

PC 9000

Features

- Interfaces with any PLC through I/O
- 6 large digits
- Dip Switch Addressable, Allows up to 4 Displays to be Cascaded
- 1 kHz buffered input speeds
- Requires only 8 output bits
- Uniquely addressable - allows cascading of multiple displays
- Wide variety input signals
- 5 or 10 to 24 VDC power supply
- Low power: less than 300 mA

Description:

The PC 9000 is a 6 digit display device with large LED digits. Any value available in a Programmable Controller can be displayed using 8 output bits or less. Up to 4 displays of 4 digits each can also be operated with only 8 output bits. Counts, times, RPM's, temperature, setpoints, etc. can be displayed continuously during a process. Power can be either 5 VDC or 10-24 VDC, however the data and power need not be the same voltage.

This 6 digit slave instrument is designed for displaying information being processed by a programmable controller. All information is loaded into its brilliant LED display using a maximum of 8 lines. Four of the 8 lines establish the number value in the BCD code. Another 4 lines are designed to carry a broad variety of instructions including digit selection, decimal position, and addressing status. In addition, the PC 9000 contains switches for field programming a completely unique address for each instrument. This feature allows many PC 9000s to be cascaded and information rapidly loaded for evaluation. The PC 9000 may slave off a broad variety of input voltages at data input rates at 1 kHz. 5 VDC or 10-24 VDC may be used for power. Typical current consumption at 12 VDC is 250 mA.

BCD to 7 Segment Display Requires Only 8 Output Lines



- Uses fewer lines than any other slave display
- All data input self-latching
- Sealed NEMA 4X/IP65 front panel

Specifications:

Display: High efficiency .56 inch LED display.

Display Modes: Two types of "display modes" - hexadecimal or B code. Hexadecimal permits the letters A-F to be displayed along with the numbers 0 through 9. B code version displays the numbers 0-9 while offering characters such as negative sign and digit blanking.

Decimal Point: Decimal points may be under complete software control or factory set (see how to order).

Data Inputs: Data is entered serially, 4 bits at a time (1 digit). Input voltages 3-30 VDC. Impedance 1.5K Ohms. All inputs are buffered and filtered. Standard input rate is 1 kHz. Additional filtering is user programmable. All inputs are active high.

Digit Select Inputs (DS): The digit select inputs accept 3-30 VDC signals used to establish which of the 6 digits in the display are being addressed.

Display Select (DSPA): "Display Select" is used only when 2 or more PC 9000 instruments are connected in parallel. The display select inputs accept 3-30 VDC signals which are used to select 1 of 4 PC 9000's.

Display Address (DSPA): Like "Display Select" Display Address is only used when 2 or more PC 9000 instruments are connected in parallel. The display address (DIP switch selectable) will assign a unique address to each PC 9000.

Termination: A unique, pluggable screw terminal block is used allowing maximum termination flexibility.

Digit Select Inputs:

There are three digit select inputs. These are used to direct the data to the appropriate digit locations of the display. They are coded in Binary, and the digits are numbered 0 through 5, starting with the least significant digit being 0 and proceeding to the left to the most significant digit.

Digit select inputs (pins 5,6,7) will be referred to as DS1, DS2, DS4 respectively in the following table. NOTE: DS4 is not used when addressing only 4 digits.

DS4	DS2	DS1	Digit Selected
0	0	0	0 LSD
0	0	1	1
0	1	0	2
0	1	1	3
1	0	0	4
1	0	1	5 MSD

Display Select Inputs:

Up to four separate PC 9000 devices may be grouped together and connected to a programmable controller. Eight output points will operate these four displays with up to 4 digits of data shown by each. Adding one more output point will permit either four 6 digit displays or four 4 digit displays with software selectable decimal points. By adding one additional point, both software selectable decimal points and six digit displays are possible.

