. In general, the contents of retentive memory are preserved, and non-retentive memory is initialized to zero (unless otherwise specified).

After the one-time powerup tasks, the PLC begins the cyclical scan activity. The flowchart to the right shows how the tasks differ, based on the PLC mode and the existence of any errors. The "scan time" is defined as the average time around the task loop. Note that the PLC is always reading the inputs, even during Stop mode. This allows programming tools to monitor input status at any time.

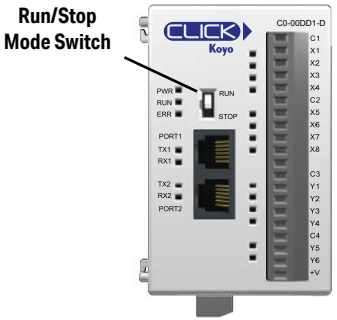
The outputs are only updated in Run mode. In Stop mode, they are in the off state.

Error detection has two levels. Non-fatal errors are reported, but the PLC remains in its current mode. If a fatal error occurs, the PLC is forced into Stop mode and the outputs turn off.



PLC Operating Modes

Stop Mode



In Stop mode, the CLICK PLC does NOT execute the ladder logic program or update the output points. The primary use for Stop Mode is to enter or change a ladder logic program. You also use Stop mode to set up the PLC parameters, such as retentive memory areas, etc.

You can use CLICK Programming Software, or the CLICK PLC mode switch to place the PLC in Stop mode; however, the CLICK PLC mode switch will override the software mode condition. If the PLC mode switch is in the Stop position, the software is blocked from changing the PLC mode. When the PLC mode switch is in the Run position, the software may toggle the mode switch from Run to Stop at will.

Run Mode

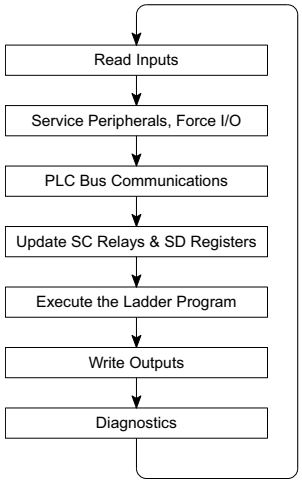
In Run mode, the PLC executes the application program and updates the I/O system. You can perform many operations during Run mode. Some of these include:

- Monitor and change I/O point status
- Change timer/counter preset values
- Change variable memory locations

The Run Mode can be divided into several key areas. For the vast majority of applications, some of these execution segments are more important than others. For example, you need to understand how the PLC updates the I/O points, handles forcing operations, and solves the application program. The remaining segments are not that important for most applications.

You can use CLICK Programming Software, or the CLICK PLC mode switch to place the PLC in Run mode.

Normal Run Mode Scan



WARNING: Only authorized personnel fully familiar with all aspects of the application should make changes to the ladder logic program. Make sure you thoroughly consider the impact of any changes to minimize the risk of personal injury or damage to equipment.

Read Inputs

The CLICK PLC reads the status of all inputs, then stores it in the image register. Input image register locations are designated with an X followed by a memory location. Image register data is used by the PLC when it solves the application program.

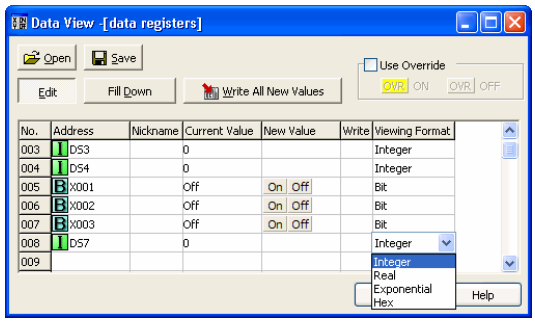
Of course, an input may change after the PLC has just read the inputs. Generally, the PLC scan time is measured in milliseconds. If you have an application that cannot wait until the next I/O update, you can use Immediate Instructions. These do not use the status of the input image register to solve the application program. The Immediate instructions immediately read the input status directly from the I/O modules. However, this lengthens the program scan since the PLC has to read the I/O point status again.

Service Peripherals and Force I/O

After the CLICK PLC reads the inputs from the input modules, it reads any attached peripheral devices. This is primarily a communications service for any attached devices. For example, it would read a programming device to see if any input, output, or other memory type status needs to be modified. There are two basic types of forcing available with the CLICK PLC:

- Forcing from a peripheral – not a permanent force, good only for one scan
- Bit Override – holds the I/O point (or other bit) in the current state. Valid bits are X, Y, C, T nd CT. (These memory types are discussed in more detail earlier in this chapter).

Forcing and Bit Override are done through the Data View Monitor.



Regular Forcing: This type of forcing can temporarily change the status of a discrete bit. For example, you may want to force an input on, even though it is really off. This allows you to change the point status that was stored in the image register. This value will be valid until the image register location is written to during the next scan. This is primarily useful during testing situations when you need to force a bit on to trigger another event.

Bit override: This is a more forceful type of bit manipulation. When bit override is enabled, you can actually override the current status of a bit in the image register. This change will remain intact until you remove the override.

WARNING: Only authorized personnel fully familiar with all aspects of the application should make changes to the program. Make sure you thoroughly consider the impact of any changes to minimize the risk of personal injury or damage to equipment.

Update System Control (SC) Relays and System Data (SD) Registers

The CLICK PLC units have system memory locations that hold this information. This portion of the execution cycle ensures these locations get updated on every scan. Also, there are several different system control relays, such as diagnostic relays, etc., that are also updated during this segment.

Solve Application Program

The CLICK PLC evaluates each instruction in the application program during this segment of the scan cycle. The instructions define the relationship between the input conditions and the desired output response. The CLICK PLC uses the output image register area to store the status of the desired action for the outputs. Output image register locations are designated with a Y followed by a memory location. The actual outputs are updated during the write outputs segment of the scan cycle.

The internal control relays (C) and the data registers (DS, DD, DF and DH) are also updated in this segment.

You may recall that you can force various types of points in the system, discussed earlier in this chapter. If any I/O points or memory data have been forced, the output image register also contains this information.

Write Outputs

Once the application program has solved the instruction logic and constructed the output image register, the CLICK PLC writes the contents of the output image register to the corresponding output points. Remember, the PLC also ensured that any forcing operation changes were stored in the output image register, so the forced points get updated with the status specified earlier.

Diagnostics

During this part of the scan, the PLC performs all system diagnostics and other tasks such as calculating the scan time and resetting the watchdog timer. There are many different error conditions that are automatically detected and reported by the CLICK PLC. Chapter 6: ***Troubleshooting*** contains a listing of the various error codes with a description of the possible causes.

Probably one of the more important things that occurs during this segment is the scan time calculation and watchdog timer control. The CLICK PLC has a watchdog timer that stores the maximum time allowed for the PLC to complete the solve application part of the scan cycle. If this time is exceeded, the PLC will enter the Stop mode and turn off all outputs. An error is automatically reported. The default value of the watchdog timer is 200ms and can be adjusted between 5–10,000 ms. Refer to the online help available from the CLICK Programming Software, C0-PGMSW, for additional information in regards to the Watchdog Timer.

Power Budgeting

What is Power Budgeting?

There are two areas that need to be considered when determining the power required to operate a CLICK PLC system. The first area is the power required by the CLICK PLC, along with the internal logic side power that the PLC provides to its own I/O and any connected I/O modules that are powered through the PLC expansion port, plus any device, such as a C-more Micro-Graphic panel, that is powered through one of the PLC's communication ports.

The second area is the power required by all externally connected I/O devices. This should be viewed as the field side power required. The field side power is dependent on the voltage used for a particular input or output device as it relates to the wired I/O point, and the calculated load rating of the connected device

It is strongly recommended that the power source for the logic side be separate from the power source for the field side to help eliminate possible electrical noise.

Be aware that the CLICK PLC unit sinking DC output points require a sustained voltage to work with their output drivers. This includes the C0-00DD1-D PLC, and the C0-08TD1 & C0-16TD1 output modules. It is recommended that this voltage be provided from the field side power source.

The CLICK PLC operates from a 24VDC power source. The 24VDC power source can be provided by an optional CLICK PLC unit power supply (C0-00AC or C0-01AC), or a standard industrial 24VDC power supply as offered by AutomationDirect.

CLICK 24VDC Power Supply
C0-00AC or C0-01AC

Alternative 24VDC Power Supply
Example: PSP24-DC12-1

Visit www.automationdirect.com for the complete line.

The power source for the connected I/O devices is dependent on the voltage rating of the devices and the type of CLICK I/O module that is being used.

Power Budgeting requires the calculation of the total current that the 24VDC power source needs to provide to CLICK PLC unit logic side, and also a separate calculation of the total current required from all devices operating from the field side of the CLICK PLC system.

Refer to the following pages which includes tables listing the CLICK PLC and I/O module current requirements, plus a power budgeting example.

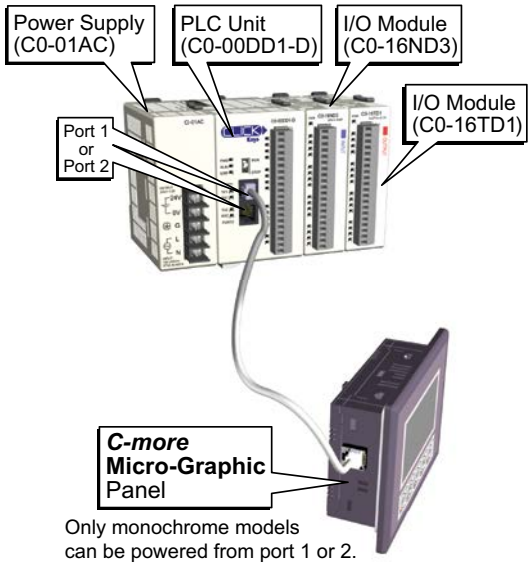
Power Budget Calculation

The following table shows the current consumption required for both the logic side and field side of the CLICK units.

PLC Current Consumption (mA)		
Part Number	Power Budget 24VDC (logic side)	External 24VDC (field side)
Basic PLC Units		
C0-00DD1-D	120	60
C0-00DD2-D	120	0
C0-00DR-D	120	0
C0-00AR-D	120	0
Standard PLC Units		
C0-01DD1-D	140	60
C0-01DD2-D	140	0
C0-01DR-D	140	0
C0-01AR-D	140	0
Analog PLC Units		
C0-02DD1-D	140	60
C0-02DD2-D	140	0
C0-02DR-D	140	0
Ethernet Basic PLC Units		
C0-10DD1E-D	120	60
C0-10DD2E-D	120	0
C0-10DRE-D	120	0
C0-10ARE-D	120	0
Ethernet Standard PLC Units		
C0-11DD1E-D	140	60
C0-11DD2E-D	140	0
C0-11DRE-D	140	0
C0-11ARE-D	140	0
Ethernet Analog PLC Units		
C0-12DD1E-D	140	60
C0-12DD2E-D	140	0
C0-12DRE-D	160	0
C0-12ARE-D	160	0
C0-12DD1E-1-D	140	60
C0-12DD2E-1-D	140	0
C0-12DRE-1-D	160	0
C0-12ARE-1-D	160	0
C0-12DD1E-2-D	140	60
C0-12DD2E-2-D	140	0
C0-12DRE-2-D	160	0
C0-12ARE-2-D	140	0

I/O Module Current Consumption (mA)		
Part Number	Power Budget 24VDC (logic side)	External 24VDC (field side)
Discrete Input Modules		
C0-08ND3	30	0
C0-08ND3-1	30	0
C0-16ND3	40	0
C0-08NE3	30	0
C0-16NE3	40	0
C0-08NA	30	0
Discrete Output Modules		
C0-08TD1	50	15
C0-08TD2	50	0
C0-16TD1	80	100
C0-16TD2	80	0
C0-08TA	80	0
C0-04TRS	100	0
C0-04TRS-10	120	0
C0-08TR	100	0
C0-08TR-3	90	0
Discrete Combo I/O Modules		
C0-16CDD1	80	50
C0-16CDD2	80	0
C0-08CDR	80	0
Specialty Modules		
C0-08SIM	50	0
C0-04POT	30	0
Analog Input Modules		
C0-04AD-1	20	65
C0-04AD-2	23	65
C0-04RTD	25	0
C0-04THM	25	0
Analog Output Modules		
C0-04DA-1	20	145
C0-04DA-2	20	85
Analog Combo I/O Modules		
C0-4AD2DA-1	25	75
C0-4AD2DA-2	20	65
C-more Micro-Graphic Panel (Monochrome only)		
All p/n	90	0

Power Budget Example

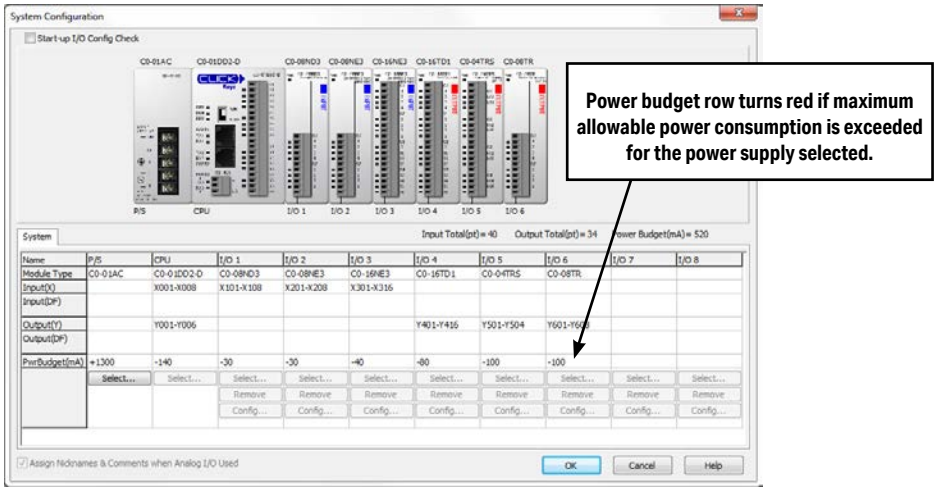


Add the current consumption for each module in the system as shown in this example.

Current Consumption (mA)		
Part Number	**Power Budget 24VDC (logic side)**	**External 24VDC (field side)**
C0-00DD1-D	120	60
C0-16ND3	40	0
C0-16TD1	80	100
***C-more* Micro**	90	0
Total:	**330**	**160 ***
* Plus calculated load of connected I/O devices.		

Power Budgeting using the CLICK Programming Software

The following example shows the logic side current consumption as calculated in the System Configuration Setup section of the CLICK Programming Software. Based on the amperage rating of the power supply selected in the first column, your power budget is calculated by subtracting each consecutive module's power consumption from the total available power budget. If you exceed the maximum allowable power consumption, the power budget row fills in red.



General Specifications

General Specifications (all CLICK PLC units)

The following general specifications apply to all CLICK PLC units, optional I/O modules, and optional power supply products. Please refer to the appropriate I/O temperature derating charts under both the PLC and I/O module specifications to determine best operating conditions based on the ambient temperature of your particular application.

General Specifications	
Power Input Voltage Range	20–28 VDC
Maximum Power Consumption	5W (No 5V use from communication port)
Maximum Inrush Current	30A (less than 1ms)
Acceptable External Power Drop	Max 10ms
Operating Temperature	Analog units, analog combo I/O modules only: 32°F to 140°F (0°C to 60°C); All other modules: 32°F to 131°F (0°C to 55°C), IEC 60068-2-14 (Test Nb, Thermal Shock)
Storage Temperature	–4°F to 158°F (–20°C to 70°C) IEC 60068-2-1 (Test Ab, Cold) IEC 60068-2-2 (Test Bb, Dry Heat) IEC 60068-2-14 (Test Na, Thermal Shock)
Ambient Humidity	30% to 95% relative humidity (non–condensing)
Altitude	Up to 2,000m
Environmental Air	No corrosive gases The level for the environmental pollution is 2 (UL840)
Vibration	MIL STD 810C, Method 514.2 IEC60068-2-27, Category [f], Procedure[VIII] JIS C60068-2-27 (Sine wave vibration test)
Shock	MIL STD 810C, Method 516.2 IEC60068-2-27 JIS C60068-2-27, Category [f], Procedure[VIII]
Noise Immunity	<EN61131-2> EN61000-4-2 (ESD) EN61000-4-3 (RFI) EN61000-4-4 (FTB) EN61000-4-5 (Surge) EN61000-4-6 (Conducted) EN61000-4-8 (Power frequency magnetic field immunity) Comply with NEMA ICS3-304 Impulse noise 1μs, 1000V RFI: No interference measured at 150MHz and 450MHz (5w/15cm)
Emissions	EN55011:1998 Class A; EN61000-6-4:2007+A1:2011
Agency Approvals	UL508 (File No. E157382, E316037); CE (EN61131-2); CUL Canadian C22.2
Other	RoHS 2011/65/EU Amendment (EU)2015/863

PLC Unit Specifications

Common Specifications

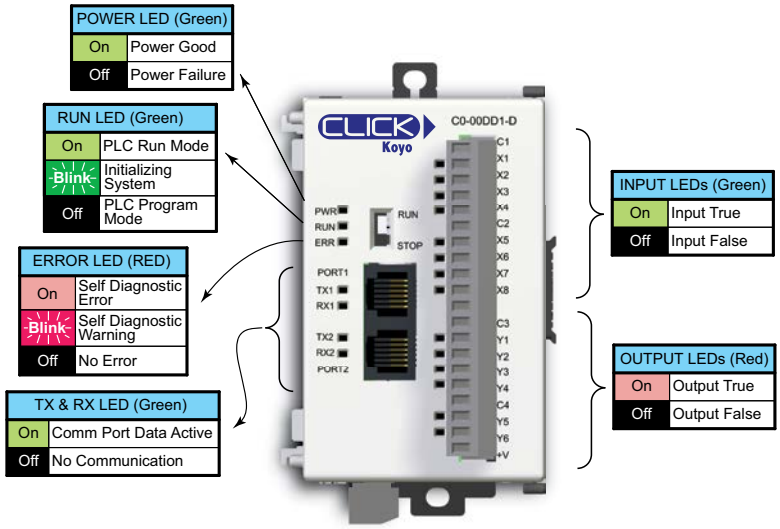
Basic, Standard and Analog PLC Unit Specifications			
	Basic PLC	**Standard PLC**	**Analog PLC**
Control Method	Stored Program/Cyclic execution method	Stored Program/Cyclic execution method	Stored Program/Cyclic execution method
I/O Numbering System	Fixed in Decimal	Fixed in Decimal	Fixed in Decimal
Ladder Memory (steps)	8000	8000	8000
Total Data Memory (words)	8000	8000	8000
Contact Execution (boolean)	< 0.6us	< 0.6us	< 0.6us
Typical Scan (1k boolean)	1–2 ms	1–2 ms	1–2 ms
RLL Ladder Style Programming	Yes	Yes	Yes
Run Time Edits	No	No	No
Scan	Variable / fixed	Variable / fixed	Variable / fixed
CLICK Programming Software for Windows	Yes	Yes	Yes
Built-in Communication Ports	Yes (two RS-232 ports)	Yes (two RS-232 ports and one RS-485 port)	Yes (two RS-232 ports and one RS-485 port)
FLASH Memory	Standard on PLC	Standard on PLC	Standard on PLC
Protocol	Protocols: Modbus RTU (master/slave) and ASCII (in/out)		
Built-in Discrete I/O points	8 inputs, 6 outputs	8 inputs, 6 outputs	4 inputs, 4 outputs
Built-in Analog I/O Channels	No	No	2 inputs, 2 outputs
Number of Instructions Available	21	21	21
Control Relays	2000	2000	2000
System Control Relays	1000	1000	1000
Timers	500	500	500
Counters	250	250	250
Interrupt	Yes (external: 8 / timed: 4)	Yes (external: 8 / timed: 4)	Yes (external: 4 / timed: 4)
Subroutines	Yes	Yes	Yes
For/Next Loops	Yes	Yes	Yes
Math (Integer and Hex)	Yes	Yes	Yes
Drum Sequencer Instruction	Yes	Yes	Yes
Internal Diagnostics	Yes	Yes	Yes
Password Security	Yes	Yes	Yes
System Error Log	Yes	Yes	Yes
User Error Log	No	No	No
Memory Backup	Super Capacitor	Super Capacitor + Battery	Super Capacitor + Battery
Battery Backup	No	Yes (battery part # D2-BAT-1)	Yes (battery part # D2-BAT-1)
Calendar/Clock	No	Yes	Yes
I/O Terminal Block Replacement	AutomationDirect p/n C0-16TB	AutomationDirect p/n C0-16TB	AutomationDirect p/n C0-16TB
Communication Port & Terminal Block Replacement	N/A	AutomationDirect p/n C0-3TB	AutomationDirect p/n C0-3TB
24VDC Power Terminal Block Replacement	AutomationDirect p/n C0-4TB	AutomationDirect p/n C0-4TB	AutomationDirect p/n C0-4TB

PLC Unit Specifications, cont'd

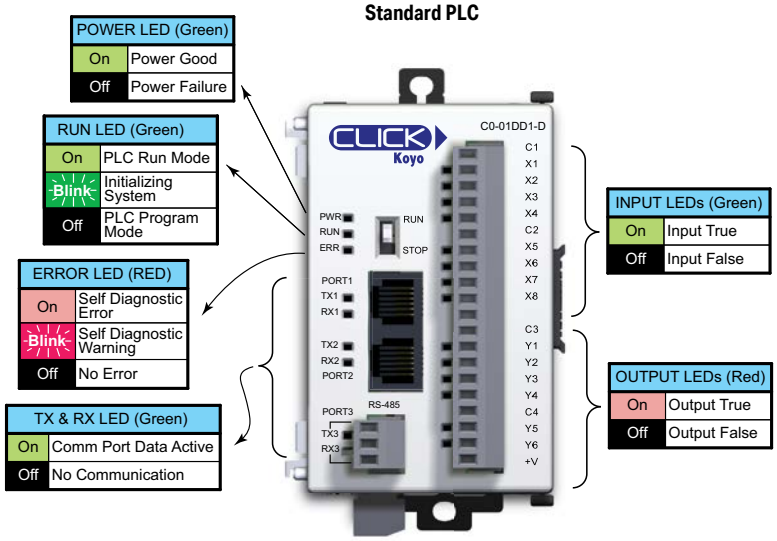
Ethernet Basic, Standard and Analog PLC Unit Specifications			
	Ethernet Basic PLC	**Ethernet Standard PLC**	**Ethernet Analog PLC**
Control Method	Stored Program/Cyclic Execution Method		
I/O Numbering System	Fixed in Decimal	Fixed in Decimal	Fixed in Decimal
Ladder Memory (steps)	8000	8000	8000
Total Data Memory (words)	8000	8000	8000
Contact Execution (Boolean)	< 0.2 µs	< 0.2 µs	< 0.2 µs
Typical Scan (1K Boolean)	< 1ms	< 1ms	< 1ms
RLL Ladder Style Programming	Yes	Yes	Yes
Run Time Edits	Yes	Yes	Yes
Scan	Variable / fixed	Variable / fixed	Variable / fixed
CLICK Programming Software for Windows	Yes	Yes	Yes
Built-in Communication Ports	Yes (one Ethernet port and one RS-232 port)	Yes (one Ethernet port, one RS-232 port and one RS-485 port)	Yes (one Ethernet port, one RS-232 port and one RS-485 port)
Protocol	Modbus RTU (master/slave) and ASCII (in/out), Modbus TCP (client server), EtherNet/IP Implicit and Explicit (adapter server)		
FLASH Memory	Standard on PLC	Standard on PLC	Standard on PLC
Built-in Discrete I/O points	8 inputs, 6 outputs	8 inputs, 6 outputs	4 inputs, 4 outputs
Built-in Analog I/O Channels	No	No	2 inputs, 2 outputs or 4 inputs, 2 outputs
Number of High-Speed Input Points	4	8	4
Number of High-Speed Counters	4	6	4
PID Control Loops	8	8	8
Number of Instructions Available	21	21	21
Control Relays	2000	2000	2000
System Control Relays	1000	1000	1000
Timers	500	500	500
Counters	250	250	250
Interrupts	Yes (external: 8 / timed: 4)	Yes (external: 8 / timed: 4)	Yes (external: 4 / timed: 4)
Subroutines	Yes	Yes	Yes
For/Next Loops	Yes	Yes	Yes
Math (Integer and Hex)	Yes	Yes	Yes
Drum Sequencer Instruction	Yes	Yes	Yes
Internal Diagnostics	Yes	Yes	Yes
Password Security	Yes	Yes	Yes
System Error Log	Yes	Yes	Yes
User Error Log	No	No	No
Memory Backup	Super Capacitor + Battery		
Battery Backup	Yes (battery part # D2-BAT-1)		
Calendar/Clock	Yes	Yes	Yes
I/O Terminal Block Replacement	AutomationDirect p/n C0-16TB		
Communication Port & Terminal Block Replacement	N/A	AutomationDirect p/n C0-3TB	AutomationDirect p/n C0-3TB
24VDC Power Terminal Block Replacement	AutomationDirect p/n C0-4TB		

PLC LED Status Indicators

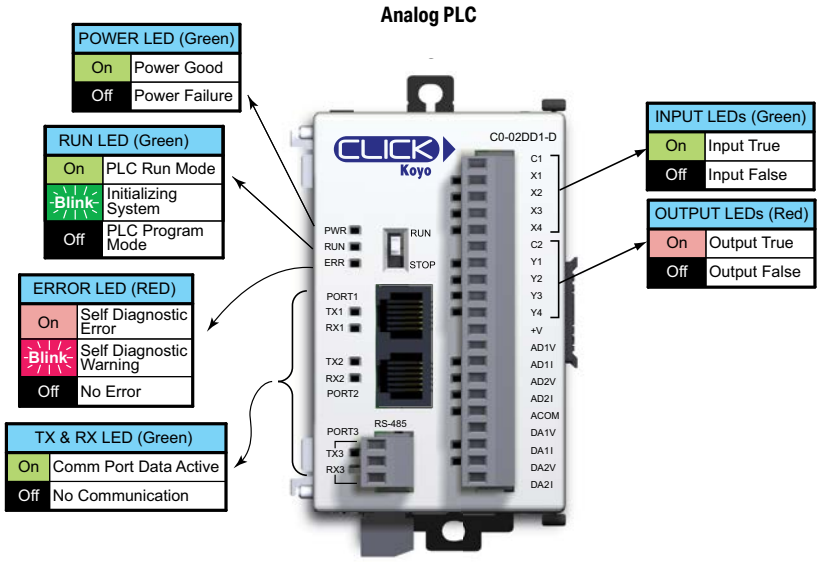
Basic PLC

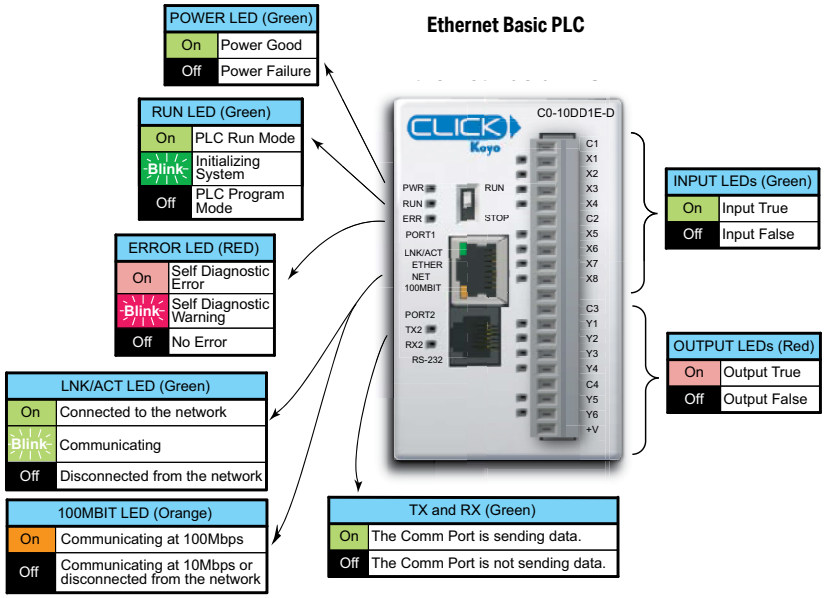


Standard PLC



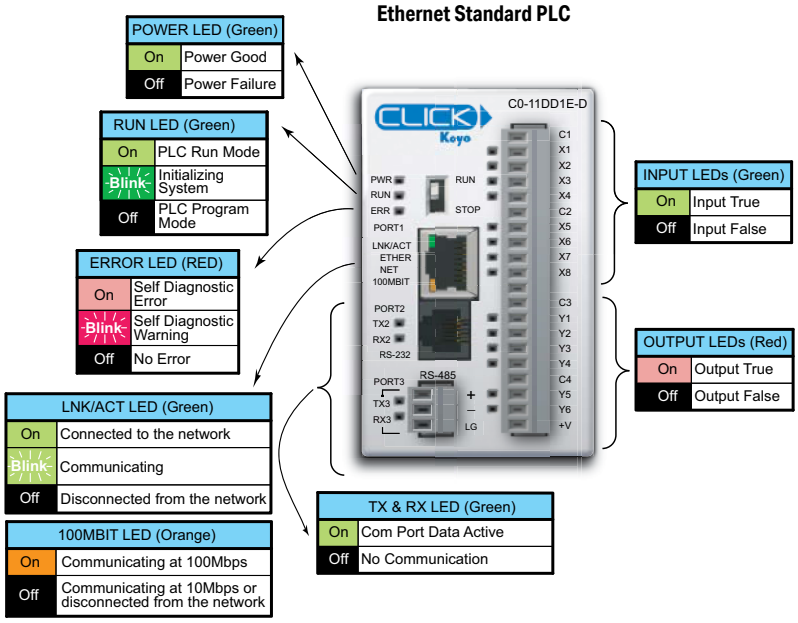
PLC LED Status Indicators, (cont'd)



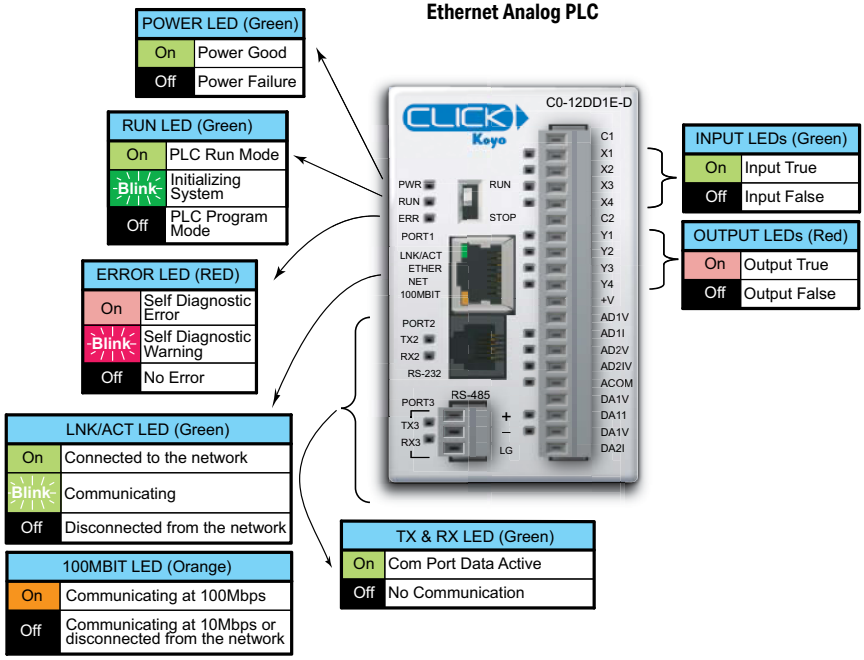


PLC LED Status Indicators, (cont'd)

Ethernet Standard PLC



Ethernet Analog PLC



Memory Map

All of the CLICK PLC units support the same memory map. The CLICK PLC uses decimal numbers for the memory addressing. See pages 2-15 and 2-16 for the definitions of each data type and memory type.

Memory Type	Symbol	Data Type	S/W Icon	Range
Input Point	X	Bit	B	X001 – X816
Output Point	Y			Y001 – Y816
Control Relay	C			C1 – C2000
Timer	T			T1 – T500
Counter	CT			CT1 – CT250
System Control Bit	SC			SC1 – SC1000
Data Register	DS	Integer	I	DS1 – DS4500
	DD	Integer2	I2	DD1 – DD1000
	DH	HEX	H	DH1 – DH500
	DF	Floating Point	F	DF1 – DF500
Input Register	XD	HEX	H	XD0 – XD8
Output Register	YD			YD0 – YD8
Timer Register	TD	Integer	I	TD1 – TD500
Counter Register	CTD	Integer2	I2	CTD1 – CTD250
System Data Register	SD	Integer	I	SD1 – SD1000
Text	TXT	Text	T	TXT1 – TXT1000

CLICK Software PID Specifications

PID Specifications	
PID maximum number of loops	8
Required Memory	40 C bits, 15 DS registers, 25 DF registers
Control Algorithm	Position
Control Loop Action	Direct-acting or Reverse-acting
Error Term	Linear or Squared
Error Dead band	Configurable
Proportional Gain	0.01–10000
Reset Time (Integral)	0.01–6000
Derivative Gain	0.0–6000
Sampling rate	100ms to 30000ms
Loop Calculation	PID or PI
PV Filter	Configurable
Set Point	Maximum and minimum values can be set
Control Output	Maximum and minimum values can be set
Derivative Gain Limit	Configurable
Bias Freeze (Anti-Windup)	Yes
Bumpless Transfer	2 Modes
Pulse Width Modulation (PWM)Output	Yes, up to 600 second period
Auto Tuning	Ziegler-Nichols Limit Cycle
Alarms	
PV Alarm	PV alarm value can be set at Low-low, Low, High, High-high condition
Deviation Alarm	Specify alarms for two ranges of PV deviation from the setpoint value
PV Rate of Change	Detect when PV exceeds a rate of change limit you specify

CLICK PLC Hardware/Software Compatibility

The table below shows the most recent software and hardware versions required for each hardware and feature release

	CLICK PLC Features Software Compatibility					
		Minimum CLICK Software Version				
CPU Type	Part Number	Hardware	High-Speed Inputs	EtherNet/IP	PID	I/O Modules
Basic	C0-00DD1-D	v1.00	N/A	N/A	N/A	N/A
	C0-00DD2-D					
	C0-00DR-D					
	C0-00AR-D					
Standard	C0-01DD1-D	v1.20	N/A	N/A	N/A	N/A
	C0-01DD2-D					
	C0-01DR-D					
	C0-01AR-D					
Analog	C0-02DD1-D (before SN 171208001)	v1.12	N/A	N/A	N/A	N/A
	C0-02DD1-D (after SN 171208001)	v2.10				
	C0-02DD2-D (before SN 174018001)	v1.12				
	C0-02DD2-D (after SN 174018001)	v2.10				
	C0-02DR-D (before SN 173158001)	v1.12				
	C0-02DR-D (after SN 173158001)	v2.10				
Ethernet Basic	C0-10DD1E-D	v2.00	v2.30	v2.40	v2.50	N/A
	C0-10DD2E-D					
	C0-10DRE-D					
	C0-10ARE-D		N/A			
Ethernet Standard	C0-11DD1E-D	v2.00	v2.30	v2.40	v2.50	N/A
	C0-11DD2E-D					
	C0-11DRE-D					
	C0-11ARE-D		N/A			
Ethernet Analog	C0-12DD1E-D	v2.20	v2.30	v2.40	v2.50	N/A
	C0-12DD2E-D					
	C0-12DRE-D					
	C0-12ARE-D		N/A			
	C0-12DD1E-1-D		v2.30			
	C0-12DD2E-1-D					
	C0-12DRE-1-D					
	C0-12ARE-1-D		N/A			
	C0-12DD1E-2-D		v2.30			
	C0-12DD2E-2-D					
	C0-12DRE-2-D					
	C0-12ARE-2-D		N/A			

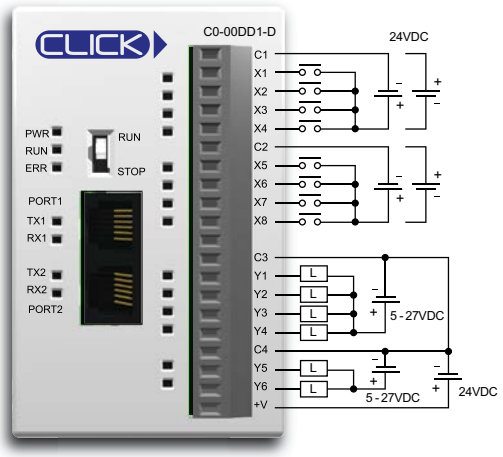
CLICK PLC Hardware/Software Compatibility (continued)

	CLICK PLC Features Software Compatibility					
		Minimum CLICK Software Version				
	Part Number	Hardware	High-Speed Inputs	EtherNet/IP	PID	I/O Modules
Relay Modules	C0-04TRS-10	N/A	N/A	N/A	N/A	v2.60
	C0-08TR-3					
Simulator Modules	C0-08SIM					
	C0-04POT					v3.70

Basic PLC Unit Specifications

C0-00DD1-D – 8 DC Input/6 Sinking DC Output Micro PLC

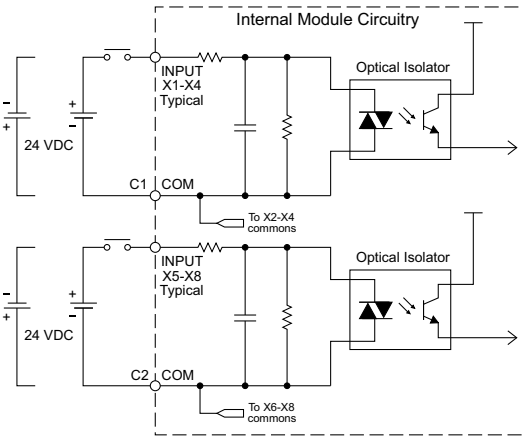
Wiring Diagram



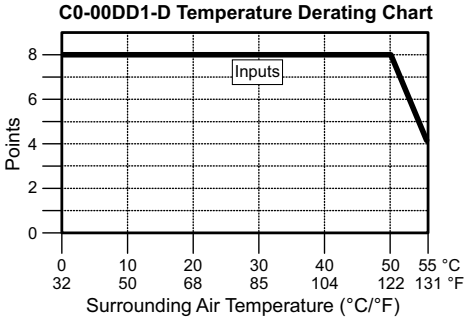
Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-2: Typ 5mA @ 24VDC X3-8: Typ 4mA @ 24VDC
Maximum Input Current	X1-2: 6.0 mA @ 26.4 VDC X3-8: 5.0 mA @ 26.4 VDC
Input Impedance	X1-2: 4.7 kΩ @ 24VDC X3-8: 6.8 kΩ @ 24VDC
ON Voltage Level	X1-2: > 19VDC X3-8: > 19VDC
OFF Voltage Level	X1-2: < 4VDC X3-8: < 7VDC
Minimum ON Current	X1-2: 4.5 mA X3-8: 3.5 mA
Maximum OFF Current	X1-2: 0.1 mA X3-8: 0.5 mA
OFF to ON Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 2ms Max 10ms
ON to OFF Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 3ms Max 10ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

General Specifications	
Current Consumption at 24VDC	120mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.0 oz (140g)

Equivalent Input Circuit



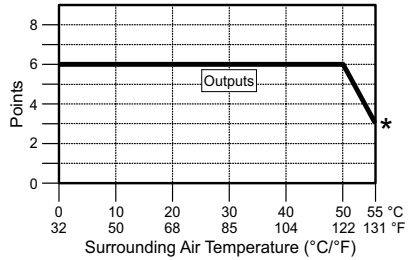
C0-00DD1-D Temperature Derating Chart



C0-00DD1-D – 8 DC Input/6 Sinking DC Output Micro PLC (continued)

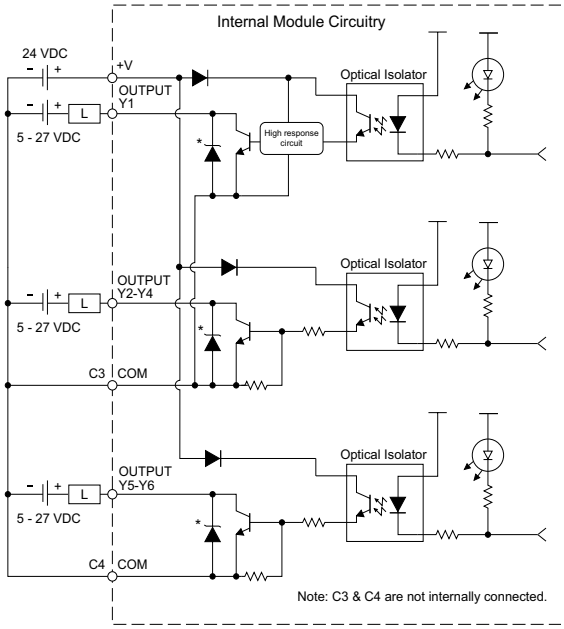
Built-in I/O Specifications - Outputs	
Outputs per Module	6 (Sink)
Operating Voltage Range	5–27 VDC
Output Voltage Range	4–30 VDC
Maximum Output Current	0.1 A/point; C3: 0.4 A/common, C4: 0.2 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	Y1: typ 5µs; Max 20µs Y2-6: < 0.5 ms
ON to OFF Response	Y1: typ 5µs; Max 20µs Y2-6: < 0.5 ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com)
External DC Power Required	20–28 VDC Maximum @ 60mA (All Points On)

C0-00DD1-D Temperature Derating Chart



* Use every other output.

