# SONIC-PRO®
## Hybrid Ultrasonic Flowmeter


**Model S3C1A1**

**Selectable Doppler or Transit Time**
**Non-Invasive clamp on transducers**
**High quality QVGA display**
**NEMA 4X (IP 66) washdown enclosure**
**Full function front panel interface**
**"Smart" external communications**
**Process control features**
**2 Year warranty**
**Includes portable carrying case**

**Liquid applications**

NEMA 4X CE ETL C US

## Applications:

- Sewage
- Wastewater
- Pulp & Paper Slurries
- DI water
- Discharge water
- Caustics
- Chemical Slurries
- Ground water
- Food and Beverage
- Petrochemical
- Any sound conducting liquid

## Features:

- Selectable Doppler or Transit Time operating mode.
- Custom quality metric algorithms and DSP technology ensures reliable, high accuracy measurements.
- Quick and easy clamp-on transducer installation. Proprietary AGC (Automatic Gain Control) algorithm eliminates manual gain adjustment.
- Three display options: user programmable via 5-button menu driven interface (S3 option), display without menu access (S2 option) and no display (S1 option).
- Factory configured for easy installation. Includes five user programmable, password protected configurations for multiple user and portable applications.
- High quality 320 x 240 pixel QVGA backlit LCD.
- Data logging to standard SD Card format. User configurable to time interval, flow rate and total set-point triggers. 500,000 events with included 32MB SD Card.
- Isolated 4-20 mA output - fully configurable.
- 0 - 1000Hz Pulse output - fully configurable.
- Optional computer connection via RS-232, RS-485, USB, Ethernet. Permits remote access and control of all functions including real-time display, system configuration, data logging, remote data capture and process control functions. Software permits remote internet access through local network set-up.
- Optional process control via three independently configurable 10 amp, form C relays. Configure to flow rate for high/low/range rate alarm or to flow total for either manual trigger batch operations or flow triggered batch operations.

# Specifications:

## General Operation

### Measuring Principle
Hybrid. User-selectable Doppler or Transit Time operating modes.

### Fluid Types
Virtually any acoustically conductive fluid.
Transit time mode from 0% to 10% (0 to 100,000 ppm) particulate.
Doppler from 0.02% to 15% (200 to 150,000 ppm) 50 micron particles.

### Fluid Velocity Range
0.25 to 30 feet per second (0.07 to 9 meters per second)

### Flow Sensitivity
0.001 feet per second (0.0003 meters per second)

### Nominal Pipe Sizes
2.0 inch - 100 inch (63mm to 2500mm)

### Pipe Liner Materials
Most plastic liners

### Pipe Materials
Most metal and plastic pipes

| Pipe Material | Pipe Size Ranges | Max Pipe Wall |
|---|---|---|
| Brass (Naval) | 2“ to 100” (63mm to 2500mm) | .500” (13mm) |
| Copper | 2“ to 100” (63mm to 2500mm) | .500” (13mm) |
| FRP (fiberglass Reinforced Plastic) | 2“ to 100” (63mm to 2500mm) | .500” (13mm) |
| Iron (cast) | 2“ to 100” (63mm to 2500mm) | .500” (13mm) |
| Iron (ductile) | 2“ to 100” (63mm to 2500mm) | .500” (13mm) |
| Nylon | 2“ to 100” (63mm to 2500mm) | 2.00” (50mm) |
| Polyethylene (HDPE) | 1“ to 100” (25mm to 2500mm) | 2.00” (50mm) |
| Polyethylene (LDPE) | 1“ to 100” (25mm to 2500mm) | 1.00” (25mm) |
| Polypropylene | 1“ to 100” (25mm to 2500mm) | .500” (13mm) |
| PVC / CPVC | 1“ to 100” (25mm to 2500mm) | 2.00” (50mm) |
| 304 Stainless Steel | 2“ to 100” (63mm to 2500mm) | .500” (13mm) |
| 304L Stainless Steel | 2“ to 100” (63mm to 2500mm) | .500” (13mm) |
| 316 Stainless Steel | 2“ to 100” (63mm to 2500mm) | .500” (13mm) |
| Steel (1% carbon hard) | 2“ to 100” (63mm to 2500mm) | .500” (13mm) |
| Steel (carbon) | 2“ to 100” (63mm to 2500mm) | .500” (13mm) |
| Titanium | 2“ to 100” (63mm to 2500mm) | .500” (13mm) |

Note: Consult the factory for an updated list of pipe materials.

