masibus®
A Sonepar Company

5040 / 5040-XP
Single Loop Controller

Advanced. Precise. Compact

Masibus Model 5040 / 5040-XP 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 option, whereas 5040-XP is available in Ex-proof, Wall mount Dual Compartment enclosure.

5040 / 5040-XP 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 / 5040-XP 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 / 5040-XP 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 RS485 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
- Available in two options
  - 5040: Panel mount
  - 5040-XP: Wall mount, Dual Compartment, Ex-proof (IP65, Gas Group, IIA/IIB)
- 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
- RS485 port with Modbus RTU protocol

Applications

- Heat treatment furnaces
- Reheat furnaces
- Ceramic Kilns
- Glass Industry
- Flow/ Pressure control
- Distillation and Reactor control in Chemical plants
- Water and waste water control
- Ratio Control

TECHNICAL SPECIFICATIONS

Input

Input 1: PV Input	
Input Type	Thermocouple (E, J, K, T, B, R, S, N) RTD (Pt100), Current, Voltage
Input Range	Refer Table-1
Accuracy	TC, RTD: ± 0.1% of F.S ± 1°C Current, Voltage: ± 0.1% of F.S ± 1 Count
ADC Resolution	17 bits
Display Resolution	0.1°C / 1 Count
Sampling Rate	250 msec
CJC Error	±2.0 °C Max
Sensor Burnout current	0.25uA
RTD excitation current	1mA Max
NMRR	> 40dB
CMRR	> 120dB
Temp-co	< 100ppm/°C
Input Impedance	> 1MΩ
Max Voltage	20VDC
Input 2: RSP Input	
Input Type	4 to 20 mA, 0-20mA, 0-5V, 1-5V
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

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
Status Indication	Four Red LED's for Relays, alarm, Auto/Manual, Set point selection, Valve Position Feedback, Green LEDs for Communication
Keys	Menu, Escape / A/M, Shift,Increment

Output

Control output (Field Programmable)	
Manual offset in P mode	±50% of P band
Proportional band	0.1 to 999.9
Integral time	0 to 1000 sec
Derivative time (Rate)	0 to 250 sec
Cycle time	1 to 250 sec
Auto-tuning	Yes
Hysteresis	1 to 250 (on/off mode)
Relay Output	
Relays	1 or 2 (2 for forward/ reverse motor control type)
Type & Rating	1 Change over (C, NO, NC), 5A @ 230V AC / 30V DC
Mode	PID or ON/OFF control (field selectable)
SSR Output	
Rating	11VDC @ 20mA
Resolution	10 mSec
Analog Output	
Output Signal	4-20 mA@500 Ω Max
Accuracy	±0.25% of FS
Retransmission Output	
Number of Output	1 (Field Programmable, selectable for PV, MV or ZV)
Output Signal	0/4-20mA @ 500 ohm Max; 0/ 1-5VDC, 0-10 V DC @ 3 K ohms min
Output Accuracy	±0.25% of span

Alarm Output

Relay Ouput	
Relays	3 or 4 (if control o/p is pulse / Analog) 2 (if O/P is VPFB or VPNA)
Type & Rating	1 Change over (C, NO, NC), 5A @ 230V AC / 30V DC
Digital Ouput	
No & Type of Output	4 Open Collector o/p
Rating	24 VDC @ 50mA

Communication Output

Interface	RS485 (2 Wire)
Protocol	Modbus RTU
Baud Rate (bps)	9600, 19200
Transmitter Power Supply	24VDC (±1V) @30mA

Power Supply

Standard	85-265V AC/110-300VDC
Optional	18-36VDC
Power consumption	<15 VA

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

Physical

	5040	5040-XP
Mounting Type	Panel	Wall mount using 2 Nos of M8 size bolts
Dimension (in mm)	96(H) x 96(W) x 110(D)	340(H) x 186(W) x 165(D)
Panel cut out (in mm)	92.5(H) x 92.5(W)	NA
Weight	500 grams	<6Kg
Enclosure Material	ABS Plastic	Explosion Proof, Aluminum Alloy LM-6, Ex-d
Ingress Protection	IP20 (except terminals)	IP65
Area Classification	Safe	Zone 1 & 2, Gas Group: IIA & IIB
Terminal Cable Size	2.5mm²	2.5mm²
Accessories	Two mounting clamps	5 Nos M20 Cable Glands

Environmental

Operating Temperature	0 to 55°C
Storage Temperature	0 to 80°C
Humidity	20 to 95 %RH non-condensing

Table 1: Display Range

	Input Type	Ranges
Thermocouple	E	-200 to 1000°C
	J	-200 to 1200°C
	K	-200 to 1370°C
	T	-200 to 400°C
	B	450 to 1800°C
	R	0 to 1750°C
	S	0 to 1750°C
	N	-200 to 1300°C
RTD	Pt-100	-199.9 to 850.0°C
Linear	-10 to 20mV	-1999 to 9999
	0 to 75mV	
	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	
5040-XP	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			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	X – Specify from table							
	G	1-5V								
	H	0-10V								

Head Office: Masibus Automation And Instrumentation Pvt. Ltd.
B-30, GIDC Electronics Estate, Sector-25, Gandhinagar-382044, Gujarat, India.
Tel: +91 79 23287275-77, Fax: +91 79 23287281.
E-mail: sales@masibus.com, Web: www.masibus.com

All specifications are subject to change without notice due to continuous improvements.
Doc. Ref.5040 / 5040-XP_R2F_1120