Equivalent Output Circuit



Note: C3 & C4 are not internally connected.

* Zener Diode Power Dissipation: 200 mW

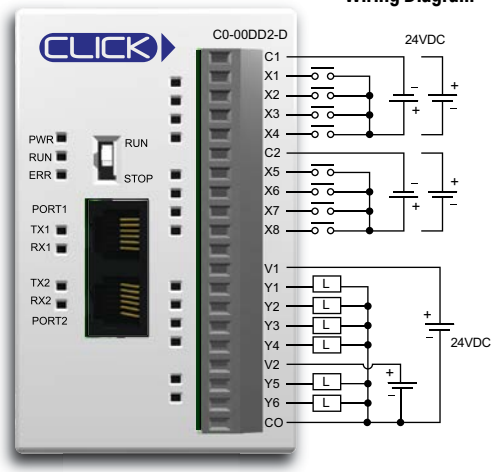
***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-00DD2-D – 8 DC Input/6 Sourcing DC Output Micro PLC

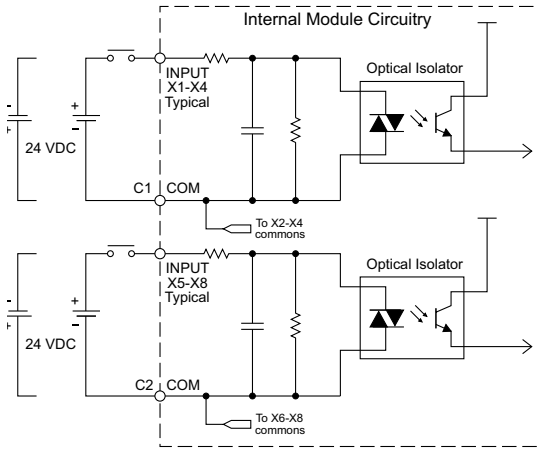
Wiring Diagram



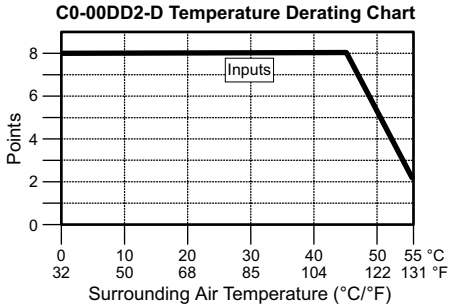
Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-2: Typ 5mA @ 24VDC X3-8: Typ 4mA @ 24VDC
Maximum Input Current	X1-2: 6.0 mA @ 26.4 VDC X3-8: 5.0 mA @ 26.4 VDC
Input Impedance	X1-2: 4.7 kΩ @ 24VDC X3-8: 6.8 kΩ @ 24VDC
ON Voltage Level	X1-2: > 19VDC X3-8: > 19VDC
OFF Voltage Level	X1-2: < 4VDC X3-8: < 7VDC
Minimum ON Current	X1-2: 4.5 mA X3-8: 3.5 mA
Maximum OFF Current	X1-2: 0.1 mA X3-8: 0.5 mA
OFF to ON Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 2ms Max 10ms
ON to OFF Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 3ms Max 10ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

General Specifications	
Current Consumption at 24VDC	120mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.0 oz (140g)

Equivalent Input Circuit



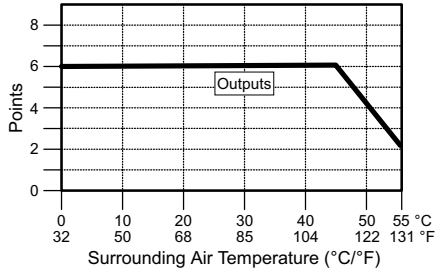
C0-00DD2-D Temperature Derating Chart



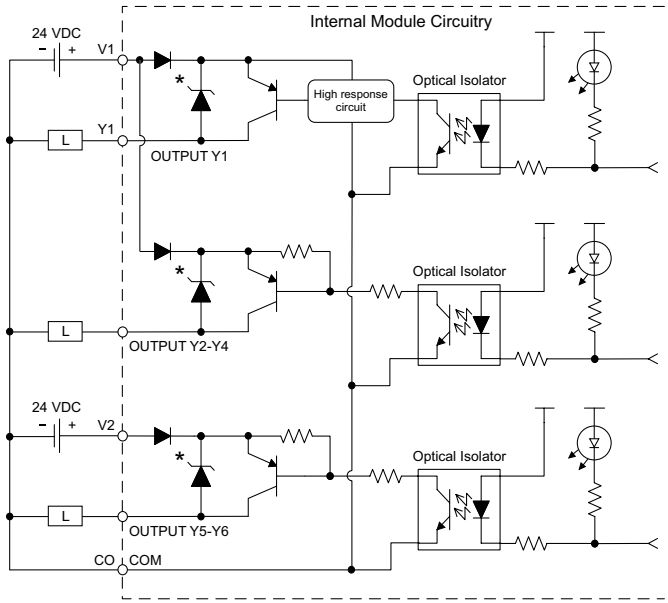
C0-00DD2-D – 8 DC Input/6 Sourcing DC Output Micro PLC (continued)

Built-in I/O Specifications - Outputs	
Outputs per Module	6 (Source)
Operating Voltage Range	24VDC
Output Voltage Range	19.2–30 VDC
Maximum Output Current	0.1 A/point , 0.6 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30VDC
On Voltage Drop	Y1: 1.0 VDC @ 0.1 A Y2-6: 0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	Y1: typ 5µs; max 20µs Y2-6: < 0.5 ms
ON to OFF Response	Y1: typ 5µs; max 20µs Y2-6: < 0.5 ms
Status Indicators	Logic Side (6 points, red LED)
Commons	1 (6 points/common)

C0-00DD2-D Temperature Derating Chart



Equivalent Output Circuit



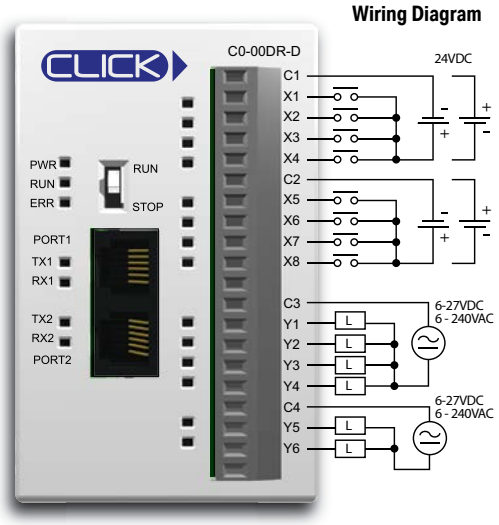
*Zener Diode Power Dissipation: 200 mW

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

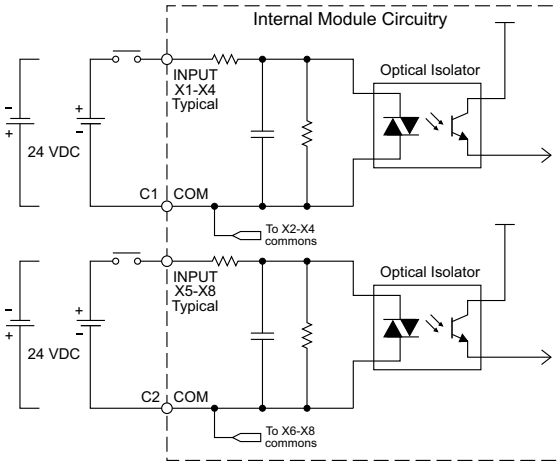
C0-00DR-D – 8 DC Input/6 Relay Output Micro PLC



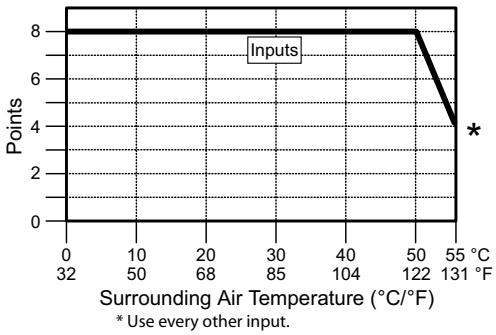
Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-2: Typ 5mA @ 24VDC X3-8: Typ 4mA @ 24VDC
Maximum Input Current	X1-2: 6.0 mA @ 26.4 VDC X3-8: 5.0 mA @ 26.4 VDC
Input Impedance	X1-2: 4.7 kΩ @ 24VDC X3-8: 6.8 kΩ @ 24VDC
ON Voltage Level	X1-2: > 19VDC X3-8: > 19VDC
OFF Voltage Level	X1-2: < 4VDC X3-8: < 7VDC
Minimum ON Current	X1-2: 4.5 mA X3-8: 3.5 mA
Maximum OFF Current	X1-2: 0.1 mA X3-8: 0.5 mA
OFF to ON Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 2ms Max 10ms
ON to OFF Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 3ms Max 10ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

General Specifications	
Current Consumption at 24VDC	120mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.6 oz (160g)

Equivalent Input Circuit



C0-00DR-D Temperature Derating Chart

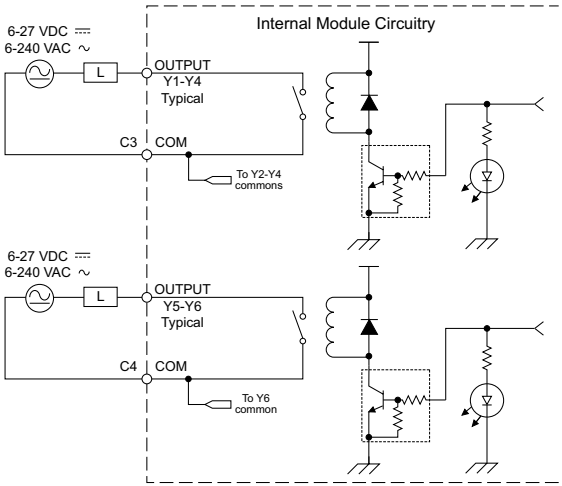


* Use every other input.

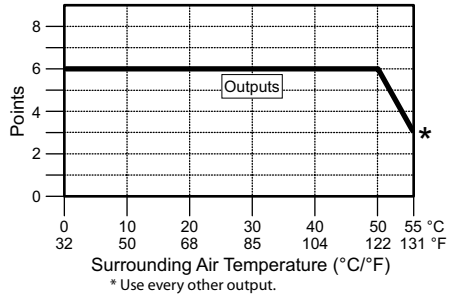
C0-00DR-D – 8 DC Input/6 Relay Output Micro PLC (continued)

Built-in I/O Specifications - Outputs	
Outputs per Module	6
Operating Voltage Range	6–240 VAC (47–63 Hz), 6–27 VDC
Output Voltage Range	5–264 VAC (47–63 Hz), 5–30 VDC
Output Type	Relay, form A (SPST)
Maximum Current	1 A/point; C3: 4A/common, C4: 2A/common
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com) Isolated

Equivalent Output Circuit



C0-00DR-D Temperature Derating Chart



* Use every other output.

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
250VAC, 1A Resistive	500,000 cycles
250VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

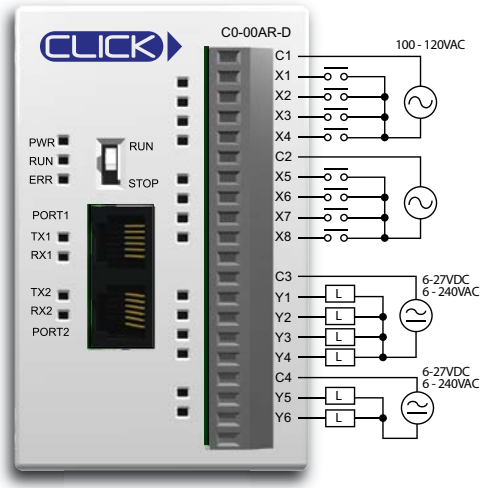
20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

***NOTE:** The C0-00DR-D is derated to 2A maximum per Common when used with the ZIPLink wiring system.*

C0-00AR-D – 8 AC Input/6 Relay Output Micro PLC

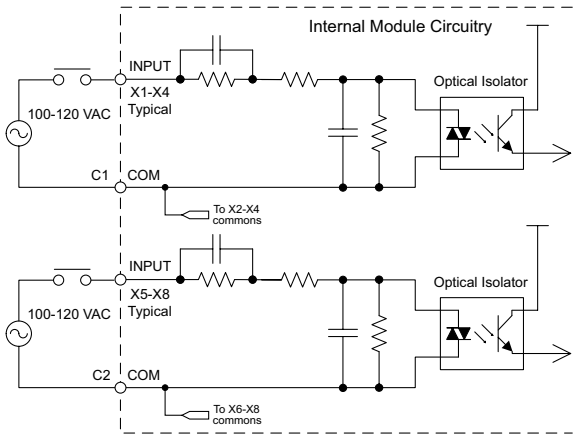
Wiring Diagram



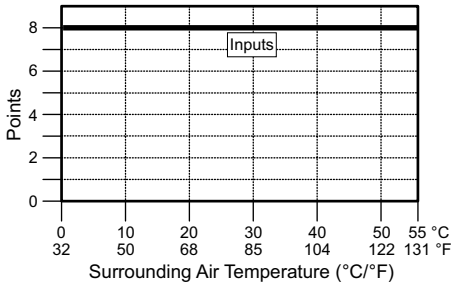
Built-in I/O Specifications - Inputs	
Inputs per Module	8
Operating Voltage Range	100–120 VAC
Input Voltage Range	80–144 VAC
AC Frequency	47–63 Hz
Input Current	8.5 mA @ 100VAC at 50Hz 10mA @ 100VAC at 60Hz
Maximum Input Current	16mA @ 144VAC at 55°C or 131°F
Input Impedance	15kΩ @ 50Hz 12kΩ @ 60Hz
ON Voltage Level	> 60VAC
OFF Voltage Level	< 20VAC
Minimum ON Current	5mA
Maximum OFF Current	2mA
OFF to ON Response	Max 40ms
ON to OFF Response	Max 40ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

General Specifications	
Current Consumption at 24VDC	120mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.6 oz (160g)

Equivalent Input Circuit



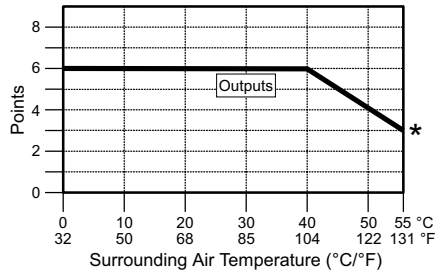
C0-00AR-D Temperature Derating Chart



C0-00AR-D – 8 AC Input/6 Relay Output Micro PLC (continued)

Built-in I/O Specifications - Outputs	
Outputs per Module	6
Operating Voltage Range	6–240 VAC (47–63 Hz), 6–27 VDC
Output Voltage Range	5–264 VAC (47–63 Hz), 5–30 VDC
Output Type	Relay, form A (SPST)
Maximum Current	1A/point; C3: 4A/common, C4: 2A/common
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com) Isolated

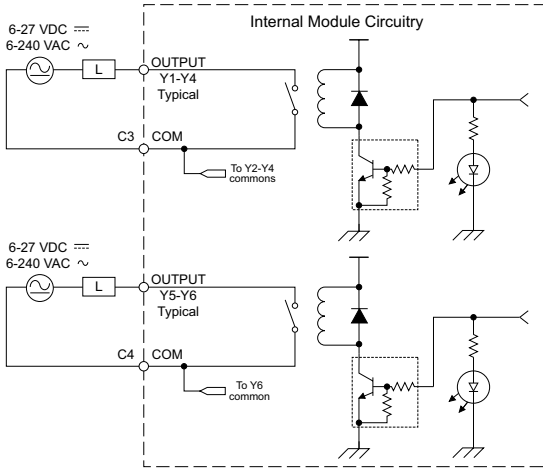
C0-00AR-D Temperature Derating Chart



* Use every other output.

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
250VAC, 1A Resistive	500,000 cycles
250VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

Equivalent Output Circuit



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

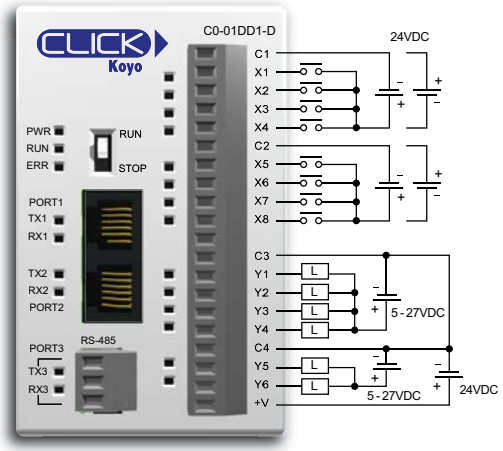
ZL-RTB20
20-pin feed-through connector module

NOTE: *The C0-00AR-D is derated to 2A maximum per Common when used with the ZIPLink wiring system.*

Standard PLC Unit Specifications

C0-01DD1-D – 8 DC Input/6 Sinking DC Output Micro PLC

Wiring Diagram

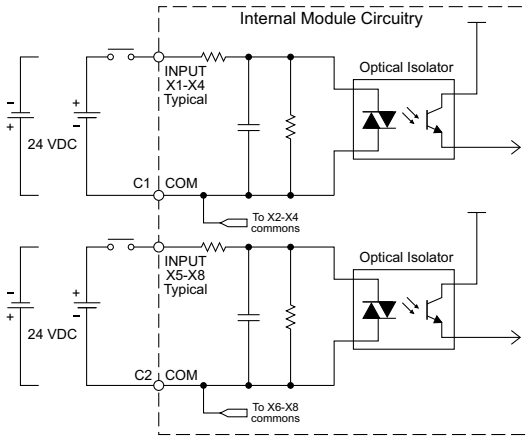


NOTE: *When using Standard PLCs, you must use CLICK programming software version V1.20 or later.*

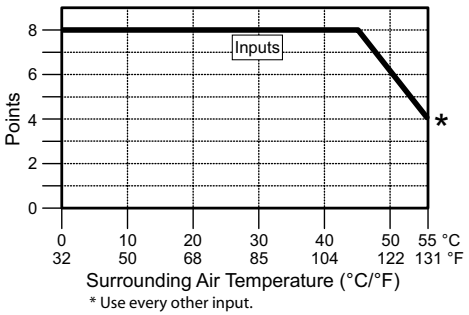
Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-2: Typ 5mA @ 24VDC X3-8: Typ 4mA @ 24VDC
Maximum Input Current	X1-2: 6.0 mA @ 26.4 VDC X3-8: 5.0 mA @ 26.4 VDC
Input Impedance	X1-2: 4.7 kΩ @ 24VDC X3-8: 6.8 kΩ @ 24VDC
ON Voltage Level	X1-2: > 19VDC X3-8: > 19VDC
OFF Voltage Level	X1-2: < 4VDC X3-8: < 7VDC
Minimum ON Current	X1-2: 4.5 mA X3-8: 3.5 mA
Maximum OFF Current	X1-2: 0.1 mA X3-8: 0.5 mA
OFF to ON Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 2ms Max 10ms
ON to OFF Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 3ms Max 10ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.0 oz (140g)

Equivalent Input Circuit



C0-01DD1-D Temperature Derating Chart

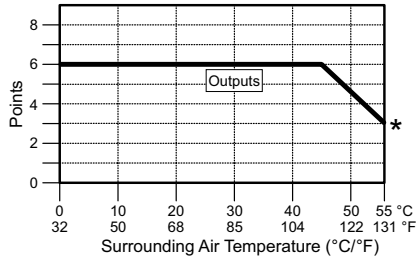


* Use every other input.

C0-01DD1-D – 8 DC Input/6 Sinking DC Output Micro PLC (continued)

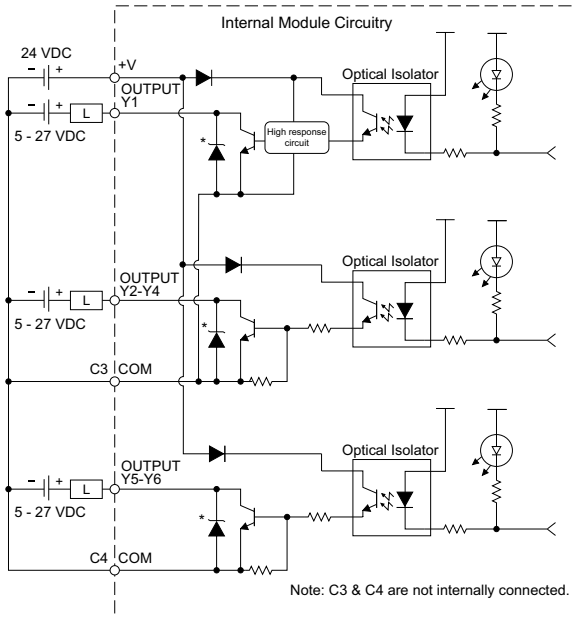
Built-in I/O Specifications - Outputs	
Outputs per Module	6 (Sink)
Operating Voltage Range	5–27 VDC
Output Voltage Range	4–30 VDC
Maximum Output Current	0.1 A/point; C3: 0.4 A/common, C4: 0.2 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10 ms
OFF to ON Response	Y1: typ 5µs; max 20µs Y2-6: < 0.5 ms
ON to OFF Response	Y1: Typ 5µs; max 20µs Y2-6: < 0.5 ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com)
External DC Power Required	20–28 VDC Maximum @ 60mA (All Points On)

C0-01DD1-D Temperature Derating Chart



* Use every other output.

Equivalent Output Circuit



* Zener Diode Power Dissipation: 200 mW

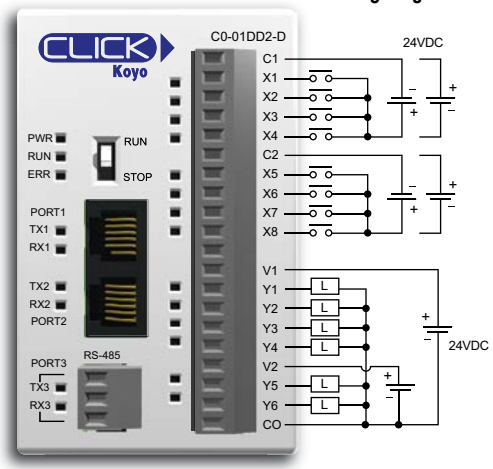
***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-01DD2-D – 8 DC Input/6 Sourcing DC Output Micro PLC

Wiring Diagram

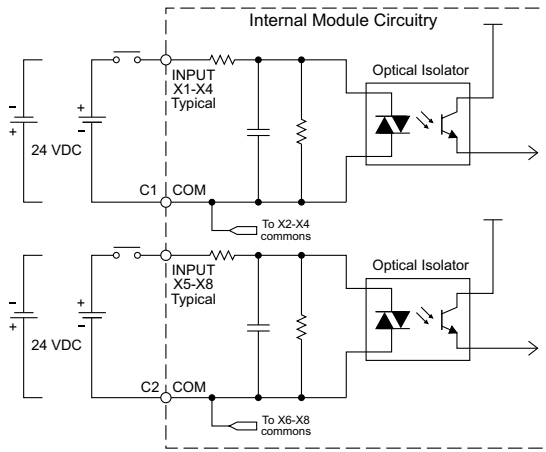


Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-2: Typ 5mA @ 24VDC X3-8: Typ 4mA @ 24VDC
Maximum Input Current	X1-2: 6.0 mA @ 26.4 VDC X3-8: 5.0 mA @ 26.4 VDC
Input Impedance	X1-2: 4.7 kΩ @ 24VDC X3-8: 6.8 kΩ @ 24VDC
ON Voltage Level	X1-2: > 19VDC X3-8: > 19VDC
OFF Voltage Level	X1-2: < 4VDC X3-8: < 7VDC
Minimum ON Current	X1-2: 4.5 mA X3-8: 3.5 mA
Maximum OFF Current	X1-2: 0.1 mA X3-8: 0.5 mA
OFF to ON Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 2ms Max 10ms
ON to OFF Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 3ms Max 10ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

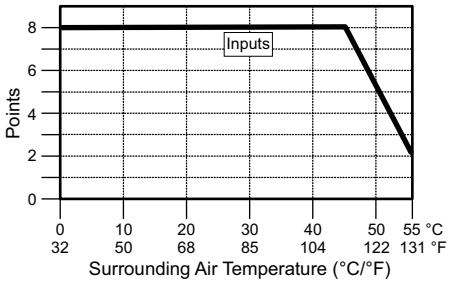
NOTE: *When using Standard PLCs, you must use CLICK programming software version V1.20 or later.*

General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.0 oz (140g)

Equivalent Input Circuit



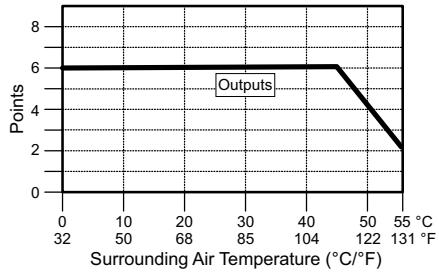
C0-01DD2-D Temperature Derating Chart



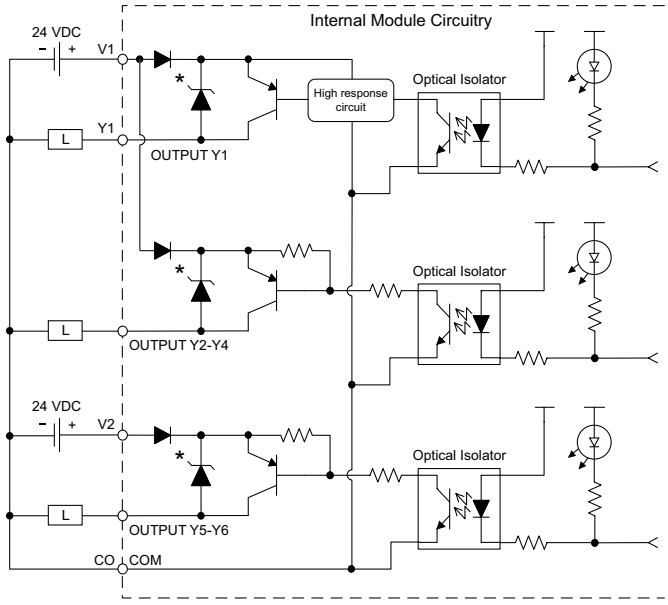
C0-01DD2-D – 8 DC Input/6 Sourcing DC Output Micro PLC (continued)

Built-in I/O Specifications - Outputs	
Outputs per Module	6 (Source)
Operating Voltage Range	24VDC
Output Voltage Range	19.2–30 VDC
Maximum Output Current	0.1 A/point , 0.6 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30VDC
On Voltage Drop	Y1: 1.0 VDC @ 0.1 A Y2-6: 0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	Y1: Typ 5µs; Max 20µs Y2-6: < 0.5 ms
ON to OFF Response	Y1: Typ 5µs; Max 20µs Y2-6: < 0.5 ms
Status Indicators	Logic Side (6 points, red LED)
Commons	1 (6 points/common)

C0-01DD2-D Temperature Derating Chart



Equivalent Output Circuit



*Zener Diode Power Dissipation: 200 mW

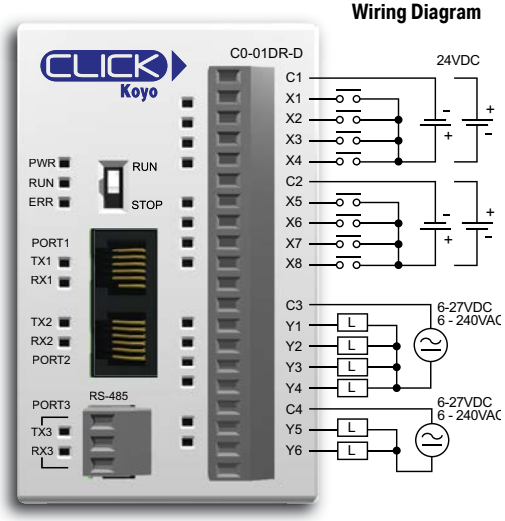
***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-01DR-D – 8 DC Input/6 Relay Output Micro PLC

Wiring Diagram

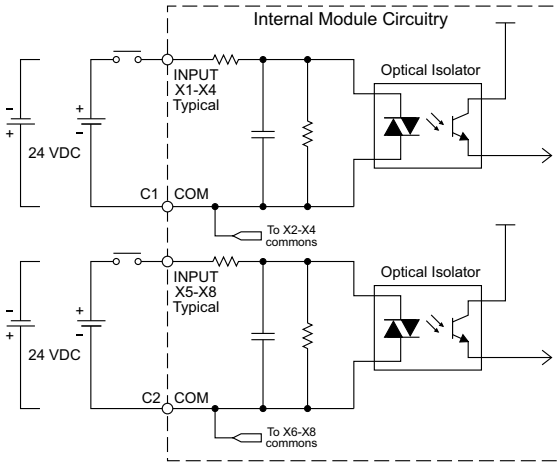


Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-2: Typ 5mA @ 24VDC X3-8: Typ 4mA @ 24VDC
Maximum Input Current	X1-2: 6.0 mA @ 26.4 VDC X3-8: 5.0 mA @ 26.4 VDC
Input Impedance	X1-2: 4.7 kΩ @ 24VDC X3-8: 6.8 kΩ @ 24VDC
ON Voltage Level	X1-2: > 19VDC X3-8: > 19VDC
OFF Voltage Level	X1-2: < 4VDC X3-8: < 7VDC
Minimum ON Current	X1-2: 4.5 mA X3-8: 3.5 mA
Maximum OFF Current	X1-2: 0.1 mA X3-8: 0.5 mA
OFF to ON Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 2ms Max 10ms
ON to OFF Response	X1-2: Typ 5µs Max 20µs X3-8: Typ 3ms Max 10ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

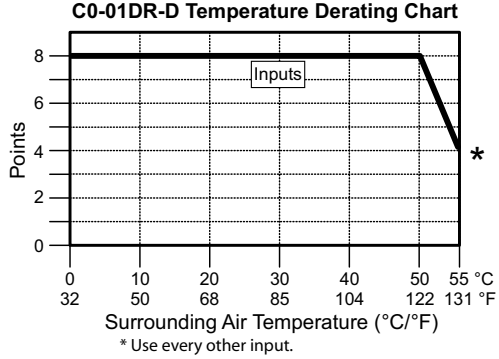
NOTE: *When using Standard PLCs, you must use CLICK programming software version V1.20 or later.*

General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.6 oz (160g)

Equivalent Input Circuit



C0-01DR-D Temperature Derating Chart

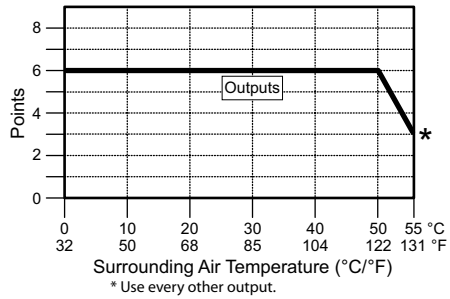


* Use every other input.

C0-01DR-D – 8 DC Input/6 Relay Output Micro PLC (continued)

Built-in I/O Specifications - Outputs	
Outputs per Module	6
Operating Voltage Range	6–240 VAC (47–63 Hz), 6–27 VDC
Output Voltage Range	5–264 VAC (47–63 Hz), 5–30 VDC
Output Type	Relay, form A (SPST)
Maximum Current	1A/point; C3: 4A/common, C4: 2A/common
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com) Isolated

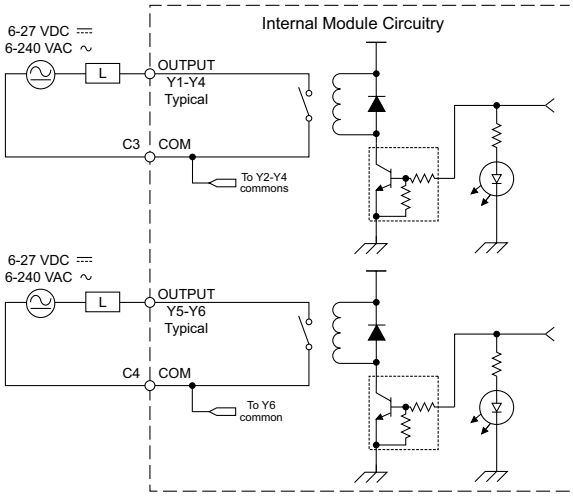
C0-01DR-D Temperature Derating Chart



* Use every other output.

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
250VAC, 1A Resistive	500,000 cycles
250VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

Equivalent Output Circuit



NOTE: *The C0-01DR-D is derated to 2A maximum per Common when used with the ZIPLink wiring system.*

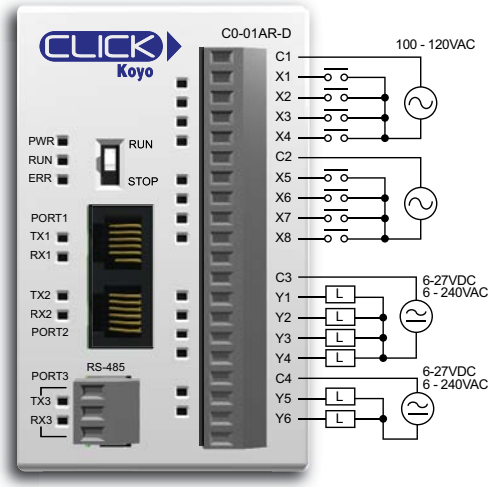
***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-01AR-D – 8 AC Input/6 Relay Output Micro PLC

Wiring Diagram

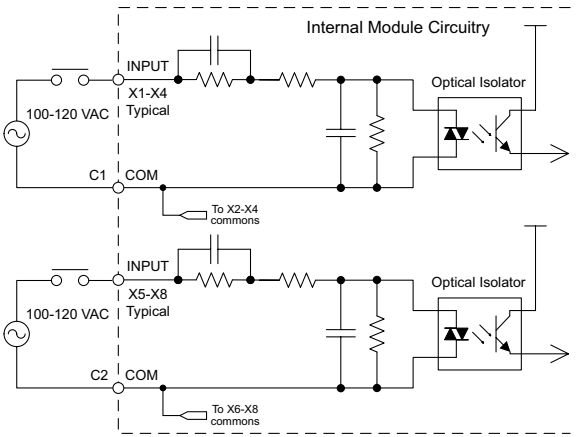


Built-in I/O Specifications - Inputs	
Inputs per Module	8
Operating Voltage Range	100–120 VAC
Input Voltage Range	80–144 VAC
AC Frequency	47–63 Hz
Input Current	8.5 mA @ 100VAC at 50Hz 10 mA @ 100VAC at 60Hz
Maximum Input Current	16 mA @ 144VAC
Input Impedance	15kΩ @ 50Hz 12kΩ @ 60Hz
ON Voltage Level	> 60VAC
OFF Voltage Level	< 20VAC
Minimum ON Current	5mA
Maximum OFF Current	2mA
OFF to ON Response	Max 40ms
ON to OFF Response	Max 40ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

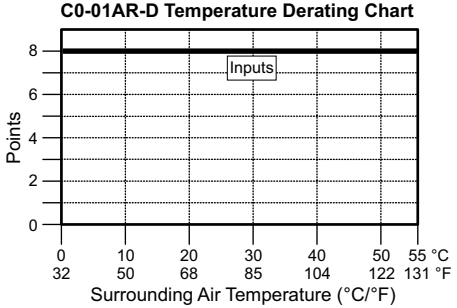
General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.6 oz (160g)

NOTE: When using Standard PLCs, you must use CLICK programming software version V1.20 or later.

Equivalent Input Circuit



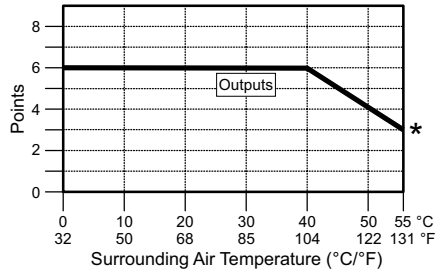
C0-01AR-D Temperature Derating Chart



C0-01AR-D – 8 AC Input/6 Relay Output Micro PLC (continued)

Built-in I/O Specifications - Outputs	
Outputs per Module	6
Operating Voltage Range	6–240 VAC (47–63 Hz), 6–27 VDC
Output Voltage Range	5–264 VAC (47–63 Hz), 5–30 VDC
Output Type	Relay, form A (SPST)
Maximum Current	1 A/point; C3: 4A/common, C4: 2A/common
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com) Isolated

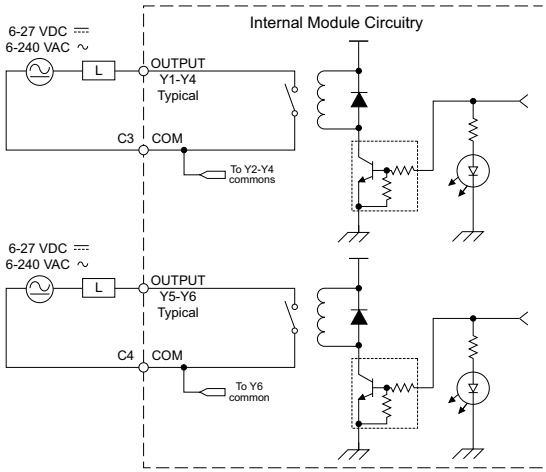
C0-01AR-D Temperature Derating Chart



* Use every other output.

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
250VAC, 1A Resistive	500,000 cycles
250VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

Equivalent Output Circuit



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

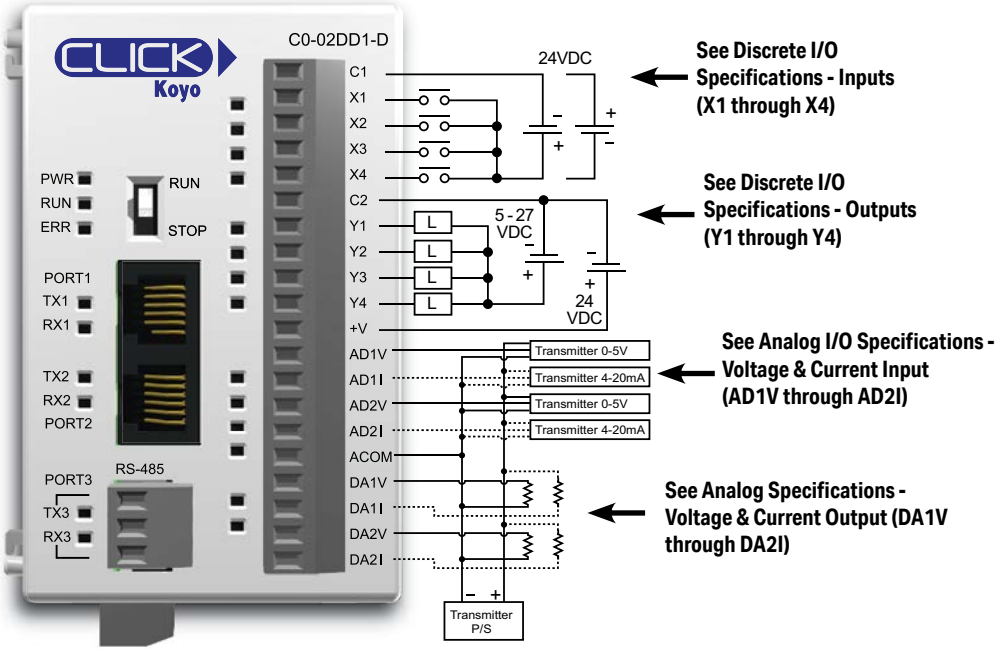
ZL-RTB20
20-pin feed-through connector module

NOTE: *The C0-01AR-D is derated to 2A maximum per Common when used with the ZIPLink wiring system.*

Analog PLC Unit Specifications

C0-02DD1-D – 4 DC Input/4 Sinking DC Output; 2 Analog In/2 Analog Out Micro PLC

Wiring Diagram



General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.3 oz (150g)

WARNING: You must use proper software and firmware for this PLC unit.

Serial Number	Software	Firmware
Before 171208001	V1.12 or later	V1.10 or later
171208001 or later	V2.10 or later	V2.10 or later
You can find the serial number on the bottom of the product label.		

NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

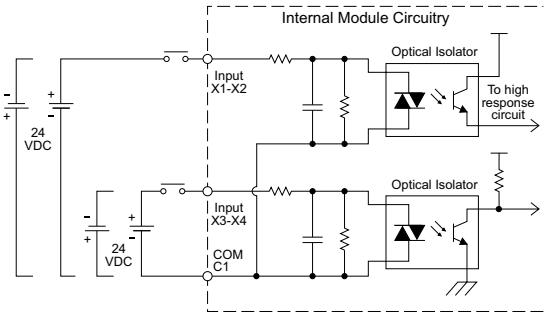
C0-02DD1-D (continued)

X1 - X4

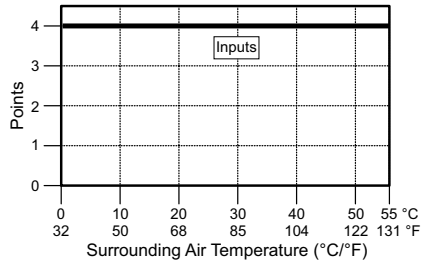
Discrete I/O Specifications - Inputs	
Inputs per Module	4 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-2: Typ 5mA @ 24VDC X3-4: Typ 4mA @ 24VDC
Maximum Input Current	X1-2: 6.0 mA @ 26.4 VDC X3-4: 5.0 mA @ 26.4 VDC
Input Impedance	X1-2: 4.7 kΩ @ 24VDC X3-4: 6.8 kΩ @ 24VDC
ON Voltage Level	X1-2: > 19VDC X3-4: > 19VDC
OFF Voltage Level	X1-2: < 4VDC X3-4: < 7VDC
Minimum ON Current	X1-2: 4.5 mA X3-4: 3.5 mA
Maximum OFF Current	X1-2: 0.1 mA X3-4: 0.5 mA
OFF to ON Response	X1-2: Typ 5µs Max 20µs* X3-4: Typ 2ms Max 10ms
ON to OFF Response	X1-2: Typ 5µs Max 20µs* X3-4: Typ 3ms Max 10ms
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

*** Threshold level is 70% amplitude.**

Equivalent Discrete Input Circuit



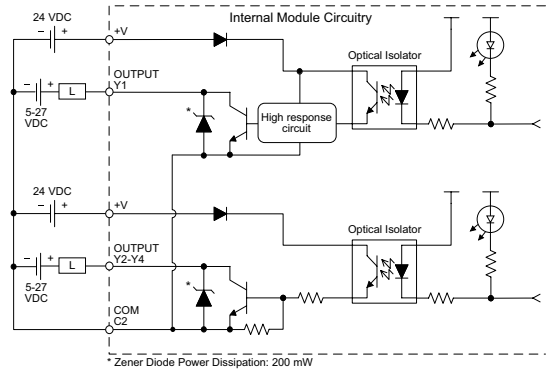
C0-02DD1-D Temperature Derating Chart



Y1 - Y4

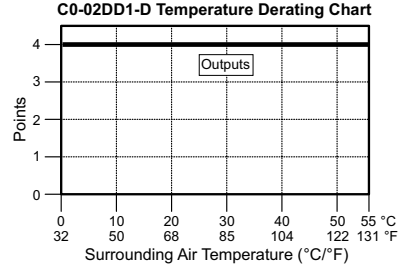
Discrete I/O Specifications - Outputs	
Outputs per Module	4 (Sink)
Operating Voltage Range	5–27 VDC
Output Voltage Range	4–30 VDC
Maximum Output Current	0.1 A/point; 0.4 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150 mA for 10ms
OFF to ON Response	Y1: Typ 5µs; Max 20µs Y2-4: < 0.5 ms
ON to OFF Response	Y1: Typ 5µs; Max 20µs Y2-4: < 0.5 ms
Status Indicators	Logic Side (4 points, red LED)
Commons	1 (4 points/common)
External DC Power Required	20–28 VDC Maximum @ 60mA (all points on)

Equivalent Discrete Output Circuit



* Zener Diode Power Dissipation: 200 mW

C0-02DD1-D Temperature Derating Chart



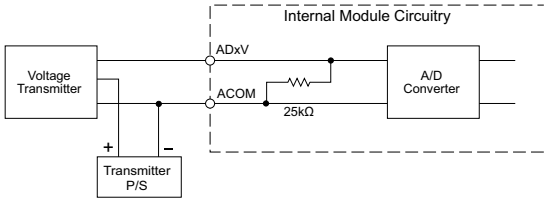
C0-02DD1-D (continued)

AD1V - AD2I

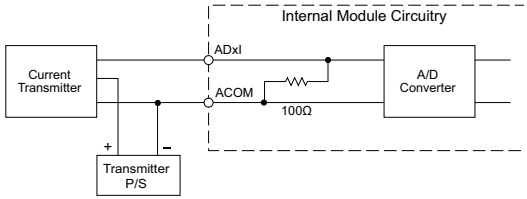
Analog Specifications - Voltage Input	
Number of Channels	2 (voltage/current selectable)
Input Range	0–5 VDC (6VDC Max.)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	25kΩ 150kΩ (Serial numbers prior to 171208001)
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±1.2% maximum
Offset Calibration Error	±5mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Input	
Inputs per Module	2 (voltage/current selectable)
Input Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	100Ω 200Ω (Serial numbers prior to 171208001)
Input Stability	±2 LSB
Full-Scale Calibration Error	±1% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Input Circuit



Analog Current Input Circuit

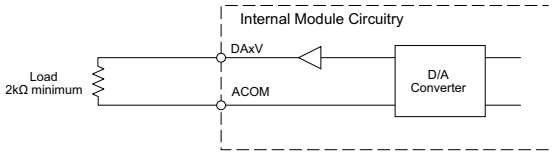


DA1V - DA2I

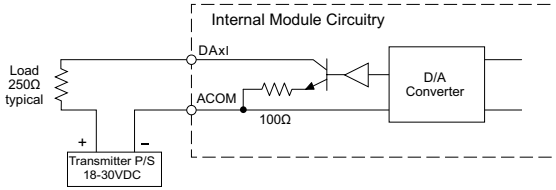
Analog Specifications - Voltage Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	0–5 VDC
Resolution	12-bit
Conversion Time	1ms
Load Impedance	2kΩ minimum (output current 2.5 mA maximum)
Full-Scale Calibration Error	±0.8% maximum
Offset Calibration Error	±5mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	1ms
Loop Supply Voltage	DC 18–30 V
Load Impedance	250Ω Load Power Supply: DC 18V: 600Ω maximum DC 24V: 900Ω maximum DC 30V: 1200Ω maximum
Full-Scale Calibration Error	±1% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Output Circuit

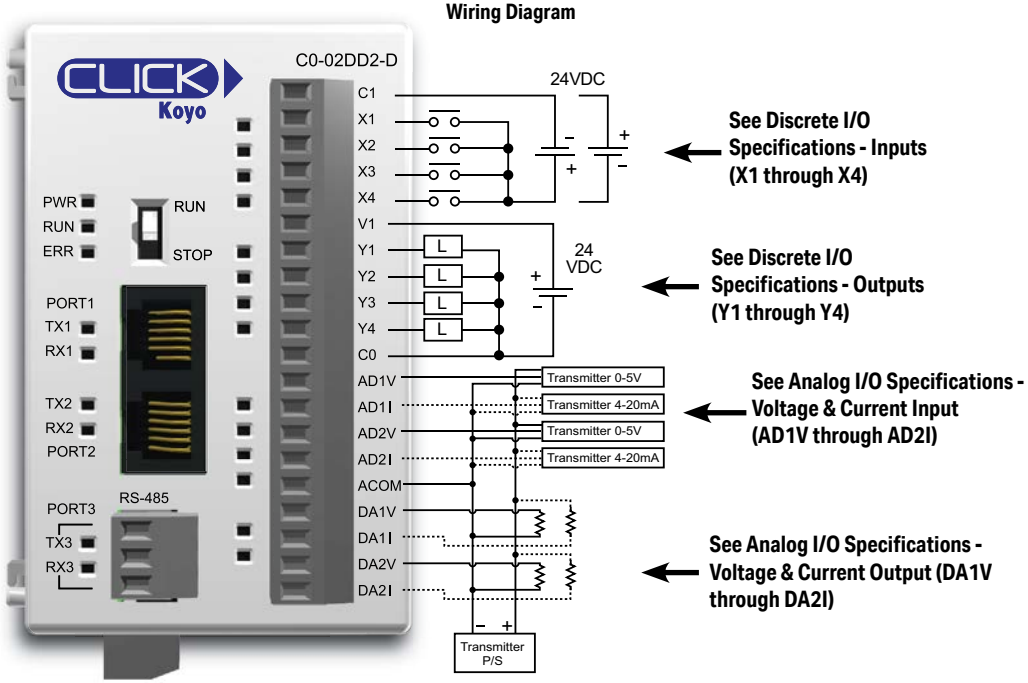


Analog Current Output Circuit



C0-02DD2-D – 4 DC Input/4 Sourcing DC Output; 2 Analog In/2 Analog Out Micro PLC

Wiring Diagram



General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.3 oz (150g)

WARNING: You must use proper software and firmware for this PLC unit.

Serial Number	Software	Firmware
Before 174018001	V1.12 or later	V1.10 or later
174018001 or later	V2.10 or later	V2.10 or later
You can find the serial number on the bottom of the product label.		

NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

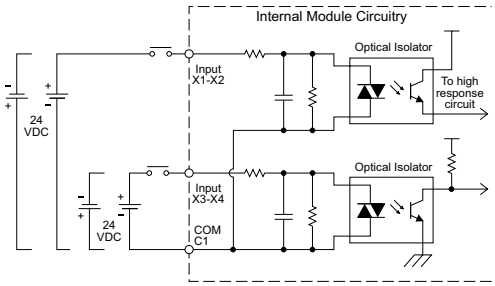
C0-02DD2-D (continued)

X1 - X4

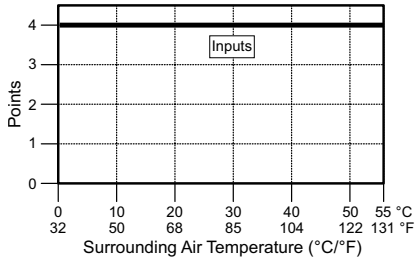
Discrete I/O Specifications - Inputs	
Inputs per Module	4 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-2: Typ 5mA @ 24VDC X3-4: Typ 4mA @ 24VDC
Maximum Input Current	X1-2: 6.0 mA @ 26.4 VDC X3-4: 5.0 mA @ 26.4 VDC
Input Impedance	X1-2: 4.7 kΩ @ 24VDC X3-4: 6.8 kΩ @ 24VDC
ON Voltage Level	X1-2: > 19VDC X3-4: > 19VDC
OFF Voltage Level	X1-2: < 4VDC X3-4: < 7VDC
Minimum ON Current	X1-2: 4.5 mA X3-4: 3.5 mA
Maximum OFF Current	X1-2: 0.1 mA X3-4: 0.5 mA
OFF to ON Response	X1-2: Typ 5µs Max 20µs* X3-4: Typ 2ms Max 10ms
ON to OFF Response	X1-2: Typ 5µs Max 20µs* X3-4: Typ 3ms Max 10ms
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

*** Threshold level is 70% amplitude.**

Equivalent Discrete Input Circuit



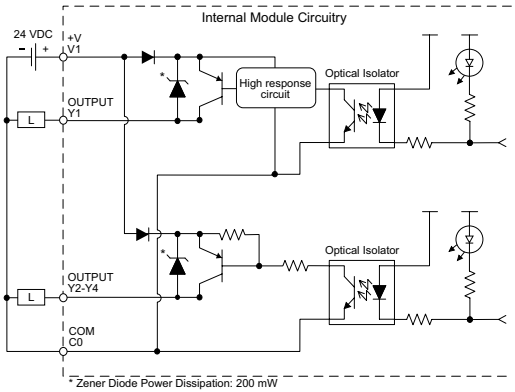
C0-02DD2-D Temperature Derating Chart



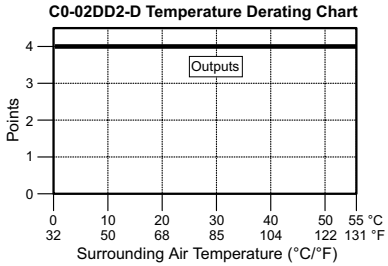
Y1 - Y4

Discrete I/O Specifications - Outputs	
Outputs per Module	4 (Source)
Operating Voltage Range	24VDC
Output Voltage Range	19.2–30 VDC
Maximum Output Current	0.1 A/point , 0.4 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1mA @ 30VDC
On Voltage Drop	Y1: 1 VDC @ 0.1A Y2-4 : 0.5VDC@ 0.1mA
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	Y1: Typ 5µs; Max 20µs Y2-4: < 0.5 ms
ON to OFF Response	Y1: Typ 5µs; Max 20µs Y2-4: < 0.5 ms
Status Indicators	Logic Side (4 points, red LED)
Commons	1 (4 points/common)

Equivalent Output Circuit



C0-02DD2-D Temperature Derating Chart



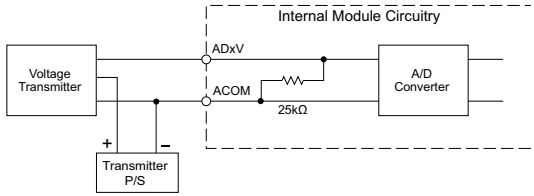
C0-02DD2-D (continued)

AD1V - AD2I

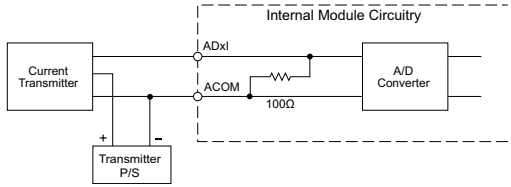
Analog Specifications - Voltage Input	
Number of Channels	2 (voltage/current selectable)
Input Range	0–5 VDC (6 VDC Max.)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	25kΩ 150kΩ (Serial numbers prior to 174018001)
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±1.2% maximum
Offset Calibration Error	±5mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Input	
Inputs per Module	2 (voltage/current selectable)
Input Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	100Ω 200Ω (Serial numbers prior to 174018001)
Input Stability	±2 LSB
Full-Scale Calibration Error	±1% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Input Circuit



Analog Current Input Circuit

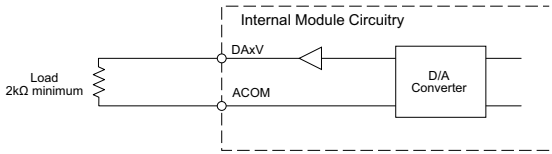


DA1V - DA2I

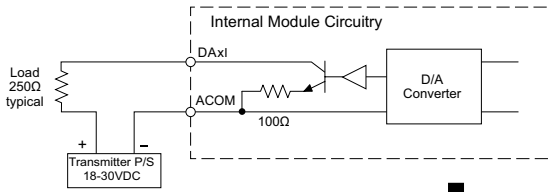
Analog Specifications - Voltage Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	0–5 VDC
Resolution	12-bit
Conversion Time	1ms
Load Impedance	2kΩ minimum (output current 2.5 mA maximum)
Full-Scale Calibration Error	±0.8% maximum
Offset Calibration Error	±5mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	1ms
Loop Supply Voltage	DC 18–30 V
Load Impedance	250Ω Load Power Supply: DC 18V: 600Ω maximum DC 24V: 900Ω maximum DC 30V: 1200Ω maximum
Full-Scale Calibration Error	±1% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

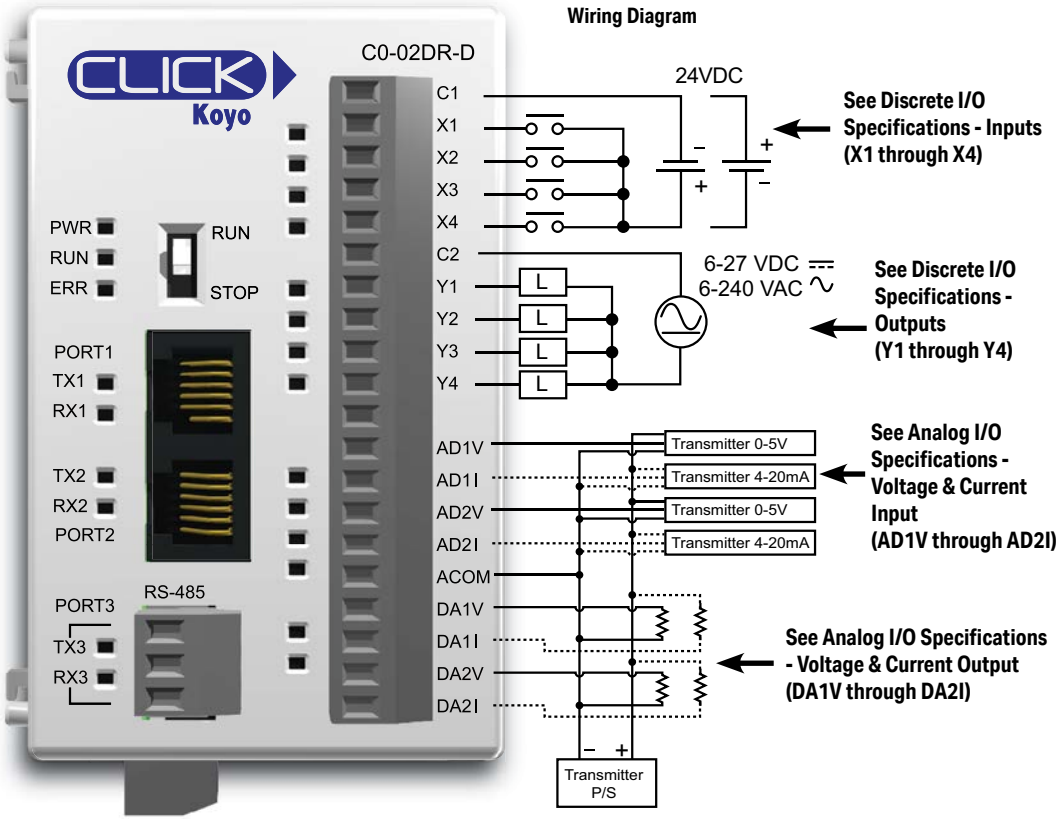
Analog Voltage Output Circuit



Analog Current Output Circuit



C0-02DR-D – 4 DC Input/4 Relay Output; 2 Analog In/2 Analog Out Micro PLC



General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.6 oz (160g)

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
120VAC, 1A Resistive	500,000 cycles
120VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

WARNING: You must use proper software and firmware for this PLC unit.

Serial Number	Software	Firmware
Before 173158001	V1.12 or later	V1.10 or later
173158001 or later	V2.10 or later	V2.10 or later
You can find the serial number on the bottom of the product label.		

NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

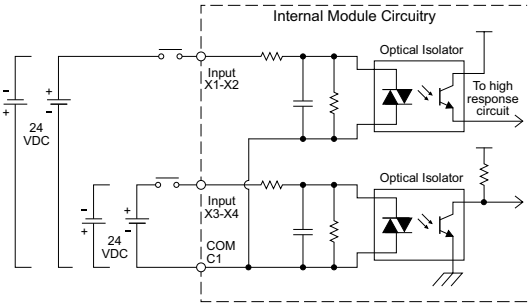
C0-02DR-D (continued)

X1 - X4

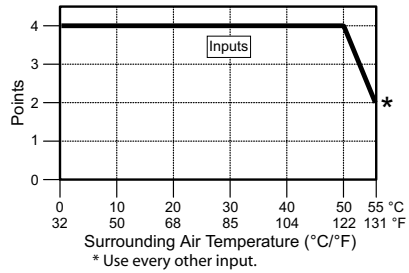
Discrete I/O Specifications - Inputs	
Inputs per Module	4 (Source/Sink)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-2: Typ 5mA @ 24VDC X3-4: Typ 4mA @ 24VDC
Input Impedance	X1-2: 4.7 kΩ @ 24VDC X3-4: 6.8 kΩ @ 24VDC
ON Voltage Level	X1-2: > 19VDC X3-4: > 19VDC
OFF Voltage Level	X1-2: < 4VDC X3-4: < 7VDC
Minimum ON Current	X1-2: 4.5 mA X3-4: 3.5 mA
Maximum OFF Current	X1-2: 0.1 mA X3-4: 0.5 mA
OFF to ON Response	X1-2: Typ 5µs Max 20µs* X3-4: Typ 2ms Max 10ms
ON to OFF Response	X1-2: Typ 5µs Max 20µs* X3-4: Typ 3ms Max 10ms
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

* Threshold level is 70% amplitude.

Equivalent Discrete Input Circuit



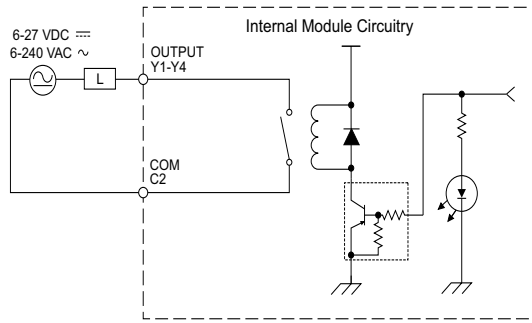
C0-02DR-D Temperature Derating Chart



Y1 - Y4

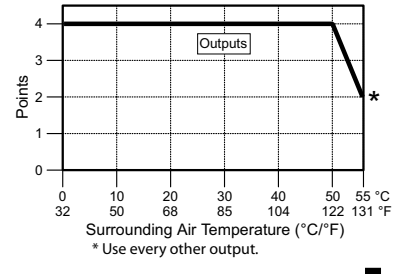
Discrete I/O Specifications - Outputs	
Outputs per Module	4
Operating Voltage Range	6–27 VDC (-15%/+10%)/ 6–240 VAC (-10%/+10%)
Output Type	Relay, form A (SPST)
AC Frequency	47–63 Hz
Maximum Current	1A/point (resistive)
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (4 points, red LED)
Commons per Module	1 (4 points/common)
Fuse	None

Equivalent Output Circuit



This circuit does not contain built-in protection.
Install protection elements such as a fuse outside the module if necessary.

C0-02DR-D Temperature Derating Chart



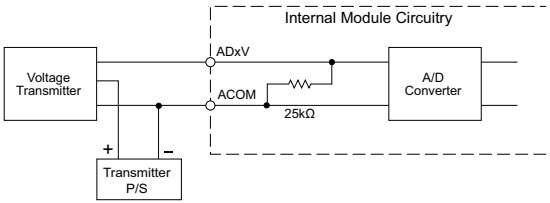
C0-02DR-D (continued)

AD1V – AD2I

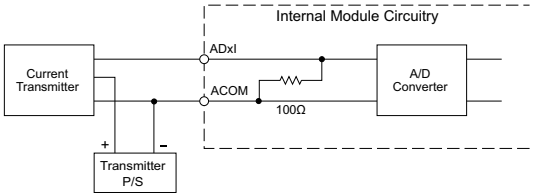
Analog Specifications - Voltage Input	
Number of Channels	2 (voltage/current selectable)
Input Range	0–5 VDC (6VDC Max.)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	25kΩ 150Ω (Serial numbers prior to 173158001)
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±1.2% maximum
Offset Calibration Error	±5mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Input	
Inputs per Module	2 (voltage/current selectable)
Input Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	100Ω 200Ω (Serial numbers prior to 173158001)
Input Stability	±2 LSB
Full-Scale Calibration Error	±1% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Input Circuit



Analog Current Input Circuit

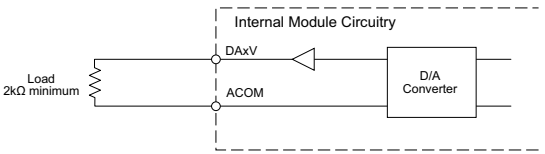


DA1V – DA2I

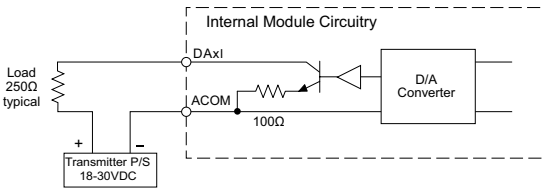
Analog Specifications - Voltage Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	0–5 VDC
Resolution	12-bit
Conversion Time	1ms
Load Impedance	2kΩ minimum (output current 2.5 mA maximum)
Full-Scale Calibration Error	±0.8% maximum
Offset Calibration Error	±5mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	1ms
Loop Supply Voltage	DC 18–30 V
Load Impedance	250Ω Load Power Supply: DC 18V: 600Ω maximum DC 24V: 900Ω maximum DC 30V: 1200Ω maximum
Full-Scale Calibration Error	±1% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Output Circuit



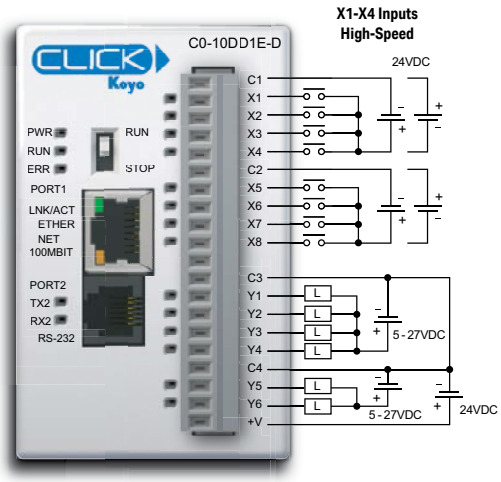
Analog Current Output Circuit



Ethernet Basic PLC Unit Specifications

C0-10DD1E-D – 8 DC Input/6 Sinking DC Output Micro PLC

Wiring Diagram

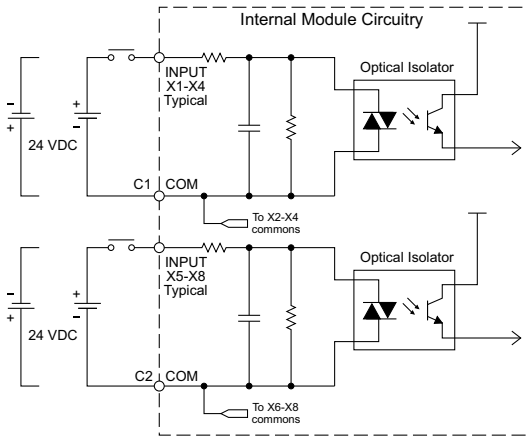


NOTE: *When using Ethernet Basic PLCs, you must use CLICK programming software version V2.00 or later.*

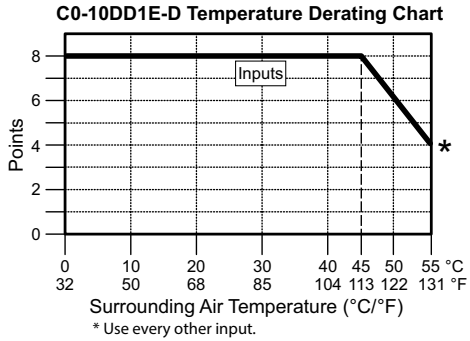
Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-4: Typ 6.5 mA @ 24VDC X5-8: Typ 4mA @ 24VDC
Maximum Input Current	X1-4: 7.0 mA @ 26.4 VDC X5-8: 5.0 mA @ 26.4 VDC
Input Impedance	X1-4: 3.9 kΩ @ 24VDC X5-8: 6.8 kΩ @ 24VDC
Input Frequency (Max)	X1-X4: 100kHz
ON Voltage Level	> 19VDC
OFF Voltage Level	X1-4: < 2VDC X5-8: < 7VDC
Minimum ON Current	X1-4: 4.5 mA X5-8: 3.5 mA
Maximum OFF Current	X1-4: 0.5 mA X5-8: 1.5 mA
OFF to ON Response	X1-4: Typ 3µs Max 5µs X5-8: Typ 2ms Max 10ms
ON to OFF Response	X1-4: Typ 1µs Max 20µs X5-8: Typ 3ms Max 10ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

General Specifications	
Current Consumption at 24VDC	120mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.0 oz (140g)

Equivalent Input Circuit



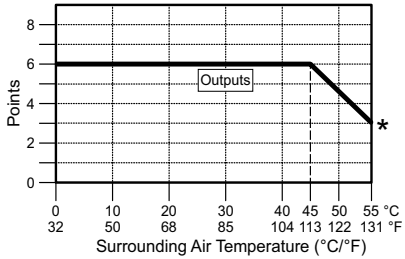
C0-10DD1E-D Temperature Derating Chart



C0-10DD1E-D – 8 DC Input/6 Sinking DC Output Micro PLC (continued)

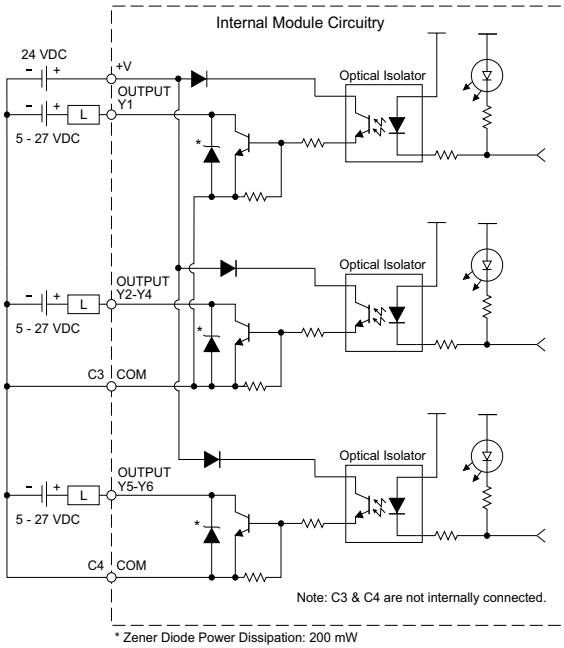
Built-in I/O Specifications - Outputs	
Outputs per Module	6 (Sink)
Operating Voltage Range	5–27 VDC
Output Voltage Range	4–30 VDC
Maximum Output Current	0.1 A/point; C3: 0.4 A/common, C4: 0.2 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.5 mA @ 30.0 VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	Max. 0.5 ms
ON to OFF Response	Max. 0.5 ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com)
External DC Power Required	20–28 VDC Maximum @ 60mA (All Points On)

C0-10DD1E-D Temperature Derating Chart



* Use every other output.

Equivalent Output Circuit



* Zener Diode Power Dissipation: 200 mW

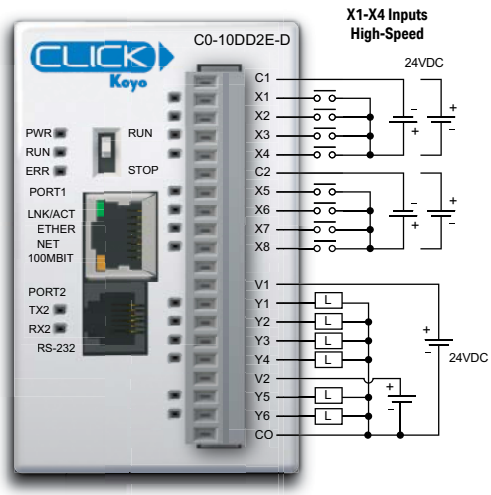
***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-10DD2E-D – 8 DC Input/6 Sourcing DC Output Micro PLC

Wiring Diagram

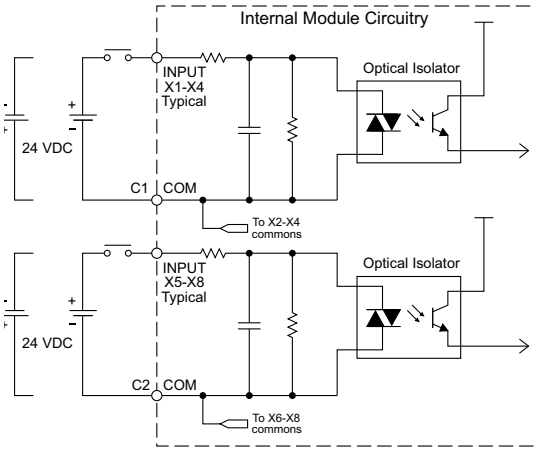


NOTE: *When using Ethernet Basic PLCs, you must use CLICK programming software version V2.00 or later.*

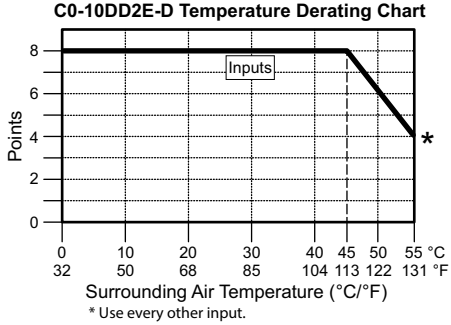
Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-4: Typ 6.5 mA @ 24VDC X5-8: Typ 4mA @ 24VDC
Maximum Input Current	X1-4: 7.0 mA @ 26.4 VDC X5-8: 5.0 mA @ 26.4 VDC
Input Impedance	X1-4: 3.9 kΩ @ 24VDC X5-8: 6.8 kΩ @ 24VDC
Input Frequency (Max)	X1-X4: 100kHz
ON Voltage Level	> 19VDC
OFF Voltage Level	X1-4: < 2VDC X5-8: < 7VDC
Minimum ON Current	X1-4: 4.5 mA X5-8: 3.5 mA
Maximum OFF Current	X1-4: 0.5 mA X5-8: 1.5 mA
OFF to ON Response	X1-4: Typ 3µs Max 5µs X5-8: Typ 2ms Max 10ms
ON to OFF Response	X1-4: Typ 1µs Max 3µs X5-8: Typ 3ms Max 10ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

General Specifications	
Current Consumption at 24VDC	120mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.0 oz (140g)

Equivalent Input Circuit



C0-10DD2E-D Temperature Derating Chart

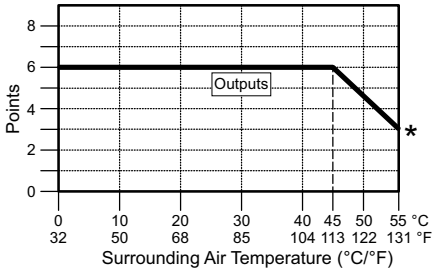


* Use every other input.

C0-10DD2E-D – 8 DC Input/6 Sourcing DC Output Micro PLC (continued)

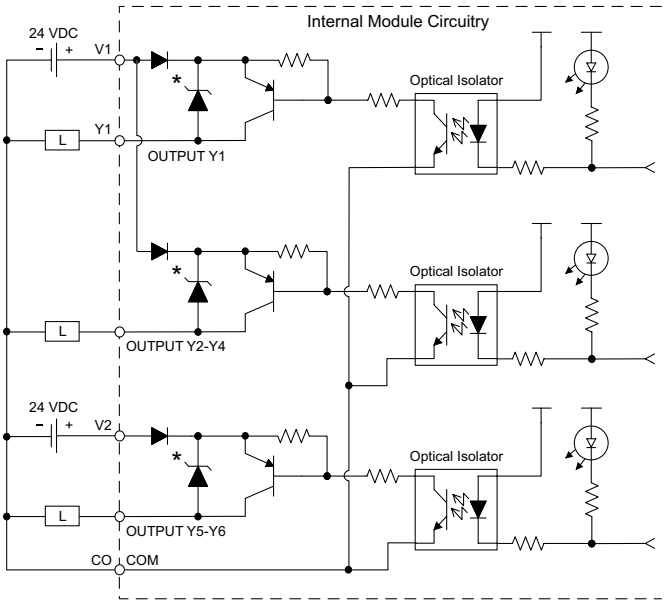
Built-in I/O Specifications - Outputs	
Outputs per Module	6 (Source)
Operating Voltage Range	24VDC
Output Voltage Range	19.2–30 VDC
Maximum Output Current	0.1 A/point , 0.6 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	Max. 0.5 ms
ON to OFF Response	Max 0.5 ms
Status Indicators	Logic Side (6 points, red LED)
Commons	1 (6 points/common)

C0-10DD2E-D Temperature Derating Chart



* Use every other output.

Equivalent Output Circuit



*Zener Diode Power Dissipation: 200 mW

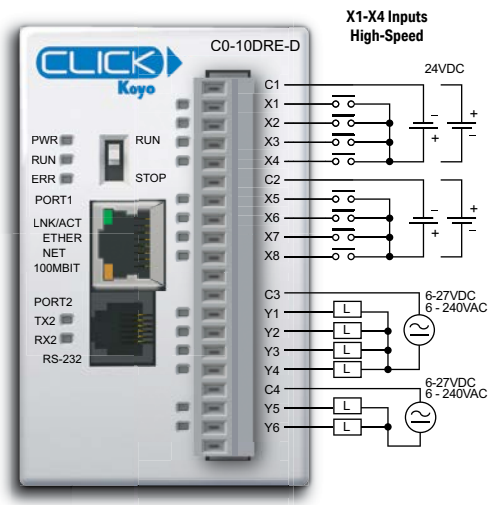
***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-10DRE-D – 8 DC Input/6 Relay Output Micro PLC

Wiring Diagram

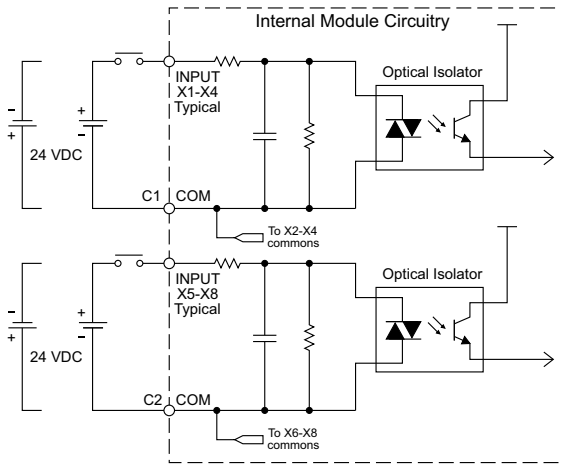


NOTE: *When using Ethernet Basic PLCs, you must use CLICK programming software version V2.00 or later.*

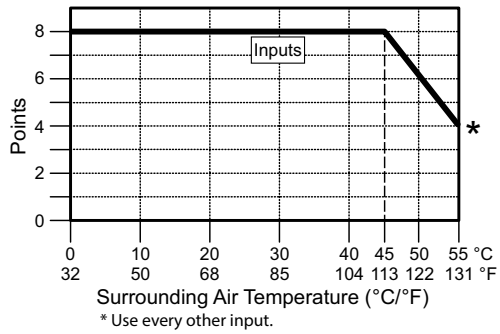
Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	X1-4: Typ 6.5 mA @ 24VDC X5-8: Typ 4mA @ 24VDC
Maximum Input Current	X1-4: 7.0 mA @ 26.4 VDC X5-8: 5.0 mA @ 26.4 VDC
Input Impedance	X1-4: 3.9 kΩ @ 24VDC X5-8: 6.8 kΩ @ 24VDC
Input Frequency (Max)	X1-X4: 100kHz
ON Voltage Level	> 19VDC
OFF Voltage Level	X1-4: < 2VDC X5-8: < 7VDC
Minimum ON Current	X1-4: 4.5 mA X5-8: 3.5 mA
Maximum OFF Current	X1-4: 0.5 mA X5-8: 1.5 mA
OFF to ON Response	X1-4: Typ 3µs Max 5µs X5-8: Typ 2ms Max 10ms
ON to OFF Response	X1-4: Typ 1µs Max 3µs X5-8: Typ 3ms Max 10ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

General Specifications	
Current Consumption at 24VDC	120mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.6 oz (160g)

Equivalent Input Circuit



C0-10DRE-D Temperature Derating Chart

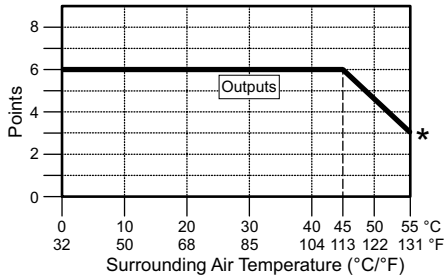


* Use every other input.

C0-10DRE-D – 8 DC Input/6 Relay Output Micro PLC (continued)

Built-in I/O Specifications - Outputs	
Outputs per Module	6
Operating Voltage Range	6–240 VAC (47–63 Hz), 6–27 VDC
Output Voltage Range	5–264 VAC (47–63 Hz), 5–30 VDC
Output Type	Relay, form A (SPST)
Maximum Current	1 A/point; C3: 4A/common, C4: 2A/common
Minimum Load Current	5mA @ 5 VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com) Isolated

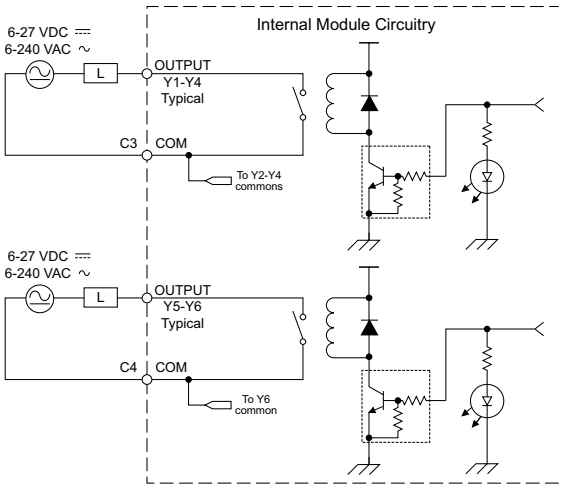
C0-10DRE-D Temperature Derating Chart



* Use every other output.