### Accuracy

| Flow Rate Averaging Time | Transit Time Accuracy at at Nominal Pipe Sizes |
|---|---|
| 5.0 Seconds (default setting) | +/-1% of rate > 1 ft/sec<br>+/-0.01 ft/sec < 1 ft/sec |
| 1.0 Seconds | +/-1% of rate > 5 ft/sec<br>+/-0.05 ft/sec < 5 ft/sec |
| 0.5 Seconds | +/-2% of rate > 12 ft/sec<br>+/-0.25 ft/sec < 12 ft/sec |

| Flow Rate Averaging Time | Doppler Accuracy at Nominal Pipe Sizes |
|---|---|
| 5.0 Seconds (default setting) | +/-2% of rate > 5 ft/sec<br>+/-0.10 ft/sec < 5 ft/sec |
| 1.0 Seconds | +/-2% of rate > 8 ft/sec<br>+/-0.20 ft/sec < 8 ft/sec |
| 0.5 Seconds | +/-2% of rate > 12 ft/sec<br>+/-0.25 ft/sec < 12 ft/sec |

### Shipping Specifications
Carton Dimensions: 21” x 17” x 9-1/2”
Carton Weight: 24 lbs. (10.9 Kg.)

## SPU (Signal Processing Unit)

### Enclosure
NEMA 4X (IP66), Powder coated aluminum, SS clamps and hardware.
Dimensions: 11.00H x 8.60W x 5.00D inches (279H x 218W x 127D mm)
Weight 9.5 lb. (4.3 Kg.)

### Mounting
Wall, pipe (vertical or horizontal) or panel mounting. Hardware included.
Panel opening: 10.63H x 8.10W inches ( 270H x 206W mm)
Panel Depth. Rear: 2.78 inches (71 mm), Front : 2.18 inches (55 mm)

### Power Requirements
95-264 VAC 50/60Hz or 15-30 VDC; 30 watts maximum

### Operating Temperature
14°F to 140°F (-10°C to 60°C) **Storage:** -40°F to 158°F (-40°C to 70°C)

### Display
320 x 240 pixel QVGA backlit LCD, UV resistant.
Simultaneous Rate and Total: 10 digit maximum + exponent to E+32
Decimal location configurable to 10 places.

### Display Languages
English, Spanish, French or German selectable.

### Keypad
Five-button positive action tactile switch keypad.

### Security
Programmable master password and individual configuration passwords.

### Display Volume Units
Independently configurable Rate and Total display units in: U.S. Gallons, ounces, barrels (US liquid), barrels (US oil), cubic ft, acre ft, Imperial (British) gallons, liter, cubic meter, or user defined “custom” units.
Rate display in feet or meters per second.

### Display Time Units
Seconds, minutes, hours, days.

### Display/Output Response Time
Selectable: 0.25, 0.50, 1.0 (default), 2.5, 5.0 seconds.

### Flow Rate Display Averaging
Selectable: 0.50, 1.0, 2.5, 5.0 (default), 10.0 seconds.

### Data Outputs
- Isolated 4-20 mA output - fully configurable, invertible
- 0-1000 Hz Pulse output - fully configurable, invertible

### Data Logging
Date/time stamped flow rate and flow total data in FAT32 file format, easily imported into Excel. Configurable to trigger on time interval (1-999,999 sec), rate and/or total set-point values. Over 500,000 log events possible with included 32MB SD Card.

### Process Control
Three independently configurable 10 amp Form C, NO/NC relays.
- Configure to flow rate for high/low/range rate alarm. Programmable release values enable auto release or manual latching operation.
- Configure to flow total for manual trigger batch operations or automatically triggered, timed batch operations.

### External Communications
Computer connection via RS-232, RS485, USB, Ethernet.
- Includes user communication and configuration software
- Permits remote internet access through local network set-up
- Remotely access and upload data logging files.

