



PanaFlow™ Z1G/Z2G

User's manual

BH025C11 EN B



PanaFlow™ Z1G/Z2G

Panametrics gas ultrasonic volumetric flow meter

User's manual

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Product registration

Thank you for purchasing your PanaFlow™ Z1G/Z2G Process Gas FlowMeter from Baker Hughes, a Panametrics Company. Please register your product at <https://info.bakerhughes.com/New-Product-Registration-LP.html> for product support such as the latest software/firmware upgrades, product information and special promotions.

Services

Panametrics provides customers with an experienced staff of customer support personnel ready to respond to technical inquiries, as well as other remote and on-site support needs. To complement our broad portfolio of industry-leading solutions, we offer several types of flexible and scalable support services including: Training, Product Repairs, Extended Warranties, Service Agreements and more. Please visit <https://www.bakerhughesds.com/panametrics/services> for more details.

Terms and conditions

Sales Terms and Conditions for your recent purchase of a Panametrics product, including the applicable product Warranty, can be found on our website at the following link: <https://www.bakerhughesds.com/sales-terms-conditions>

Typographical conventions

Note: These paragraphs provide information that provides a deeper understanding of the situation, but is not essential to the proper completion of the instructions.

IMPORTANT:

These paragraphs provide information that emphasizes instructions that are essential to proper setup of the equipment. Failure to follow these instructions carefully may cause unreliable performance.

Safety issues

	WARNING! It is the responsibility of the user to make sure all local, county, state and national codes, regulations, rules and laws related to safety and safe operating conditions are met for each installation.
	Attention European customers! To meet CE Mark requirements for all units intended for use in the EU, all electrical cables must be installed as described in this manual.

	CAUTION! This symbol indicates a risk of potential minor personal injury and/or severe damage to the equipment, unless these instructions are followed carefully.
	WARNING! This symbol indicates a risk of potential serious personal injury, unless these instructions are followed carefully.

Auxiliary equipment

Local safety standards

The user must make sure that he operates all auxiliary equipment in accordance with local codes, standards, regulations, or laws applicable to safety.

Working area

	WARNING! Auxiliary equipment may have both manual and automatic modes of operation. As equipment can move suddenly and without warning, do not enter the work cell of this equipment during automatic operation, and do not enter the work envelope of this equipment during manual operation. If you do, serious injury can result.
	WARNING! Make sure that power to the auxiliary equipment is turned OFF and locked out before you perform maintenance procedures on this equipment.

Qualification of personnel

Make sure that all personnel have manufacturer-approved training applicable to the auxiliary equipment.

Personal safety equipment

Make sure that operators and maintenance personnel have all safety equipment applicable to the auxiliary equipment. Examples include safety glasses, protective headgear, safety shoes, etc.

Unauthorized operation

Make sure that unauthorized personnel cannot gain access to the operation of the equipment.

Environmental compliance

RoHS

The PanaFlow™ Z1G/Z2G Process Gas FlowMeter fully complies with RoHS regulations (Directive 2011/65/EU).

Waste Electrical and Electronic Equipment (WEEE) directive

Panametrics is an active participant in Europe’s *Waste Electrical and Electronic Equipment* (WEEE) take-back initiative (Directive 2012/19/EU).



The equipment that you bought has required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems. Those systems will reuse or recycle most of the materials of your end life equipment in a sound way.

The crossed-out wheeled bin symbol invites you to use those systems.

If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administration.

Please visit <https://www.bakerhughesds.com/health-safetyand-environment-hse> for take-back instructions and more information about this initiative.

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Chapter 1. General information

1.1 Theory of operation

The *PanaFlow Z1G/Z2G Process Gas Flowmeter* system uses ultrasonic transit-time technology. A brief description of transit-time theory follows. For more information about the theory, and the use of Panametrics ultrasonic flow meters for measuring flow, please refer to *Ultrasonic Measurements for Process Control* by L.C. Lynnworth (Academic Press, 1989).

1.1.1 Transit-time method

The transit time technique uses a pair of transducers, with each transducer alternately sending and receiving coded ultrasonic signals through the fluid. When the fluid is flowing, signal transit time in the downstream direction is shorter than in the upstream direction. The difference between these transit times is proportional to the flow velocity. The *PanaFlow Z1G/Z2G Process Gas Flowmeter* measures this very small time difference and, using various digital signal processing techniques combined with programmed pipe parameters, determines the flow rate and direction.

1.1.2 Transducers

When in a transmit cycle, transducers convert electrical energy into ultrasonic pulses and then convert the ultrasonic pulses back to electrical energy when in a receive cycle. In other words, they act like loudspeakers when transmitting the signal and like microphones when receiving it. They perform the actual data transmission and collection, thus interrogating the flow.

1.2 Multi-path design

Multi-path ultrasonic flow meters are designed to accommodate more than one pair of transducers to interrogate the flow field in different locations and more accurately determine the actual flow rate. The *PanaFlow Z1G/Z2G Process Gas Flowmeter* system is available in either a 1-Path or 2-Path configuration. For the 2-Path configuration, the measurement paths are located either at Diametrical path or at Midradius configurations. In addition to the flow transducers, the *PanaFlow Z1G/Z2G Process Gas Flowmeter* can be fitted with optional temperature and pressure transducers to permit mass flow measurements.

1.3 Flow profile

One of the main factors affecting an ultrasonic flow measurement is the flow profile. If the flow profile is known, mathematical modeling of the flow and the relationships between the raw data of the two paths can be made. Maintaining a constant flow-profile shape across all flow velocities, pipe sizes and upstream flow disturbances can be difficult. For this reason, Panametrics has tested the *PanaFlow Z1G/Z2G Process Gas Flowmeter* under various conditions in an effort to determine its operational limits.

1.4 Unpacking

The *PanaFlow Z1G/Z2G Process Gas Flowmeter* is typically packaged in a wooden crate, the size of which will depend on the size of product ordered. The flowcell is secured by several 2x4 wood blocks to prevent shifting during transit. Simply remove these 2x4 braces to unpack the system. For local-mount systems the transmitter electronics enclosure is installed directly on top of the flowcell via an adapter. For remote-mount systems the transmitter electronics enclosure and the remote cable may ship in a separate package.

1.5 Inspection

Prior to installation, inspect all materials to be used in the installation:

- *Gaskets* – check for cracks, tears and over compression
- *Nuts and Bolts* – check for damaged threads and for debris
- *RF Flange Faces* – check for damage to serrations that may cause gaskets to not seal properly.

In general, check for anything that may prevent safe operation of the equipment.

IMPORTANT:

If pipes are shipped pre-assembled as a single section, care should be taken to inspect and check the bolts and gaskets.

1.6 Meter components

Figure 1 on page 3 shows a PanaFlow Z1G/Z2G Process Gas Flowmeter system, with the items described in Table 1 below.

Table 1: Typical system components	
Item No.	Component
1	Meter Body with Flanges (material list WCB: LCB: CF8: CF8M: CK3MCuN: CD3MWCuN)
2	Transmitter Electronics
3	Magnetic Stylus (for Transmitter Keypad)
4	Mounting Adapter, Transmitter (for local mount only)
5	Transducers/Inserts

The meter body with Flanges together is called as Flowcell or Spool.

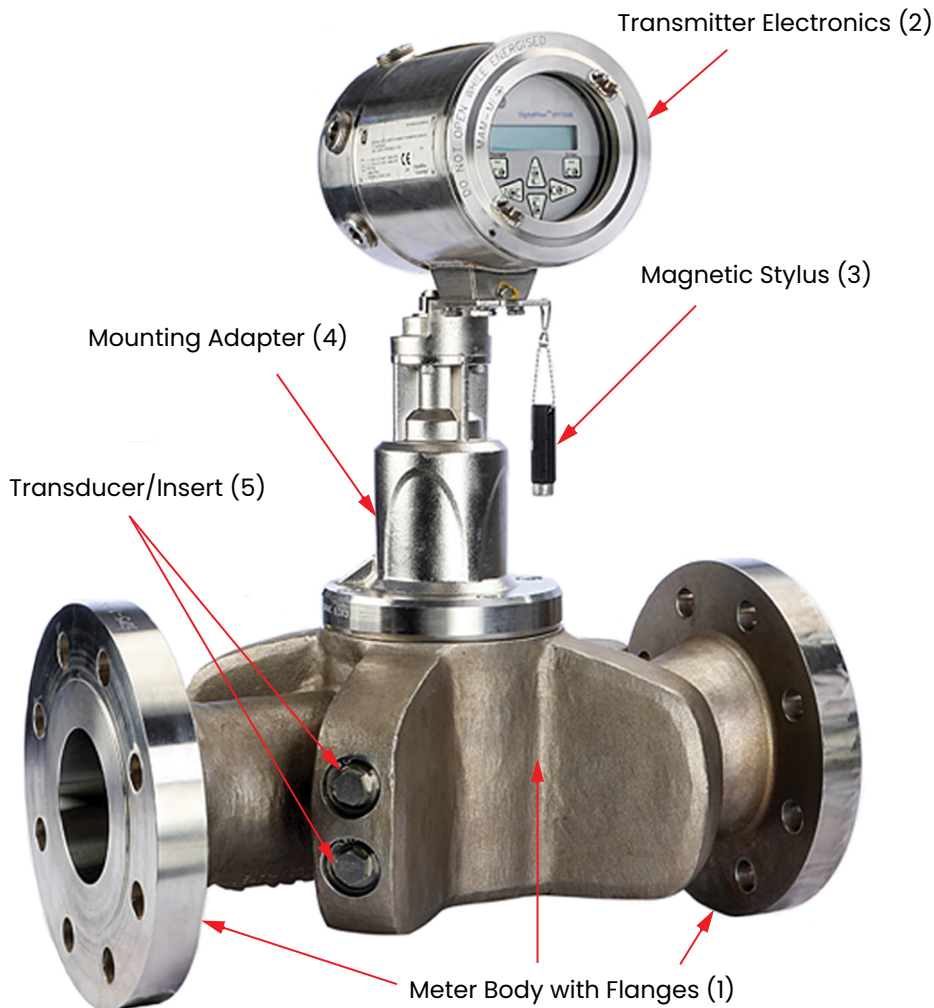


Figure 1: PanaFlow Z1G/Z2G process

1.7 Tag plates

The PanaFlow Z1G/Z2G Process Gas Flowmeter is marked with a variety of labels which provide valuable information about your specific system. Examples of typical flowcell tag plates are shown in the following sections.

1.7.1 Model tag plate

The Model Tag Plate (see Figure 2 below) contains the model name and certification markings for the spool and its hazardous area usage.

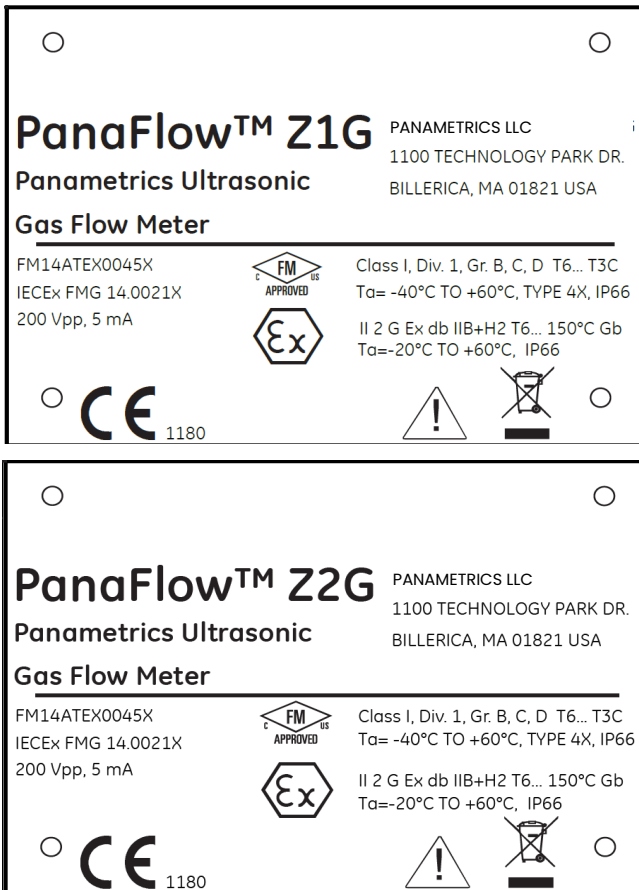


Figure 2: Model tag plate

1.7.2 Specification tag plate

The Specification Tag Plate (see Figure 3) contains information pertaining to the build and test of the spool, such as spool nominal size, flange rating, wall thickness, material, dry weight (including transmitter), vessel manufacturing serial number, ambient and fluid temperature ranges, operating pressures, hydro test pressure and date.

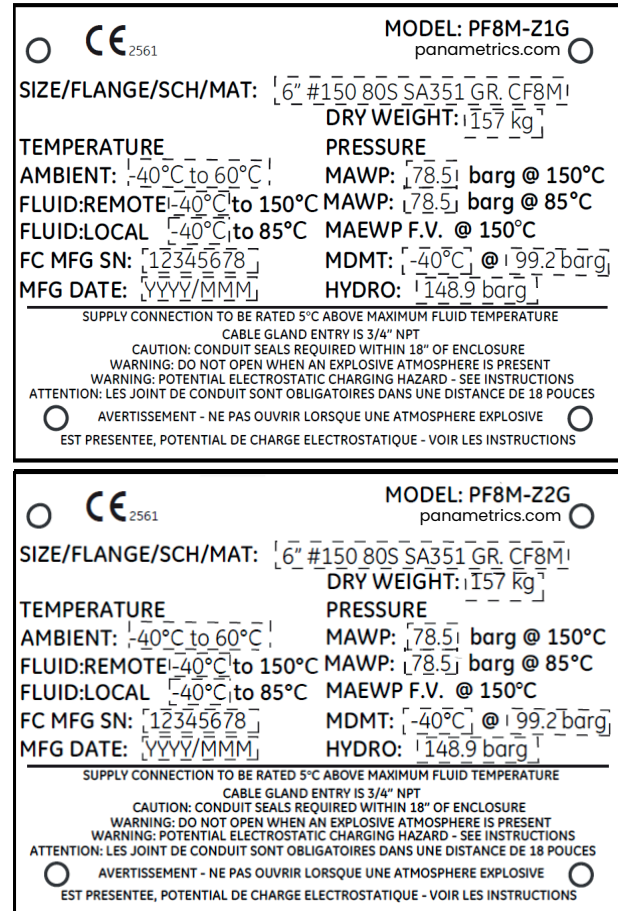


Figure 3: Specification tag plate

1.7.3 Part string and serial number tag plate

The Part String and Serial Number Tag (see Figure 4 below) contains the specific configuration of the spool as well as the final assembly date, Panametrics serial number and customer tag number.

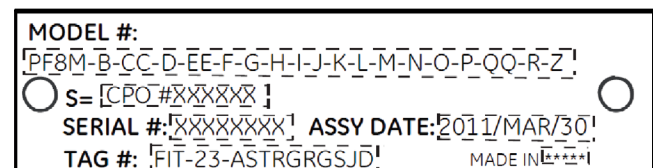


Figure 4: Part string and S/N tag plate

1.7.4 Transmitter tag plate

The Flow Transmitter Tag Plate (see *Figure 5* on page 5) is affixed to the transmitter and includes the configuration per the model information detailed on the Model Tag Plate. This tag plate also contains the hazardous area certification information for the transmitter.

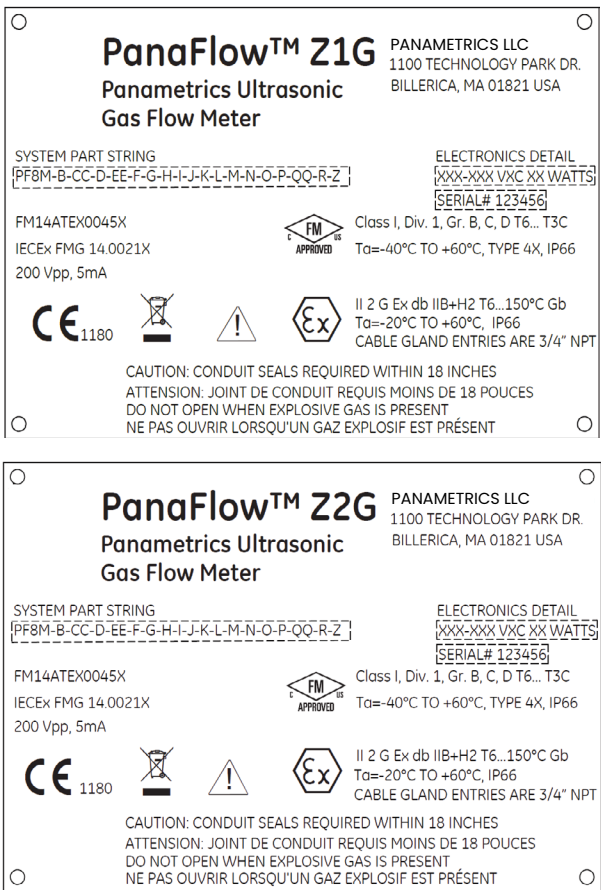


Figure 5: Flow transmitter tag plate

Chapter 2. Installation

2.1 Introduction

To ensure safe and reliable operation of the *PanaFlow Z1G/Z2G Process Gas Flowmeter*, the system must be installed in accordance with the guidelines established by Panametrics engineers. Those guidelines are explained in detail in this chapter.

	WARNING!
	The <i>PanaFlow Z1G/Z2G Process Gas Flowmeter</i> can measure the flow rate of many gases, some of which are potentially hazardous. In such cases, the importance of proper safety practices cannot be overemphasized.
	Attention!
	To meet CE Mark requirements for all units intended for use in the EU or in high electrical noise environments, all electrical cables must be installed as described in Appendix A, "CE Mark Compliance and High Noise Environments".

