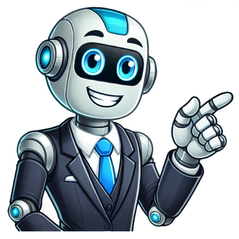
I'm not a bot



Page 1 00809-0100-4725 English Rev. BB Model 8732C Integral Mount Magnetic Flowmeter System... Page 3 For information on Rosemount nuclear-qualified products, contact your local Rosemount Sales Representative. Rosemount, the Rosemount logotype, and SMART FAMILY are registered trademarks of Rosemount Inc. HART is a registered trademark of the HART Communication Foundation. Cover Photo: 8732-002AB. Table of Contents IMPORTANT Procedures and instructions in this manual may require special precautions to ensure the safety of the personnel performing the operations. Information that raises potential safety issues is indicated by a warning symbol ( ). Refer to the safety messages listed at the beginning of each section before performing an operation preceded by this symbol. Page 6 Installation Procedures ....2-7 Handling ....2-7 Flowtube Mounting . Page 7 SECTION 4: Introduction ....4-1 Safety Messages . Page 8 Ordering Information ....6-4 Model 8732C Spare Parts ....6-5 SECTION 7: Specifications . Page 9 APPENDIX A: Introduction ....A-1 Safety Messages . Model 8732C Magnetic Flowmeter System. Section 3: Local Operator Interface introduces the Model 8732C local operator interface (LOI) and its function in configuring the Model 8732C. Section 4: Transmitter Functions guides you through the software configuration functions for the Model 8732C. A complete magnetic flowmeter system consists of two components: the Rosemount Model 8732C microprocessor-based integral-mount magnetic flowmeter transmitter, and a Rosemount Model 8705 or 8711 flowtube. The flowtube is installed in-line with process piping, either vertically or horizontally. Coils located on opposite sides of the flowtube create a magnetic field, and conductive liquid moving through the magnetic field generates a voltage that is detected by two electrodes. Section Installation INTRODUCTION This section covers the installation procedures for the Model 8732C Magnetic Flowmeter System. SAFETY MESSAGES Instructions and procedures in this section may require special precautions to ensure the safety of the personnel performing the operations. Information that raises potential safety issues is indicated by a warning symbol ( ). (22.50 mA) or low (3.75 mA). The switch is set in the High position when it leaves the factory. Current Output Internally or The Model 8732C 4–20 mA loop may be powered internally or by an Externally Powered external power supply. The Internal/External power supply switch determines the source of the 4–20 mA loop power. 3. Identify the location of each switch (see Figure 2-1). 4. Change the setting of the desired switches with a small screwdriver. 5. Reinstall and tighten the electronics cover. FIGURE 2-1. Model 8732C Electronics Board and Hardware Switches. Hi/Lo Alarm... Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Mechanical Considerations The mounting site for the Model 8732C Integral Mount Transmitter should provide enough room for secure mounting, easy access to the conduit ports, full opening of the transmitter covers, and easy readability of the local operator interface (LOI) screen (see Figure 2-2). The Model 8732C Transmitter is designed to be powered by voltages Transmitter Input Power ranging from 90 to 250 V ac (50 to 60 Hz) or 15–30 V dc. Units powered with an ac power supply should be connected to standard ac connections for 90 V ac or 250 V ac. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Figure 2-3 shows the surge current for each corresponding supply voltage. For combinations not shown above, you can calculate the maximum distance given the surge current, the voltage of the source, and the minimum start-up voltage of the transmitter, 15 V dc using the following equation: Max. Because the Model 8732C System requires external power, access to a suitable power source must be ensured. Overheating will damage the flowtube. Do not encapsulate the flowtube with heating elements. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Flowtube Mounting Physical mounting of a flowtube is similar to installing a typical section of pipe. Only conventional tools, equipment, and accessories (such as bolts, gaskets, and grounding hardware) are required. Rosemount magnetic flowmeter systems are wet-calibrated at the Calibration factory and need no further calibration during installation. Installation Flowtube Orientation Vertical Installation Vertical installation allows upward process fluid flow and is generally preferred. Upward flow keeps the cross-sectional area full, regardless of flow rate. Orientation of the electrode plane is unimportant in vertical installations. NOTE As shown in Figure 2-6, avoid downward vertical flows where back pressure is inadequate to ensure that the flowtube remains full. Page 22 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System An inclined installation, as shown in Figure 2-8, is an acceptable installation technique. This tends to keep the cross-sectional area full. NOTE As shown in Figure 2-8, avoid declining installations where back pressure is inadequate to ensure that the flowtube remains full. Installation Flow Direction The flowtube should be mounted so that the FORWARD end of the flow arrow, shown on the flowtube identification tag, points in the direction of flow through the tube (see Figure 2-9). FIGURE 2-9. Flow Direction. Flow Flow Direction Arrow Gaskets The flowtube requires gaskets at each of its connections to adjacent... Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Flange Bolts Flowtube sizes and torque values for Class 150 and Class 300 flanges are listed in Table 2-3. Tighten flange bolts in the incremental sequence shown in Figure 2-11. Correct flange bolt tightening is crucial for proper flowtube operation and Model 8705 life. Installation For Model 8711, the flowtube inside diameter should be centered with Model 8711 respect to the inside diameter of the adjoining upstream and downstream piping. This will ensure the flowmeter achieves its specified accuracy. Mounting bolts supplied with 0.15 through 1-inch (4–25 mm) line sizes are specifically sized to properly align these flowtubes with the flange configurations specified. Page 26 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Alignment with Centering Sleeves Follow the instructions below for the 1.5- through 8-inch (40 to 200 mm) line sizes if you received two centering sleeves instead of centering rings: 1. Insert the two studs for the bottom side of the flowtube, with the centering sleeves, between the pipe flanges. Installation Grounding Grounding the flowtube is one of the most important details of flowtube installation. Proper grounding ensures that only the voltage induced in the flowtubes magnetic field is measured. Use Table 2-5 to determine which grounding option figure to use for Model 8705 proper installation. Page 28 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System FIGURE 2-16. Model 8705 Grounding for Conductive Lined Pipe with Grounding Rings. Earth Ground Grounding Rings FIGURE 2-17. Model 8705 Grounding for Non-Conductive Pipe with Lining Protectors. Earth Ground Lining Protector Tab... Installation FIGURE 2-19. Model 8705 Grounding for Non-Conductive Pipe with Grounding Electrodes. Use Table 2-6 to help determine the grounding option required for Model 8711 proper operation. TABLE 2-6. Model 8711 Grounding Installation. Grounding Options Type of Pipe No Grounding Options Grounding Rings Grounding Electrodes Conductive Unlined Pipe... Page 30 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System FIGURE 2-21. Model 8711 Grounding for Conductive Lined Pipe with Grounding Rings. Earth Ground Grounding Rings FIGURE 2-22. Model 8711 Grounding for Non-Conductive Pipe with Grounding Rings. Earth Ground Grounding Rings FIGURE 2-23. Model 8711 Grounding for Non-Conductive Pipe with Grounding Electrodes. Installation Install Conduit Transmitter junction boxes have ports for ¾-inch NPT conduit connections. 1. Connect the ¾-inch NPT conduit to the transmitter in accordance with local or plant electrical codes. 2. Seal unused ports to prevent moisture or other contamination from entering the junction box. 250 ohms resistance in the loop. External External power must be supplied if the Model 8732C is to be used in a multidrop installation (see Multidrop Communications on page 4-18). A 10–30 V dc power source is required. If a HART-based Communicator or DCS is used, it must be connected across a minimum of 250 ohms resistance in the loop. Installation Connect Pulse Output The Pulse Output function provides an isolated switch-closure frequency output signal that is proportional to the flow through the Power Source flowtube. The signal is normally used in conjunction with an external totalizer or control system. The following requirements apply: Supply Voltage: Up to 24 V ac or dc. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Connect Auxiliary In lieu of pulse output, the auxiliary output control function allows you to externally signal a zero flow or reverse flow condition. The following Output Control requirements apply: Supply Voltage: Up to 24 V ac or dc. Installation Installation Check Use this guide to check new installations of Rosemount Magnetic Flowmeter Systems that appear to malfunction. For detailed and Guide troubleshooting instructions, see Section 5: Troubleshooting. Before You Begin Be sure that power to your system is off before beginning these checks. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Process Leak As shown in Figure 2-27, the standard configuration divides the housing into three separate compartments: one for each electrode and Containment one for the coils. The electrodes are separated from the rest of the internal components and the coils. Installation Relief Valves Housing configuration “W1” provides a relief valve in the housing to prevent possible overpressuring caused by damage to the lining or other situations that might allow process pressure to enter the housing. The relief valve will vent when the pressure inside the flowtube housing exceeds 5 psi. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Field-Removable The field-removable electrode option allows the user to remove the electrode assembly with the flowtube still mounted in the line. Electrodes Frequently, this option will be used for cleaning the electrode head when coating is of concern. Page 39 Installation 2-27... Page 40 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System 2-28... Local Operator Interface THE LOCAL OPERATOR The LOI option is an operator communications center for the Model 8732C. Through the LOI, the operator can access any transmitter INTERFACE (LOI) function for changing configuration parameter settings, checking totalized values, or other functions. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System LOI Features The LOI option contains a two-line, 16-character liquid crystal display (LCD) that is back-lit and visible from any angle. This display uses optical switches that reliably detect the touch of a finger on the LOI glass. Local Operator Interface LOI Rotation Each magnetic flowmeter installation is different from application to application; therefore, the LOI display can be rotated to accommodate various setups using the following procedure: 1. Remove power from the transmitter. 2. Unscrew and remove the LOI cover. Do not remove the cover in explosive atmospheres when the circuit is alive. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System LOI EXAMPLES Use the Transmitter Parameter keys shown in Figure 3-1 to change the parameters. The parameters are set in one of two ways: Table Value and Select Value. Table Values Parameters that are available from a predefined list, such as units. Local Operator Interface LOI SCREEN FLOW ↑ → DISPLAY TOTALIZER ↑ DISPLAY SETUP Flow Rate Display ↓ Totalize Display Display Lock ↑ →Units Tube Size BASIC SETUP Tube Cal. No. ↑ →URV Configure URV, LRV ↓ LRV Configure Damping ↓ End of List ↑... Rosemount Model 8732C Integral Mount Magnetic Flowmeter System TABLE 3-2. LOI Display and Functions. LOI Display Transmitter Function Display Setup Display Lock ....Locks out configuration changes (including totalizer start/stop/reset) from being made via the LOI. A DL indicator will show on the main flow rate screen. All values can still be viewed. Section Transmitter Functions INTRODUCTION The Model 8732C features a full range of software functions for configuration of output from the transmitter. Software functions are accessed through the LOI (see Section 3: Local Operator Interface), a HART-based communicator (see Appendix A: HART Communicator), or a control system. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System SAFETY MESSAGES Instructions and procedures in this section may require special precautions to ensure the safety of the personnel performing the operations. Information that raises potential safety issues is indicated by a warning symbol ( ). Please refer to the following safety messages before performing an operation preceded by this symbol. Transmitter Functions REVIEW VARIABLES Before operating the Model 8732C in an actual installation, review all of the factory set configuration data to ensure that they reflect the current application. Review the flowmeter configuration parameters set at the factory to Review... Rosemount Model 8732C Integral Mount Magnetic Flowmeter System BASIC CONFIGURATION The basic configuration functions of the Model 8732C must be set for all applications of the transmitter in a magnetic flowmeter system. If your application requires the advanced functionality features of the Model 8732C, see Special Units Configuration on page 4-5. Example Suppose you work for a brewery, and want the Model 8732C to display flow in barrels per hour. One barrel of beer is equal to 31.0 gallons. You would set the following: Volume Unit = BARL. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System ANALOG OUTPUT The standard 4–20 mA analog output can be configured to meet the special requirements of your application. In the standard configuration, CONFIGURATION a 4 mA output (LRV) corresponds to 0.0 ft/s in the line, while a 20 mA output (URV) corresponds to a maximum flow of 30 ft/s. Transmitter Functions For maximum accuracy, the analog output should be calibrated and, if 4–20 mA Output Trim necessary, trimmed for your system loop. The 4–20 mA Output Trim HART Fast Keys 1, 2, 4, 1 procedure alters the conversion of the digital signal into an analog 4–20 mA output. When selecting pulse output scaling, remember that the maximum pulse rate is 1000 Hz. With the 110 percent overrange capability, the absolute limit is 1100 Hz. For example, if you want the Model 8732C to pulse every time 0.01 gallons pass through the flowtube, and the flow... Transmitter Functions Pulse Width, or duration, of the frequency output pulse can be Pulse Width adjusted to match the requirements of different counters HART Fast Keys 1, 4, 3, 3, 2 or controllers (See Figure 4-1). The pulse width adjusts the time that the switch is closed. Page 56 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Example The external counter is ranged for 350 gpm. You want to set 1 pulse for every gallon of flow. What is the maximum frequency output? (Assume the pulse width = 0.5 ms.) Transmitter Functions TOTALIZER The totalizer tracks total flow in the process line. You can start, stop, or reset the totalizer as well as configure it to present the data specific to CONFIGURATION your application on the LOI display. On the LOI, the Totalizer Display allows you to choose the desired Totalizer Display format for indicating the totalized values. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System NOISE REDUCTION Damping allows selection of a response time, in seconds, to a step change in Damping flow rate. It is most often used to smooth fluctuations in output. HART Fast Keys... Transmitter Functions Signal Processing Control Signal Processing Control — On/Off When ON is selected, the Model 8732C output is derived using a running HART Fast Keys 1, 4, 4, 4 average of the individual flow inputs. This average is updated at the rate of 12 samples per second regardless of the selected coil drive mode. This procedure is rarely needed by customers. It is only necessary if you HART Fast Keys 1, 2, 4, 3 believe the Model 8732C is no longer accurate. It must be performed with the coil drive mode set to 6 Hz and with a nominal flowtube calibration Transmitter Trim number stored in the memory. The tag may be up to eight characters long and is user-defined. Device Information The Model 8732C microcontroller will automatically read the Software Software Revision Number Revision Number and display it under this heading. The software... Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Liner Material enables you to select the liner material for the attached Liner Material flowtube. This variable needs to be changed only if you have replaced HART Fast Keys 1, 4, 5 your flowtube. Transmitter Functions Flange Type enables you to specify the type of flange on the transmitter for Flange Type later reference. This variable is preset at the factory but can be changed HART Fast Keys 1, 4, 5 if necessary. Device Information •... Rosemount Model 8732C Integral Mount Magnetic Flowmeter System MULTIDROP Multidrop configuration refers to the connection of several transmitters to a single communications transmission line. Communication between COMMUNICATIONS the HART Communicator and the transmitters takes place digitally with the analog output of the transmitters deactivated. Using the HART communications protocol, up to 15 transmitters can be connected on a single twisted pair of wires or over leased phone lines. Model 8732C in the same way as it can a Model 8732C in a standard point-to-point installation. NOTE The Model 8732C is set to poll address zero at the factory, allowing it to operate in the standard point-to-point manner with a 4–20 mA output signal. To activate multidrop communication, the transmitter poll address must be changed to a number between 1 and 15. Page 66 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System 4-20... Section Troubleshooting BASIC Problems in the magnetic flowmeter system are usually indicated by incorrect output readings from the system, error messages, or failed TROUBLESHOOTING tests. Consider all sources when identifying a problem in your system. SAFETY MESSAGES Instructions and procedures in this section may require special precautions to ensure the safety of the personnel performing the operations. Page 68 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System TABLE 5-1. Basic Troubleshooting–Model 8732C. Symptom Potential Cause Corrective Action Output at 0 mA. No power to transmitter. Check power source and connections to the transmitter. Analog output improperly Check the analog power switch. See Hardware Switches on page 2-2 for configured. Noisy Conditions Basic Procedure 1. Change coil drive to 30 Hz. 2. Increase the damping. 3. Activate signal processing. 4. Consult Rosemount Sales Representative about using a High-Signal Magnetic Flowmeter System. TABLE 5-2. Advanced Troubleshooting–Model 8732C. Accuracy Symptom... Rosemount Model 8732C Integral Mount Magnetic Flowmeter System TABLE 5-2. Advanced Troubleshooting–Model 8732C. Symptom Potential Cause Corrective Action Noisy Process. Chemical additives upstream of Complete the Noisy Conditions Basic Procedure (page 5-3). magnetic flowmeter. Move injection point downstream of magnetic flowmeter, or move magnetic flowmeter. Troubleshooting Flowtube Troubleshooting The following tests can check Models 8705 or 8711 flowtubes in line and full of process material. The tests allow you to determine whether or Procedures not the flowtube needs to be removed from the process. The transmitter must be removed to conduct these tests. Page 72 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System FIGURE 5-1. Model 8705 Flowtube Circuit Diagram. Coil Coil Flowtube Chassis 50 k both FIGURE 5-2. Model 8711 Magnetic Flowmeter Flowtube Circuit Diagram. to Transmitter to Transmitter Shield – – Electrodes Coil... Troubleshooting RETURN OF MATERIALS To expedite the return process outside the United States, contact the nearest Rosemount representative. Within the United States and Canada, call the North American Response Center using the 800-654-RSMT (7768) toll-free number. This center, available 24 hours a day, will assist you with any needed information or materials. Page 74 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System... SPECIFICATIONS Functional Specifications Flowtube Compatibility Compatible with Rosemount Model 8705 or Model 8711 Flowtubes. Flow Rate Range Capable of processing signals from fluids that are traveling between 0.04 and 30 ft/s (0.01 to 10 m/s) for both forward and reverse flow in all flowtube sizes. Page 76 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Software Lockout Security switch on electronics can be set for deactivation of all LOI and HART-based communicator functions that affect the transmitter input/output. Auxiliary Output Function In lieu of a scalable frequency output, an auxiliary output is available using the digital output terminals. KEMA/CENELEC Approval (ED) EEx d IIB T6. Special Conditions If the Magnetic Flowmeter Transmitter Type 8732C is used integrally with certified Magnetic Flowmeter Types 8705 or 8711, it shall be assured that the mechanical contact areas of the 8705 or 8711 and the 8732C comply with the requirements for flanged joints, EN 50018-1877, clause 4.1. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Physical Specifications Electrical Connections ¾–14 NPT connections provided on the transmitter housing. PG13.5 and CM20 adapters are available. Screw terminals provided for all connections. Power wiring connected to transmitter only. Integrally mounted transmitters are factory wired to the flowtube. Electrical Connection Assembly (Flowtube to transmitter) 08732-0133-0001 Model 8732C Non-Volatile Totalizer Chip – C53641-0003 Transmitter and Flowtube Accessories Multi-Point Reference Calibration Standard (for use with Model 8712C, 8712U, or 8732C Transmitters) — Model 8714D Spare Model 8714D Cable (for Model 8732C Transmitters) — 08714-0205-0001 UMB Tube to 8732C Transmitter Conversion Bracket —... Page 80 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System... (15, 25, 40, 50, 80, 100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 750, and 900 mm). Interchangeability All Model 8705 Flowtubes and Series 8712 or 8732C Transmitters are completely interchangeable. System accuracy is maintained regardless of line size or optional features. Each flowtube nameplate has a multi-... Page 82 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System TABLE 7-1. Relation Between Ambient Temperature, Process Meter Size Maximum Ambient Maximum Process Temperature Class Temperature, and (inches) Temperature Temperature Temperature Class. ½ 149 °F (65 °C) 240 °F (116 °C) 149 °F (65 °C) 248 °F (120 °C) Page 83 Model 8705 Specifications and Reference Data TABLE 7-2. Flowtube Temperature vs. Pressure Limits. ANSI Class Flanges: ½ – 24 inch Line Sizes Pressure in psi PTFE Teflon ETFE Tefzel Natural Rubber Neoprene Polyurethane Liners Liner Liner Liner Liner Liner Flange Rating (@ 100 °F, 37.8 (@ 350 °F, 177 (@ 300 °F, 149... Performance (System specifications at reference conditions with frequency output and flowtube in new condition.) Accuracy (with Model 8712C, Model 8712U or Model 8732C) Specifications ±0.5% of rate from 1 to 30 ft/s (0.3 to 10 m/s). Includes combined effects of linearity, repeatability, and calibration uncertainty. Page 85 Model 8705 Specifications and Reference Data TABLE 7-3. Model 8705 Dimensions with ANSI Flanges in Inches (Millimeters). Overall Body Line Size Liner Face Process Body Centerline Bolt Hole Number Flowtube Widest' Bolt Hole and Flange Diameter Flange Height to Conduit Circle and Size Length... Page 86 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System TABLE 7-4. Flowtube Dimensions with DIN Flanges in Millimeters (Inches). Overall Line Size Liner Face Process Body Body Centerline Bolt Hole Flowtube Bolt Hole Number of and Flange Diameter Flange Height Width “D”... Page 87 Model 8705 Specifications and Reference Data TABLE 7-5. Flowtube Dimensions with ANSI Flanges and Tri-Clamp Adaptors (A3) in Inches (Millimeters) Line Size Nominal Overall Process Body Centerline Tri- Flowtube Flange Height to Conduit Flange Clamp Length Rad. “B” “C” Max “E”... Page 88 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System 4.75 2.00 0.66 (121) (51) (17) 1.35 1.00 (34) (25) 2.00 2.00 (51) (51) ¾–14 NPT Conduit Connection “E” “C” “B” “A” “L” “D” NOTES Dimensions are in inches (millimeters). See Table 7-3 and 7-4 for variable dimensions. Page 89 Model 8705 Specifications and Reference Data ORDERING INFORMATION Model Product Description 8705 Magnetic Flowmeter Flowtube Code Lining Material PTFE Teflon ETFE Tefzel Polyurethane ⎫ ⎬ Neoprene Available in 1½- through 36-inch (40–900 mm) line sizes. ⎭ Natural Rubber ELECTRODE TYPE (see below) Code Electrode Material Code A (Add) Page 90 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Code Optional Grounding Rings and Lining Protection Grounding Ring Grounding rings and lining protectors cannot be used together. Both options provide the same fluid grounding function. Lining Protectors Lining protectors available with PTFE liners only. Section Model 8711 Specifications and Reference Data SPECIFICATIONS Functional Specifications Service Conductive liquids and slurries. Line Sizes 0.15, 0.30, 0.5, 1, 1.5, 2, 3, 4, 6, and 8 inches (4, 8, 15, 25, 40, 50, 80, 100, 150, 200 mm). Upper Range Limit 30 ft/s (10 m/s). Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Standard Hazardous Locations Certifications Factory Mutual (FM) Approval Approved for Class I, Division 2, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III hazardous locations. Page 93 Model 8711 Specifications and Reference Data Process Connections Mounts between these Flange Configurations ANSI: Class 150, 300.vv DIN: PN 10 and 25. BS: 10 Table D, E, and F. Mounting Studs 0.15, 0.30, 0.5, and 1 inch (4, 8, 15, 25 mm): 316 SST, ASTM A-193, Grade B7. Page 94 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System FIGURE 8-1. Model 8711 Dimensional Drawings 1.5- THROUGH 8-INCH LINE SIZES 4.75 (121) 0.66 (13) (17) 1.35 (34) 2.00 (51) “A” “B” Flow “C” “D” 0.15- THROUGH 1-INCH LINE SIZES 4.75 (121) Page 95 8.0 (200) Code Transmitter Mounting Configuration Remote (2-inch Pipe or Surface Mount) Integral with Model 8712C Transmitter Integral with Model 8732C Transmitter Code Mounting Kit ANSI Class 150 DIN PN 10/16 (8 inch (200mm) has a PN 10 Mounting Kit Only.) ANSI Class 300 DIN PN 25/40 (8 inch (200mm) has a PN 25 Mounting Kit Only.) Page 96 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System... HART Communicator INTRODUCTION This appendix provides basic communicator information on the HART Communicator Model 275 when used with a Model 8732C Integral Mount Magnetic Flowmeter System. Included in this appendix are a menu tree, a table of fast key sequences, and information on using the HART communicator. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System FIGURE A-1. HART Communicator Menu Tree. 1 Gross Totalized Value 1 Flow Rate 2 Net Totalized Value 2 Percent of Range 1 PROCESS 3 Reverse Totalized Value 3 Analog Output VARIABLE 4 Start Totalizer... Appendix A TABLE A-1. HART Fast Key Sequences for the Model 8732C. Function HART Fast Key Function HART Fast Key AO Alarm Type 1, 4, 3, 1, 4 Message 1, 4, 5, 4 Analog Output 1, 1, 3 Net Totalized Value... Rosemount Model 8732C Integral Mount Magnetic Flowmeter System CONNECTIONS The HART Communicator exchanges information with the transmitter from the control room, the instrument site, or any wiring termination AND HARDWARE point in the loop. The HART Communicator should be connected in parallel with the transmitter. Page 101 FIGURE A-4. Connecting the HART Communicator with the Optional Load Resistor. NOTE Loop must be broken to insert the optional 250 ohm resistor. 4–20 mA – Model 8732C 4–20 mA + Optional 250 ohm Fuse load resistor... Rosemount Model 8732C Integral Mount Magnetic Flowmeter System BASIC FEATURES The basic features of the HART Communicator include Action Keys, Function Keys, and Alphanumeric and Shift Keys. FIGURE A-5. The HART Communicator. Function Keys Action Keys Alphanumeric Keys Shift Keys... Appendix A Action Keys The Action Keys As shown in Figure A-5, the action keys are the six blue, white, and black keys located above the alphanumeric keys. The function of each key is described as follows: ON/OFF Key Use this key to power the HART Communicator. When the communicator is turned on, it searches for a transmitter on the 4–20 mA loop. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Alphanumeric The Alphanumeric keys perform two functions: the fast selection of menu options and data entry. and Shift Keys FIGURE A-6. HART Communicator Alphanumeric and Shift Keys. Data Entry Some menus require data entry. Use the Alphanumeric and Shift keys to enter all alphanumeric information into the HART Communicator. Appendix A MENUS AND FUNCTIONS The HART Communicator is a menu driven system. Each screen provides a menu of options that can be selected as outlined above, or provides direction for input of data, warnings, messages, or other instructions. Main Menu When the HART Communicator is turned on, one of two menus will appear. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Diagnostic Messages The following is a list of messages used by the HART Communicator (HC) and their corresponding descriptions. TABLE A-2. Diagnostic Messages. Message Description Add item for ALL device types or Asks the user whether the hot key item being added only for this ONE device type. Page 107 Appendix A Message Description OFF KEY DISABLED Appears when the user attempts to turn the HC off before sending modified data or before completing a method. Online device disconnected with There is unsent data for a previously connected device. unsent data. RETRY or Press RETRY to send data, or press OK to disconnect OK to lose data. Page 108 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System A-12... INTRODUCTION Operation planning is necessary for successful installation. Process fluid conductivity should be 5 microsiemens/cm (5 micromhos/cm) or greater. All options available to the Model 8732C Integral Mount Magnetic Flowmeter System should be carefully reviewed before selection. Flowtube site and process fluid characteristics are also important considerations. Requirements for a satisfactory flowtube site depend on the exact installation configuration. Consider the following when planning a site. A Model 8732C Integral Mount Magnetic Flowmeter System requires Line Power Access a supply of ac power only at the transmitter, and not at the flowtube. Appendix B FIGURE B-2. Typical Bypass Piping Configuration. Flow Process Conditions Process conditions and loop elements must be considered during site selection to ensure an accurate, noise-free output signal. Avoid placement near pumps (especially positive displacement pumps) or flow variations may appear in the output signal. Also, keep slurries as homogeneous as possible to prevent damage to the flowtube electrodes and liner. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Flowtube Orientation Upstream Piping Length Magnetic flowmeters are less sensitive to liquid velocity profile variation than most other flowmeters. However, to ensure specification accuracy over widely varying process conditions, install the flowtube with a minimum of five straight pipe diameters upstream and two straight pipe diameters downstream from the electrode plane. Page 113 Appendix B TABLE B-1. Sizing Guidelines. Velocity Range Velocity Range Application (ft/s) (m/s) Normal Service 2–20 0.6–6.1 Abrasive Slurries 3–10 0.9–3.1 Non-Abrasive Slurries 5–15 1.5–4.6 To convert flow rate to velocity, use the appropriate factor listed in Table B-2 and the following equation: Flow Rate Velocity = Factor... Page 114 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System FIGURE B-3. Fluid Velocity vs. Rate Curves for Model 8705. FLOW RATE (liters/minute) 150K 10K 20K 30K 50K 100K 200K 40K 60K 80K FLOW RATE (gallons/minute) FIGURE B-4. Fluid Velocity vs. Rate Curves for Model 8711... Page 115 Appendix B TABLE B-3. Line Size vs. Fluid Velocity/Rate Minimum/Maximum Flow Rate Nominal Gallons per Minute Liters per Minute Line Size in Inches at 0.04 ft/s at 0.3 m/s at 10 m/s at 1 ft/s at 30 ft/s at 0.012 m/s (mm) (Low-flow (Min. Page 116 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System... Appendix Transmitter Output Instability SAFETY MESSAGES Instructions and procedures in this section may require special precautions to ensure the safety of the personnel performing the operations. Please read the following safety messages before performing any operation described in this section. Warnings Explosions could result in death or serious injury: •... Rosemount Model 8732C Integral Mount Magnetic Flowmeter System PROCEDURES If the output of your Model 8732C is unstable, first check the wiring and grounding associated with the magnetic flowmeter system (see the Installation Check and Guide on page 2-23).Ensure that the following conditions are met: •... 125 samples, it is this number of previous inputs that are averaged together to arrive at the average value. Because the output stage of the 8732C circuit is updated twelve times each second, regardless of coil drive mode, twelve samples equals one second (i.e., 0 to 120 samples = 0 to 10 seconds). When Should Signal The Model 8732C offers three separate functions that can be used in Processing Be Used? series for improving a noisy output. The first step is to toggle the coil drive to the 30 Hz mode and initialize with an auto zero. V, because field strength is a controlled constant and electrode spacing is fixed. Therefore, the output voltage E is directly proportional to liquid velocity, resulting in the inherently linear output of the Rosemount Magnetic Flowmeter System. FIGURE D-1. Flowtube Cross Section. Rosemount Model 8732C Integral Mount Magnetic Flowmeter System PRIMARY AND The Series 8700 System consists of primary and secondary devices. The primary Series 8700 Flowtube is a pipe section with coils and SECONDARY DEVICES electrodes. The secondary Series 8700 Transmitter generates the coil drive signal. Page 123 Appendix D Although stray noise may be picked up with induced flow voltage at the electrodes, it is easily separated by the following procedure: 1. Measure voltage with the magnetic field high and note the amount. 2. Measure voltage with magnetic field low and note the amount. 3. Page 124 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System The pulsed dc field coil design has the following advantages: • Automatic Zeroing — A new reference is established with each sample of the flow signal, several times a second. This eliminates the need to zero the system under a no-flow condition that requires process shutdown. Index Action Keys A-7 Electrical Considerations Handling 2-7 Alphanumeric Keys A-8 Input Power 2-5 Hardware A-4 Auto Zero 4-12, C-2 Wire Lengths 2-5 Hardware Switches 2-2 Auxiliary Output 2-22 Electrical Design D-2 HART Communicator A-1 Electrode Material 4-16 Action Keys A-7 Electrode Type 4-16 Alphanumeric Keys A-8 Environmental Considerations 2-6... Page 126 Rosemount Model 8732C Integral Mount Magnetic Flowmeter System Liner Material 4-16 Rate Unit 4-5 Vertical Installation 2-9 LOI Keys Relief Valves 2-26 Function Definition 3-6 Return of Materials 5-7 Lower Range Value A-3 Reverse Flow Enable 4-8 Wire Lengths 2-5... 