

Specification sheet

D301462X412
December 2008

Flow computers

7955 flow computer specification

- Pulse integrity to IP 252/76, API Ch 5.5 Level A
- 5 Serial ports & 1 Ethernet port
- High resolution 20 bit A/D converter for analog inputs
- 4 meter run (stream) and proving capability
- Hot duty standby for multi-stream applications available as standard



Introduction

The 7955 flow computer can be utilised for single, dual, three or four stream applications, with or without a prover on liquid applications. Application software is available for both liquid hydrocarbon and gas applications. Please see page 4 for ordering code.

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

Pulsed flow meter inputs: typically turbine, PD meter, ultrasonic or Coriolis

Number of inputs	5 (software configurable as either single or dual pulse) 5th input is reserved for master meter prover input
Pulse integrity checking	IP 252/76, API Ch 5.5 Level A
Pulse interpolation/dual pulse chronometry	API MPMS Ch 4.6
Type	Pulse count, maximum rise time 80ms
Input trigger level	0.5V
Max. voltage level	30V
Frequency range	Dual pulse (A & B) 0 to 5kHz, minimum pulse width 100µs Single pulse 0 to 10kHz, minimum pulse width 50µs

Analog

Number of inputs	16 (user assignable)
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

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<i>Temperature - PRT / RTD</i>		
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	
<i>Status</i>		
Number of inputs	26 Opto - coupled/fully floating	
Input voltage required	5 - 24V per channel	
Update rate	0.5ms for prove detect, others 250ms max.	
<i>HART</i>		
Number of inputs	16 variables Up to 4 HART loops Point to point and multi drop support (each loop uses an analog input channel)	
Sampling time	400 ms per active transmitter	
<i>Power</i>		
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		
<i>Analog</i>		
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)	
<i>Pulse Outputs</i>		
Number of outputs	5	
Type	Open collector	
Output rating	200mA @ 24V with programmable on-time	
Switch voltage	24V maximum	
Maximum frequency	10 Hz	
<i>Status/Alarms</i>		
Number of outputs	25	
Type	FET open drain and 1 off relay (0.5 Amp DC)	
Rating	250mA @ 24V	
Switching voltage	24V	

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Communications – Serial

Number serial ports	3 (Standard) 5 (optional)
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 16 Bit integers optional, 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

Communications – Ethernet

Number of Ethernet ports:	1 Ethernet Port available Local area (LAN) & Wide area (WAN) network support 10 Base T performance
Protocol:	Modbus over TCP/IP
Physical:	15 way IAU socket, an external MAU transceiver is required (by others)

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:	16 MHz
Computation resolution:	64 Bit (IEEE 754), fully floating point maths package Embedded OSE Real time operating system
Maths co processor:	Yes
Program storage:	3.0 MByte Flash
Data storage:	1.0 MByte RAM
Computation accuracy:	< 1 part in 10^{11}
Process data retention:	Internal lithium cell, 24 months when 7955 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 355 mm (14.0")
Weight:	3.5 Kg (7.7lb)
Vibration:	Tested to IEC publication 68-2-6, Part II, frequency range 10 - 150Hz, max acceleration 20m/s ²
Safety:	To BS EN61010 standards
EMC Emissions & Immunity:	EN 61326-1997 Industrial locations. Emissions EN 55022 & Immunity EN 61000-4

Flow computers

Ordering codes

7955 EA	7955 Flow Computer						
	B	D-type connectors (16 analog inputs)					
		Code	Software application <i>note 2</i>				
		4	Gas applications - Quad Stream 1540 Flow Computer software				
		8	Liquid applications - Quad Stream 2540 Flow Computer software				
		Z	None standard - please specify full version and issue number with order				
		Code	Communications ports				
		3	Three serial comms ports				
		5	Five serial comms ports and NO Ethernet port				
		6	Five serial comms ports and 1 Ethernet port				
		Code	Analog inputs and outputs				
		4	16 analog inputs and 4 analog outputs				
		8	16 analog inputs and 8 analog outputs				
		Code	Option boards				
		N	None				
		H	4 channel HART board required				
		Code	Connector kits for use with 50 way D - type connectors ¹				
		N	No connector kits required				
		3	3 connector kits				
		Code	Configuration tool				
		N	Not required.				
		B	PC Config and Serial Communications cable				
t	t	t	t	t	t	t	t
7955EA	B	8	3	4	N	N	B

Note

- 1 7955 EA B has 3 off 50 way 'D'-type connectors, connector kits provide a 1.8m cable and a Din rail mounted connector block with screw terminals.
- 2 Software supplied will be latest issue of software, unless otherwise specified on order.

For further details about the 7955 flow computer capability and functionality please see
 D351484X412 for liquid hydrocarbon applications
 D351485X412 for gas applications
 or visit www.emersonprocess.com/remote/

For single stream applications please ask for details of the 7951 Flow Computer in data sheet D301463X412.

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