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
250VAC, 1A Resistive	500,000 cycles
250VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

Equivalent Output Circuit



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

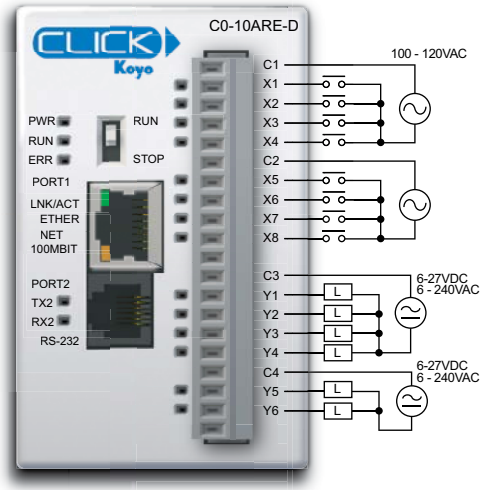
20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

NOTE: *The C0-10DRE-D is derated to 2A maximum per Common when used with the ZIPLink wiring system.*

C0-10ARE-D – 8 AC Input/6 Relay Output Micro PLC

Wiring Diagram

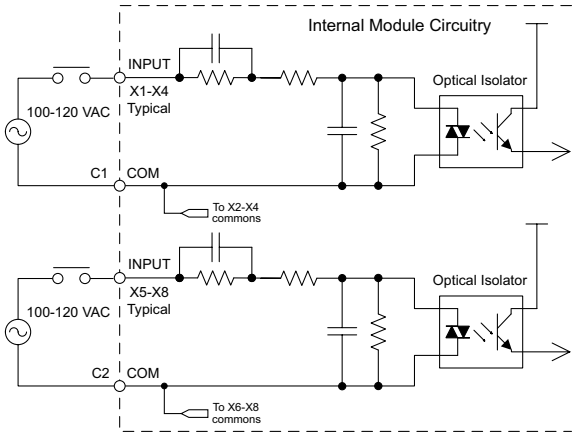


Built-in I/O Specifications - Inputs	
Inputs per Module	8
Operating Voltage Range	100–120 VAC
Input Voltage Range	80–144 VAC
AC Frequency	47–63 Hz
Input Current	8.5 mA @ 100VAC at 50Hz 10mA @ 100VAC at 60Hz
Maximum Input Current	16mA @ 144 VAC at 55°C or 131°F
Input Impedance	15kΩ @ 50Hz 12kΩ @ 60Hz
ON Voltage Level	> 60 VAC
OFF Voltage Level	< 20 VAC
Minimum ON Current	5mA
Maximum OFF Current	2mA
OFF to ON Response	< 40ms
ON to OFF Response	< 40ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

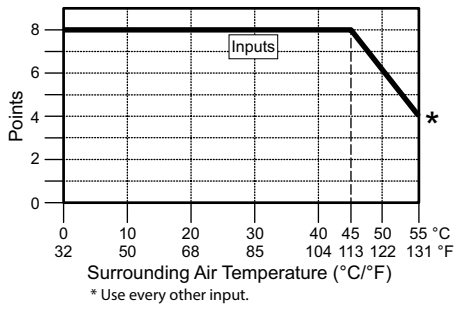
General Specifications	
Current Consumption at 24VDC	120mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.6 oz (160g)

NOTE: *When using Ethernet Basic PLCs, you must use CLICK programming software version V2.00 or later.*

Equivalent Input Circuit



C0-10ARE-D Temperature Derating Chart

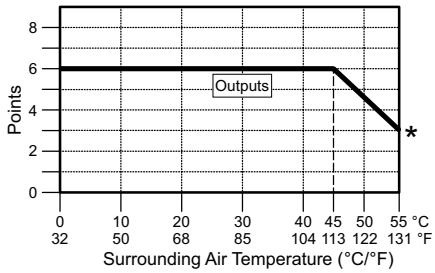


* Use every other input.

C0-10ARE-D – 8 AC Input/6 Relay Output Micro PLC (continued)

Built-in I/O Specifications – Outputs	
Outputs per Module	6
Operating Voltage Range	6–240 VAC (47–63 Hz), 6–27 VDC
Output Voltage Range	5–264 VAC (47–63 Hz), 5–30 VDC
Output Type	Relay, form A (SPST)
Maximum Current	1 A/point; C3: 4A/common, C4: 2A/common
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com) Isolated

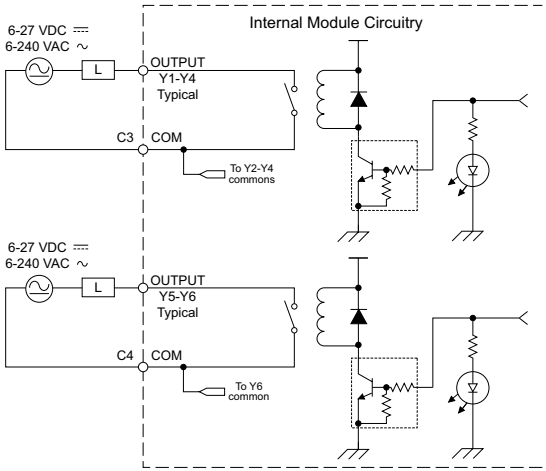
C0-10ARE-D Temperature Derating Chart



* Use every other output.

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
250VAC, 1A Resistive	500,000 cycles
250VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

Equivalent Output Circuit



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

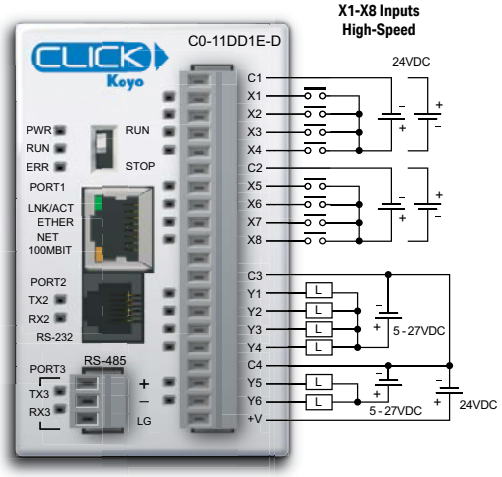
ZL-RTB20
20-pin feed-through connector module

NOTE: *The C0-10ARE-D is derated to 2A maximum per Common when used with the ZIPLink wiring system.*

Ethernet Standard PLC Unit Specifications

C0-11DD1E-D – 8 DC Input/6 Sinking DC Output Micro PLC

Wiring Diagram

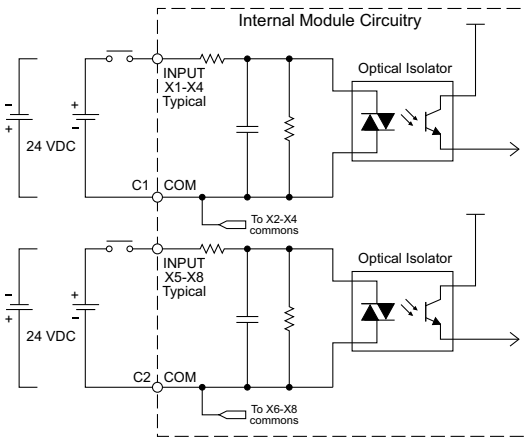


Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Maximum Input Current	7.0 mA @ 26.4 VDC
Input Impedance	3.9 kΩ @ 24VDC
Input Frequency (Max)	X1-X8: 100kHz
ON Voltage Level	> 19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs Max 5µs
ON to OFF Response	Typ 1µs Max 3µs
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

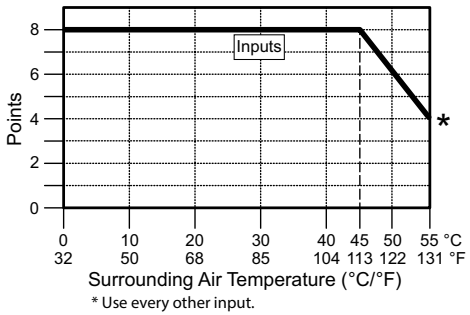
NOTE: *When using Ethernet Standard PLCs, you must use CLICK programming software version V2.00 or later.*

General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.0 oz (140g)

Equivalent Input Circuit



C0-11DD1E-D Temperature Derating Chart

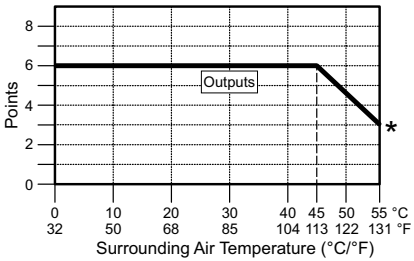


* Use every other input.

C0-11DDE1-D – 8 DC Input/6 Sinking DC Output Micro PLC (continued)

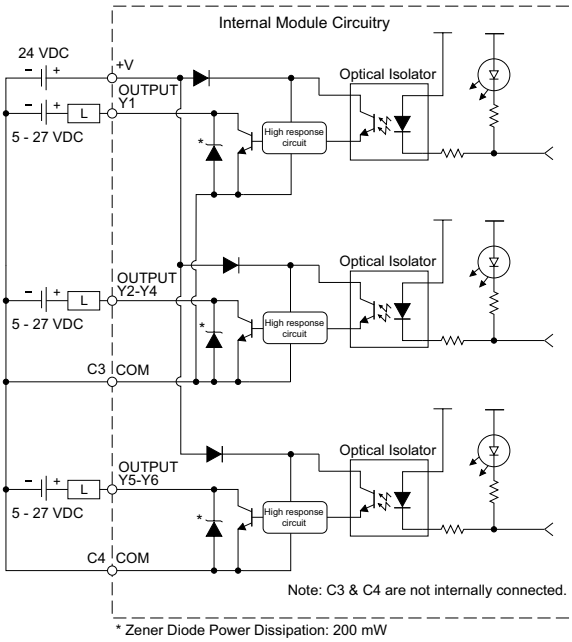
Built-in I/O Specifications - Outputs	
Outputs per Module	6 (Sink)
Operating Voltage Range	5–27 VDC
Output Voltage Range	4–30 VDC
Maximum Output Current	0.1 A/point; C3: 0.4 A/common, C4: 0.2 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	Max. 0.5 ms
ON to OFF Response	Max. 0.5 ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com)
External DC Power Required	20–28 VDC Maximum @ 60mA (All Points On)

C0-11DD1E-D Temperature Derating Chart



* Use every other output.

Equivalent Output Circuit



* Zener Diode Power Dissipation: 200 mW

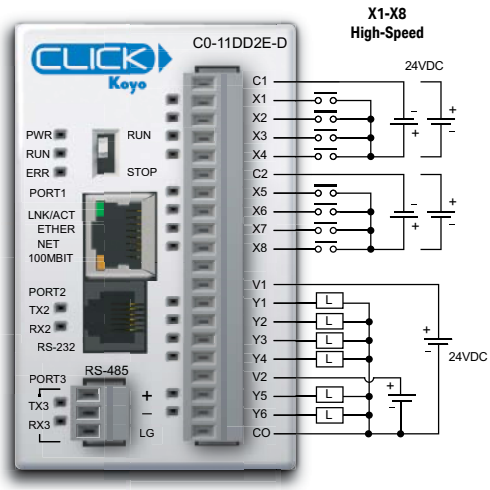
***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-11DD2E-D – 8 DC Input/6 Sourcing DC Output Micro PLC

Wiring Diagram

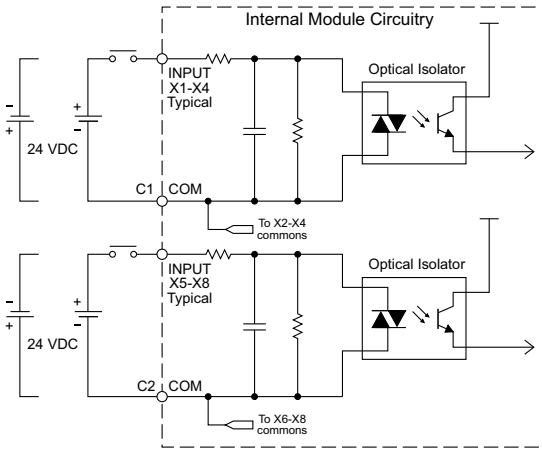


Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Maximum Input Current	7.0 mA @ 26.4 VDC
Input Impedance	3.9 kΩ @ 24VDC
Input Frequency (Max)	X1-X8: 100kHz
ON Voltage Level	> 19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs Max 5µs
ON to OFF Response	Typ 1µs Max 3µs
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

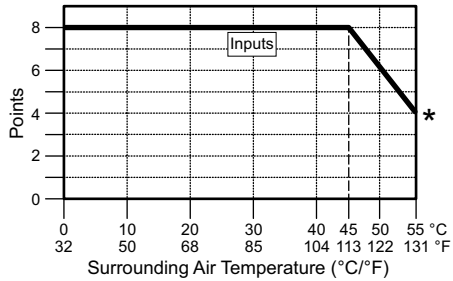
NOTE: *When using Ethernet Standard PLCs, you must use CLICK programming software version V2.00 or later.*

General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.0 oz (140g)

Equivalent Input Circuit



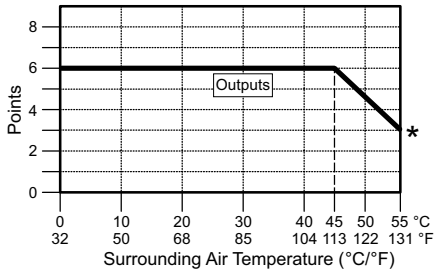
C0-11DD2E-D Temperature Derating Chart



C0-11DD2E-D – 8 DC Input/6 Sourcing DC Output Micro PLC (continued)

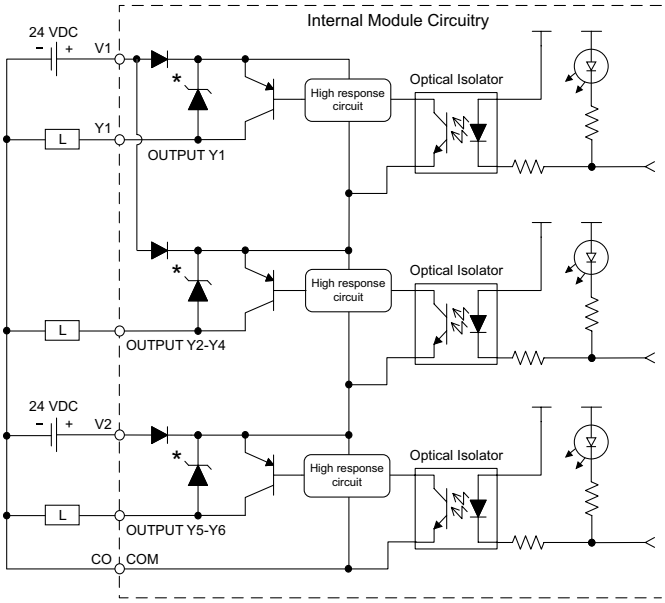
Built-in I/O Specifications - Outputs	
Outputs per Module	6 (Source)
Operating Voltage Range	24VDC
Output Voltage Range	19.2–30 VDC
Maximum Output Current	0.1 A/point, 0.6 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	Max. 0.5 ms
ON to OFF Response	Max. 0.5 ms
Status Indicators	Logic Side (6 points, red LED)
Commons	1 (6 points/common)

C0-11DD2E-D Temperature Derating Chart



* Use every other output.

Equivalent Output Circuit



*Zener Diode Power Dissipation: 200 mW

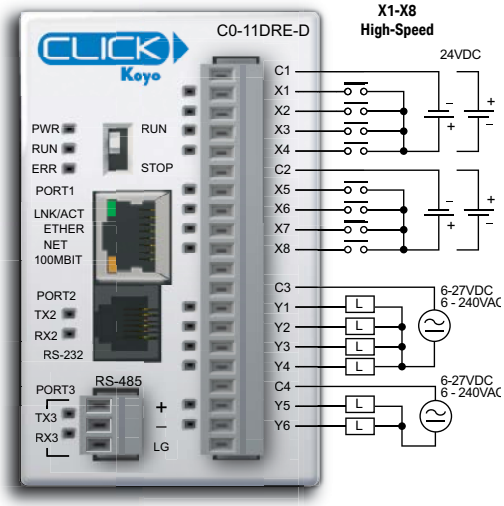
***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-11DRE-D – 8 DC Input/6 Relay Output Micro PLC

Wiring Diagram

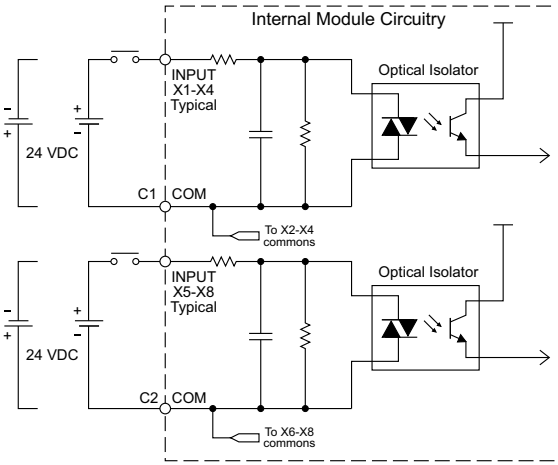


Built-in I/O Specifications - Inputs	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Maximum Input Current	7.0 mA @ 26.4 VDC
Input Impedance	3.9 kΩ @ 24VDC
Input Frequency (Max)	X1-X8: 100kHz
ON Voltage Level	> 19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs Max 5µs
ON to OFF Response	Typ 1µs Max 3µs
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

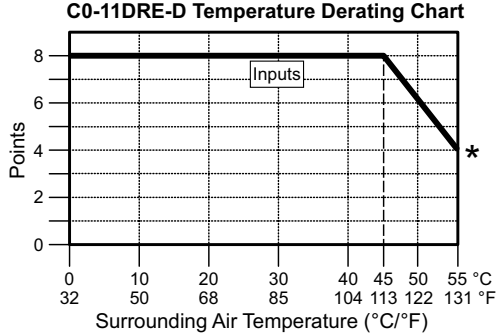
General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.6 oz (160g)

NOTE: *When using Ethernet Standard PLCs, you must use CLICK programming software version V2.00 or later.*

Equivalent Input Circuit



C0-11DRE-D Temperature Derating Chart

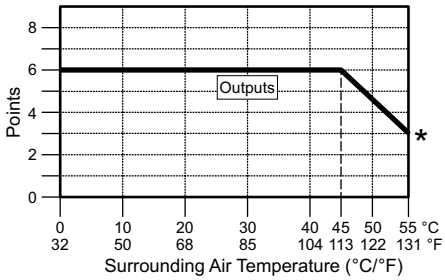


* Use every other input.

C0-11DRE-D – 8 DC Input/6 Relay Output Micro PLC (continued)

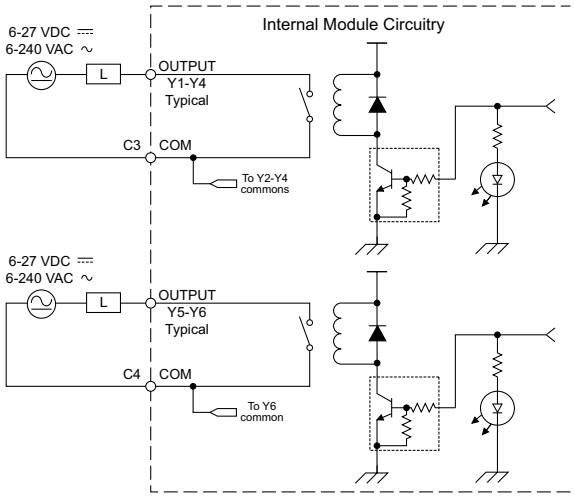
Built-in I/O Specifications - Outputs	
Outputs per Module	6
Operating Voltage Range	6–240 VAC (47–63 Hz), 6–27 VDC
Output Voltage Range	5–264 VAC (47–63 Hz), 5–30 VDC
Output Type	Relay, form A (SPST)
Maximum Current	1A/point; C3: 4A/common, C4: 2A/common
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com) Isolated

C0-11DRE-D Temperature Derating Chart



* Use every other output.

Equivalent Output Circuit



Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
250VAC, 1A Resistive	500,000 cycles
250VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

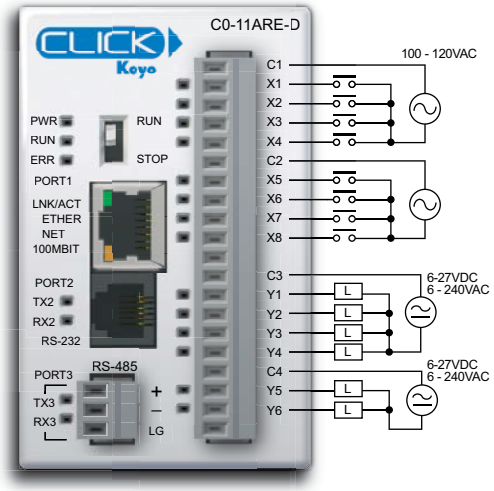
20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

NOTE: *The C0-11DRE-D is derated to 2A maximum per Common when used with the ZIPLink wiring system.*

C0-11ARE-D – 8 AC Input/6 Relay Output Micro PLC

Wiring Diagram

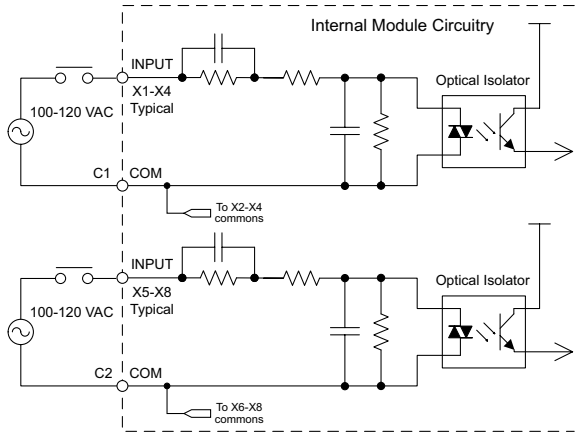


Built-in I/O Specifications - Inputs	
Inputs per Module	8
Operating Voltage Range	100–120 VAC
Input Voltage Range	80–144 VAC
AC Frequency	47–63 Hz
Input Current	8.5 mA @ 100VAC at 50Hz 10mA @ 100VAC at 60Hz
Maximum Input Current	16mA @ 144VAC
Input Impedance	15kΩ @ 50Hz 12kΩ @ 60Hz
ON Voltage Level	> 60VAC
OFF Voltage Level	< 20VAC
Minimum ON Current	5mA
Maximum OFF Current	2mA
OFF to ON Response	< 40ms
ON to OFF Response	< 40ms
Status Indicators	Logic Side (8 points, green LED)
Commons	2 (4 points/common) Isolated

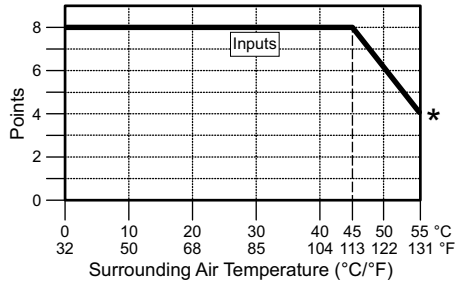
General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.6 oz (160g)

NOTE: *When using Ethernet Standard PLCs, you must use CLICK programming software version V2.00 or later.*

Equivalent Input Circuit



C0-11ARE-D Temperature Derating Chart

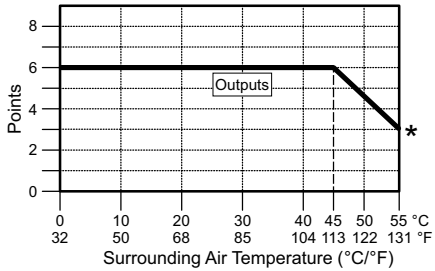


* Use every other input.

C0-11ARE-D – 8 AC Input/6 Relay Output Micro PLC (continued)

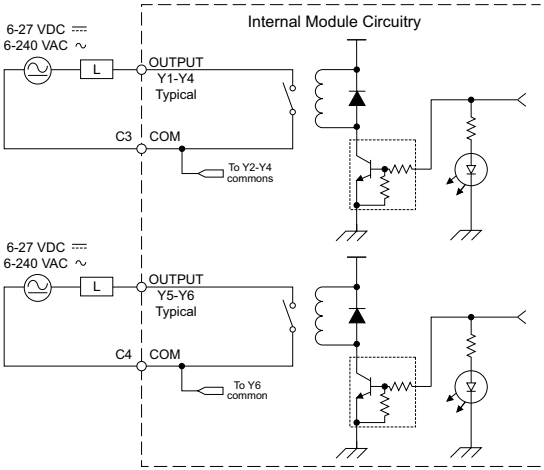
Built-in I/O Specifications - Outputs	
Outputs per Module	6
Operating Voltage Range	6–240 VAC (47–63 Hz), 6–27 VDC
Output Voltage Range	5–264 VAC (47–63 Hz), 5–30 VDC
Output Type	Relay, form A (SPST)
Maximum Current	1A/point; C3: 4A/common, C4: 2A/common
Minimum Load Current	5mA @ 5 VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (6 points, red LED)
Commons	2 (4 points/com & 2 points/com) Isolated

C0-11ARE-D Temperature Derating Chart



* Use every other output.

Equivalent Output Circuit



Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
250VAC, 1A Resistive	500,000 cycles
250VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

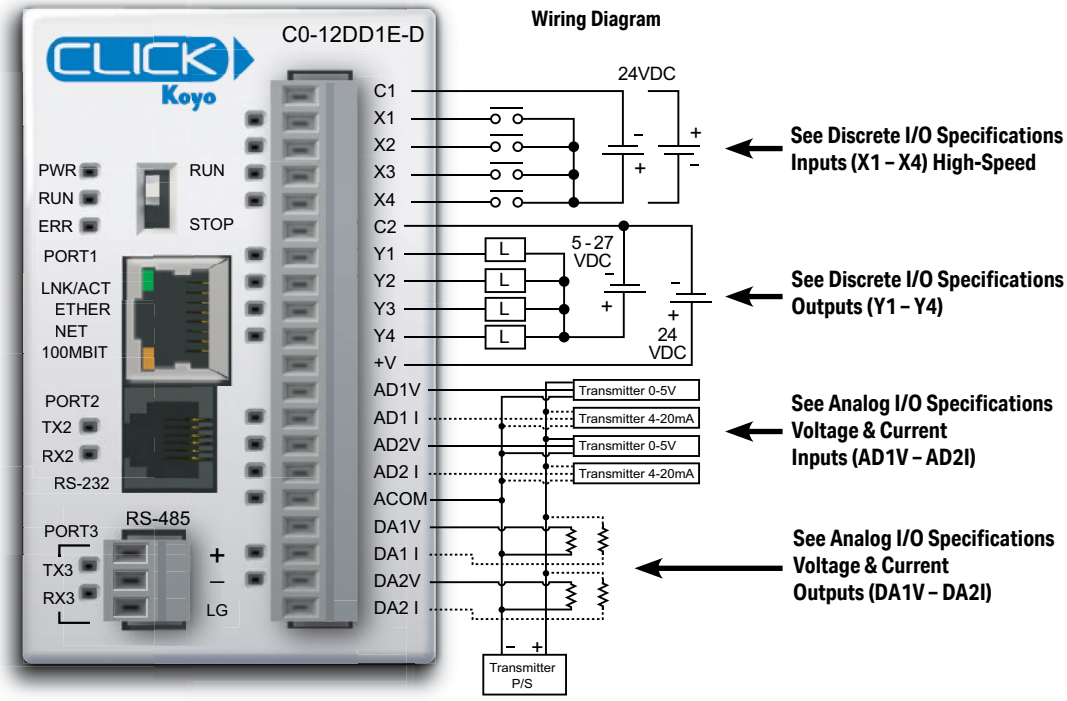
20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

NOTE: *The C0-11DRE-D is derated to 2A maximum per Common when used with the ZIPLink wiring system.*

Ethernet Analog PLC Unit Specifications

C0-12DD1E-D – 4 DC Input (Sink/Source)/4 Sinking DC Output
2 Analog Voltage/Current Input
2 Analog Voltage/Current Output Micro PLC



General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.1 oz (145g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

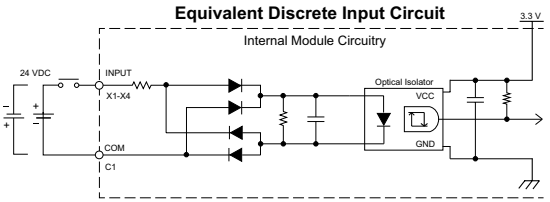
NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

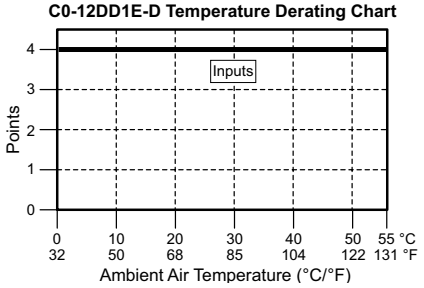
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12DD1E-D (continued)

X1 - X4 (High-Speed)

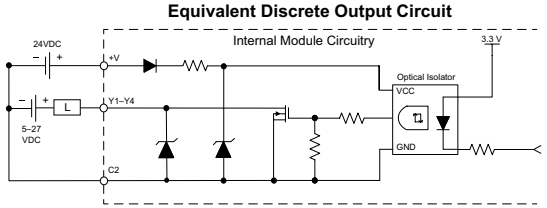
Discrete I/O Specifications - Inputs	
Inputs per Module	4 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Maximum Input Current	7.0 mA @ 26.4 VDC
Input Impedance	3.9 kΩ @ 24VDC
Input Frequency (Max)	X1-X4: 100kHz
ON Voltage Level	> 19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs Max 5µs
ON to OFF Response	Typ 1µs Max 3µs
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

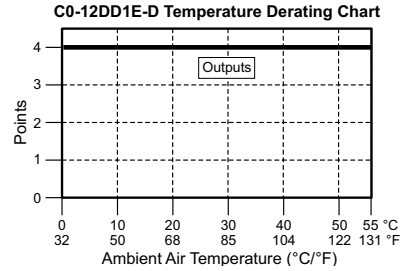




Y1 - Y4

Discrete I/O Specifications - Outputs	
Outputs per Module	4 (Sink)
Operating Voltage Range	5–27 VDC
Maximum Output Current	0.1 A/point; 0.4 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	< 5µs
ON to OFF Response	< 5µs
Status Indicators	Logic Side (4 points, red LED)
Commons	1 (4 points/common)
External DC Power Required	20–28 VDC Maximum @ 60mA (All points ON)





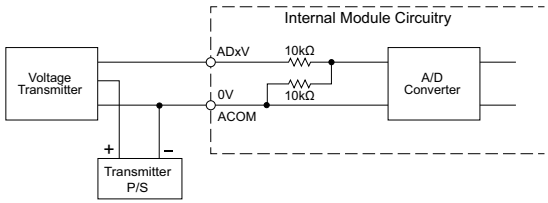
C0-12DD1E-D (continued)

AD1V - AD2I

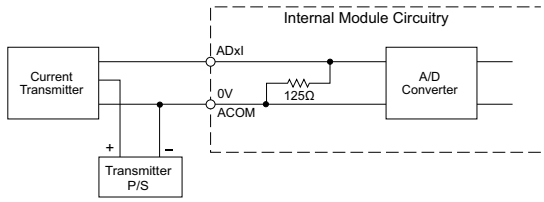
Analog Specifications - Voltage Input	
Inputs per Module	2 (voltage/current selectable)
Input Range	0–5 VDC (6VDC Max.)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	20kΩ
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Input	
Inputs per Module	2 (voltage/current selectable)
Input Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	125Ω
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Input Circuit



Analog Current Input Circuit

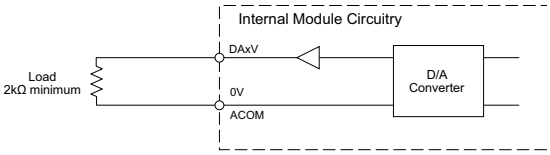


DA1V - DA2I

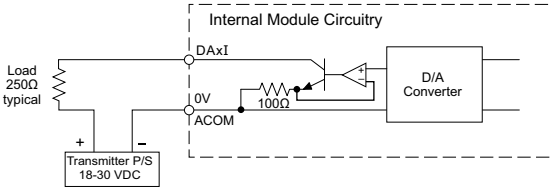
Analog Specifications - Voltage Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	0–5 VDC
Resolution	12-bit
Conversion Time	1ms
Load Impedance	2kΩ minimum (output current 2.5 mA maximum)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	1ms
Loop Supply Voltage	DC 18–30 V
Load Impedance	250Ω Load Power Supply: DC 18V: 600Ω maximum DC 24V: 900Ω maximum DC 30V: 1200Ω maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

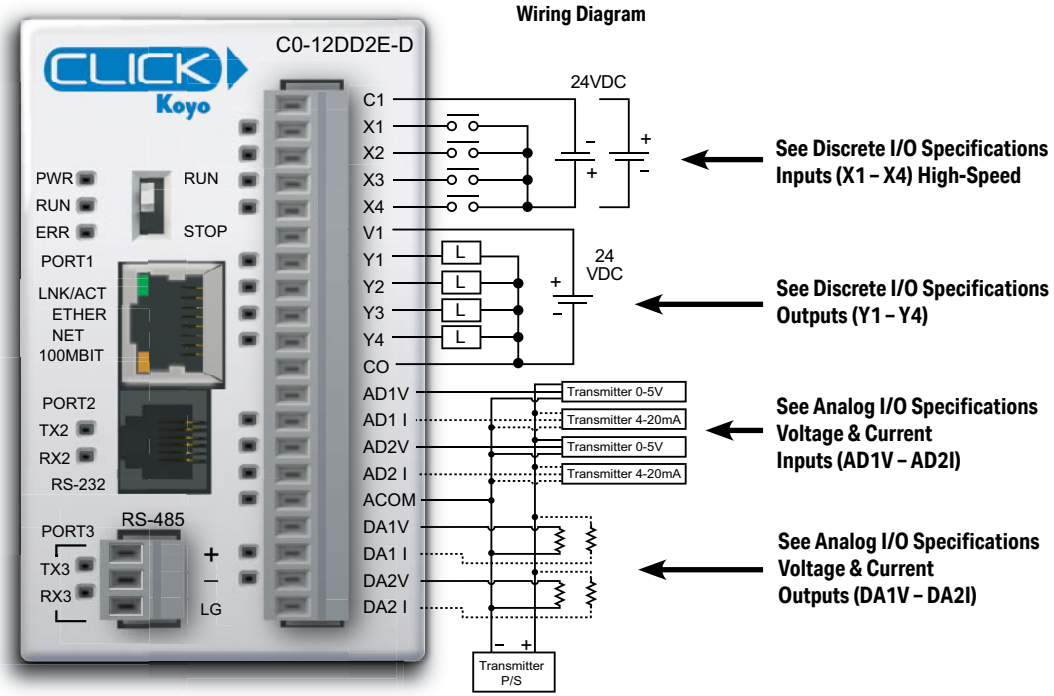
Analog Voltage Output Circuit



Analog Current Output Circuit



C0-12DD2E-D – 4 DC Input (Sink/Source)/4 Sourcing DC Output; 2 Analog Voltage/Current Input 2 Analog Voltage/Current Output Micro PLC



General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.08 oz (144g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

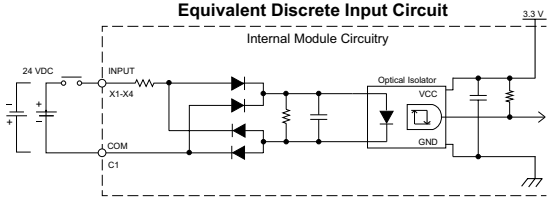
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12DD2E-D (continued)

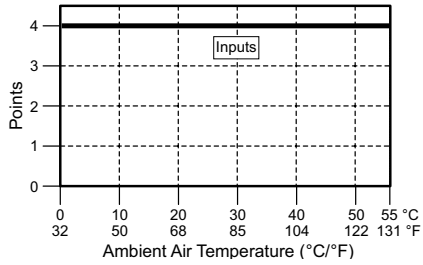
X1 - X4 (High-Speed)

Discrete I/O Specifications - Inputs	
Inputs per Module	4 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Maximum Input Current	7mA @ 26.4 VDC
Input Impedance	3.9 kΩ @ 24VDC
Input Frequency (Max)	X1-X4: 100kHz
ON Voltage Level	> 19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs, Max 5µs
ON to OFF Response	Typ 1µs, Max 3µs
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

Equivalent Discrete Input Circuit



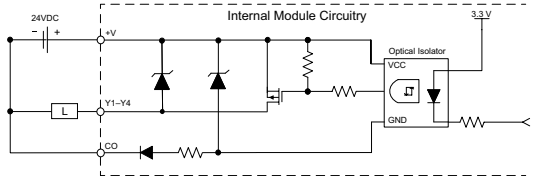
C0-12DD2E-D Temperature Derating Chart



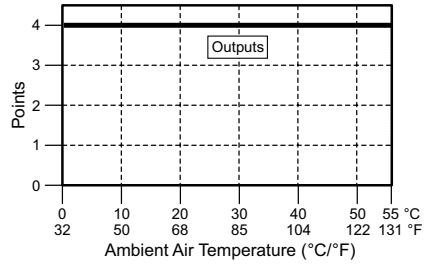
Y1 - Y4

Discrete I/O Specifications - Outputs	
Outputs per Module	4 (Source)
Operating Voltage Range	24VDC
Output Voltage Range	19.2–30 VDC
Maximum Output Current	0.1 A/point , 0.4 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1mA @ 30VDC
On Voltage Drop	0.5 VDC@ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	< 5µs
ON to OFF Response	< 5µs
Status Indicators	Logic Side (4 points, red LED)
Commons	1 (4 points/common)

Equivalent Discrete Output Circuit



C0-12DD2E-D Temperature Derating Chart



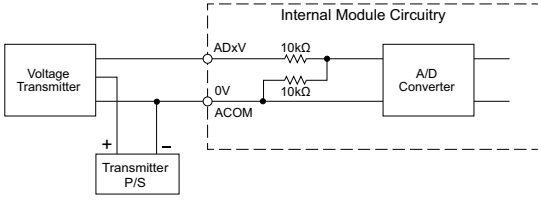
C0-12DD2E-D (continued)

AD1V - AD2I

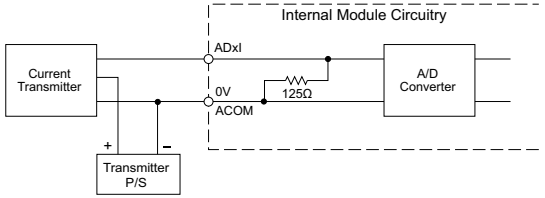
Analog Specifications - Voltage Input	
Inputs per Module	2 (voltage/current selectable)
Input Range	0–5 VDC
Resolution	12-bit
Conversion Time	50ms
Input Impedance	20kΩ
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Input	
Inputs per Module	2 (voltage/current selectable)
Input Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	125Ω
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	Less than ±100ppm / °C

Analog Voltage Input Circuit



Analog Current Input Circuit

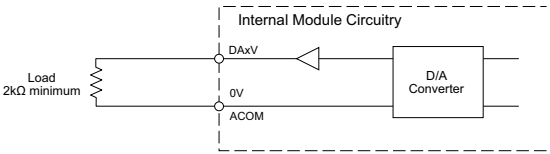


DA1V - DA2I

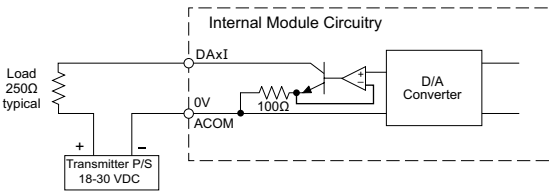
Analog Specifications - Voltage Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	0–5 VDC
Resolution	12-bit
Conversion Time	1ms
Load Impedance	2kΩ minimum (output current 2.5 mA maximum)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	1ms
Loop Supply Voltage	DC 18–30 V
Load Impedance	250Ω Load Power Supply: DC 18V: 600Ω maximum DC 24V: 900Ω maximum DC 30V: 1200Ω maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

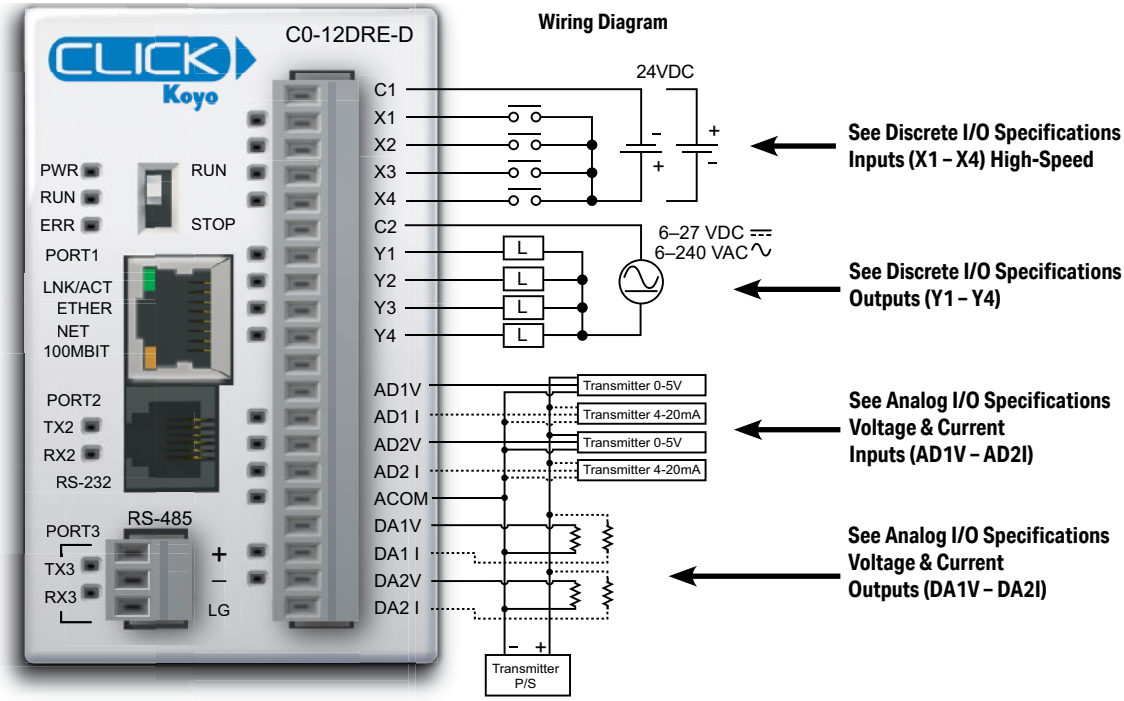
Analog Voltage Output Circuit



Analog Current Output Circuit



C0-12DRE-D – 4 DC Input (Sink/Source)/4 Relay Output; 2 Analog Voltage/Current Input 2 Analog Voltage/Current Output Micro PLC



