

PID Controller (MODEL 5030)



Masibus' Model 5030 is a versatile micro-controller based process PID Controller with a very high performance to price ratio. Model 5030 has powerful hardware capabilities like universal inputs, transmitter powering, remote set-point, terminal embedded cold junction sensor and front keypad for user configuration. The Controller has wide range of control output options to interface with all types of end control element.

Masibus has embedded special function block for pulsed output to motorized valves (MOV) that can work with or without valve position feedback. Slide wire resistance position feedback opens out very often, causing unstable loop; such problems can be avoided using Model 5030 with pulse output without position feedback. Model 5030 has many such special process function blocks.

The input can be programmed for any one of thermocouple types, RTD Pt 100, current or voltage. The control out put is user selectable from linear voltage/current, heat/cool relays, motorized actuator, pulse output (slow/fast cycle) for SSR.

Transmitter excitation supply, remote options/ features set point input and two independent auxiliary relays are supplied as standard. Configuration, Programming, Operation & Calibration modes are protected by DIP switches. Special digit shift key facilitates quick setting and is unique to the product.

Model 5030 has optional retransmission output for interface to recorder or can provide serial RS 485 communication over MODBUS for PC interface.

Model 5030 has 4 digit display for PV, SV and 20 segment bar display for MV. Even control output can be limited using high or low limit selection.

Features

- *Micro-controller based universal process controller*
- *Wide choice of input & output types*
- *Pulsed output for MOV with/without position feedback*
- *Remote set point input for cascade control*
- *Configurable control parameters*
- *Three-level security*
- *Simultaneous PV, SV, MV display*
- *Isolated retransmission & TPS output*
- *Optional RS 485 communication*

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TECHNICAL SPECIFICATIONS

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Display

- 4 digit 0.56" Red LEDs for process variable.
- 4 digit 0.39" Red LEDs for set point.
- 20 segment bargraph for control output / valve position indication.
- Individual discrete Red LEDs to indicate relay status, auto/manual mode, Local/Remote set point, Transmit/Receive status in case of serial communication.

Accuracy

± 0.1% of F.S ± 1 Count.

Input

- Thermocouple types B, E, J, K, R, S & T (ANSI standard)
- RTD Pt 100, 3-wire.
- 4-20 mA or 1-5V DC linear.
- Other types on request.
- Input open protection : upscale.
- Common Mode Rejection ratio (CMRR) : 120 dB@ 50Hz.
- Normal Mode Rejection ratio (NMRR) : 60 dB@ 50Hz.

Input Type		Range
Thermocouple	B	100 to 1820°C
	E	-200 to 1000°C
	J	-200 to 1200°C
	K	-200 to 1372°C
	R	0 to 1768°C
	S	0 to 1768°C
RTD	T	-200 to 400°C
	PT-100 (3 wire)	-199.9 to 850°C
Linear	4 to 20 mA	-1999 to 9999
	0-5V	-1999 to 9999
Remote set-point input	0/4-20 mA	-1999 to 9999

Controls

Set, Digit shift, Increase, Decrease and Enter keys for configuration, operation, programming and calibration. With the Digit shift key individual digit can be directly changed, so data can be changed fast instead of normal increment / decrement keys.

Data access level programmable for operator level and supervisor level by DIP switch at back. Data lock provision by DIP switch at back to avoid unauthorized data access.

Control Parameters

Proportional Band : 1 to 400 (Field Configurable as Absolute, % SP, % SPAN)

Integral time (Reset) : 1 to 1800 seconds. (0-OFF)

Derivative time (Rate) : 1 to 600 seconds. (0-OFF).

Special feature of proportional band shift and integral inhibit provided for batch operation application.

Output

Control Output : Field selectable from one of the following -

- Volt / Current (0/4-20mA or 0/1-5V)
- Pulse output (Slow cycle pulse: cycle time 4 sec. / Fast cycle pulse : cycle time 0.4 sec., 12V @12mA)
- Heat / Cool relay : 2 SPDT relays rated at 2A @ 230VAC with hysteresis
- Forward / Reverse relay : 2 SPDT Relays rated 2A @ 230VAC with dead band and with/without potentiometer feedback (motorized actuator interface)
 - Resistance feedback - 100 to 1000
 - Current feedback - 4-20 mA DC

Two/Three Auxilliary Relays: Front panel configurable for control or Absolute/Deviation alarm. Relays configurable for 'on above' and 'on below'.

Acknowledge facility for alarm.

Transmitter Power Supply : 24VDC @30mA

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Retransmission output : 4-20mA Isolated @600Ω
(not available if serial communication option selected)

Options

Serial communication : RS 485 with MODBUS RTU protocol.
(not available if retransmission option selected)

Enclosure : Explosion proof (Group IIA / IIB)

Calibration

Zero and span of process variable, remote set point and valve position are adjusted by digital calibration through front panel keys. No trim-pots used.

General

Power supply	110V/230V AC ±10%, 50 Hz
Ambient	0 to 55 °C
Humidity	up to 95% RH (non condensing)
Power consumption	Less than 15 VA

Protection

Enclosure : IP20

Physical

Case	M.S. powder coated with ABS molded bezel and membrane key pad.
Terminals	Cable wire up to 2.5 mm ²
Bezel size	96mm x 96mm
Panel cutout	92 x 92 mm
Depth behind panel	220 mm max. Including terminals
Weight	Less than 2.5 Kg

ORDERING CODE

Model 5030									
Input Type	Aux output		APS		Control output		Mounting		
X	X		XX		X			XX	
1 E	N	None	A1	110VAC	R	Heat relay	P0	Panel	
2 J	3	RS485	A2	230VAC	F	F/R relay with feedback	FP	Wall-FLP	
3 K									
4 T					M	F/R relay without feedback			
5 B									
6 R					C	4-20 mA DC			
7 S					V	0-5 VDC			
9 Pt-100, 3W					S	SSR			
C 4-20mA									
D 0-20mA									
E 1-5VDC									
F 0-5VDC									

X - Specify from table