2.2 Lifting instructions

Use proper lifting techniques when moving the *PanaFlow Z1G/Z2G Process Gas Flowmeter*. No lifting hooks or eyelets are provided. The recommended method for lifting the *PanaFlow Z1G/Z2G Process Gas Flowmeter* is by using lifting straps on each side of the spool with a stabilizer bar between them, located above the transmitter head. Additional care may need to be taken to prevent the transmitter from rotating, especially on the smaller systems where the transmitter weight is a larger percentage of the total system weight. A label similar to *Figure 6*, which illustrates these required precautions, is attached to the flowcell.

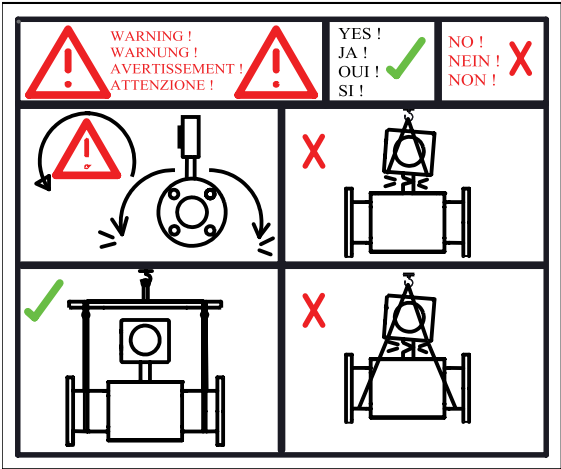


Figure 6: Spoolpiece lifting label (ref. dwg. 442-1232)

While lifting the *PanaFlow Z1G/Z2G Process Gas Flowmeter*, be sure to observe the warnings and figures below:

	WARNING!
	Never stand below any object being lifted.

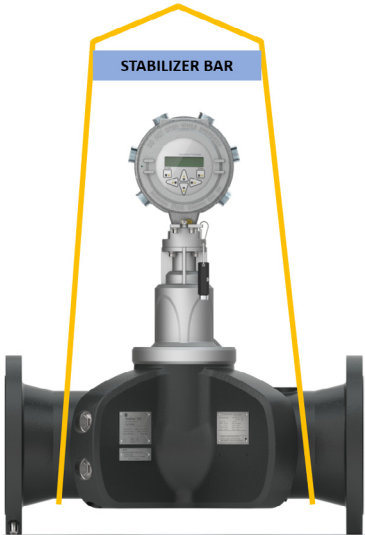


Figure 7: Proper lifting method

	WARNING!
	Do not use the transmitter to support the weight of the flowcell as shown in Figure 8. The transmitter cannot support the weight of the Flowcell/Spool..



Figure 8: Improper lifting method

2.3 Flowcell location guidelines

The flowcell includes the flow transducers and, optionally, pressure and temperature transmitters. Ideally, install the flowcell in a section of pipe with access to the flowcell, such as a long run of pipe that is above ground. Observe the following recommendations:

- There should be at least 20 pipe diameters of straight, undisturbed flow upstream and 10 pipe diameters of straight, undisturbed flow downstream from the measurement point. To ensure undisturbed flow, avoid sources of disturbances in the fluid such as valves, flanges, expansions, and elbows.
- Because condensate or sediment at the bottom of the pipe may cause attenuation of the ultrasonic signal, always install the *PanaFlow ZIG/Z2G Process Gas Flowmeter* with the transmitter in a vertical orientation on the top of the pipe. This ensures that the transducers are located on the sides of the pipe rather than on the top or bottom.
- Only authorized personnel should perform the installation. The proper personal protection equipment (PPE) should always be used when working with this equipment.
- The flowcell shall be installed in such a way that it can be safely operated, maintained and inspected. Please refer to specific outline and installation drawings for proper clearances and specific distances for each system size. In general, allow for a minimum of 12" of space on all sides of the flowcell and flow transmitter, with an ideal clearance of 24" on all sides.
- You must provide suitable over-pressure protection at the main piping to the flowcell in order to prevent damage to the flowcell and injury to personnel. The utilized over-pressure protection device shall be supplied with all declarations of conformity and EC-type design certificates.

- Make sure the difference between the inside diameter of the pipe and that of the *PanaFlow ZIG/Z2G Process Gas Flowmeter* does not exceed 0.5%, as changes in internal diameters will cause flow profile disturbances.
- Make sure any non-symmetrical offset does not exceed 1%, as misalignment between the piping and the meter may cause flow profile disturbances.
- Make sure the gasket is centered on the flange faces and does not protrude into the pipe, as protrusion of the gasket into the pipe may cause flow profile disturbances.
- If pipe insulation is required, install all insulation materials and accessories in accordance with the manufacturer's instructions and recognized industry practices. Adhere to the local code where applicable to ensure that the safe and proper installation will serve its intended purpose.

2.4 Making the electrical connections

This section contains instructions for making all the necessary electrical connections to the *PanaFlow ZIG/Z2G Process Gas Flowmeter*. Refer to *Figure 13* on page 14 for a complete wiring diagram.

Note: Except for the power connector, all electrical connectors are stored on their terminal blocks during shipment and may be removed from the enclosure for more convenient wiring. Simply, feed the cables through the conduit holes on the side of the enclosure, attach the wires to the appropriate connectors, and plug the connectors back into their terminal blocks.

To prepare the *PanaFlow ZIG/Z2G Process Gas Flowmeter* for wiring, refer to Figure 9 below, and complete the following steps:

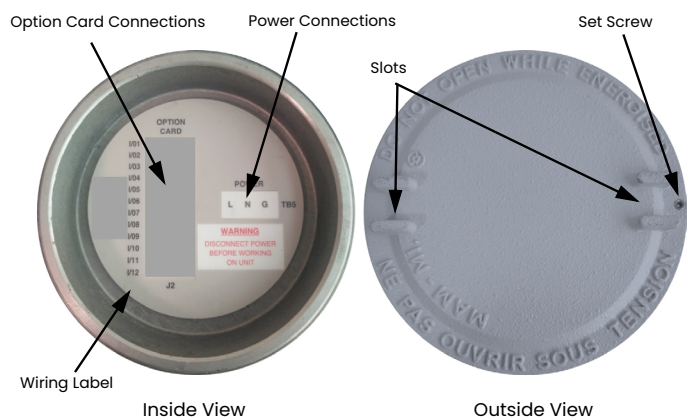


Figure 9: Rear cover with connection labels

WARNING!



Always disconnect the line power from the *PanaFlow ZIG/Z2G Process Gas Flowmeter* electronics before removing either the front or rear cover. This is especially important in a hazardous environment.

1. Disconnect any existing power line from its source.
2. Loosen the set screw on the rear cover.
3. Place a rod or long screwdriver across the cover in the slots provided, and rotate the cover counterclockwise until it comes free from the enclosure.
4. Install any required cable clamps in the appropriate conduit holes around the side of the enclosure.
5. Refer to the labels inside the rear cover to assist in making the power and option card connections. Also, *Figure 14 on page 15* shows the specific connection labels for all available option cards.
2. Install a cable clamp in the conduit hole closest to the power terminal block. Avoid using the other conduit holes for this purpose to minimize any interference in the circuitry from the AC power line.
3. Strip 1/4 in. of insulation from the end of each of the three power line leads.
4. Route the cable through the conduit hole and connect the line power leads to the terminal block, using the pin number assignments shown in *Figure 13 on page 14*.
5. Leaving a bit of slack, secure the power line with the cable clamp.

2.4.1 Wiring the line power

The *PanaFlow ZIG/Z2G Process Gas Flowmeter* may be ordered for operation with power inputs of either 85-240 VAC (standard) or 12-28 VDC (optional). The tag plate on the side of the electronics enclosure lists the required line voltage and the power rating. Be sure to connect the meter only to the specified line voltage.

	WARNING! Proper grounding of the <i>PanaFlow ZIG/Z2G Process Gas Flowmeter</i> is required to prevent the possibility of electric shock. See <i>Figure 11 on page 12</i> for the location of the chassis grounding screw.
--	--

	WARNING! For compliance with the European Union's Low Voltage Directive, this unit requires an external power disconnect device such as a switch or circuit breaker. The disconnect device must be marked as such, clearly visible, directly accessible, and located within 1.8 m (6 ft) of the meter.
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	WARNING! Improper connection of the line power leads or connecting the meter to the incorrect line voltage may damage the unit. It may also result in hazardous voltages at the flowcell and associated piping as well as within the electronics enclosure.
--	--

Refer to *Figure 13 on page 14* to locate the correct terminal block, and connect the line power as follows:

1. Prepare the line power leads by trimming the line and neutral AC power leads (or the positive and negative DC power leads) to a length 0.5 in. (1 cm) shorter than the ground lead. This ensures that the ground lead is the last to detach if the power cable is forcibly disconnected from the meter.

	WARNING! Make sure both covers, with their o-ring seals, are installed and the set screws tightened before applying power in a hazardous environment.
	CAUTION! The transducers must be properly wired before applying power to the meter. (If the electronics enclosure is mounted directly on the flowcell, these connections are made at the factory prior to shipment.)

Proceed to the next section to continue the wiring of the *PanaFlow ZIG/Z2G Process Gas Flowmeter*.

2.4.2 Wiring the transducers

	Attention! To meet CE Mark requirements for all units intended for use in the EU or in high electrical noise environments, all electrical cables must be installed as described in <i>Appendix A, "CE Mark Compliance and High Noise Environments"</i>.
--	--

For a *PanaFlow ZIG/Z2G Process Gas Flowmeter* system with the flow transmitter mounted on the flowcell, no external transducer wiring is required. However, for a system with a remote mounted flow transmitter, refer to the wiring diagram in *Figure 12 on page 13* to connect the transducers and preamplifiers to the transmitter.

2.4.3 Wiring the standard 4-20 mA analog outputs

The standard configuration of the *PanaFlow ZIG/Z2G Process Gas Flowmeter* includes two isolated 4-20 mA analog outputs (designated as outputs 1 and 2). Connections to these outputs may be made with standard twisted-pair wiring, but the current loop impedance for these circuits must not exceed 600 Ω .

**Attention!**

To meet CE Mark requirements for all units intended for use in the EU or in high electrical noise environments, all electrical cables must be installed as described in *Appendix A, "CE Mark Compliance and High Noise Environments"*.

To wire the analog outputs, complete the following steps:

1. Disconnect the main power and remove the rear cover.
2. Install a cable clamp in the chosen conduit hole on the side of the electronics enclosure.
3. Refer to Figure 13 on page 14 to locate the correct terminal block, and wire the analog outputs as shown. Secure the cable clamp.

Note: Analog outputs 1 and 2 in the wiring diagram correspond to analog outputs A and B in Slot 0 in the Panaview software.

4. If wiring of the unit has been completed, reinstall the rear cover on the enclosure and tighten the set screw.

**WARNING!**

Make sure both covers, with their o-ring seals, are installed and the set screws tightened before applying power in a hazardous environment.

Note: Prior to use, the analog outputs must be set up and calibrated.

Proceed to the next section to continue the wiring of the PanaFlow Z1G/Z2G Process Gas Flowmeter.

2.4.4 Wiring the standard RS485 serial port

The PanaFlow Z1G/Z2G Process Gas Flowmeter is equipped with a standard RS485 serial interface. This serial port will be used to communicate with PC/DCS system. In addition, the PanaFlow Z1G/Z2G Process Gas Flowmeter can receive and execute remote commands, using Panametrics's PanaView software.

Note: For more detailed information on serial communications refer to Panametrics's EIA-RS Serial Communications manual (document #916-054).

**Attention!**

To meet CE Mark requirements for all units intended for use in the EU or in high electrical noise environments, all electrical cables must be installed as described in *Appendix A, "CE Mark Compliance and High Noise Environments"*.

Refer to Figure 13 on page 14 to locate the correct terminal block, and wire the RS485 serial port as follows:

**WARNING!**

Always disconnect the line power from the PanaFlow Z1G/Z2G Process Gas Flowmeter electronics before removing either the front or rear cover. This is especially important in a hazardous environment.

1. Disconnect the main power and remove the rear cover.
2. Install the required cable clamp in the chosen conduit hole on the side of the electronics enclosure.
3. Feed one end of the cable through the conduit hole, wire it to terminal block, and secure the cable clamp. Use the information in Table 2 below to prepare a suitable cable for connecting the PanaFlow Z1G/Z2G Process Gas Flowmeter to the external serial device.

Table 2: RS485 cable connections

TB Pin #	Signal description
1	RS485+
2	RS485-
3	COM
4	Not Used
5	Not Used

- If wiring of the unit has been completed, reinstall the rear cover on the enclosure and tighten the set screw.

Proceed to the next section to continue the wiring of the *PanaFlow ZIG/Z2G Process Gas Flowmeter*.

2.4.5 Wiring the option cards

The *PanaFlow ZIG/Z2G Process Gas Flowmeter* can accommodate two option cards one in Slot 1 and other option card in Slot 2. The following option card functions are available only in certain combinations.

- Analog Inputs (Slot 1)
- RTD Inputs (Slot 1)
- Modbus Communications (Slot 2)
- HART Communications (Slot 2)
- Foundation Fieldbus Communications (Slot 2)

Figure 14 on page 15 shows the connection labels for the available option cards. Wiring any option card installed in Slot 1 requires completion of the following steps:



Attention!

To meet CE Mark requirements for all units intended for use in the EU or in high electrical noise environments, all electrical cables must be installed as described in *Appendix A, "CE Mark Compliance and High Noise Environments"*.

- Disconnect the main power and remove the rear cover.
- Install a cable clamp in the chosen conduit hole on the side of the electronics enclosure and feed a standard twisted-pair cable through this conduit hole.
- Locate the 12-pin terminal block in Figure 13 on page 14 and wire the option card as indicated on the label inside the rear cover (see Figure 9 on page 7). Secure the cable clamp.

IMPORTANT:

If you have multiple flow transmitters, because of the attached wiring label, all rear covers must remain with their original meters!

- If wiring of the unit has been completed, reinstall the rear cover on the enclosure and tighten the set screw.

IMPORTANT:

Prior to use, the option card must be set up and calibrated.

For more specific instructions on particular option cards, proceed to the appropriate section(s) that follow.

2.4.5.1 Wiring a 4-20 mA analog inputs option card

To calculate standard flow rates, the *PanaFlow ZIG/Z2G Process Gas Flowmeter* requires accurate temperature and pressure data from the measurement site. Transmitters installed in the flowcell can provide this information via an optional 4-20 mA analog inputs option card. This option card includes two or four isolated 4-20 mA analog inputs (designated as A, B, C and D), each of which includes a 24 VDC power supply for loop-powered transmitters. Either input may be used to process the temperature signal, while the other input is used to process the pressure signal.

IMPORTANT:

To properly enter programming data into the meter, it is necessary to know which input is assigned to which process parameter.

The analog inputs, which have an impedance of 118 Ω , should be connected with standard twisted-pair wiring. Power to the transmitters may be supplied either by the integral 24 VDC power supply on the analog input option card or by an external power supply. Figure 10 below shows typical wiring diagrams, with and without an external power supply, for one of the analog inputs.

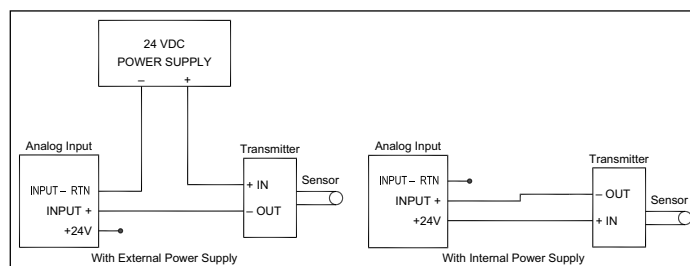


Figure 10: Typical analog input wiring diagrams

Before making any connections, complete the steps in "Making the Electrical Connections" on page 10. Then, wire the analog inputs as shown on the label in the rear cover (see Figure 9 on page 7).

IMPORTANT:

The analog inputs option card can be calibrated with the *PanaFlow ZIG/Z2G Process Gas Flowmeter's* built-in analog outputs. However, be certain that the analog outputs have been calibrated first.

2.4.5.2 Wiring an RTD inputs option card

The *PanaFlow Z1G/Z2G Process Gas Flowmeter* RTD inputs option card provides two or four direct RTD inputs (designated as A, B, C and D). Each RTD input requires three wires, and should be connected as shown on the label in the rear cover (see *Figure 9 on page 7*).

Before making any connections, complete the steps in “Making the Electrical Connections” on page 10.

2.4.5.3 Wiring a Modbus option card

A Modbus option card uses the RS485 standard for communication, and it must be installed in Slot 2. The RS485 standard allows up to 32 nodes (drivers and receivers) on one multi-drop network, at distances up to 4000 ft (1200 m). Panametrics recommends using 24-gauge (24 AWG) twisted-pair wire with a characteristic impedance of 120 Ω and 120 Ω termination at each end of the communications line.

Note: The Modbus option card provides its own RS485 connections.

2.4.5.4 Wiring the HART interface

To connect the HART interface, refer to *Figure 13 on page 14* and proceed as follows:

1. Connect the HART Net (+) wire to pin #1.
2. Connect the HART Net (-) wire to pin #2.
3. Connect the optional cable shield to pin #3.

2.4.5.5 Wiring the Foundation Fieldbus interface

To connect the Foundation Fieldbus interface, refer to *Figure 13 on page 14* and proceed as follows:

1. Connect the Fieldbus Net (+) wire to pin #1.
2. Connect the Fieldbus Net (-) wire to pin #2.
3. Connect the optional cable shield to pin #3.