General Specifications	
Current Consumption at 24VDC	160mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.4 oz (155g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

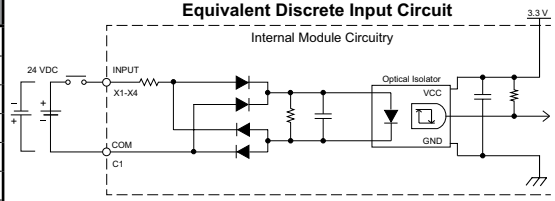
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12DRE-D (continued)

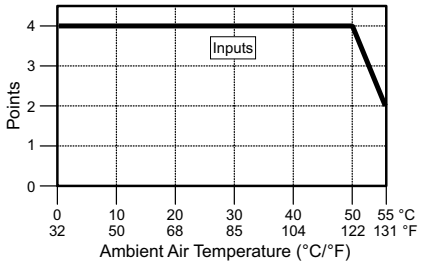
X1 - X4 (High-Speed)

Discrete I/O Specifications - Inputs	
Inputs per Module	4 (Source/Sink)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Input Impedance	3.9 kΩ @ 24 VDC
Input Frequency (Max)	X1-X4: 100kHz
ON Voltage Level	> 19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs, Max 5µs
ON to OFF Response	Typ 1µs, Max 3µs
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

Equivalent Discrete Input Circuit



C0-12DRE-D Temperature Derating Chart

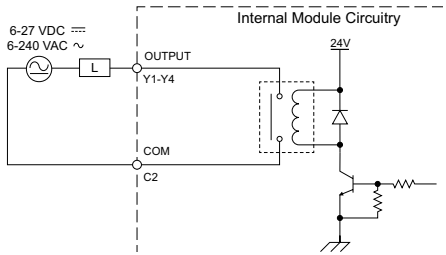


Y1 - Y4

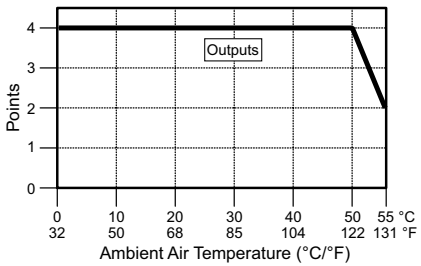
Discrete I/O Specifications - Outputs	
Outputs per Module	4
Operating Voltage Range	6–27 VDC / 6–240 VAC
Output Type	Relay, form A (SPST)
AC Frequency	47–63 Hz
Maximum Current	1A/point (resistive)
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (4 points, red LED)
Commons per Module	1 (4 points/common)

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
120VAC, 1A Resistive	500,000 cycles
120VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

Equivalent Discrete Output Circuit



C0-12DRE-D Temperature Derating Chart



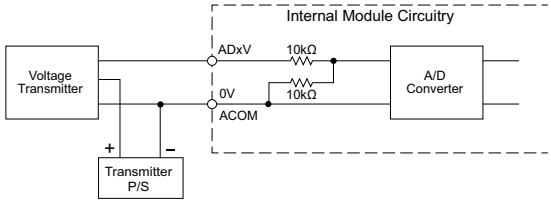
C0-12DRE-D (continued)

AD1V - AD2I

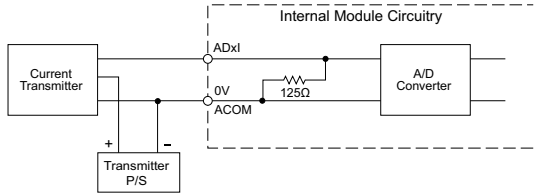
Analog Specifications - Voltage Input	
Inputs per Module	2 (voltage/current selectable)
Input Range	0–5 VDC (6VDC Max.)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	20kΩ
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Input	
Inputs per Module	2 (voltage/current selectable)
Input Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	125Ω
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Input Circuit



Analog Current Input Circuit

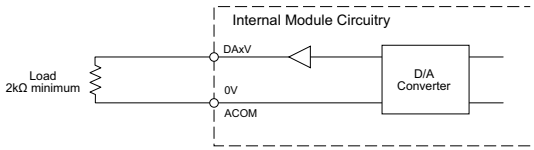


DA1V - DA2I

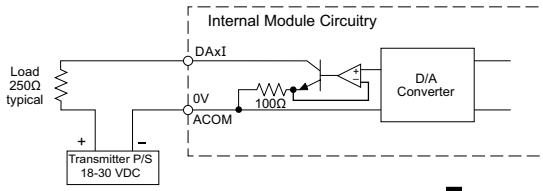
Analog Specifications - Voltage Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	0–5 VDC
Resolution	12-bit
Conversion Time	1ms
Load Impedance	2kΩ minimum (output current 2.5 mA maximum)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Specifications - Current Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	1ms
Loop Supply Voltage	DC 18–30 V
Load Impedance	250Ω Load Power Supply: DC 18V: 600Ω maximum DC 24V: 900Ω maximum DC 30V: 1200Ω maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Output Circuit

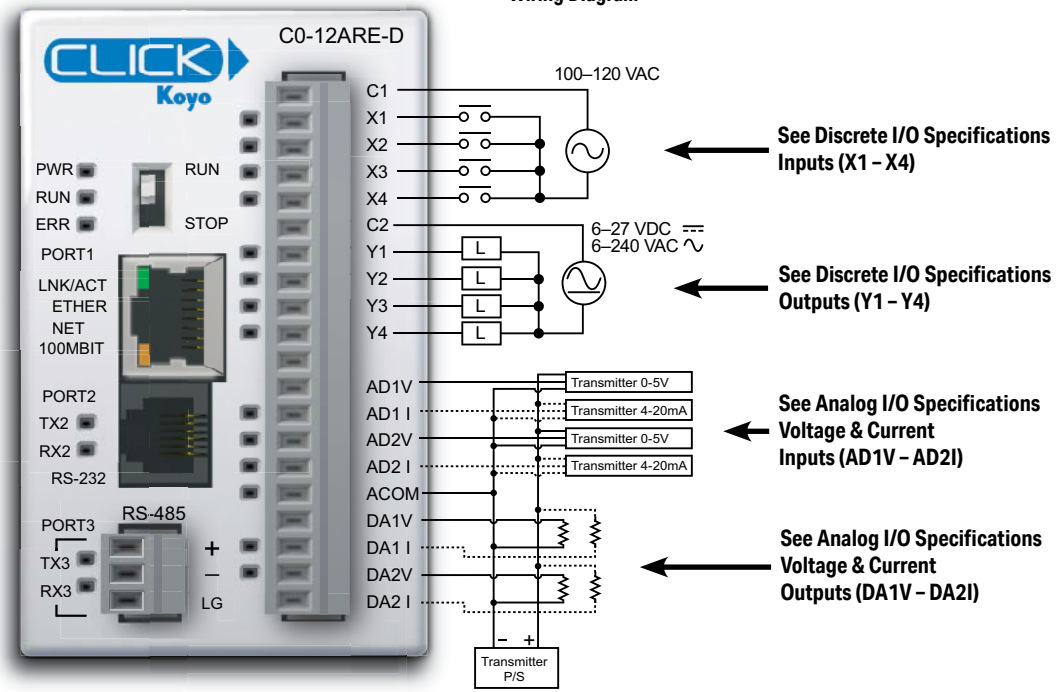


Analog Current Output Circuit



C0-12ARE-D – 4 AC Input/4 Relay Output; 2 Analog Voltage/Current Input 2 Analog Voltage/Current Output Micro PLC

Wiring Diagram



General Specifications	
Current Consumption at 24VDC	160mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.4 oz (154g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

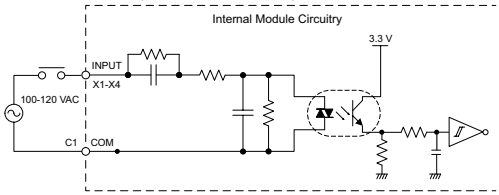
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12ARE-D (continued)

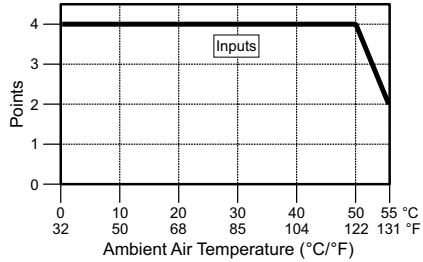
X1 - X4

Discrete I/O Specifications - Inputs	
Inputs per Module	4
Operating Voltage Range	100–120 VAC
AC Frequency	47–63 Hz
Input Current	Typ 8.5 mA @ 100VAC (50Hz) Typ 10mA @100VAC (60Hz)
Max. Input Current	16mA @ 144VAC
Input Impedance	15kΩ @ 50Hz 12kΩ @ 60Hz
ON Voltage Level	> 60VAC
OFF Voltage Level	< 20VAC
Minimum ON Current	5mA
Maximum OFF Current	2mA
OFF to ON Response	< 40ms
ON to OFF Response	< 40ms
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

Equivalent Discrete Input Circuit



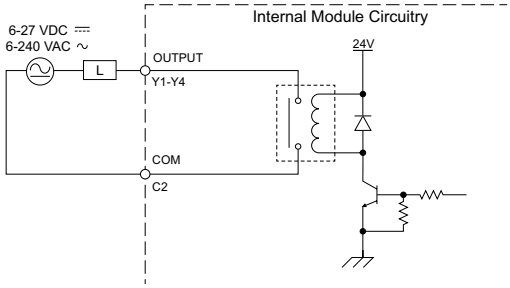
C0-12ARE-D Temperature Derating Chart



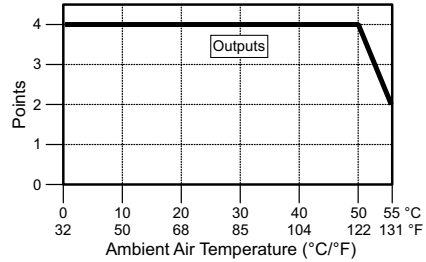
Y1 - Y4

Discrete I/O Specifications - Outputs	
Outputs per Module	4
Operating Voltage Range	6–27 VDC, 6–240 VAC
Output Type	Relay, form A (SPST)
AC Frequency	47–63 Hz
Maximum Current	1A/point (resistive)
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (4 points, red LED)
Commons per Module	1 (4 points/common)

Equivalent Discrete Output Circuit



C0-12ARE-D Temperature Derating Chart



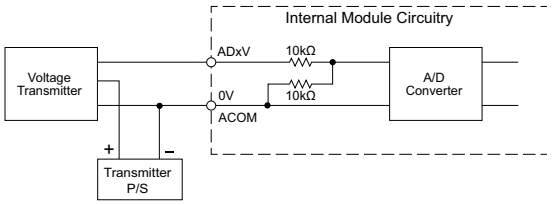
Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
120VAC, 1A Resistive	500,000 cycles
120VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

C0-12ARE-D (continued)

AD1V - AD2V

Analog Specifications - Voltage Input	
Inputs per Module	2 (voltage/current selectable)
Input Range	0–5 VDC (6VDC Max.)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	20kΩ
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

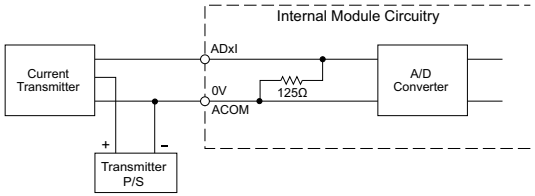
Analog Voltage Input Circuit



AD1I - AD2I

Analog Specifications - Current Input	
Inputs per Module	2 (voltage/current selectable)
Input Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	125Ω
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

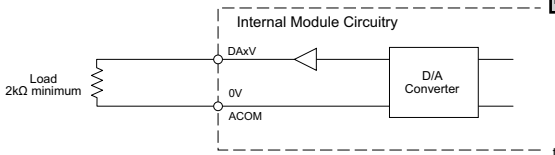
Analog Current Input Circuit



DA1V - DA2V

Analog Specifications - Voltage Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	0–5 VDC
Resolution	12-bit
Conversion Time	1ms
Load Impedance	2kΩ minimum (output current 2.5 mA maximum)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

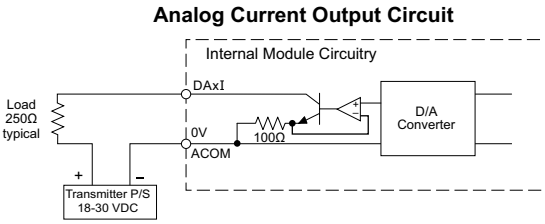
Analog Voltage Output Circuit



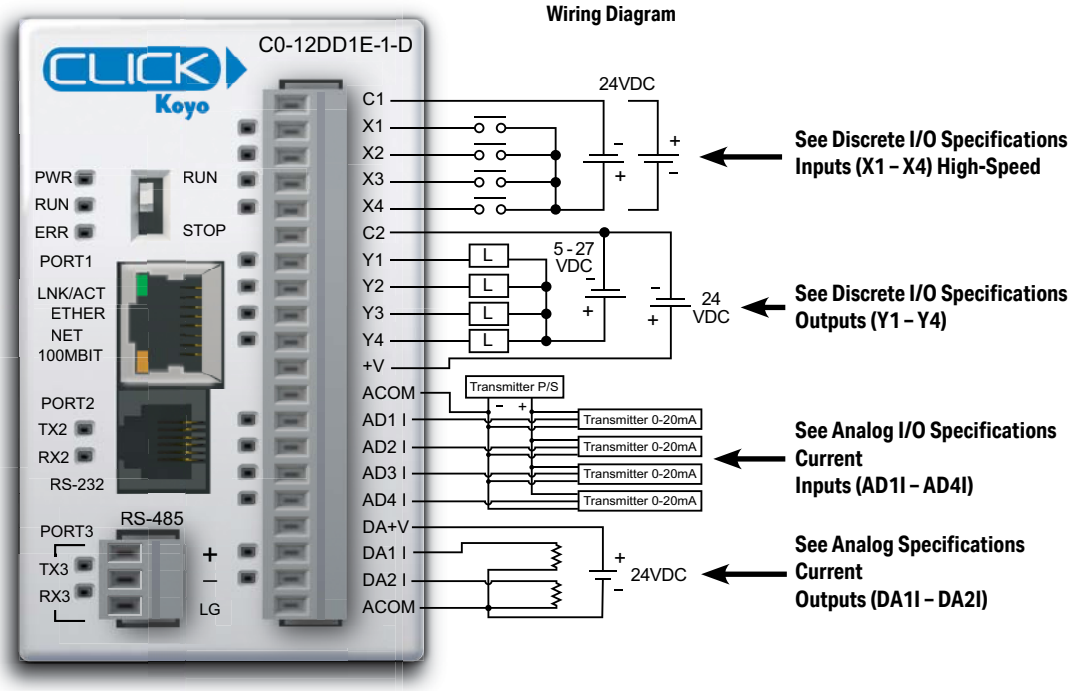
DA1I - DA2I

Analog Specifications - Current Output	
Outputs per Module	2 (voltage/current selectable)
Output Range	4–20 mA (sink)
Resolution	12-bit
Conversion Time	1ms
Loop Supply Voltage	DC 18–30 V
Load Impedance	250Ω Load Power Supply: DC 18V: 600Ω maximum DC 24V: 900Ω maximum DC 30V: 1200Ω maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Current Output Circuit



C0-12DD1E-1-D – 4 DC Input (Sink/Source)/4 Sinking DC Output; 4 Analog Current Input 2 Analog Current Output Micro PLC



General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.08 oz (144g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

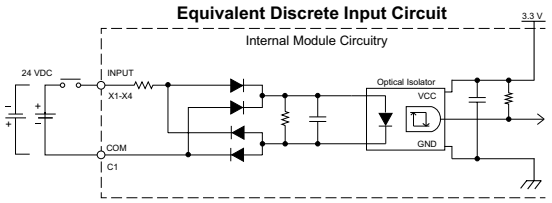
NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

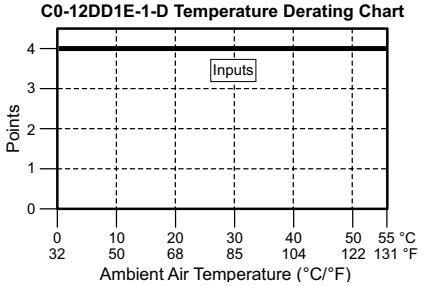
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12DD1E-1-D (continued)

X1 - X4 (High-Speed)

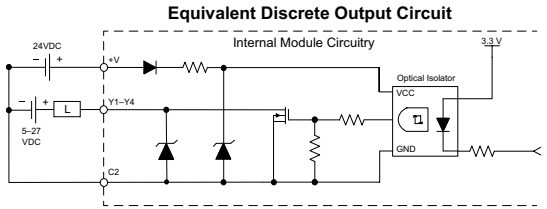
Discrete I/O Specifications - Inputs	
Inputs per Module	4 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Maximum Input Current	7mA @ 26.4 VDC
Input Impedance	3.9 kΩ @ 24VDC
Input Frequency (Max)	X1-X4: 100kHz
ON Voltage Level	>19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs Max 5µs
ON to OFF Response	Typ 1µs Max 3µs
Status Indicators	Logic Side (4 points, green LED
Commons	1 (4 points/common)

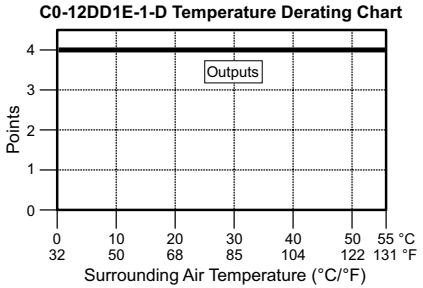




Y1 - Y4

Discrete I/O Specifications - Outputs	
Outputs per Module	4 (Sink)
Operating Voltage Range	5–27 VDC
Maximum Output Current	0.1 A/point; 0.4 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	< 5µs
ON to OFF Response	< 5µs
Status Indicators	Logic Side (4 points, red LED)
Commons	1 (4 points/common)
External DC Power Required	20–28 VDC Maximum @ 60mA (All points on)



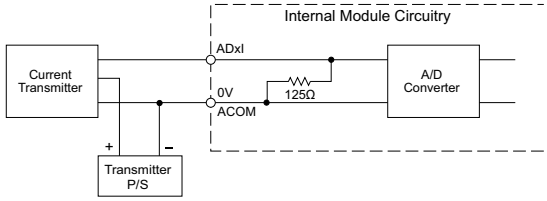


C0-12DD1E-1-D (continued)

AD1I - AD4I

Analog Specifications - Current Input	
Inputs per Module	4 (current)
Input Range	0–20 mA (sink)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	125Ω
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±120ppm / °C maximum

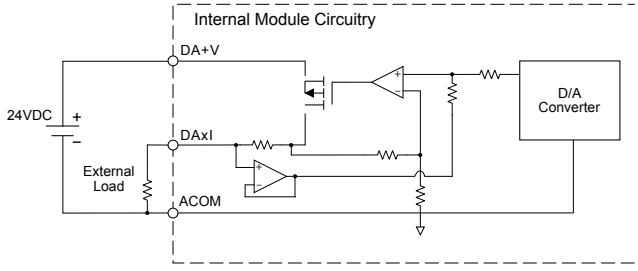
Analog Current Input Circuit



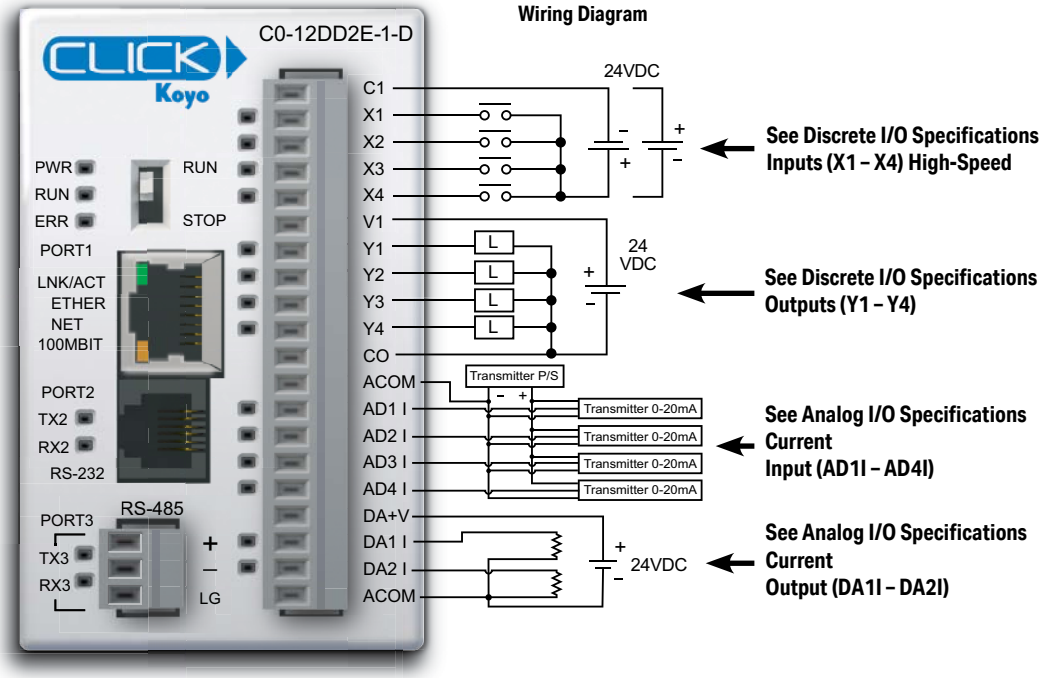
DA1I - DA2I

Analog Specifications - Current Output	
Outputs per Module	2 (current)
Output Range	4–20 mA (source)
Resolution	12-bit
Conversion Time	2.5 ms
Load Impedance	250Ω TYP (200–800 Ω)
Loop Supply Voltage	DC 24V TYP (21.6–26.4 VDC)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mA maximum
Accuracy vs. Temperature Error	±120ppm / °C maximum
External DC Power Required	21.6–26.4 VDC

Analog Current Output Circuit



C0-12DD2E-1-D – 4 DC Input (Sink/Source)/4 Sourcing DC Output; 4 Analog Current Input 2 Analog Current Output Micro PLC



General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.08 oz (144g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

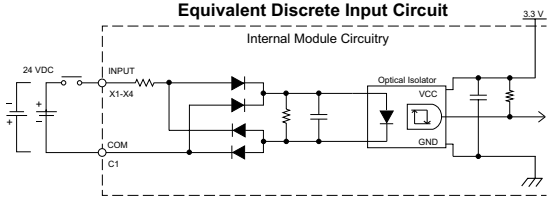
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12DD2E-1-D (continued)

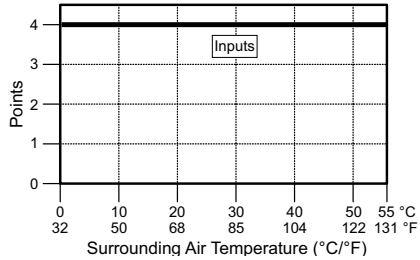
X1 - X4 (High-Speed)

Discrete I/O Specifications - Inputs	
Inputs per Module	4 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Maximum Input Current	7mA @ 26.4 VDC
Input Impedance	3.9 kΩ @ 24VDC
Input Frequency (Max)	X1-X4: 100kHz
ON Voltage Level	>19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs Max 5µs
ON to OFF Response	Typ 1µs Max 3µs
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

Equivalent Discrete Input Circuit



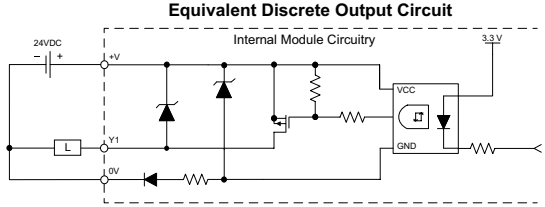
C0-12DD2E-1-D Temperature Derating Chart



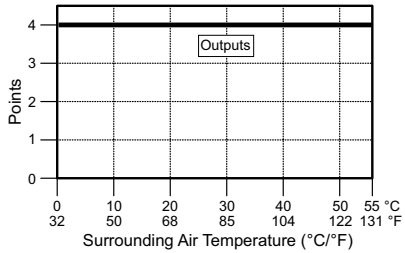
Y1 - Y4

Discrete I/O Specifications - Outputs	
Outputs per Module	4 (Source)
Operating Voltage Range	19.2–30 VDC
Maximum Output Current	0.1 A/point; 0.4 A/common C0
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	< 5µs
ON to OFF Response	< 5µs
Status Indicators	Logic side (4 points, red LED)
Commons	1 (4 points/common)

Equivalent Discrete Output Circuit



C0-12DD2E-1-D Temperature Derating Chart

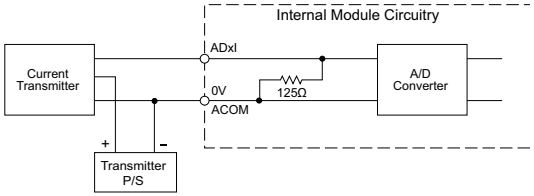


C0-12DD2E-1-D (continued)

AD1I - AD4I

Analog Specifications - Current Input	
Inputs per Module	4 (current)
Input Range	0–20 mA (sink)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	125Ω
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

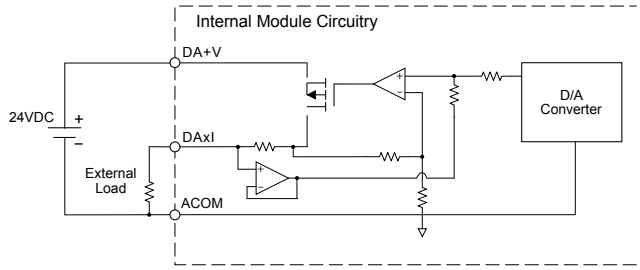
Analog Current Input Circuit



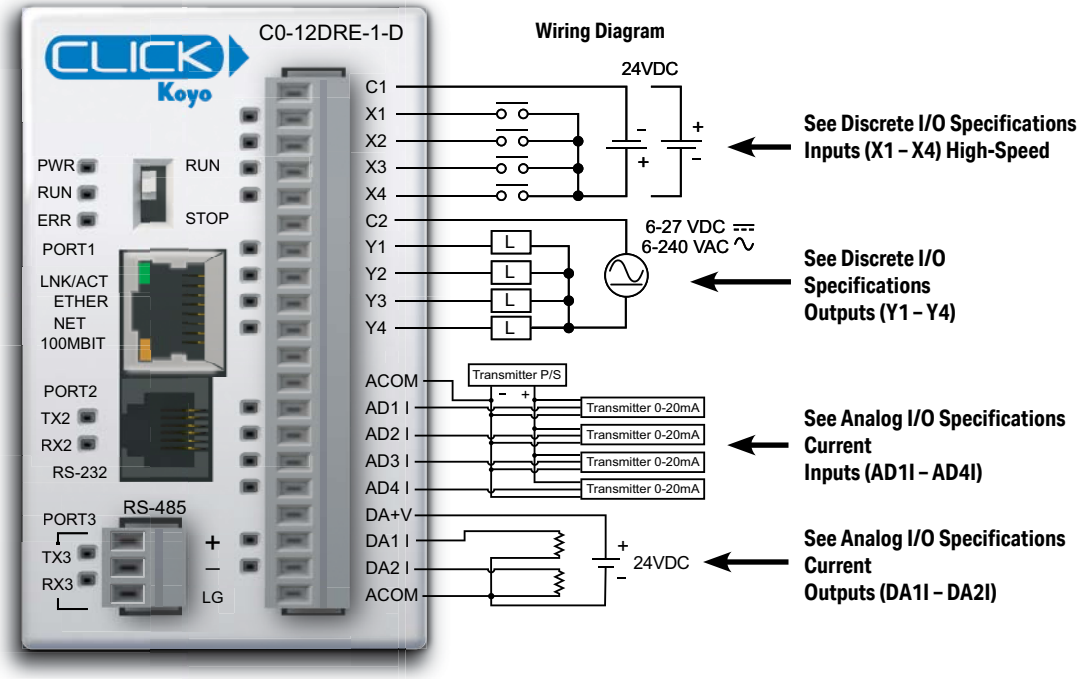
DA1I - DA2I

Analog Specifications - Current Output	
Outputs per Module	2 (current)
Output Range	4–20 mA (source)
Resolution	12-bit
Conversion Time	2.5 ms
Load Impedance	250Ω Typ (200Ω to 800Ω)
Loop Supply Voltage	24VDC Typ (21.6–26.4 VDC)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mA maximum
Accuracy vs. Temperature Error	±120ppm / °C maximum
External DC Power Required	21.6–26.4 VDC

Analog Current Output Circuit



C0-12DRE-1-D – 4 DC Input (Sink/Source)/4 Relay Output; 4 Analog Current Input 2 Analog Current Output Micro PLC



General Specifications	
Current Consumption at 24VDC	160mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.3 oz (151g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

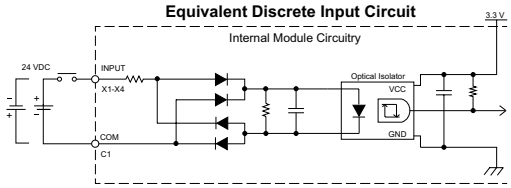
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12DRE-1-D (continued)

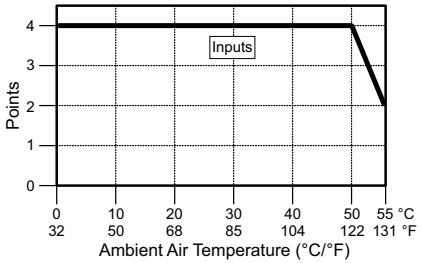
X1 - X4 (High-Speed)

Discrete I/O Specifications - Inputs	
Inputs per Module	4
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Max. Input Current	7mA @ 26.4 VDC
Input Impedance	3.9 kΩ @ 24VDC
Input Frequency (Max)	X1-X4: 100kHz
ON Voltage Level	>19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs Max 5µs
ON to OFF Response	Typ 1µs Max 3µs
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

Equivalent Discrete Input Circuit



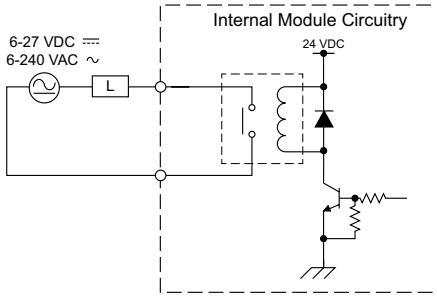
C0-12DRE-1-D Temperature Derating Chart



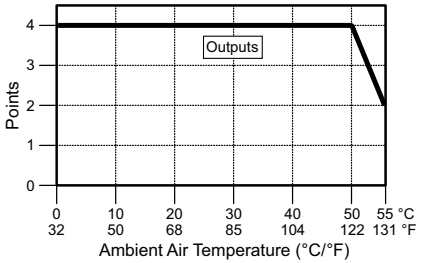
Y1 - Y4

Discrete I/O Specifications - Outputs	
Outputs per Module	4
Operating Voltage Range	6–27 VDC, 6–240 VAC
Output Type	Relay, form A (SPST)
AC Frequency	47–63 Hz
Maximum Current	1A/point (resistive)
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (4 points, red LED)
Commons	1 (4 points/common)

Equivalent Discrete Output Circuit



C0-12DRE-1-D Temperature Derating Chart



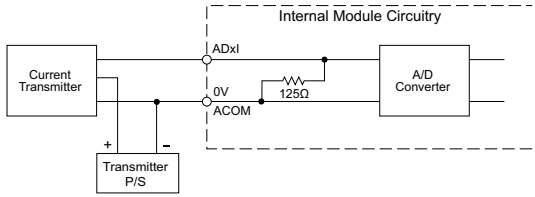
Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
120VAC, 1A Resistive	500,000 cycles
120VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

C0-12DRE-1-D (continued)

AD1I - AD4I

Analog Specifications - Current Input	
Inputs per Module	4 (Current)
Input Range	0–20 mA (Sink)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	125Ω
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

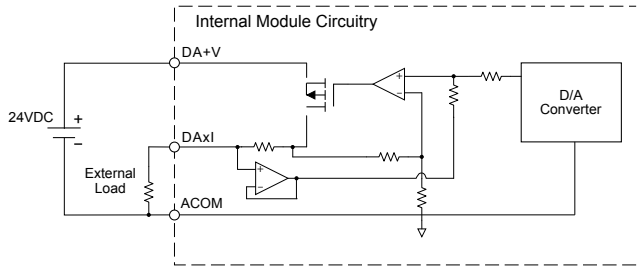
Analog Current Input Circuit



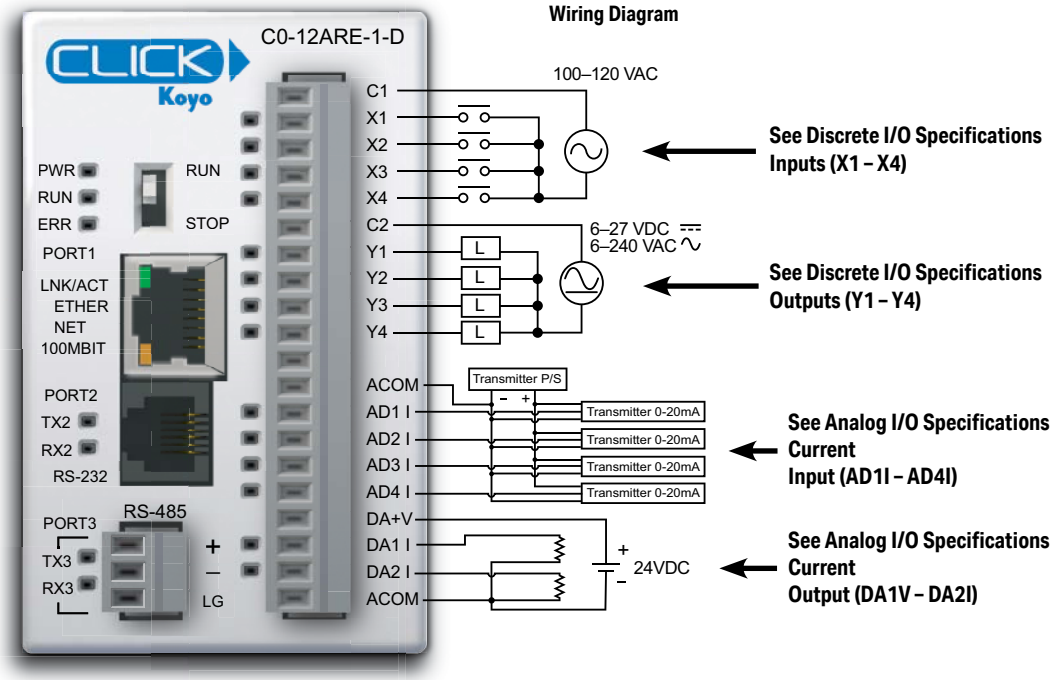
DA1I - DA2I

Analog Specifications - Current Output	
Outputs per Module	2 (Current)
Output Range	4–20 mA (Source)
Resolution	12-bit
Conversion Time	2.5 ms
Load Impedance	250Ω Typ (200Ω to 800Ω)
Loop Supply Voltage	24VDC Typ (21.6–26.4)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mA maximum
Accuracy vs. Temperature Error	±120ppm / °C maximum
External DC Power Required	21.6–26.4 VDC

Analog Current Output Circuit



C0-12ARE-1-D – 4 AC Input/4 Relay Output; 4 Analog Current Input 2 Analog Current Output Micro PLC



General Specifications	
Current Consumption at 24VDC	160mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.4 oz (154g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

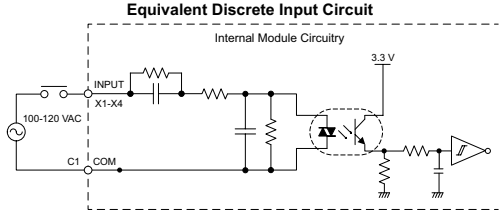
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12ARE-1-D (continued)

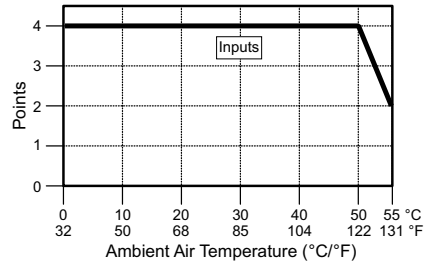
X1 - X4

Discrete I/O Specifications - Inputs	
Inputs per Module	4
Operating Voltage Range	100–120 VAC
AC Frequency	47–63 Hz
Input Current	Typ 8.5 mA @ 100VAC at 50Hz Typ 10mA @ 100VAC at 60Hz
Maximum Input Current	16mA @ 144VAC
Input Impedance	15kΩ @ 50Hz 12kΩ @ 60Hz
ON Voltage Level	> 60VAC
OFF Voltage Level	< 20VAC
Minimum ON Current	5mA
Maximum OFF Current	2mA
OFF to ON Response	< 40ms
ON to OFF Response	< 40ms
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

Equivalent Discrete Input Circuit



C0-12ARE-1-D Temperature Derating Chart

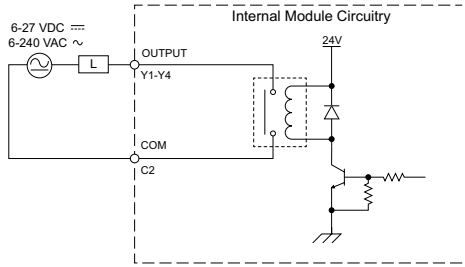


Y1 - Y4

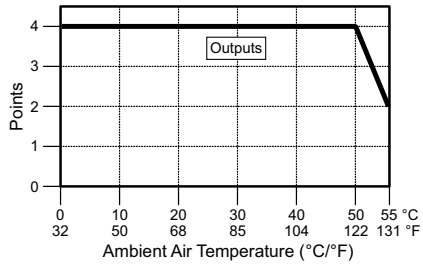
Discrete I/O Specifications - Outputs	
Outputs per Module	4
Operating Voltage Range	6–27 VDC, 6–240 VAC
Output Type	Relay, form A (SPST)
AC Frequency	47–63 Hz
Maximum Current	1A/point (resistive)
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (4 points, red LED)
Commons per Module	1 (4 points/common)

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
120VAC, 1A Resistive	500,000 cycles
120VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

Equivalent Discrete Output Circuit



C0-12ARE-1-D Temperature Derating Chart

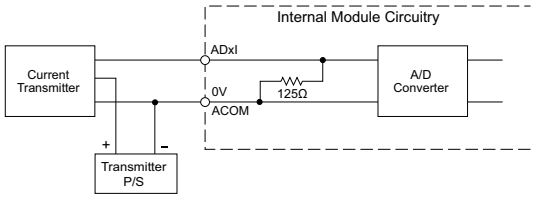


C0-12ARE-1-D (continued)

AD1I – AD4I

Analog Specifications - Current Input	
Inputs per Module	4 (current)
Input Range	0–20 mA (sink)
Resolution	12-bit
Conversion Time	50ms
Input Impedance	125Ω
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±0.1 mA maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