Software Selectable Decimal Point:

To turn on any decimal point, while entering data and position information for the desired digit enter a logic "1" to the "Decimal Point" input. The decimal point will light at the right of the digit entered. To enable the software decimal point option, any fixed decimal point solder bridge must be removed.

Programming for Hexadecimal Code:

The standard display mode of the PC 9000 is the "B" code. This includes the minus sign and the blank digit. If the hexadecimal mode is desired, it can be activated by bridging gap number 8 in a manner similar to the setting of fixed decimal points as outlined in the previous section.

Programming for Display Select:

If multiple PC 9000's are to be connected together, each device will need a unique address.

Remove the front lens as described under Case/Lens Removal. Locate switches 3 and 4 on the right under the display.

The PC 9000 is normally set at the factory for an address of 0. If other addresses are desired, set according to the following chart. (On is down, Off is up)

Switch 3	Switch 4	Display Selected
OFF	OFF	DISP 0
OFF	ON	DISP 1
ON	OFF	DISP 2
ON	ON	DISP 3

Programming for Scan Time:

The PC 9000 has been designed to reject a great amount of electrical noise. It is suggested that if the scan time of the programmable controller is relatively long, the internal filtering switches be set to assure highly reliable operation.

The PC 9000 is normally set at the factory for an input scan response time of approximately 1.2 milliseconds. If a 10 mS. or 25 mS. scan response time is desired the front lens must be removed. To change the response time, locate the four position switch mounted directly under the LED display board. Set the switches numbered 1 and 2 according to the following chart (ON is down, OFF is up).

Switch 2	Switch 1	Scan Time
OFF	OFF	1.2 mS
ON	OFF	10 mS
OFF	ON	25 mS

NOTE: If both switches 1 and 2 are turned on, the display will lock up.

NOTE: If multiple PC 9000's are going to be connected in parallel, they must have their addresses set before the front lens is installed. If this is required after completing the scan time adjustment, go on to the next section (Programming For Display Select).

Programming for a Fixed Decimal Point:

Remove the circuit board from the case, locate the area just behind the display on the left side showing 8 solder jumper gaps numbered 1-8. (Refer to Modification Section). The first five (1-5) are used to light a decimal point in the display. By making a solder bridge from the outside pads numbered 1-5 to the inside trace, the selected decimal will be lit. Example: gap 2 will light XXXX.XX. Only one fixed decimal point is permitted.

HEXADECIMAL		B-CODE	
Data	Hex Display	Data	B-Code Display
0000	0	0000	0
0001	1	0001	1
0010	2	0010	2
0011	3	0011	3
0100	4	0100	4
0101	5	0101	5
0110	6	0110	6
0111	7	0111	7
1000	8	1000	8
1001	9	1001	9
1010	A	1010	—
1011	b	1011	E
1100	C	1100	H
1101	d	1101	L
1110	E	1110	P
1111	F	1111	(Blank)

Programming for "B" Mode:

If the PC 9000 has been set for the Hexadecimal mode, it can be changed back to the "B" Mode. Follow the instructions for the Hexadecimal mode above and remove the solder bridge at gap #8 to make this change.

Daisy Chain - Solderless Interconnect for PC 9000:

Features

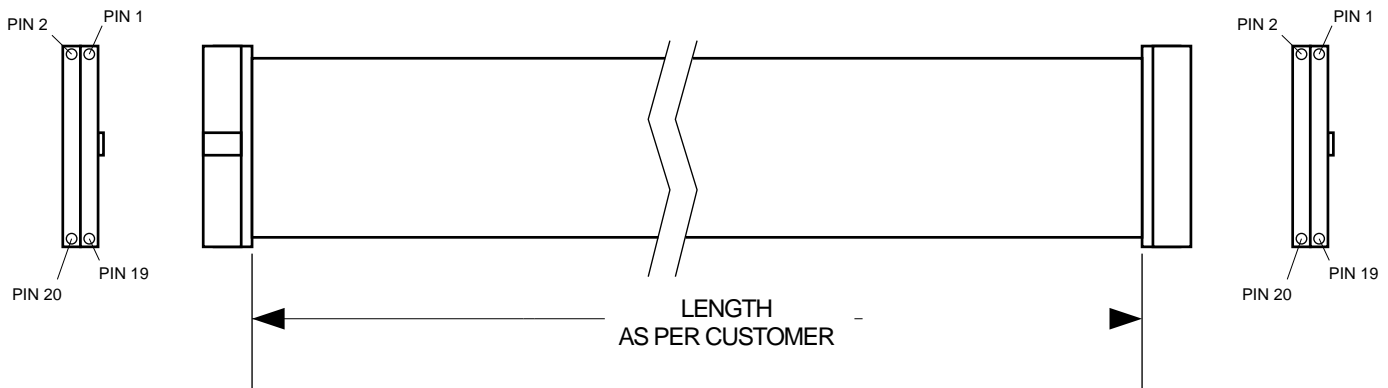
- Plug with Screw Terminal Connection to the Programmable Controller
- Interchangeable Wiring
- Easily Removed for Modification or Repair
- Wire up to Four PC 9000's in Less Than Ten Minutes.
- No Soldering Required

Description:

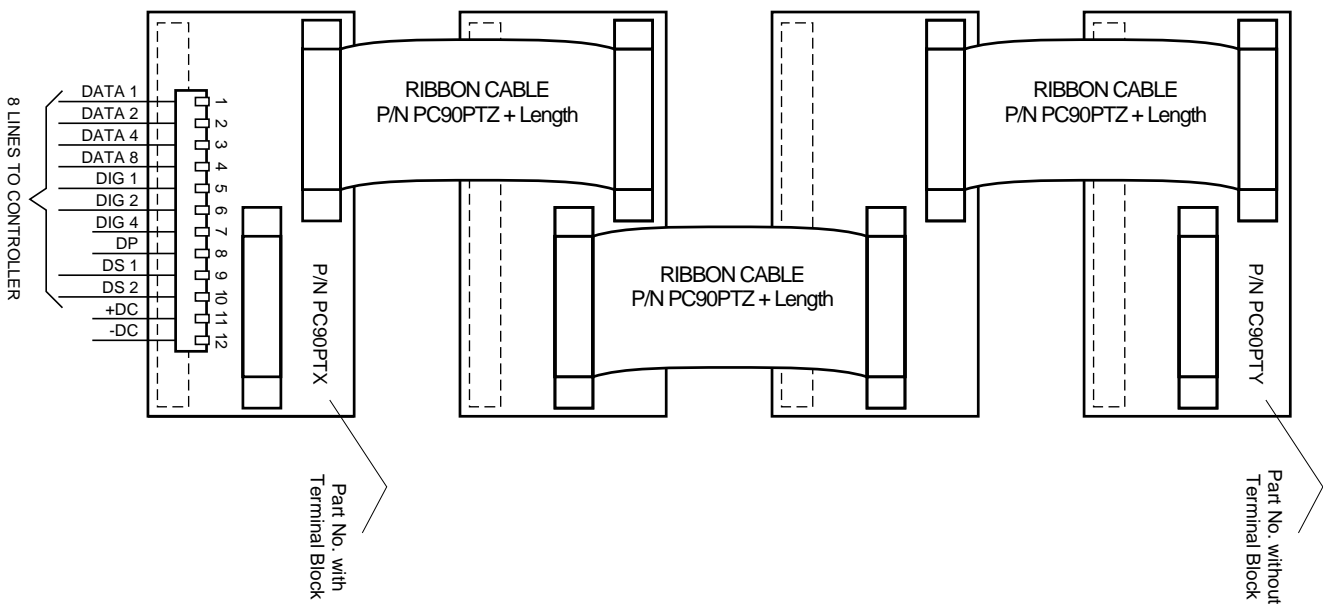
The KEP Solderless Interconnect System for the PC 9000 consists of two versions of interface boards allowing different configurations and connections of up to four PC 9000 units with a minimum of wiring effort. Factory assembled wiring harnesses allow "plug-in" connections between the PC 9000 displays. Almost any cable length is available to permit custom-built panels.

