

## IPC5000 S/D

## Universal Programmer

## Specification

### Overview

The IPC5000 is a high-functional Single or Dual loop programmer retaining all the reliability, simplicity, and compatibility.

This programmer is operated by touch-screen in 5.7 inch LCD monitors and controls in various kinds of applications such as:

- Furnace & Industrial Oven
- Autoclave
- Test Chamber
- Environmental Room / Clean Room
- Retort Oven
- Pressure Cooker
- Dyeing Machine
- Reactor

### Features

#### • 5.7 inch LCD Touch Screen

Configuration & operation will be done by touch screen function keys in graphic LCD display.

#### • Universal Input(s)

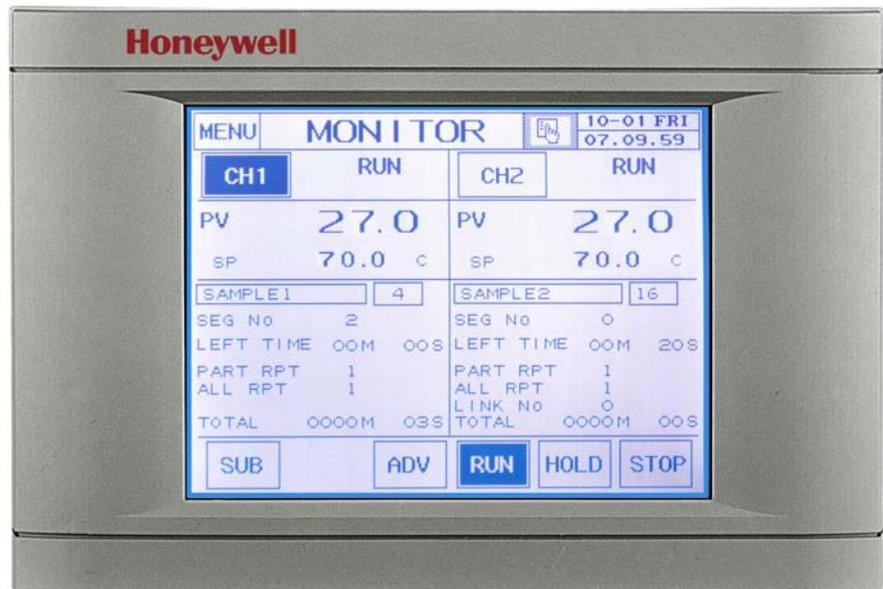
Analog input(s) is a low-level type (s), which accepts Thermocouple, RTD, mA, voltage type. (See Table 1)

#### • 0.1% Input Accuracy

Analog input(s) has typical accuracy of  $\pm 0.1\%$  of full-scale input.

#### • 12 DI/12 Dos

12 points of digital inputs can be connected to non-voltage contact (relay contact) or open collector (sink current toward 0V), and they are allocated to pre-



defined actions. 12 digital outputs can be assigned to 4 different types of events (MODE, Alarm, Time and PV)

#### • 32 Programs, 800 segments

32 Programs can be programmed within 100 segments for each and 800 segments in total. 10 Links are offered, and each Link can link up to 6 programs.

#### • Heat/Cool Capability

Each control loop provides split range control with independent PID tuning constants – one for heating, one for cooling – plus mixed output forms.

#### • Ethernet Communication

A communication link is provided between IPC5000 and a host computer or PLC via RS-485 (Modbus® RTU) or Ethernet (Modbus TCP) communications option.

#### • IP65 Front Face Protection

IP65 rated front face permits use in

applications where it may be subjected to moisture, dust conditions.

#### • Asynchronous/Synchronous Mode

In Dual-Channel type, two loop controls can be run independently with different program and also they can be operated simultaneously with one single program.

#### • Multi-Language Prompts

3 different languages will be selected via configuration and displayed.

#### • PC Configuration

A free-ware will be offered and IPC5000 can be configured and operated thru this software on PC.

#### • Real Time Clock

IPC5000 provides accurate time and makes it possible to schedule running operation.