## Clamp-On Transducers

### Housing
NEMA 6P (IP67), Nickel plated aluminum, SS clamps & hardware.
Dimensions: 3.12H x 2.95W x 1.60D in. (79H x 75W x 41D mm)
Weight (excluding cable): 0.8 lb. (0.4 kg.) each

### Cable
Shielded coaxial RG/U Type:59. PVC jacket, black. RoHS Compliant
Standard length: 10 ft. (3m)
Optional lengths available: 25 ft. (7m), 50 ft. (15m), 100 ft. (30m)

### Pipe Surface Temperature
-20°F to 250°F (-34°C to 121°C)

# Installation:

## Fluid Requirements

The **Sonic-Pro** series **Hybrid Ultrasonic Flow Meters** can measure fluid flow in virtually any fluid in which sound waves can travel. The **Sonic-Pro** meters are considered "hybrid" because they can measure fluid flow using either the Doppler or Transit Time methods. The **Sonic-Pro** ultrasonic sound transducers are clamped to the outside of the pipe wall and include no moving parts. This method of flow measurement is safe, non-intrusive and very easy to service.

The Doppler measurement method requires particles be present in the flow stream to "reflect" the sound waves. The meter may be operated in the Doppler mode when the fluid contains 0.02% to 15% (200 to 150,000 ppm) of particles .

The Transit Time measuring method requires relatively "clean" fluid to enable the sound waves to complete their circuit. The meter may be operated in the Transit-Time mode when the fluid contains 0% to 10% (0 to 100,000 ppm) of particles. To allow for changes in the fluid's particle count, the **Sonic-Pro** monitors the signal gain and employs an Automatic Gain Control (AGC) algorithm that periodically adjusts the gain maintain the optimum power level.

The speed at which sound travels in the fluid must be known. The factory will configure the meter for a known fluid during the initial configuration. The **Sonic-Pro** model **S3c** includes a 5-button user interface and remote PC software that can be used to configure the meter. Many common fluids are listed in the software and can be selected directly from the menu. Provided the speed of sound in the fluid is known, custom "unknown" fluids can be input manually by the user. A list of various fluids and their sound speeds are provided in the user manual.

## Flow Stream Requirements

The Sonic-Pro's sound wave beam is only affected by fluid that actually passes through the beam and therefore, the meter will not measure accurately if the fluid velocity is not consistent across the entire pipe diameter. Flow disturbances such as pumps, elbows, tees, and valves in the flow stream can cause swirl patterns and vortices that will affect the measurement. Install the transducers on a straight run of pipe **as far as possible** from any disturbances. The distance required for accuracy will depend on the type of disturbance.

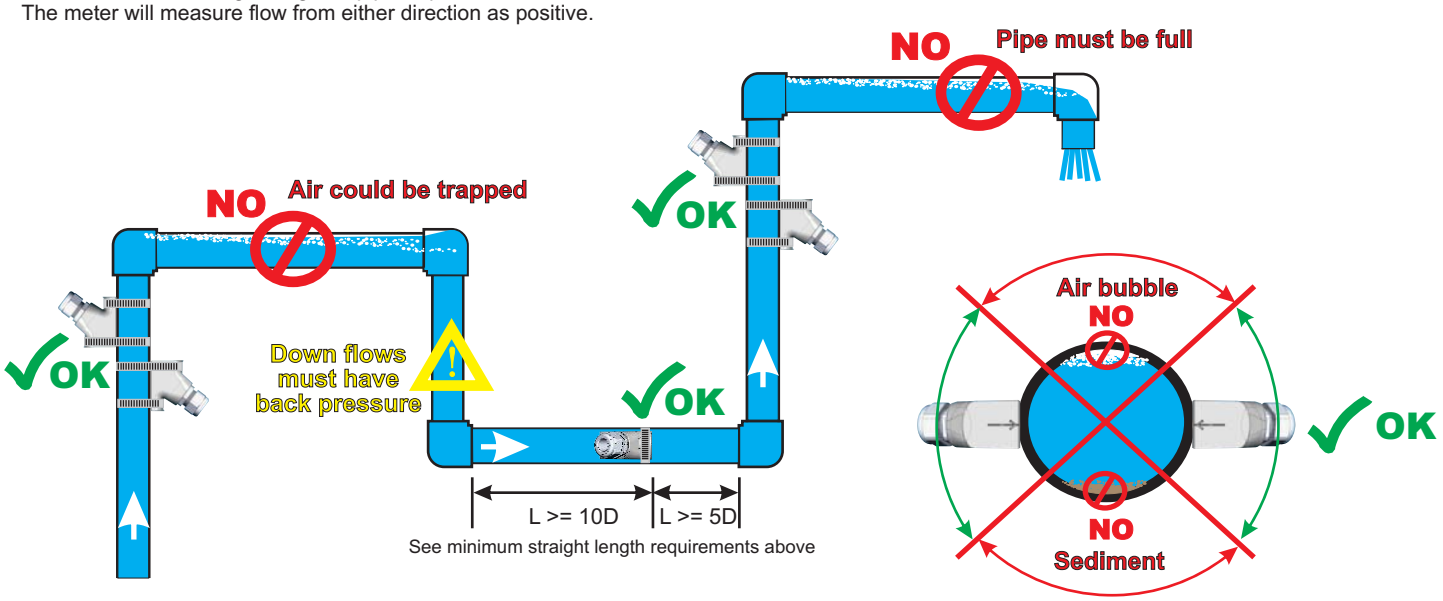
## Minimum Straight Pipe Length Requirements

