

Programmable Controller

IC697GDC701

GFK-0519B
July 1995

Graphics Display Coprocessor (GDC)

Features

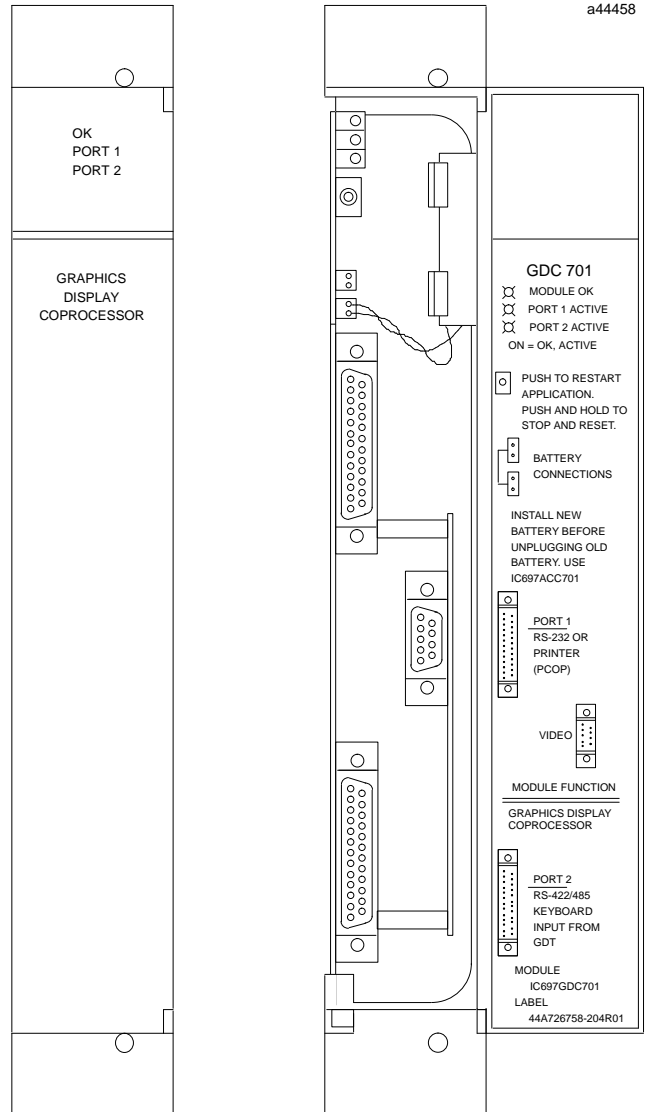
- Single slot Graphics Display Coprocessor
- Runs IC640HWP77X Graphics Display System (GDS) software
- 12 Mhz, 80C186 microprocessor
- High performance access to PLC memory
- Real time calendar clock synchronized to PLC
- Reset pushbutton
- Three status LEDs
- Soft configuration (No DIP switches or jumpers)
- 640 Kbytes program RAM and 1 Mbyte Video RAM on board
- EGA video resolution (640 x 350 pixels)
- Analog RGB video signals (sync on green)

Functions

The Graphics Display Coprocessor (GDC) Module is a coprocessor to the IC697 PLC CPU. It is programmed to perform IC697GDS display functions when coupled with the IC642PCM System 3000 Graphics Display Terminal (GDT). It communicates with the IC697 CPU over the system backplane.

Many Graphics Display Coprocessors can be supported in a single IC697 PLC system and can be located in either the main rack or expansion racks.

Operation of the module may be initialized by depressing a pushbutton on the module or by an attached GDC (PCOP) development system. The status of the GDC is indicated by three green LEDs on the front of the module.



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Installation

- Installation should not be attempted without referring to the applicable *Programmer Controller Installation Manual*.
- Make sure rack power is off before installing the GDC.
- Connect the battery to either of the battery connectors on the module (See figure 2).
- Install in the rack (See figure 1).
- Turn on power.
- The module should power-up and blink the top LED. When the diagnostics have completed successfully the top LED stays on.