Specifications		
Model	IPC5000S	IPC5000D
<b>Display</b>		
Digital Indication & Display	Display Type	5.7 inch LCD (STN Negative, Blue)
	Screen Size (Unit: mm/inch)	$\frac{115.17}{4.534}(W) \times \frac{86.37}{3.4}(H)$
	Resolution	320(W) x 240(H)
	Back Light	LED, White (Luminous Intensity: 20cd/m <sup>2</sup> )
	Display Size	40 lines x 30 lines (8x8 dots characters)
	Display Color	Blue characters on white background
	Display Language Cap.	Up to 3 languages
	Operation	Analog touch panel (Actuation force: 10g – 80g)
<b>General</b>		
Rated Power Supply Voltage	100 to 240V AC 50/60Hz, 37VA Max.	
Inrush Current when power supply turns on	Lower than 50 A	
Insulation Resistance	Higher than 50M $\Omega$ under DC 500V megger during power terminal and PE terminal	
Withstand Voltage	1500V AC 50/60Hz for 1min across power terminal and PE terminal	
Reference	Ambient Temperature	23 $\pm$ 2 $^{\circ}$ C
	Relative Humidity	60 $\pm$ 5% RH
	Power Voltage (Vac)	110V AC
	Power Frequency	50 $\pm$ 1Hz or 60 $\pm$ 1HZ
	Vibration Resistance	0 m/s <sup>2</sup>
Operative Limits	Ambient Temperature	0 to 50 $^{\circ}$ C
	Relative Humidity	10 to 90%RH (non-condensing)
	Power Voltage (Vac)	85 to 264V AC
	Power Frequency	50 $\pm$ 2Hz or 60 $\pm$ 2Hz
	Vibration Resistance	0 to 1.96m/s <sup>2</sup> (10 to 60Hz in X, Y, Z directions for 2 hours each)
Transportation & Storage	Ambient temperature	-20 to +70 $^{\circ}$ C
	Relative Humidity	10 to +95% RH (non-condensing)
	Vibration Resistance	0 to 1.96m/s <sup>2</sup> (10 to 60Hz in X, Y, Z directions for 2 hours each)
Exterior	Case and front panel: plastic	
Mounting	Panel-mount	
Exterior Size (unit: $\frac{mm}{inch}$ )	$\frac{196}{7.717}(W) \times \frac{131}{5.157}(H) \times \frac{154}{6.063}(D)$	
Panel Cutout (unit: $\frac{mm}{inch}$ )	$\frac{185.5 \pm 0.5}{7.303 \pm 0.02}(W) \times \frac{120.5 \pm 0.5}{4.744 \pm 0.02}(H)$	

Specifications			
Model		IPC5000S	IPC5000D
Input & Output			
Analog Input	Number of point	1 point (Universal input)	2 points (Universal input)
	Type	TC : K, J, R, S, B, E, T, N (JIS/IEC), W, C RTD : Pt100 (JIS/IEC), JPt100 (JIS) Linear : VOLTAGE 0~10V, 0~5V, 1~5V CURRENT 0 ~ 20mA, 4 ~ 20mA (For details, refer to Table 1-1)	
	Sampling Rate	100 ms	
	Indication Accuracy	±0.1%FS ± 1digit (Accuracy is variable according to input type or range)	
	Cold junction accuracy	±1.0 °C (under standard conditions)	
	Input bias	-99.9 ~ +99.9 variable	
	Digital filter	0 ~ 120 sec (0: filter off)	
	Square-root Extraction	Low-cut: 0.1~5.0% of input (in case of voltage input from orifice or pressure sensor)	
	Compensation	Linearity / Approximation (1) Segment break-point: 1 to 10 of total range (2) Linearity Bias : -10000.0 ~ 10000.0 Compensation Set : -5.0~105.0% of input range span (3) Approximation Bias : -5.0~105.0% of input range span Compensation Set : -5.0~105.0% of input range span	
	Analog Output (Transmission output) : Optional	Object	PV1, SP1, MV1, DEV1
Output type		4~20mA DC	
Output accuracy		+/- 0.1% of span	
Update Rate		100 ms	
Digital Inputs (External switch input)	Number of point	12 points	
	Connectable type	No-Voltage contact (relay contact) Open collector (sink current toward 0V)	
	Allocation (Fixed)	RUN/STOP, HOLD, ADV, Trouble inputs, Program number (For details, refer to Table 1-2)	
	Trouble input	4 points	2 points
	Trouble message	32 messages (Each trouble can have its message), Max. 22 characters	
	Sampling cycle	100 ms	

