## Flow computers

# 7951 flow computer specification

- Expanded data logging facility
- Pulse integrity to IP 252/76, API Ch 5.5 Level A
- 3 Serial communications ports
- High resolution 20 bit A/D converter for analog inputs
- Gas applications 1 or 2 meter runs (streams)
- Liquid applications 1 meter run (stream) and proving

The 7951 flow computer can be utilised for single

stream liquid or gas applications, dual stream gas

For applications with up to 4 streams please ask

for details of the 7955 Multistream Flow Computer.

· Reduced cycle time

Introduction



#### Connectors

The 7951 is available with 2 types of connector for termination of field signals :-

Klippon connectors with screw terminals are generally used for single stream applications and some dual stream applications.

'D'- type connectors are generally used for applications with 1 or 2 streams and where proving is required on liquid.

#### Inputs

Density/Base density/Viscosity

applications and liquid proving.

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	2 (software configurable as either single or dual pulse)			
	[ 1 off with Klippon connectors]			
Pulse integrity checking	IP 252/76, API Ch 5.5 Level A			
Pulse interpolation/dual pulse chronometry	API MPMS Ch 4.6			
Туре	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 with 100µS			
	Single pulse 0 to 10KHz, minimum pulse width 50µS			



## **Remote Automation Solutions**

# **Technical specification sheet** D301463X412 June 2008

# Flow computers

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     < ± 0.00% full scale       Resolution     20 bit (1 part per million)       Sampling time     50 ms per channel       Temperature - PRT / RTD     Number of inputs       Mumber 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 1000.PRT       Limits of error and resolution     Maximum error       Number of inputs     'D' type connector 10 standard, option of 18, Klippon Connector 6.       Sampling cycle time     50ms per channel       Status     Number of inputs       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.       HART     Number of inputs       Number of inputs     8 variables     Up to 20 expected to 20 expected to 20 expected to 20 expect 20 expect 20 expected to 20 expected to 20 expect 20 expected to	Analog			
Type     4 to 20 mA, 0 to 20 mA       Span selection     Unlimited (keyboard selectable)       Uncertainty     < ± 0.008% full scale		4 as standard ontion of 10 (D-type connectors) 8 (Klippon connectors)		
Span selection     Unlimited (keyboard selectable)       Uncertainty     < ± 0.008% full scale	•			
Uncertainty   < ± 0.008% full scale		,		
Resolution     20 bit (1) part per million)       Sampling time     50 ms per channel       Temperature - PRT / RD     Number of inputs     4 (using the first four analog channels)       Configuration     4 wire: Power return line connected to analog input ground       Temperature range     -220° to to + 220° to to + 200° to 1000 PRT       Limits of error and resolution     Maximum error     Resolution       Status     Status       Number of inputs     D' type connector 10 standard, option of 18, Klippon Connector 6.       Input voltage required     5 - 24V per channel     Update rate       Vumber of inputs     D' type connector 10 standard, option of 18, Klippon Connector 6.       Number of inputs     B variables     Up to 2 HART loops       Number of inputs     B variables     Up to 2 HART loops       Number of inputs     B variables     Up to 2 HART loops       Number of inputs     B variables     Up to 2 Wat (each loop uses an analog input channel)       Sampling time     400 ms per active transmitter     Power       Power     Voltage     +21V to + 30V dc     Voltage       Power     One independent 24V output, @ 800mA     General instrumentation				
Sampling time     50 ms per channel       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     Maximum error       Resolution     # wire: Power return line connected to analog input ground       Temperature range     -220°C to + 220°C for 100Ω PRT       Limits of error and resolution     # 0.05°C     ± 0.02°C       Sampling cycle time     50ms per channel       Status     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.       HART     Number of inputs       Sampling time     400 ms per active transmitter       Power     Voltage       Voltage     ±21V to ± 30V dc       Power consumption     Unloaded: 20 watts (max.)       Loaded: 35 watts (max.)     Loaded: 36 watts (max.)       Loaded: 42 wupput, @ 800mA     One independent 24V output, @ 800mA       Flowmeter     One independent 24V o				