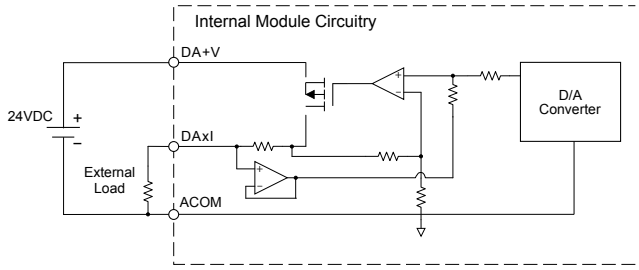
Analog Current Input Circuit



DA1I – DA2I

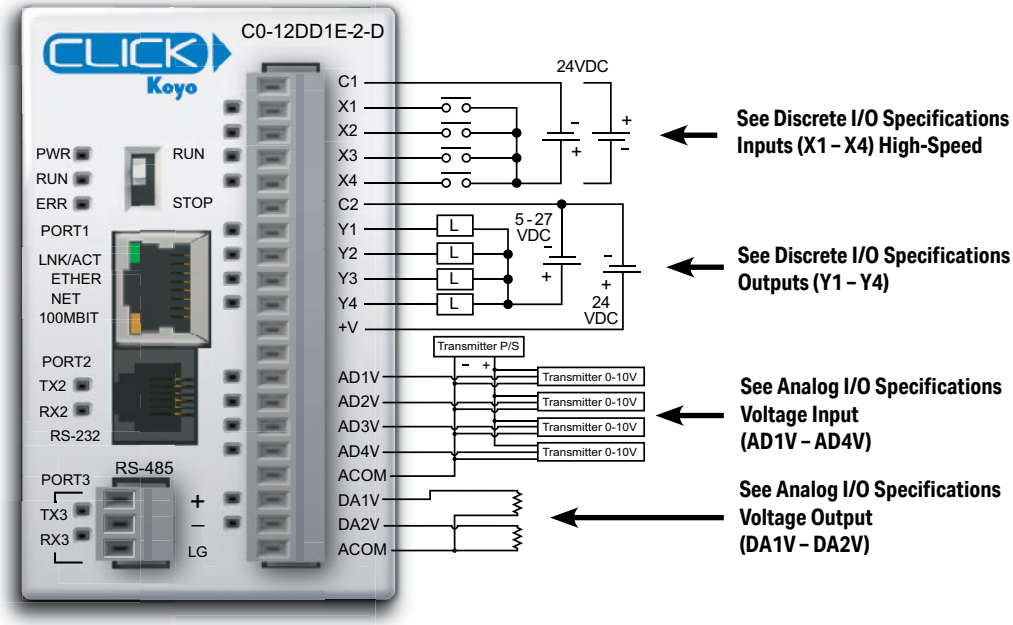
Analog Specifications - Current Output	
Outputs per Module	2 (current)
Output Range	4–20 mA (source)
Resolution	12-bit
Conversion Time	2.5 ms
Load Impedance	250Ω Typ (200Ω to 800Ω)
Loop Supply Voltage	DC 24V Typ (21.6–26.4 V)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mA maximum
Accuracy vs. Temperature Error	±120ppm / °C maximum
External DC Power Supply Required	21.6 –26.4 VDC

Analog Current Output Circuit



C0-12DD1E-2-D – 4 DC Input (Sink/Source)/4 Sinking DC Output; 4 Analog Voltage Input 2 Analog Voltage Output Micro PLC

Wiring Diagram



General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.08 oz (144g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

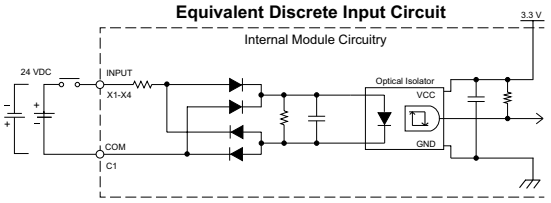
NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

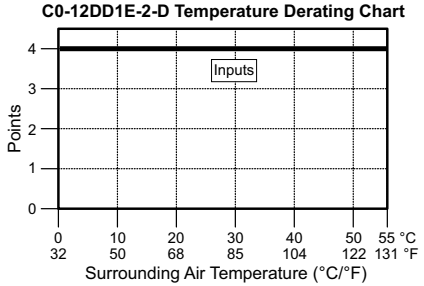
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12DD1E-2-D (continued)

X1 - X4 (High-Speed)

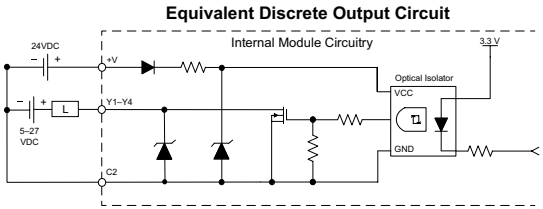
Discrete I/O Specifications - Inputs	
Inputs per Module	4 (Source/Sink)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Max. Input Current	7mA @ 26.4 VDC
Input Impedance	3.9 kΩ @ 24VDC
ON Voltage Level	>19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs Max 5µs
ON to OFF Response	Typ 1µs Max 3µs
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

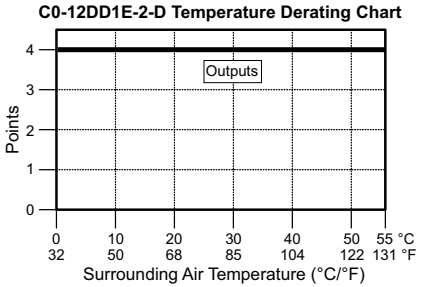




Y1 - Y4

Discrete I/O Specifications - Outputs	
Outputs per Module	4 (Sink)
Operating Voltage Range	5–27 VDC
Maximum Output Current	0.1 A/point; 0.4 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150 mA for 10ms
OFF to ON Response	5µs
ON to OFF Response	5µs
Status Indicators	Logic Side (4 points, red LED)
Commons	1 (4 points/common)
External DC Power Required	20–28 VDC Maximum @ 60mA (All points on)



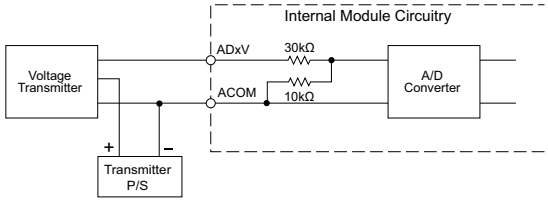


C0-12DD1E-2-D (continued)

AD1V - AD4V

Analog Specifications - Voltage Input	
Inputs per Module	4 (voltage)
Input Range	0–10 VDC
Resolution	12-bit
Conversion Time	50ms
Input Impedance	40kΩ
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

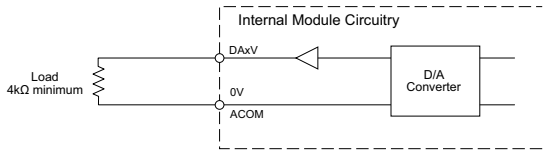
Analog Voltage Input Circuit



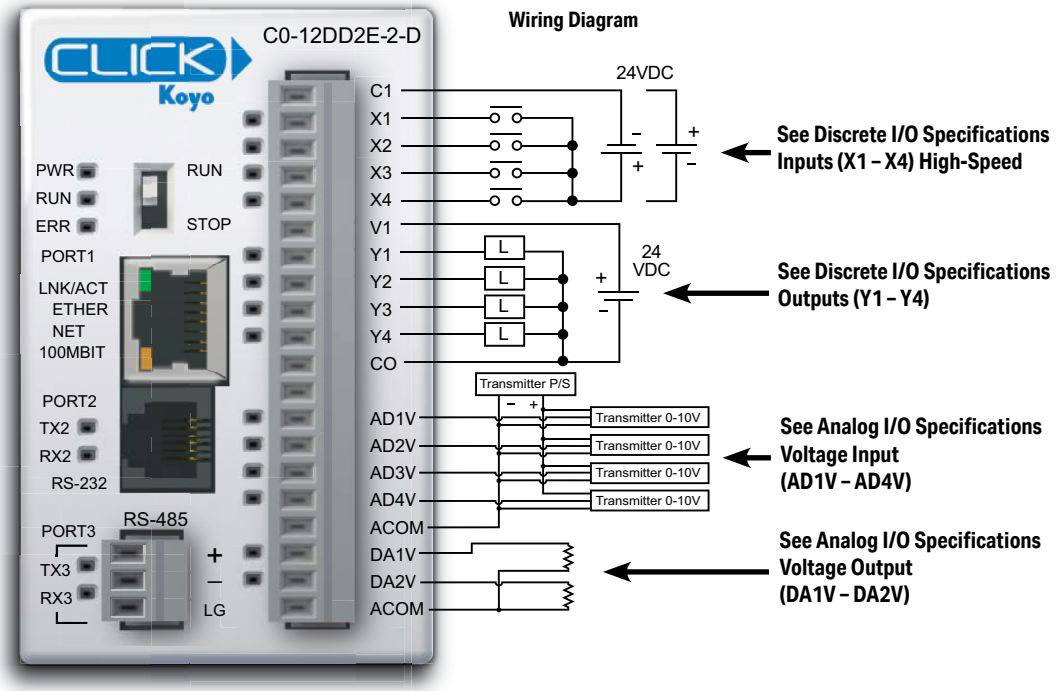
DA1V - DA2V

Analog Specifications - Voltage Output	
Outputs per Module	2 (voltage)
Output Range	0–10 VDC
Resolution	12-bit
Conversion Time	1ms
Load Impedance	4kΩ minimum (output current 2.5 mA maximum)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Output Circuit



C0-12DD2E-2-D – 4 DC Input (Sink/Source)/4 Sourcing DC Output; 4 Analog Voltage Input 2 Analog Voltage Output Micro PLC



General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.08 oz (144g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

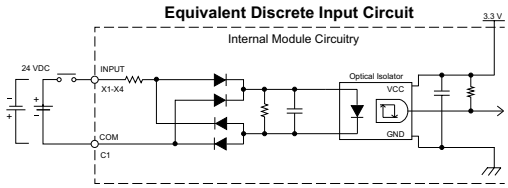
NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

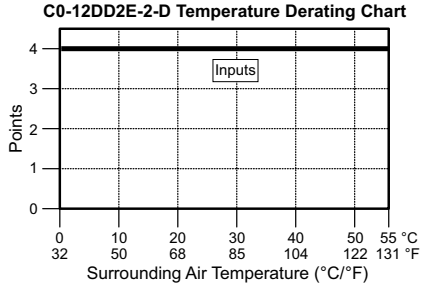
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12DD2E-2-D (continued)

X1 - X4 (High-Speed)

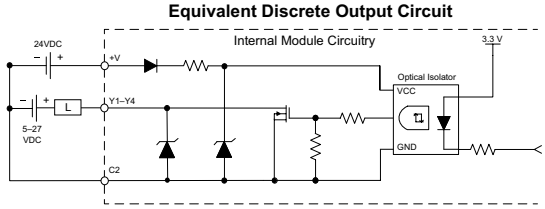
Discrete I/O Specifications - Inputs	
Inputs per Module	4 (Source/Sink)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Max. Input Current	7mA @ 26.4 VDC
Input Impedance	3.9 kΩ @ 24VDC
ON Voltage Level	>19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs Max 5µs
ON to OFF Response	Typ 1µs Max 3µs
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

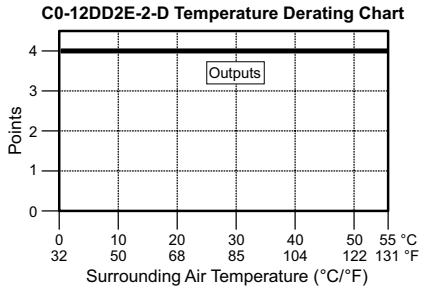




Y1 - Y4

Discrete I/O Specifications - Outputs	
Outputs per Module	4 (Source)
Operating Voltage Range	24VDC
Output Voltage Range	19.2–30 VDC
Maximum Output Current	0.1 A/point , 0.4 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1mA @ 30VDC
On Voltage Drop	0.5 VDC@ 0.1 mA
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	< 5µs
ON to OFF Response	< 5µs
Status Indicators	Logic Side (4 points, red LED)
Commons	1 (4 points/common)



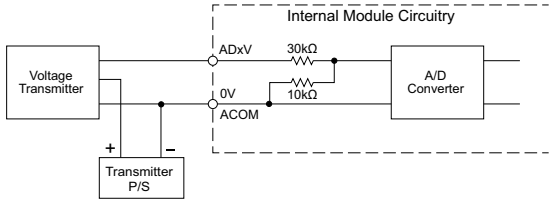


C0-12DD2E-2-D (continued)

AD1V - AD4V

Analog Specifications - Voltage Input	
Inputs per Module	4 (voltage)
Input Range	0–10 VDC
Resolution	12-bit
Conversion Time	50ms
Input Impedance	40kΩ
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

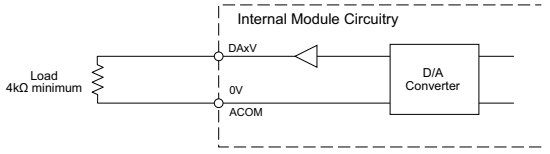
Analog Voltage Input Circuit



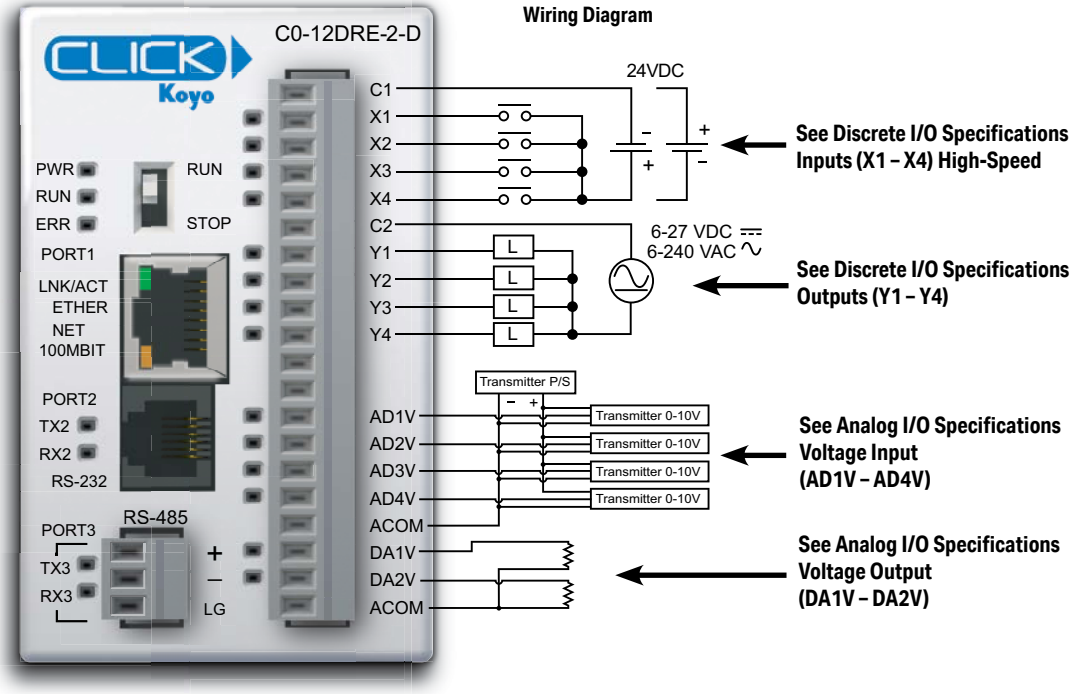
DA1V - DA2V

Analog Specifications - Voltage Output	
Outputs per Module	2 (voltage)
Output Range	0–10 VDC
Resolution	12-bit
Conversion Time	1ms
Load Impedance	4kΩ minimum (output current 2.5 mA maximum)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Output Circuit



C0-12DRE-2-D – 4 DC Input (Sink/Source)/4 Relay Output; 4 Analog Voltage Input 2 Analog Voltage Output Micro PLC



General Specifications	
Current Consumption at 24VDC	160mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.4 oz (154g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

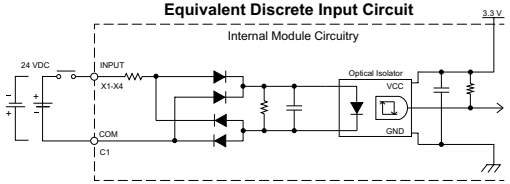
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12DRE-2-D (continued)

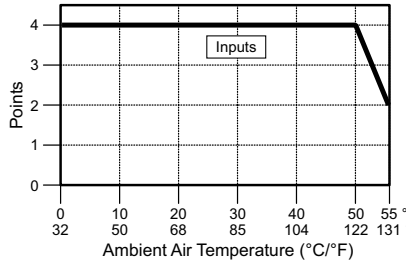
X1 - X4 (High-Speed)

Discrete I/O Specifications - Inputs	
Inputs per Module	4
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 6.5 mA @ 24VDC
Max. Input Current	7mA @ 26.4 VDC
Input Impedance	3.9 kΩ @ 24VDC
ON Voltage Level	>19VDC
OFF Voltage Level	< 2VDC
Minimum ON Current	4.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Typ 3µs Max 5µs
ON to OFF Response	Typ 1µs Max 3µs
Status Indicators	Logic side (4 points, green LED)
Commons	1 (4 points/common)

Equivalent Discrete Input Circuit



C0-12DRE-2-D Temperature Derating Chart

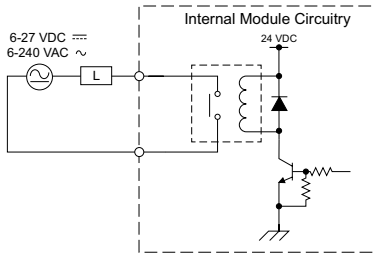


Y1 - Y4

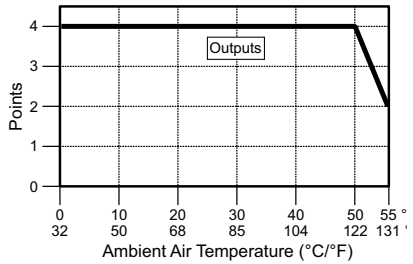
Discrete I/O Specifications - Outputs	
Outputs per Module	4
Operating Voltage Range	6–27 VDC, 6–240 VAC
Output Type	Relay, form A (SPST)
AC Frequency	47–63 Hz
Maximum Current	1A/point (resistive)
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (4 points, red LED)
Commons per Module	1 (4 points/common)

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
120VAC, 1A Resistive	500,000 cycles
120VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

Equivalent Discrete Output Circuit



C0-12DRE-2-D Temperature Derating Chart

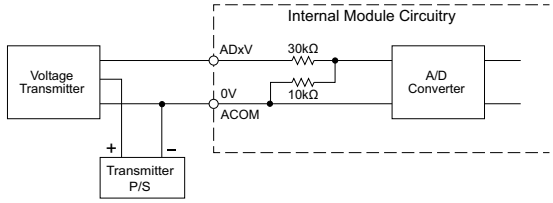


C0-12DRE-2-D (continued)

AD1V - AD4V

Analog Specifications - Voltage Input	
Inputs per Module	4 (voltage)
Input Range	0–10 VDC
Resolution	12-bit
Conversion Time	50ms
Input Impedance	40kΩ
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

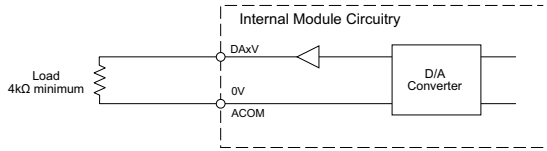
Analog Voltage Input Circuit



DA1V - DA2V

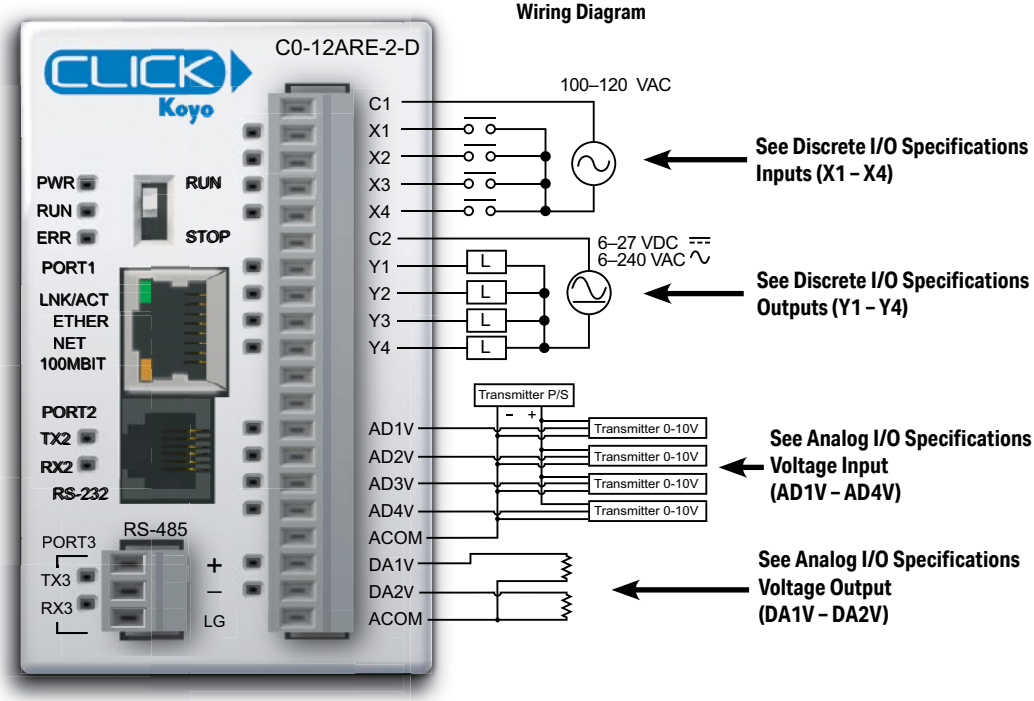
Analog Specifications - Voltage Output	
Outputs per Module	2 (voltage)
Output Range	0–10 VDC
Resolution	12-bit
Conversion Time	1ms
Load Impedance	4kΩ minimum (output current 2.5 mA maximum)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Output Circuit



C0-12ARE-2-D – 4 AC Input (Sink/Source) /4 Relay Output; 4 Analog Voltage Input 2 Analog Voltage Output Micro PLC

Wiring Diagram



General Specifications	
Current Consumption at 24VDC	140mA
Terminal Block Replacement Part No.	C0-16TB
Weight	5.4 oz (155g)

WARNING: When using an Ethernet Analog PLC unit, you must use CLICK programming software version V2.20 or later.

NOTE: *Please refer to the Analog I/O Configuration section in Chapter 3 for information on using the analog I/O.*

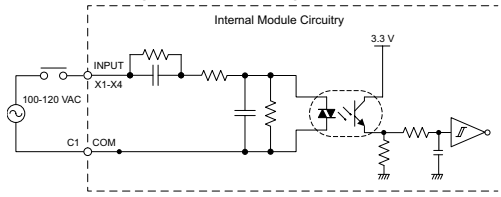
NOTE: *There are no ZIPLink pre-wired PLC connection cables and modules for the Ethernet Analog PLCs (cannot mix discrete I/O and analog I/O signals in a ZIPLink cable).*

C0-12ARE-2-D (continued)

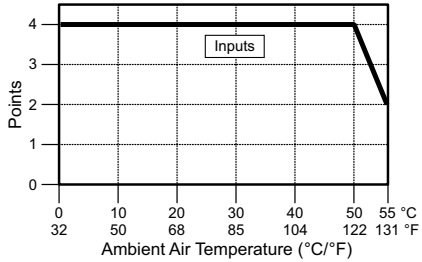
X1 - X4

Discrete I/O Specifications - Inputs	
Inputs per Module	4
Operating Voltage Range	100–120 VAC
AC Frequency	47–63 Hz
Input Current	Typ 8.5 mA @ 100VAC at 50Hz Typ 10mA @ 100VAC at 60Hz
Maximum Input Current	16mA @ 144VAC
Input Impedance	15kΩ @ 50Hz 12kΩ @ 60Hz
ON Voltage Level	> 60VAC
OFF Voltage Level	< 20VAC
Minimum ON Current	5mA
Maximum OFF Current	2mA
OFF to ON Response	< 40ms
ON to OFF Response	< 40ms
Status Indicators	Logic Side (4 points, green LED)
Commons	1 (4 points/common)

Equivalent Discrete Input Circuit



C0-12ARE-2-D Temperature Derating Chart

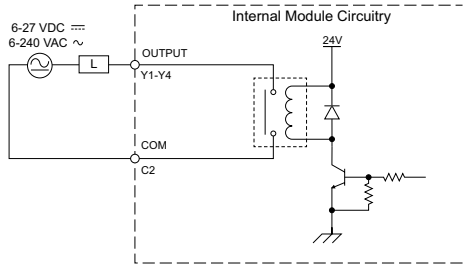


Y1 - Y4

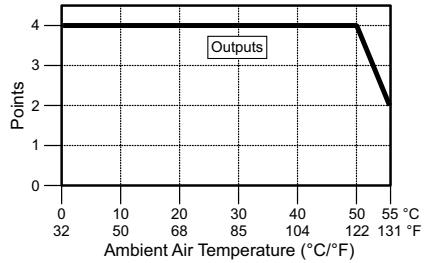
Discrete I/O Specifications - Outputs	
Outputs per Module	4
Operating Voltage Range	6–27 VDC, 6–240 VAC
Output Type	Relay, form A (SPST)
AC Frequency	47–63 Hz
Maximum Current	1A/point (resistive)
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (4 points, red LED)
Commons per Module	1 (4 points/common)

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
120VAC, 1A Resistive	500,000 cycles
120VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

Equivalent Discrete Output Circuit



C0-12ARE-2-D Temperature Derating Chart

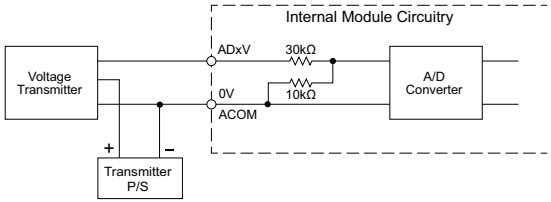


C0-12ARE-2-D (continued)

AD1V - AD4V

Analog Specifications - Voltage Input	
Inputs per Module	4 (voltage)
Input Range	0–10 VDC
Resolution	12-bit
Conversion Time	50ms
Input Impedance	40kΩ
Input Stability	±2 LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

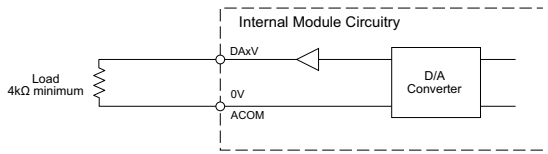
Analog Voltage Input Circuit



DA1V - DA2V

Analog Specifications - Voltage Output	
Outputs per Module	2 (voltage)
Output Range	0–10 VDC
Resolution	12-bit
Conversion Time	1ms
Load Impedance	4kΩ minimum (output current 2.5 mA maximum)
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±25mV maximum
Accuracy vs. Temperature Error	±100ppm / °C maximum

Analog Voltage Output Circuit

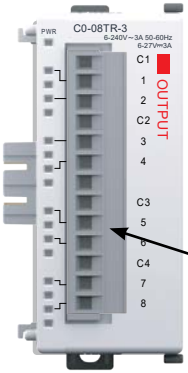


I/O Module Specifications

I/O Terminal Block Specifications for CPUs and I/O Modules

11-Pin Terminal Block, C0-8TB

11-pin Terminal Block Specifications	
Connector Type	Pluggable Terminal Block
Number of Pins	11 pt
Pitch	3.50 mm
Wire Range	28–16 AWG
Wire Strip Length	7mm
Screw Size	M2.0
Screw Torque	2.0 to 2.2 lb-inch
AutomationDirect Part Number	C0-8TB



13-Pin Terminal Block, C0-8TB-1

13-pin Terminal Block Specifications	
Connector Type	Pluggable Terminal Block
Number of Pins	13 pt
Pitch	5.08 mm
Wire Range	12–20 AWG
Wire Strip Length	7.0–8.0 mm
Screw Size	M2.5
Screw Torque	4.51 lb·inch
AutomationDirect Part Number	C0-8TB-1

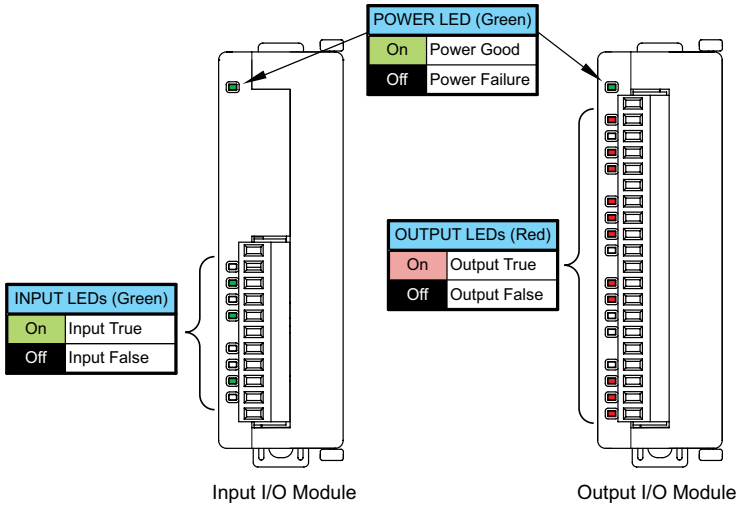
20-Pin Terminal Block, C0-16TB

20-pin Terminal Block Specifications	
Connector Type	Pluggable Terminal Block
Number of Pins	20 pt
Pitch	3.50 mm
Wire Range	28-16 AWG
Wire Strip Length	7mm
Screw Size	M2.0
Screw Torque	2.0 to 2.2 lb-inch
AutomationDirect Part Number	C0-16TB

LED Indicators

All CLICK I/O modules, except analog modules, have an LED Power Indicator (PWR). When this LED is on, the I/O module is receiving 24VDC through the backplane connector correctly. The input modules have green LEDs and the output modules have red LEDs respectively as the status indicator. When the LED is on, the I/O point is on.

I/O Module LED Status Indicators



C0-08SIM – 8-Point Toggle Switch Input Module

8-point toggle switch input module provides for simple simulation of system discrete inputs.

Input Specifications	
Inputs per Module	8 Toggle Switches
OFF to ON Response	Max 140ms, Typ 90ms
ON to OFF Response	Max 110ms, Typ 60ms
Status Indicators	Logic Side (8 points, green LED) Power Indicator (green LED)
Bus Power Required	Max. 50mA (All points ON)
Weight	2.9 oz (84g)

CAUTION

The C0-08SIM unit toggle switch can get hot when mounted in hot environment. Wear heat-resistant gloves before use, as it may cause burns.

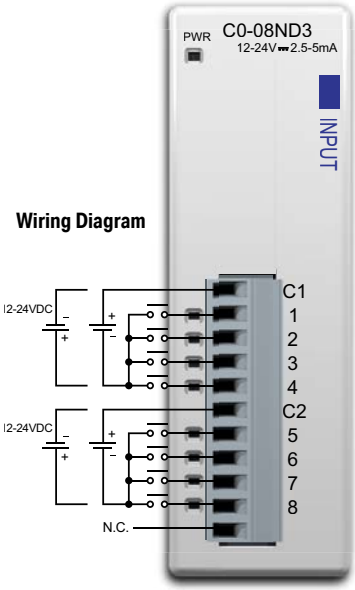
C0-04POT – 4-Point Potentiometer Input Module

4-point potentiometer input module with 12-bit resolution provides for simple simulation of system analog inputs.

Input Specifications	
Inputs per Module	4 Potentiometers
Resolution	12-bit
Total Rotation Angle	280° ±10°
Conversion Time	25ms
Input Stability	±2LSB maximum
Full-Scale Calibration Error	±2% maximum
Offset Calibration Error	±13LSB maximum
Accuracy vs Temperature Error	±100ppm/°C maximum
Instantaneous Deviation During Noise Test	±20% of full scale maximum
Status Indicators	Logic Side (8 points, green LED) Power Indicator (green LED)
Bus Power Required	30mA maximum
Weight	2.9 oz [84g]

C0-08ND3 – 8-Point Sink/Source DC Input Module

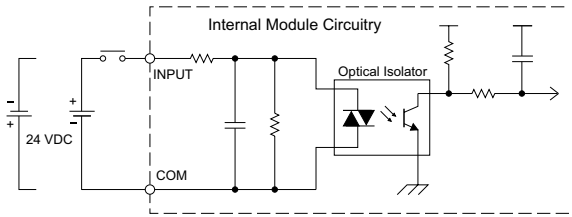
8-point 12–24 VDC current sinking or sourcing input module, 2 commons, isolated, removable terminal block included.



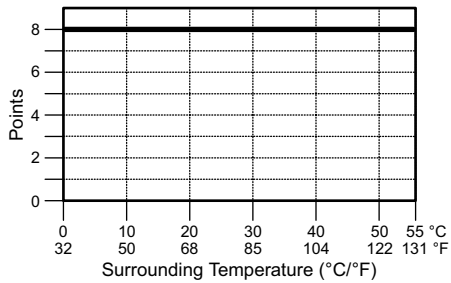
N.C. = Not Connected

Input Specifications	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	12–24 VDC
Input Voltage Range	10.8–26.4 VDC
Input Current	Typ 5mA @ 24VDC
Maximum Input Current	7mA @ 26.4 VDC
Input Impedance	4.7 kΩ @ 24VDC
ON Voltage Level	> 8.0 VDC
OFF Voltage Level	< 3.0 VDC
Minimum ON Current	1.4 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Max 3.5 ms, Typ 2ms
ON to OFF Response	Max 4 ms, Typ 2.5 ms
Status Indicators	Logic Side (8 points, green LED) Power Indicator (green LED)
Commons	2 (4 points/common) Isolated
Bus Power Required (24VDC)	Max. 30mA (All Inputs On)
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	2.8 oz (80g)

Equivalent Input Circuit



Input Module Temperature Derating Chart



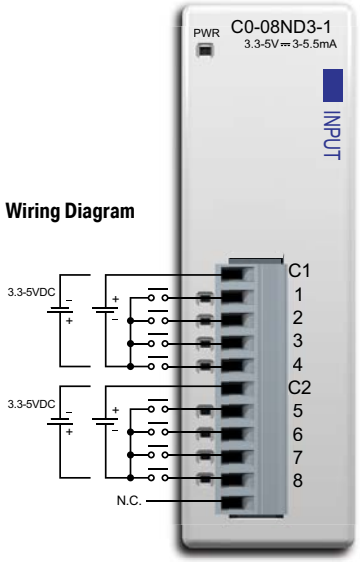
*ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC

11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-08ND3-1 – 8-Point Sink/Source DC Input Module

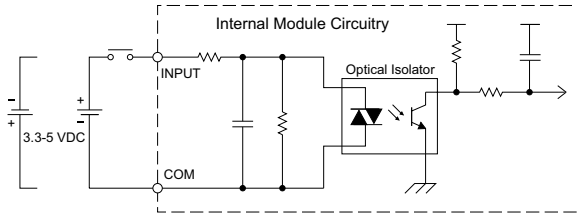
8-point 3.3–5 VDC current sinking or sourcing input module, 2 commons, isolated, removable terminal block included.



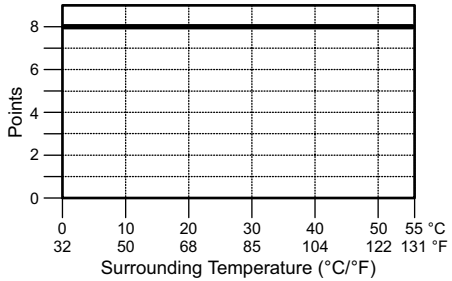
N.C. = Not Connected

Input Specifications	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	3.3–5 VDC
Input Voltage Range	2.8–5.5 VDC
Input Current	Typ 5.5 mA @ 5 VDC
Maximum Input Current	7.5 mA @ 5.5 VDC
Input Impedance	680 Ω
ON Voltage Level	> 2.2 VDC
OFF Voltage Level	< 0.8 VDC
Minimum ON Current	1.4 mA
Maximum OFF Current	0.2 mA
OFF to ON Response	Max. 3ms Typ. 1.6 ms
ON to OFF Response	Max. 4ms Typ. 2.3 ms
Status Indicators	Logic Side (8 points, green LED) Power Indicator (green LED)
Commons	2 (4 points/common) Isolated
Bus Power Required (24VDC)	Max. 30mA (All Inputs On)
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	2.8 oz (80g)

Equivalent Input Circuit



Input Module Temperature Derating Chart



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

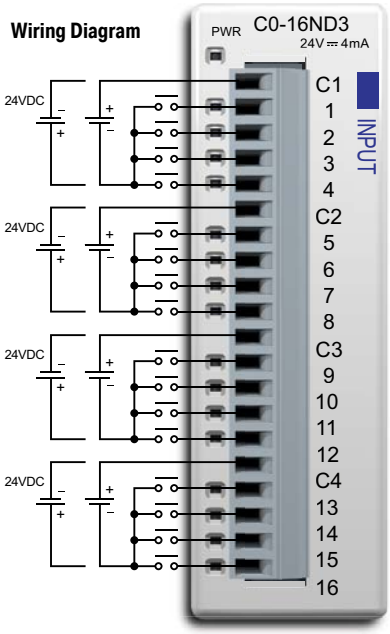
11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-16ND3 – 16-Point Sink/Source DC Input Module

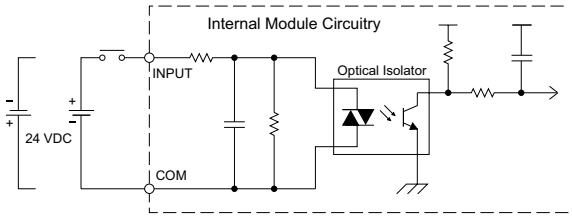
16-point 24VDC current sinking or sourcing input module, 4 commons, isolated, removable terminal block included.

Wiring Diagram

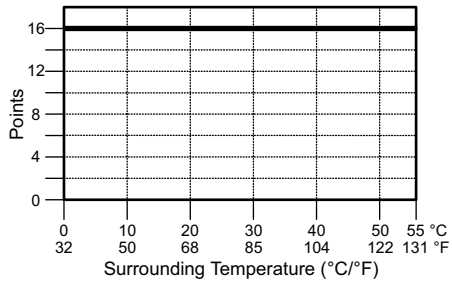


Input Specifications	
Inputs per Module	16 (Sink/Source)
Operating Voltage Range	24VDC
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 4.0 mA @ 24VDC
Maximum Input Current	5.0 mA @ 26.4 VDC
Input Impedance	6.8 kΩ @ 24VDC
ON Voltage Level	> 19VDC
OFF Voltage Level	< 7VDC
Minimum ON Current	3.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Max. 10ms Typ 2ms
ON to OFF Response	Max. 10ms Typ 3ms
Status Indicators	Logic Side (16 points, green LED) Power Indicator (green LED)
Commons	4 (4 points/common) Isolated
Bus Power Required (24VDC)	Max. 40 mA (All Inputs On)
Terminal Block Replacement	AutomationDirect p/n C0-16TB
Weight	3.2 oz (90g)

Equivalent Input Circuit



Input Module Temperature Derating Chart



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

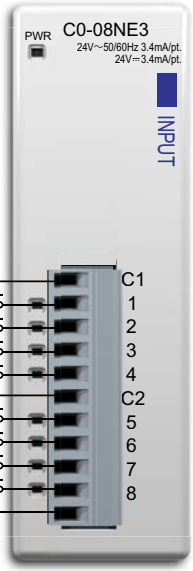
20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20 20-pin feed-through connector module

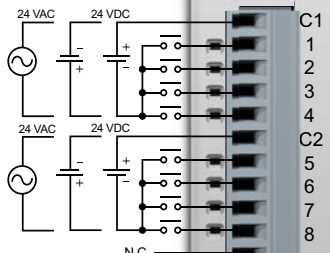
ZL-LTB16-24-1 sensor input module

C0-08NE3 – 8-Point Sink/Source AC/DC Input Module

8-point 24VAC / 24VDC current sinking or sourcing input module, 2 commons, 4 points per common, removable terminal block included.



Wiring Diagram

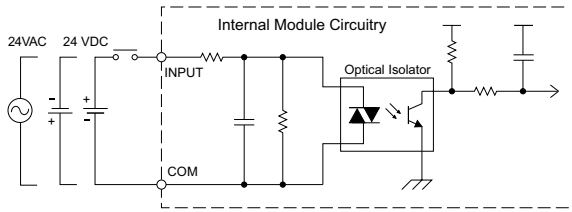


N.C. = Not Connected

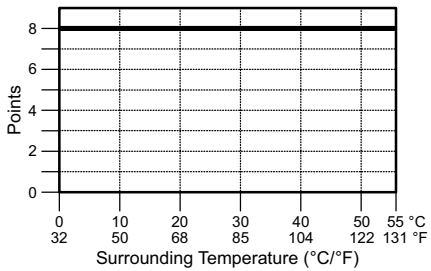
Input Specifications	
Inputs per Module	8 (Sink/Source)
Operating Voltage Range	24 VAC/VDC
Input Voltage Range	20.4–27.6 VAC/VDC
Peak Voltage	27.6 VAC/VDC
AC Frequency	47–63 Hz
Input Current	Typ 3.4 mA @ 24 VAC/VDC
Maximum Input Current	5.0 mA @ 27.6 VAC/VDC
Input Impedance	6.8 KΩ @ 24 VAC/VDC
ON Voltage Level	> 18.0 VAC/VDC
OFF Voltage Level	< 4.0 VAC/VDC
Minimum ON Current	2.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	5–40 ms
ON to OFF Response	10–50 ms
Status Indicators	Logic Side (8 points, green LED) Power Indicator (green LED)
Commons	2 (4 points/common) Isolated
Bus Power Required (24VDC)	Max. 30mA (All Inputs On)
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	2.9 oz (82g)

NOTE: *When using this module you must also use CLICK programming software version V1.20 or later.*

Equivalent Input Circuit



Input Module Temperature Derating Chart



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

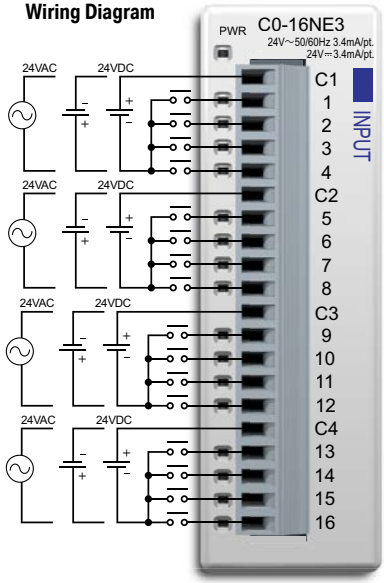
11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-16NE3 – 16-Point Sink/Source AC/DC Input Module

16-point 24VAC / 24VDC current sinking or sourcing input module, 4 commons, 4 points per common, removable terminal block included.

