



5040 Single Loop Controller

Advanced. Precise. Compact



Masibus Model 5040 is much more than a controller capable for complex and demanding process control applications. It has accessibility of both hardware and software features in compact size making it a highly configurable product, offering many features found in costly programmable controllers. Model 5040 is available in panel mount.

5040 accepts all analog process inputs like thermocouple, RTD, current and voltage as well as 4 digital inputs, remote set point and feedback resistance input. A comprehensive controlling can be implemented using four relays, four digital outputs and two analog output with any of required control algorithm like auto-tune PID, Onoff or motorized valve control.

5040 offers field configurable control outputs comprising of relay o/p, SSR o/p & analog o/p. It has total 4 relay o/p providing a combination of alarm control output based on application requirement.

5040 offers 4 nos. of open collector digital o/p used for various alarm diagnostic o/p such as PV Input open, RS input open and VPFB input open.

Using RS-485 interface desired parameters configuration and status can be communicated to SCADA/ PLC/ DCS applications. important process values can be re-transmitted as any standard current or voltage signal.

It has fail-safe design protecting the process in case of system malfunctioning.

Features

- Universal input selection
- Panel Mount
- Universal output including valve positioner output
- Autotune PID with ratio control
- Fast loop response time of 250msec.
- 4 Relay and 4 digital outputs for control, alarms and events
- 4 Digital inputs for remote operations
- 18 Alarm types
- Auto/manual selection with bumpless transfer
- Auto-tune PID, On-Off or motorised valve control
- Analog outputs for control/retransmission
- RS-485 port with modbus RTU protocol

Applications

- Heat treatment furnaces
- Reheat furnaces
- Ceramic kilns
- Glass industry
- Flow/ pressure control
- Water and waste water control
- Ratio control

