GFK-0370F
August 1997

Communications Coprocessor Module (CMM)

Features

- Single-Slot Module
- SNP / SNP-X Protocol (master, slave)
- CCM Protocol (master, slave, peer)
- RTU Modbus Protocol (slave only)
- Supports connection to MS-DOS® or Windows® programming and configuration software package (monitor only)
- 12 Mhz, 80C186 Microprocessor
- Two RS-422 / RS-485 or RS-232 Serial Ports
- CCM, RTU and SNP / SNP-X Available on Either or Both Ports
- Simultaneous Communications on Both Ports (up to 9.6 Kbps, or 19.2 Kbps individually)
- High Performance Access to PLC Memory
- Three Status LEDs
- Reset pushbutton
- Soft Switch Configuration (no switches or jumpers)
- No Battery Required

Functions

The Communications Coprocessor Module (CMM) is a member of a family of communication modules, and provides both communications control (CCM), remote terminal (RTU), and general IC69* communications (SNP) functionality. CCM, RTU and SNP are available on either or both serial ports in any of nine possible configurations: CCM / CCM, CCM / RTU, RTU / CCM, RTU / RTU, SNP / SNP, SNP / CCM, CCM / SNP, SNP / RTU, and RTU / SNP

The CMM provides both the RS-232 and RS-485 Interfaces and communicates with the PLC CPU over the backplane. Many CMMs can be placed in a single IC697 PLC system as illustrated by Figure 2.

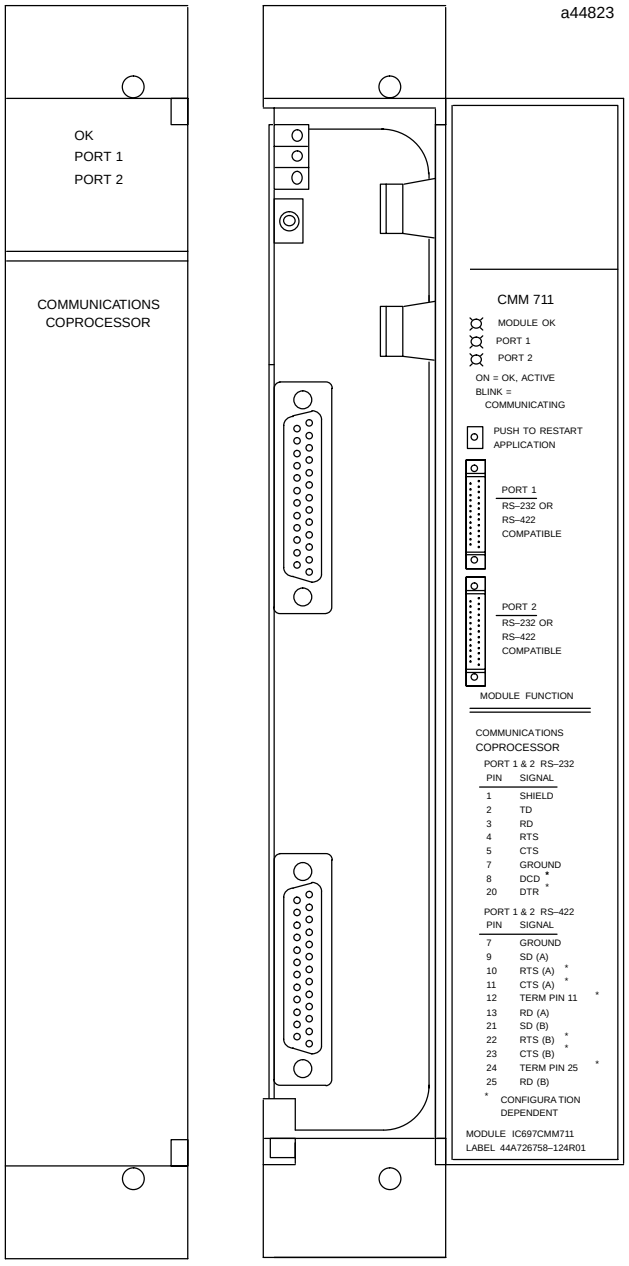

Figure 1. Communications Coprocessor Module

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CCM:

Functions provided by the CMM module in the CCM mode of operation are: read / write of register, input and output tables (PLC memory types %R, %I and %Q); bit set / clearof inputs and outputs (%I and %Q); read of scratch pad; Q sequence commands for fast reads; and the ability to modify the diagnostic status word.

In the master and peer CCM configurations, the CMM module initiates communications with remote devices through application ladder program communications requests (COMREQs).

RTU:

The RTU mode of operation is a query / response protocol used for communicating between the CMM and a host computer. The host computer is the master device and transmits the query to the RTU slave which responds to the master. In RTU mode, only slave configuration is available.

In the RTU slave protocol, the following functions are provided: read input and output tables (%I and %Q), read analog input (%AI), read register table (%R), read scratchpad, read exception status, force a single or multiple output(s) (%Q), preset a single or multiple register(s) (%R), report the device type, and perform loopback maintenance.