00809-0100-4665, Rev AAAugust 2010Rosemount 8732Integral Mount or Remote Mount Magnetic Flowmeter System with Profibus-PA About Manualsnet Legal Privacy policy Terms of use Indexes Brands Index Categories Index Minnesotan manufacturer of measurement tools RosemountCompany typeDivisionIndustryOil & Gas, Life Sciences, Chemical, Pharmaceutical, Marine, Power, Water & Wastewater, Packaging, Metals & Mining, Refining, PetrochemFounded1956HeadquartersShakopee, MNProductsMeasurement Instrumentation: Pressure, temperature, marine, level, and DP flow. Analytical instrumentation for gas analysis, liquid analysis, flame and gas detection, and analytical systemsRevenue2.7$ billion dollarsNumber of employees8500ParentEmerson Electric Co.WebsiteEmerson.com/Rosemount Rosemount Inc. is a subsidiary of Emerson Electric Company. Its headquarters is located in Shakopee, Minnesota, where they manufacture measurement instrumentation such as pressure, temperature, level, DP flow, and wireless, as well as analytical and detection instrumentation for gas analysis, liquid analysis, combustion measurement and flame and gas detection. Rosemount Engineering was founded by Frank Werner, Robert Keppel, and Vernon Heath in the Minneapolis–Saint Paul area in 1956[1] with a focus on the aerospace industry, which was then growing rapidly under the expansion of the U.S. space program. In 1966, the company diversified to the commercial processing industry and became known as Rosemount Inc. Rosemount's founders, Frank Werner and Vernon Heath, took up skiing in the 1950s, and decided to introduce a better ski boot. This led to the Rosemount ski boot of 1965, one of the first all-synthetic designs. The ski factory was sold to Bass Sports in 1968, but the Rosemount brand was used until it was purchased by Raichle in 1972. Its success captured the attention of several high-tech companies. Rosemount was acquired by Emerson Electric Company in August 1976. In 2013, Emerson announced the purchase of a new global headquarters location in Shakopee, Minnesota for its Rosemount branded products headquarters. Its 500,000-square-foot (46,000 m2) building was originally built for ADC Telecommunications, but was abandoned in 2001 prior to completion and had never been occupied. The Rosemount brand is associated with Emerson, Emerson Automation Solutions, Rosemount, Rosemount Inc, and Rosemount Engineering. ^ Forster, Julie (February 4, 2012). "Emerson's Rosemount: Providing "eyes and ears" for the world's factories". Twin Cities Pioneer Press. Retrieved October 5, 2018. //www.emersonprocess.com/rosemount/about/history.html Retrieved from " Whether you need help with product selection, troubleshooting, or getting specific documentation, Emerson makes it easy to find the answers you're looking for. Easily book a meeting or start a chat directly with Emerson experts today. Page 1 Reference Manual 00809-0100-4663, Rev BA January 2010 Rosemount 8732 Integral Mount or Remote Mount Magnetic ™ Flowmeter System with F fieldbus OUNDATION www.rosemount.com... Page 3 The products described in this document are NOT designed for nuclear-qualified applications. Using non-nuclear qualified products in applications that require nuclear-qualified hardware or products may cause inaccurate readings. For information on Rosemount nuclear-qualified products, contact your local Rosemount Sales Representative. www.rosemount.com... Rosemount Sensors .... Page 6 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Basic Setup ....3-7 Tag . Page 7 Diagnostics Licensing the 8732 Diagnostics ......C-2 Tunable Empty Pipe Detection ......C-2 Tunable Empty Pipe Parameters . Page 8 8732 Transmitter ....E-13... Page 9 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 APPENDIX F Definition..........F-1 Parameters and Descriptions . Page 10 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 TOC-6... The transmitter can be integrally or remotely mounted from the sensor. This manual is designed to assist in the installation and operation of the Rosemount 8732 Magnetic Flowmeter Transmitter and the Rosemount 8700 Series Magnetic Flowmeter Sensors. www.rosemount.com... Attempting to install and operate the Rosemount 8705, 8707 High-Signal, 8711 or 8721 Magnetic Sensors with the Rosemount 8712 or 8732 Magnetic Flowmeter Transmitter without reviewing the instructions contained in this manual could result in personal injury or equipment damage. Do not connect a Rosemount 8732 to a non-Rosemount sensor that is located in an explosive atmosphere. Explosions could result in death or serious injury: Installation of this transmitter in an explosive environment must be in accordance with the appropriate local, national, and international standards, codes, and practices. LOI screen (see Figure 2-1). The transmitter should be mounted in a manner that prevents moisture in conduit from collecting in the transmitter. If the 8732 is mounted remotely from the sensor, it is not subject to limitations that might apply to the sensor. Remote-mounted transmitters may be installed in the control room to protect the electronics from a harsh environment and provides easy access for configuration or service. Rosemount 8732 transmitters require external power so there must be access to a suitable power source. INSTALLATION Rosemount 8732 installation includes both detailed mechanical and electrical installation procedures. Transmitter Security The security switch on the 8732 allows the user to lock out any configuration changes attempted on the transmitter. No changes to the configuration are allowed when the switch is in the ON position. The flow rate indication function remains active at all times. Remove display if applicable. Identify the location of each switch (see Figure 2-2). Change the setting of the desired switches with a small screwdriver. Replace the electronics cover. Figure 2-2. Rosemount 8732 Electronics Board and Hardware Switches Conduit Ports and... Transmitter Input Power The 8732 transmitter is designed to be powered by 90-250 V AC, 50–60 Hz or 12–42 V DC. The eighth digit in the transmitter model number designates the appropriate power supply requirement. I = Supply current requirement (Amps) V = Power supply voltage (Volts) Installation Category The installation category for the Rosemount 8732 is (overvoltage) Category II. Overcurrent Protection The Rosemount 8732 Flowmeter Transmitter requires overcurrent protection of the supply lines. Maximum ratings of overcurrent devices are as follows:... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure 2-5. AC Transmitter Power Connections AC Line or DC + AC Neutral or DC – Transmitter Power Cable AC or DC Ground Connect F The F fieldbus signal provides the output information from the... OUNDATION Connect -FF to Terminal 1. Connect +FF to Terminal 2. NOTE Foundation fieldbus signal wiring for the 8732 is not polarity sensitive. Refer to Figure 2-6 on page 2-9. Figure 2-6. F fieldbus OUNDATION... Page 22 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure 2-7. Rosemount 8732 Transmitter Field Wiring 6234 ft (1900 m) max (depending upon cable characteristics) Integrated Power Conditioner Terminators and Filter Fieldbus Segment Power Supply (Trunk) (The power supply, filter, first terminator,... This section covers the steps required to physically install the transmitter including wiring and calibration. Rosemount Sensors To connect the transmitter to a non-Rosemount sensor, refer to the appropriate wiring diagram in “Universal Sensor Wiring Diagrams” on page E-1. The calibration procedure listed is not required for use with Rosemount sensors. 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Rosemount recommends using the combination signal and coil drive for N5, E5 approved sensors for optimum performance. Remote transmitter installations require equal lengths of signal and coil drive cables. Integrally mounted transmitters are factory wired and do not require interconnecting cables. Connect coil drive and electrode cables as shown in Figure 2-10. Transmitter Connections Do not connect AC power to the sensor or to terminals 1 and 2 of the transmitter, or replacement of the electronics board will be necessary. Figure 2-10. Wiring Diagram Rosemount 8705/8707/8711/8721 Rosemount 8732 Transmitter Sensors 2-13... Page 26 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 2-14... 3-6 LOCAL OPERATOR The optional Local Operator Interface (LOI) provides an operator communications center for the 8732. By using the LOI, the operator can INTERFACE access any transmitter function for changing configuration parameter settings, checking totalized values, or other functions. The LOI is integral to the transmitter electronics. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure 3-1. Local Operator Interface Keypad Data Entry The LOI keypad does not have numerical keys. Numerical data is entered by the following procedure. Access the appropriate function. Use the RIGHT ARROW key to move to the value to change. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table Value Example Setting the TUBE SIZE: Press the DOWN arrow to access the menu. Select line size from the Basic set-up menu. Press the UP or DOWN arrow to increase/decrease (incrementally) the tube size to the next value. Page 30 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table 3-2. LOI Menu Tree Diagnostics Diag Controls Empty Pipe B asic Diag Process Noise Self Test Advanced Diag Ground/Wiring Ground/Wiring R un 8714i AO L oop Test V ariables Elec Temp... • 4-20 mA Loop Verification Failed • 8714i Failed Review The 8732 includes a capability that enables you to review the configuration variable settings. Fast Keys 1, 5 The flowmeter configuration parameters set at the factory should be reviewed to ensure accuracy and compatibility with your particular application of the flowmeter. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Analog Output – The analog output variable provides the analog value for the flow rate. The analog output refers to the industry standard output in the 4–20 mA range. The analog output and 4-20 mA loop can be verified using the Analog Feedback diagnostic capability internal to the transmitter (See “8714i... The Pulse Output displays the current value of the pulse signal. Fast Keys 1, 1, 5 BASIC SETUP The basic configuration functions of the Rosemount 8732 must be set for all applications of the transmitter in a magnetic flowmeter system. If your Fast Keys 1, 3 application requires the advanced functionality features of the Rosemount 8732, see Section 4 "Operation"... Page 34 (see “Flow Units” on page 3-7). If your application has special needs and the standard configurations do not apply, the Rosemount 8732 provides the flexibility to configure the transmitter in a custom-designed units format using the special units variable. The actual special units setting you define will not appear. Four characters are available to store the new units designation. The 8732 LOI will display the four character designation as configured. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 PV URV The upper range value (URV), or analog output range, is preset to 30 ft/s at the factory. The units that appear will be the same as those selected under the (Upper Range Value) units parameter. Be sure the calibration number reflects a calibration to a Rosemount reference transmitter. If the calibration number was generated by a means other than a certified Rosemount flow lab, accuracy of the system may be compromised. If your flowtube sensor is not a Rosemount flowtube sensor and was not calibrated at the Rosemount factory, contact your Rosemount representative for assistance. Page 38 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 3-12... This section contains information for advanced configuration parameters and diagnostics. The software configuration settings for the Rosemount 8732 can be accessed through a 375 Field Communicator or through a control system. The software functions for the 375 Field Communicator are described in detail in this section of the manual. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Empty Pipe Detection Turn the empty pipe diagnostic on or off as required by the application. For more details on the empty pipe diagnostic, see Appendix C: Diagnostics. Electronics Temperature Out of Range Turn the electronics temperature diagnostic on or off as required by the application. Advanced Diagnostics The advanced diagnostics menu contains information on all of the additional diagnostics and tests that are available in the 8732 transmitter if one of the 375 Transducer Block, Diagnostics diagnostics suite packages was ordered. Rosemount offers two advanced diagnostic suites. Functionality under this menu will depend on which of these suites are ordered. Page 42 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 8714i Results 375 Transducer Block, Diagnostics, Advanced Diagnostics, 8714i Meter Verification Review the results of the most recently performed 8714i Meter Verification test. Information in this section details the measurements taken and if the meter passed the verification test. Page 43 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Sensor Calibration Result 375 Transducer Block, Diagnostics, Advanced Diagnostics, 8714i Meter Verification, 8714i Results Displays the result of the sensor calibration verification test as pass or fail. For more details on this parameter see Appendix C: Diagnostics. Page 44 Have the transmitter measure and store the sensor signature values. These values will then be used as the baseline for the meter verification test. Use this when connecting to older Rosemount or competitors’ sensors or installing the magnetic flowmeter system for the first time. For more details on this parameter see Appendix C: Diagnostics. Page 45 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Measurements 375 Transducer Block, Diagnostics, Advanced Diagnostics, 8714i Meter Verification View the measured values taken during the meter verification process. These values are compared to the signature values to determine if the test passes or fails. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Diagnostic Variables From this menu, all of the diagnostic variable values can be reviewed. This information can be used to get more information about the transmitter, sensor, 375 Transducer Block, Diagnostics and process, or to get more detail about an alert that may have activated. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 8714i Result 375 Transducer Block, Diagnostics, Diagnostic Variables, 8714i Results Displays the results of the 8714i Meter Verification test as pass or fail. For more details on this parameter see Appendix C: Diagnostics. Page 48 If this message occurs, no values were changed in the transmitter. Simply power down the Rosemount 8732E to clear the message. To simulate a nominal sensor with the Rosemount 8714, you must change the following five parameters in the Rosemount 8732E: Sensor Calibration Number—1000015010000000... 375 Transducer Block, Diagnostics, Trims The universal auto trim function enables the Rosemount 8732E to calibrate sensors that were not calibrated at the Rosemount factory. The function is activated as one step in a procedure known as in-process calibration. If your Rosemount sensor has a 16-digit calibration number, in-process calibration is not required. Rosemount 8732 January 2010 ADVANCED In addition to the basic configuration options and the diagnostic information and controls, the 8732 has many advanced functions that can also be CONFIGURATION configured as required by the application. DETAILED SETUP The detailed setup function provides access to other parameters within the... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Cal Min Span 375 Transducer Block, Detailed Setup, Additional Params The PV minimum span is the minimum flow range that must separate the minimum and maximum configured PV Range values. Reverse Flow 375 Transducer Block, Detailed Setup, Additional Params Enable or disable the transmitter’s ability to read reverse flow. Page 52 Control 375 Transducer Block, Detailed Setup, Signal Processing, Man Config DSP When ON is selected, the Rosemount 8732E output is derived using a running average of the individual flow inputs. Signal processing is a software algorithm that examines the quality of the electrode signal against user-specified tolerances. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 For example, if the number of samples selected is 100, then the response time of the system is 10 seconds. In some cases this may be unacceptable. By setting the time limit, you can force the 8732E to clear the value of the running average and re-establish the output and average at the new flow rate once the time limit has elapsed. Page 54 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Sensor Tag 375 Transducer Block, Detailed Setup, Device Info Sensor tag is the quickest and shortest way of identifying and distinguishing between sensors. Sensors can be tagged according to the requirements of your application. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Electrode Type 375 Transducer Block, Detailed Setup, Device Info, Construction Materials Electrode type enables you to select the electrode type for your magnetic transmitter system. This variable only needs to be changed if you have replaced electrodes or if you have replaced your sensor. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Block Mode: Target Operator requested mode for the function block. Only one selection may be made. Options include: Transducer Block, Mode Auto Use this mode when all configuration changes to the block are complete and the transmitter is ready to be returned to service. Verify that the operating environment of the sensor and transmitter is consistent with the appropriate hazardous area approval. Do not connect a Rosemount 8732 to a non-Rosemount sensor that is located in an explosive atmosphere. www.rosemount.com... Page 58 Installation of this transmitter in an explosive environment must be in accordance with the appropriate local, national, and international standards, codes, and practices. Please review the approvals section of the 8732 reference manual for any restrictions associated with a safe installation. Figure 5-1 shows sensors correctly supported for handling and installation. Notice the plywood end pieces are still in place to protect the sensor liner during transportation. Figure 5-1. Rosemount 8705 Sensor Support for Handling 6-Inch and Larger ½- through 4-Inch... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 SENSOR MOUNTING Physical mounting of a sensor is similar to installing a typical section of pipe. Conventional tools, equipment, and accessories (bolts, gaskets, and grounding hardware) are required. Upstream/Downstream To ensure specification accuracy over widely varying process conditions,... Page 61 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure 5-4. Incline or Decline Orientation FLOW FLOW Horizontal installation should be restricted to low piping sections that are normally full. Orient the electrode plane to within 45 degrees of horizontal in horizontal installations. Rosemount 8732 January 2010 The electrodes in the Rosemount 8711 are properly oriented when the top of the sensor is either vertical or horizontal, as shown in Figure 5-6. Avoid any mounting orientation that positions the top of the sensor at 45 degrees from the vertical or horizontal position. The following section should be used as a guide in the installation of the flange-type Rosemount 8705 and Rosemount 8707 High-Signal Sensors. (FLANGED SENSOR) Refer to page 5-10 for installation of the wafer-type Rosemount 8711 Sensor. Gaskets The sensor requires a gasket at each of its connections to adjacent devices or piping. Page 64 All sensors require a second torquing 24 hours after initial flange bolt tightening. Table 5-1. Flange Bolt Torque Specifications for Rosemount 8705 and 8707 High-Signal Sensors PTFE/ETFE liner Polyurethane liner Class 150... Page 65 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table 5-2. Flange Bolt Torque and Bolt Load Specifications for Rosemount 8705 PTFE/ETFE liner PN10 PN 16 PN 25 PN 40 Size Code Line Size (Newton-meter) (Newton) (Newton-meter) (Newton) (Newton-meter) (Newton) (Newton-meter) (Newton) Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table 5-3. Flange Bolt Torque and Bolt Load Specifications for Rosemount 8705 Polyurethane Liner PN 10 PN 16 PN 25 PN 40 Size Code Line Size (Newton-meter) (Newton) (Newton-meter) (Newton) (Newton-meter) (Newton) (Newton-meter) (Newton) Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table 5-4. Stud Specifications Nominal Sensor Size Stud Specifications 0.15 – 1 inch (4 – 25 mm) 316 SST ASTM A193, Grade B8M Class 1 threaded mounted studs – 8 inch (40 – 200 mm) CS, ASTM A193, Grade B7, threaded mounting studs Place the sensor between the flanges. The sensor requires a gasket at each of its connections to adjacent devices or piping. The gasket material selected must be compatible with the process fluid and operating conditions. Gaskets are supplied with all Rosemount 8721 Sanitary sensors except when the process connection is an IDF sanitary screw type. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 NOTE Consult factory for installations requiring cathodic protection or situations where there are high currents or high potential in the process. The sensor case should always be earth grounded in accordance with national and local electrical codes. Page 70 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure 5-14. Grounding with Grounding Rings or Lining Protectors Grounding Rings or Lining Protectors Figure 5-15. Grounding with Grounding Rings or Lining Protectors Grounding Rings or Lining Protectors 5-14... Page 71 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure 5-16. Grounding with Grounding Electrodes 5-15... 00809-0100-4663, Rev BA Rosemount 8732 January 2010 PROCESS LEAK The Rosemount 8705 and 8707 High-Signal Sensor housing is fabricated from carbon steel to perform two separate functions. First, it provides PROTECTION shielding for the sensor magnetics so that external disturbances cannot (OPTIONAL) interfere with the magnetic field and thus affect the flow measurement. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Relief Valves The first optional configuration, identified by the W1 in the model number option code, uses a completely welded coil housing. This configuration does not provide separate electrode compartments with external electrode access. Page 74 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure 5-19. Housing Configuration — Sealed Electrode Compartment (Option Code W3) Fused Glass Seal O-Ring Seal Sealed Electrode Compartment - 27 NPT Optional: Use drain port to plumb to a safe area... FM or CSA approval. Do not connect a Rosemount 8732 to a non-Rosemount sensor that is located in an explosive atmosphere. Mishandling products exposed to a hazardous substance may result in death or serious injury. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 INSTALLATION CHECK Use this guide to check new installations of Rosemount magnetic flowmeter systems that appear to malfunction. AND GUIDE Before You Begin Transmitter Apply power to your system before making the following transmitter checks. Problems in the magnetic flowmeter system are usually indicated by incorrect output readings from the system, error messages, or failed tests. Consider all MESSAGES sources in identifying a problem in your system. Table 6-1. Rosemount 8732 Basic Diagnostic Messages Message Potential Cause Corrective Action “Fieldbus Not... Page 78 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table 6-2. Rosemount 8732 Advanced Diagnostic Messages (Suite 1 - Option Code D01) Message Potential Cause Corrective Action Grounding/Wiring Fault Improper installation of wiring See “Sensor Connections” on page 2-11 Coil/Electrode shield not See “Sensor Connections”... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 TRANSMITTER TROUBLESHOOTING Table 6-4. Advanced Troubleshooting–Rosemount 8732 Symptom Potential Cause Corrective Action Does not appear to be within Transmitter, control system, or other Check all configuration variables for the transmitter, sensor,... Page 80 Sensor calibration number Units Line size Electrode coating Use bulletnose electrodes in the Rosemount 8705 Sensor. Downsize the sensor to increase the flow rate above 3 ft/s. Periodically clean the sensor Air in line Move the sensor to another location in the process line to... To interpret the results, the hazardous location certification for the sensor must be known. Applicable codes for the Rosemount 8705 are N0, N5, and KD. Applicable codes for the Rosemount 8707 are N0 and N5. Applicable codes for the Rosemount 8711 are N0, N5, E5, and KD. Page 82 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table 6-5. Sensor Test Sensor Required Measuring at Test Location Equipment Connections Expected Value Potential Cause Corrective Action A. Sensor Installed or Multimeter 1 and 2 = R 2... Sensor Tests be known. Applicable codes for the Rosemount 8705 are N0, N5, and KD. Applicable codes for the Rosemount 8707 are N0 and N5. Applicable codes for the Rosemount 8711 are N0, N5, E5, and KD. Page 84 Measure both electrodes. One electrode should result in an open reading, while the other electrode should be less than 275 Table 6-7. Uninstalled Rosemount 8711 Wafer Sensor Tests Hazardous Location Certification Measuring at Connections N5, E5, CD 18 and Electrode ... FUNCTIONAL Sensor Compatibility SPECIFICATIONS Compatible with Rosemount 8705, 8711, 8721, and 570TM sensors. Compatible with Rosemount 8707 sensor with D2 Dual calibration option. Compatible with AC and DC powered sensors of other manufacturers. Sensor Coil Resistance 350 maximum Flow Rate Range Capable of processing signals from fluids that are traveling between 0.04 and... Page 86 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure A-2. Apparent Power Power Supply Voltage (AC RMS) DC Supply Current Requirements Units powered by 12-42 V DC power supply may draw up to 1 amp of current steady state. Page 87 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Enclosure Rating NEMA 4X CSA Type 4X, IEC 60529, IP66 (transmitter), Pollution Degree 2 Output Signal Manchester-encoded digital signal that conforms to IEC 1158-2 and ISA 50.02... Damping Adjustable between 0 and 256 seconds.