WARNING!

Make sure both covers, with their o-ring seals, are installed and the set screws tightened before applying power in a hazardous environment.

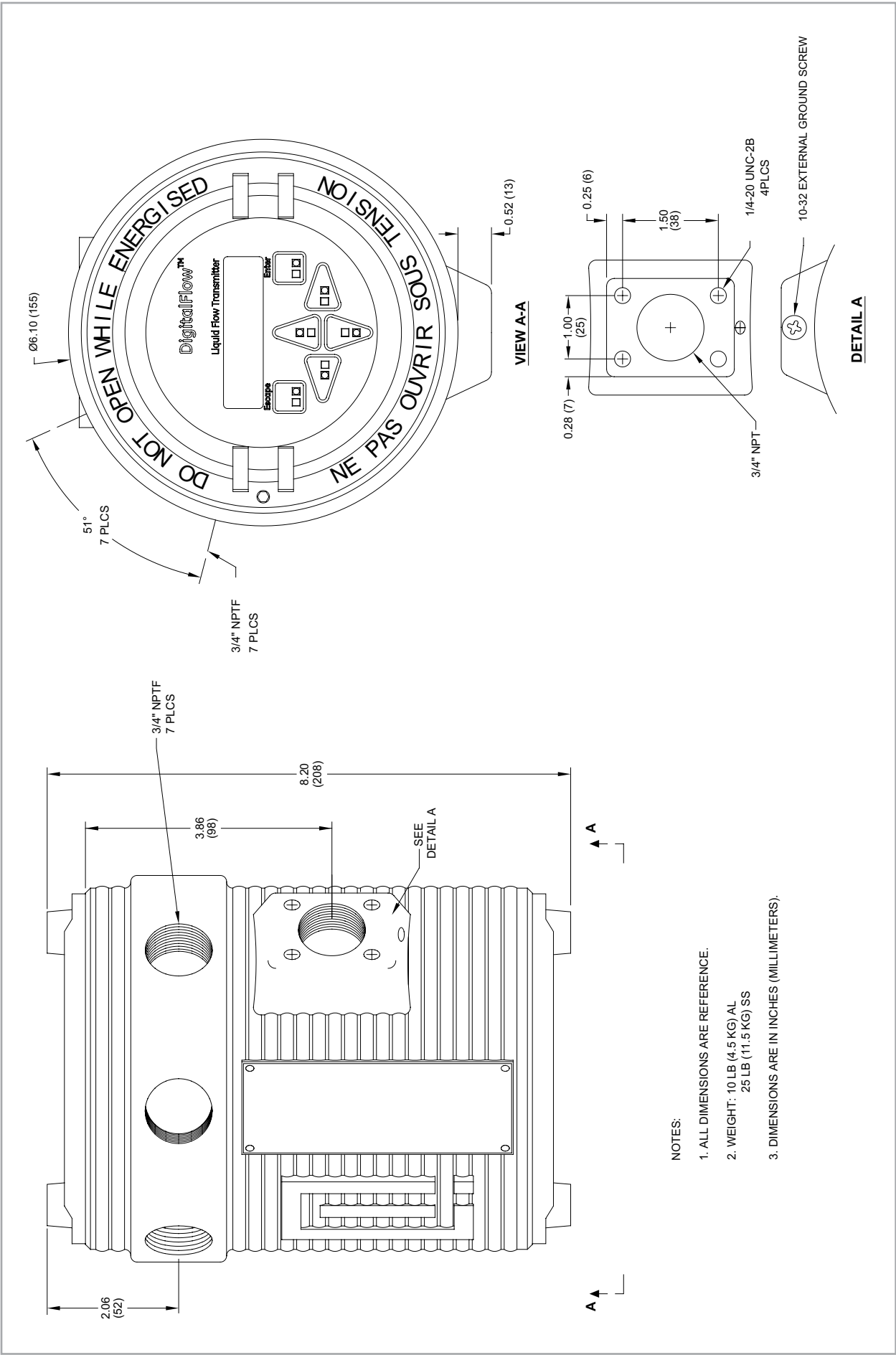


Figure 11: Transmitter electronics enclosure - outline and dimensions (ref. dwg. 712-1318)

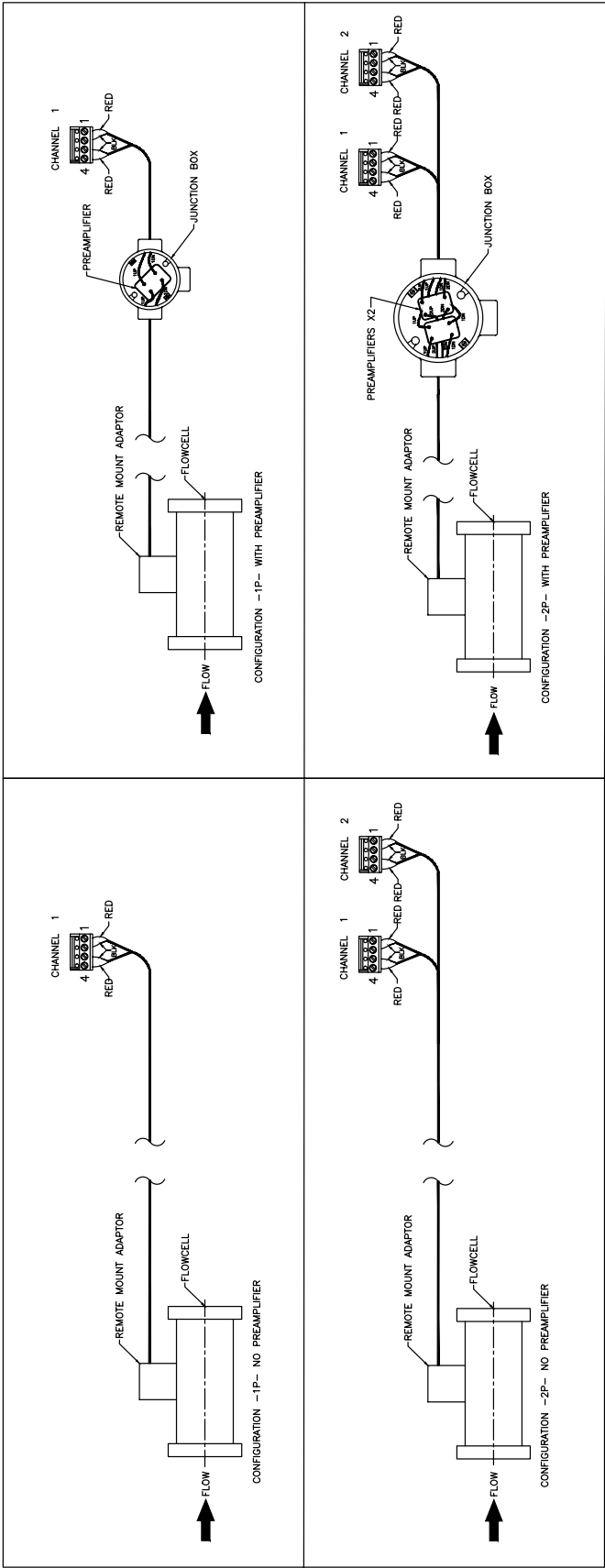


Figure 12: Remote mount electronics – transducer and preamplifier wiring (ref. dwg. 702-731, 732)

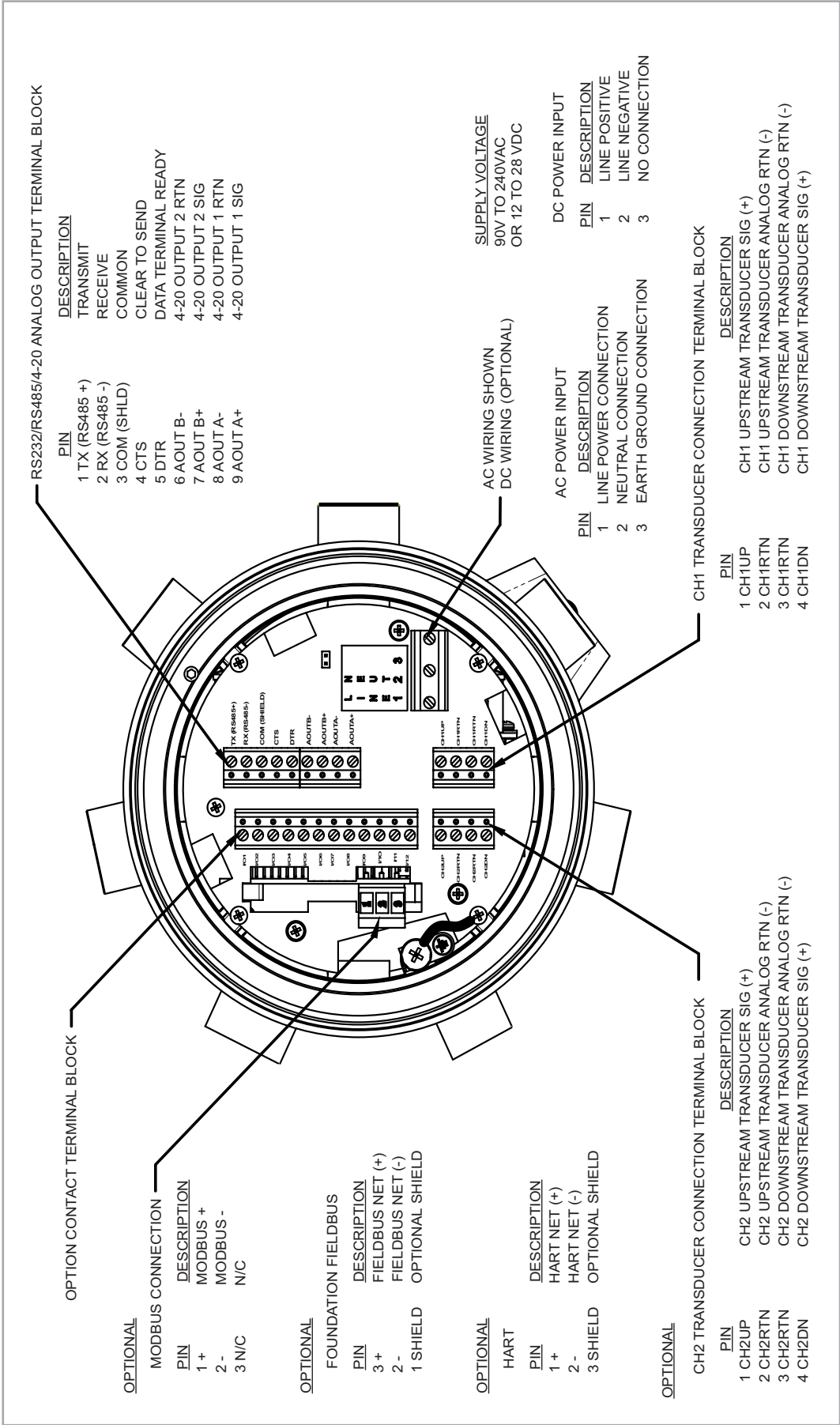


Figure 13: Transmitter electronics - wiring diagram (ref. dwg. #702-1846)

-05 (CI, TI, FI)		-08 (AI, HI)		-09 (OI)	
Pin 1	OUT - A	Pin 1	ALARM A - NO	Pin 1	NC
2	RTN - A	2	ALARM A - COM	2	NC
3	NC	3	ALARM A - NC	3	NC
4	OUT - B	4	ALARM B - NO	4	NC
5	RTN - B	5	ALARM B - COM	5	NC
6	NC	6	ALARM B - NC	6	NC
7	OUT C - +24V	7	OUT C - +24V	7	OUT C - +24V
8	INPUT C - +	8	INPUT C - +	8	INPUT C - +
9	INPUT C - RTN	9	INPUT C - RTN	9	INPUT C - RTN
10	OUT D - +24V	10	OUT D - +24V	10	OUT D - +24V
11	INPUT D - +	11	INPUT D - +	11	INPUT D - +
12	INPUT D - RTN	12	INPUT D - RTN	12	INPUT D - RTN

NOTE:

R = RTD Input

A = Standard Alarm

H = Hermetic Alarm

F = Frequency Output

T = Totalizer Output

I = Current Input

C = Current Output

O = Blank/No Connection

Figure 14: Labels - option card connections

Chapter 3. Initial setup

3.1 Introduction

This chapter provides instructions for programming the data required to place the *PanaFlow Z1G/Z2G Process Gas Flowmeter* into operation. Before the *PanaFlow Z1G/Z2G Process Gas Flowmeter* can begin taking measurements and displaying valid data, the current system and pipe parameters must be entered.

Additional programming options provide access to the more advanced features of the *PanaFlow Z1G/Z2G Process Gas Flowmeter*, but this information is not required to begin taking measurements.

Note: Be sure to record all programming data in Appendix B, “Gas Process Flowmeter Service Record”.

As a guide in following the programming instructions in this chapter, see Figure 16 on page 21 for the relevant portions of the *PanaFlow Z1G/Z2G Process Gas Flowmeter* menu map.

3.2 Programming methods

You can program the *PanaFlow Z1G/Z2G Process Gas Flowmeter* with the magnetic keypad on the electronics enclosure, or with PanaView™, Panametrics’s PC-based non-resident software program that communicates with the *PanaFlow Z1G/Z2G Process Gas Flowmeter* via its serial port. PanaView provides additional programming capabilities, such as:

- Load and save site file data
- Create and save graph and log files
- Display text output and graphs of live measurement data
- Create custom templates for displaying text, graph, and log data
- Interface with multiple Panametrics instruments.

This chapter focuses on programming via the magnetic keypad. For information on programming the *PanaFlow Z1G/Z2G Process Gas Flowmeter* via *PanaView*, refer to the *PanaView User’s Manual* (Panametrics document #910-211).

3.3 The magnetic keypad

The glass window on the electronics enclosure includes the components shown in Figure 15 below.



Figure 15: Display and magnetic keypad

IMPORTANT:

The *PanaFlow Z1G/Z2G Process Gas Flowmeter* magnetic keypad enables programming of the instrument through the glass faceplate without removing the cover. Thus, all programming procedures may be performed while the unit is installed in a hazardous area.

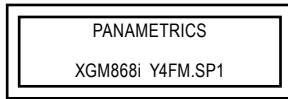
The six keys on the magnetic keypad (see Table 3 below) enable users to program the *PanaFlow Z1G/Z2G Process Gas Flowmeter*.

Table 3: Keypad keys and functions

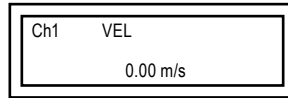
Key	Key Name	Functions
✗	Escape Key	To cancel a numeric entry change, or exit a menu or as Back key
✓	Enter Key	To accept a numeric entry or select a menu option
◀	Left Arrow Key	To navigate among menu choices or to set cursor position
▶	Right Arrow Key	To navigate among menu choices or to set cursor position
▲	Up Arrow Key	To navigate among menu choices or to Increment numeric entries
▼	Down Arrow Key	To navigate among menu choices or to Decrement numeric entries

3.4 Initial power on screens

When you power On the *PanaFlow Z1G/Z2G Process Gas Flowmeter*, the display first shows the model name and software version:



The meter then starts to display measured parameters.



To enter the Keypad Program, press the [✕] key, followed by the [✓] key, and the [✕] key again. Each successive key must be entered within 10 seconds of the prior key.

As a guide in following the programming instructions in this chapter, the relevant portions of the *PanaFlow Z1G/Z2G Process Gas Flowmeter* menu map can be found in *Figure 16 on page 21*. Proceed to the following sections to enter data in the *Channel* or *GLOBL* menus.

IMPORTANT:

If the keypad has not been pressed for 10 minutes, the *PanaFlow Z1G/Z2G Process Gas Flowmeter* exits the Keypad Program and returns to displaying measurements. The meter retains any configuration changes that were confirmed with the [✓] key, and restarts as if the programming had been completed.

3.5 Entering data in the GLOBL menu

To begin programming your meter, you must select the system units from the GLOBL menu as discussed below. Refer to *Figure 16 on page 21* and remember to record all programming data in Appendix B, “Gas Process Flowmeter Service Record”.

3.5.1 Entering global system data

The *GLOBL-SYSTM* submenu is used to enter several general system parameters (e.g., English or metric units). For meters with 2 channels, this menu is also used to compute parameters such as the sum, difference or average of the channel 1 and channel 2 signals. When calculating the *SUM*, *DIF* or *AVE* readouts, data from the *GLOBL-SYSTM* submenu is used. Any conflicting data entered in the *CHANNEL-SYSTM* submenu is overridden. Complete the following steps:

1. In the Keypad Program, scroll to PROG and press [✓].
2. In the PROG menu, scroll to GLOBL and press [✓].
3. In the Global PROGRAM menu, scroll to SYSTM and press [✓].
4. Scroll to the desired System Units selection (either metric or English) and press [✓] to display all

parameters and measurements in the designated units.

5. Scroll to the desired Pressure Units selection (absolute or gauge) and press [✓].
6. Do one of the following:
 - If PSia (absolute) was selected, skip this step.
 - If PSig (gauge) was selected, enter the desired atmospheric pressure and press [✓].
7. The program automatically returns to the Global PROGRAM menu.

3.5.2 Selecting volumetric units

1. Scroll to the desired *Volumetric Units* for the flow rate display and press [✓]. *Table 4* below lists the available volumetric units.

Table 4: Available volumetric / Totalizer units

English	Metric
ACF = Actual Cubic Feet	ACM = Actual Cubic Meters
KACF = Thousands of ACF	KACM = Thousands of ACM
MMACF = Millions of ACF	MMACM = Millions of ACM
SCF = Standard Cubic Feet	SCM = Standard Cubic Meters
KSCF = Thousands of SCF	KSCM = Thousands of SCM
MMSCF = Millions of SCF	MMSCM = Millions of SCM

2. Scroll to the desired unit of *Volumetric Time* (from *seconds* to *days*) and press [✓].
3. Scroll to the desired number of *Vol Decimal Digits* (digits to the right of the decimal point) in the volumetric flow display and press [✓].

