masibus

409

Smart Indicator

Model-409 is a powerful micro-controller based process indicator, designed to accept multiple input types and two programmable set points with individual relays. Model-409 accepts 21 different types of inputs (all industry standard input) which are field configurable, facilitates plant operator to use in any application. Model-409 is easy to operate and configuration is user friendly. CJC compensation for thermocouple input is done through software for higher accuracy. Provision for range setting is provided to restrict usage band for process safety.

Model-409 is equipped with transmitter power supply; two relays, retransmission output and serial communication RS485 as standard, making this model a benchmark product in the international market. Model-409 uses 5 digit LED display to address process flow rate, weighing measurement application with a high accuracy of ±0.1% FS. Model-409 is a stable & rugged indicator, the first choice of OEMs and end users. Model-409 utilizes its unique feature of LED brightness control which enables plant engineers/ operators to adjust intensity of controllers' LED display in order to achieve comfort for eyes.

Digital input facility is available to reset process value logged for min & max value as 'PV Hi' & 'PV Lo' parameters respectively. Importantly, retransmission output is isolated from other input/ output and internal circuit. Model-409 uses SMPS power supply to cover wide range of power supply from 85 to 265 VAC at 50 Hz to survive in industrial power fluctuation conditions.

Model-409 has a powerful watchdog circuit with close monitoring of software loop that ensures the proper instrument operation in case of power spikes that are very common in industrial environment. This model can also be used as single point Remote Terminal Display, using its serial communication data transfer capability through RS485 on MODBUS protocol. Model-409 is packaged in 96(W) x 48(H) x 112(D) mm industrial standard ABS plastic enclosure (panel mounted) with front facial & enclosure rated to general purpose.

Features

- Micro-controller based advanced process indicating alarm unit
- 21 selectable input types
- LED brightness control
- Transmitter Power Supply built-in
- Standard serial communication
- Digital Input-Reset PV min/max value
- Two independent programmable alarm output
- Can be used as remote terminal unit (RTU)
- Easy configuration front keys

Technical Specifications:

Display	
PV	Red LED 5-digit, character size 0.56".
LED	for status indication (Alarm and Tx/Rx)
Operation keys	Escape, Enter, Increment, Decrement
Display Range	Refer Table 1
Burn out current	0.5 uA
Reference Junction compensation error	±2 ºC
Noise Rejection Ratio	
Common mode	>100 dB (50Hz)
Normal mode	>40 dB (50Hz)
RTD	Allowable lead wire resistance 15 Ω or less.
Input Impedance	1MΩ (Approx.) for TC, RTD, 0-2V, 0. 4-2V, 0-75mV, ±75mV, 0-400 Ω. 220 kΩ for 0-10V, ±10V 440 kΩ for 0-5V, 1-5V, 0-6000 Ω.
TEMPCO	< 100 ppm for input to display <150 ppm for retransmission output
Input Sampling period	4 Sample/Sec

Alarm	
Alarm AL1	Momentary Alarm
	Condition – high/low/vlow
	Lamp – on/flash/latch
	Relay – on/off
Alarm AL2	Momentary Alarm
	Condition – vhigh/high/low
	Lamp – on/flash/latch
	Relay – on/off

Note: The possible combinations are explained in the operational manual.

Re transmission output (Factory set for current or voltage)	
DC Current	0 to 20 mA DC, 4 to 20 mA
DC Voltage	0 to 5V DC, 0 to 10 VDC, 1 to 5V
	Accuracy ±0.25% of full Span
Load Resistance for current O/P	600 Ω or less
Load Resistance for Voltage O/P	2 KΩ or more
Supply voltage	85 to 265V AC, 50Hz.
	Optional 18 - 32 VDC available
Power Consumption	Max. 10VA
Insulation resistance	Between Power supply terminal and ground terminal, 500V DC 50 MΩ.

Environment	
Ambient	0 to 55 ºC.
Humidity	20 to 95% RH (Non-condensing)

Case	
Material	ABS Plastic
Color	Black
Mounting method	Panel mounting
Dimension	96(W)*48(H)*112(D)
Panel Cutout	92(W)*46(H)
Weight	260 grams (Approx.)

Communication	
Communication Interface	Based on EIA RS-485
Communication method	Half-duplex communication start stop synchronous.
Communication Speed	4800/9600/19200/38400bps selectable by key
Parity	None
Communication Protocol	Modbus RTU
Connectable number of unit	Max.32 unit per host computer
Communication error detection	CRC check
Contact Input	1-Channel (Isolated) Non- voltage contact input, Maximum reverse voltage 6V, Maximum Forward voltage 50V, Capacity 24V DC, 10mA
Transmitter Power Supply	24V DC ±10% @26mA (±10 % accuracy)

Isolation specification

Measured input terminal - Isolated from other input/output terminals.
24V DC supply for transmitter - Isolated from other input/output terminal and internal circuit.
Retransmission output terminal - Isolated from other input/output terminal and internal circuit
Relay contact output terminal/RS-485 communication terminal/Power supply terminal/ground terminal - Isolated from other input/output terminal and internal circuit.

Table-1: Display Range

Input	Input Type	Range	Accuracy
TC	E	-200.0 to 1000.0 ºC	±0.1 % Of Full span ± 1 digit
	J	-200.0 to 1200.0 ºC	
	K	-200.0 to 1350.0 ºC	
	T	-200.0 to 400.0 ºC	
	B	450.0 to 1800.0 ºC	
	R	0.0 to 1750.0 ºC	
	S	0.0 to 1750.0 ºC	
RTD	Pt-100	-200.0 to 850.0 ºC	
DC * Current	4-20 mA	-19999 to 19999	
	0-20 mA	-19999 to 19999	
DC Voltage	0-5 V	-1999.9 to 1999.9	
	1-5 V		
	0-2 V		
	0.4 – 2V		
	± 10V	-199.99 to 199.99	
	0-10 V		
	-10-20mV		
	± 75 mV	-19.999 to 19.999	
	0-75 mV		
Resistance Input	0-400Ω	-1.9999 to 1.9999	
	0-6000Ω		

* For DC Current input, 250Ω shunt resistor (sold separately) must be externally installed.
For DC current and voltage input, scaling is possible and decimal point can be changed.

Ordering Code

Model			Retransmission O/p	
409	APS		X	
	A1	85-265 VAC	1	4-20 mA
	A3	18-32 VDC	2	0-20 mA
			3	1-5 VDC
			4	0-5 VDC
			5	0-10VDC

Head Office:
Masibus Automation And Instrumentation Pvt. Ltd.
B-30, GIDC Electronics Estate, Sector-25, Gandhinagar-382044, Gujarat, India.
Tel: +91 79 23287275-79, Fax: +91 79 23287281-82.
E-mail: sales@masibus.com, Web: www.masibus.com

Masibus Representative:

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