SNP/SNP-X:

SNP is the native protocol of all IC69* PLCs. SNP is a master-slave protocol, where the slave device responds to requests from the master. An SNP slave device is built into every IC69* PLC. Each serial port on the CMM can be configured to provide SNP master or slave capability.

The SNP protocol on the CMM module provides read and write access to PLC memory (types %R, %I, %Q, %AI, %AQ, %T, %M, %P, %L, and %G), full Series 90 Datagram support, and many status and control functions. An Autodial feature is also provided to control a modem attached to an SNP master port.

The SNP-X extensions to SNP provide easy-to-use, high performance read and write access to PLC memory (types %R, %I, %Q, %AI, %AQ, %T, %M, and %G). SNP-X is especially useful for simple, high-speed data acquisition and control in multidrop configurations.

As an SNP master, the CMM module initiates communications with remote devices through application ladder programs communication requests (COMREQS). An SNP master port on a CMM module can communicate with the SNP slave port built into any IC69* PLC, or with other SNP slave devices.

As an SNP slave, the CMM module provides additional communications port(s) for connection to remote operator interface units or other SNP communications devices. The MS-DOS or Windows based software package may be connected to an SNP slave port on a CMM module for data monitoring only. Programming and configuration of IC69* PLCs are not possible through the CMM SNP ports.

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Systems Configuration

Figure 2 illustrates typical CMM interface installations in a IC69* PLC system.

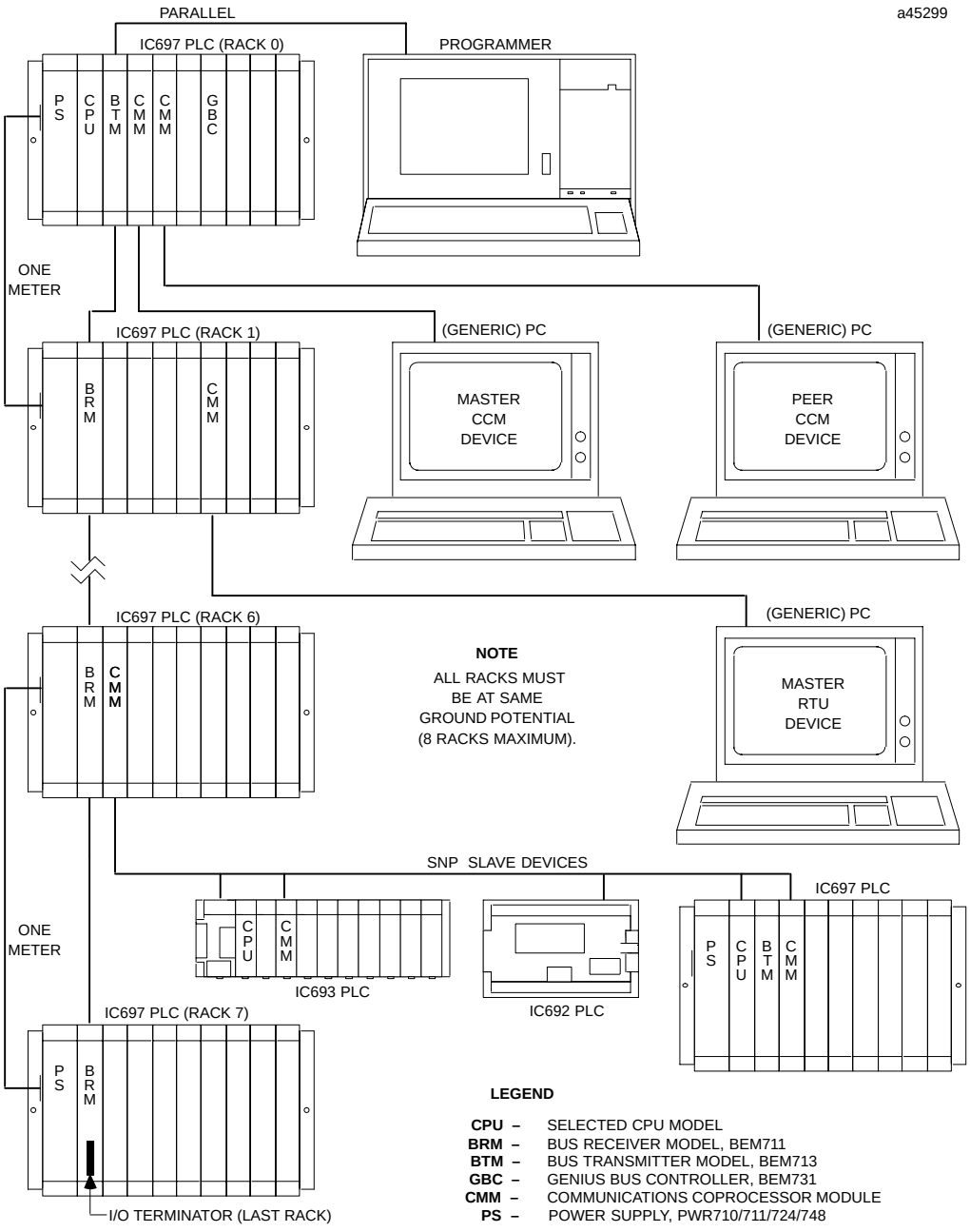

Figure 2. Typical PLC System Configuration

Module Physical Description

The CMM module is a single-slot module that plugs into either the IC697 PLC or I/O rack.