3.5.3 Selecting totalizer units

4. Scroll to the desired *Totalizer Units* for the flow rate display and press [✓]. Available units are listed in *Table 4* above.
5. Scroll to the desired number of *Tot Decimal Digits* (digits to the right of the decimal point in the totalized flow rate display) and press [✓].
6. Do one of the following:
 - If *MASS FLOW* is *ON*, proceed to “*Selecting Mass Flow Units*” on page 26.
 - If *MASS FLOW* is *OFF*, the meter returns to the *Global PROGRAM* window. Press [✕] twice and proceed to Chapter 4, “Operation”.

Note: The following prompts appear only if Mass Flow is activated for both channels.

3.5.4 Selecting mass flow units

1. Scroll to the desired *Mass Flow* units for the flow rate display and press [✓]. The available units for this prompt are determined by the selection made at the *System Units* screen. See *Table 5* for the available units.

Table 5: Available mass flow units

English	Metric
LB = Pounds	Kilograms
KLB = Thousands of LB	Metric Tons (1000 KG)
MMLB = Millions of LB	
Tons (2000 LB)	

2. Scroll to the desired *Mass Flow Time* units for the mass flow rate display (from *seconds* to *days*) and press [✓].
3. Scroll to the desired number of *Mdot Dec. Digits* (digits to the right of the decimal point in the mass flow rate display) and press [✓].
4. Scroll to the desired *Mass (Totalizer)* units for the totaled mass flow rate display and press [✓]. The available units for this prompt are determined by the selection made at the *System Units* prompt.
5. Scroll to the desired number of *Mass Dec. Digits* (digits to the right of the decimal point in the totaled mass flow rate display) and press [✓].
6. After completing the above steps, the *PanaFlow Z1G/Z2G Process Gas Flowmeter* returns to the *Global PROGRAM* window. Press [✓] and scroll to *CH1* or *CH2* to continue the initial setup programming.

3.6 Activating a channel

The *Channelx-ACTIV* submenu permits selection of the desired measurement method. In addition, it is used to activate/deactivate one or both of the channels in a 2-Channel *PanaFlow Z1G/Z2G Process Gas Flowmeter*.

To access the *Channelx-ACTIV* submenu, proceed as follows:

1. From the *Keypad Program*, scroll to *CH1* or *CH2* and press [✓].
2. In the *Channel PROGRAM* menu, scroll to *ACTIV* and press [✓].
3. Scroll to *Burst* to activate the channel/path, and press [✓].

Note: *Burst* is automatically selected for a 1-Channel meter.

4. Scroll to one of the measurement methods described below and press [✓].

- *Skat Only* is the preferred technique for locating the acoustic signal and for high velocity measurements. It is more robust in a noisy environment than the *Measure* technique.
- *Skat/Measure* is the preferred technique to use for low velocity measurements.

If *Skat Only* is selected at the above prompt, the meter uses this technique exclusively. However, if *Skat/Measure* is selected, the meter uses *Skat Only* to find the acoustic signal and then tries to use the *Skat/Measure* technique for the actual measurement.

After completing the above step, the meter returns to the *Channel PROGRAM* menu. Proceed to the next section to continue programming your meter.

3.7 Entering system data for a channel

The *Channelx-System* submenu is used to enter system parameters for the channel.

3.7.1 Accessing the channelx-system submenu

1. From the *Channel PROGRAM* menu, scroll to *SYSTEM* and press [✓].
2. The first prompt asks for the *Channel Label*. Use the four arrow keys to enter the desired label (in any numeric or text combination up to five characters), and then press [✓].
3. The next prompt asks for the *Channel (Site) Message*. Enter the desired text in the same manner as the channel label with up to 15 characters, and then press [✓].

3.7.2 Selecting volumetric units

1. Scroll to the desired *Volumetric Units* for the flow rate display and press [✓]. the available units are listed in *Table 6* below.
2. Scroll to the desired *Volumetric Time* units for the flow rate display (from *seconds* to *days*) and press [✓].
3. Scroll to the desired number of *Vol Decimal Digits* (digits to the right of the decimal point in the volumetric flow rate display) and press [✓]

Table 6: Available volumetric / Totalizer units

English	Metric
ACF = Actual Cubic Feet	ACM = Actual Cubic Meters
KACF = Thousands of ACF	KACM = Thousands of ACM
MMACF = Millions of ACF	MMACM = Millions of ACM
SCF = Standard Cubic Feet	SCM = Standard Cubic Meters
KSCF = Thousands of SCF	KSCM = Thousands of SCM
MMSCF = Millions of SCF	MMSCM = Millions of SCM

3.7.3 Selecting totalizer units

1. Scroll to the desired *Totalizer Units* for the totalized flow rate display and press [✓]. The available units are listed in *Table 6* above.
2. Scroll to the desired number of *Tot Decimal Digits* (digits to the right of the decimal point in the totalized flow rate display) and press [✓].
3. Do one of the following:
 - If *MASS FLOW* is *ON*, proceed to “*Selecting Mass Flow Units*” on page 29.
 - If *MASS FLOW* is *OFF*, the meter returns to the *Channel PROGRAM* menu.

3.7.4 Selecting mass flow units

1. Scroll to the desired *Mass Flow* units for the flow rate display and press [✓]. The available units for this prompt are determined by the selection made at the *System Units* prompt (see *Table 7* below).

Table 7: Available mass flow units

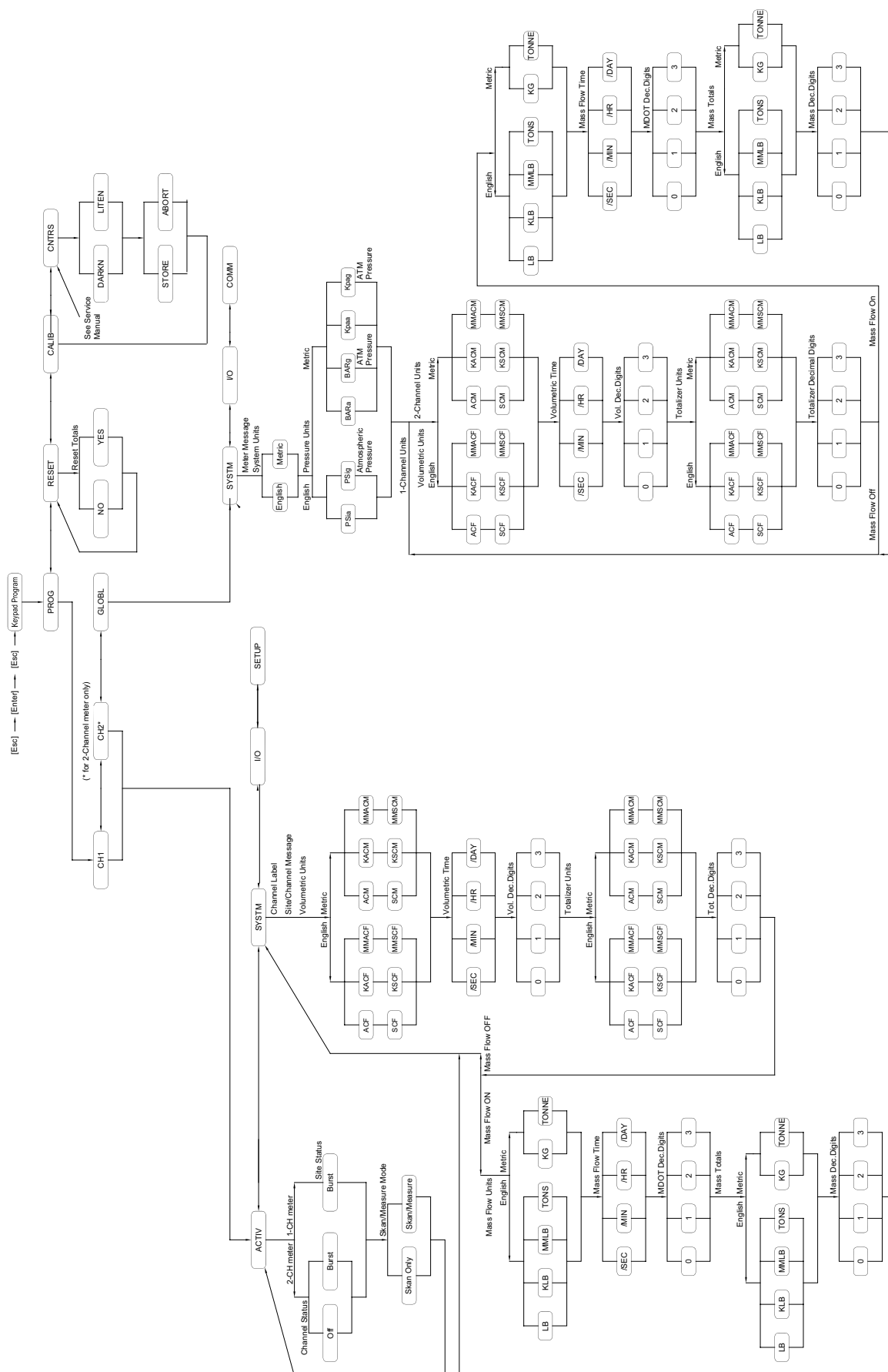
LB = Pounds	Kilograms
KLB = Thousands of LB	Metric Tons (1000 KG)
MMLB = Millions of LB	
Tons (2000 LB)	

2. Scroll to the desired *Mass Flow Time* units for the mass flow rate display and press [✓].
3. Scroll to the desired number of *Mdot Decimal Digits* (digits to the right of the decimal point in the mass flow rate display) and press [✓].
4. Scroll to the desired *Mass (Totalizer)* units for the totalized mass flow rate display and press [✓]. The available units for this prompt are determined by the selection made at the *System Units* prompt.

5. Scroll to the desired number of *Mass Dec. Digits* (digits to the right of the decimal point in the totalized mass flow rate display) and press [✓].

After completing the above steps, the *PanaFlow Z1G/Z2G Process Gas Flowmeter* returns to the *Channel PROGRAM* menu.

[no content intended for this page]



[no content intended for this page]

Chapter 4. Operation

4.1 Introduction

See *Chapter 2, "Installation"*, and *Chapter 3, "Initial Setup"*, to prepare your *PanaFlow Z1G/Z2G Process Gas Flowmeter* system for operation. When the meter is ready to take measurements, proceed with this chapter. The following specific topics are discussed:

- "Powering Up" below
- "The *PanaFlow Z1G/Z2G Process Gas Flowmeter* LCD Display" on page 35
- "The Optional *PanaView* Display" on page 36
- "Taking Measurements" on page 37

Note: All inputs and outputs of the *PanaFlow Z1G/Z2G Process Gas Flowmeter* are calibrated at the factory prior to shipment. If it becomes necessary to recalibrate any of the inputs and/or outputs, consult the factory for instructions.

WARNING!



To ensure the safe operation of the *PanaFlow Z1G/Z2G Process Gas Flowmeter*, it must be installed and operated as described in this manual. In addition, be sure to follow all applicable local safety codes and regulations for the installation of electrical equipment.

4.2 Powering up

Because the *PanaFlow Z1G/Z2G Process Gas Flowmeter* does not have an ON/OFF switch, it will power up as soon as the connected power source is energized.

WARNING!



For compliance with the European Union's Low Voltage Directive, this unit requires an external power disconnect device such as a switch or circuit breaker. The disconnect device must be marked as such, clearly visible, directly accessible, and located within 1.8 m (6 ft) of the meter.

There are three methods for obtaining readings from the *PanaFlow Z1G/Z2G Process Gas Flowmeter*:

- Built-in *PanaFlow Z1G/Z2G Process Gas Flowmeter* LCD display
- *PanaView* software installed on a personal computer
- External analog device to read the *PanaFlow Z1G/Z2G Process Gas Flowmeter* analog output

At least one of the above display options must be installed in order to obtain flow rate readings from the meter.

Immediately upon power up, the *software version* display appears. Then, the meter performs a series of internal checks, which take about 45 seconds, prior to displaying the flow rate data (see "*Initial Power On Screens*" on page 23).

Note: If the *PanaFlow Z1G/Z2G Process Gas Flowmeter* fails any of the internal checks, try disconnecting the power and then re-powering the unit. If the meter continues to fail any of the internal checks, contact the factory for assistance.

After successfully performing the internal checks, the *PanaFlow Z1G/Z2G Process Gas Flowmeter* begins taking measurements and the software version display is replaced by a measurement mode display. Proceed to the appropriate section for instructions on using the LCD display and the *PanaView* display option.

Note: As a minimum, the system and pipe parameters for each installed channel must be entered before the *PanaFlow Z1G/Z2G Process Gas Flowmeter* can display valid data. Refer to *Chapter 3, "Initial Setup"*, for specific instructions.

4.3 The *PanaFlow Z1G/Z2G process gas flowmeter* LCD display

The components of the *PanaFlow Z1G/Z2G Process Gas Flowmeter* LCD display are shown in *Figure 17* below, along with a typical mass flow rate readout.

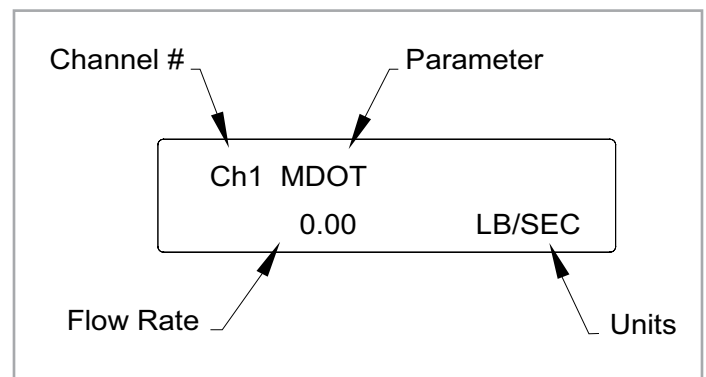


Figure 17: A typical LCD flow rate display

As shown in *Figure 17* above, the *PanaFlow Z1G/Z2G Process Gas Flowmeter* display screen includes the following information:

- Channel Number
- Flow Parameter
- Units of Measure
- Flow Rate Value

However, the items in this list may be reprogrammed to display a variety of alternative choices (see "*Programming the LCD Display*" on page 37).

Note: The LCD backlight flashes to signal errors. If the backlight is Off when an error is detected, the display is illuminated briefly, but if the backlight is already On, the light is interrupted briefly. In addition, Error Code messages may appear in the upper right corner of the LCD display.

4.4 The optional PanaView display

The components of the PanaView text display are shown in Figure 18 below, along with a typical flow rate readout.

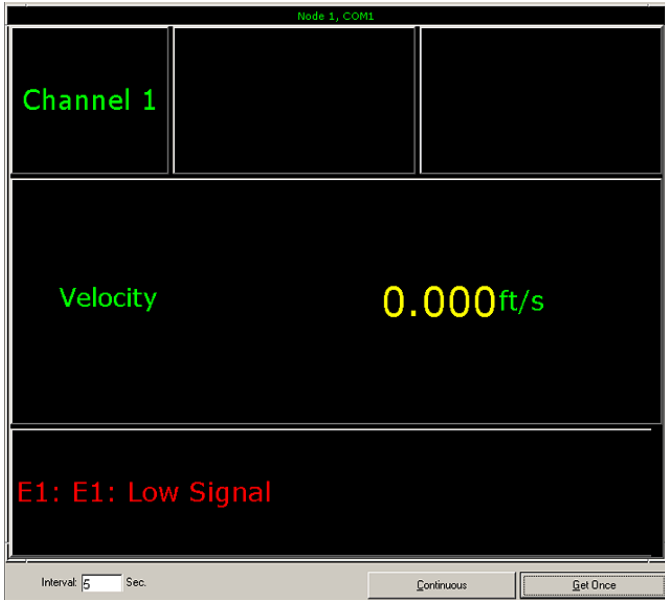


Figure 18: A Typical PanaView text display pane

As shown in Figure 18 above, the PanaView text pane includes the following information:

- Channel Number
- Flow Parameter
- Units of Measure
- Flow Rate Value

However, the items in this list may be reprogrammed to display a variety of alternative choices (see “Programming the PanaView Display” on page 40).

Note: As shown in Figure 18 above, Error Code messages may appear in the lower left corner of the PanaView text display window.

4.5 Taking measurements

The PanaFlow Z1G/Z2G Process Gas Flowmeter is capable of displaying several different variables in a variety of formats. However, this manual discusses only the basic measurement displays using the LCD display or the PanaView display. Refer to the PanaView User’s Manual (Panametrics document #910-211) for details on using PanaView and the PanaFlow Z1G/Z2G Process Gas Flowmeter analog outputs to obtain the flow rate data.

4.5.1 Programming the LCD display

Note: When you first initialize the PanaFlow Z1G/Z2G Process Gas Flowmeter, the number of LCD parameters is set to OFF. You must program the LCD to display any measured parameters.

Using the Keypad Program, you can program the LCD display to display up to four variables in sequence. Complete the following steps to program the LCD display:

1. Power up the PanaFlow Z1G/Z2G Process Gas Flowmeter and wait until it has initialized.
2. To enter the Keypad Program, press the [✖] key, followed by the [✓] key, and the [✖] key again. Each successive key must be entered within 10 seconds of the prior key.
3. In the Keypad Program window, scroll to PROG and press [✓].
4. In the PROG menu, scroll to GLOBL and press [✓].
5. Scroll to I/O and press [✓].
6. Scroll to LCD and press [✓].
7. At the # of LCD Parameters screen, scroll to the desired number (from OFF through 1-4 and KEY) and press [✓]. The OFF setting switches the measurement display Off. The KEY setting enables users to change the measurement display with the arrow keys, without accessing the Keypad Program. If you select KEY:
 - To view a parameter other than the one currently displayed, press the [▲] and [▼] keys to scroll through the various available parameters.
8. Select the desired Measurement Parameter (see Table 8 on page 38 for a list of the available parameters).