Specifications			
Model	IPC5000S		
IPC5000D			
<b>Input &amp; Output</b>			
Digital Output (Event Output)	Number of point	12 points	
	Output Type	Open collector	
	External supply voltage	MAX DC30V	
	Max. load current	MAX 100mA/1ch	
	Time Event		
	Event Code	Code 0 (OFF), Code 1 (ON), Code 2 (On-Delay & Cut-Back)	
	Object	Segment Time	
	PV Event		
	Event code	Code 11 – Code 38	
	Object	Set Point (SP) / Process Variable(PV) Destination(Target) Value (DV) / Manipulated value (MV)	
	Operating point	Absolute value (ABS) / Deviation (DEV) / MAX, MIN value	
	Operating Condition	Band / LOW/HIGH	
	Range	Absolute	-19999.0~20000.0 Unit
		Deviation	-19999.0~20000.0 Unit
		Differential	0 ~ 1000.0 Unit
	On delay time	0 ~ 99 sec	
	Mode Event		
	Event code	Code 41 – Code 60	
	Object	RUN, HOLD, ADV, WAIT, MAN, TUNE, READY, FIX, STOP, END, TRBL, DOWN, UP	
	Alarm Event		
	Event Code	Code 61 – Code 80	
	Object	INNER : Object = PV, SP, DV, MV Operating point = ABS, DEV, MAX & MIN value Operating condition = Band/LOW/HIGH Range : Same with PV Event DIAGNOSIS : PV input burn-out FAIL : Instrument fail (Type: Memory, Power failure)	
	Action	RUN: Operation in RUN mode ALL: Operation in all cases	
Auxiliary Analog Input : Optional	Number of point	1 point	
	Input type	mA (4~20mA), V (0~10V, 1~5V)	
	Sampling Rate	200 ms	
	Input accuracy	±0.3%FS ± 1digit	

\* The analog input option has no functional assignment, available for future purpose only.





Specifications					
Model		IPC5000S	IPC5000D		
Control Operation					
Program	READY	Stand-by status before program start (Control stop)			
	RUN	Program running status * Program Start Quick Start by RUN/STOP key or external contact relay input Timer Start by scheduled time			
	HOLD	Status to hold program run by force			
	WAIT	Waiting status during the WAIT function enabled			
	END	Status after program completed (Control stop)			
	BREAK	POWER FAILURE or Stop status (Control stop)			
	TUNE	AUTO-TUNING status			
	Fix Control	READY	Stand-by status before program start (Control stop)		
RUN		Program running status * Program Start Quick Start by RUN/STOP key or external contact relay input Timer Start by scheduled time			
HOLD		Status to hold program run by force			
TUNE		AUTO-TUNING status			
<b>Communication</b>					
Communication	RS-232 (Basic)	Speed	9600 or 19200		
		Parity check	NONE		
		Bit length	8		
		Stop Bits	1		
	RS-485 (Option)	Data Bits per Character	Bit transfer order	LSB first	
			End of message	Idle line for three or more characters (>1.82 msec).	
	Ethernet (Option)	Protocol	Modbus TCP		
		Port	One 10Base-T(RJ-45 connector)		
		Cabling Type	UTP category 2 or better Note) UTP: Unshielded Twisted Pair cable		