Figure 3 shows the maintenance controls and indicators located on the CMM module.

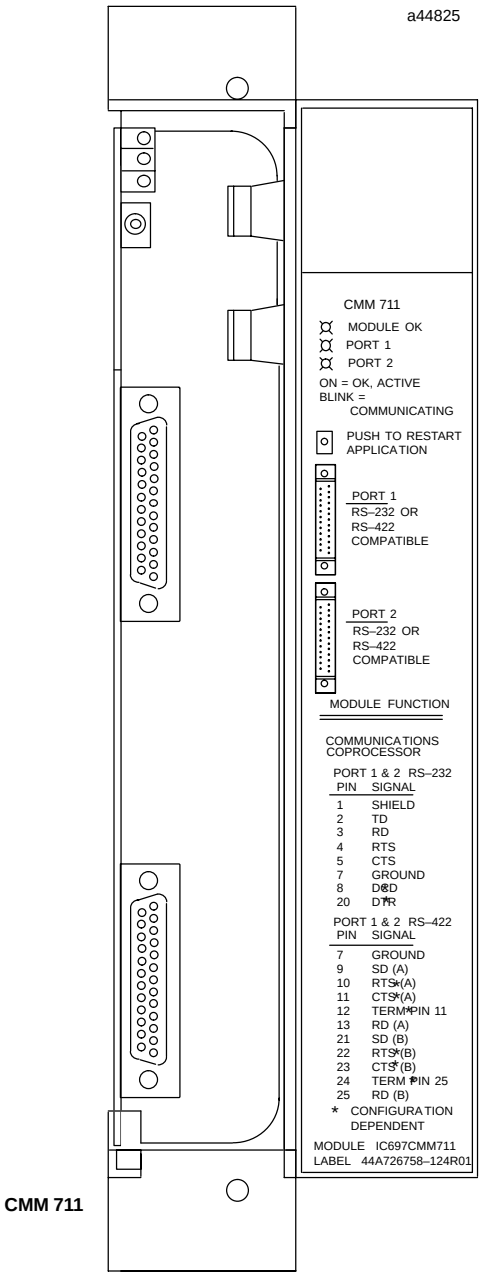

Figure 3. CMM Module - User Details

User Maintenance Items

The CMM module has the following user-accessible elements:

- Three LEDs located at the top of the module.
- Restart Pushbutton: located immediately beneath the LEDs.
- Two Serial Ports: two 25-pin female connectors provide RS-232 and RS-422/RS-485 communication.

Installation

Installation should not be attempted without referring to the Installation Manual. (See Related Publications listed on page 6.)

- Make sure rack power is OFF before attempting to install module.
- Install module in the rack (see Figure 2).
- Turn ON power.

The CMM is configurable only using the MS-DOS or Windows programming software package.

Status Indication

Three Status LEDs are available as shown in Figure 3. The top LED indicates the condition of the module. The bottom two LEDs indicate activity at the serial ports: Port 1 LED indicates activity on port 1; Port 2 LED indicates activity on port 2.

The module should power up and blink the top LED. When the diagnostics have completed successfully, the top LED stays on.

Pushbutton Control

One pushbutton is provided. Push to reinitialize communications at both serial ports.

Serial Ports

Both ports are RS-232 and RS-422/RS-485 compatible. Both ports acting simultaneously can each provide up to 9.6 Kbps of full duplex data communications, or up to 19.2 Kbps individually.

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Port 1 (3PL) and Port 2 (4PL):

Connectors 3PL and 4PL contain signals for both RS-232 and RS-422 / RS-485 types of communication circuits. The pin assignment for the RS-232 signals are per the RS-232 specification with an exception that pins not normally used for RS-232 are used for RS-422 / RS-485 signals. Refer to Tables 1 and 2.

Table 1. Port 1 or 2: RS-232

Pin	Function	Signal Name	I/O
1	Shield	-	-
2	Transmitted Data	TD	Output
3	Received Data	RD	Input
4	Request To Send	RTS	Output
5	Clear To Send	CTS	Input
7	Signal Ground	0V	-
8	Data Carrier Detect	DCD	Input
20	Data Terminal Ready	DTR	Output

Table 2. Port 1 or 2: RS-422/RS-485

Pin	Function	Signal Name	I/O
9	Send Data (A)	SD (A)	Output
10	Request To Send (A)	RTS (A)	Output
11	Clear To Send (A)	CTS (A)	Input
12	Termination for pin 11	-	-
13	Receive Data (A)	RD (A)	Input
21	Send Data (B)	SD (B)	Output
22	Request To Send (B)	RTS (B)	Output
23	Clear To Send (B)	CTS (B)	Input
24	Termination for pin 25	-	-
25	Receive Data (B)	RD (B)	Input

Configuration

There are no user DIP switches or jumpers on this board for configuration. However, the board must be configured before operation using the MS-DOS or Windows software package. Refer to the Related Publications listed on page 6.