Table 8: Available measurement parameters

Option Bar	Description	Good	Bad
VEL	Displays the flow velocity.	N.A.	N.A.
VOLUM	Displays the volumetric flow.	N.A.	N.A.
+TOTL	Displays the forward totalized volume flow.	N.A.	N.A.
-TOTL	Displays the reverse totalized volume flow.	N.A.	N.A.
TIMER	Displays the total flow measurement time.	N.A.	N.A.t
MDOT	Displays the mass flow.	N.A.	N.A.
+MASS	Displays the forward totalized mass flow.	N.A.	N.A.
-MASS	Displays the reverse totalized mass flow.	N.A.	N.A.
SS up	Displays the signal strength for the upstream direction.	50 – 75	<50 or >75
SS do	Displays the signal strength for the downstream direction.	50 – 75	<50 or >75
SNDSP	Displays the measured speed of sound in the gas.	N.A.	N.A.
Tup	Displays the upstream ultrasonic signal transit time.	N.A.	N.A.
Tdown	Displays the downstream ultrasonic signal transit time.	N.A.	N.A.
DELTA	Displays the transit time difference between the upstream and downstream signals.	N.A.	N.A.
Tot K	Displays the total K factor.	N.A.	N.A.
PEAK%	Displays the percentage of peak (set to +50 by default).	N.A.	N.A.
Qup	Displays the signal quality for the upstream direction.	≥ 1200	-400 to +400
Qdown	Displays the signal quality for the downstream direction.	≥ 1200	-400 to +400
AMPup	Displays the value for the signal amplitude of the upstream direction.	24 ± 5	<19 or >29
AMPdn	Displays the value for the signal amplitude of the downstream direction.	24 ± 5	<19 or >29
CNTup	Displays the AGC DAC count for the upstream gain setting.	N.A.	N.A.
CNTdn	Displays the AGC DAC count for downstream gain setting.	N.A.	N.A.
P#up	Displays signal peaks for the upstream direction.	100 – 2300	<100 or >2300
P#dn	Displays signal peaks for the downstream direction.	100 – 2300	<100 or >2300
TEMP	Displays the gas temperature (from 0/4-20mA input).	N.A.	N.A.
PRESR	Displays the gas pressure (from 0/4-20mA input).	N.A.	N.A.
AcVOL	Displays the actual volumetric flow.	N.A.	N.A.
StVOL	Displays standard volumetric flow.	N.A.	N.A.
Tu S ¹	Displays Skan transit time upstream.	N.A.	N.A.
Td S ¹	Displays Skan transit time downstream.	N.A.	N.A.
DT S ¹	Displays Skan Delta T.	N.A.	N.A.
Tu M ¹	Displays Measure transit time upstream.	N.A.	N.A.
Td M ¹	Displays Measure transit time downstream.	N.A.	N.A.
DT M ¹	Displays Measure Delta T.	N.A.	N.A.
Vinst	Displays the instantaneous velocity.	N.A.	N.A.

¹ available only if Burst Mode = S/M

Note: The measurement units that appear in these prompts are those selected in the GLOBL-SYSTM menu. Also, when differences in one channel's programming invalidates an output previously chosen for the other channel, the measurement defaults to the nearest selectable item in the parameter list.

The previous two prompts repeat until all of the specified # of LCD Parameters have been set up. When all of the display parameters have been set up, the meter returns to the Global I/O window. To leave the Keypad Program, press [✕] three times.

After leaving the Keypad Program, the PanaFlow ZIG/Z2G Process Gas Flowmeter resets itself and begins to display the parameters specified in this section. If more than one parameter was set up, each of the parameters is displayed in sequence, with a pause of several seconds between display changes.

To use the programmed LCD display to obtain flow rate data, simply power on the PanaFlow ZIG/Z2G Process Gas Flowmeter as described earlier in this chapter. Then, read the flow rate directly from the display (see Figure 17 on page 23).

4.5.2 Programming the PanaView display

Launch the PanaView software on the PC and establish communications with the PanaFlow ZIG/Z2G Process Gas Flowmeter (see the PanaView manual, Panametrics document #910-211 as necessary). Then, enter the required startup parameters, as described in Chapter 3, "Initial Setup". Proceed as follows:

1. In PanaView, open the Output menu (see Figure 19 below) and click on the Text Display option.

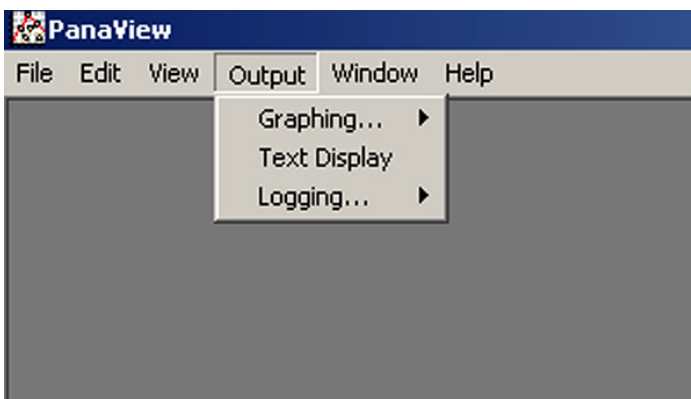


Figure 19: The output menu

Note: The Text Display window is actually stacked on top of any previously opened PanaView windows, such as the Meter Browser window.

2. Using the Window menu, as described in the PanaView manual, arrange the open windows in the desired format. For this discussion, Figure 20 shows the Text Display window in its maximized (full-screen) size.

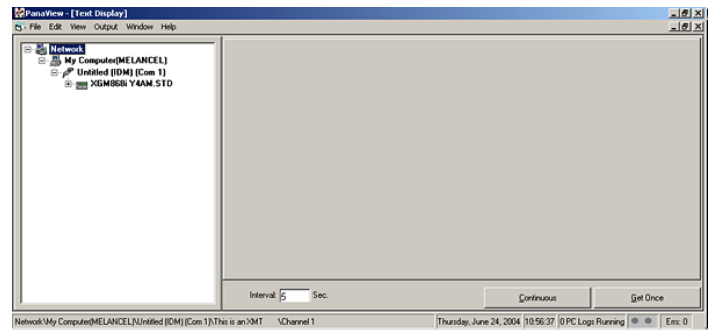


Figure 20: The text display window

3. The left pane of the Text Display window contains the standard PanaView network tree. Expand the branch for your PanaFlow ZIG/Z2G Process Gas Flowmeter model, and double-click on the desired channel. On 2-channel units, you can also display the SUM, DIFF or AVG parameters.
 4. From the expanded tree, double-click on the desired flow parameter to display it in the right pane of the window.
 5. Before actual data values can be displayed in the text pane, activate one of the following data collection modes (see Figure 20 above):
 - Click on the [Get Once] option button at the bottom of the right pane in the Text Display window. The current value of the selected process parameter, as specified in the PanaView network tree, is displayed in the right pane of the Text Display window.
 - Enter an Interval in the text box at the bottom of the right pane in the Text Display window, or check the Max. Comm Rate box to collect readings as fast as the system allows (i.e., 1 sec). Then, click on the [Continuous] option button to begin collecting data for display in the right pane of the Text Display window. The right pane now appears similar to Figure 18 on page 24.
- Note:** Any value entered in the Interval text box is overridden if the Max. Comm Rate box is checked.
6. If the [Continuous] option was selected in Step 5, click on the [Stop] option button, which has replaced the original [Continuous] option button, to terminate data collection.

The Text Display window may be left open while other tasks are performed, or it may be closed by clicking on the lower [✕] control button at the far right of the menu bar.

IMPORTANT:

If you click on the upper [X] control button at the far right of the PanaView title bar, you will exit PanaView completely.

4.5.2.1 Displaying multiple process parameters

The procedure for displaying a single process parameter in a text screen may be repeated to simultaneously display multiple process parameters. To do so, proceed as follows:

1. Display the first process parameter in a text screen, as described in the previous section.
2. Repeat Step 1 for any desired additional process parameters, by double clicking on them in the PanaView network tree. *PanaView* automatically tiles the multiple text screens in the right pane of the *Text Display* window, as shown in *Figure 21* below.

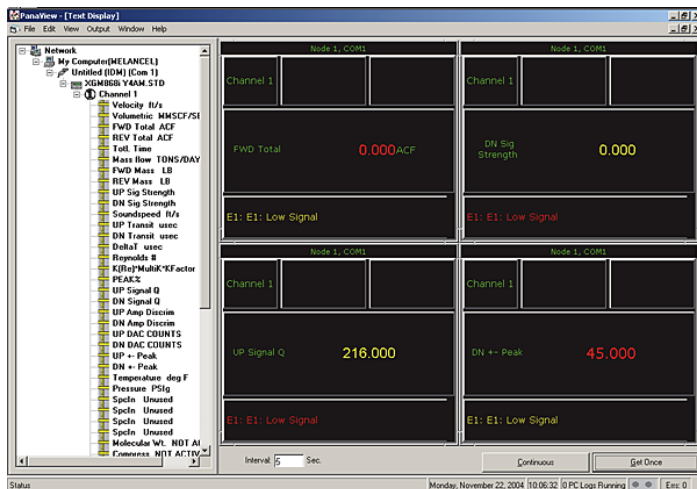


Figure 21: Multiple text screens in the text display window

3. As in any standard *Windows*® application, the multiple text screens may be resized by dragging their borders. Also, the individual panes within a parameter's text screen may be resized by dragging the borders within that text screen.
4. To close an open text screen, right click anywhere within that screen, except in the title bar or the error section, and click on the **[Remove]** option that pops up in the context menu.

Note: After resizing or removing any of the multiple text screens, the default tiled layout may be restored by opening the *Window* menu (see the *PanaView User's Manual*) and clicking on the *Tile Output Displays* option.

4.5.2.2 Displaying multiple text windows

The procedures for displaying one or more process parameters in a single *Text Display* window may be repeated to open multiple *Text Display* windows. To do so, proceed as follows:

1. To open another *Text Display* window and display the desired process parameter(s) in the new window, repeat the steps in "*Programming the PanaView Display*" on page 40.
2. Arrange the multiple *Text Display* windows as desired via the *Window* menu (see the *PanaView Manual*).

4.5.3 Pausing measurements

On occasion, you may wish to stop taking measurements. With *PanaView*, you can direct the *PanaFlow ZIG/Z2G Process Gas Flowmeter* to pause measurements without disconnecting the power from the meter. Proceed as follows:

1. From the meter tree in the *New Meter Browser*, click on the *PanaFlow ZIG/Z2G Process Gas Flowmeter* entry.
2. Expand the *Edit Functions* option, and double-click on the *Pause Measurement* entry to open a window similar to *Figure 22* below.

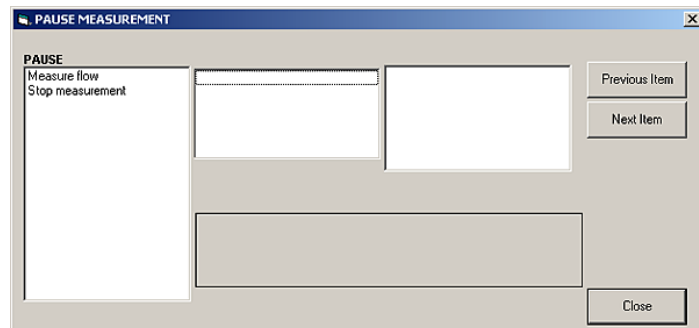


Figure 22: The pause measurement window

3. To pause the active measurements, double-click on the *Stop Measurement* option. The window closes and the *PanaFlow ZIG/Z2G Process Gas Flowmeter* stops taking measurements.
4. To restart the measurements, double-click on the *Pause Measurement* entry, and then on the *Measure Flow* option. The *PanaFlow ZIG/Z2G Process Gas Flowmeter* resumes flow measurement.

4.6 PT sensor drift and recalibration

The PT sensor is an optional accessory, that comes with select models of ZIG/Z2G. The sensor is specified to have a maximum drift of 0.1% of full scale (FS) output per year.

Although, the output drift of this sensor reduces over time, as the innate stresses in the materials relax and stop shifting around, we recommend removing the sensor for recalibration every 5 years. However, user may decide on the recalibration frequency based on the application process needs, to have it calibrated earlier than the recommended period.

When the sensor is removed for calibration, either install the spare sensor or an approved Ex d plug to close the sensor mounting slot. Follow all the safety precautions and recommendations while removing and installing the sensor.

Send the sensor to the Customer Support Center addresses mentioned on the rear cover of this manual. We will return the calibrated sensor to the specified address, along with the calibration certificate

Chapter 5. Specifications

5.1 Operation and performance

Fluid types

Acoustically conductive gases

Pipe sizes

2 to 16 in. (50 to 400 mm)

Meter body materials

Carbon Steel, SA216 Gr. WCB

Low Temp Carbon Steel, SA352 Gr. LCB

Stainless Steel, SA351 Gr. CF8M

Duplex Stainless Steel, SA995 Gr. CD3MWCuN

Flange ratings

ASME: 150 lb, 300 lb or 600 lb

DIN: PN10, PN16, PN25, PN40 or PN63

Meter body certifications

PED Cat III, Module B+C2

CRN (All Canadian Provinces)

NACE MR01-75/MR-01-031

Flow measurement range (bi-directional)

0.5 to 250 ft/s (0.15 to 76 m/s)

Turndown Ratio = 500:1

Flow measurement accuracy

- 1 Path:
 - ± 0.075 ft/s (± 0.02 m/s) at flow range of 0.5 to 5 ft/s (0.15 to 1.5 m/s)
 $\pm 1.5\%$ of reading at flow range of 5 to V_{max} /s (1.5 to V_{max})
- 2 Path:
 - ± 0.05 ft/s (0.015 m/s) at flow range of 0.5 to 5 ft/s (0.15 to 1.5 m/s)
 $\pm 1.0\%$ of reading at flow range of 5 to V_{max} (1.5 to 76 V_{max})

Note: Accuracy/repeatability specifications assume a final installation with fully developed flow profile (typically 20 diameters upstream and 10 diameters downstream of straight pipe run), Reynolds Number > 5000 and single phase fluids. Applications with piping arrangements that induce swirl (e.g., two out-of-plane elbows) may require additional straight run and/or flow conditioning. For shorter straight pipe runs, consult the factory for a computational flow dynamic evaluation.

Repeatability

$\pm 0.2\%$ to 0.5% of reading

Measurement parameters

Mass flow, standard and actual flow, totalized flow, and flow velocity

Electronics enclosure

NEMA Type 4X explosion-proof and weatherproof (IP66)

Standard: Epoxy-coated aluminum

Optional: Stainless steel

Hazardous area certifications

US/CAN: Class I, Div. 1 Group B,C,D

ATEX: II 2 G Ex db IIB+H2 T6... 150° C Gb

IECEX: Ex db IIB+H2 T6... 150° C Gb

Input power

Standard: 90 to 240 VAC

Optional: 12 to 28 VDC, $\pm 5\%$

Power consumption

20 W maximum

Process temperature range

-40 to 302°F (-40 to 150°C)

Note: -40 to 257° F (-40 to 125° C) range when used with pressure and temperature sensor option.