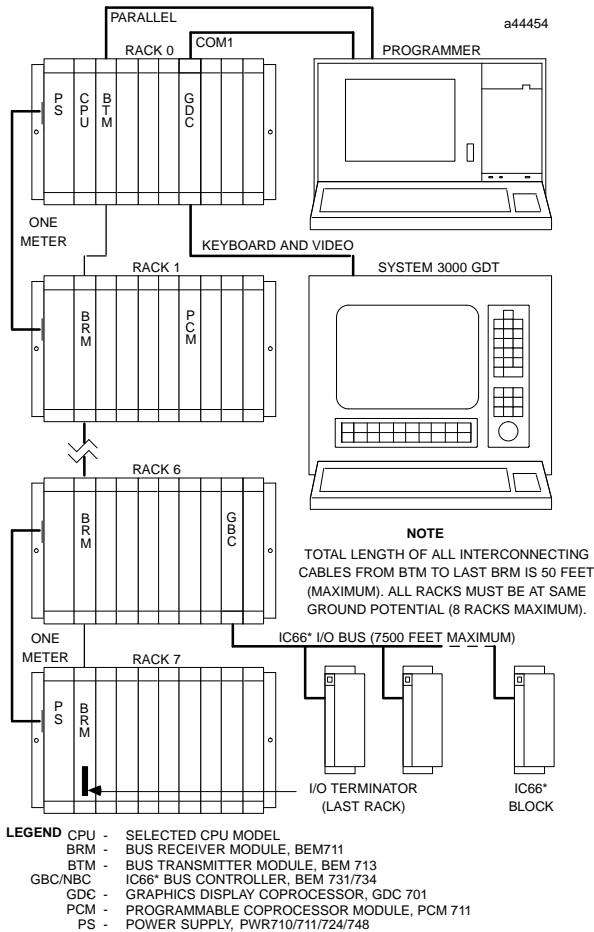


Figure 1. Typical PLC System Configuration

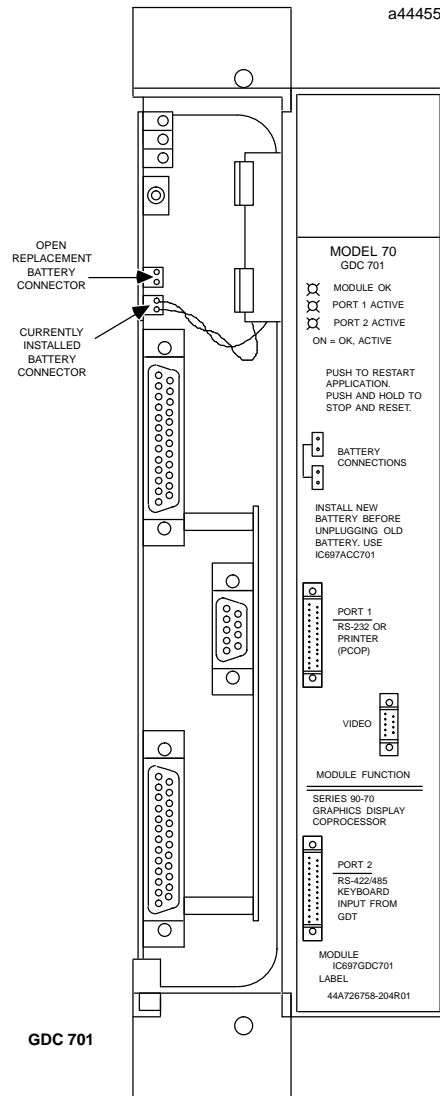


Figure 2. Graphics Display Coprocessor Module - User Details

Programming and Configuration

An IC647, IC640, or an IBM®-compatible PC, XT, AT, or PS/2® computer with PCM Development Software (PCOP) installed connects to the top port as shown in figure 3. The default setting is 19,200 bps. The PCM Development Software is used to configure the serial port parameters and to install the IC640HWP77X software onto the GDC. Refer to the the *Graphics Display System User's Manual* for details of operation.

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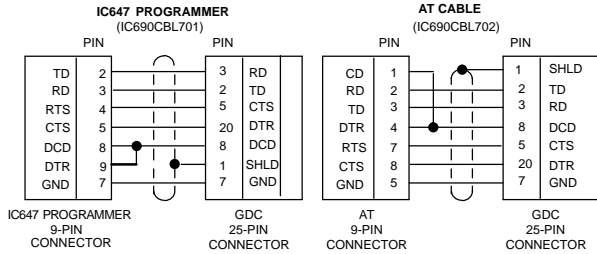
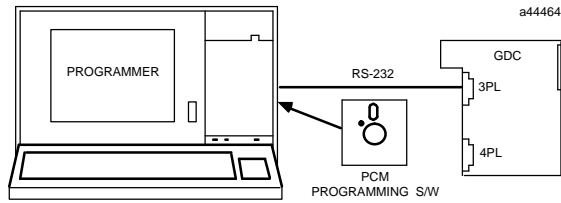


Figure 3. Example of PCM Development System Connection to GDC

Serial Ports

Although both ports are RS-232 and RS-422/RS-485 compatible and the signals shown in both Table 1 and Table 2 are available at each connector, the use of each port is dedicated for GDC operation.

