## DL105 I/O Specifications

## F1-130DR

## Wiring diagram and specifications

## Power requirements

Voltage range..................................94-240 VAC (30VA)

## DC input specifications

Number of input points........................... 10 (sink/source)
Number of commons...................................... 3 (isolated)

Input voltage range.............................. $\mathrm{X} 0-\mathrm{X} 3$ ):10-26.4 VDC .(X4-X11):10-26.4 VDC or .21.6-26.4 VAC

|  | 21.6-26.4 VAC |
| :---: | :---: |
| Input impedance. | 2.8 kq @ 12-24 VDC |
| ON current/voltage level. | ....>3mA / > 9VDC |
| OFF current/voltage level | < $0.5 \mathrm{~mA} /<2 \mathrm{VDC}$ |
| OFF to ON response. | .X0-X3: $50 \mu$ |
|  | . $\mathrm{X} 4-\mathrm{X11:} 2-8 \mathrm{~ms}$ |
| ON to OFF response | .X0-X3: $50 \mu \mathrm{~s}$ |
|  | X4-X11: 2-8 ms |
| Fuses. | None |

## Relay output specifications


Maximum inrush current.....................................12A
Minimum load................................................ 10 mA
Minimum OFF resistance......................100Mq @ 500VDC
OFF to ON response........................................... 15 ms
ON to OFF response............................................... 5 ms
Fuses.............................None (external recommended)

## Auxiliary 24 VDC Output

| Voltage range.. | 21.6-26.4 VDC |
| :---: | :---: |
| Output. | . $500 \mathrm{~mA} \mathrm{max.}$, |
| Ripple. | ..less than 200 mV p-p |


| Typical Relay Life (Operations) <br> at Room Temperature |  |  |  |
| :--- | :--- | :--- | :--- |
| Voltage <br> of Load | Load Current |  |  |
|  | 10 M | 600 K | 300 K |
| 24VDC Solenoid | - | 150 K | 75 K |
| 110VAC Resistive | - | 600 K | 300 K |
| 110VAC Solenoid | - | 500 K | 200 K |
| 220VAC Resistive | - | 300 K | 150 K |
| 220VAC Solenoid | - | 250 K | 100 K |



Equivalent Circuit High-Speed Inputs (X0-X3)


Equivalent Circuit Standard Inputs (X4-X11)


Equivalent Output Circuit


## Features and Specifications

The DL105 micro PLCs contain the CPU, power supply and I/O all in the same housing. If you examine the CPU

## Review the specs

Make sure these features can satisfy the requirements of your application. Since these units are completely selfcontained, you cannot expand the system or replace the CPU as you would in a modular system.

## System capacity

System capacity is the ability to accommodate a variety of applications.
For ladder memory, most Boolean instructions require one word. Some other instructions, such as timers, counters, etc., require two or more words. Our V-memory words are useful for data storage, etc.

## Performance

The performance is simply the scan time, which is the amount of time required to read the inputs, solve the RLL program and update the outputs.

## Instructions and diagnostics

Make sure the unit offers the instructions you need.

## Communications

All DL105 units offer one RS-232 port, capable of 9600 baud.

## Specialty features

With the DC input and/or DC output versions, we also offer several highspeed I/O features.

Specifications table, you'll see that we included many features found in our modular CPUs.

## AC-powered units

F1-130DR
10DC inputs, 4 inputs are filtered inputs, can also be configured as a single 5 kHz high-speed counter, interrupt input, or pulse catch input
8 relay outputs, 7A/point
Programming
Handheld programmer..D2-HPP.
DirectSOFT Programming for Windows
PC-DSOFT6.

|  |  |
| :---: | :---: |
| PC-R60-U (upgrade). |  |

Note: Either high-speed input or pulse output can be used, but not in the same configuration.


## DL105 Hardware Features

## CPU Status Indicators

| ..ON. | CPU is in RUN mode |
| :---: | :---: |
| OFF | U is in PROGRAM mode |
| PWR ......ON.. | ..CPU power good |
| OFF | .CPU power failure |
| CPU......ON | .CPU internal diagnostics |
|  | has detected an error |
|  | ...CPU is 0 |

## Mode Control

The DL105 units do not have mode switches like many of our modular CPUs. You can set the unit (using special V-memory locations) so that it will power up in RUN mode.