Ambient temperature range

-40 to 140°F (-40 to 60°C) US/CAN

-4 to 140°F (-20 to 60°C) ATEX/IECEX

Below -20 Display readability will be affected

Storage temperature

-40 to +185°F (-40 to +85°C)

Digital communication

Standard: RS485

Optional: HART®

Optional: Modbus®

Optional: Foundation Fieldbus®

5.2 Dimensions and weights

Table 9: Example for a 3 in. [80 mm], 2-Path Flowcell

Flange Rating	A in. [mm]	C in. [mm]	D in. [mm]	X in. [mm]	Y in. [mm]	Z in. [mm]	CX in. [mm]	CY in. [mm]	CZ in. [mm]	Approx. Weight
ASME 150# RF	12.7 [322]	19.0 [481]	7.5 [190]	20.0 [508]	22.7 [576]	9.8 [247]	44.0 [1117]	34.7 [881]	33.8 [857]	66.7 kg
ASME 150# RF	12.7 [322]	19.0 [481]	8.3 [209]	20.0 [508]	23.1 [586]	9.8 [247]	44.0 [1117]	35.1 [890]	33.8 [857]	70.7kg
ASME 150# RF	12.7 [322]	19.0 [481]	8.3 [209]	20.2 [508]	23.1 [586]	9.8 [247]	44.0 [1117]	35.1 [890]	33.8 [857]	72.9 kg

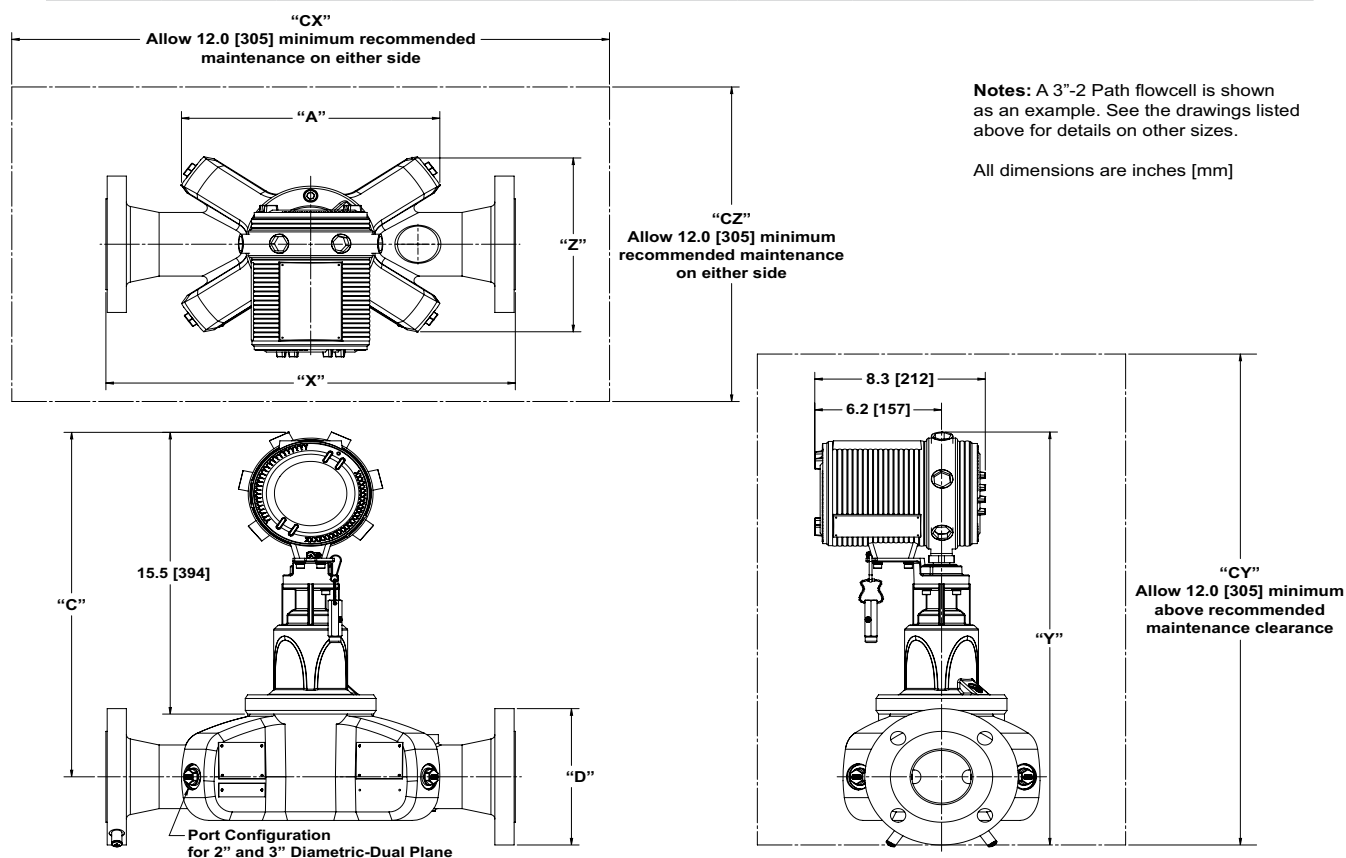


Figure 23: PanaFlow Z1G/Z2G dimensions

Table 10: Reference drawings

Drawing number	Drawing reference
712-2158	General arrangement drawing, PanaFlow Z1G/Z2G, Local Mount
712-2160	General arrangement drawing, PanaFlow Z1G/Z2G, Remote Mount

Note: The drawings listed above include the dimensions and weights for all available pipe sizes.

[no content intended for this page]

Appendix A. CE Mark compliance and high noise environments

A.1 Introduction

For CE Mark compliance, the *PanaFlow Z1G/Z2G Process Gas Flowmeter* must meet the EMC and LVD directives.



Attention European Customers!

CE Mark compliance is required for all units intended for use in EU countries, and it is also recommended for installation in high electrical noise environments.

A.2 EMC compliance

In addition to the standard wiring requirements, the electrical connections must be shielded and grounded as described in *Table 11* below for EMC compliance. After all the necessary electrical connections have been made, seal any unused cable entry holes.

Note: *If the instructions in this appendix are followed, the unit will comply with the EMC Directive.*

Table 11: Wiring modifications		
Connection	Cable Type	Termination Modification
Transducer	Shielded Cable	Terminate the shield using the cable glands (already done).
Power	Shielded Cable	Terminate the shield using the cable glands.
Shielding	Wires enclosed in a properly-grounded metal conduit do not require additional shielding.	
All Input / Output Options	Shielded Cable	

IMPORTANT:

Make sure to connect the *PanaFlow Z1G/Z2G Process Gas Flowmeter* case to the earth ground with a grounding cable, using the external ground screws found on either side of the enclosure. The connection should be less than 9.8 feet (3 meters) long.

[no content intended for this page]

Appendix B. Gas process flowmeter service record

B.1 Option cards installed

Whenever an option card is installed or changed in the *PanaFlow ZIG/Z2G Process Gas Flowmeter*, record the type of card and any additional setup information in the appropriate row of *Table 12* below.

Table 12: Option cards installed		
Slot #	Type of option card	Additional setup information
0	Analog Outputs (A, B)	
1		
2		

B.2 Data entry

Record complete and detailed service data for the *PanaFlow Z1G/Z2G Process Gas Flowmeter* in *Table 13* below. Make additional copies of this table as needed.

Table 13: Service record		
Date	Description of service	Performed by

Table 13: Service record (cont.)

Date	Description of service	Performed by

B.3 Setup data

After the *PanaFlow Z1G/Z2G Process Gas Flowmeter* has been installed, setup data must be entered via the User Program prior to operation. Record that information in *Table 14* below.

Table 14: Setup data										
General Information										
Model #					Serial #					
Software Vers.					Setup Date					
Channel - Status										
Channel 1					Channel 2					
Channel Status	Off	Burst			Channel Status	Off	Burst			
Measure Mode	Skat	S/M			Measure Mode	Skat	S/M			
Channel - System										
Channel Label					Channel Label					
Site / Channel Msg.					Site / Channel Msg.					
Vol. Units					Vol. Units					
Vol. Time Units					Vol. Time Units					
Vol. Dec. Digits					Vol. Dec. Digits					
Totalizer Units					Totalizer Units					
Mass Flow					Mass Flow					
Mass Flow Time					Mass Flow Time					
MDOT Dec. Dig.					MDOT Dec. Dig.					
Mass Totalizer					Mass Totalizer					
Mass Dec. Dig.					Mass Dec. Dig.					
Channel - Input / Output										
Zero Cutoff					Zero Cutoff					
Temp. Input					Temp. Input					
Base Temp.					Base Temp.					
Pressure Input					Pressure Input					
Base Pressure					Base Pressure					
Lw Press. Switch	No	Yes			Lw Press. Switch	No	Yes			
Pressure Limit					Pressure Limit					
Channel - SETUP - V Averaging										
Response Time					Response Time					

Table 14: Setup data (cont.)						
Channel – SETUP – Advanced features – Multi K factors						
K-Factor #	Reynolds Number	K-Factor		K-Factor #	Reynolds Number	K-Factor
1				1		
2				2		
3				3		
4				4		
5				5		
6				6		
7				7		
8				8		
9				9		
10				10		
11				11		
12				12		
13				13		
14				14		
15				15		
16				16		
17				17		
18				18		
19				19		
20				20		
Channel – SETUP – Advanced features – Mass flow calculation						
Mass Flow	Yes	No		Mass Flow	Yes	No
Density Type	Fluid Dens.	Mole. Wgt.		Density Type	Fluid Dens.	Mole. Wgt.
Qact or Qstd?	Actual	Standard		Qact or Qstd?	Actual	Standard
Fluid Density				Fluid Density		
Mole. Weight				Mole. Weight		
Global – System						
Meter Message				Totalizer Units		
System Units	English	Metric		Tot. Dec. Digits		
Pressure Units				Mass Flow		
Atmos. Pressure				Mass Flow Time		
Vol. Units				MDOT Dec. Digit		
Vol. Time Units				Mass Totals		
Vol. Dec. Digits				Mass Dec. Digits		
Global – Input / Output – Error handling						
Error Handling				2-Path Error	No	Yes
Global – Communications port						
Meter Address				MOD. Parity		
Baud Rate				MOD. Stop Bits		
MOD. Baud Rate				MOD. Address		

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[no content intended for this page]

Measurement and control

Certification and safety statements for the PanaFlow Z1G/Z2G ultrasonic gas flow meters

When installing this apparatus in potentially hazardous areas, the following requirements must be met:

- Field wiring shall be rated at least 5°C above maximum ambient or fluid temperature, whichever is greater.
- Connecting cables shall be mounted securely and protected from mechanical damage, pulling and twisting.
- Conduit seals are required within 18 inches of the enclosure.
- Cable entries are 3/4" or 1/2" NPT.
- Cable glands of an approved flameproof design are required. These must be installed according to the manufacturer's instructions. Where the cable glands are provided by Panametrics, the manufacturer's instructions, as supplied, to Panametrics, will be included in the documentation.
- The system is covered by the certificate numbers FMI4ATEX0045X and IECEx FMG 14.0021X as shown on the labels below. The system is certified as ATEX and IECEx: II 2 G Ex d IIB +H2 T6 Gb in Ta = -20°C to +60°C ambient, Type 4X and IP66. The system temperature code is dependent upon the process fluid temperature ranges of -20°C to +150°C. Refer specific conditions of use for ATEX and US/Canada for more information about temperature code.
- Unused entries must be sealed using a suitably certified threaded plug.
- Modifications to the flameproof enclosure are not permitted.
- The apparatus should be de-energized before opening.
- Installation shall be in accordance with the installation instructions and the National Electrical Code® ANSI/NFPA 70, the Canadian Electrical Code C22.1, or IEC/EN 60079-14, as applicable.
- Equipment is of type flameproof "d" design and complies with the standards listed in table below.
- The product contains no exposed parts which produce surface temperature infrared, electromagnetic ionizing, or non-electrical dangers.
- The product must not be subjected to mechanical or thermal stresses more than those permitted in the certification documentation and the instruction manual.
- The product cannot be repaired by the user; it must be replaced by an equivalent certified product. Repairs should only be carried out by the manufacturer or by an approved repairer.
- Only trained, competent personnel may install, operate and maintain the equipment.
- The product is an electrical apparatus and must be installed in the hazardous area in accordance with the requirements of the EU Type Examination Certificate. The installation must be carried out in accordance with all the appropriate international, national and local standard codes and practices and site regulations for flameproof apparatus and in accordance with the instructions contained in the manual. Access to the circuitry must not be made during operation.

Standards

IEC 60079-0:2011	EN 60079-0:2012 + A11:2013
IEC 60079-1:2014	EN 60079-1:2014
IEC 60529:2001	EN 60529:1991 + A1:2000

ATEX

Specific conditions of use:

1. The flameproof joints of the equipment are not intended to be repaired. Consult the manufacturer if dimensional information on the flameproof joints is necessary.
2. Follow the manufacturer's instructions to reduce the potential of an electrostatic charging hazard.
3. Consult the manufacturer for genuine replacement flange fasteners. M10x35 hexagon socket cap screws of ISO 12.9 DIN912 grade steel (zinc-plated) or better with a minimum yield strength of 135,000 psi are acceptable alternatives.
4. Consult the manufacturer for genuine replacement enclosure/adaptor fasteners. M6x16 and M6x30 hexagon socket cap screws of ISO 12.9 DIN912 grade steel (zinc-plated) or better with a minimum yield strength of 135,000 psi are acceptable alternatives.
5. Care should be taken to avoid creating an ignition hazard due to impact or friction on the titanium transducers which form part of the flameproof enclosure.
6. The electronics enclosure is rated for an ambient temperature range of -20°C to +60°C (when local or remote mounted). The remote mount junction box and flow body is rated for an ambient temperature range of -20°C to +60°C (when local mounted) or -40°C to +60°C (when remote mounted).
7. The equipment temperature class is dependent on the maximum process temperature and mounting configuration according to the following table:

Mounting Configuration	Maximum Process Temperature	Temperature Class	
		Enclosure	Remote Junction Box/ Flow Body
Local Remote	85° C	T6	T6
Remote	100 ° C	T6	T6
Remote	135 ° C	T6	T6
Remote	150 ° C	T6	150 ° C

US/CANADA:

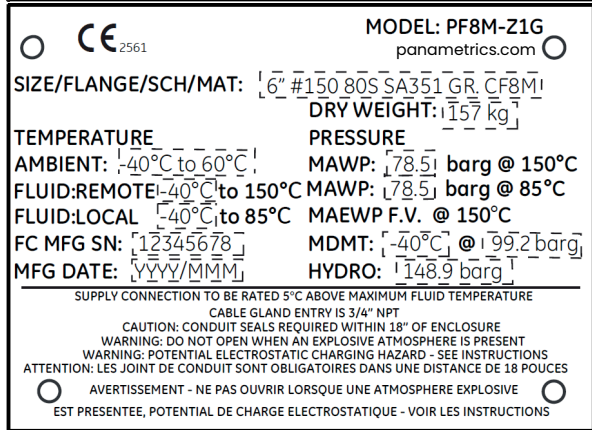
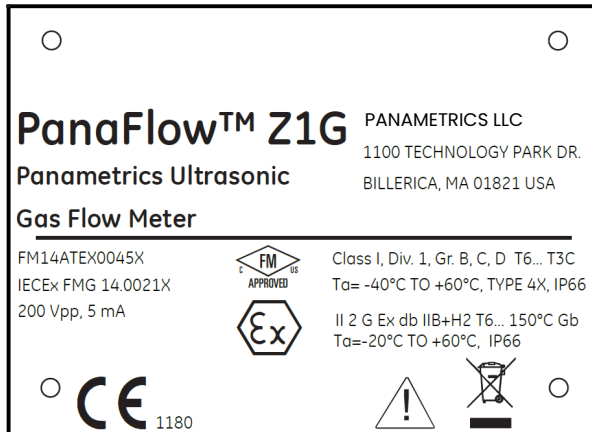
Specific conditions of use:

1. The electronics enclosure is rated for an ambient temperature range of -20°C to +60°C (when local or remote mounted). The remote mount junction box and flow body is rated for an ambient temperature range of -20°C to +60°C (when local mounted) or -40°C to +60°C (when remote mounted).
2. The equipment temperature class is dependent on the maximum process temperature and mounting configuration according to the following table:

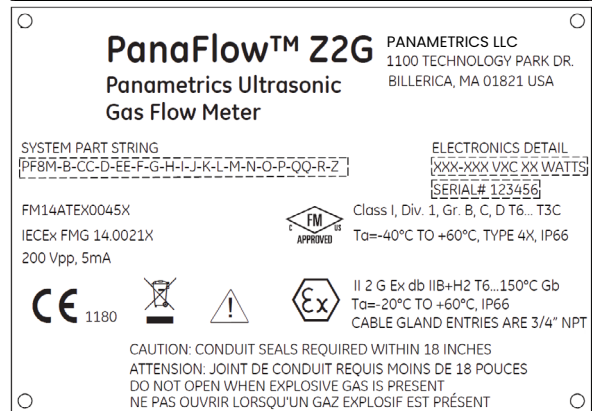
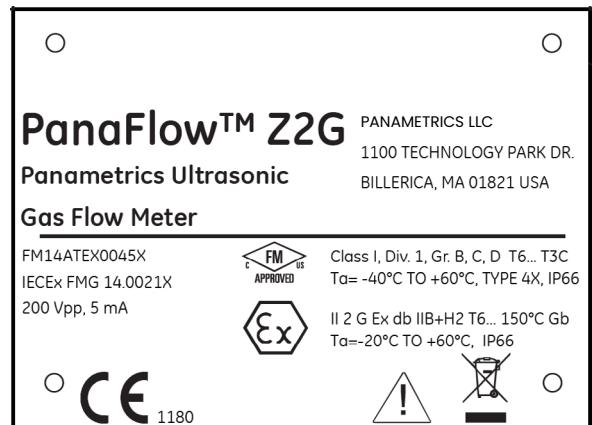
Mounting Configuration	Maximum Process Temperature	Temperature Class	
		Enclosure	Remote Junction Box/ Flow Body
Local Remote	85° C	T6	T6
Remote	100 ° C	T6	T5
Remote	120 ° C	T6	T4A
Remote	135 ° C	T6	T4
Remote	150 ° C	T6	T3A

Markings

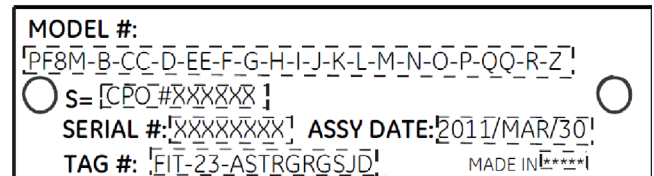
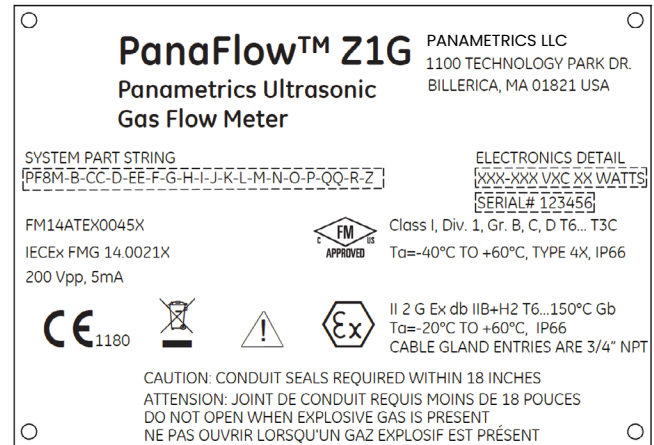
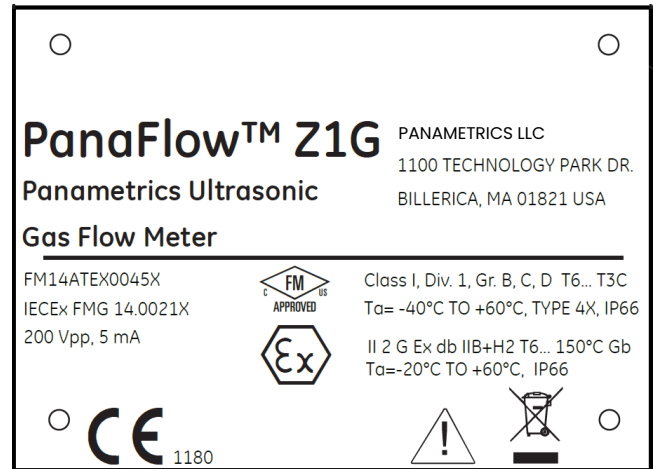
- Shall appear on the meter as shown below for the AC and DC powered versions.