**Table 1 – Input Actuations**

Input type		Input Code	Range		Measurement Accuracy	
			°C	°F		
Thermocouples	K (CA)	K1	-200.0~200.0	-328.0~392.0	+/-0.1%FS	Below 0°C: +/-0.2%FS
		K2	0.0 ~ 1200.0	32.0~2192.0	+/-0.1%FS	
		K3	0.0~800.0	32.0~1472.0	+/-0.1%FS	
		K4	0.0~400.0	32.0~752.0	+/-0.1%FS	
	J (IC)	J	0.0~800.0	32.0~1472.0	+/-0.1%FS	
	R	R	0.0~1600.0	32.0~2912.0	+/-0.1%FS	
	S	S	0.0~1600.0	32.0~2912.0	+/-0.1%FS	
	B	B	0.0~1800.0	32.0~3272.0	+/-0.1%FS	+/-4.0%FS at 0 to 260°C +/-0.15%FS at 260 to 800°C
	E (CRC)	E	0.0~800.0	32.0~1472.0	+/-0.1%FS	
	T (CC)	T	-200.0~300.0	-328~572	+/-0.1%FS	+/-0.3%FS at -200 to -45°C
	N	N	0.0~1300.0	32~2372	+/-0.1%FS	
	W	W1	0.0~1200.0	32~2192	+/-0.1%FS	
		W2	0.0~2300.0	32~4172	+/-0.1%FS	
C	C	0.0~2300.0	32~4172	+/-0.1%FS		
RTD	Pt100 (JIS/IEC)	Pt1	-200.0~500.0	-328.0~932.0	+/-0.1%FS	
		Pt2	-200.0~200.0	-328.0~392.0	+/-0.1%FS	
		Pt3	-100.0~150.0	-148.0~302.0	+/-0.1%FS	
		Pt4	-50.0~200.0	-58.0~392.0	+/-0.1%FS	
		Pt5	-40.0~60.0	-40.0~140.0	+/-0.2%FS	
		Pt6	0.0~100.0	32.0~212.0	+/-0.2%FS	
		Pt7	0.0~300.0	32.0~572.0	+/-0.1%FS	
		Pt8	0.0~500.0	32.0~932.0	+/-0.1%FS	
	JPt100 (JIS)	JPt1	-200.0~500.0	-328.0~932.0	+/-0.1%FS	
		JPt2	-200.0~200.0	-328.0~392.0	+/-0.1%FS	
		JPt3	-100.0~150.0	-148.0~302.0	+/-0.1%FS	
		JPt4	-50.0~200.0	-58.0~392.0	+/-0.1%FS	
		JPt5	-40.0~60.0	-40.0~140.0	+/-0.2%FS	
		JPt6	0.0~100.0	32.0~212.0	+/-0.2%FS	
		JPt7	0.0~300.0	32.0~572.0	+/-0.1%FS	
		JPt8	0.0~500.0	32.0~932.0	+/-0.1%FS	
DC Voltage	0~10V	DCV1	Configurable Range -19999 ~ 20000		+/-0.1%FS	
	0~5V	DCV2			+/-0.1%FS	
	1~5V	DCV3			+/-0.1%FS	
DC Current	0~20mA	MA1	(DP position is configurable)		+/-0.1%FS	
	4~20mA	MA2			+/-0.1%FS	

**Table 2 – The Function Table of External Switch Input (Digital Input)**

DI No.	Function	Detection way
DI 01	RUN/STOP (RUN ↔ STOP)	Leading edge
DI 02	HOLD	ON status
DI 03	ADV	Leading edge
DI 04	Trouble Message Input 1	ON status
DI 05	Trouble Message Input 2	ON status

- IPC5000 Single Channel Type

DI No.	Function	Detection way
DI 06	Trouble Message Input 3	ON status
DI 07	Trouble Message Input 4	ON status

- IPC5000 Dual Channel Type

DI 06	DI 07	Channel Selection
OFF	OFF	Both CH1 and CH2 Disabled
OFF	ON	CH1 Disabled, but CH2 Enabled
ON	OFF	CH1 Enabled, but CH2 Disabled
ON	ON	Both CH1 and CH2 Enabled

- Program Selection

DI 08	DI 09	DI 10	DI 11	DI 12	Pattern Selection
OFF	OFF	OFF	OFF	OFF	Select Program No. 00
OFF	OFF	OFF	OFF	ON	Select Program No. 01
OFF	OFF	OFF	ON	OFF	Select Program No. 02
OFF	OFF	OFF	ON	ON	Select Program No. 03
OFF	OFF	ON	OFF	OFF	Select Program No. 04
OFF	OFF	ON	OFF	ON	Select Program No. 05
OFF	OFF	ON	ON	OFF	Select Program No. 06
OFF	OFF	ON	ON	ON	Select Program No. 07
OFF	ON	OFF	OFF	OFF	Select Program No. 08
OFF	ON	OFF	OFF	ON	Select Program No. 09
OFF	ON	OFF	ON	OFF	Select Program No. 10
OFF	ON	OFF	ON	ON	Select Program No. 11
OFF	ON	ON	OFF	OFF	Select Program No. 12
OFF	ON	ON	OFF	ON	Select Program No. 13
OFF	ON	ON	ON	OFF	Select Program No. 14
OFF	ON	ON	ON	ON	Select Program No. 15
ON	OFF	OFF	OFF	OFF	Select Program No. 16
ON	OFF	OFF	OFF	ON	Select Program No. 17
ON	OFF	OFF	ON	OFF	Select Program No. 18
ON	OFF	OFF	ON	ON	Select Program No. 19
ON	OFF	ON	OFF	OFF	Select Program No. 20
ON	OFF	ON	OFF	ON	Select Program No. 21
ON	OFF	ON	ON	OFF	Select Program No. 22
ON	OFF	ON	ON	ON	Select Program No. 23
ON	ON	OFF	OFF	OFF	Select Program No. 24
ON	ON	OFF	OFF	ON	Select Program No. 25
ON	ON	OFF	ON	OFF	Select Program No. 26