STANDARD RIBBON CABLE LENGTHS

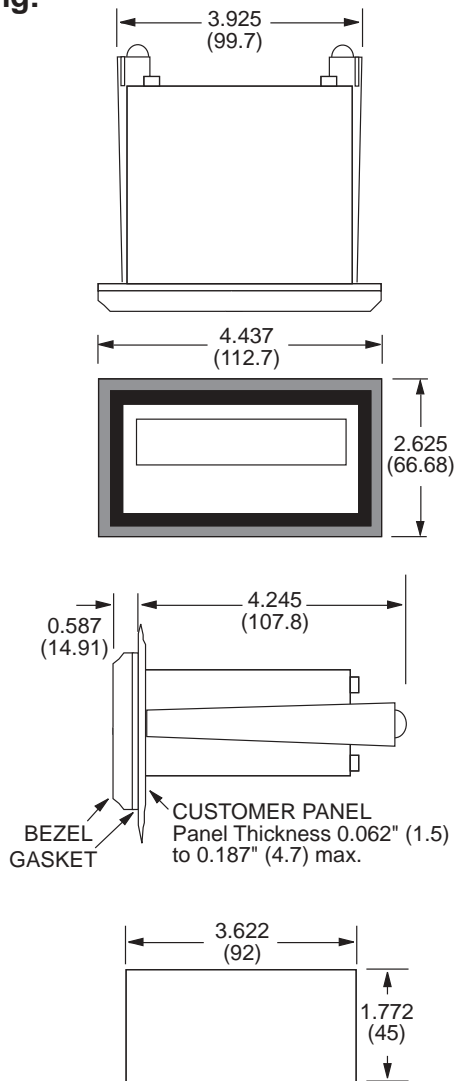
ORDER	LENGTH
Z6	6"
Z12	12"
Z18	18"
Z24	24"
Z48	48"



Slave Displays



Mounting:



NOTE: Allow an additional 0.75" in depth when using the "PC90PT" series ribbon adaptors

Wiring:

Each unit is shipped with a 12 terminal, two piece, male/female connector.

- 1 • BCD Data 1
- 2 • BCD Data 2
- 3 • BCD Data 4
- 4 • BCD Data 8
- 5 • Digit Select 1
- 6 • Digit Select 2
- 7 • Digit Select 4
- 8 • Decimal Point
- 9 • Display Select 1
- 10 • Display Select 2
- 11 • (+) DC Power
- 12 • (-) DC Power

How To Order:

EXAMPLE: PC 9	7	B	7	4
Series				
Power Supply				
7 = 5 VDC (regulated) ±5%				
9 = 10 to 24 VDC				
Display Mode				
H = Hexadecimal 0-9, A, b, C, d, E, F				
B = B Code Standard 0-9, -, E, H, L, P. (blank)				
Decimal Point				
1 = xxxxx.x				
2 = xxxx.xx				
3 = xxx.xxx				
4 = xx.xxxx				
5 = x.xxxxx				
7 = Software selectable				
Options				
4 = "Sinking" input (for use with sinking output modules)				

Accessories

PC90PTX: To connect to Programmable Controller (must have 1)

PC90PTY: To connect up to three additional PC_9000's

PC90PTZ:

NOTE: Order sufficient quantity and lengths of cable. See standard ribbon cable chart below.

STANDARD RIBBON CABLE LENGTHS

ORDER	LENGTH
Z6	6"
Z12	12"
Z18	18"
Z24	24"
Z48	48"

10 Conductor Color-Coded Cable -