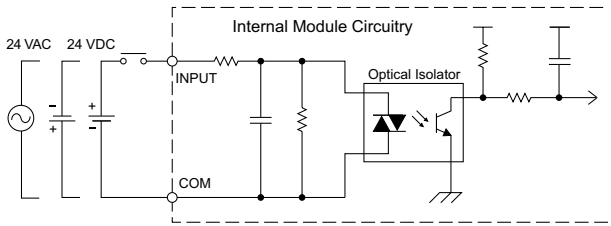
Wiring Diagram



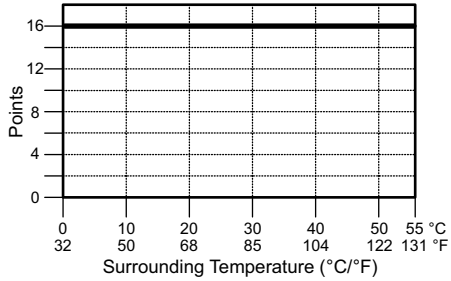
Input Specifications	
Inputs per Module	16 (Sink/Source)
Operating Voltage Range	24 VAC/VDC
Input Voltage Range	20.4–27.6 VAC/VDC
Peak Voltage	27.6 VAC/VDC
AC Frequency	47-63 Hz
Input Current	Typ 3.4 mA @ 24 VAC/VDC
Maximum Input Current	5.0 mA @ 27.6 VAC/VDC
Input Impedance	6.8 kΩ @ 24 VAC/VDC
ON Voltage Level	> 18.0 VAC/VDC
OFF Voltage Level	< 4.0 VAC/VDC
Minimum ON Current	2.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	5–40 ms
ON to OFF Response	10–50 ms
Status Indicators	Logic Side (16 points, green LED) Power Indicator (green LED)
Commons	4 (4 points/common) Isolated
Bus Power Required (24VDC)	Max. 40mA (All Inputs On)
Terminal Block Replacement	AutomationDirect p/n C0-16TB
Weight	3.2 oz (90g)

NOTE: *When using this module you must also use CLICK programming software version V1.20 or later.*

Equivalent Input Circuit



Input Module Temperature Derating Chart



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

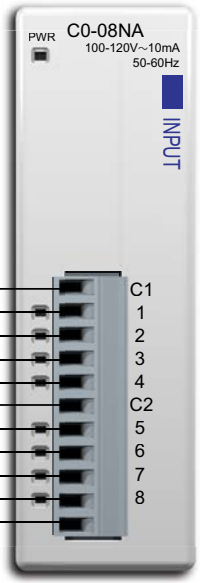
20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20 20-pin feed-through connector module

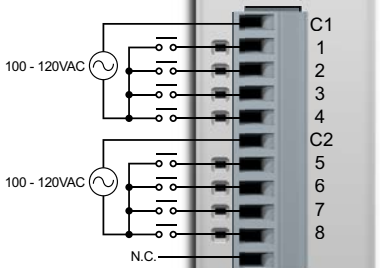
ZL-LTB16-24-1 sensor input module

C0-08NA – 8-Point AC Input Module

8-point 100–120 VAC input module, 2 commons, isolated, removable terminal block included.



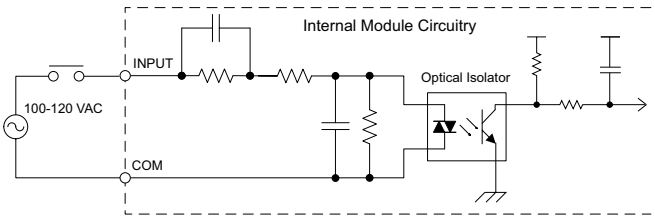
Wiring Diagram



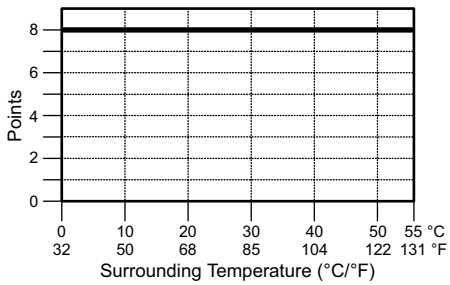
N.C. = Not Connected

Input Specifications	
Inputs per Module	8
Operating Voltage Range	100–120 VAC
Input Voltage Range	80–144 VAC
AC Frequency	47–63 Hz
Input Current	Typ 8.5 mA @ 100VAC (50Hz) Typ 10mA @ 100VAC (60Hz)
Maximum Input Current	16mA @ 144VAC
Input Impedance	15kΩ (50 Hz), 12kΩ (60Hz)
ON Voltage Level	> 70VAC
OFF Voltage Level	< 20VAC
Minimum ON Current	5mA
Maximum OFF Current	2mA
OFF to ON Response	< 40ms
ON to OFF Response	< 40ms
Status Indicators	Logic Side (8 points, green LED) Power Indicator (green LED)
Commons	2 (4 points/common) Isolated
Bus Power Required (24VDC)	Max. 30mA (All Inputs On)
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	2.8 oz (80g)

Equivalent Input Circuit



Input Module Temperature Derating Chart



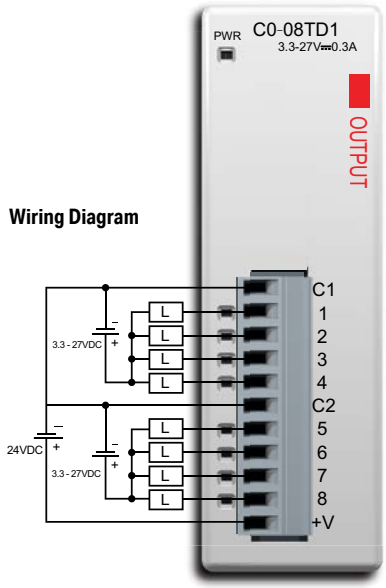
***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

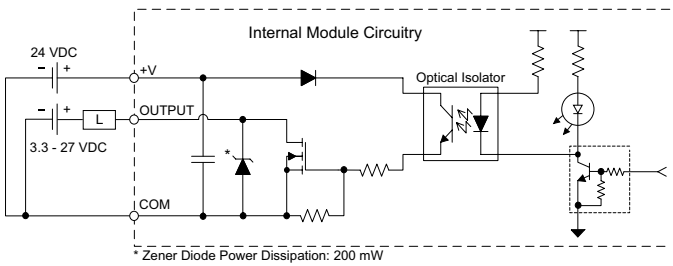
C0-08TD1 – 8-Point Sinking DC Output Module

8-point 3.3–27 VDC current sinking output module, 2 commons, 0.3 A/pt, removable terminal block included.

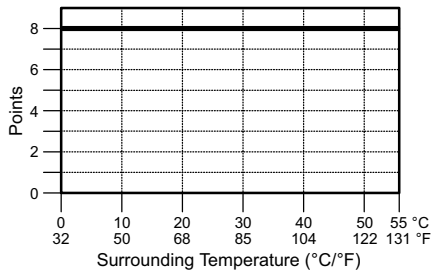


Output Specifications	
Outputs per Module	8 (Sink)
Operating Voltage Range	3.3–27 VDC
Output Voltage Range	2.8–30 VDC
Maximum Output Current	0.3 A/point , 1.2 A/common
Minimum Output Current	0.5 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	1.5 VDC @ 0.3 A
Maximum Inrush Current	1A for 10ms
OFF to ON Response	< 0.5 ms
ON to OFF Response	< 0.5 ms
Status Indicators	Logic Side (8 points, red LED) Power Indicator (green LED)
Commons	2 (4 points/common)
External DC Power Required	21.6–26.4 VDC Max 15mA (All Outputs On)
Bus Power Required (24VDC)	Max. 50mA (All Outputs On)
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	2.8 oz (80g)

Equivalent Output Circuit



Output Module Temperature Derating Chart



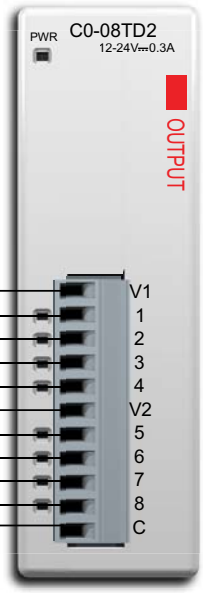
***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-08TD2 – 8-Point Sourcing DC Output Module

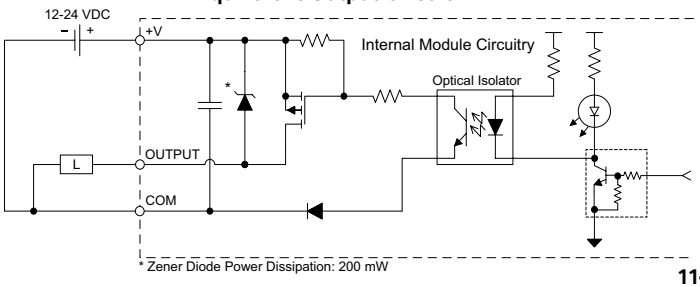
8-point 12–24VDC current sourcing output module, 1 common, 0.3 A/pt, removable terminal block included.



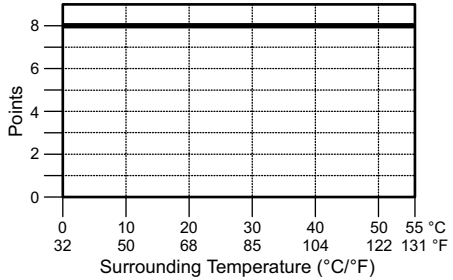
Wiring Diagram

Output Specifications	
Outputs per Module	8 (Source)
Operating Voltage Range	12–24VDC
Output Voltage Range	9.6–30 VDC
Maximum Output Current	0.3 A/point , 1.2 A/common
Minimum Output Current	0.5 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	1.5 VDC @ 0.3 A
Maximum Inrush Current	1A for 10ms
OFF to ON Response	< 1ms
ON to OFF Response	< 1ms
Status Indicators	Logic Side (8 points, red LED) Power Indicator (green LED)
Commons	1 (8 points/common)
Bus Power Required (24VDC)	Max. 50mA (All Outputs On)
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	2.8 oz (80g)

Equivalent Output Circuit



Output Module Temperature Derating Chart



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

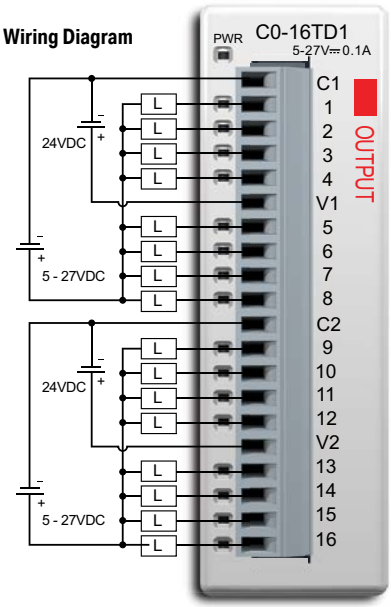
11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-16TD1 – 16-Point Sinking DC Output Module

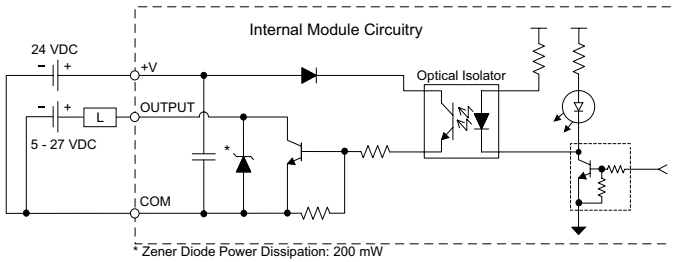
16-point 5–27 VDC current sinking output module, 2 commons, isolated, 0.1 A/pt, removable terminal block included.

Wiring Diagram



Output Specifications	
Outputs per Module	16 (Sink)
Operating Voltage Range	5–27 VDC
Output Voltage Range	4–30 VDC
Maximum Output Current	0.1 A/point , 0.8 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	< 0.5 ms
ON to OFF Response	< 0.5 ms
Status Indicators	Logic Side (16 points, red LED) Power Indicator (green LED)
Commons	2 (8 Points/common) Isolated
External DC Power Required	21.6–26.4 VDC Max 100mA (All Outputs On)
Bus Power Required (24VDC)	Max. 80mA (All Outputs On)
Terminal Block Replacement	AutomationDirect p/n C0-16TB
Weight	3.2 oz (90g)

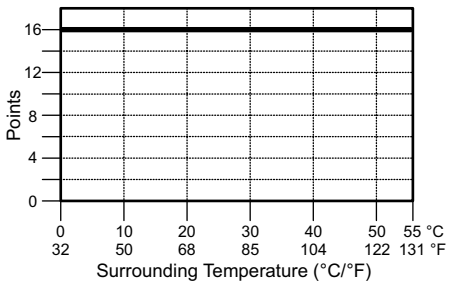
Equivalent Output Circuit



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

Output Module Temperature Derating Chart



ZL-RTB20 20-pin feed-through connector module

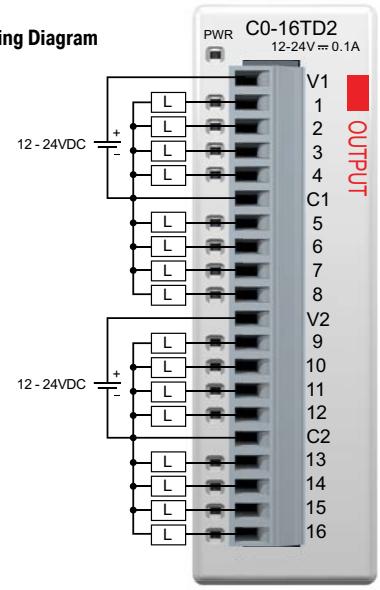
ZL-RFU20 fuse module

ZL-RRL16-24-1 relay module
Note: 10A/Point (DC)
8A/Point (AC)
(Replaceable relays)

C0-16TD2 – 16-Point Sourcing Output Module

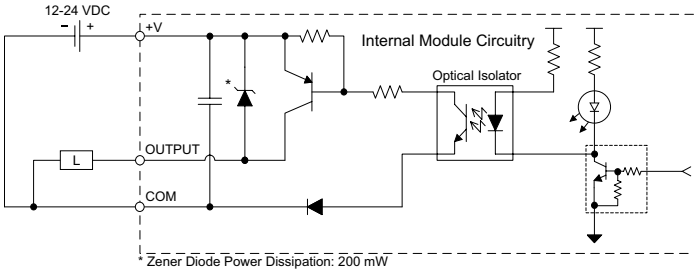
16-point 12–24 VDC current sourcing output module, 2 commons, isolated, 0.1 A/pt, removable terminal block included.

Wiring Diagram



Output Specifications	
Outputs per Module	16 (Source)
Operating Voltage Range	12–24VDC
Output Voltage Range	9.6–30.0 VDC
Maximum Output Current	0.1 A/point , 0.8 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30.0 VDC
On Voltage Drop	0.6 VDC @ 0.1 A
Maximum Inrush Current	150mA for 10ms
OFF to ON Response	< 0.5 ms
ON to OFF Response	< 0.5 ms
Status Indicators	Logic Side (16 points, red LED) Power Indicator (green LED)
Commons	2 (8 points/common) Isolated
Bus Power Required (24VDC)	Max. 80mA (All Outputs On)
Terminal Block Replacement	AutomationDirect p/n C0-16TB
Weight	3.2 oz (90g)

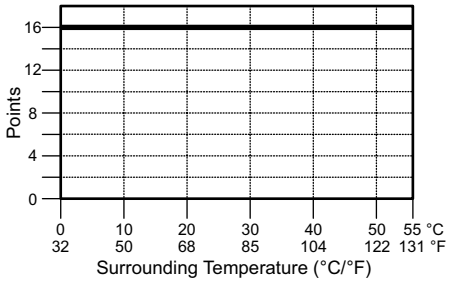
Equivalent Output Circuit



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

Output Module Temperature Derating Chart



ZL-RTB20 20-pin feed-through connector module

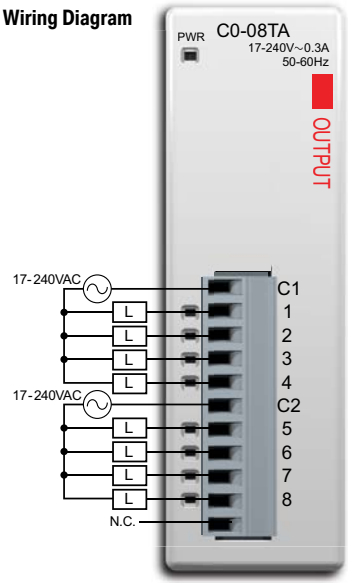
ZL-RFU20 fuse module

ZL-RRL16-24-2 relay module
Note: 10A/Point (DC)
8A/Point (AC)
(Replaceable relays)

C0-08TA – 8-Point AC Output Module

8-point 17-240 VAC triac output module, 2 commons, isolated, 0.3 A/pt, removable terminal block included.

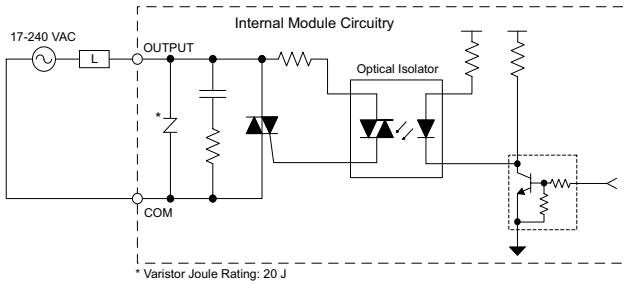
Wiring Diagram



N.C. = Not Connected

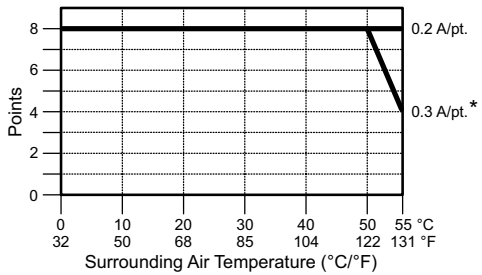
Output Specifications	
Outputs per Module	8
Operating Voltage Range	17–240 VAC
Output Voltage Range	13.5–288 VAC
AC Frequency	47–63 Hz
Maximum Output Current	0.3 A/point, 1.2 A/common
Minimum Load	10mA
Maximum Leakage Current	4mA @ 288 VAC
On Voltage Drop	1.5 VAC @ > 0.1 A 3.0 VAC @ < 0.1 A
Maximum Inrush Current	10A for 10ms
OFF to ON Response	1ms
ON to OFF Response	1ms + 1/2 cycle
Status Indicators	Logic Side (8 points, red LED) Power Indicator (green LED)
Commons	2 (4 points/common) Isolated
Bus Power Required (24VDC)	Max. 80mA (All Outputs On)
Protection Circuit	Not built into the module - Install protection elements such as external fuse.
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	3.5 oz (100g)

Equivalent Output Circuit



* Varistor Joule Rating: 20 J

Output Temperature Derating Chart



* Use every other output.

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

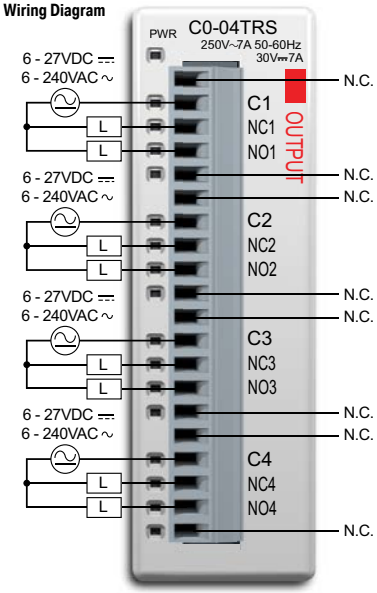
11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-04TRS – 4-Point Relay Output Module

4-point 6–240 VAC / 6–27 VDC Isolated relay output module, 4 Form C (SPDT) relays, 4 isolated commons, 7 A/point, removable terminal block included.

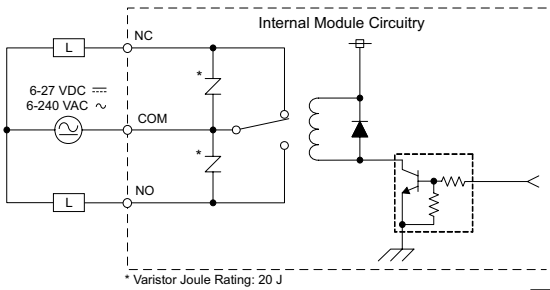
Wiring Diagram



N.C. = Not Connected

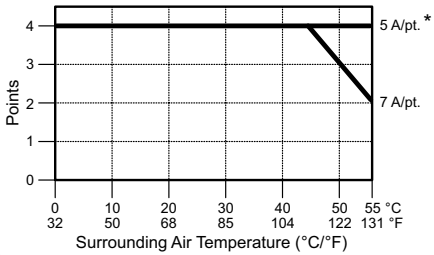
Output Specifications	
Outputs per Module	4
Operating Voltage Range	6–27 VDC / 6–240 VAC
Output Voltage Range	5–30 VDC / 5–264 VAC
Output Type	Relay, form C (SPDT)
AC Frequency	47–63 Hz
Maximum Current	7A / point, 7A / common
Minimum Load Current	100mA @ 5VDC
Maximum Leakage Current	0.1 mA @ 264VAC
Maximum Inrush Current	12A
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (4 points, red LED) Power Indicator (green LED)
Commons	4 (1 point/common) Isolated
Bus Power Required (24VDC)	Max. 100mA (All Outputs On)
Protection Circuit	Not built into the module - Install protection elements such as external fuse.
Terminal Block Replacement	AutomationDirect p/n C0-16TB
Weight	4.4 oz (125g)

Equivalent Output Circuit



* Varistor Joule Rating: 20 J

Output Temperature Derating Chart



* No derating when the load current is 5A or less for each output point.

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	**Relay Life**
30VDC, 7A Resistive	100,000 cycles
250VAC, 7A Resistive	100,000 cycles
250VAC, 4.9 A Solenoid	90,000 cycles
250VAC, 2.9 A Solenoid	100,000 cycles
ON to OFF = 1 cycle	

NOTE: *The C0-04TRS relay output module is derated to 2A per point maximum when used with the ZIPLink wiring system.*

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

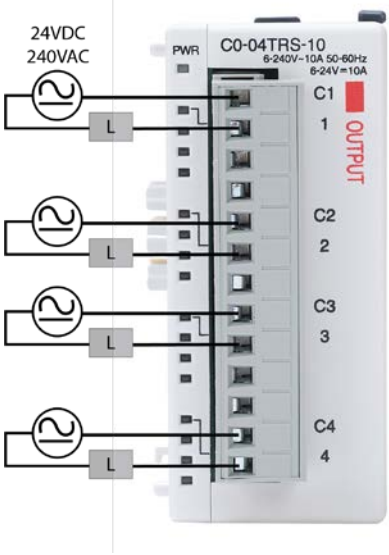
20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20
20-pin feed-through connector module

C0-04TRS-10 – 4-Point Relay Output Module

4-point 6–240 VAC / 6–24 VDC Isolated relay output module, 4 Form A (SPST) relays, 4 isolated commons, 10A/point, removable terminal block included.

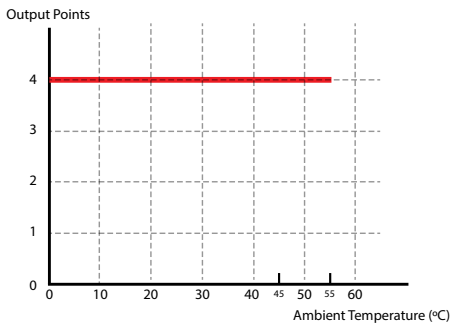
Wiring Diagram



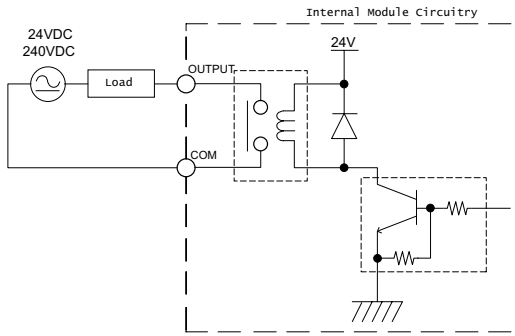
Output Specifications	
Outputs per Module	4
Operating Voltage Range	6–24 VDC / 6–240 VAC
Peak Voltage	24VDC / 264VAC
Output Type	Relay, form A (SPST)
AC Frequency	47–63 Hz
Maximum Current	10A / point, 10A / common
Minimum Load Current	100mA @ 5VDC
Maximum Inrush Current	16A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (4 points, red LED) Power Indicator (green LED)
Commons	4 (1 point/common) Isolated
Bus Power Required (24VDC)	Max. 120mA (All Outputs On)
Protection Circuit	Not built into the module - Install protection elements such as external fuse.
Terminal Block Replacement	AutomationDirect p/n C0-8TB-1
Weight	5.22 oz (148g)

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
24VDC, 10A Resistive	120,000 cycles
24VDC, 10A Inductive	60,000 cycles
110VAC, 10A Resistive	120,000 cycles
110VAC, 10A Inductive	35,000 cycles
220VAC, 10A Resistive	120,000 cycles
220VAC, 10A Inductive	35,000 cycles
ON to OFF = 1 cycle	

Output Temperature Derating Chart



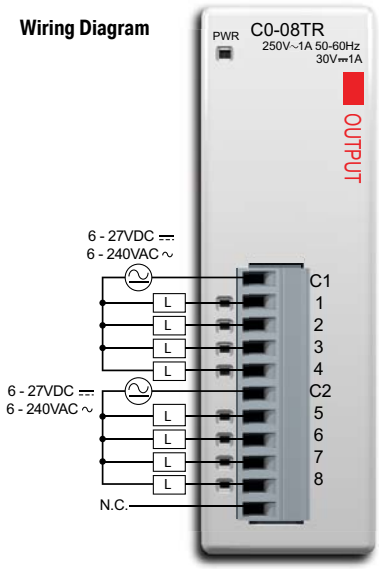
Equivalent Output Circuit



C0-08TR – 8-Point Relay Output Module

8-point 6–240 VAC /6–27 VDC relay output module, 8 Form A (SPST) relays, 2 commons, isolated, 4 A/common, removable terminal block included.

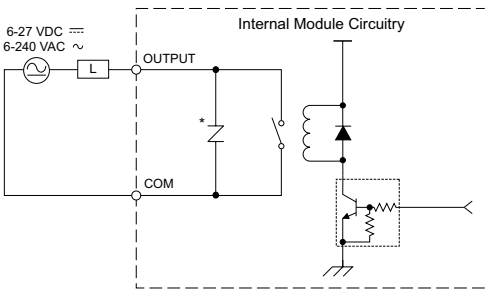
Wiring Diagram



N.C. = Not Connected

Output Specifications	
Outputs per Module	8
Operating Voltage Range	6–27 VDC / 6–240 VAC
Output Voltage Range	5–30 VDC / 5–264 VAC
Output Type	Relay, form A (SPST)
AC Frequency	47–63 Hz
Maximum Current (resistive)	1A /point, 4A /common
Minimum Load Current	5mA @ 5VDC
Maximum Leakage Current	0.1 mA @ 264VAC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (8 points, red LED) Power Indicator (green LED)
Commons	2 (4 points/common) Isolated
Bus Power Required (24VDC)	Max. 100mA (All Outputs On)
Protection Circuit	Not built into the module - Install protection elements such as external fuse.
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	3.9 oz (110g)

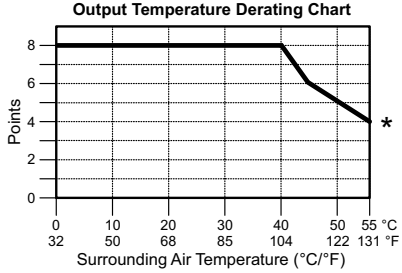
Equivalent Output Circuit



* Varistor Joule Rating: 20 J

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
30VDC, 1A Resistive	300,000 cycles
30VDC, 1A Solenoid	50,000 cycles
250VAC, 1A Resistive	500,000 cycles
250VAC, 1A Solenoid	200,000 cycles
ON to OFF = 1 cycle	

Output Temperature Derating Chart



* Use every other output.

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

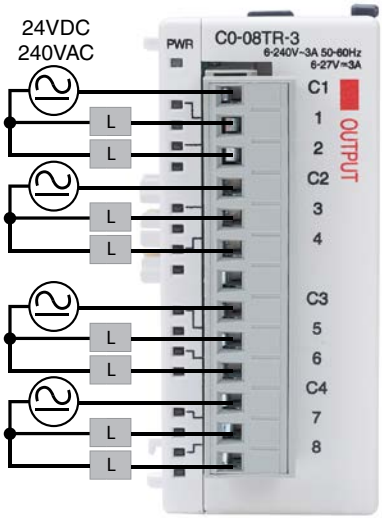
ZL-RTB20
20-pin feed-through connector module

NOTE: *The C0-08TR is derated to 2A maximum per Common when used with the ZIPLink wiring system.*

C0-08TR-3 – 8-Point Relay Output Module

8-point 6–240 VAC /6–27 VDC relay output module, 8 Form A (SPST) relays, 4 commons, isolated, 3A/point, removable terminal block included.

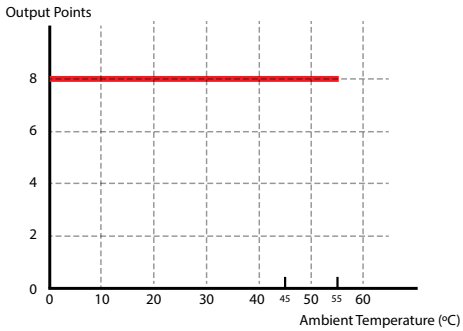
Wiring Diagram



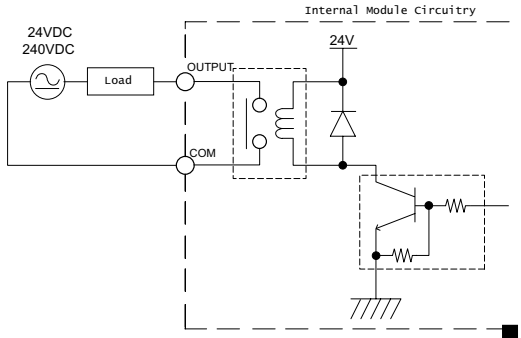
Output Specifications	
Outputs per Module	8
Operating Voltage Range	6–27 VDC / 6–240 VAC
Peak Voltage	30 VDC / 264 VAC
Output Type	Relay, form A (SPST)
AC Frequency	47–63 Hz
Maximum Current (resistive)	3A /point, 6A /common
Minimum Load Current	5mA @ 5VDC
Maximum Inrush Current	5A for 10ms
OFF to ON Response	< 15ms
ON to OFF Response	< 15ms
Status Indicators	Logic Side (8 points, red LED) Power Indicator (green LED)
Commons	4 (2 points/common) Isolated
Bus Power Required (24VDC)	Max. 90mA (All Outputs ON)
Protection Circuit	Not built into the module - Install protection elements such as external fuse.
Terminal Block Replacement	AutomationDirect p/n C0-8TB-1
Weight	4.12 oz (117g)

Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type	Relay Life
24VDC, 3A Resistive	100,000 cycles
24VDC, 3A Inductive	50,000 cycles
110VAC, 3A Resistive	100,000 cycles
110VAC, 3A Inductive	25,000 cycles
220VAC, 3A Resistive	100,000 cycles
220VAC, 3A Inductive	25,000 cycles
ON to OFF = 1 cycle	

Output Temperature Derating Chart



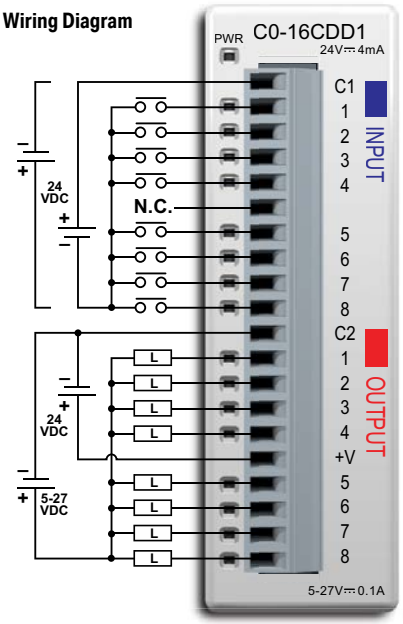
Equivalent Output Circuit



C0-16CDD1 – 8-Point DC Input and 8-Point DC Sinking Output Module

8-point 24VDC current sinking/sourcing input, 1 common, 8-point 5–27 VDC sinking output, 0.1A/pt., 1 common, non-fused, removable terminal block included.

Wiring Diagram



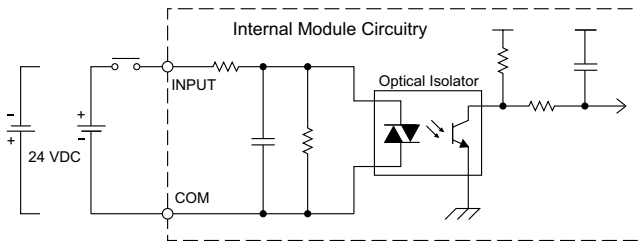
N.C. = Not Connected

Input Specifications	
Inputs per Module	8 (Source/Sink)
Operating Voltage Range	CE: 24VDC (-10%/+10%) UL: 24VDC (-10%/+10%)
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 4.0 mA @ 24VDC
Maximum Input Current	5.0 mA @ 26.4 VDC
Input Impedance	6.8 kΩ @ 24VDC
ON Voltage Level	>19.0 VDC
OFF Voltage Level	<7.0 VDC
Minimum ON Current	3.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Max. 10ms Typ 2ms
ON to OFF Response	Max. 10ms Typ 3ms
Status Indicators	Logic Side (8 points, green LED) Power Indicator (green LED)
Commons	1 (8 points/common)

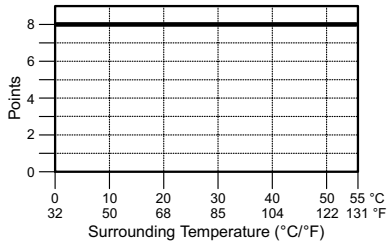
General Specifications	
Bus Power Required (24VDC)	Max. 80mA (all points on)
Terminal Block Replacement	AutomationDirect p/n C0-16TB
Weight	3.2 oz (90g)

NOTE: *When using this module you must also use CLICK programming software and PLC firmware version V1.40 or later.*

Equivalent Input Circuit



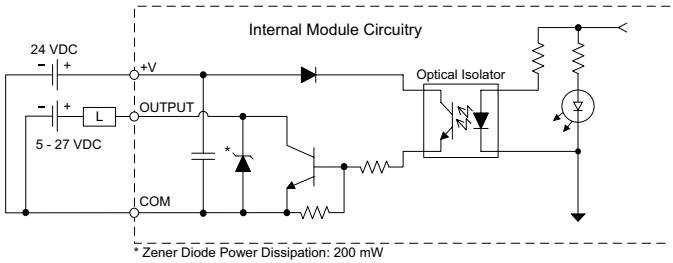
Input Module Temperature Derating Chart



C0-16CDD1 (continued)

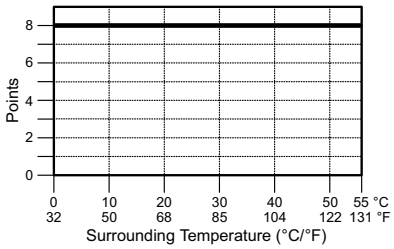
Output Specifications	
Outputs per Module	8 (sink)
Operating Voltage Range	CE: 5–24 VDC (-15%/+20%) UL: 5–27 VDC (-15%/+20%)
Output Voltage Range	4–30 VDC
Maximum Output Current	0.1 A/point, 0.8 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30VDC
On Voltage Drop	0.5 VDC @ 0.1 A
Maximum Inrush Current	0.15 A for 10ms
OFF to ON Response	< 0.5 ms
ON to OFF Response	< 0.5 ms
Status Indicators	Logic Side (8 points, red LED)
Commons	1 (8 points/common)
External DC Power Required	24VDC (-10%/+10%) max. 50mA (all points on)

Equivalent Output Circuit



* Zener Diode Power Dissipation: 200 mW

Output Module Temperature Derating Chart



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

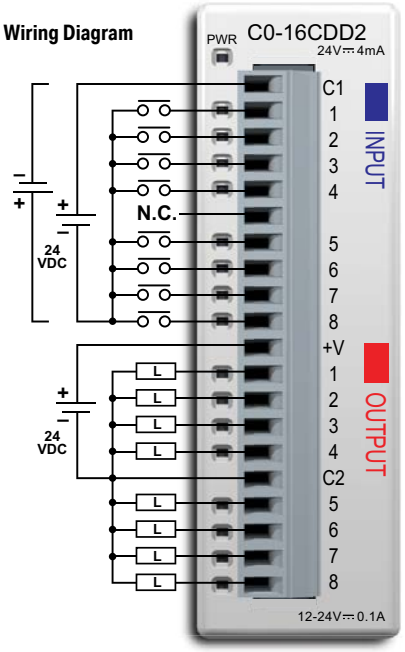
ZL-RTB20
20-pin feed-through connector module

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

C0-16CDD2 – 8-Point DC Input and 8-Point DC Sourcing Output Module

8-point 24VDC current sinking/sourcing input, 1 common, 8-point 12–24 VDC sourcing output, 0.1A/pt, 1 common, non-fused, removable terminal block included.

Wiring Diagram



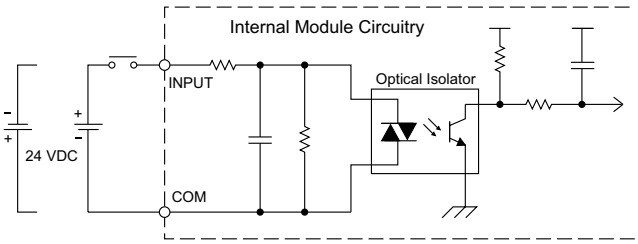
N.C. = Not Connected

Input Specifications	
Inputs per Module	8 (source/sink)
Operating Voltage Range	CE: 24VDC (-10%/+10%) UL: 24VDC (-10%/+10%)
Input Voltage Range	21.6–26.4 VDC
Input Current	Typ 4.0 mA @ 24VDC
Maximum Input Current	5.0 mA @ 26.4 VDC
Input Impedance	6.8 kΩ @ 24VDC
ON Voltage Level	>19.0 VDC
OFF Voltage Level	<7.0 VDC
Minimum ON Current	3.5 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Max. 10ms Typ 2ms
ON to OFF Response	Max. 10ms Typ 3ms
Status Indicators	Logic Side (8 points, green LED) Power Indicator (green LED)
Commons	1 (8 points/common)

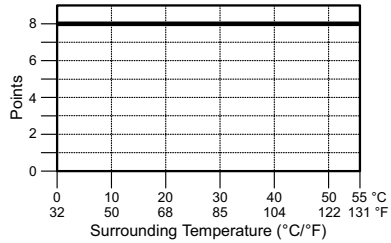
General Specifications	
Bus Power Required (24VDC)	Max. 80mA (all points on)
Terminal Block Replacement	AutomationDirect p/n C0-16TB
Weight	3.2 oz (90g)

NOTE: *When using this module you must also use CLICK programming software and PLC firmware version V1.40 or later.*

Equivalent Input Circuit



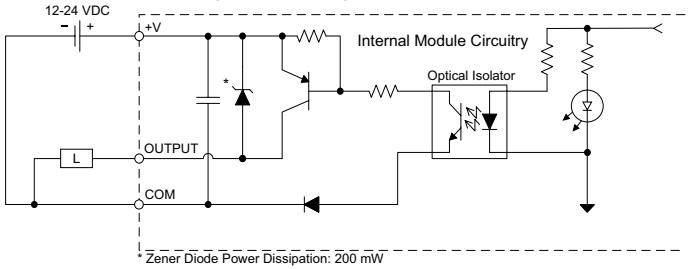
Input Module Temperature Derating Chart



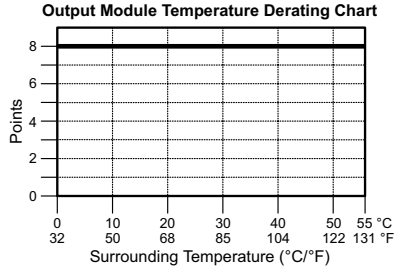
C0-16CDD2 (continued)

Output Specifications	
Outputs per Module	8 (Source)
Operating Voltage Range	CE: 12–24 VDC (-15%/+20%) UL: 12–24 VDC (-20%/+25%)
Output Voltage Range	9.6–30 VDC
Maximum Output Current	0.1 A/point , 0.8 A/common
Minimum Output Current	0.2 mA
Maximum Leakage Current	0.1 mA @ 30VDC
On Voltage Drop	0.6 VDC @ 0.1 A
Maximum Inrush Current	0.15 A for 10ms
OFF to ON Response	<0.5 ms
ON to OFF Response	<0.5 ms
Status Indicators	Logic Side (8 points, red LED)
Commons	1 (8 points/common)

Equivalent Output Circuit



Output Module Temperature Derating Chart



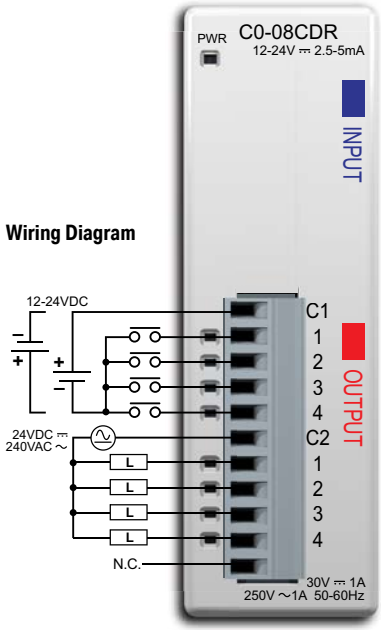
***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

ZL-RTB20
20-pin feed-through connector module

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

C0-08CDR – 4-Point DC Input and 4-Point Relay Output Module

4-point 12–24 VDC current sinking/sourcing input, 1 common, 4-point 6.25–24 VDC / 6–240 VAC relay output, Form A (SPST) relays 1A/pt, 1 common, non-fused, removable terminal block included.