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

Port 1 (3PL) is normally connected to an RS-232 serial COM port of a host computer for communications to PCOP at 19.2 Kilobaud. Alternately, port 1 may be connected to a serial RS-232 printer (see the *Graphics Display System User's Manual* to reconfigure Port 1). Figure 3 shows typical cable connections for this purpose and Table 1 shows the details of the RS-232 signals.

Table 1. Port 1 and 2 - RS-232 Signals

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	GND	-
8	Data Carrier Detect	DCD	Input
20	Data Terminal Ready	DTR	Output

Port 2 (4PL) is configured as a 1200 baud RS-422 port and is dedicated to accepting keyboard input from the GDT's RS-422 port. Figure 4 shows appropriate cable connections and Table 2 shows usable RS-422 signal details.

Table 2. Port 1 and 2 - RS-422/485 Signals

PIN	FUNCTION	SIGNAL NAME	I/O
7	Signal Ground	SG	-
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

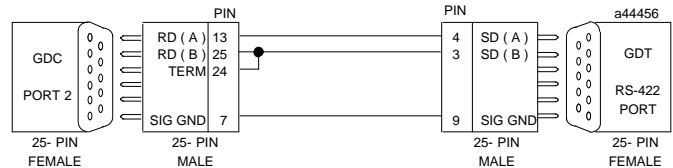


Figure 4. GDC Port 2 Connection to GDT

Video

The GDC provides EGA video resolution of 640 x 350 pixels. This video is provided to the GDT in the form of RGB signals with sync on green. Video signals from the GDC are provided through the 9-pin D connector on the module. The cable has three RG-179/U coaxial cables, terminated with three BNC connectors at the GDT end. Figure 5 shows wiring details of this cable.

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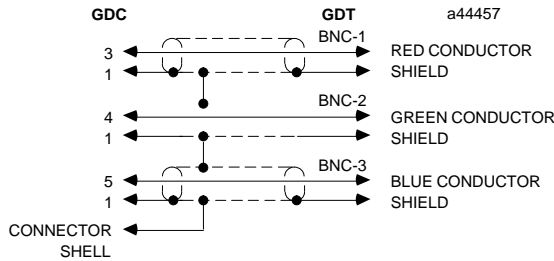


Figure 5. Video Cable Wiring Configuration

The three coax shields are soldered together and a stranded AWG #16 (1.3 mm²) wire of less than three inches is soldered to the connector shell and to the shields. The shields are also tied to pin 1 of the connector.

Configuration

There are no user DIP switches or jumpers on this board for configuration. However, the IC640HWP77X software must be loaded using PCM Development Software (refer to the *Graphics Display System User's Manual* for details). The GDC must be configured with IC641 Configuration software prior to use.

Status Indication

Three Status LEDs are available as shown in figure 2. The top LED indicates the condition of the GDC module, the bottom two LEDs indicate serial port and backplane activity.

Controls

One pushbutton is provided on the module. Push and hold for less than 5 seconds will restart an application. Push and hold for more than 10 seconds and the module factory default configuration will be installed (this action will not clear memory but will permit communication with the programmer using factory default settings).

Batteries

A lithium battery (IC697ACC701) is installed as shown in figure 2. This battery maintains user memory when power is removed. Be sure to install the new battery in the unused battery connector before removing and discarding the old battery. If during power-up diagnostics a low battery is detected, the Module OK LED (top) will not stay on.

Table 3. References

Reference	Title
1	ProgrammingSoftware User's Manual
2	ProgrammableControllerReferenceManual
3	Programmable Coprocessor Module and Support Software User's Manual
4	ProgrammableControllerInstallationManual
5	GraphicsDisplaySystemUser's Manual

Table 4. Specifications for IC697GDC701 †

Battery	
Shelflife	10 years at 20°C (68°F)
Memory retention	6 months nominal without applied power.
Current Required from 5V Bus	1.2 amps
Serial Ports	RS-232andRS-422/RS-485compatible
VME	System designed to support the VME standard C.1

† Refer to GFK-0867B, or later for product standards and general specifications.

Table 5. Ordering Information

Description	Catalog Number
GraphicsDisplay Coprocessor Module, 12 Mhz	IC697GDC701
LithiumBattery	IC697ACC701