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 tor 1000 PRT     Limits of error and resolution   Maximum error     Resolution   (1000 PRT calibrated in region of operation)     V1000 PRT calibrated in region of operation)   ± 0.05°C     Sampling cycle time   50ms per channel     Status   Number of inputs     Update rate   0.5ms for prove detect, others 250ms max.     HART   HART     Number of inputs   8 variables     Point to point and multi drop support (each loop uses an analog input channel)     Sampling time   400 ms per active transmitter     Power   Voltage     Voltage   + 21V to + 30V dc     Power consumption   Unidaded: 20 watts (max.)     Loaded: 35 watts (max.)     Max start up current 2A     Transducer energisation:     General instrumentation   One independent 24V output, @ 800mA     Flowmeter   One independent 24V output, @ 120mA     Outputs   Analog     Number of output channels   4 as standarl (8 w				
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 r 100Ω PRT       Limits of error and resolution     Maximum error     Resolution       (1000 PRT calibrated in region of operation)     ± 0.05°C     ± 0.02°C       Sampling cycle time     50ms per channel     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.       HART     Number of inputs     8 variables     Up to 2 HART loops       Number of inputs     8 variables     Up to 2 HART loops       Number of inputs     8 variables     Up to 2 HART loops       Number of inputs     8 variables     Up to 2 HART loops       Power     Voltage     +21V to + 30V dc       Power     Voltage     +21V to + 30V dc       Power consumption     Unloaded: 20 watts (max.)       Loaded: 35 watts (max.)     Loaded: 35 watts (max.)       Loaded: af with option board fitted]     Transducer energisation:       General instrumentation				
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 r 100Ω PRT       Limits of error and resolution     Maximum error     Resolution       (1000 PRT calibrated in region of operation)     ± 0.05°C     ± 0.02°C       Sampling cycle time     50ms per channel     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.       HART     Number of inputs     8 variables     Up to 2 HART loops       Number of inputs     8 variables     Up to 2 HART loops       Number of inputs     8 variables     Up to 2 HART loops       Number of inputs     8 variables     Up to 2 HART loops       Power     Voltage     +21V to + 30V dc       Power     Voltage     +21V to + 30V dc       Power consumption     Unloaded: 20 watts (max.)       Loaded: 35 watts (max.)     Loaded: 35 watts (max.)       Loaded: af with option board fitted]     Transducer energisation:       General instrumentation	Temperature - PRT / RTD			
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   ± 0.05°C     Sampling cycle time   50ms per channel     Status   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.     HART   Number of inputs     Sampling time   400 ms per active transmitter     Power   Point to point and multi drop support (each loop uses an analog input channel)     Sampling time   400 ms per active transmitter     Power   Voltage     Voltage   +21V to +30V dc     Power consumption   Unloaded: 20 watts (max.)     Loaded: 35 watts (max.)   Loaded: 35 watts (max.)     Loaded: 35 watts (max.)   Max start up current 2A     Transducer energisation:   One independent 24V output, @ 800mA     General instrumentation   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 ) <td></td> <td>4 (using the first four analog channels)</td>		4 (using the first four analog channels)		
Temperature range   -220°C for 1002 PRT     Limits of error and resolution   Maximum error   Resolution     (1002 PRT calibrated in region of operation) ± 0.05°C   ± 0.02°C   ± 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.     HART   8 variables   Up to 2 HART loops     Number of inputs   8 variables   Up to 2 HART loops     Point to point and multi drop support (each loop uses an analog input channel)   Sampling time     Sampling time   400 ms per active transmitter     Power   Voltage   + 21V to + 30V dc     Power consumption   Unloaded: 20 watts (max.)     Loaded: 35 watts (max.)   Loaded: 35 watts (max.)     Max start up current 2A   Transducer energisation:     General Instrumentation   One independent 24V output, @ 800mA     Flowmeter   One independent voltage switchable to 8 or 16V. @ 120mA     Outputs   Analog     Number of output channels   4 as standard [8 with option board fitted] <t< td=""><td></td><td></td></t<>				