DI 08	DI 09	DI 10	DI 11	DI 12	Pattern Selection
ON	ON	OFF	ON	ON	Select Program No. 27
ON	ON	ON	OFF	OFF	Select Program No. 28
ON	ON	ON	OFF	ON	Select Program No. 29
ON	ON	ON	ON	OFF	Select Program No. 30
ON	ON	ON	ON	ON	Select Program No. 31

## Model Interpretation

### Instruction

- Select the desired key number.  
The arrow to the right marks the selection available.
- Make one desired selection each from Table I through III.  
A dot ( • ) denotes unrestricted availability.

**KEY NUMBER**  
**IPC5000** \_ - 

Table I

 - 

Table II

 - 

Table III

### KEY NUMBER

Description		Selection	Availability	
Control Loop	Single Loop Control	IPC5000S	↓	
	Dual Loop Control	IPC5000D		↓

### TABLE I - Input & Outputs

Input	Standard Input (2 Analog Inputs + 12 Digital Inputs)	0 _	•	•
Output	Standard Output (2 Analog Outputs + 12 Digital Outputs)	_ 0	•	•
	Standard Output + 2 Analog Outputs	_ 1		•

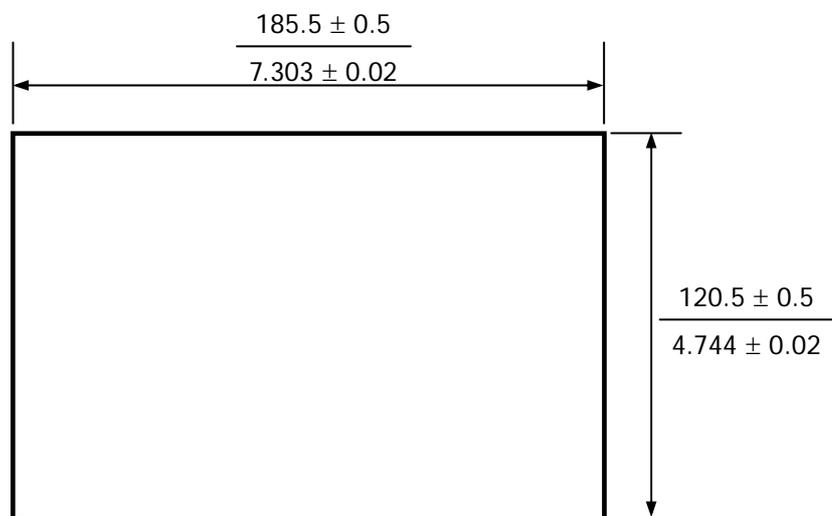
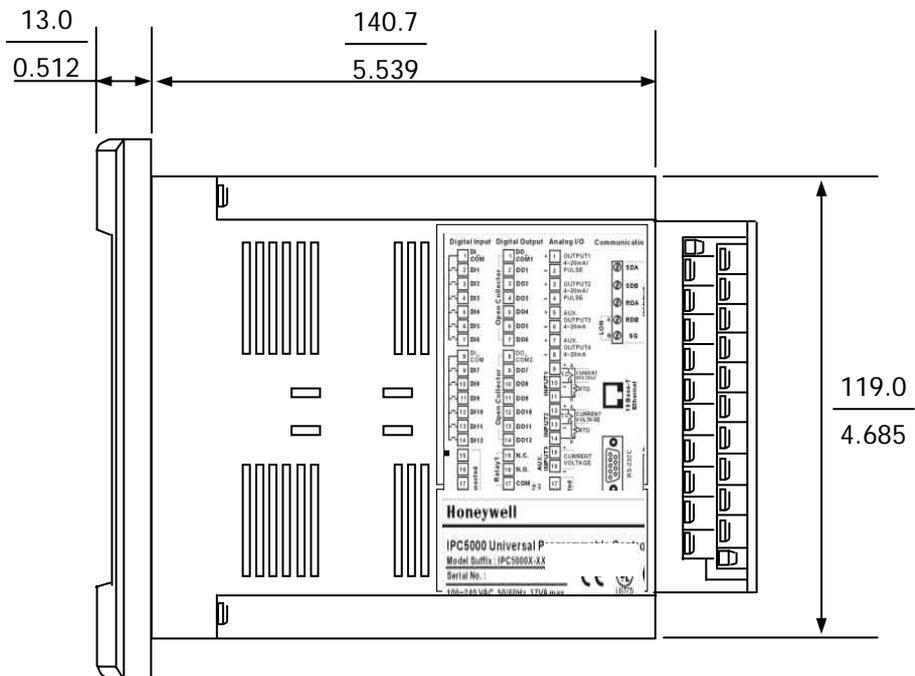
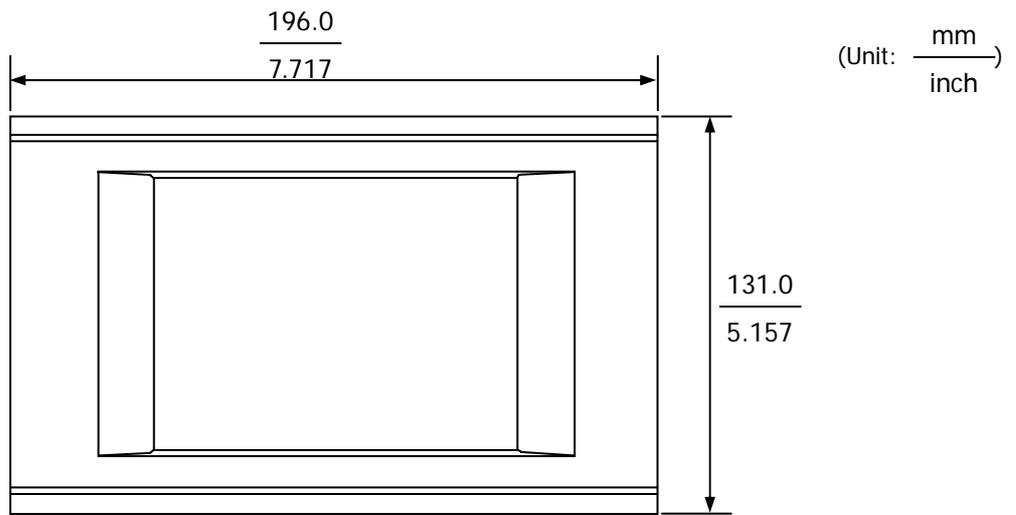
### TABLE II - Options