TECHNICAL SPECIFICATIONS

Input		Alarm Output		
Input 1: PV Input		Relay Ouput		
Input Type	Thermocouple (E, J, K, T, B, R, S, N) RTD (Pt100), current, voltage	Relays	3 or 4 (If control o/p is pulse / analog) 2 (if O/P is VPFB or VPNA)	
Input Range	Refer Table-1	Type & Rating	1 Change over (C, NO, NC), 5A @ 230V AC / 30V DC	
Accuracy	TC, RTD: ± 0.1% of F.S ± 1°C current, voltage: ± 0.1% of F.S ± 1 count	Digital Ouput		
ADC Resolution	17 bits	No & Type of Output	4 Open collector o/p	
Display Resolution	0.1°C / 1 count	Rating	24 VDC @ 50mA	
Sampling Rate	250 msec.	Communication Output		
CJC Error	±2.0 °C max.	Interface	RS-485 (2 Wire)	
Sensor Burnout Current	0.25uA	Protocol	Modbus RTU	
RTD Excitation Current	1mA max.	Baud Rate (bps)	9600, 19200	
NMRR	> 40dB	Transmitter Power	24VDC (±1V) @30mA	
CMRR	> 120dB	Supply		
Temp-Co	< 100ppm/°C	Power Supply		
Input Impedance	> 1MΩ	Standard	85-265V AC/110-300VDC	
Max Voltage	20VDC	Optional	18-36VDC	
Input 2: RSP Input		Power Consumption	<15 VA	
Input Type	4 to 20 mA, 0-20mA, 0-5V, 1-5V	Isolation (Withstanding voltage) ■ Bet ⁿ primary terminals* and secondary terminals**At least 1500V AC for 1 minute ■ Bet ⁿ primary terminals* and grounding terminal:At least 1500 V AC for 1 minute ■ Bet ⁿ grounding terminal and secondary terminals**At least 1500 V AC for 1 minute ■ Bet ⁿ secondary terminals**:At least 500 V AC for 1 minute * Primary terminals indicate power terminals and relay output terminals. ** Secondary terminals indicate analog I/O signal and communication O/P. Insulation resistance: 50MΩ or more at 500 VDC between power terminals and grounding terminal		
Sampling Rate	750 msec.			
Accuracy	±0.1% FS			
Input Impedance	1 MΩ			
Input 3: ZV Input				
Input Type	Potentiometer 100 to 2K Ohm			
Resolution	0.1%			
Digital Input				
Input Type	4, Potential free or open collector			
Rating	24VDC @ 5mA max.			
Display & Keys		Physical		
Process Value	0.56" Four-digit 7 segment red LED			
Set Value	0.4" Four-digit 7 segment green LED			
Manipulated Val/ZV	20 Segment orange LED	Mounting Type	Panel	
Status Indication	Four red LED's for relays, alarm, Auto/manual, set point selection, valve position feedback, green LEDs for communication	Dimension (in mm)	96(H) x 96(W) x 110(D)	
		Panel Cut Out (in mm)	92.5(H) x 92.5(W)	
Keys	Menu, escape / A/M, shift, increment	Weight	500 grams	
Output		Enclosure Material	ABS plastic	
Control output (Field Programmable)		Ingress Protection	IP20 (Except terminals)	
Manual Offset in P Mode	±50% of P band	Area Classification	Safe	
Proportional Band	0.1 to 999.9	Terminal Cable Size	2.5mm²	
Integral Time	0 to 1000 sec.	Accessories	Two mounting clamps	
Derivative Time (Rate)	0 to 250 sec.	Environmental		
Cycle Time	1 to 250 sec.	Operating Temperature	0 to 55°C	
Auto-Tuning	Yes	Storage Temperature	0 to 80°C	
Hysteresis	1 to 250 (on/off mode)	Humidity	20 to 95 %RH Non-condensing	
Relay Output		Table 1: Display Range		
Relays	1 or 2 (2 for forward/ reverse motor control type)	Thermocouple	Input Type	Ranges
Type & Rating	1 Change over (C, NO, NC), 5A @ 230V AC / 30V DC		E	-200 to 1000°C
Mode	PID or ON/OFF control (field selectable)		J	-200 to 1200°C
SSR Output			K	-200 to 1370°C
Rating	11VDC @ 20mA		T	-200 to 400°C
Resolution	10 mSec.		B	450 to 1800°C
Analog Output			R	0 to 1750°C
Output Signal	4-20 mA@500 Ω max.	S	0 to 1750°C	
Accuracy	±0.25% of FS	N	-200 to 1300°C	
Retransmission Output		RTD	Pt-100	-199.9 to 850.0°C
Number of Output	1 (Field Programmable, selectable for PV, MV or ZV)	Linear	-10 to 20mV	-1999 to 9999
Output Signal	0/4-20mA @ 500 ohm Max; 0/ 1-5VDC, 0-10 V DC @ 3 K ohms min.		0 to 75mV	
Output Accuracy	±0.25% of span		0 to 100mV	
			0.4 to 2V, 0 to 2V	
			4 to 20mA, 0 to 20mA (Ext 100Ω)	
		0 to 5V		
		1 to 5V		
		0 to 10 V		

TECHNICAL SPECIFICATIONS

Ordering Code										
Model	Input type		Aux Power Supply		Control Ouput		Rx Output		DI/ DO	
5040	X		X		X		X		X	
	1	E	U1	85-260VAC/ 110-300VDC	1	Relay	N	None	N	None
	2	J	U2	18-36VDC	2	SSR	1	4-20mA	Y	Yes
	3	K	X – Specify from table		3	Analog	2	0-20mA		
	4	T			4	F/R	3	1-5V		
	5	B					4	0-10V		
	6	R								
	7	S								
	8	N								
	9	Pt-100								
	A	-10-20mV								
	B	0-75mV								
	C	0-100mV								
	D	0.4-2V								
	E	0-2V								
	F	0-5V								
	G	1-5V								
	H	0-10V								