The meter's accuracy is affected by disturbances such as pumps, elbows, tees, valves, etc., in the flow stream. Install the meter in a straight run of pipe **as far as possible** from any disturbances. The distance required for accuracy will depend on the type of disturbance.

| Type of Disturbance | Straight Lengths of Pipe Required | |
|---|---|---|
| | Upstream from Transducers | Downstream from Transducers |
| Flange | 5 x Nominal Pipe Size | 5 x Nominal Pipe Size |
| Reducer | 7 x Nominal Pipe Size | 5 x Nominal Pipe Size |
| 90° Elbow | 10 x Nominal Pipe Size | 5 x Nominal Pipe Size |
| Two 90° Elbows - 1 Direction | 15 x Nominal Pipe Size | 5 x Nominal Pipe Size |
| Two 90° Elbows - 2 Directions | 20 x Nominal Pipe Size | 5 x Nominal Pipe Size |
| Gate valve or Pump | 25 x Nominal Pipe Size | 5 x Nominal Pipe Size |

## Transducer Mounting Location

- The meter can be mounted on horizontal or vertical runs of pipe.
- Mounting on the sides (3 o'clock and 9 o'clock) position on horizontal pipe is recommended.
- Mounting anywhere around the diameter of vertical pipe is acceptable, however, the pipe must be completely full of fluid at all times.
- Back pressure is required on downward flows to ensure a full pipe.
- See the minimum straight length of pipe requirement chart above.
- The meter will measure flow from either direction as positive.



# Application Qualifier:

## Fluid Requirements

| Doppler Operation | Transit Time Operation |
|---|---|
| • Must conduct sound<br>• Must contain sound reflecting particles such as air bubbles, sand, etc.<br><br>Doppler measurement requires 0.02% to 15% (200 to 150,000 ppm) particles be present in the flow stream to "reflect" the sound waves. | • Must conduct sound<br>• Must be relatively clean fluid<br><br>Transit Time measurement requires relatively "clean" fluid. Fluids containing from 0% to 10% (0 to 100,000 ppm) of particles are acceptable. |

Note: Do not attempt to measure very low flow velocities in the Doppler mode, the particles can fall out of suspension resulting in error or failure.