Communication	RS-232C	0 _	•	•
	RS-232C, RS-485 (Modbus RTU)	1 _	•	•
	RS-232C, Ethernet (Modbus TCP)	2 _	•	•
Manual & Cable	None	_ 0	•	•
	Manual CD	_ 1	•	•
	Manual CD, RS-232C Cable (connection with PC)	_ 2	•	•

### TABLE III - Language

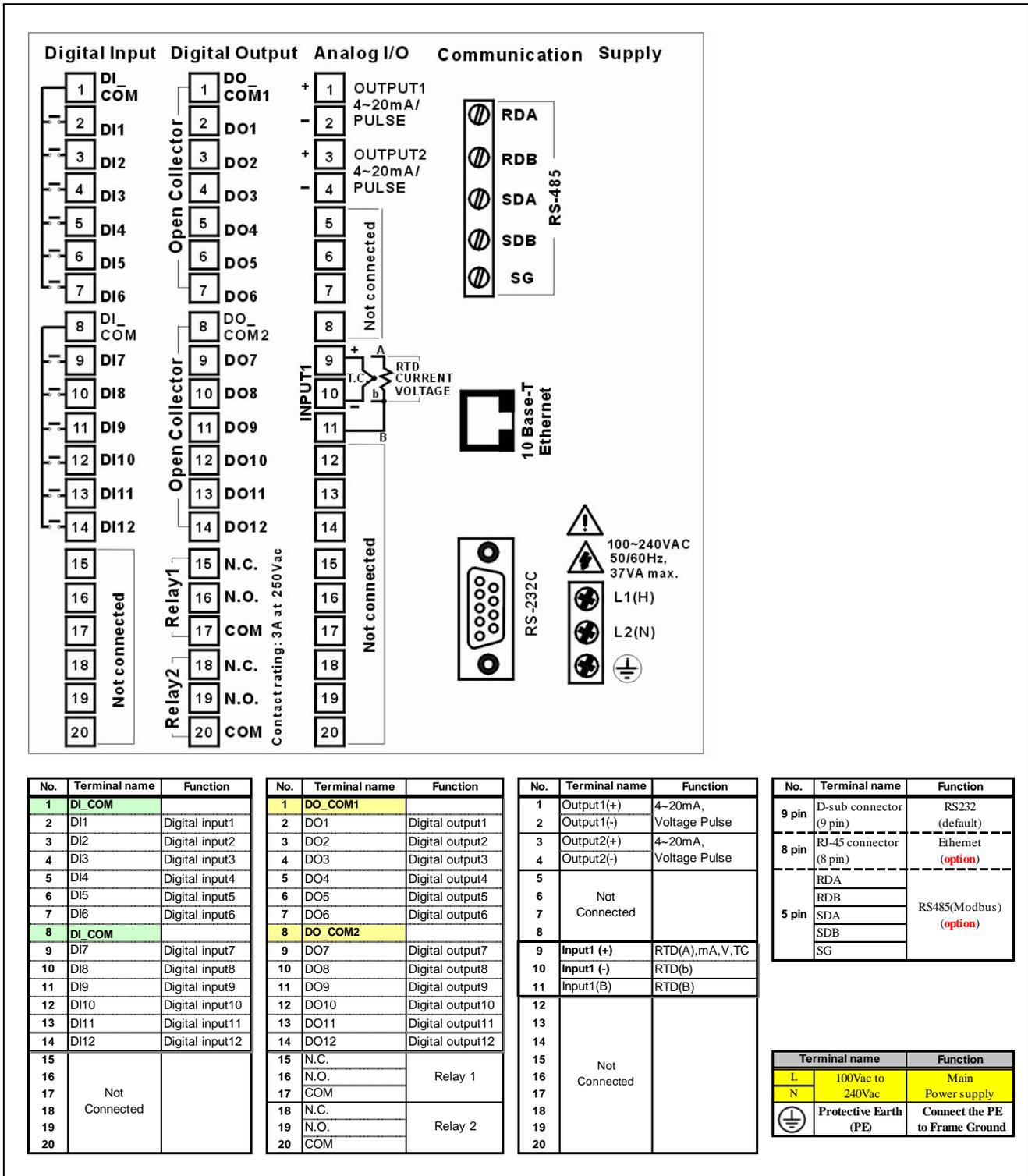
Display Language	English/Korean	0	•	•
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## External Dimension