Limits of error and resolution     Maximum error     Resolution       (100Ω PRT calibrated in region of operation)     ± 0.05°C     ± 0.02°C       Sampling cycle time     50ms per channel       Status     '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.       HART     Number of inputs       8 variables     Up to 2 HART loops       Point to point and multi drop support (each loop uses an analog input channel)     Sampling time       Sampling time     400 ms per active transmitter       Power     Voltage     + 21V to + 30V dc       Power consumption     Unloaded: 35 watts (max.)       Loaded: 35 watts (max.)     Max start up current 2A       Transducer energisation:     One independent 24V output, @ 800mA       General instrumentation     One independent voltage switchable to 8 or 16V. @ 120mA       Outputs     Analog       Number of output Current (Powered by FC.)       Power     One 24V supply with capacity for 8 outputs @25mA each       Max. loop impedance     1K Ω       Type of output     Output S	<b>V</b>			
$ \begin{array}{rrrr} (1002 PRT calibrated in region of operation) \pm 0.05^\circ C \pm 0.02^\circ C \\ Sampling cycle time 50ms per channel \\ \hline 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. \\ \hline HART \\ \hline Number of inputs 8 variables Up to 2 HART loops Point of point and multi drop support (each loop uses an analog input channel) \\ \hline Sampling time 400 ms per active transmitter \\ \hline Power \\ \hline Voltage + 21V to + 30V dc \\ \hline Power consumption Unloaded: 20 watts (max.) \\ \hline Max start up current 2A \\ \hline Transducer energisation: \\ General instrumentation One independent voltage switchable to 8 or 16V. @ 120mA \\ \hline Outputs \\ \hline Analog \\ \hline Number of output channels 4 as standard [8 with option board fitted] \\ \hline Type of output Current [Powere dy VC] & 20 mA or 0 to 20 mA (selectable) \\ \hline Zero offset 20% or 0% (Keyboard selectable) \\ \hline Zero offset 20% or 0% (Keyboard selectable) \\ \hline Zero offset 20% or 0% (Keyboard selectable) \\ \hline Accuracy 12 bit (40.075\% of full scale) \\ \hline Accuracy 12 bit (20.075\% of full scale) \\ \hline Dutputs \\ Ansure of output terpersentation Any measured or computed value (Keyboard selectable) \\ \hline Zero offset 0.1075\% of full scale ) \\ \hline Resolution Any measured or computed value (Keyboard selectable) \\ \hline Dutputs \\ Ancuracy 12 bit (40.075\% of full scale ) \\ \hline Resolution Any measured or computed value (Keyboard selectable) \\ \hline Dutput representation Any measured or computed value (Keyboard selectable) \\ Dutput representation Any measured or computed value (Keyboard selectable) \\ \hline Dutput representation Any measured or computed value (Keyboard selectable) \\ Dutput representation Any measured or computed value (Keyboard selectable) \\ Dutput representation Any measured or computed value (Keyboard selectable) \\ Dutput representation Any measured or computed value (Keyboard selectable) \\ Dutput representation Any measured or computed value (Keyboard selectable) \\ Dutput representation Any measu$				
Sampling cycle time   50ms per channel     Status   '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.     HART   8 variables   Up to 2 HART loops Point to point and multi drop support (each loop uses an analog input channel)     Sampling time   400 ms per active transmitter     Power   Voltage     Voltage   +21V to + 30V dc     Power consumption   Unloaded: 20 watts (max.) Loaded: 35 watts (max.) Max start up current 2A     Transducer energisation:   General instrumentation     General instrumentation   One independent 24V output, @ 800mA     Flowmeter   One independent voltage switchable to 8 or 16V. @ 120mA     Outputs   Analog     Analog   250% or 0% (Keyboard selectable)     Zero offset   20% or 0% (Keyboard selectable)     Zero offset   20% or 0% (Keyboard selectable)     Accuracy   12 bit (±0 075% of full scale)     Accuracy   12 bit (±0 075% of full scale)     Qutput impedance   1Max instrum     Output impedance   1Max instrum     Output inpedance   10 scales orends minimum     Output				
Status   '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.     HART   Number of inputs     Number of inputs   8 variables   Up to 2 HART loops     Point to point and multi drop support (each loop uses an analog input channel)   Sampling time     Sampling time   400 ms per active transmitter     Power   Voltage   +21V to + 30V dc     Power consumption   Unioaded: 20 watts (max.) Loaded: 35 watts (max.)   Loaded: 35 watts (max.)     Max start up current 2A   Transducer energisation:   One independent 24V output, @ 800mA     Flowmeter   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   1 K Ω   Type   4 to 20 mA or 0 to 20 mA (selectable)   Zero offset   20% or 0% (Keyboard selectable)     Zero offset   20% or 0% (Keyboard selectable)   Qutput representation   Analog   Anumber of output   Accuracy   1 bit (40.				
