



5040 Single Loop Controller

Features

- Universal Input, 17 Input types
- Universal output including Valve positioner (with and without feedback) output
- Universal Power Supply
- Fast Loop response time of 250 mSec
- Digital filter with brightness control
- 4 Relay and 4 Digital outputs freely configurable for Control, Alarm and events
- 18 Alarm types
- Levels of configuration and password protection
- All Configuration and Calibration from front panel keypad
- Auto tune PID with cascade and Ratio control
- Auto/Manual selection with bump less transfer
- 4 Digital Inputs for remote operation
- 2 Isolated Analog outputs for control /Re-Transmission
- Isolated communication port with Modbus RTU protocol
- Draw-out design for ease of maintenance and replacement

Benefits

- One controller for all input and output types
- Suitable for wide range of AC/DC Aux supply
- Fast Loop Response suits all process control applications including flow
- Freely configurable I/Os meets most demanding applications
- User friendly menu to configure and calibrate
- All configuration, status and calibration parameters available on Modbus
- Re-Transmission and Communication feature for Interface with DAS/SCADA/PLC
- Most compact, comprehensive and cost effective

Application

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

Technical Specifications:

Input:

PV : 1

Type	Range
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
Pt-100	-200 to 850 °C
-10 to 20 mV	-1999 to 9999
0 to 75 mV	
0 to 100 mV	
0.4 to 2 V	
4 to 20mA(Ext.100Ω)	
0 to 2 V	
0 to 20 mA(Ext.100Ω)	
0 to 5V	
1 to 5 V	
0 to 10 V	

ADC Resolution : 17 bits
 Display Resolution : 0.1 / 1.0 °C
 Sampling rate : 4 samples/sec

Accuracy

E,J,K,T,N : 0.1% of FS (Rdg ≥ 0 °C) 0.25% of FS(Rdg < 0 °C)

B,R,S : 0.25% of FS

Pt-100, mV, V : 0.1% of FS

CJC error : ± 2.0 °C Max

Sensor open : All inputs except 0-5/10 V

T/C Burnout current : 0.25uA

RTD excitation current : 1.0 mA max

NMRR : > 40dB

CMRR : > 120dB

Tempco : < 100 ppm

Input Impedance : > 1MΩ

Max Voltage : 20V dc

SV

Type	Range
0 to 5 V 0 to 20mA(Ext.250Ω)	-1999 to 9999
1 to 5 V 4 to 20mA(Ext.250Ω)	

ADC Resolution : 17 bits
 Sampling rate : 3 X PV sampling rate
 Accuracy : 0.1% of FS
 Input Impedance : > 1MΩ

ZV : Potentiometer 100Ω to 2KΩ

Protection : Wire Break detection of any wire

Resolution : 0.1%

Digital Input : 4, Potential free or open collector

Rating : 24V DC@5mA max

Outputs

Loop power supply : 24V DC ± 1V@ 26mA (current limited)

Control output (Field programmable)

Relay
 :No. of Relays : 2
 Type : 1 change over contacts
 Rating : 2A@ 230VAC/30 VDC

Pulse
 Rating : 11V DC@20mA
 Resolution : 10ms

Linear
 : 4-20mA@500Ω max
 Accuracy : 0.25% of FS

Alarm outputs

Relay : 2 or 4(If control output is linear/pulse)
 Type : 1 change over contacts
 Rating : 2A@ 230VAC/30 VDC
 Open collector : 4
 Rating : 24V DC@50mA

Re-Transmission output

1 (Field programmable)
 Selectable for PV, MV or ZV
 Current or Voltage : 0/4-20mA @500Ω Max
 Accuracy(DAC) : 0/1-5V, 0-10V @10KΩ Min
 Isolation : 0.25% FS
 : With Primary terminals :1500VAC/1 Min
 : With Secondary terminals: 600VAC/1 Min

Communication

Type : Rs485
 Protocol : Modbus RTU
 Baud Rate : 9600/19.2k.
 Isolation : With Primary terminals :1500VAC/1 Min
 : With Secondary terminals: 600VAC/1 Min

Control Mode

Manual offset in P mode : On/Off, P, PI, PID
 P band : ±50% of P band
 Integral : 0.1 to 999.9
 Derivative : 0(off) to 1000 secs
 Cycle time : 0(off) to 250 secs
 Auto tuning : 1 to 250 secs (Hys in on/off mode)
 : Yes

Display

PV : 0.56" Red 4 digit
 SV : 0.4" Green 4 digit
 MV/ZV : 20 segment orange Bar
 Status : Discrete LEDs
 : 5 for configuration, calibration & operation

Keys

Power supply

Standard : 85-260VAC @ 50Hz
 Optional : 18-36VDC
 Consumption : 15VA Max

Environmental

Operating temperature : 0-55 °C
 Storage temperature : 0-80 °C
 Humidity : 30-95 %RH non-condensing
 Insulation Resistance : > 50MΩ @500VDC
 Dielectric : 1500VAC@50Hz for 1 minute
 Protection : IP20

Physical

Enclosure : Molded ABS
 Weight : 500 grams approx
 Color : Black
 Front Bezel : 96 x 96 mm
 Panel Cutout : 92.5mm x 92.5mm
 Depth behind panel : 110 mm
 Accessories : 2 numbers mounting clamps

ORDERING CODE

Model	Inputs	APS	Control	O/P	RX O/P
5040	1 E	U1 85-260VAC	1 Relay	1	4-20mA
	2 J	U2 18-36VDC	2 Pulse	2	0-20mA
	3 K		3 Linear	3	1-5V
	4 T		4 F/R	4	0-5V
	5 B			5	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					

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