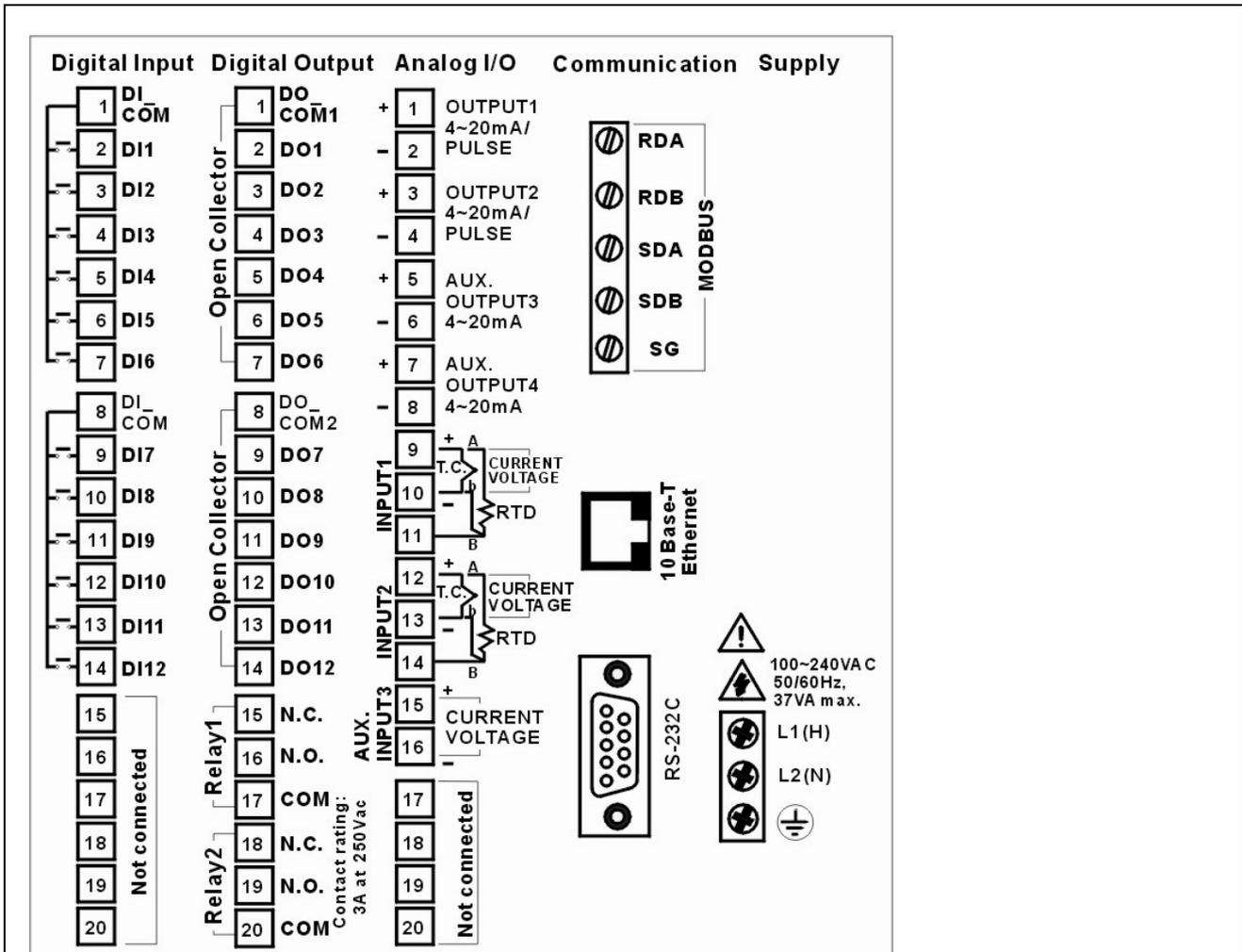


## Wiring Diagram

- Single Channel (IPC5000S)



- Dual Channel Type (IPC5000D)



No.	Terminal name	Function
1	DI_COM	
2	DI1	Digital input1
3	DI2	Digital input2
4	DI3	Digital input3
5	DI4	Digital input4
6	DI5	Digital input5
7	DI6	Digital input6
8	DI_COM	
9	DI7	Digital input7
10	DI8	Digital input8
11	DI9	Digital input9
12	DI10	Digital input10
13	DI11	Digital input11
14	DI12	Digital input12
15		
16	Not Connected	
17		
18		
19		
20		

No.	Terminal name	Function
1	DO_COM1	
2	DO1	Digital output1
3	DO2	Digital output2
4	DO3	Digital output3
5	DO4	Digital output4
6	DO5	Digital output5
7	DO6	Digital output6
8	DO_COM2	
9	DO7	Digital output7
10	DO8	Digital output8
11	DO9	Digital output9
12	DO10	Digital output10
13	DO11	Digital output11
14	DO12	Digital output12
15	N.C.	
16	N.O.	Relay 1
17	COM	
18	N.C.	
19	N.O.	Relay 2
20	COM	

No.	Terminal name	Function
1	Output1(+)	4~20mA,
2	Output1(-)	Voltage Pulse
3	Output2(+)	4~20mA,
4	Output2(-)	Voltage Pulse
5	Output3(+)	AUX. Output
6	Output3(-)	(4~20mA)
7	Output4(+)	AUX. Output
8	Output4(-)	(4~20mA)
9	Input1 (+)	RTD(A),mA,V,TC
10	Input1 (-)	RTD(B)
11	Input1(B)	RTD(B)
12	Input2 (+)	RTD(A),mA,V,TC
13	Input2 (-)	RTD(B)
14	Input2(B)	RTD(B)
15	Input3(+)	
16	Input3(-)	AUX. Input(mA,V)
17		
18	Not Connected	
19		
20		

No.	Terminal name	Function
9 pin	D-sub connector (9 pin)	RS232 (default)
8 pin	RJ-45 connector (8 pin)	Ethernet (option)
5 pin	RDA	RS485 Modbus (option)
	RDB	
	SDA	
	SDB	
	SG	

Terminal name	Function
L	100Vac to Main
N	240Vac Power supply
⚡	Protective Earth Connect the PE to Chassis ground

## Warranty / Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and is **in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose**. Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use. While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

*Specifications are subject to change without notice.*

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