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.       HART     8 variables     Up to 2 HART loops       Number of inputs     8 variables     Up to 2 HART loops       Point to point and multi drop support (each loop uses an analog input channel)     Sampling time       Sampling time     400 ms per active transmitter       Power     Voltage     + 21V to + 30V dc       Power consumption     Unloaded: 20 watts (max.) Loaded: 35 watts (max.) Loaded: 35 watts (max.) Loaded: 36 watts (max.)     Loaded: 120mA       Outputs     Analog     One independent 24V output, @ 800mA       Flowmeter     One independent voltage switchable to 8 or 16V. @ 120mA       Outputs     Analog     Max start up current 2A       Type of output     Current (Powered by FC )     Power       Power     One 24V supply with capacity for 8 outputs @25mA each       Max, loog impedance     1 K Ω     Ype       A to 20 mA or 0 to 20 mA (selectable)     Span selection     Unlimited (Keyboard selectable)       Zero offset     20% or 0% (Keyboard selectable)     Ea				
Input voltage required     5 - 24V per channel       Update rate     0.5ms for prove detect, others 250ms max.       HART     Number of inputs       8 variables     Up to 2 HART loops       Point to point and multi drop support (each loop uses an analog input channel)     Sampling time       Sampling time     400 ms per active transmitter       Power     Voltage       Yoltage     +21V to + 30V dc       Power consumption     Unloaded: 20 watts (max.) Loaded: 35 watts (max.)       Loaded:     35 watts (max.)       Max start up current 2A     Transducer energisation: General instrumentation       General instrumentation     One independent 24V output, @ 800mA       Flowmeter     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 20 valv (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				
Update rate   0.5ms for prove detect, others 250ms max.     HART   Number of inputs   8 variables   Up to 2 HART loops     Point to point and multi drop support (each loop uses an analog input channel)   Sampling time   400 ms per active transmitter     Power   Voltage   +21V to + 30V dc   Power     Power consumption   Unloaded: 20 watts (max.) Loaded: 35 watts (max.) Max start up current 2A   Transducer energisation:     General instrumentation   One independent 24V output, @ 800mA     Flowmeter   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 to 10 20 mA (selectable)     Zero offset   20% or 0% (Keyboard selectable)     Accuracy   1 2 bit (±0.075% of full scale )     Resolution   1 part in 3500     Output representation   Any measured or computed value (Keyboard selectable)     Output representation   Any measured or computed value (Keyboard selectable)     Update rate				
HART     Number of inputs   8 variables   Up to 2 HART loops     Point to point and multi drop support (each loop uses an analog input channel)     Sampling time   400 ms per active transmitter     Power   +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     Flowmeter     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)     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				
Number of inputs     8 variables     Up to 2 HART loops       Point to point and multi drop support (each loop uses an analog input channel)       Sampling time     400 ms per active transmitter       Power     400 ms per active transmitter       Voltage     +21V to + 30V dc       Power consumption     Unloaded: 20 watts (max.) Loaded: 35 watts (max.) Max start up current 2A       Transducer energisation:     General instrumentation       General instrumentation     One independent 24V output, @ 800mA       Flowmeter     One independent voltage switchable to 8 or 16V. @ 120mA       Outputs     Analog       Analog     Number of output channels       Max. loop impedance     1K Ω       Type     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     1 part in 3500       Output impedance     1M2 minimum       Output inpedance     All analog outputs are galvanically isolated from ground (but not from each other)       Update rate	Update rate	0.5ms for prove detect, others 250ms max.		
