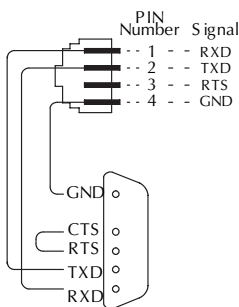
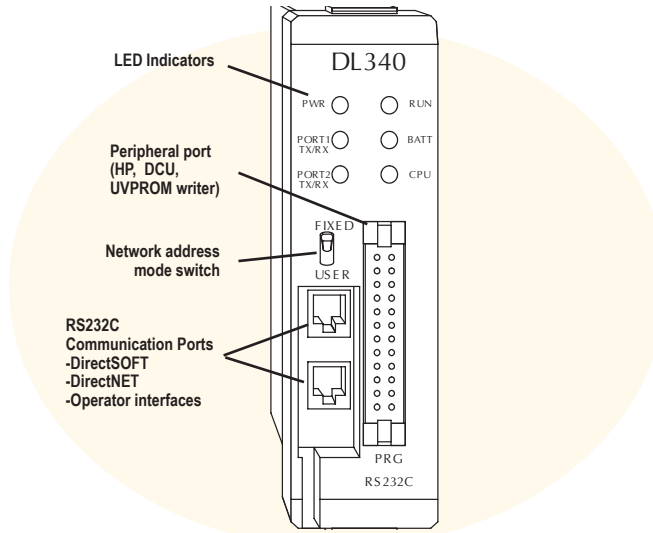


# D3-340 Key Features

## D3-340 Retired

The diagram to the right shows the various hardware features found on the D3-340 CPU.

| CPU Status Indicators |           |   |
|-----------------------|-----------|---|
| <b>RUN</b>            | ON<br>OFF | CPU is in RUN mode<br>CPU is in Program mode            |
| <b>BATT</b>           | ON<br>OFF | Memory backup voltage low<br>Memory backup voltage good |
| <b>CPU</b>            | ON<br>OFF | CPU failure<br>CPU is good                              |
| <b>PWR (Power)</b>    | ON<br>OFF | CPU power good<br>CPU power failure                     |
| <b>Port1 RX/TX</b>    | RED       | Flashing red indicates the CPU port is receiving data   |
|                       | GREEN     | Flashing green indicates the CPU port is sending data   |
| <b>Port2 RX/TX</b>    | RED       | Flashing red indicates the CPU port is receiving data   |
|                       | Green     | Flashing green indicates the CPU port is sending data   |



## EEPROM and UVPROM chips

The DL305 CPUs come with on-board RAM and a battery. If you need additional program security, you may want to use an EEPROM memory chip.

### D3-340-EE

Optional EEPROM memory for the D3-340 only. Four chips per pack. (Only one chip is required for the CPU.) No additional programming device is necessary.

### D3-D4-BAT

Spare battery (lithium 3.0 V). Also used for D4-430 and D4-454 CPUs.

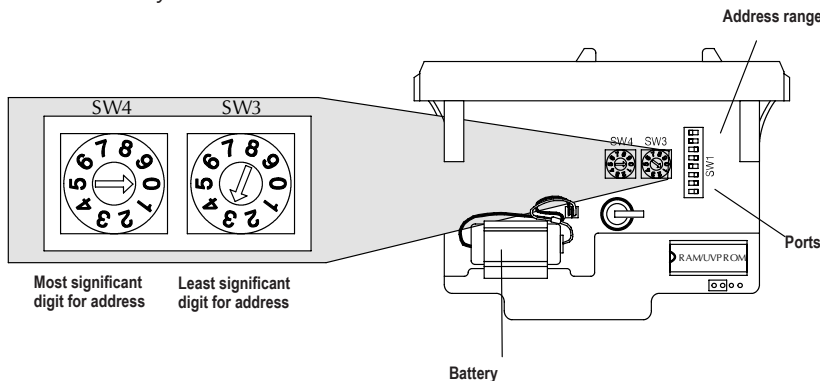
| D3-340 RS232C Communication Port Specs |  |
|--|--|
| Protocol                               | DirectNET                                      |
| <b>Connector</b>                       | RJ11(handset connector)                        |
| <b>Network address</b>                 | 01 to 90                                       |
| <b>Baud rate</b>                       | 38400, 19200, 9600, 4800, 2400, 1200, 600, 300 |
| <b>Parity-</b>                         | None or odd                                    |
| <b>Transfer mode</b>                   | HEX/ASCII<br>Half-duplex<br>Asynchronous       |
| <b>Data bits</b>                       | 8  |
| <b>Start bits</b>                      | 1  |
| <b>Stop bits</b>                       | 1  |
| <b>Turn around delay</b>               | 0 to 1980 in 20ms intervals (preset with R777) |