Wiring Diagram

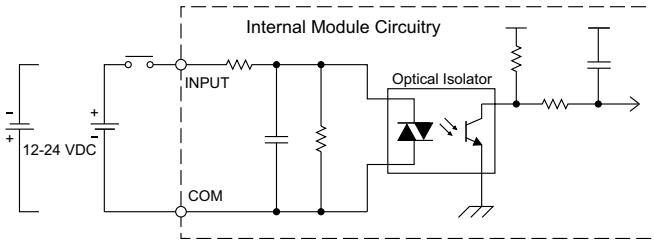
N.C. = Not Connected

Input Specifications	
Inputs per Module	4 (source/sink)
Operating Voltage Range	CE: 12–24 VDC (-10%/+10%) UL: 12–24 VDC (-10%/+10%)
Input Voltage Range	10.8–26.4 VDC
Input Current	Typ 5.0 mA @ 24VDC
Maximum Input Current	7.0 mA @ 26.4 VDC
Input Impedance	4.7 kΩ @ 24VDC
ON Voltage Level	>8.0 VDC
OFF Voltage Level	<3.0 VDC
Minimum ON Current	1.4 mA
Maximum OFF Current	0.5 mA
OFF to ON Response	Max. 3.5 ms Typ 2ms
ON to OFF Response	Max. 4ms Typ 2.5 ms
Status Indicators	Logic Side (4 points, green LED) Power Indicator (green LED)
Commons	1 (4 points/common)

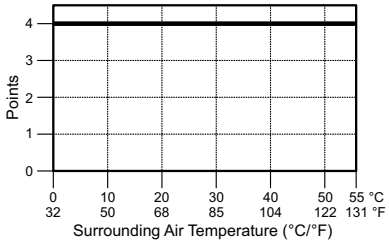
General Specifications	
Bus Power Required (24VDC)	Max. 80mA (all points on)
Protection Circuit	Not built into the module - Install protection elements such as external fuse
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	3.2 oz (90g)

NOTE: *When using this module you must also use CLICK programming software and PLC firmware version V1.40 or later.*

Equivalent Input Circuit



Input Temperature Derating Chart



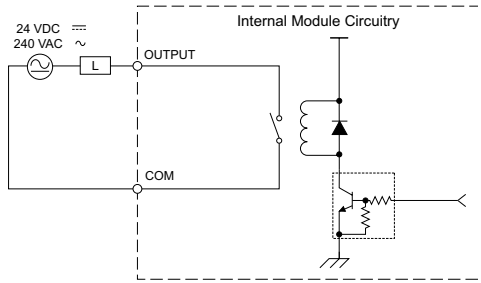
C0-08CDR (continued)

Output Specifications	
Outputs per Module	4 (Relay)
Operating Voltage Range	CE: 6.25–24 VDC (-15%/+10%) / 6–240 VAC (-15%/+10%) UL: 24VDC (-15%/+10%) / 240VAC (-10%/+10%)
Peak Voltage	30VDC / 264VAC
Output Type	Relay, Form A (SPST)
AC Frequency	47–63 Hz
Maximum Current	1A /point, 4 A/common
Minimum Load Current	5mA @ 5VDC
Maximum Leakage Current	0.1 mA @ 264VAC
Maximum Inrush Current	3A for 10ms
OFF to ON Response	<15ms
ON to OFF Response	<15ms
Status Indicators	Logic Side (4 points, red LED)
Commons	1 (4 points/common)

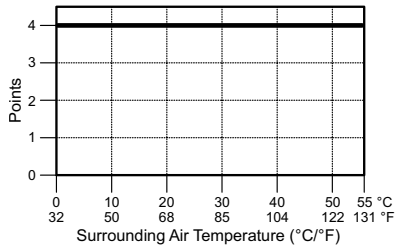
Typical Relay Life (Operations) at Room Temperature	
Voltage & Load Type*	Relay Life (ON to OFF = 1 cycle)
30VDC, 1A, Resistive	80,000 cycles
30VDC, 1A, Solenoid	80,000 cycles
250VAC, 1A, Resistive	80,000 cycles
250VAC, 1A, Solenoid	80,000 cycles

** These relay outputs support both inductive (solenoid) and resistive loads.*

Equivalent Output Circuit



Output Temperature Derating Chart



***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

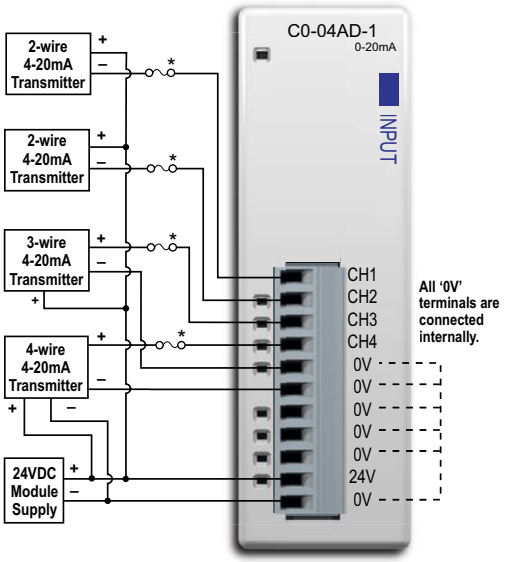
ZL-RTB20
20-pin feed-through connector module

11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

C0-04AD-1 – 4-Channel Analog Current Input Module

4-channel analog current sinking input module, 13-bit resolution, range: 0–20 mA. External 24VDC power required, removable terminal block included.

Wiring Diagram



NOTE: *When using this module you must also use CLICK programming software and PLC firmware version V1.40 or later.*

Input Specifications	
Inputs per Module	4
Input Range	0–20 mA (sink)
Resolution	13-bit, 2.44 uA/count
Input Type	Single ended (one common)
Maximum Continuous Overload	±44mA
Input Impedance	124Ω, 0.5 W current input
Filter Characteristics	Low pass, -3 dB at 120Hz
Sample Duration Time	2ms
All Channel Update Rate	25ms
Open Circuit Detection Time	Zero reading within 100ms
Accuracy vs. Temperature	±75 PPM/°C maximum
Maximum Inaccuracy	0.5% of range (including temperature changes)
Linearity Error (End to End)	±3 count maximum, monotonic with no missing codes
Input Stability and Repeatability	±2 count maximum
Full Scale Calibration Error (including Offset)	±8 count maximum
Offset Calibration Error	±8 count maximum
Maximum Crosstalk at DC, 50/60 Hz	±2 count maximum
Field to Logic Side Isolation	1800VAC for 1 sec.
Recommended Fuse (external)	AutomationDirect p/n S500-32-R (0.032A fuse)
External 24VDC Power Required	65mA
Bus Power Required (24VDC)	20mA
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	2.9 oz (82g)

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

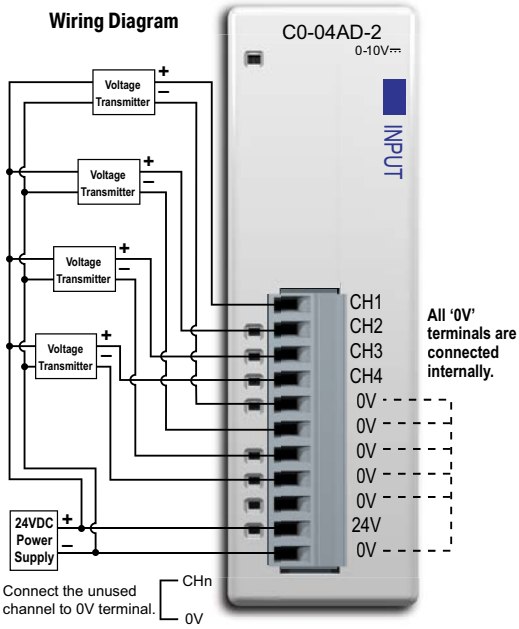
ZL-RTB20 20-pin feed-through connector module

11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

C0-04AD-2 – 4-Channel Analog Voltage Input Module

4-channel analog voltage input module, 13-bit resolution, range: 0–10V. External 24VDC power required, removable terminal block included.

Wiring Diagram



Input Specifications	
Inputs per Module	4
Input Range	0–10 V
Resolution	13-bit, 1.22 mV per count
Input Type	Single ended (one common)
Maximum Continuous Overload	±100VDC
Input Impedance	>150kΩ
Filter Characteristics	Low pass, -3 dB at 500Hz
Sample Duration Time	6.25 ms
All Channel Update Rate	25ms
Open Circuit Detection Time	Zero reading within 100 ms
Accuracy vs. Temperature	±75 PPM/°C maximum
Maximum Inaccuracy	0.5% of range (including temperature changes)
Linearity Error (End to End)	±3 count maximum, monotonic with no missing codes
Input Stability and Repeatability	±2 count maximum
Full Scale Calibration Error (Including Offset)	±8 count maximum
Offset Calibration Error	±8 count maximum
Maximum Crosstalk at DC, 50/60 Hz	±2 count maximum
Field to Logic Side Isolation	1800VAC for 1 sec.
External 24VDC Power Required	65mA
Base Power Required (24VDC)	23mA
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	2.9 oz (82g)

NOTE: When using this module you must also use CLICK programming software and PLC firmware version V1.40 or later.

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

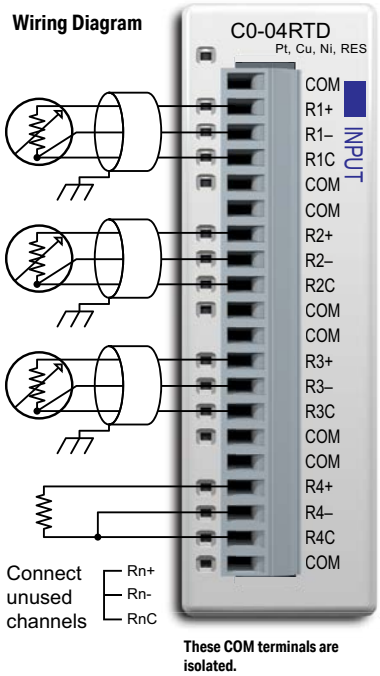
ZL-RTB20 20-pin feed-through connector module

11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

C0-04RTD – 4-Channel RTD Input Module

4-channel RTD input module, 16-bit resolution (±0.1 degrees Celsius or Fahrenheit), supports: Pt100, Pt1000, jPT100, Cu10, Cu25, Ni120. Resistive ranges also supported, removable terminal block included.

Wiring Diagram



General Specifications	
Field to Logic Side Isolation	No isolation
External DC Power Required	None
Bus Power Required (24VDC)	25mA
Thermal Dissipation	2.047 BTU per hour
Terminal Block Replacement	AutomationDirect p/n C0-16TB
Weight	3.1 oz (86g)

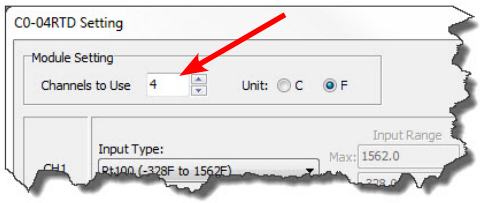
Input Specifications	
Inputs per Module	4
Common Mode Range	±2.5 V
Common Mode Rejection	100dB at DC and 100 dB at 50/60 Hz
Input Impedance	>5MΩ
Maximum Ratings	Fault protected inputs to ±50VDC
Resolution	±0.1°C or °F, 0.1 Ω or 0.01 Ω
Input Ranges*	Pt100: -200 to 850°C (-328 to 1562°F) Pt1000: -200 to 595°C (-328 to 1103°F) jPt100: -100 to 450°C (-148 to 842°F) 10Ω Cu: -200 to 260°C (-328 to 500°F) 25Ω Cu: -200 to 260°C (-328 to 500°F) 120Ω Ni: -80 to 260°C (-112 to 500°F) 0 to 3125.0 Ω : Resolution 0.1 Ω 0 to 1562.5 Ω : Resolution 0.1 Ω 0 to 781.2 Ω : Resolution 0.1 Ω 0 to 390.62 Ω : Resolution 0.01 Ω 0 to 195.31 Ω : Resolution 0.01 Ω
RTD Linearization	Automatic
Excitation Current (All Ranges)	210µA

* While it is possible to use different resistive ranges, we recommend using the narrowest range that covers the resistance being measured. For example, if measuring approximately 100 ohms resistance, use the 0 to 195.31 ohms range. While the resolution is the same as the 0 to 390.62 ohms range, output RMS noise will be lower and stability will be improved.

NOTE: *The C0-04RTD module cannot be used with thermistors.*

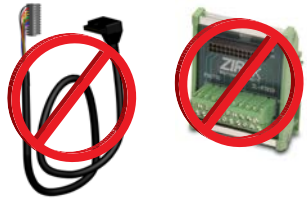
NOTE: *When using this module you must also use CLICK programming software and PLC firmware version V1.40 or later.*

If there are any unused channels, make sure to select the correct number of channels that you actually use in the **C0-04RTD Setting** window.



C0-04RTD – 4-Channel RTD Input Module (continued)

Input Specifications (continued)	
Accuracy vs. Temperature	±10ppm per °C maximum
RTD Input Maximum Inaccuracy	±3°C (excluding RTD error); ±5°C (ranges Cu10 and Cu25)
RTD Linearity Error (End to End)	±2°C maximum, ±0.5°C typical, monotonic with no missing codes
Resistance Input Maximum Zero Scale Error	±0.0015% of full scale range in ohms (negligible)
Resistance Input Maximum Full Scale Error	±0.02% of full scale range
Maximum Linearity Error	±0.015% of full scale range maximum at 25°C, monotonic with no missing codes
Resistance Maximum Input Inaccuracy	0.1% at 0 to 60°C (32° to 140° F), typical 0.04% at 25°C (77° F)
Warm Up Time	30 minutes for ±1C° repeatability
Single Channel Update Rate	240ms
All Channel Update Rate	Single Channel Update Rate times the number of enabled channels on the module
Open Circuit Detection Time	Positive full-scale reading within 2 seconds
Conversion Method	Sigma - Delta



Not Compatible with *ZIP*Link Pre-Wired PLC Connection Cables and Modules.

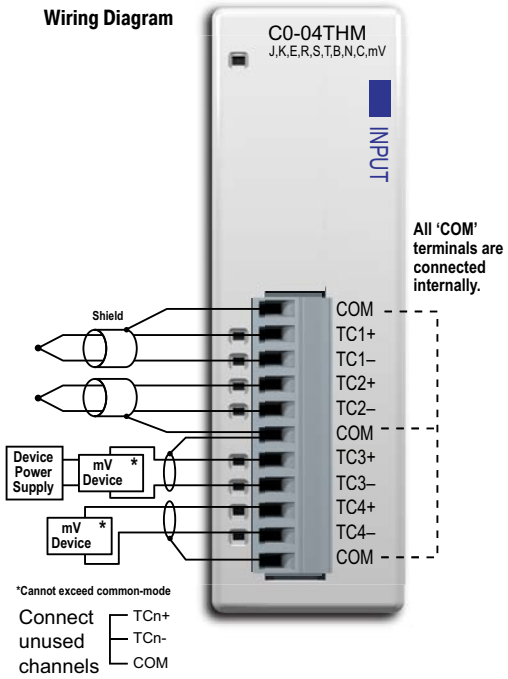
NOTE: *When this module is used in a CLICK PLC system, it takes up to 24 seconds for initialization after power-up. During this time period, the RUN LED on the PLC module blinks to indicate the initialization process.*

Initialization Time		
The Number of Channels Used	The same Input Type is selected for all Channels	Mixed Input Types are selected
1	4 sec	N/A
2	5 sec	May take up to 13 sec
3	6 sec	May take up to 18 sec
4	7 sec	May take up to 24 sec

C0-04THM – 4-Channel Thermocouple Input Module

4-channel thermocouple input module, 16-bit resolution (±0.1 degrees Celsius or Fahrenheit), Supports: J, K, E, R, S, T, B, N, C type thermocouples; voltages ranges also supported, removable terminal block included.

Wiring Diagram

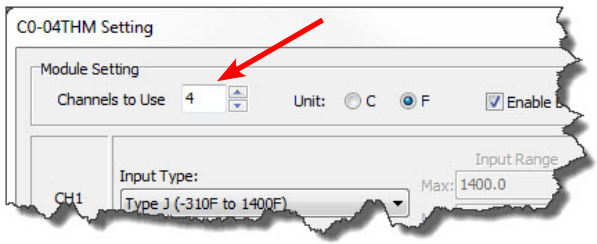


General Specifications	
Field to Logic Side Isolation	1800 VAC applied for 1 second (100% tested)
External DC Power Required	None
Bus Power Required (24VDC)	25mA
Thermal Dissipation	0.175 BTU per hour
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	3.1 oz (86 g)

Input Specifications	
Inputs per Module	4
Common Mode Range	-1.3 to +3.8 V
Common Mode Rejection	100dB at DC and 130dB at 60Hz
Input Impedance	>5MΩ
Maximum Ratings	Fault protected inputs to ±50VDC
Resolution	±0.1°C or °F, 16-bit
Input Ranges	Type J: -190 to 760°C (-310 to 1400°F) Type K: -150 to 1372°C (-238 to 2502°F) Type E: -210 to 1000°C (-346 to 1832°F) Type R: 65 to 1768°C (149 to 3214°F) Type S: 65 to 1768°C (149 to 3214°F) Type T: -230 to 400°C (-382 to 752°F) Type B: 529 to 1820°C (984 to 3308°F) Type N: -70 to 1300°C (-94 to 2372°F) Type C: 65 to 2320°C (149 to 4208°F) 0 to 39.0625 mV ±39.0625 mV ±78.125 mV 0 to 156.25 mV ±156.25 mV 0 to 1.25 V

NOTE: *When using this module you must also use CLICK programming software and PLC firmware version V1.40 or later.*

If there are any unused channels, make sure to select the correct number of channels that you actually use in the **C0-04THM Setting** window.



C0-04THM – 4-Channel Thermocouple Input Module (continued)

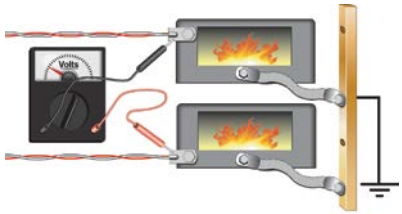
Input Specifications (continued)	
Cold Junction Compensation	Automatic
Thermocouple Linearization	Automatic
Accuracy vs. Temperature	±25 ppm per °C maximum
Linearity Error	±2°C maximum, ±1°C typical, monotonic with no missing codes
Maximum Inaccuracy	±3°C maximum (excluding thermocouple error)
Maximum Voltage Input Offset Error	0.05% at 0° to 55° C (32° to 131° F), typical 0.04% at 25° C (77° F)
Maximum Voltage Input Gain Error	0.06% at 25°C (77°F)
Maximum Voltage Input Linearity Error	0.05% at 0° to 55°C (32° to 131°F), typical 0.03% at 25°C (77°F)
Maximum Voltage Input Inaccuracy	0.1% at 0° to 55°C (32° to 131°F), typical 0.04% at 25°C (77°F)
Warm Up Time	30 minutes for ±1C° repeatability
Single Channel Update Rate	400ms
All Channel Update Rate	Single Channel Update Rate times the number of enabled channels on the module
Open Circuit Detection Time	Burn Out flag set and zero scale reading within 3 seconds
Conversion Method	Sigma - Delta

Not Compatible with *ZIP*Link Pre-Wired PLC Connection Cables and Modules.

NOTE: *When this module is used in a CLICK PLC system, it takes up to 11 seconds for initialization after power-up. During this time period, the RUN LED on the PLC module blinks to indicate the initialization process.*

Initialization Time	
The Number of Channels Used	With any Configuration
1	5 sec
2	7 sec
3	9 sec
4	11 sec

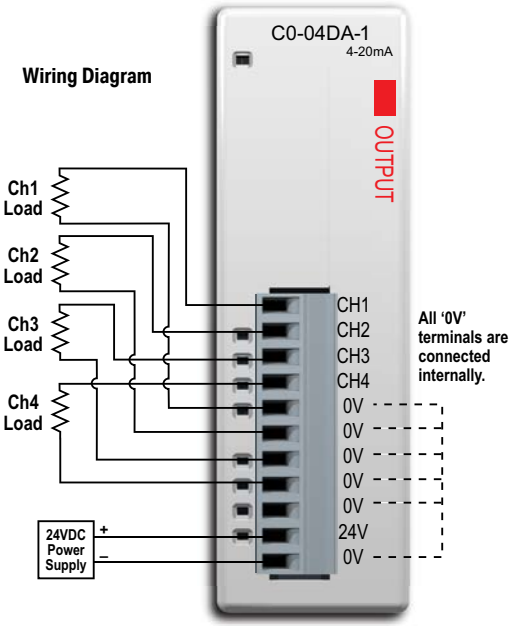
NOTE: *With grounded thermocouples, take precautions to prevent having a voltage potential between thermocouple tips. A voltage less than -1.3V or greater than +3.8V between tips will skew measurements.*



C0-04DA-1 – 4-Channel Analog Current Output Module

4-channel analog current sourcing output module, 12-bit resolution, range: 4–20 mA. External 24VDC power required, removable terminal block included.

Wiring Diagram



NOTE: *When using this module you must also use CLICK programming software and PLC firmware version V1.40 or later.*

Output Specifications	
Outputs per Module	4
Output Range	4–20 mA (source)
Resolution	12-bit, 3.9 uA per count
Output Type	Current sourcing at 20mA max.
Output Value in Fault Mode	Less than 4mA
Load Impedance	0-600Ω at 24VDC; minimum load: 0Ω 32° to 131°F (0° to 55°C) ambient temp.
Maximum Inductive Load	1mH
Allowed Load Type	Grounded
Maximum Inaccuracy	±1% of range
Max. Full Scale Calibration Error (Including Offset)	±0.2% of range maximum
Max. Offset Calibration Error	±0.2% of range maximum
Accuracy vs. Temperature	±75 PPM/°C maximum full scale calibration change (±0.005% of range/°C)
Max. Crosstalk at DC, 50/60 Hz	-72 dB, 1 LSB
Linearity Error (End to End)	±4 LSB max., (±0.1% of full scale)
Output Stability and Repeatability	±2% LSB after 10 minute warmup period typical
Output Ripple	±0.1% of full scale
Output Settling Time	0.3 ms maximum, 5µs min. (full scale range)
All Channel Update Rate	10ms
Max. Continuous Overload	Outputs open circuit protected
Field to Logic Side Isolation	1800VAC applied for 1 second (100% tested)
Type of Output Protection	Electronically limited to 20mA or less
Output Signal at Power Up and Power Down	4mA
External VDC Power Required	145mA
Base Power Required (24VDC)	20mA
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	2.9 oz (82g)

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

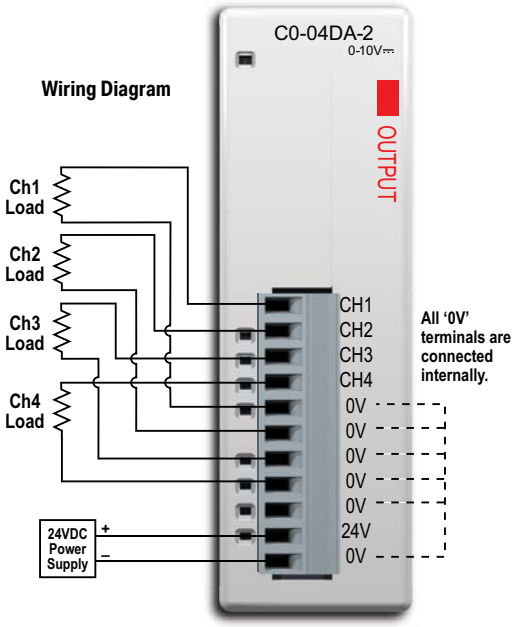
11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

ZL-RTB20 20-pin feed-through connector module

C0-04DA-2 – 4-Channel Analog Voltage Output Module

4-channel analog voltage output module, 12-bit resolution, range: 0–10 V. External 24VDC power required, removable terminal block included.

Wiring Diagram



NOTE: *When using this module you must also use CLICK programming software and PLC firmware version V1.40 or later.*

Output Specifications	
Outputs per Module	4
Output Range	0–10 V
Resolution	12-bit, 2.44 mV per count
Output Type	Voltage sourcing at 10mA max. (One common)
Output Value in Program Mode	Determined by PLC
Output Value in Fault Mode	0 V
Output Impedance	0.2 Ω typical
Load Impedance	>1000Ω
Maximum Capacitive Load	0.01 uF maximum
Allowed Load Type	Grounded
Maximum Inaccuracy	0.5% of range
Max. Full Scale Calibration Error (Not including Offset)	±0.2% of range maximum voltage
Max. Offset Calibration Error	±0.2% of range maximum
Accuracy vs. Temperature	±75 PPM/°C maximum full scale calibration change (±0.0025% of range/°C)
Max. Crosstalk at DC, 50/60 Hz	-72 dB, 1 LSB
Linearity Error (End to End)	±4 LSB max., (±0.1% of full scale); monotonic with no missing codes
Output Stability and Repeatability	±2% LSB after 10 minute warmup period typical
Output Ripple	0.1% of full scale
Output Settling Time	0.3 ms maximum, 5 µs minimum (full scale range)
All Channel Update Rate	10ms
Max. Continuous Overload	Outputs current limited to 40mA typical; continuous overloads on multiple outputs can damage module.
Field to Logic Side Isolation	1800VAC applied for 1 second (100% tested)
Type of Output Protection	0.1 µF transient suppressor
Output Signal at Power Up and Power Down	0 V
External 24VDC Power Required	85mA
Base Power Required (24VDC)	20mA
Terminal Block Replacement	AutomationDirect p/n C0-8TB
Weight	2.9 oz (82g)

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

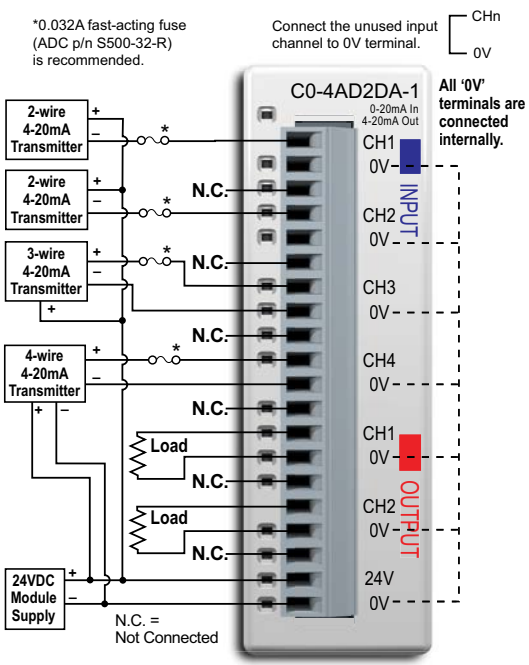
11-pin connector cable
ZL-C0-CBL11 (0.5 m length)
ZL-C0-CBL11-1 (1.0 m length)
ZL-C0-CBL11-2 (2.0 m length)

ZL-RTB20 20-pin feed-through connector module

C0-4AD2DA-1 – 4-Channel Analog Current Input and 2-Channel Analog Current Output Module

4-channel analog current sinking input (13-bit resolution) and 2-channel analog current sourcing output (12-bit resolution) module, range: 0–20 mA (inputs), 4–20 mA (outputs). External 24VDC power required, removable terminal block included.

Wiring Diagram



NOTE: When using this module you must also use CLICK programming software and PLC firmware version V1.40 or later.

General Specifications	
Field to Logic Side Isolation	1800VAC for 1 sec.
External 24VDC Power Required	75mA
Bus Power Required (24VDC)	25mA
Recommended Fuse (External)	AutomationDirect p/n S500-32-R (0.032 A fuse)
Terminal Block Replacement	AutomationDirect p/n C0-16TB
Weight	3.1 oz (86g)

Input Specifications	
Inputs per Module	4
Input Range	0-20 mA (sink)
Resolution	13-bit, 2.44 uA per count
Input Type	Single ended (one common)
Maximum Continuous Overload	±44 mA
Input Impedance	124Ω, 0.5 W current input
Filter Characteristics	Low pass, -3 dB at 400 Hz
PLC Data Format	13-bit unsigned Integer, range is 0-8191
Sample Duration Time	5 ms
All Channel Update Rate	20 ms (input plus output maximum time)
Open Circuit Detection Time	Zero reading within 20 ms
Conversion Method	Successive approximation
Accuracy vs. Temperature	±75 PPM/°C maximum
Maximum Inaccuracy	0.5% of range (including temperature changes)
Linearity Error (End to End)	±3 count maximum, monotonic with no missing codes
Input Stability and Repeatability	±2 count maximum
Full Scale Calibration Error (Including Offset)	±8 count maximum
Offset Calibration Error	±8 count maximum
Maximum Crosstalk at DC, 50/60 Hz	±2 count maximum

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20 20-pin feed-through connector module

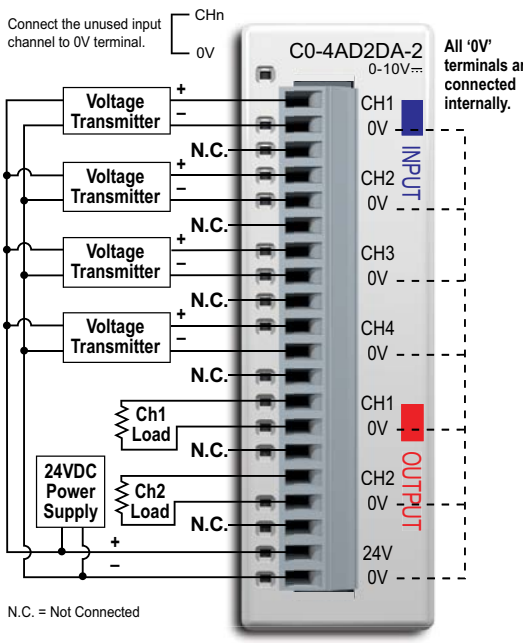
C0-4AD2DA-1 – 4-Channel Analog Current Input and 2-Channel Analog Current Output Module (continued)

Output Specifications	
Outputs per Module	2
Output Range	4–20 mA (source)
Resolution	12-bit, 3.9 uA per count
Output Type	Current sourcing at 20mA max. (One common)
PLC Data Format	12-bit unsigned integer, 0-4095 counts
Output Value in Fault Mode	Less than 4mA
Load Impedance	0–600 Ω at 24VDC; minimum load: 0Ω 32° to 113°F (0° to 45°C); 125Ω 113° to 131°F (45° to 55°C) ambient temp.
Maximum Inductive Load	1mH
Allowed Load Type	Grounded
Maximum Inaccuracy	±1% of range
Max. Full Scale Calibration Error (Including Offset)	±0.2% of range maximum
Max. Offset Calibration Error	±0.2% of range maximum
Accuracy vs. Temperature	±50 PPM/°C maximum full scale calibration change (±0.005% of range/°C)
Max. Crosstalk at DC, 50/60 Hz	-72 dB, 1 LSB
Linearity Error (End to End)	±4 LSB maximum, (±0.1% of full scale), monotonic with no missing codes
Output Stability and Repeatability	±2% LSB after 10 minute warmup period typical
Output Ripple	±0.1% of full scale
Output Settling Time	0.2 ms maximum, 5µs min. (full scale range)
All Channel Update Rate	20ms
Max. Continuous Overload	Outputs open circuit protected
Type of Output Protection	Electronically limited to 20mA or less
Output Signal at Power Up or Power Down	4mA

C0-4AD2DA-2 – 4-Channel Analog Voltage Input and 2-Channel Analog Voltage Output Module

4-channel analog voltage input (13-bit resolution) and 2-channel analog voltage output (12-bit resolution) module, range: 0-10V. External 24VDC power required, removable terminal block included.

Wiring Diagram



NOTE: *When using this module you must also use CLICK programming software and PLC firmware version V1.40 or later.*

General Specifications	
Field to Logic Side Isolation	1800VAC for 1 sec.
External 24VDC Power Required	65mA
Base Power Required (24VDC)	20mA
Terminal Block Replacement	AutomationDirect p/n C0-16TB
Weight	3.1 oz (86g)

Input Specifications	
Inputs per Module	4
Input Range	0–10 V
Resolution	13-bit, 1.22 mV per count
Input Type	Single ended (one common)
Maximum Continuous Overload	±100VDC
Input Impedance	>150kΩ
Filter Characteristics	Low pass, -3dB at 500Hz
Sample Duration Time	5ms
All Channel Update Rate	20ms
Open Circuit Detection Time	Zero reading within 100ms
Conversion Method	Successive approximation
Accuracy vs. Temperature	±75 PPM/°C maximum
Maximum Inaccuracy	0.5% of range (including temperature changes)
Linearity Error (End to End)	±3 count maximum, monotonic with no missing codes
Input Stability and Repeatability	±2 count maximum
Full Scale Calibration Error (including Offset)	±8 count maximum
Offset Calibration Error	±8 count maximum
Maximum Crosstalk at DC, 50/60 Hz	±2 count maximum

***ZIP*Link Pre-Wired PLC Connection Cables and Modules for CLICK PLC**

20-pin connector cable
ZL-C0-CBL20 (0.5 m length)
ZL-C0-CBL20-1 (1.0 m length)
ZL-C0-CBL20-2 (2.0 m length)

ZL-RTB20 20-pin feed-through connector module

C0-4AD2DA-2 – 4-Channel Analog Voltage Input and 2-Channel Analog Voltage Output Module (continued)

Output Specifications	
Outputs per Module	2
Output Range	0–10 V
Resolution	12-bit, 2.44 mV per count
Output Type	Voltage sourcing at 10mA max. (One common)
Output Value in Program Mode	Determined by PLC
Output Value in Fault Mode	0V
Output Impedance	0.2 Ω typical
Load Impedance	>1000Ω
Maximum Capacitive Load	0.01 µF maximum
Allowed Load Type	Grounded
Maximum Inaccuracy	1% of range
Max. Full Scale Calibration Error (Not including Offset)	±0.2% of range maximum voltage
Max. Offset Calibration Error	±0.2% of range maximum
Accuracy vs. Temperature	±75 PPM/°C maximum full scale calibration change (±0.0025% of range/°C)
Max. Crosstalk at DC, 50/60 Hz	-72dB, 1 LSB
Linearity Error (End to End)	±4 LSB maximum, (±0.1% of full scale); monotonic with no missing codes
Output Stability and Repeatability	±2% LSB after 10 minute warmup period typical
Output Ripple	0.5% of full scale
Output Settling Time	0.3 ms maximum, 5µs minimum (full scale range)
All Channel Update Rate	20ms
Max. Continuous Overload	Outputs current limited to 40mA typical; continuous overloads on multiple outputs can damage module.
Type of Output Protection	0.1 µF transient suppressor
Output Signal at Power Up or Power Down	0V

Power Supply Specifications

C0-00AC Power Supply

Limited auxiliary AC power supply allows you to power the CLICK PLC with 100-240 VAC supply power. The 0.5 A DC power supply is capable of controlling the PLC plus a limited configuration based on the power budget of each I/O module. The C0-00AC is a low-cost solution for applications requiring only minimal I/O and power consumption. This power supply will not support a fully-populated CLICK PLC system with all possible I/O module combinations.

C0-00AC Power Supply Specification	
Input Voltage Range	85–264 VAC
Input Frequency	47–63 Hz.
Input Current (typical)	0.3 A @ 100 VAC, 0.2 A @ 200VAC
Inrush Current	30A
Output Voltage Range	23–25 VDC
Output Current	0.5 A
Over Current Protection	@ 0.65 A (automatic recovery)
Weight	5.3 oz (150g)

C0-01AC Power Supply

No-limit auxiliary AC power supply allows you to power the CLICK PLC with 100-240 VAC supply power. The 1.3 A DC power supply is capable of supporting a fully-populated CLICK PLC system with all possible I/O module combinations with no concerns of exceeding the power budget.

C0-01AC Power Supply Specification	
Input Voltage Range	85–264 VAC
Input Frequency	47–63 Hz.
Input Current (typical)	0.9 A @ 100VAC, 0.6 A @ 200VAC
Inrush Current	30A
Output Voltage Range	23–25 VDC
Output Current	1.3 A
Over Current Protection	@ 1.6 A (automatic recovery)
Weight	6.0 oz (170g)

PSP24-DC12-1 DC-DC Converter

With this DC-DC converter you can operate the CLICK PLC with 12VDC input power.

PSP24-DC12-1 DC-DC Converter Specifications	
Input Voltage Range	9.5–18 VDC
Input Power (no load)	1.0 W max.
Startup Voltage	8.4 VDC
Undervoltage Shutdown	7.6 VDC
Output Voltage Range	24–28 VDC (adjustable)
Output Current	1.0 A
Short Circuit Protection	Current limited at 110% typical
Weight	7.5 oz (213g)

Accessories

C0-USER-M – CLICK PLC Hardware Users Manual

Manual covers all CLICK PLC & I/O Module installation & wiring, specifications, error codes & trouble shooting guide. Sold separately from hardware.

The CLICK PLC Hardware User Manual can be downloaded free at the AutomationDirect Web site or purchased from the AutomationDirect online Web store, **www.automationdirect.com**

C0-PGMSW – CLICK PLC Programming Software USB

CLICK PLC programming software Ladder Logic Editor for Windows PCs, includes the manual as a pdf file. Free download available from AutomationDirect online Web store: www.automationdirect.com. Alternatively the programming software USB may be purchased and shipped from the AutomationDirect online Web store: www.automationdirect.com

EA-MG-PGM-CBL – PC to Panel Programming Cable Assembly for C-more Micro-Graphic Panels and/or PC to CLICK PLCs.

6-ft. cable assembly to connect personal computer to any C-more Micro-Graphic panel or CLICK PLC for setup and programming. (Note: This cable assembly uses the PC's USB port and converts the signals to serial transmissions. The USB port supplies 5VDC to the Micro-Graphic panel for configuration operations). Assembly includes standard USB A-type connector to B-type connector cable, custom converter, and an RS232C cable with RJ12 modular connector on each end.

NOTE: *If your PC has a USB port but does not have a serial port, you must use programming cable EA-MG-PGM-CBL.*

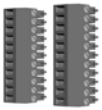
D2-DSCBL – PC Programming Cable for CLICK and *Direct*LOGIC PLCs

12ft (3.66 m) RS232 shielded PC programming cable for CLICK, DL05, DL06, DL105, DL205, D3-350, and D4-450 CPUs. 9-pin D-shell female connector to an RJ12 6P6C connector.

Cat5e – PC Programming Ethernet Cable for CLICK PLCs

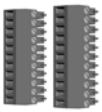
3ft–50ft Cat5e STP Ethernet Patch Cable for PC programming of CLICK PLCs; RJ45 connector. Straight or Cross-over cable can be used.

Accessories (cont'd)



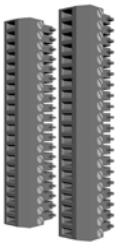
C0-8TB – Spare 8 Point I/O Terminal Block

Replacement terminal block for the 8 point I/O modules. Sold in packs of 2.



C0-8TB-1 – Spare 8 Point I/O Terminal Block

Replacement terminal block for the 8 point relay I/O modules. Sold in packs of 2.



C0-16TB – Spare 16 Point I/O Terminal Block

Replacement terminal block for the 16 point I/O modules & PLC built-in I/O. Sold in packs of 2.

C0-3TB - Spare 3-Pole Terminal Block

Replacement 3-pole terminal block for the 3-wire, RS485 communications port on the CLICK Standard and Analog PLCs. Sold in packs of 2.

C0-4TB – Spare 24VDC Power Terminal Block

Replacement terminal block for the 24VDC supply power to the PLC. Sold in packs of 2.

D2-BAT-1 – Battery

Replacement battery for Standard, Analog, and Ethernet PLC units.

***ZIP*Link Wiring Systems**

C-more and C-more Micro-Graphic Operator Interfaces

DN-WS – Wire Stripper

TW-SD-MSL-2 – Insulated Slotted Screwdriver 0.4 x 2.5 x 80 mm

DN-EB35MN – DINnectors End Bracket