## Pipe Requirements:

| Pipe Material | Pipe Size Ranges and Maximum Wall Thickness | | |
|---|---|---|---|
| | Doppler Mode Pipe Size Range | Transit Time Mode Pipe Size Range | Max Pipe Wall |
| Brass (Naval) | 2" to 100" (63mm to 2500mm) | 2" to 100" (63mm to 2500mm) | .500" (13mm) |
| Copper | 2" to 100" (63mm to 2500mm) | 2" to 100" (63mm to 2500mm) | .500" (13mm) |
| FRP (fiberglass Reinforced Plastic) | 2" to 100" (63mm to 2500mm) | 2" to 100" (63mm to 2500mm) | .500" (13mm) |
| Iron (cast) | 2" to 100" (63mm to 2500mm) | 2" to 100" (63mm to 2500mm) | .500" (13mm) |
| Iron (ductile) | 2" to 100" (63mm to 2500mm) | 2" to 100" (63mm to 2500mm) | .500" (13mm) |
| Nylon | 1" to 100" (25mm to 2500mm) | 1-1/2" to 100" (40mm to 2500mm) | 2.00" (50mm) |
| Polyethylene (HDPE) | 1" to 100" (25mm to 2500mm) | 1-1/2" to 100" (40mm to 2500mm) | 2.00" (50mm) |
| Polyethylene (LDPE) | 1" to 100" (25mm to 2500mm) | 1-1/2" to 100" (40mm to 2500mm) | 1.00" (25mm) |
| Polypropylene | 1" to 100" (25mm to 2500mm) | 1-1/2" to 100" (40mm to 2500mm) | .500" (13mm) |
| PVC / CPVC | 1" to 100" (25mm to 2500mm) | 1-1/2" to 100" (40mm to 2500mm) | 2.00" (50mm) |
| 304 Stainless Steel | 2" to 100" (63mm to 2500mm) | 2" to 100" (63mm to 2500mm) | .500" (13mm) |
| 304L Stainless Steel | 2" to 100" (63mm to 2500mm) | 2" to 100" (63mm to 2500mm) | .500" (13mm) |
| 316 Stainless Steel | 2" to 100" (63mm to 2500mm) | 2" to 100" (63mm to 2500mm) | .500" (13mm) |
| Steel (1% carbon hard) | 2" to 100" (63mm to 2500mm) | 2" to 100" (63mm to 2500mm) | .500" (13mm) |
| Steel (carbon) | 2" to 100" (63mm to 2500mm) | 2" to 100" (63mm to 2500mm) | .500" (13mm) |
| Titanium | 2" to 100" (63mm to 2500mm) | 2" to 100" (63mm to 2500mm) | .500" (13mm) |

Note: The outside surface of the pipe must be clean and smooth. Insulation, coatings, rust and other surface imperfections should be removed before installing the transducers. The inside surface of the pipe must be smooth to properly reflect the sound wave.

## Straight Lengths of Pipe Requirements

| Type of Disturbance | Straight Lengths of Pipe Required | |
|---|---|---|
| | Upstream from Transducers | Downstream from Transducers |
| Flange | 5 x Nominal Pipe Size | 5 x Nominal Pipe Size |
| Reducer | 7 x Nominal Pipe Size | 5 x Nominal Pipe Size |
| 90° Elbow | 10 x Nominal Pipe Size | 5 x Nominal Pipe Size |
| Two 90° Elbows - 1 Direction | 15 x Nominal Pipe Size | 5 x Nominal Pipe Size |
| Two 90° Elbows - 2 Directions | 20 x Nominal Pipe Size | 5 x Nominal Pipe Size |
| Gate valve | 25 x Nominal Pipe Size | 5 x Nominal Pipe Size |
| Pump | 25 x Nominal Pipe Size | 5 x Nominal Pipe Size |

Note: The Sonic-Pro's sound wave beam is only affected by fluid that actually passes through the beam and therefore, the meter will not measure with high accuracy if the fluid velocity is not consistent across the entire pipe diameter. Flow disturbances such as pumps, elbows, tees, and valves in the flow stream can cause swirl patterns and vortices that will affect the measurement. Install the transducers on a straight run of pipe **as far as possible** from any disturbances. The distance required for high accuracy will depend on the type of disturbance.

## Display Options:


### Model S3 Display

**The S3 display option allows full access to the configuration menus directly from the front panel Keypad.**

**Display**
320 x 240 pixel QVGA backlit LCD

**Display Languages**
English, Spanish, French or German.

**Keypad**
Five-button tactile switch keypad.

**Security**
Master and configuration passwords.

**Display Volume Units**
Configurable Rate and Total units. Rate display in feet or meters per second.

**Display Time Units**
Seconds, minutes, hours, days.


### Model S2 Display

**The S2 display option allows the user to clear the accumulated total to zero (if allowed by configuration) and to swap the rate and total display fonts. Access to the configuration menu is not available from the keypad.**