Sensor Compensation Rosemount sensors are flow-calibrated and assigned a calibration factor at the factory. The calibration factor is entered into the transmitter, enabling interchangeability of sensors without calculations or a compromise in standard accuracy. January 2010 8732E transmitters and other manufacturer's sensors can be calibrated at known process conditions or at the Rosemount NIST-Traceable Flow Facility. Transmitters calibrated on site require a two-step procedure to match a known flow rate. This procedure can be found in "Universal Trim" on page 4-11. Page 90 0.04 and 3.0 ft/s (0.01 and 1 m/s), the system has an accuracy of ±0.015 ft/s (0.005 m/s). Rosemount 8732E with Other Manufacturers' Sensors: When calibrated in the Rosemount Flow Facility, system accuracies as good as 0.5% of rate can be attained. There is no accuracy specification for other manufacturers' sensors calibrated in the process line. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Stability ±0.1% of rate over six months Ambient Temperature Effect ±0.25% change over operating temperature range EMC Compliance EN61326-1 1997 + A1/A2/A3 (Industrial) electromagnetic compatibility (EMC) for process and laboratory apparatus. Page 92 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010... Emerson Process Management Flow Technologies Co., Ltd. — Nanjing, China European Directive Information The EC declaration of conformity for all applicable European directives for this product can be found on our website at www.rosemount.com. A hard copy may be obtained by contacting our local sales office. ATEX Directive Rosemount Inc. Compliance with all applicable European Union Directives. (Note: CE Marking is not available on Rosemount 8712H). IECEx Scheme For Rosemount 8732E transmitters: Rosemount complies with all of the stated standards below: IEC 60079-0 : 2004 IEC 60079-1 : 2007-04 IEC 60079-11 : 2006... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 HAZARDOUS The Rosemount 8700 Series magnetic flowmeters offer many different hazardous locations certifications. The table below provides an overview of LOCATIONS PRODUCT the available hazardous area approval options. Equivalent hazardous APPROVALS OFFERING locations certifications for sensor and transmitter must match in integrally mounted magnetic flowmeter systems. Page 96 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table B-3. ATEX Approvals Transmitter 8732E 8712D 8712H Offering Sensor 8705 8707 8711 8705 8707 8711 8707 ATEX Category Hazardous Area Approval Code Non-Hazardous Trans: LVD and EMC Sensor: LVD and EMC... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Equipment Category 1 - Dust Environment Dust Environment Only Trans: Dust Ignition Proof Other Certifications Product Certification Code European Pressure Equipment Directive (PED) NSF 61 Drinking Water (1) Available in remote mount configuration only. Requires equivalent ATEX approval on the sensor (2) For I.S. Page 98 Reference Rosemount Control Drawing 08732-1051 (8732E) Class I, Division 2, Groups A, B, C, D Temp Codes – T4 (8732 at 60°C: -50 °C Ta 60 °C) Dust-ignition proof Class II/III, Division 1, Groups E, F, G Temp Codes – T4 (8712 at 40°C), T5 (8732 at 60°C) Page 99 The electrical data is to be taken from Table B-7 on page B-12 If the Rosemount 8732 Flow Transmitter is used integrally with the Junction Box, it shall be assured that the mechanical contact areas of the Junction Box and Flow Transmitter comply with the requirements for flanged joints according to standard EN/IEC 60079-1 clause 5.2. Page 100 90 °C. A Junction Box in type of explosion protection increased safety "e" may be attached to the base of the Rosemount 8732E Flow Transmitter, permitting remote mounting of the Rosemount 8705 and 8711 Sensors. Page 101 The electrical data is to be taken from Table B-7 on page B-12 If the Rosemount 8732 Flow Transmitter is used integrally with the Junction Box, it shall be assured that the mechanical contact areas of the Junction Box and Flow Transmitter comply with the requirements for flanged joints according to standard EN/IEC 60079-1 clause 5.2. Page 102 CE Marking; 3-A Symbol Authorization #1222; EHEDG Type EL European Certifications ATEX Dust 8732 - Certificate No.: KEMA 06ATEX0006 II 1D max T = 40 °K(1) Amb. Temp. Limits: (-20 °C = Ta = +65 °C) Vmax = 40 V DC (pulsed) Page 103 = 40 V DC (pulsed) SPECIAL CONDITIONS FOR SAFE USE (X): If the Rosemount 8732 Flow Transmitter is used integrally with the Rosemount 8705 or Rosemount 8711 Sensors, it shall be assured that the mechanical contact areas of the Sensor and Flow Transmitter comply with the requirements for flat joints according to standard EN 50018, clause 5.2. Page 104 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table B-7. Electrical Data Rosemount 8732 Flow Transmitter Power supply: 250 V AC, 1 A or 42 Vdc, 2,5 A, 20 W maximum Foundation fieldbus 30 V DC, 30 mA, 1 W maximum... Page 105 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table B-8. Relation between Maximum Process Temperature ambient temperature, process Meter Size (Inches) Maximum Ambient Temperature Temperature Class temperature, and temperature 115°F (65°C) 239°F (115°C) class 149°F (65°C) 248°F (120°C) 95°F (35°C) 95°F (35°C) Page 106 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Maximum process temperature °F (°C) per temperature class Maximum Ambient Temperature 1.5 in. sensor size 149°F (65°C) 297°F (147°C) 160°F (71°C) 88°F (31°C) 55°F (13°C) 140°F (60°C) 307°F (153°C) 171°F (77°C) 97°F (36°C) Page 107 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-1. ATEX Installation (1 of 6) B-15... Page 108 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-2. ATEX Installation (2 of 6) B-16... Page 109 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-3. ATEX Installation (3 of 6) B-17... Page 110 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-4. ATEX Installation (4 of 6) B-18... Page 111 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-5. ATEX Installation (5 of 6) B-19... Page 112 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-6. ATEX Installation (6 of 6) B-20... Page 113 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-7. FM Certified I.S. Output (1 of 4) B-21... Page 114 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-8. FM Certified I.S. Output (2 of 4) B-22... Page 115 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-9. FM Certified I.S. Output (3 of 4) B-23... Page 116 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-10. FM Certified I.S. Output (4 of 4) B-24... Page 117 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-11. CSA Certified I.S. Output (1 of 2) B-25... Page 118 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-12. CSA Certified I.S. Output (2 of 2) B-26... Page 119 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-13. CSA Installation B-27... Page 120 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Figure B-14. Factory Mutual Hazardous Locations B-28... D02 Option 8714i Meter Verification Meter Verification • Options for Accessing Diagnostics Rosemount Magmeter Diagnostics can be accessed through the 375 Field Communicator, AMS Device Manager, or any other F fieldbus OUNDATION configuration tool. Access Diagnostics through AMS Intelligent Device Manager for the Ultimate Value The value of the Diagnostics increases significantly when AMS is used. ENABLING diagnostics can be licensed in the field through the use of a license key. To obtain a license key, contact your local Rosemount Representative. Each transmitter has a unique license key specific to the diagnostic option code. See the detailed procedures below for entering the license key and enabling the advanced diagnostics. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Empty Pipe Value Transducer Block, Diagnostics, Basic Diagnostics, Empty Pipe Limits, EP Value AMS Tab Diagnostics Reads the current Empty Pipe Value. This is a read-only value. This number is a unitless number and is calculated based on multiple installation and process variables such as sensor type, line size, process fluid properties, and wiring. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Troubleshooting Empty The following actions can be taken if Empty Pipe detection is unexpected. Pipe Verify the sensor is full. Verify that the sensor has not been installed with a measurement electrode at the top of the pipe. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Troubleshooting The transmitter detected high levels of 50/60 Hz noise caused by improper wiring or poor process grounding. Ground/Wiring Fault Verify that the transmitter is earth grounded. Connect ground rings, grounding electrode, lining protector, or grounding straps. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 High Process Noise The High Process Noise diagnostic has two read-only parameters. It does not have any configurable parameters. This diagnostic requires that flow be Parameters present in the pipe and the velocity be > 1 ft/s. Rosemount High-Signal 8707 sensor be used. These sensors can be calibrated to run at lower coil drive current supplied by the standard Rosemount transmitters, but can also be upgraded by changing to the 8712H High-Signal transmitter. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 The transmitter continuously monitors signal amplitudes over a wide range of frequencies. For the high process noise diagnostic, the transmitter specifically looks at the signal amplitude at frequencies of 2.5 Hz, 7.5 Hz, 32.5 Hz, and 42.5 Hz. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 8714i Meter Verification The 8714i has a multitude of parameters that set the test criteria, test conditions, and scope of the calibration verification test. Test Parameters Test Conditions for the 8714i Meter Verification There are three possible test conditions that the 8714i Meter Verification test can be initiated under. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Empty Pipe Set the test criteria for the Empty Pipe condition. The factory default for this value is set to three percent with limits configurable between one and ten percent. Transducer Block, Diagnostics, Advanced Diagnostics, 8714i Meter Verification,... Page 131 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Viewing the 8714i Meter Verification Results Depending on the method used to view the results, they will be displayed in either a menu structure, as a method, or in the report format. When using the 375 Field Communicator, each individual component can be viewed as a menu item. Page 132 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Actual Velocity Displays the velocity measured by the transmitter during the transmitter calibration verification process. Transducer Block, Diagnostics, Advanced Diagnostics, 8714i Meter Verification, 8714i Results, Actual Velocity AMS Tab Context Menu, Device Diagnostics, 8714i Report... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Optimizing the 8714i The 8714i Meter Verification diagnostic can be optimized by setting the test criteria to the desired levels necessary to meet the compliance requirements Meter Verification of the application. The following examples below will provide some guidance on how to set these levels. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Troubleshooting the In the event that the 8714i Meter Verification test fails, the following steps can be used to determine the appropriate course of action. Begin by reviewing the 8714i Meter Verification 8714i results to determine the specific test that failed. Page 135 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Electrode Circuit Resistance The Electrode Circuit Resistance is a measurement of the electrode circuit health. This value is used as a baseline to determine if the electrode circuit is still operating correctly when the 8714i Meter Verification diagnostic is initiated. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 ROSEMOUNT MAGNETIC FLOWMETER CALIBRATION VERIFICATION REPORT Calibration Verification Report Parameters Calibration Conditions: ☐ Internal ☐ External User Name: _____ Test Conditions: ☐ Flowing ