

CLICK Stackable I/O Module Specifications

CO-04RTD \$165.00

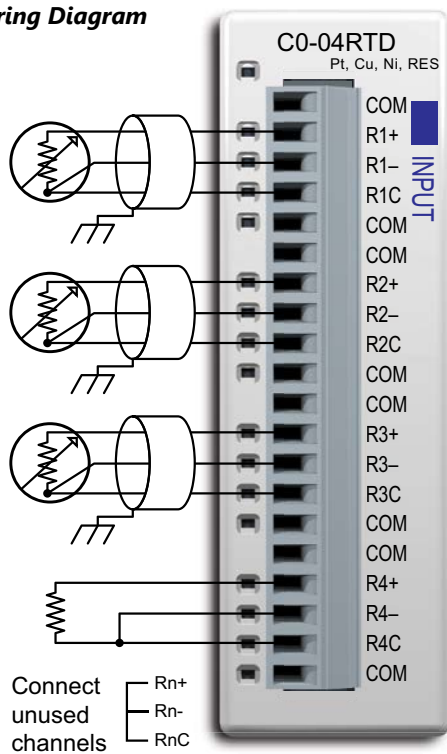
4-Channel RTD Input Module

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 (replacement AutomationDirect p/n [C0-16TB](#)).



NOTE: The [C0-04RTD](#) module cannot be used with thermistors.

Wiring Diagram



These COM terminals are isolated.



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



NOTE: When this module is used in a CLICK PLC system, it may take up to 24 seconds for initialization after power-up (see the table below). During this time period, the RUN LED on the PLC Unit blinks to indicate the initialization process.

CO-04RTD 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 |

| Input Specifications | |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inputs per Module | 4 |
| Common Mode Range | ±2.5 V |
| Common Mode Rejection | 100dB at DC and 100 dB at 50/60Hz |
| 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) | 210 μA |
| 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 ±1°C 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 |

* 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.

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] |

Not Compatible with ZIPLink Pre-Wired PLC Connection Cables and Modules.



CLICK Stackable I/O Module Specifications

General Specifications For All CLICK Stackable I/O Modules

These general specifications apply to all CLICK Stackable I/O Modules. Please refer to the appropriate I/O temperature derating charts under the PLC (CLICK PLC with built-in I/O), Option Slot module (CLICK PLUS only), and Stackable I/O module specification to determine best operating conditions based on the ambient temperature of your particular application.



NOTE: These modules are available to use with CLICK or CLICK PLUS systems.

| General Specifications | |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature | Analog, 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) |
| Environmental Air | No corrosive gases. Environmental pollution level is 2 (UL840) |
| Vibration | MIL STD 810C, Method 514.2, EC60068-2-27, 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) <Local Test> Impulse noise 1µs, 1000V RFI: No interference measured at 150 and 450 MHz (5w/15cm) |
| Emissions | EN55011:1998 Class A; EN61000-6-4:2007+A1:2011 |
| Agency Approvals | UL508, UL61010-2-201 (File No. E157382, E316037); CE (EN61131-2); CUL Canadian C22.2 |
| Other | RoHS 2011/65/EU Amendment (EU)2015/863 |

Power Supplies

Power Supplies

The CLICK PLC family offers two 24VDC power supplies. They are identical except for the output current.

It is not mandatory to use one of these CLICK power supplies for the CLICK/CLICK PLUS PLC system. You can use any other 24VDC power supply that AutomationDirect.com offers, including the PSP24-DC12-1 12 to 24 VDC converter shown below.

CO-00AC Power Supply

Limited auxiliary AC power supply allows you to power the 24VDC CLICK C0 and C2 series PLCs 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 CO-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.

CO-01AC Power Supply

Expanded auxiliary AC power supply allows you to power the 24VDC CLICK C0 and C2 series PLCs 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 for exceeding the power budget.

PSP24-DC12-1 DC-DC Converter

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

CO-00AC



CO-01AC



| CLICK 24VDC Power Supply Ratings | | |
|----------------------------------|----------------|---------|
| Part Number | Output Current | Price |
| CO-00AC | 0.5 A | \$32.50 |
| CO-01AC | 1.3 A | \$44.50 |

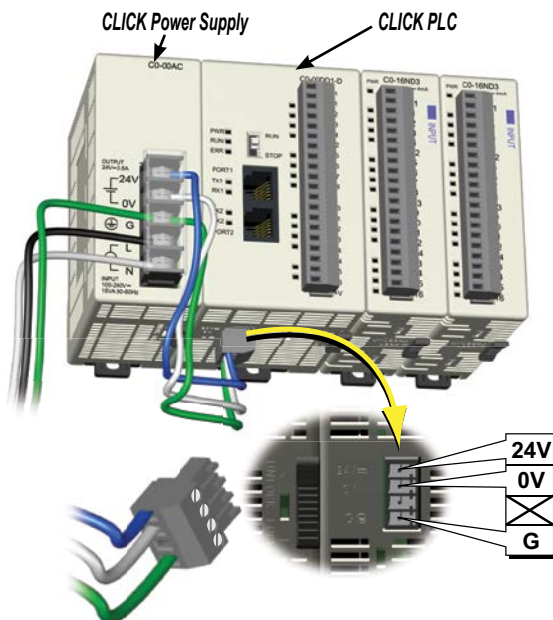
| CO-00AC Power Supply Input Specifications | | |
|-------------------------------------------|-----------------------------------|-----------------------------------|
| Part Number | CO-00AC | CO-01AC |
| Input Voltage Range | 85–264 VAC | |
| Input Frequency | 47–63 Hz | |
| Input Current (typical) | 0.3 A @ 100VAC, 0.2 A @ 200VAC | 0.9 A @ 100VAC, 0.6 A @ 200VAC |
| Inrush Current | 30A | |
| Efficiency | 80% typical | |

| CO-00AC Power Supply Output Specs | | |
|-----------------------------------|------------------------------------|---------------------------------|
| Part Number | CO-00AC | CO-01AC |
| Output Voltage Range | 23–25 VDC | |
| Output Current | 0.5 A | 1.3 A |
| Ripple | 200mV p-p max (0–55°C) | |
| Ripple Noise | 300mV p-p max (0–55°C) | |
| Over Current Protection | @ 0.65 A (automatic recovery) | @ 1.6 A (automatic recovery) |
| Over Voltage Protection | @ 27.6 V (clamped by Zener diode) | |
| Start-up Time | 1000ms max at rated input and load | |
| Hold-up Time | 10ms minimum at 85VAC, I=max | |

| CO-00AC Power Supply General Specs | | |
|------------------------------------|------------------------------------------------------------------------|---------------|
| Part Number | CO-00AC | CO-01AC |
| Ambient Operating Temperature | 32–131°F [0–55°C] | |
| Storage Temperature | –4–158°F [–20–70°C] | |
| Humidity | 30–95%, non-condensing | |
| Vibration Resistance | JIS C60068-2-6, sine wave vibration | |
| Shock Resistance | JIS C60068-2-27 | |
| Voltage Withstand | 1500VAC, 5mA cutoff current | |
| Input-Output | 1500VAC, 5mA cutoff current | |
| Input-Ground | 500VAC, 5mA cutoff current | |
| Output-Ground | 500VAC, 5mA cutoff current | |
| Insulation Resistance | 10MΩ minimum, 500VDC | |
| Input-Output | 10MΩ minimum, 500VDC | |
| Input-Ground | 5MΩ minimum, 500VDC | |
| Output-Ground | 5MΩ minimum, 500VDC | |
| Noise Immunity | FCC Class A, EN55022:1998 Class A | |
| Input/Output Interface | 5P terminal block, Fujicon UF2362AX series or equivalent | |
| Agency Approvals | UL508, UL1604, EN61010-1 (IEC 1010-1), CAN/CSA E60079-15:02, JIS C0025 | |
| Weight | 5.3 oz [150g] | 6.0 oz [170g] |

PSP24-DC12-1 DC-DC Converter Specs

| | |
|--------------------------|---------------------------------|
| 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] |



24VDC power is supplied to the PLC unit through wiring connected from the power supply output to the 4-pin 24VDC input connector located on the bottom of the PLC unit.



PSP24-DC12-1

Power Budgeting

Power Budgeting

There are two areas to be considered when determining the power required to operate a CLICK PLC system. The first area is the power required by the PLC, along with the internal logic side power that the CPU 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 communications 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.

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

Refer to the Power Budgeting example shown on the following page. The table shows required current for a CLICK PLUS PLC, two I/O modules, and a **C-more** Micro. Use the total amperage values to select the properly sized power supply.



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



Other 24VDC Power Supply
Example: **PSP24-060S**

Power Consumption for CLICK PLC Units

Power Consumption for CLICK PLUS PLC 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 | | |
| C0-00AR-D | | |
| Standard PLC Units | | |
| C0-01DD1-D | 140 | 60 |
| C0-01DD2-D | 140 | 0 |
| C0-01DR-D | | |
| C0-01AR-D | | |
| Analog PLC Units | | |
| C0-02DD1-D | 140 | 60 |
| C0-02DD2-D | 140 | 0 |
| C0-02DR-D | | |
| Ethernet Basic PLC Units | | |
| C0-10DD1E-D | 120 | 60 |
| C0-10DD2E-D | 120 | 0 |
| C0-10DRE-D | | |
| C0-10ARE-D | | |
| Ethernet Standard PLC Units | | |
| C0-11DD1E-D | 140 | 60 |
| C0-11DD2E-D | 140 | 0 |
| C0-11DRE-D | | |
| C0-11ARE-D | | |

| PLC Current Consumption (mA) | | |
|----------------------------------|---------------------------------|-----------------------------|
| Part Number | Power Budget 24VDC (logic side) | External 24VDC (field side) |
| Ethernet Analog PLC Units | | |
| C0-12DD1E-D | 140 | 60 |
| C0-12DD2E-D | | |
| C0-12DRE-D | 160 | 0 |
| C0-12ARE-D | | |
| C0-12DD1E-1-D | 140 | 60 |
| C0-12DD2E-1-D | | |
| C0-12DRE-1-D | 160 | 0 |
| C0-12ARE-1-D | | |
| C0-12DD1E-2-D | 140 | 60 |
| C0-12DD2E-2-D | | |
| C0-12DRE-2-D | 160 | 0 |
| C0-12ARE-2-D | | |

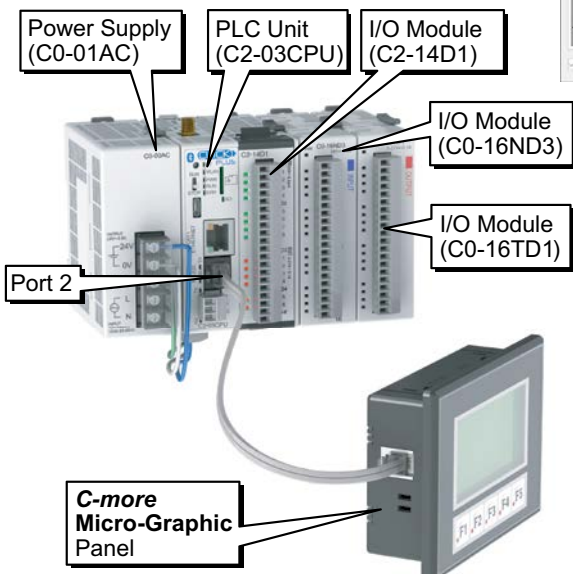
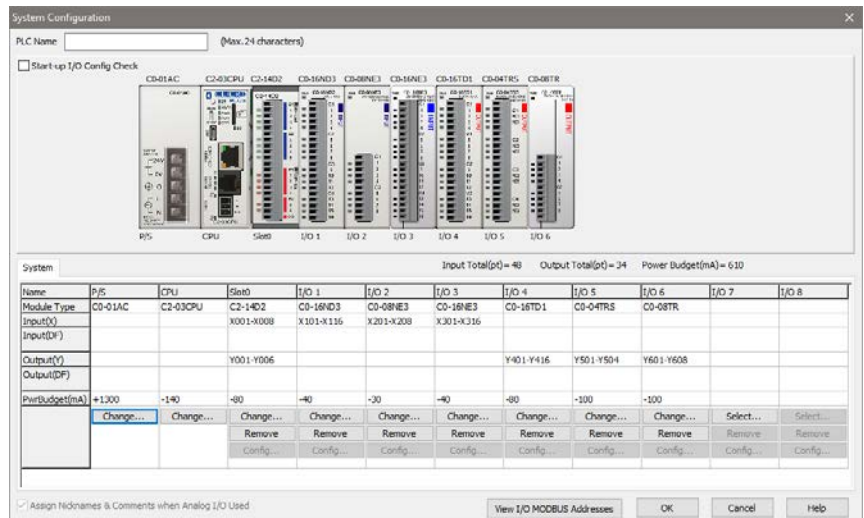
| CLICK PLUS PLC and Option Slot Modules Current Consumption (mA) | | |
|-----------------------------------------------------------------|---------------------------------|-----------------------------|
| Part Number | Power Budget 24VDC (logic side) | External 24VDC (field side) |
| CLICK PLUS PLCs | | |
| C2-01CPU | 110 | 0 |
| C2-02CPU | 105 | 0 |
| C2-03CPU | 130 | 0 |
| Option Slot I/O Modules | | |
| C2-14D1 | 50 | 60 |
| C2-14D2 | 50 | 0 |
| C2-14DR | 75 | 0 |
| C2-14AR | 75 | 0 |
| C2-08D1-4VC | 80 | 60 |
| C2-08D2-4VC | 80 | 0 |
| C2-08DR-4VC | 100 | 0 |
| C2-08AR-4VC | 100 | 0 |
| C2-08D1-6C | 80 | 60 |
| C2-08D2-6C | 80 | 0 |
| C2-08DR-6C | 100 | 0 |
| C2-08AR-6C | 100 | 0 |
| C2-08D1-6V | 80 | 60 |
| C2-08D2-6V | 80 | 0 |
| C2-08DR-6V | 100 | 0 |
| C2-08AR-6V | 100 | 0 |

Power Budgeting

Power Consumption for CLICK Stackable I/O Modules

| I/O Module Current Consumption (mA) | | |
|-------------------------------------|---------------------------------|-----------------------------|
| Part Number | Power Budget 24VDC (logic side) | External 24VDC (field side) |
| Discrete Input Modules | | |
| C0-08SIM | 50 | 0 |
| 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 |

| I/O Module Current Consumption (continued) (mA) | | |
|-------------------------------------------------|---------------------------------|-----------------------------|
| Part Number | Power Budget 24VDC (logic side) | External 24VDC (field side) |
| Discrete Combo I/O Modules | | |
| C0-16CDD1 | 80 | 50 |
| C0-16CDD2 | 80 | 0 |
| C0-08CDR | 80 | 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 | 90 | 0 |



Only monochrome models can be powered from port 2.

Power Budgeting Example

| Current Consumption (mA) Example | | |
|----------------------------------|---------------------------------|-----------------------------|
| Part Number | Power Budget 24VDC (logic side) | External 24VDC (field side) |
| C2-03CPU | 130 | 0 |
| C2-14D1 | 50 | 60 |
| C0-16ND3 | 40 | 0 |
| C0-16TD1 | 80 | 100 |
| C-more Micro | 90 | 0 |
| Total: | 390 | 160 * |

* Add in calculated load of connected I/O devices.

CLICK Specifications

CLICK PLC Hardware/Software Compatibility

CLICK PLCs require a minimum software version of v2.50 for the PID function. The table below shows the most recent software and hardware versions required for the High-Speed input operation capability to be accessible.

| CLICK PLC Features Software Compatibility | | | | | | | |
|-------------------------------------------|------------------------------------------------------------|--------------------------------|-------------------|-------------|-------|-------|-------|
| CPU Type | Part Number | Minimum CLICK Software Version | | | | | |
| | | Hardware | High-Speed Inputs | EtherNet/IP | PID | DHCP | |
| 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 CPUs | Ethernet CPUs require v2.40 for EtherNet/IP communications | | | | | | |
| Ethernet Basic | C0-10DD1E-D | v2.00 | v2.30 | v2.40 | v2.50 | v3.00 | |
| | C0-10DD2E-D | | | | | | |
| | C0-10DRE-D | | N/A | | | | |
| | C0-10ARE-D | | | | | | |
| Ethernet Standard | C0-11DD1E-D | v2.00 | v2.30 | v2.40 | v2.50 | v3.00 | |
| | C0-11DD2E-D | | | | | | |
| | C0-11DRE-D | | N/A | | | | |
| | C0-11ARE-D | | | | | | |
| Ethernet Analog | C0-12DD1E-D | v2.20 | v2.30 | v2.40 | v2.50 | v3.00 | |
| | C0-12DD2E-D | | | | | | |
| | C0-12DRE-D | | N/A | | | | |
| | C0-12ARE-D | | | | | | |
| | C0-12DD1E-1-D | | v2.30 | | | | |
| | C0-12DD2E-1-D | | | | | | |
| | C0-12DRE-1-D | | N/A | | | | |
| | C0-12ARE-1-D | | | | | | |
| | C0-12DD1E-2-D | | v2.30 | | | | |
| | C0-12DD2E-2-D | | | | | | |
| | C0-12DRE-2-D | | N/A | | | | |
| | C0-12ARE-2-D | | | | | | |
| I/O Modules | C0-08NE3 | v1.20 | N/A | N/A | N/A | N/A | |
| | C0-16NE3 | | | | | | |
| | C0-04AD-1 | v1.40 | | | | | |
| | C0-04AD-2 | | | | | | |
| | C0-04DA-1 | | | | | | |
| | C0-04DA-2 | | | | | | |
| | C0-4AD2DA-1 | | | | | | |
| | C0-4AD2DA-2 | | | | | | |
| | C0-04RTD | | | | | | |
| | C0-04THM | | | | | | |
| | C0-08CDR | | | | | | |
| | C0-16CDD1 | | | | | | |
| | C0-16CDD2 | | | | | | |
| | Other modules | | | | | | v1.00 |