**The meter is factory set for one pipe application only. Pipe material and dimensional changes, fluid selections, output signal scaling, and other features of the meter are not accessible.**

**The communications option is required to access to the configuration menus.**

**Display**
320 x 240 pixel QVGA backlit LCD


### Model S1 Display

**The S1 display option does not include a local display.**

**The meter is factory set for one pipe application only. Pipe material and dimensional changes, fluid selections, output signal scaling, and other features of the meter are not accessible.**

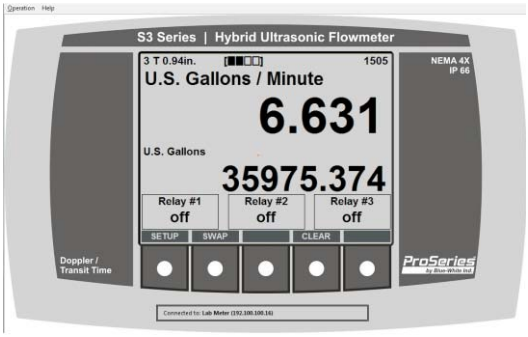
**The communications option is required to access to the configuration menus.**

**Display**
None.

## Communications Options:

Any Sonic-Pro model can be equipped with a **Communications Package** that includes Ethernet, USB, RS-232, and RS-485 connections, and proprietary Sonic-Pro User PC Software. When connected to a PC computer running the Sonic-Pro software, the user can access the configuration menu for program editing and data logging downloads directly into a PC.

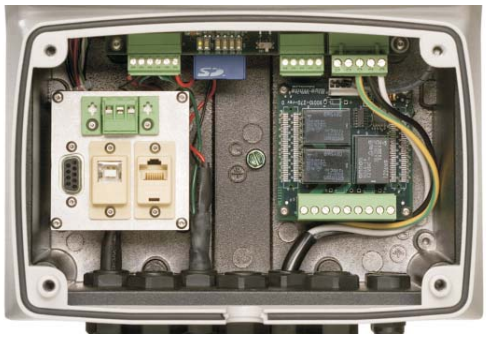
The Sonic-Pro Software user interface mimics the S3 model 5-button touch pad so learning to use the software application is simple. Simply clicking on the buttons is the same as pressing the buttons on the Sonic-Pro SPU touch pad. Pressing and holding shift while clicking on a button simulates pressing and holding a button on the touch pad.



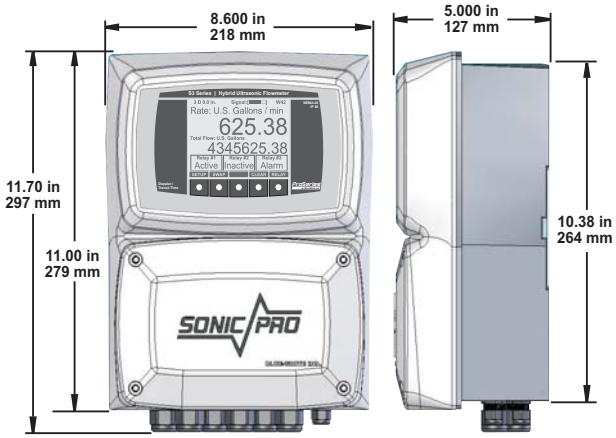

## Process Control Options:

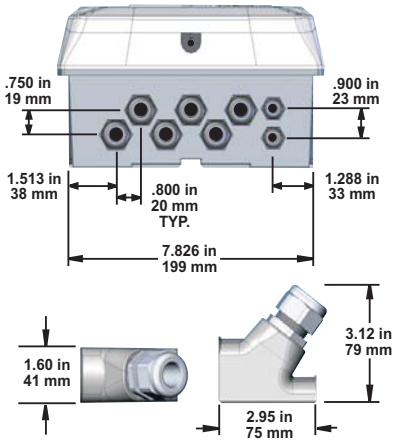
Any Sonic-Pro model can be equipped with a **Process Control Relay Package** that includes three independently programmable 10 amp relays. However, relay programming requires the Model S3 programming features or the Communications package to function. Models S1 and S2 cannot access the relay functions unless connected to the communications Software.