Number of inputs     8 variables     Up to 2 HART loops       Point to point and multi drop support (each loop uses an analog input channel)       Sampling time     400 ms per active transmitter       Power     400 ms per active transmitter       Voltage     +21V to + 30V dc       Power consumption     Unloaded: 20 watts (max.) Loaded: 35 watts (max.) Max start up current 2A       Transducer energisation:     General instrumentation       General instrumentation     One independent 24V output, @ 800mA       Flowmeter     One independent voltage switchable to 8 or 16V. @ 120mA       Outputs     Analog       Analog     Number of output channels       Max. loop impedance     1K Ω       Type     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     1 part in 3500       Output impedance     1M2 minimum       Output inpedance     All analog outputs are galvanically isolated from ground (but not from each other)       Update rate	HART			
Point to point and multi drop support (each loop uses an analog input channel)       Sampling time     400 ms per active transmitter       Power     400 ms per active transmitter       Voltage     +21V to + 30V dc       Power consumption     Unloaded: 20 watts (max.) Loaded: 35 watts (max.) Max start up current 2A       Transducer energisation:     General instrumentation       General instrumentation     One independent 24V output, @ 800mA       Flowmeter     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)       Accuracy     12 bit (±0.075% of full scale )       Resolution     1 part in 3500       Output impedance     1MΩ minimum       Output rate     0.1 seconds minimum       Isolation     All analog outputs are galvanically isolated from ground (but not from each other)       Pulse Outp		8 variables 1 In to 2 HART loops		
channel)       Sampling time     400 ms per active transmitter       Power				
Sampling time   400 ms per active transmitter     Power				
Power     Voltage   +21V to + 30V dc     Power consumption   Unloaded: 20 watts (max.) Loaded: 35 watts (max.) Max start up current 2A     Transducer energisation:   One independent 24V output, @ 800mA     General instrumentation   One independent 24V output, @ 800mA     Flowmeter   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 impedance   1MΩ minimum     Output ingedance   0.1 seconds minimum     Isolation   Any measured or computed value (Keyboard selectable)     Potter arte   0.1 seconds minimum     Isolation   All analog outputs are galvanically isolated from ground (but not	Sampling time	,		
Voltage   +21V to + 30V dc     Power consumption   Unloaded: 20 watts (max.) Loaded: 35 watts (max.)     Loaded: 35 watts (max.)   Max start up current 2A     Transducer energisation:   One independent 24V output, @ 800mA     Flowmeter   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 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)     Pulse Outputs   'D'-Type connectors - 5, Klippon Connectors - 3     Type   Open collector     Output rating   200mA @ 24V with programmable on-time				
Power consumption   Unloaded: 20 watts (max.) Loaded: 35 watts (max.) Max start up current 2A     Transducer energisation:   One independent 24V output, @ 800mA     General instrumentation   One independent 24V output, @ 800mA     Flowmeter   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   Anl malog outputs are galvanically isolated from ground (but not from each other)     Pulse Outputs   'D'-Type connectors - 5, Klippon Connectors - 3     Type   Open collector     Output rating   200mA @ 24V with programmable on-time				
Loaded:     35 watts (max.) Max start up current 2A       Transducer energisation:     One independent 24V output, @ 800mA       General instrumentation     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 medance     0.1 seconds minimum       Isolation     All analog outputs are galvanically isolated from ground (but not from each other)       Pulse Outputs     'D'-Type connectors - 5, Klippon Connectors - 3       Type     Open collector       Output rating     200mA @ 24V with programmable on-time				
Max start up current 2A       Transducer energisation:       General instrumentation       Plowmeter       One independent 24V output, @ 800mA       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 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)       Pulse Outputs     'D'-Type connectors - 5, Klippon Connectors - 3       Type     Open collector       Output rating     200mA @ 24V with programmable on-time	Power consumption			
Transducer energisation:   One independent 24V output, @ 800mA     Flowmeter   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 representation   Anl masured 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)     Pulse Outputs   'D'-Type connectors - 5, Klippon Connectors - 3     Type   Open collector     Output rating   200mA @ 24V with programmable on-time				
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Output rating200mA @ 24V with programmable on-timeSwitch voltage24V maximum	•			
Switch voltage 24V maximum				
Maximum frequency 10 Hz				
	Maximum frequency	10 HZ		