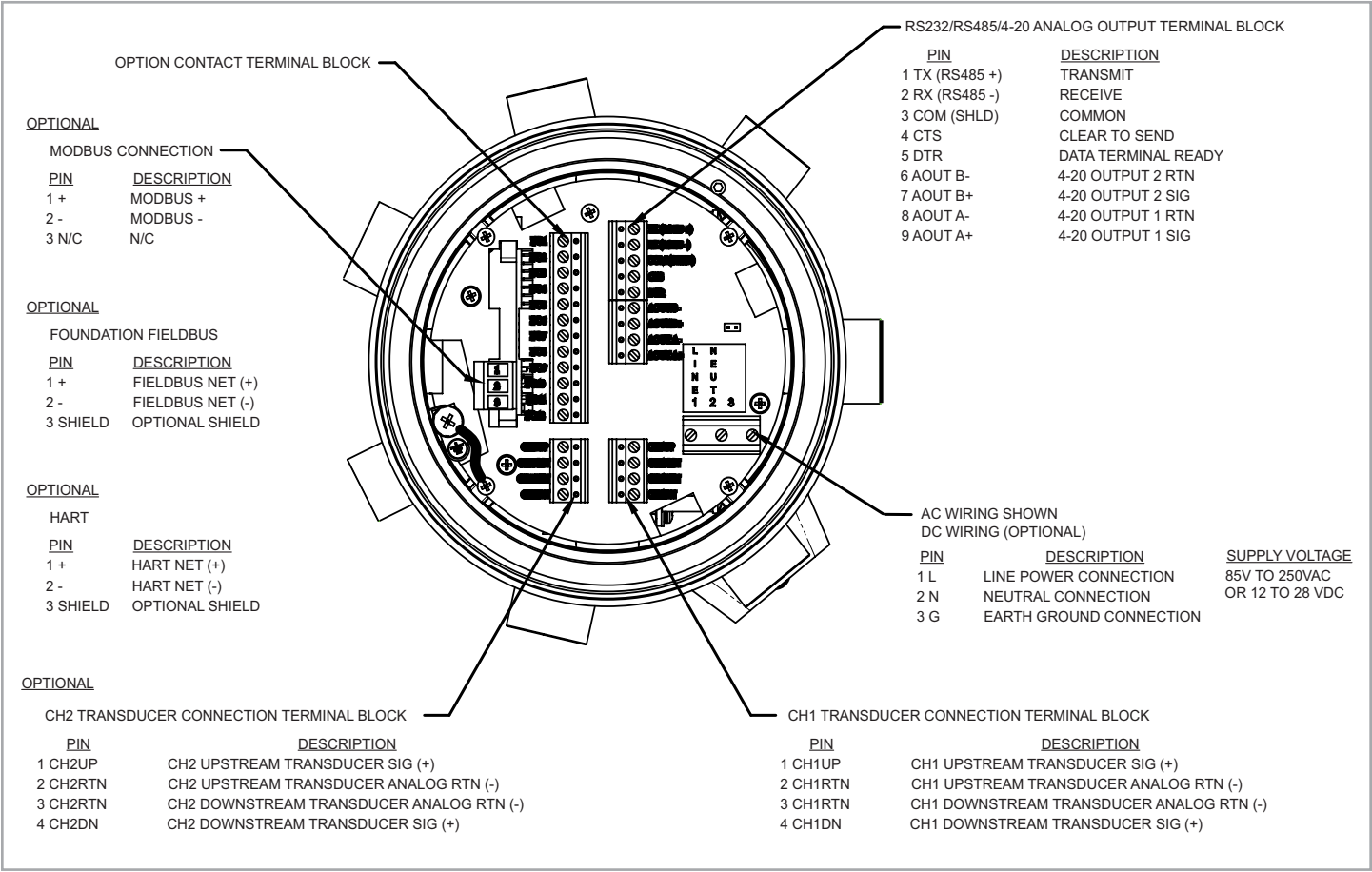
- Shall appear on the meter as shown below.



- Following marking shall additionally appear on the flowcell:



Connection and wiring diagram (ref. dwg. 702-1846)



EU DECLARATION OF CONFORMITY

Panametrics LLC

PanaFlow™ Z1G Flowmeter
PanaFlow™ Z2G Flowmeter

We,

Panametrics LLC,
1100 Technology Park Drive
Billerica, MA 01821, USA^{2a}

declare under our sole responsibility³ that the PanaFlow ZxG measurement system⁴, consisting of a meter electronics and associated transducers and a pressure retaining flow cell, is in conformity with the following harmonising directives:⁵

- 2014/30/EU EMC
- 2014/35/EU LVD
- 2014/34/EU ATEX II 2 G
- 2014/68/EU PED Category III, Modules B + C2
- 2011/65/EU RoHS

Conformity is declared based on assessment against the following harmonised standards:^{6a}

- EN 61326-1: 2013 Group 1, Class A, Industrial EM Environments
- EN 61326-2-3: 2013
- EN 60079-0:2012+A11:2013
- EN 60079-1:2014 Ex db IIB+H2 T6 Gb
- EN 61010-1:2010 Overvoltage Category II, Pollution Degree 2
- EN 60529:1991+A1+A2:2013 IP66

and other technical specifications:^{6b}

- ASME B31.3, 2014 edition Notified Body involvement:⁷

A product type examination was performed and a PED Type Examination Certificate was issued by HSB UK. Production of PED product is monitored and a Marking Permission certificate is issued by HSB UK.

- Hartford Steam Boiler UK Ltd, UK NoBo # 2561
Unit 7, Brewery Yard, Deva City Office Park, Trinity Way, Salford M3 7BB, UK
HSB UK-18-03-007 EU Type Examination Certificate
HSB UK-18-03-008 Marking Permission per Module C2

A product type examination was performed and an ATEX Type Examination Certificate was issued by FM UK.

- FM Approvals Ltd, UK NoBo # 1725 FM14ATEX0045X
FM14ATEX0045X

Production of ATEX product is monitored and Quality Assurance Notification, QAN, is issued by SGS Baseefa.

- SGS Baseefa Ltd, UK NoBo# 1180 License 0794 (Billerica), 0795 (Shannon) and 7700 (Pune).

Other information:⁸

While the products named above were initially assessed for compliance with the Essential Health and Safety Requirements of the ATEX Directive using earlier harmonised standards, a subsequent review has determined that the apparatus meets by the current harmonised standards listed above.

Note: The numbers in superscripts are for ease of use of language specific content.

Signed for and on behalf of Panametrics Sensing



Mr. Chris Frail, Engineering Manager
Billerica - June 6th, 2018

Digital Solutions- Panametrics

1100 Technology Park Drive

Billerica, MA 01821 USA

ROHS_XXXX ZxG

RoHS Certificate of Compliance

EU Directive 2011/65/EU for the Restriction of Hazardous substances in the manufacture of specific electrical and electronic equipment. Although this restriction does not apply to components, per 2011L0065, Article 2 (Scope), item 4(c), we recognize that some customers may require compliant components to satisfy their compliance requirements. For this purpose, Panametrics Infrastructure Sensing, LLC has taken all reasonable steps to assure that the manufacturing process for our products, and the components used within those products do not contain the restricted substances (below) at levels that exceed the maximum concentrations indicated unless otherwise listed as exempt within the directive.

Lead 0.1% *

Mercury 0.1%

Hexavalent Chromium 0.1% Polybrominated Biphenyls (PBB) 0.1%

Polybrominated Diphenyl Ethers (PBDE) 0.1% Cadmium 0.01%

*This product leverages the following exemptions listed in Annex III 6a, 6c, 7a, 7c1 and Annex IV 14 and 15. As such, the product(s) listed below has been manufactured to comply with the EU RoHS directive.

Product name: PanaFlow Z1G, PanaFlow Z2G, PanaFlow ZxG

Additional Parts:

Certifying signature



Mr. Chris Frail, Engineering Manager

Billerica - June 6th, 2018

BG

ЕС ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ (№ XXXX)

1. Модел на продукта/продукт (номер на продукта, тип, партиден или сериен номер):
2. (2a) Наименование и адрес на производителя или, когато е приложимо, (2b) на неговия упълномощен представител:
3. Настоящата декларация за съответствие е издадена на отговорността на производителя.
4. Предмет на декларацията (идентификация на продукта, позволяваща проследяването му; това може, когато това е необходимо за идентифициране на продукта, да включва изображение):
5. Предметът на декларацията, описан по-горе, отговаря на съответното законодателство на Съюза за хармонизация:
6. (6a) Познаване на използваните хармонизирани стандарти или познатото законодателство на Съюза за хармонизация:
7. Когато е приложимо, нотифицираният орган ... (наименование, номер) ... извърши ... (описание на извършеното) ... и издаде сертификата:
8. Допълнителна информация:
- I. Подписано за и от името на:
- II. (място и дата на издаване):
- III. (име, длъжност) (подпис):

CS

EU PROHLÁŠENÍ O SHODĚ (č. XXXX)

1. Model výrobku/výrobek (číslo výrobku, typu či dávky nebo sériové číslo):
2. (2a) Jméno a adresa výrobce a případně (2b) jeho zplnomocněného zástupce:
3. Toto prohlášení o shodě se vydává na výhradní odpovědnost výrobce.
4. Předmět prohlášení (identifikace výrobku umožňující jej zpětně sledovat; je-li to nezbytné pro identifikaci daného výrobku, může zahrnovat vyobrazení):
5. Výše popsaný předmět prohlášení je ve shodě s příslušnými harmonizačními právními předpisy Unie:
6. (6a) Odkazy na příslušné harmonizované normy, které byly použity, (6b) nebo na jiné technické specifikace, na jejichž základě se shoda prohlašuje:
7. Případně: oznámený subjekt ... (název, číslo) provedl ... (popis zásahu) a vydal certifikát:
8. Další informace:
- I. Podepsáno za a jménem:
- II. (místo a datum vydání):
- III. (jméno, funkce) (podpis):

DA

EU-OVERENSSTEMMELSEERKLÆRING (nr. XXXX)

1. Produktmodel/produkt (produkt-, type-, parti- eller serienummer):
2. (2a) Fabrikantens og, hvor det er relevant, (2b) dennes bemyndigede repræsentants navn og adresse:
3. Denne overensstemmelseserklæring udstedes på fabrikantens ansvar.
4. Erklæringens genstand (identifikation af produktet, så det kan spores; dette kan, hvis det er nødvendigt for identifikationen, inkludere et billede):
5. Genstanden for erklæringen, som beskrevet ovenfor, er i overensstemmelse med den relevante EUharmoniseringslovgivning:
6. (6a) Referencer til de relevante anvendte harmoniserede standarder eller (6b) til de andre tekniske specifikationer, som der erklæres overensstemmelse med:
7. Hvor det er relevant, det bemyndigede organ ... (navn, nummer) har foretaget ... (beskrivelse af aktiviteten) og udstedt attesten:
8. Supplerende oplysninger:
- I. Underskrevet for og på vegne af:
- II. (udstedelsessted og -dato):
- III. (navn, stilling) (underskrift):

DE

EU-KONFORMITÄTSERKLÄRUNG (Nr. XXXX)

1. Produktmodell/Produkt (Produkt-, Typen-, Chargen- oder Seriennummer):
2. (2a) Name und Anschrift des Herstellers und gegebenenfalls (2b) seines Bevollmächtigten:
3. Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.
4. Gegenstand der Erklärung (Bezeichnung des Produkts zwecks Rückverfolgbarkeit: nötigenfalls kann zur Identifizierung des Produkts ein Bild hinzugefügt werden.):
5. Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union:
6. (6a) Angabe der einschlägigen harmonisierten Normen oder (6b) der anderen technischen Spezifikationen, die der Konformitätserklärung zugrunde gelegt wurden:
7. Gegebenenfalls: Die notifizierte Stelle ... (Name, Kennnummer) ... hat ... (Beschreibung ihrer Maßnahme) ... und folgende Bescheinigung ausgestellt:
8. Zusatzangaben:
- I. Unterzeichnet für und im Namen von:
- II. (Ort und Datum der Ausstellung):
- III. (Name, Funktion) (Unterschrift):

EL

ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ ΕΕ (αριθ. XXXX)

1. Μοντέλο προϊόντος/προϊόν (αριθμός προϊόντος, τύπου, παρτίδας, ή σειράς):
2. (2a) Όνομα και διεύθυνση του κατασκευαστή, και, κατά περίπτωση, (2b) του εξουσιοδοτημένου αντιπροσώπου του:
3. Η παρούσα δήλωση συμμόρφωσης εκδίδεται με αποκλειστική ευθύνη του κατασκευαστή.
4. Στόχος της δήλωσης (προσδιορισμός προϊόντος που καθιστά δυνατή την ιχνηλασιμότητα. Μπορεί, εάν χρειάζεται για τον προσδιορισμό του προϊόντος, να περιλαμβάνεται εικόνα):
5. Ο στόχος της δήλωσης που περιγράφεται παραπάνω είναι σύμφωνος με τη σχετική ενωσιακή νομοθεσία εναρμόνισης:
6. (6a) Παραπομπές στα σχετικά εναρμονισμένα πρότυπα που χρησιμοποιήθηκαν ή (6b) παραπομπές στις λοιπές τεχνικές προδιαγραφές σε σχέση με τις οποίες δηλώνεται η συμμόρφωση:
7. Όπου έχει εφαρμογή, ο κοινοποιημένος οργανισμός ... (ονομασία, αριθμός) πραγματοποίησε ... (περιγραφή της παρέμβασης) και χορήγησε το πιστοποιητικό:
8. Πρόσθετες πληροφορίες:
- I. Υπογραφή για λογαριασμό και εξ ονόματος:
- II. (τόπος και ημερομηνία έκδοσης):
- III. (όνομα, θέση) (υπογραφή):

EN

EU DECLARATION OF CONFORMITY (No XXXX)

1. Product model/product (product, type, batch or serial number):
2. (2a) Name and address of the manufacturer and, where applicable, (2b) his authorised representative:
3. This declaration of conformity is issued under the sole responsibility of the manufacturer.
4. Object of the declaration (identification of product allowing traceability; it may, where necessary for the identification of the product, include an image):
5. The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:
6. (6a) References to the relevant harmonised standards used or (6b) references to the other technical specifications in relation to which conformity is declared:
7. Where applicable, the notified body ... (name, number) performed ... (description of intervention) and issued the certificate:
8. Additional information:
- I. Signed for and on behalf of:
- II. (place and date of issue):
- III. name, function) (signature):

ES

DECLARACIÓN UE DE CONFORMIDAD (n o XXXX)

1. Modelo de producto/producto (producto, tipo, lote, o número de serie):
2. (2a) Nombre y dirección del fabricante y, en su caso, (2b) de su representante autorizado:
3. La presente declaración de conformidad se expide bajo la exclusiva responsabilidad del fabricante.
4. Objeto de la declaración (identificación del producto que permita su trazabilidad; si fuera necesario para la identificación del producto, podrá incluirse una imagen):
5. El objeto de la declaración descrita anteriormente es conforme con la legislación de armonización pertinente de la Unión:
6. (6a) Referencias a las normas armonizadas pertinentes utilizadas, o (6b) referencias a las otras especificaciones técnicas respecto a las cuales se declara la conformidad:
7. Si procede, el organismo notificado ... (nombre, número) ... ha efectuado ... (descripción de la intervención) ... y expide el certificado: ...
8. Información adicional:
- I. Firmado en nombre de:
- II. (lugar y fecha de expedición):
- III. (nombre, cargo) (firma):

ET

ELI VASTAVUSDEKLARATSIOON (nr XXXX)

1. Tootemudel/toode (toote-, tüübi-, partiivõi seerianumber):
2. (2a) Tootja ja kui see on asjakohane, (2b) tema volitatud esindaja nimi ja aadress:
3. Käesolev vastavusdeklaratsioon on välja antud tootja ainuvastutusel.
4. Deklareeritav toode (toote identifitseerimine, mis võimaldab toodet jälgida. See võib hõlmata ka kujutist, kui see on toote identifitseerimiseks vajalik):
5. Üldkirjeldatud deklareeritav toode on kooskõlas asjaomaste liidu ühtlustamisaktidega:
6. (6a) Viited kasutatud harmoneeritud standarditele või (6b) viited muudele tehnilistele spetsifikatsioonidele, millele vastavust deklareeritakse:
7. Kui see on asjakohane, teavitatud asutus ... (nimi, number) teostas ... (tegevuse kirjeldus) ja andis välja tõendi:
8. Lisateave:
- I. Alla kirjutanud (kelle poolt ja nimel):
- II. (väljaandmise koht ja kuupäev):
- III. (nimi, ametinimetus) (allkiri):