## Communications Port

| Protocol. | ..K-sequence slave |
| :---: | :---: |
| Devices. | ..Can connect with HPP, |
|  | DirectSOFT, DV-1000 |
|  | .C-More Panels |
| Specs. | .6P6C RJ12 connector |
|  | RS-232-C, 9,600 baud |
|  | .Odd parity | ..Fixed station address (1), .. 8 data bits (one start, ..one stop bit),

.Asynchronous, half-duplex, DTE

## RJ12 Connector Port 1 Pinout

|  |  | Signal |
| :---: | :---: | :---: |
| 1. |  | OV |
| 2. |  | 5 V |
| 3. | RS-232 | Data in |
| 4. | RS-232 | Data out |
| 5. |  | 5 V |
|  |  | OV |

## Fixed EEPROM memory

The DL105 units offer built-in EEPROM memory.

NOTE: Terminals accept 16-24 AWG. For 16 AWG, use type TFFN or Type MTW. Other types of 16 AWG may be acceptable, but it really depends on the thickness of the wire insulation.


## Dimensions and Installation

It is important to understand the installation requirements for your DL105 system. This will help ensure that the DL105 products operate within their environmental and electrical limits.

## Plan for safety

This catalog should never be used as a replacement for the user manual. The user manual, D1-USER-M, contains important safety information that must be followed. The system installation should comply with all appropriate electrical codes and standards.

## Unit dimensions and mounting orientation

Use the following diagrams to make sure the DL105 system can be installed in your application. DL105 units must be mounted horizontally to ensure proper airflow for cooling purposes. It is important to check these dimensions against the conditions required for your application. For example, we recommend that you leave $2^{\prime \prime}$ depth for ease of access and cable clearance; however, your distance may be greater or less. Also, check the installation guidelines for the recommended cabinet clearances.

Environmental Specifications

| Storage <br> Temperature | $-4^{\circ} \mathrm{F}$ to $158^{\circ} \mathrm{F}\left(-20^{\circ} \mathrm{C}\right.$ to $\left.70^{\circ} \mathrm{C}\right)$ |
| :--- | :--- |
| Ambient <br> Operating <br> Temperature | $32^{\circ} \mathrm{F}$ to $131^{\circ} \mathrm{F}\left(0^{\circ}\right.$ to $\left.55^{\circ} \mathrm{C}\right)$ |
| Ambient <br> Humidity | $30 \%$ to $95 \%$ relative humidity <br> (non-condensing $)$ |
| Vibration <br> Resistance | MIL STD 810 C, Method 514.2 |
| Shock <br> Resistance | MIL STD810, Method 516.2 |
| Noise <br> Immunity | NEMA(ICS3-304) |
| Atmosphere | No corrosive gases |



Note: There is a minimum of $2^{\prime \prime}(50 \mathrm{~mm})$ clearance required between the panel door or any devices mounted in the panel door and the nearest DL105 component.

Dimensions and mounting


## Power Supply and Type of I/O

## Power supply options

This product family offers units that operate on 110/220 VAC and 12/24 VDC. Choosing the power supply is probably the most important consideration when specifying a DL105 system, since not all I/O combinations are offered with each power supply option. The table to the right provides the I/O choices and power supply specifications for each type unit.

## Choosing the I/O

The DL105 product family offers several different combinations of I/O points. Once you have chosen the power supply option, you need to choose the unit that offers the type of I/O points needed in your application.

## Fixed I/O

All DL105 Micro PLCs have "fixed" I/O that is updated on every scan. This means that all units have 10 inputs and 8 outputs, regardless of the actual type of points on the units ( DC in / Relay out, DC in/DC out, etc.) The DL105 micro PLC is non-expandable, so you cannot add I/O points. If you are concerned about future system expansion, check our DL06 (36 base I/O expandable to 100 total I/O), or the DL205 micro-modular product family. The DL205 also offers a wide array of features and flexible I/O arrangements with several different base sizes.

## Addresses automatically assigned

The DL105 uses automatic addressing, so for the vast majority of applications, there is no setup required. We use octal addressing for many of our products, which means there are no 8 s or 9 s .
The first eight input points use addresses X0-X7, and the last two input points use X 10 and X 11 . If you plan on using the high-speed counting features, there is some very minimal setup required in special V-memory locations.

## AC-powered units

## Part No.

I/O Mix
F1-130DR
10 DC in