## Hardware switches

Below is a side view of a D3-340 CPU that shows several types of hardware switches.

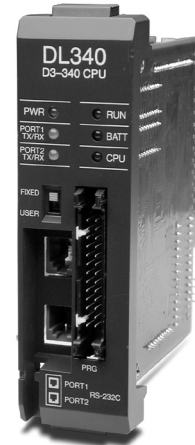
The D3-340 has a jumper switch for selecting UVPROM, EEPROM and RAM options, two rotary switches to select

network addresses and an eight-position dipswitch for selecting baud rates (300 to 38.4K baud), communication mode (Server, Client, Modbus RTU) and memory options.



# CPU Specifications

| DL305 CPU Specifications             |              |              |
|--------------------------------------|--------------|--------------|
| System Capacity                      | D3-340       | D3-350       |
| Total memory (K words)               | 3.98         | 14.8         |
| Ladder memory (K words)              | 3.7          | 7.6          |
| User data memory                     | 172 bytes    | 7.1 K words  |
| CMOS RAM                             | Yes          | No           |
| UVPRM                                | Opt.         | No           |
| EEPROM                               | Opt.         | Flash        |
| Total I/O points using:              |              |              |
| Local I/O                            | 136          | 144          |
| Local and Expansion I/O              | 184          | 368          |
| Remote I/O(1)                        | N/A          | 512          |
| I/O point density                    | 8/16         | 8/16         |
| Slots per base (CPU requires 1 slot) | 5/8/10       | 5/8/10       |
| Performance                          |              |              |
| Contact execution (boolean)          | 0.87 $\mu$ s | 0.61 $\mu$ s |
| Typical scan (1K boolean)(2)         | 4-5 ms       | 5-6 ms       |
| Programming & Diagnostics            |              |              |
| RLL ladder style                     | Yes          | Yes          |
| RLLPLUS (stage)                      | No           | Yes          |
| RunTime Editing                      | No           | Yes          |
| Supports Overrides                   | No           | Yes          |
| Variable/fixed scan                  | Variable     | Either       |
| Handheld programmer port             | Yes          | Yes          |
| Built-in RS232C ports                | 2            | 2            |
| Real-time clock/calendar             | No           | Yes          |
| Instructions                         | 63           | 129          |
| Control relays(CR)                   | 196          | 1024         |
| Shift register bits                  | 128          | Use CRs      |
| Stages (RLLPLUS only)                | N/A          | 1024         |
| Timers/counters                      | 64           | 256/128      |
| Immediate I/O                        | No           | Yes          |
| Subroutines                          | No           | Yes          |
| For/Next Loops                       | No           | Yes          |
| Timed interrupt                      | No           | Yes          |
| Integer math                         | Yes          | Yes          |
| Floating point math                  | No           | Yes          |
| PID                                  | No           | Yes          |
| Drum sequence                        | No           | Yes          |
| Bit of word                          | No           | Yes          |
| ASCII print                          | No           | Yes          |
| Data registers                       | 192          | 7168         |
| Internal diagnostics                 | Yes          | Yes          |
| Password security                    | Yes          | Multi-level  |
| Battery backup                       | Yes          | Yes          |
| Communications                       |              |              |
| Built-in ports                       | Yes          | Yes          |
| DirectNET Client                     | Yes          | Yes          |
| DirectNET Server                     | Yes          | Yes          |
| MODBUS RTU Client                    | No           | Yes          |
| MODBUS RTU Server                    | Yes          | Yes          |
| Data communications unit             | Yes          | N/A          |
| Specialty modules                    |              |              |
| Thermocouple                         | Yes          | Yes          |
| Analog Input (#channels max.)        | 128          | 368          |
| Analog output (#channels max.)       | 32           | 48           |
| High-speed counter (10KHz)           | Yes          | No           |



1. The D3-350 bottom port supports DL205 remote I/O.
2. 1K program includes contacts, coils, and scan overhead. If you compare to other products, make sure to include their scan overhead.

# Communications

## Determine your communications requirements

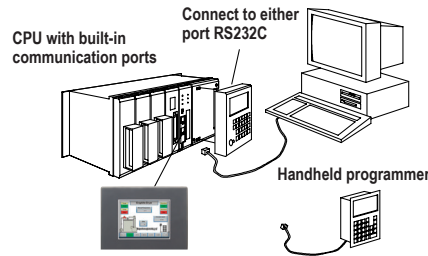
The choice of CPU can have a big impact on your communications capabilities in the DL305 family. If you are considering doing any communications, you should use the D3-340 or the D3-350 CPUs.

## Standard communications

The D3-340 and D3-350 CPUs offer two built-in RS232C communication ports. Operator interfaces and DirectSOFT can be connected to either port. On the D3-340 CPU, the handheld programmer is attached directly or with a cable to the parallel port adjacent to the two serial communication ports. On the D3-350 CPU, the handheld programmer is attached to Port 1. The handheld programmer can be operated simultaneously with the communication ports. The D3-340 baud rate and network addresses are set by hardware dipswitches and rotary switches for Port 1. Port 2 uses internal registers that can be changed with a handheld programmer or DirectSOFT. Port 1 on the D3-350 is fixed. Port 2 can be configured using the handheld programmer or DirectSOFT.

## DL305 as a server on a network

Both ports on the D3-340 and the D3-350 CPUs can serve as server ports for DirectNET. The bottom ports offer additional flexibility in that they can serve as a Server on a Modbus RTU network. The D3-350 even supports RS422, so no RS232-to-RS422 converter is needed. No programming is required in these CPUs for them to act as Server ports.



| Network Addresses |            |       |
|-------------------|------------|-------|
| Port              | Protocol   | Range |
| 1                 | Server     | 1-90  |
| 2                 | Client     | 0     |
|                   | MODBUS/RTU | 1-247 |

## DL305 as a network client

The bottom built-in communication port of the D3-340 and D3-350 CPUs can serve as a Network Client for DirectNET. Up to 90 Server stations can be addressed. The D3-350 can also serve as a MODBUS RTU Client; up to 247 Server stations can be addressed. DL405, DL305 and DL205 controllers can be used as Server stations. (Please note there are certain restrictions pertaining to valid DL205 and DL405 memory types that the D3-340 Client can read and write.)

## Custom drivers

The DL305 product family supports the DirectNET protocol. However, in some applications you may have a need to connect to a device that does not support this protocol. If so, the ASCII/BASIC modules also allow you to write your own custom communication drivers (in BASIC) to connect to special devices. These high-speed modules offer communication rates up to 115.2K baud on RS232C, RS422, and RS485. With 128K of memory, there is ample program or data storage space. (These modules are not supported by the D3-350.)

### D3-340 RS232C Communication Port Specifications

|                          |   |
|--------------------------|---|
| <b>Protocol</b>          | DirectNET   |
| <b>Connector</b>         | RJ11(handset connector)                           |
| <b>Network address</b>   | 01 to 90  |
| <b>Baud rate</b>         | 38400, 19200, 9600, 4800, 2400, 1200, 600, 300    |
| <b>Parity-</b>           | None or odd                                       |
| <b>Transfer mode</b>     | HEX/ASCII<br>Half-duplex<br>Asynchronous          |
| <b>Data bits</b>         | 8   |
| <b>Start bits</b>        | 1   |
| <b>Stop bits</b>         | 1   |
| <b>Turn around delay</b> | 0 to 1980 in 20ms intervals<br>(Preset with R777) |

