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CONTROLOTRON®

System 1020

Low Cost Clamp-On Transit-Time Flowmeter

High Accuracy Technology Leaving Only The Cost Behind!

Description

The 1020 System provides affordable high performance for most flow measurement and control applications. The compact integrated design makes it easy and inexpensive to install, and provides many advantages never before found in a low cost ultrasonic flowmeter.

Fig.1

Controlotron's Wide-Beam™ technology has been delivering high performance Clamp-On flow measurement capability to all industries since 1976. System 1020 takes the best of that technology, leaving out many of the high cost options that are not needed in typical flow metering applications. System 1020 is available as an integrated Flow Display Computer/Transmitter and sensor package or with a remote wall-mounted one or two channel Flow Display Computer/Transmitter. System 1020 provides a new standard of convenience and performance at a price competitive with conventional flow technology.

Controlotron's Wide-Beam™ transducer technology has been adapted for System 1020 in order to retain full Wide-Beam™ performance for Steel Pipes. However, instead of requiring different transducers for other pipe materials, like Controlotron's other Clamp-On models, System 1020 matches these same transducers to other pipes using its new Wide-Band™ operation mode. Matching transducers to the pipe is what distinguishes Controlotron's clamp-on technique from other manufacturers' products and is crucial to obtaining high performance, reliability and stability from a Clamp-On flowmeter.

System 1020 is produced under an ISO 9000 Quality Assurance program and meets worldwide standards.

Functions and Features

- Minimal, low cost transducer cabling
- Compact, Integral design eliminates the cost of running sensor cables.
- Zeromatic Path™ automatically sets Zero without stopping flow and eliminates zero drift.
- Wide-Band™ pipe matching provides high performance and stability for non-steel pipes.
- Sensitive and responsive enough for even small size batching applications.
- Ideal for difficult applications, including multi-product lines, aerated lines, and low flow rates.
- Bi-directional flow measurement up to 40 ft/sec (15 m/s) with active zero
- Operates accurately on any pipe material, from 1/2" to 360" (12 - 9150 mm) diameter
- Digital and analog data outputs; optional data display
- Integral & remote wall-mounted compact Flow Display Computer/Transmitter options.

Designed for Exceptional Performance... Ideal for Tough Applications!

What Makes 1020 Better?

Clamp-On Flowmeters provide much lower cost of ownership than conventional intrusive flowmeters: Lower installation cost, no pressure drop, no moving parts, minimal maintenance. These advantages, coupled with exceptional performance, reliability and economy, make 1020 the best choice. Field application evaluations available.

Multiple Transducer Availability

All pipes are sonic waveguides that prefer transducers matched to their particular sonic properties. Typical clamp-on flowmeters offer only one or two transducers, no matter what the pipe size. Since there are many different pipes, Controlotron makes a range of standard transducers and will provide the one that is optimized to your pipe's sonic properties. Simply specify pipe diameter, material and wall thickness. This guarantees proper selection and optimum performance and reliability.

Compact Design Reduces Installation Cost

Incorporating the Flow Display Computer/Transmitter with the Mounting Track and Sensors in one integral unit saves considerable expense and installation complexity by avoiding the need for routing transducer cables. However, when control room mounting is preferred, or for dual channel operation, 1020 supports transducer cables up to 1000 feet long.

Menu-Driven Index Marks Speed Installation

1020 will tell you exactly which index mark to use for Transducer installation. Just pick your pipe's dimensions and material from 1020's menu list, then identify your liquid type (water, oil, etc.). No need for subjective ruler measurement and no chance for installation error.

Optimized Operation On Any Pipe Material

Controlotron's 1010 high precision Wide Beam™ transducers are pipe material specific. 1020's high precision Wide-Beam™/Wide-Band™ transducers can be used on any sonically conductive pipe material: steel, plastic, cement-lined, aluminum, copper nickel, glass, etc. For sonically non-conductive pipes, like concrete, ask for Controlotron's insert peg transducer.

Wide-Beam™/Wide-Band™ Operation Handles Tough Applications

Typical ultrasonic flowmeters receive signals from fixed frequency transducers, resulting in signal shapes that vary from pipe to pipe and which are difficult to correlate. Even when correlation is possible, correlating on distorted signal shapes causes calibration error and unreliable performance. Controlotron's technology matches the sensors to the pipe so that operation is predictable and reliable on every pipe - even under conditions of high liquid aeration and variable liquid sonic properties, such as encountered in sludge and paper pulp applications.

Better Signal Processing

Because Controlotron's transducers are matched to the pipe, the system produces better, more predictable signal waveshapes. This achieves a much more precise and robust zero-crossover detection technique, rather than the correlation techniques of typical ultrasonic meters.

Fig.2

1020N NEMA 4 Flow Display Computer Transmitter Shown with optional Cable Gland/Conduit Adapter

Cost Effectiveness, Accuracy and Reliability All in One Clamp-On Flowmeter

How to Specify 1020

All units feature:

- Assignable 4-20 mA isolated loop-powered output
- TTL flow pulse rate output
- RS-232 digital communication port
- DB-9 connector for PC communication
- Assignable open collector alarm output (40 VDC max)
- Batch totalizer start-stop control line
- Internal calibration security switch
- Remote PC installation menu
- Data / diagnostics via RS-232

Step 1. Select Flow Display Computer/Transmitter

Choose from:

1020N Flow Display Computer/Transmitter can be provided either integrally mounted to the transducer track or as a remote wall-mounted unit.

