

You can use the control coprocessor for applications such as:

- calculating complex math or application-specific algorithms using C and/or BASIC programs
- 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 programmable controller with a variety of field devices

Control-Coprocessor Modules

The control coprocessor consists of a main module and an optional serial expander module. Table 1.A lists catalog numbers for the control-coprocessor main modules and the optional serial expander module.

Table 1.A
Control-Coprocessor Catalog Numbers①

Control-Coprocessor Module Selection	Catalog Number
Main module—256 Kbytes	1771-DMC
Main module—1 Mbyte with Ethernet	1771-DMC1
Main module—4 Mbyte with Ethernet	1771-DMC4
Serial expander module	1771-DXPS

① See Appendix A, Table A.3 for more detailed information on memory usage.

The control-coprocessor main module is a 1-slot module. If you use both the control-coprocessor main module and a serial expander module, you require 2 slots. The figure at the left shows a 2-slot module with a 1771-DMC1 or -DMC4 main module and a serial expander module.

The control coprocessor is a member of the 1771 Universal I/O System. You can use it with or without a programmable controller.

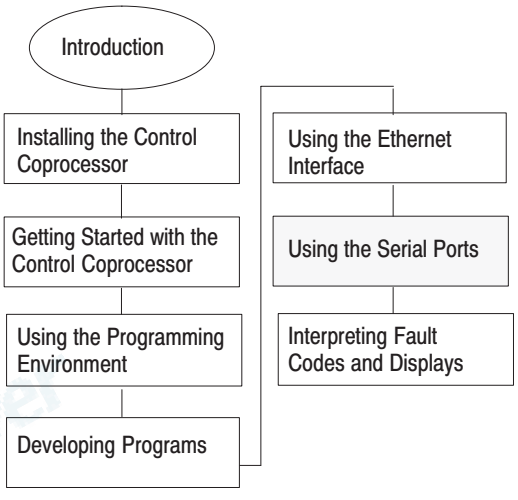
Chapter 7

Using the Serial Ports

Chapter Objectives

This chapter provides information for setting up communication with the serial ports on both the control coprocessor main module and the serial expander module.

For information on:	See page:
Setting up communication parameters	7-2
Referencing OS-9 serial port device names	7-4
Connecting to the serial port	7-4
Using a serial port for ASCII communication	7-5
Using a serial port for RS-485 communication	7-10
Using a serial port for RS-422 communication	7-17



You can use the serial ports to connect to a device that sends and receives ASCII and other serial communication.

With Series A Revision D (1.20) and later of the firmware, the serial port drivers include Data Carrier Detect functions (`_ss_dcon` and `_ss_dcoff`) and they also support RS-485 communications. The serial port on the expander module (1771-DXPS) handles reception of 7-bit even-parity communications. For more information about these functions, see the OS-9 C Language User Manual, publication 1771-6.5.104.

The serial port buffers also increased with Series A Revision D (1.20) of the firmware. The input buffers on the coprocessor and the expander increased from 80 to 128 bytes. The output buffers on the coprocessor increased from 140 to 256 bytes. The output buffers were already 256 bytes on the expander. These buffers are fixed, and they cannot be modified through user programs.

You use the PCBridge software to set up communication parameters for your personal computer. See Chapter 3.

Using a Serial Port for ASCII and Other Serial Communication

You can use the serial ports for ASCII and other serial communication. Examples of ASCII peripheral devices that you can use are:

- ASCII terminals
- bar-code readers
- Allen-Bradley Dataliner
- weigh scales
- printers

Accessing a Port

When you use a serial port for ASCII and other serial communication, use standard C library calls. You can use C calls such as:

- getc()
- read()
- write()

Your C program can get and change port parameters using the OS-9 library calls _gs_opt() and _ss_opt().

See the OS-9 C User Manual, publication 1771-6.5.104, for more information on C library calls.

Example Program

The following program sets up the COMM2 port (/t2) with the proper parameters for receiving data from a bar-code reader. The program:

- clears the input buffer on the COMM2 port
- loops forever, waiting for carriage-return-terminated lines of ASCII characters indicating that a bar code has been read
- places bar-code data in a buffer
- calls a subroutine to handle decision-making (based on the content of the bar code)

Appendix A

Control-Coprocessor Specifications

Product Specifications

Table A.1 lists general specifications for the control coprocessor.

Table A.1
Control-Coprocessor Specifications

Backplane Current	Main module	• 2.50 Amps at +5 Vdc (1771-DMC module with no Ethernet) • 4.00 Amps at +5 Vdc (1771-DMC1 or -DMC4 module with Ethernet and transceiver)①
	Serial expander module	1.5 Amps at +5 Vdc
Fault Relay	Serial expander module	500 mA at 30 Vac/dc (resistive)
Environmental Conditions	Operating temperature	0-60° C (32-140° F)
	Storage temperature	-40-85° C (-40-185° F)
	Relative humidity	5-95% (without condensation)
Time-of-Day Clock and Calender	Maximum variations at 60° C	±5 minutes per month
	Typical variations at 20° C	±20 seconds per month
Communication Ports②	COMM0	RS-232C; 9-pin
	COMM1, COMM2, and COMM3	RS-232C, -423, -485, and -422A compatible; 25-pin
	Ethernet port	TCP/IP protocol using FTP, TELNET, and socket library routines; INTERCHANGE server, SNMP compatible (MIB I); 15-pin standard transceiver
Communication Rates	COMM0, COMM1, COMM2, and COMM3 ports	110, 150, 300, 600, 1200, 2400, 4800, and 9600 bps, 19.2 Kbps, and 38.4 Kbps
	Ethernet	10 Mbps
Location	1771-I/O chassis	• direct-connect to a PLC-5 programmable controller • same chassis as a programmable controller, but standalone • remotely located from a programmable controller and standalone
Keying	Main module (on the upper C connector)	• between 24 and 26 • between 30 and 32
	Serial expander module (one on the upper C and two on the lower D connectors)	• between 16 and 18 (upper C connector) • between 2 and 4 (lower D connector) • between 16 and 18 (lower D connector)
Agency Certification	(Only when product is marked)	• CSA certified • CSA Class I, Division 2, Groups A, B, C, D • UL listed
Battery Life	Main module	1 year

① This is an approximate value. See Chapter 2, Installing the Control Coprocessor, for instructions on calculating backplane current requirements.

② With the 1771-DMC module (256 Kbyte), DF1 is not available on the communication ports; if you add an optional 1- or 4-Mbyte SIMM, however, the communication ports will initialize with DF1 capability.