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# Communication Modules

## 1771-DB, -DMC, -DMC1, -DMC4, -DXPS, -SDN, -SN, 1785-ENET

In addition to the on-board ports available with PLC-5 processors, you have the option of providing another communication port for a PLC-5 processor by adding a communication module.

| Communication with PLC Processor | Operation | Communication Port Protocol | Product (Cat. No.) | Page |
|---|---|---|---|---|
| • Direct connection to channel 3 of a PLC-5 processor | • Process messages | • Ethernet TCP/IP | **PLC-5 Ethernet Interface Module (1785-ENET)** | 7-35 |
| • Block-transfer with PLC-5 processor | • BASIC programs<br>• C programs | • RS-232-C<br>• RS-422-A<br>• RS-485<br>• DH-485 | **PLC BASIC Module (1771-DB)** | 7-36 |
| • Block-transfer with PLC-5 processor | • Scan I/O<br>• Process messages | • DeviceNet | **DeviceNet Scanner Module (1771-SDN)** | 7-37 |
| • Block-transfer with PLC-5 processor | • Scan I/O | • Universal Remote I/O | **Sub I/O Scanner Module (1771-SN)** | — |
| **Description:** The Sub I/O scanner module provides a PLC-5 processor with an additional Universal Remote I/O channel for a maximum of 7 additional I/O racks. This allows you to expand a system by a maximum of 896 I/O that do not require block-transfer. The 1771-SN module can not block-transfer I/O data to or from a remote I/O chassis. The module's backplane current load is 1.2A. | | | | |
| • Block-transfer with PLC processor<br>• Direct connection to channel 3 of a PLC-5 processor | • BASIC programs<br>• C programs<br>• Assembly programs<br>• Real-time multi-tasking operating system (OS/9) | • RS-232-C<br>• RS-422-A<br>• RS-423-A<br>• Ethernet TCP/IP | **Control Coprocessors (1771-DMC, 1771-DMC1, 1771-DMC4, 1771-DXPS)** | 7-38 |
| • Block-transfer with PLC-5 processor | • Scan I/O | • RS-485<br>• SPI | **SPI Protocol Interface Module (1771-SPI)** | 7-39 |

# Communication Modules (Control Coprocessors)

## 1771-DMC, -DMC1, -DMC4, -DXPS



1771 Control Coprocessors are single-slot 1771 modules that can read PLC data table and status file information, process it, and write data back to the PLC processor as directed by your C, BASIC, or Assembler language program. Your programs run in the coprocessors in a real-time, multi-tasking operating system environment, independent of the PLC control logic. However, PLC programs can be used to start or stop programs in the coprocessors.

A control coprocessor can communicate directly to an enhanced PLC-5□processor (PLC-5/11, -5/20, -5/20E, -5/30, -5/40[1], -5/40E, -5/40L, -5/60[1], -5/60L -5/80, and -5/80E processors) via the PLC processor's coprocessor expansion port (channel 3A). Coprocessors communicate with other PLC processors via chassis backplane or via remote I/O link (see specifications to the right). The coprocessors can communicate to devices outside the PLC system via an asynchronous serial communication port. 1771-DMC1 and 1771-DMC4 versions also include an Ethernet port for communication with TCP/IP devices.

An *optional expander module* (1771-DXPS) provides two additional serial communication ports, a keyswitch for reinitializing the Control Coprocessor without cycling power, and a four-digit alphanumeric display that can be used for diagnostic reporting or operator prompts.

You can program a control processor with a personal computer running our *PCBridge Software* (1771-PCB) or an ASCII terminal. We recommend you use our PCBridge Software on a computer. PCBridge software includes C cross compiler, cross assembler, cross linker, C source code debugger, Kermit, Internet support, A-B interface libraries, and a text editor.

[1] PLC-5/40 and -5/60 processors series B, revision B or later have a coprocessor expansion port for direct connection to a control coprocessor.

### Ordering Information

| Control Coprocessor Product Selection | Cat. No. |
|---|---|
| Main Module - 256K bytes | 1771-DMC |
| Main Module - 1M byte with Ethernet | 1771-DMC1 |
| Main Module - 4M bytes with Ethernet | 1771-DMC4 |
| Expander - 2 ports, keyswitch, and display | 1771-DXPS |
| PCBridge Software (requires 640K bytes RAM, 2M bytes online disk storage, and DOS 4.0 or later) | 1771-PCB |

### Typical Applications

Use Control Coprocessors for applications such as:

- calculating complex math or application-specific algorithms using C and/or BASIC programs
- memory intensive production scheduling or historical data logging/tracking
- high speed search and compare of very large files or look-up tables
- protocol conversion for interfacing a PLC processor with a variety of field devices

### Specifications

Class I Div 2 Hazardous

| | |
|---|---|
| **Backplane current load** | |
| Main module | • 2.50A @ 5V dc (1771-DMC module with no Ethernet)<br>• 4.00A @ 5V dc (1771-DMC1 or -DMC4 module with Ethernet and transceiver)[1] |
| Serial expander module | 1.50A @ 5V dc |
| **Fault relay** | |
| Serial expander module | 500 mA @ 30V ac/dc (resistive) |
| **Environmental conditions** | |
| Operating temperature | 0 to 60° C (32 to 140° F) |
| Storage temperature | -40 to 85° C (-40 to 185° F) |
| Relative humidity | 5 – 95% (without condensation) |
| **Communication ports[2]** | |
| COMM0 | RS-232-C; 9-pin |
| COMM1, COMM2, and COMM3 | RS-232-C, -423, -485, and -422A compatible; 25-pin |
| Ethernet (1771-DMC1 & DMC4 only) | TCP/IP protocol using FTP®, telnet, and socket library routines; 15-pin standard AUI, INTERCHANGE server |
| **Communication rates** | |
| COMM0, COMM1, COMM2, and COMM3 | 110, 150, 300, 600, 1200, 2400, 4800, and 9600 bit/s, 19.2k bit/s , and 38.4k bit/s |
| Ethernet | 10M bit/s |
| **Battery life** | |
| Main module | 1 year |
| Processor compatibility [3] | • Enhanced PLC-5 processors: channel 3A, backplane, remote I/O<br>• Classic PLC-5 processors: backplane, remote I/O<br>• PLC-5/250 processor: remote I/O only<br>• PLC-3 processor: remote I/O only<br>• Mini-PLC-2 processor: backplane only<br>• PLC-2/20 and -2/30 processors: remote I/O only |

[1] This is an approximate value. See the *1771 Control Coprocessor User Manual* (1771-6.5.95) for calculating backplane current requirements.
[2] With the 1771-DMC module, DF1 is not available on the communication ports. However, if you add an optional 1M byte (cat. no. 1771-DRS1) or 4M bytes (cat. no. 1771-DRS4) SIMM, the communication ports will initialize with DF1 capability.
[3] We recommend one-slot addressing for all configurations.

*For more information, see the 1771 Control Coprocessor Product Data, pub. 1771-2.216.*

For memory devices, see to page 7-11.