## Technical specification sheet D301463X412

### June 2008

## Flow computers

Number of outputs	'D'-Type connectors, 9 standard, option of 17, Kippon connectors 7					
Туре	FET open drain and 1 off relay (0.5 Amp DC)					
Rating	250mA @ 24V					
Switching voltage	24V					
Communications – Serial						
Number serial ports	3					
Туре:	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					
Diamlawa						
Displays Number of characters per line:	20 Alpha numeric					
Number of lines:	4					
Colour of display:	Black/yellow (back lit) Type: LCD, continuously powered					
· ·	Black yellow (back lit) Type. LCD, continuously powered					
Microprocessor						
Processor:	Motorola					
Clock speed:						
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 < 1 part in 10 <sup>11</sup>					
Computation accuracy: Process data retention:	Internal lithium cell, 24 months when 7951 is unpowered					
	Internal litrium 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:						
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 <sup>2</sup>					
EMC Emissions & Immunity:	EN 61326-1997 Industrial locations					
	Emissions EN 55022 & Immunity EN 61000-4					

## Flow computers

#### Ordering codes

7951 EA	Flow	Comput	er							
	A	Klippo	n conn	ector <sup>n</sup>	ote 1,2	4 ana	log i/p's as standard (8 analog inputs if option 8 below)			
	В		ype connectors note 1,2				4 analog i/p's as standard (10 analog inputs if option 8 below)			
		Code	Softw	are ap	olicatio	n note 4				
		1	Gas a	pplicat	ions	- 1510	- 1510 Single stream Flow Computer software			
		2		pplicat			Dual stream Flow Computer software			
		6	Liquid	l applic	ations	- 2510	) Single stream Flow Computer software			
		Z	Non s	tandar	d	- plea	se specify full version and issue number with order			
			Code	Comr	nunicat	tions po	orts			
			3			comms	•			
				Code			s and outputs <sup>note 2</sup>			
				4		• •	uts and 4 analog outputs			
				8			DR 10 ('D'-Type) analog inputs and 8 analog outputs			
							n boards			
					N	None				
					Н		nnel HART board			
						Code	, , ,			
						N	No connector kits required			
						5	5 connector kits for use with 7951 EA B			
							Code Configuration tool			
							N Not required			
							B PC Config and Serial Communications cable			
▼	▼	▼	♥	•	♥	♥	<b>▼</b>			
7951 EA	Α	1	3	4	Ν	Ν	В			

#### Note

- 1 Option 7951 EA **A** has 1 dual pulsed flowmeter input, for dual stream applications with pulsed flowmeter inputs use option **B**
- 2 For liquid proving 'D' -Type connectors and extra Analog I/O (option 8) must be specified
- 3 Connector kits are not needed with Klippon connectors (option A), they are recommended with D-type connectors (option B), each kit includes a 1.8m cable and a Din rail mounted connector block with screw terminals.
- 4 Software supplied will be latest issue of software, unless otherwise specified on order

For further details about the 7951 flow computer capability and functionality please see D351484X412 for liquid hydrocarbon applications D351485X412 for gas applications

For Multistream Flow Computer applications please ask for details of the 7955 Flow Computers data sheet D301462X412.

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