Each relay can be configured to respond to changes in either the measured *rate* of flow or the accumulated *total* flow value. When assigned to monitor flow rate, high/low/range rate alarms are possible. When assigned to monitor accumulated total, manual trigger batch operations or automatically triggered, timed batch (proportional feed) operations are possible.



## Dimensions:




TRANSDUCER (Series A)


With Wall Mount Hardware

## Model Number Matrix:

**Sonic-Pro Ordering Information**

| Sonic-Pro Part Number Matrix | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Base Electronics Package** | | | | | | | | | | | |
| S1 | Factory configured without display [1] | | | | | | | | | | |
| S2 | Factory configured with display [1] | | | | | | | | | | |
| S3 | Factory configured with user configurable display | | | | | | | | | | |
| | **Smart Communications and Control** [2] | | | | | | | | | | |
| | A | **Communications** Includes Ethernet, USB, RS-232, RS-485 connections, and user configuration and monitoring PC software. | | | | | | | | | |
| | B | **Process control** Includes three 10 amp, form C relays. Note: Requires S3 configurable display or the communications option | | | | | | | | | |
| | C | Both Communication and Process Control options | | | | | | | | | |
| | X | None | | | | | | | | | |
| | | **Power Supply Cord Rating and Plug Type** [5] | | | | | | | | | |
| | | 1 | U.S. 125V with NEMA 5/15 plug | | | | | | | | |
| | | 2 | European 250V with CEE 7/VII plug | | | | | | | | |
| | | 3 | U.S. 250V with NEMA 6/15 plug | | | | | | | | |
| | | X | Power cord without attachement plug | | | | | | | | |
| | | | **Transducer Model and Cable Length** | | | | | | | | |
| | | | A1 | Model A with 10 ft cable | | | | | | | |
| | | | A2 | Model A with 25 ft cable | | | | | | | |
| | | | A3 | Model A with 50 ft cable | | | | | | | |
| | | | A4 | Model A with 100 ft cable | | | | | | | |
| | | | | **Nominal Pipe Size** [4] | | | | | | | |
| | | | | Select from options list | | | | | | | |
| | | | | **Pipe Pressure Rating** [4] | | | | | | | |
| | | | | Select from options list | | | | | | | |
| | | | | **Pipe Material** [4] | | | | | | | |
| | | | | Select from options list | | | | | | | |
| | | | | **Display Volume Units** [3] | | | | | | | |
| | | | | G | Gallons | | | | | | |
| | | | | L | Liters | | | | | | |
| | | | | F | Cubic Feet | | | | | | |
| | | | | A | **Acre Feet** | | | | | | |
| | | | | M | Cubic Meters | | | | | | |
| | | | | | **Display Time Units** | | | | | | |
| | | | | | M | Minutes | | | | | |
| | | | | | H | Hours | | | | | |
| | | | | | D | Days | | | | | |
| | | | | | | **Fluid** [4] | | | | | |
| | | | | | | Select from options list | | | | | |
| | | | | | | **Display language** | | | | | |
| | | | | | | E | English | | | | |
| | | | | | | S | Spanish | | | | |
| | | | | | | G | German | | | | |
| | | | | | | F | French | | | | |
| S3 | C | 1 | A1 | 060 | SD | J | G | M | AL | E | Sample model number |

| Pipe Size | |
|---|---|
| IPS Pipe Size | |
| 020 | 2" |
| 025 | 2-1/2" |
| 030 | 3" |
| 040 | 4" |
| 050 | 5" |
| 060 | 6" |
| 080 | 8" |
| 100 | 10" |
| 120 | 12" |
| 141 | 14" |
| 161 | 16" |
| 181 | 18" |
| 201 | 20" |
| 220 | 22" |
| 240 | 24" |
| 260 | 26" |
| 281 | 28" |
| 300 | 30" |
| 320 | 32" |
| 340 | 34" |
| 360 | 36" |
| 420 | 42" |
| 480 | 48" |
| Metric Pipe Size | |
| 063 | 63mm |
| 075 | 75mm |
| 090 | 90mm |
| 110 | 110mm |
| 125 | 125mm |
| 140 | 140mm |
| 160 | 160mm |
| 180 | 180mm |
| 200 | 200mm |
| 225 | 225mm |
| 250 | 250mm |
| 280 | 280mm |
| 315 | 315mm |
| 355 | 355mm |
| 400 | 400mm |
| 450 | 450mm |
| 500 | 500mm |
| 560 | 560mm |
| 630 | 630mm |
| 710 | 710mm |
| 800 | 800mm |
| 101 | 1000mm |
| XXX | User config. |

