Thumbwheel Interface
IC610MDL105

This module provides an interface between the Series One or Series One Plus PCs and up to four sets of user supplied thumbwheels. Each set of thumbwheels will allow the operator to control the preset on a timer or counter. In fact, these timer/counters (references 674 to 677) will not function without this interface module. The power (24 V dc) to sense the state of these thumbwheels is provided by the power supply in the CPU base unit. This interface module must be installed in the same base unit as the CPU and can only be located in slots 2 through 5. Only one interface module is allowed per system. The thumbwheels and their associated wiring must be supplied by the user. The thumbwheels are standard BCD coded and diode isolated, a standard option available with most thumbwheels. The following is the required setting for each digit of the thumbwheel:

Digit	Internal	Switch	Closure	(X=Closed)
Value	8	4	2	1
0				
1				X
2			X	
3			X	X
4		X		
5		X		X
6		X	X	
7		X	X	X
8	X			
9	X			X

Whenever the interface is installed in the CPU base unit, eight discrete references are assigned to this module slot. These references have no significance relative to the operation of the interface. They can be used as internal coils, but not as status to other hardware I/O. All four presets are read into the Series One or Series One Plus PC each scan. Figure 6.39 illustrates the wiring for the 20 terminals on the interface module. No special terminations are required for circuits that are not being used.

One thumbwheel is read into the CPU every scan assuring rapid response to new values. Care should be used when changing the value on the thumbwheels, since intermediate values can be brought in and used during a scan or for several scans. For example, if the thumbwheel is set for the value 095 and the new value 105 is desired, altering the hundreds digit first results in 195 being detected and used by the CPU, until the tens digit is changed from 9 to 0. Normally, higher values are more acceptable than lower values and the natural tendency to enter new values from the left or high order digit will result in larger values. However, if the tens digit is changed first, the value 005 could be read prior to the 105 being set. The exact results depend upon the application and the specific logic entered.

Internal Power Consumption	90 mA @ 24 V dc (9 units of load)
	10 mA @ 9 V dc (1 unit of load)

pc-s1-83-0073

THUMBWHEEL
INTERFACE

B2	C677
A2	C676
B1	C675
A1	C674
B10	8000
A10	4000
B9	2000
A9	1000
B8	800
A8	400
B7	200
A7	100
B6	80
A6	400
B5	20
A5	10
B4	8
A4	4
B3	2
A3	1

CONNECTOR
SUPPLIED WITH INTERFACE

COMMONS (674) — HUNDREDS 0-9 — TENS 0-9 — UNITS 0-9 (0-9)

ALL THUMBWHEELS SHOULD HAVE EACH INDIVIDUAL SIGNAL (E.G. 800) DIODE ISOLATED AND BUSSED TO INTERFACE (E.G. PIN B8) FOLLOWING THUMBWHEELS SCHEMATICALLY SHOWS GROUPS OF FOUR INDIVIDUAL WIRES FOR SIMPLICITY

COMMONS (675) — THOUSANDS 0-9 — HUNDREDS 0-9 — TENS 0-9 — UNITS 0-9

AT EACH THUMBWHEEL

N

COMMONS (676) — THOUSANDS 0-9 — TENS 0-9 — UNITS 0-9

DIODES ARE TYPE IN914, IN4148, OR EQUAL

RECOMMENDED WIRE SIZE IS AWG NO 23

MAXIMUM DISTANCE TO FURTHEST GROUP OF THUMBWHEELS IS 10 FEET (3 METERS)

IN NOISY ENVIRONMENTS, USE SHIELDED WIRE GROUNDED AT INTERFACE

COMMONS (677) — HUNDREDS 0-9 — TENS 0-9 — UNITS 0-9

NOTE

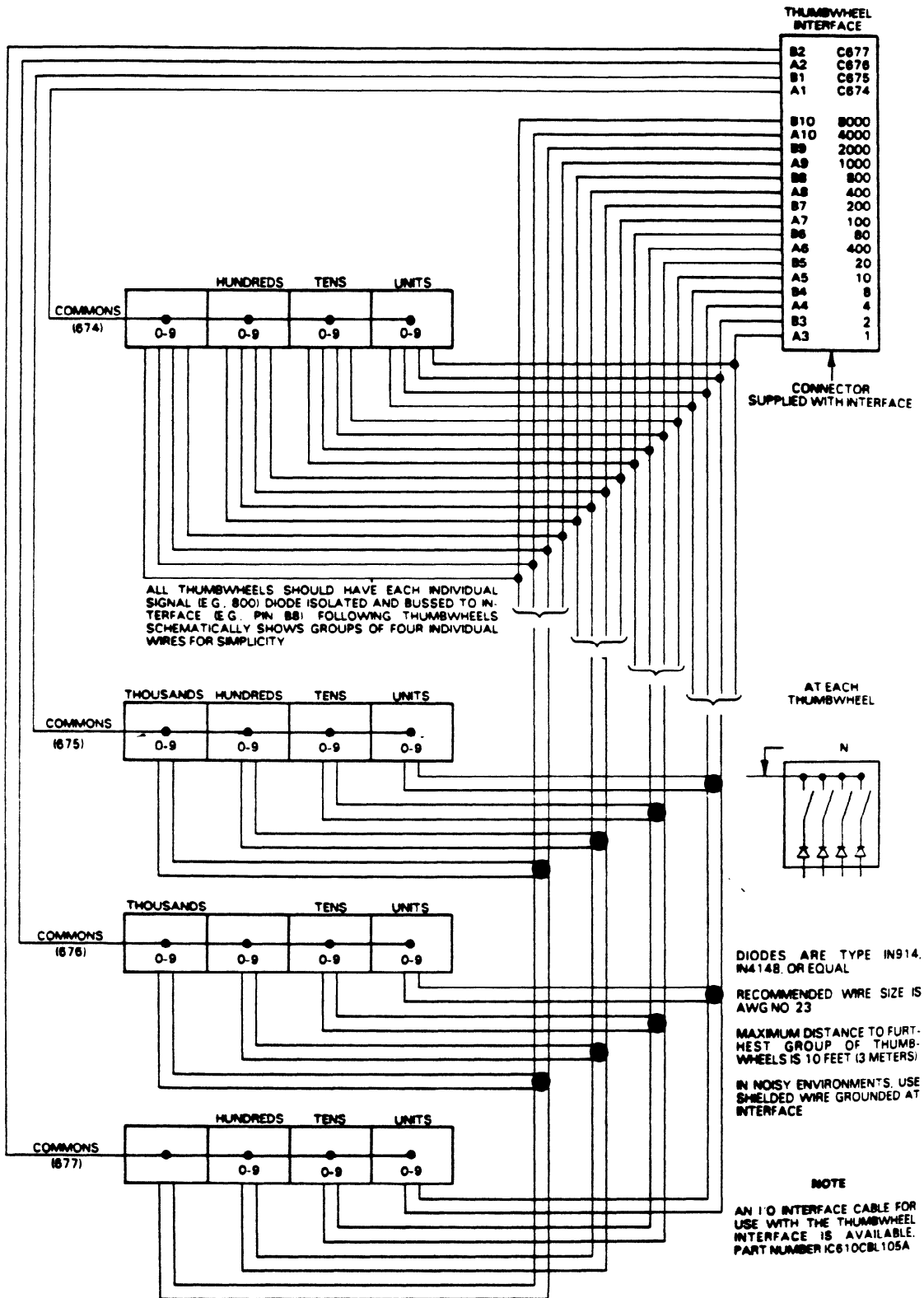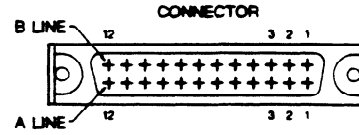AN I/O INTERFACE CABLE FOR USE WITH THE THUMBWHEEL INTERFACE IS AVAILABLE. PART NUMBER IC610CBL105A

Figure 6-39. Wiring for Thumbwheel Interface

pc-s1-83-0067

GEJ-7000
Thumbwheel Interface Cable
Wire List and Installation Diagram

CONNECTOR
B LINE 12   3 2 1
+ + + + + + + + + + + +
+ + + + + + + + + + + +
A LINE 12   3 2 1

Pin No	Signal		Wire color code
A1	674 Thumbwheel switch common		ORN (RED1)
A2	676 Thumbwheel switch common		GRA (RED1)
A3	units digit	1	WHT (RED1)
A4		4	YEL (RED1)
A5	tens digit	1	PNK (RED1)
A6		4	ORN (RED2)
A7	hundreds digit	1	GRA (RED2)
A8		4	WHT (RED2)
A9	thousands digit	1	YEL (RED2)
A10		4	PNK (RED2)
A11	not connected*		ORN (RED3)
A12	not connected*		GRA (RED3)

Pin No.	Signal		Wire color code
B1	675 Thumbwheel switch common		ORN (BLK1)
B2	677 Thumbwheel switch common		GRA (BLK1)
B3	units digit	2	WHT (BLK1)
B4		8	YEL (BLK1)
B5	tens digit	2	PNK (BLK1)
B6		8	ORN (BLK2)
B7	hundreds digit	2	GRA (BLK2)
B8		8	WHT (BLK2)
B9	thousands digit	2	YEL (BLK2)
B10		8	PNK (BLK2)
B11	not connected*		ORN (BLK3)
B12	not connected*		GRA (BLK3)

Color Code Example

ORN (RED1):   orange one red mark   GRA (BLK2):   gray two black marks
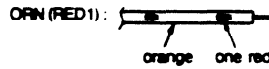
ORN·····orange
GRA·····gray
WHT·····white
YEL·····yellow
PNK·····pink
RED·····red
BLK·····black

The white wire with three red marks and the white wire with three black marks are not used.

* If solid state BCD input is used, connect to BCD input device common.

Figure 6-40. Thumbwheel Interface Cable Wire List