FI

EU-VAATIMUSTENMUKAISUUSVAKUUTUS (nro XXXX)

1. Tuotemalli/tuote (tuote-, tyyppi-, erä-, tai sarjanumero):
2. (2a) Valmistajan ja tarvittaessa (2b) valmistajan valtuutetun edustajan nimi ja osoite:
3. Tämä vaatimustenmukaisuusvakuutus on annettu valmistajan yksinomaisella vastuulla.
4. Vakuutuksen kohde (jäljitettyvyyden mahdollistava tuotteen tunnistus; voidaan liittää kuva, jos tämä on tarpeen tuotteen tunnistamiseksi).
5. Edellä kuvattu vakuutuksen kohde on asiaa koskevan unionin yhdenmukaistamislainsäädännön vaatimusten mukainen:
6. (6a) Viittaus niihin asiaa koskeviin yhdenmukaistettuihin standardeihin, joita on käytetty, tai (6b) viittaus muihin tekniisiin eritelmiin, joiden perusteella vaatimustenmukaisuusvakuutus on annettu:
7. Tarvittaessa ilmoitettu laitos ... (nimi, numero) ... suoritti ... (toimenpiteen kuvaus) ... ja antoi todistuksen:
8. Lisätietoja:
- I. ... puolesta allekirjoittanut
- II. (antamispäikka ja -päivämäärä):
- III. (nimi, tehtävä) (allekirjoitus):

FR

DÉCLARATION UE DE CONFORMITÉ (n o XXXX)

1. Modèle de produit/produit (numéro de produit, de type, de lot, ou de série):
2. (2a) Nom et adresse du fabricant et, le cas échéant, (2b) de son mandataire:
3. La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
4. Objet de la déclaration (identification du produit permettant sa traçabilité; elle peut, si nécessaire pour l'identification du produit, comporter une image):
5. L'objet de la déclaration décrit ci-dessus est conforme à la législation d'harmonisation de l'Union applicable:
6. (6a) Références des normes harmonisées pertinentes appliquées ou (6b) des autres spécifications techniques par rapport auxquelles la conformité est déclarée:
7. Le cas échéant, l'organisme notifié ... (nom, numéro) a effectué ... (description de l'intervention) et a établi l'attestation:
8. Informations complémentaires:
- I. Signé par et au nom de:
- II. (date et lieu d'établissement):
- III. (nom, fonction) (signature):

HR

EU IZJAVA O SUKLADNOSTI (br. XXXX)

1. Uzorak proizvoda/proizvod (broj proizvoda, šarže, vrste ili serijski broj):
2. (2a) Naziv i adresa proizvođača i prema potrebi (2b) njegovog ovlaštenog zastupnika:
3. Za izdavanje EU izjave o sukladnosti odgovoran je isključivo proizvođač.
4. Predmet izjave (identifikacija proizvoda koja omogućava sljedivost: može uključivati sliku, ako je to potrebno za identifikaciju proizvoda):
5. Predmet navedene izjave je u skladu s mjerodavnim zakonodavstvom Unije o usklađivanju:
6. (6a) Pozivanja na relevantne primjenjene usklađene norme ili (6b) pozivanja na specifikacije u vezi s kojima se izjavljuje sukladnost:
7. Ako je potrebno, prijavljeno tijelo ... (naziv, broj) proveo je ... (opis intervencije) i izdao potvrdu:
8. Dodatne informacije:
- I. Potpisano za i u ime:
- II. (mjesto i dan izdavanja):
- III. (ime, funkcija) (potpis):

HU

EU-MEGFELELŐSÉGI NYILATKOZAT (XXXX. sz.)

1. Termékmodell/termék (termék-, típus-, tétel- vagy sorozatszám):
2. (2a) A gyártó vagy adott (2b) esetben meghatalmazott képviselőjének neve és címe:
3. Ezt a megfelelőségi nyilatkozatot a gyártó kizárólagos felelőssége mellett adják ki.
4. A nyilatkozat tárgya (a nyomkövethetőséget lehetővé tevő termék azonosítója; a leírás képet is tartalmazhat, amennyiben a termék azonosításához erre szükség van):
5. A fent ismertetett nyilatkozat tárgya megfelel a vonatkozó uniós harmonizációs jogszabályoknak:
6. (6a) Az alkalmazott harmonizált szabványokra való hivatkozás vagy az azokra az egyéb műszaki leírásokra való hivatkozás, (6b) amelyekkel kapcsolatban megfelelőségi nyilatkozatot tettek:
7. Adott esetben: a(z) ... (név, szám) ... bejelentett szervezet elvégezte a ... (a beavatkozás ismertetése) ..., és a következő tanúsítványt adta ki:
8. További információk:
- I. A nyilatkozatot az alábbi nevében és megbízásából írták alá:
- II. (a kiállítás helye és dátuma):
- III. (név, beosztás) (aláírás):

IT

DICHIARAZIONE DI CONFORMITÀ UE (N. XXXX)

1. Modello di prodotto/prodotto (numero di prodotto, tipo, lotto o serie):
2. (2a) Nome e indirizzo del fabbricante e, se del caso, (2b) del suo rappresentante autorizzato:
3. La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
4. Oggetto della dichiarazione (identificazione del prodotto che ne consenta la tracciabilità; se necessario per l'identificazione del prodotto è possibile includere un'immagine):
5. L'oggetto della dichiarazione di cui sopra è conforme alla pertinente normativa di armonizzazione dell'Unione:
6. (6a) Riferimento alle pertinenti norme armonizzate utilizzate o (6b) riferimenti alle altre specifiche tecniche in relazione alle quali è dichiarata la conformità:
7. Se del caso, l'organismo notificato ... (denominazione, numero) ... ha effettuato (descrizione dell'intervento) ... e rilasciato il certificato:
8. Informazioni aggiuntive:
- I. Firmato a nome e per conto di:
- II. (luogo e data del rilascio):
- III. (nome, funzione) (firma):

LT

ES ATITIKTIES DEKLARACIJA (Nr. XXXX)

1. Gaminio modelis / gaminys (gaminio, tipo, partijos arba serijos numeris):
2. (2a) Gamintojo ir, kai taikytina, (2b) jo įgaliotojo atstovo pavadinimas ir adresas:
3. Ši atitikties deklaracija išduota tik gamintojo atsakomybe.
4. Deklaracijos objektas (gaminio identifikavimo ženklas, pagal kurį jį galima atsekti: pririnkus gali būti pateikiamas atvaizdas, kad būtų galima gaminį identifikuoti):
5. Pirmiau aprašytas deklaracijos objektas atitinka susijusius derinamuosius Sąjungos teisės aktus:
6. (6a) Susijusių taikytų darnųjų standartų nuorodos arba (6b) kitų techninių specifikacijų, pagal kurias buvo deklaruota atitiktis, nuorodos:
7. Jei taikytina, notifikuotoji įstaiga ... (pavadinimas, numeris) atliko ... (dalyvavimo procese aprašymas) ir išdavė sertifikatą:
8. Papildoma informacija:
- I. Už ką ir kieno vardu pasirašyta:
- II. (išdavimo data ir vieta):
- III. (vardas ir pavardė, pareigos) (parašas):

LV

ES ATBILSTĪBAS DEKLARĀCIJA (Nr. XXXX)

1. Produkta modelis/produkts (produkta, tipa, partijas vai sērijas numurs):
2. (2a) Ražotāja un attiecīgā gadījumā (2b) viņa pilnvarotā pārstāvja nosaukums un adrese:
3. Šī atbilstības deklarācija ir izdota vienīgi uz ražotāja atbildību.
4. Deklarācijas priekšmets (produkta identifikācija, kas nodrošina tā izsekojamību; ja nepieciešams produkta identificēšanai, tajā var iekļaut attēlu):
5. Iepriekš aprakstītais deklarācijas objekts atbilst attiecīgajam Savienības saskaņošanas tiesību aktam:
6. (6a) Atsauces uz attiecīgajiem izmantojamiem saskaņotajiem standartiem vai (6b) uz citām tehniskajām specifikācijām, attiecībā uz ko tiek deklarēta atbilstība:
7. Attiecīgā gadījumā paziņotā struktūra ... (nosaukums, numurs) ... ir veikusi ... (darbības apraksts) ... un izsniegusi sertifikātu:
8. Papildu informācija:
- I. Parakstīts šādas personas vārdā:
- II. (izdošanas vieta un datums):
- III. (vārds, uzvārds, amats) (paraksts):

MT

DIKJARAZZJONI TA' KONFORMITÀ TAL-UE (Nru XXXX)

1. Mudell tal-prodott/Prodott (numru talprodott, tat-tip, tal-lott jew tas-serje):
2. (2a) L-isem u l-indirizz tal-manifattur u, fejn applikabbli, (2b) tar-rappreżentant awtorizzat tiegħu:
3. Din id-dikjarazzjoni ta' konformità tinħareġ taht ir-responsabbiltà unika tal-manifattur.
4. L-għan tad-dikjarazzjoni (l-identifikazzjoni tal-prodott li tippermetti t-traċċabbiltà. Tista', fejn ikun hemm bżonn biex jiġi identifikat ilprodott, tinkludi stampa):
5. L-għan tad-dikjarazzjoni deskritt hawn fuq huwa konformi mal-leġislazzjoni ta' armonizzazzjoni rilevanti tal-Unjoni:
6. (6a) Ir-referenzi għall-istandards armonizzati rilevanti li ntuzaw, jew (6b) irreferenzi għall-ispeċifikazzjonijiet tekniċi lohra li skonthom qed tiġi ddikjarata l-konformità:
7. Fejn applikabbli, il-korp notifikat ... (isem, numru) ... wettaq ... (deskrizzjoni tal-intervent) ... u ħareġ iċ-ċertifikat:
8. Informazzjoni addizzjonali:
- I. Iffirmat għal u f'isem:
- II. (post u data tal-fruġ):
- III. (isem, funzjoni) (firma):

NL

EU-CONFORMITEITSVERKLARING (Nr. XXXX)

1. Productmodel/product (product-, type, partij- of serienummer):
2. (2a) Naam en adres van de fabrikant en, in voorkomend geval, (2b) zijn gemachtigde:
3. Deze conformiteitsverklaring wordt verstrekt onder volledige verantwoordelijkheid van de fabrikant.
4. Voorwerp van de verklaring (beschrijving aan de hand waarvan het product kan worden getraceerd. Wanneer dat voor de identificatie van het product noodzakelijk is, mag er een afbeelding worden toegevoegd):
5. Het hierboven beschreven voorwerp is in overeenstemming de desbetreffende harmonisatiewetgeving van de Unie:
6. (6a) Vermelding van de toegepaste relevante geharmoniseerde normen of (6b) van de overige technische specificaties waarop de conformiteitsverklaring betrekking heeft:
7. (Indien van toepassing) De aangemelde instantie ... (naam, nummer) heeft een... (werkzaamheden beschrijven) uitgevoerd en het certificaat verstrekt:
8. Aanvullende informatie:
 - I. Ondertekend voor en namens:
 - II. (plaats en datum van afgifte)
 - III. (naam, functie) (handtekening):

PL

DEKLARACJA ZGODNOŚCI UE (nr XXXX)

1. Model produktu/produkt (numer produktu, typu, partii lub serii):
2. (2a) Nazwa i adres producenta lub w stosownym przypadku (2b) jego upoważnionego przedstawiciela:
3. Niniejsza deklaracja zgodności wydana zostaje na wyłączną odpowiedzialność producenta.
4. Przedmiot deklaracji (identyfikacja produktu umożliwiająca odtworzenie jego historii; można dołączyć ilustrację, jeżeli jest to konieczne do identyfikacji produktu):
5. Wymieniony powyżej przedmiot niniejszej deklaracji jest zgodny z odpowiednimi wymaganiami unijnego prawodawstwa harmonizacyjnego:
6. (6a) Odniesienia do odpowiednich norm zharmonizowanych, które zastosowano, lub (6b) do innych specyfikacji technicznych, w stosunku do których deklarowana jest zgodność:
7. W stosownym przypadku, jednostka notyfikowana ... (nazwa, numer) przeprowadziła ... (opis interwencji) i wydała certyfikat:
8. Informacje dodatkowe:
 - I. Podpisano w imieniu:
 - II. (miejsce i data wydania):
 - III. (imię i nazwisko, stanowisko) (podpis):

PT

DECLARAÇÃO UE DE CONFORMIDADE (n. o XXXX)

1. Modelo do produto/produto (número do produto, do tipo, do lote ou da série):
2. (2a) Nome e endereço do fabricante e, eventualmente, (2b) do seu mandatário:
3. A presente declaração de conformidade é emitida sob a exclusiva responsabilidade do fabricante:
4. Objeto da declaração (identificação do produto que permita rastreá-lo; se for necessário para a identificação do produto, pode incluir uma imagem):
5. O objeto da declaração acima descrito está em conformidade com a legislação aplicável de harmonização da União:
6. (6a) Referências às normas harmonizadas aplicáveis utilizadas ou (6b) às outras especificações técnicas em relação às quais é declarada a conformidade:
7. Se aplicável, o organismo notificado ... (nome, número) efetuou ... (descrição da intervenção) e emitiu o certificado:
8. Informações complementares:
 - I. Assinado por e em nome de:
 - II. (local e data de emissão):
 - III. (nome, cargo) (assinatura):

RO

DECLARAȚIE UE DE CONFORMITATE (NR. XXXX)

1. Modelul de produs/produsul (numărul produsului, tipului, lotului sau numărul de serie):
2. (2a) Denumirea și adresa producătorului și, unde este cazul, (2b) a reprezentantului său autorizat:
3. Prezenta declarație de conformitate este emisă pe răspunderea exclusivă a producătorului.
4. Obiectul declarației (identificarea produsului permițând trasabilitatea; dacă este necesar pentru identificarea unui produs, se poate adăuga o imagine):
5. Obiectul declarației descris mai sus este în conformitate cu legislația relevantă de armonizare a Uniunii:
6. (6a) Trimiteri la standardele armonizate relevante folosite sau (6b) trimiteri la celelalte specificații tehnice în legătură cu care se declară conformitatea:
7. Unde este cazul, organismul notificat... (denumire, număr) a efectuat ... (descrierea intervenției) și a emis certificatul:
8. Informații suplimentare:
 - I. Semnat pentru și în numele:
 - II. (locul și data emiterii):
 - III. (numele, funcția) (semnătura):

SK

EÚ VYHLÁSENIE O ZHODE (č. XXXX)

1. Model výrobku/výrobok (číslo výrobku, typ, číslo šarže, alebo sériové číslo):
2. (2a) Meno/názov a adresa výrobcu a podľa potreby (2b) jeho splnomocneného zástupcu:
3. Toto vyhlásenie o zhode sa vydáva na vlastnú zodpovednosť výrobcu.
4. Predmet vyhlásenia (identifikácia výrobku umožňujúca výsledovateľnosť; pokiaľ je to nevyhnutné na identifikáciu výrobku, môže obsahovať obrázok):
5. Uvedený predmet vyhlásenia je v zhode s príslušnými harmonizačnými právnymi predpismi Únie:
6. (6a) Odkazy na príslušné použité harmonizované normy alebo (6b) odkazy na iné technické špecifikácie, v súvislosti s ktorými sa zhoda vyhlasuje:
7. V prípade potreby notifikovaný orgán...(názov, číslo) ... vykonal ... (opis zásahu) ... a vydal certifikát:
8. Doplnujúce informácie:
 - I. Podpísané za a v mene:
 - II. (miesto a dátum vydania):
 - III. (meno, funkcia) (podpis):

SL

IZJAVA EU O SKLADNOSTI (št. XXXX)

1. Model proizvoda /proizvod (proizvod, tip, serija ali serijska številka):
2. (2a) Ime in naslov proizvajalca in, kadar je potrebno, (2b) pooblaščenega zastopnika:
3. Za izdajo te izjave o skladnosti je odgovoren izključno proizvajalec.
4. Predmet izjave (identifikacija proizvoda, ki omogoča sledljivost; kadar je to potrebno za identifikacijo proizvoda, lahko vsebuje sliko):
5. Predmet navedene izjave je v skladu z ustreznimi zakonodajami Unije o harmonizaciji:
6. (6a) Sklicevanja na uporabljene ustrezne harmonizirane standarde ali (6b) sklicevanja na druge tehnične specifikacije v zvezi s skladnostjo, ki je navedena v izjavi:
7. Priglašeni organ ... (ime, številka) je po potrebi izvedel ... (opis posega) in izdal certifikat.
8. Dodatne informacije:
 - I. Podpisano za in v imenu:
 - II. (kraj in datum izdaje):
 - III. (ime, funkcija) (podpis):

SV

EU-FÖRSÄKRAN OM ÖVERENSSTÄMMELSE (nr XXXX)

1. Produktmodell/produkt (produkt-, typ-, parti- eller serienummer):
2. (2a) Tillverkarens namn och adress och, i tillämpliga fall, (2b) tillverkarens representant:
3. Denna försäkran om överensstämmelse utfärdas på tillverkarens eget ansvar.
4. Föremål för försäkran (identifiera produkten så att den kan spåras; för att produkten ska kunna identifieras kan det vara nödvändigt att bifoga en bild):
5. Föremålet för försäkran ovan överensstämmer med den relevanta harmoniserade unionslagstiftningen:
6. (6a) Hänvisningar till de relevanta harmoniserade standarder som använts eller (6b) hänvisningar till de andra tekniska specifikationer enligt vilka överensstämmelsen försäkras:
7. I tillämpliga fall, det anmälda organet ... (namn, nummer) har utfört ... (beskrivning av åtgärden) och utfärdat intyg:
8. Ytterligare information:
 - I. Undertecknat för:
 - II. (ort och datum):
 - III. (namn, befattning) (namnteckning):

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