| Pipe Pressure Rating | |
|---|---|
| SK | Sch 5 (ASTM D 1785) |
| SA | Sch 10 (ASTM D 1785) |
| SB | Sch 20 (ASTM D 1785) |
| SC | Sch 30 (ASTM D 1785) |
| SD | Sch 40 (ASTM D 1785) |
| SE | Sch 60 (ASTM D 1785) |
| SF | Sch 80 (ASTM D 1785) |
| SG | Sch 100 (ASTM D 1785) |
| SH | Sch 120 (ASTM D 1785) |
| SI | Sch 140 (ASTM D 1785) |
| SJ | Sch 160 (ASTM D 1785) |
| DA | SDR 41 (ASTM D 2241) |
| DB | SDR 26 (ASTM D 2241) |
| DC | SDR 21 (ASTM D 2241) |
| DD | SDR 13.5 (ASTM D 2241) |
| PA | PN 4 Metric (DIN 8062) |
| PB | PN 6 Metric (DIN 8062) |
| PC | PN 10 Metric (DIN 8062) |
| PD | PN 16 Metric (DIN 8062) |
| PE | PN 20 Metric (DIN 8062) |
| BB | CLASS B British (BS 3506) |
| BC | CLASS C British (BS 3506) |
| BD | CLASS D British (BS 3506) |
| BE | CLASS E British (BS 3506) |
| B7 | CLASS 7 British (BS 3506) |
| XX | User configured |

| Pipe Material | |
|---|---|
| A | Brass (Naval) |
| B | Copper |
| C | FRP (fiberglass reinforced plastic) |
| D | **Iron (cast)** |
| E | Iron (ductile) |
| F | Nylon |
| G | Polyethylene (HDPE) |
| H | Polyethylene(LDPE) |
| I | Polypropylene |
| J | PVC / CPVC |
| K | PVDF |
| L | Stainless Steel 304 |
| M | Stainless Steel 304L |
| N | Stainless Steel 316 |
| O | Steel (1% Carbon, hardened) |
| P | Steel (carbon) |
| Q | Titanium |
| X | User configured |

| Fluid | |
|---|---|
| AA | Alcohol (Ethyl alcohol; Ethanol) |
| AB | Benzene |
| AC | Ethylene glycol |
| AD | Ethylene glycol / water (50%) |
| AE | Gasoline |
| AF | Isopropyl alcohol |
| AG | Methyl alcohol (Methanol) |
| AH | Methyl ethyl Ketone |
| AI | Milk, homogenized |
| AJ | Oil, diesel |
| AK | Toluene |
| AL | Water (distilled; waste) |
| AN | Water, sea |
| XX | User configured |

| Optional replacement set of transducers | | | | | |
|---|---|---|---|---|---|
| ST | SonicPro Transducer | | | | |
| | **Pipe Size** | | | | |
| | A | Pipe 1" to 100" (25mm to 2500mm) | | | |
| | | **Cable Length** | | | |
| | | 010 | 10 feet | | |
| | | 025 | 25 feet | | |
| | | 050 | 50 feet | | |
| | | 100 | 100 feet | | |
| ST | - | A | - | 010 | Sample model |

Notes:

1) Unless equipped with the communications option and user software, models S1 and S2 are factory configurable only.

2) Smart Communications Option B (process control relays), requires either the S3 configurable display or the communications option for relay configuration.

3) Other display volume units, including custom units are available. Contact the factory for ordering information.

4) Not all pipe sizes, pipe pressure ratings, pipe materials and fluids are shown here. Contact the factory for more information.

5) The basic Sonic-Pro model number includes one set of transducers. Optional transducer set ordering information is shown to enable ordering replacement or secondary sets.

Blue-White Industries, Ltd.
5300 Business Drive, Huntington Beach, CA 92649
**Tel:** 714-893-8529 **Fax:** 714-894-9492
www.blue-white.com **Email:** sales@blue-white.com