

Micro Motion 7951 signal converter

- Density and Viscosity measurement
- 3 Serial communication ports
- High resolution 20 bit A/D converter for analog inputs

Introduction

The Micro Motion 7951 Signal Converter has been specifically designed to operate with the Micro Motion gas density, liquid density and viscosity transducers. It offers the user a powerful tool to process the live input values from the transducers in a simple to use panel mounted package.

The 7951 Signal Converter is offered with two software options, namely:-

- 1020 software for gas applications. This software is configured to accept up to two inputs from either Micro Motion gas density or gas specific gravity transducers.
- 2010 software for liquid applications. This software is configured to accept single inputs from Micro Motion liquid density and viscosity transducers.



Inputs

Density/Base density/Viscosity

No. of inputs	4
Periodic time	100µs to 5000µs
Periodic time uncertainty	± 6ppm typical
Input trigger level	0.5V Max. input level: 30V
Resolution	1ns at 1.5kHz for 1 second sampling
Input impedance	10kΩ nominal

Analog

Number of inputs	4 as standard, option of 10 (D-type connectors) 8 (Klippon connectors)
Type	4 to 20 mA, 0 to 20 mA
Span selection	Unlimited (keyboard selectable)
Uncertainty	< ± 0.008% full scale
Resolution	20 bit (1 part per million)
Sampling time	50 ms per channel

Technical specification sheet

IP7951/SC, Rev. A

April 2008

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Temperature - PRT / RTD

Number of inputs	4 (using the first four analog channels)	
Configuration	4 wire: Power return line connected to analog input ground	
Temperature range	-220°C to + 220°C for 100Ω PRT	
Limits of error and resolution (100Ω PRT calibrated in region of operation)	Maximum error ± 0.05°C	Resolution ± 0.02°C
Sampling cycle time	50ms per channel	

Status

Number of inputs	'D' type connector 10 standard, option of 18, Klippon Connector 6.
Input voltage required	5 - 24V per channel
Update rate	0.5ms for prove detect, others 250ms max.

Power

Voltage	+21V to + 30V dc
Power consumption	Unloaded: 20 watts (max.) Loaded: 35 watts (max.) Max start up current 2A
Transducer energisation: General instrumentation Flowmeter	One independent 24V output, @ 800mA One independent voltage switchable to 8 or 16V. @ 120mA

Outputs

Analog

Number of output channels	4 as standard [8 with option board fitted]
Type of output	Current (Powered by FC)
Power	One 24V supply with capacity for 8 outputs @ 25mA each
Max. loop impedance	1K Ω
Type	4 to 20 mA or 0 to 20 mA (selectable)
Zero offset	20% or 0% (Keyboard selectable)
Span selection	Unlimited (Keyboard selectable)
Accuracy	12 bit (±0.075% of full scale)
Resolution	1 part in 3500
Output impedance	1MΩ minimum
Output representation	Any measured or computed value (Keyboard selectable)
Update rate	0.1 seconds minimum
Isolation	All analog outputs are galvanically isolated from ground (but not from each other)

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Status/Alarms

Number of outputs	'D'-Type connectors, 9 standard, option of 17, Kippon connectors 7
Type	FET open drain and 1 off relay (0.5 Amp DC)
Rating	250mA @ 24V
Switching voltage	24V

Communications – Serial

Number serial ports	3
Type:	RS 232 or RS 485 (selectable) Port 1 is RS 232
Software protocols:	Modbus ASCII, RTU (Master, Slave & Peer) Data type IEEE 32 & 64 Bit commands 03 and 16
Baud rates:	300, 600, 1200, 2400, 4800, 9600, 19200 baud
Stop bits:	Selectable 1 or 2
Parity bits:	Even, odd or none
Number of data bits:	Selectable 7 or 8

Displays

Number of characters per line:	20 Alpha numeric
Number of lines:	4
Colour of display:	Black/yellow (back lit) Type: LCD, continuously powered

Microprocessor

Processor:	Motorola
Clock speed:	24 MHz
Computation resolution:	64 Bit (IEEE 754), fully floating point maths package Embedded OSE Real time operating system
Program storage:	2.0 MByte Flash
Data storage:	2.0 MByte RAM
Computation accuracy:	< 1 part in 10 ¹¹
Process data retention:	Internal lithium cell, 24 months when 7951 is unpowered

Real time clock

Accuracy:	1 part in 90000
Power:	Internal lithium button cell

Environment

Storage temperature:	-20°C to + 70°C (-4°F to + 158°F)
Working temperature:	0°C to + 50°C (+32°F to + 122°F)
Humidity:	Up to 90% non-condensing

Physical

Enclosure:	IP50 from front panel when mounted
Dimensions:	Height 101 mm (3.98") Width 197 mm (7.76") Depth 257 mm (10.1")
Weight:	2.5 Kg (5.5lb)
Vibration:	Tested to IEC 60068-2-6, Part II, frequency range 10 - 150Hz, max acceleration 20m/s ²
EMC Emissions & Immunity:	EN 61326-1997 Industrial locations

Signal converters

Ordering codes

7951 MA	7951 Micro Motion signal converter						
	A	Klippon connector 4 analog i/p's as standard (8 analog inputs if option 8 below)					
	B	D-type connectors 4 analog i/p's as standard (10 analog inputs if option 8 below)					
	Code	Software application					
	0	Gas applications - 1020 Signal Converter software					
	5	Liquid applications - 2010 Signal Converter software					
	Z	Non standard software (ETO)- please specify full version and issue number with order					
	Code	Communications ports					
	3	Three serial comms ports					
	Code	Analog inputs and outputs					
	4	4 analog inputs and 4 analog outputs					
	8	8 (Klippon) OR 10 ('D'-Type) analog inputs and 8 analog outputs					
	Code	Option boards					
	N	None					
	Code	Connector kits for use with 25 way D-Type connectors					
	N	No connector kits required					
	5	5 connector kits for use with 7951 MA B					
	Code	Configuration tool					
	N	Not required					
	B	PC Config and Serial Communications cable					
	C	Factory configuration					
7951 MA	A	0	3	4	N	N	B

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