1020DN Dual channel remote wall-mounted Flow Display Computer/Transmitter*

*Specify length of transducer cables up to 300 feet (1000 feet with factory approval).

Specify 90 - 240 VAC or 9 - 36 VDC power

Step 2. Choose Options

Choose from:

- 2x16 Integral display and 5 key keypad for installation menu and data display (RS-232 available for remote data access on DB-9 connector)
- Assignable SPDT relay (replaces open collector alarm output)
- Assignable second 4-20 mA Analog Output (Standard in Dual Channel Model)

Step 3. Select Transducer

- Simply identify the diameter, material and wall thickness of your pipe.
- Controlotron will recommend the correct transducer or request selection table

Step 4. Choose Transducer Mounting Assembly

Choose from:

1022-A Trackless spacer bar-stainless steel strap mount (Fig. 3)

This is the lowest cost mounting method, and is ideal for enclosed areas.

1022ABC integrated 1020N Flow Display Computer/ Transmitter and transducer mounting track (Fig. 1)

This is a fully protected transducer installation.

1022ABR Remote 1020N/DN Mounting track for remote computer (Fig. 4)

This is a fully protected transducer installation, with conduit provision for the transducer cables to a remote wall-mounted Flow Display Computer/Transmitter. The mounting assembly part number conforms to the transducer size and the pipe diameter.

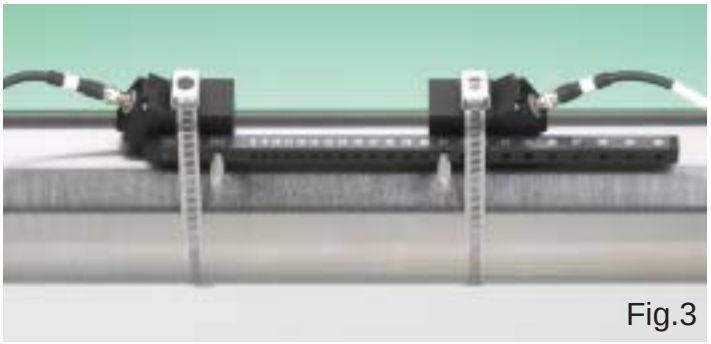

Fig.3

1022-A Trackless spacer bar-stainless steel strap mount

Fig.4

1020N Remote wall-mounted Flow Display Computer / Transmitter

Industry Applications for System 1020

System 1020 is suitable for most applications. Here are a few examples:

Water & Wastewater
- Potable Water
- Wastewater, influent & effluent
- Processed Sewage, Sludge
- River / Sea Water
- Irrigation
- Additives

Military & Transportation
- Fuel Flow
- Fire Protection

Pulp & Paper
- Paper Stock
- White Water
- Lime Slurry
- Coatings

Power Plants
- Coolant Flow
- Fuel Flow (Coal Slurry or Oil)
- Boiler / Scrubber Slurry Flows

Process Control
- Chemicals
- De-Ionized Water
- Pharmaceuticals
- Metal & Textile Production
- Toxic, Hazardous & Corrosive Liquids
- Pump Efficiency
- Batching
- Flow Balancing
- Ultra-Pure Water

Performance Specifications

ACCURACY	± 1.0% of rate, or better
BATCH REPEATABILITY	± 0.1%
FLOW RANGE	± 40 f/s,(± 12 m/s) including zero flow, bi-directional
FLOW SENSITIVITY	0.001 f/s, (0.0003 m/s) flow rate independent
ZERO DRIFT	0.1% of rate, Zero with Zeromatic Path Active
DATA REFRESH RATE	3 Hz (some data available at 100 Hz)
TIME AVERAGED RESPONSE RATE	1 to 60 seconds

Feature Specifications

		Single Channel	Dual Channel
DISPLAY	2 x16 Character LCD	√	√
MENU ACCESS	5 Key Keypad	√	√
	RS-232 Serial Port	√	√
OUTPUTS	Isolated 4 to 20 mA, Programmable	1	2
	Additional Isolated 4 to 20 mA, Programmable (Optional)	1	0
	0 to 5 kHz Pulse Rate, Digital Isolated	1	0
	RS-232 Serial Port	√	√
STATUS/ALARM I/O	Optically Coupled Output Logic Gates	1	2
	Programmable, Form A Relay (Optional)	1	2
	Optically Isolated Totalizer Hold Switch Input	1	2
DATA LOGGER	1 Megabyte, Provides Both Site & Datalogger Storage	√	√

Mechanical Specifications

	FLOW DISPLAY COMPUTER/TRANSMITTER
WEIGHT (Pounds / Kilograms)	4.0 / 1.82
DIMENSIONS (Inches) W x H x D	7.77 x 4.06 x 4.30
(Millimeters) W x H x D	197 x 103 x 109
POWER	90-240 VAC @ 12 VA or 9-36 VDC @ 12 Watt
SERVICE RATING	NEMA 4, IP 65

CONTROLOTRON®

How to Order

Contact your local Controlotron representative
(see web site for contact information), or call Controlotron direct.

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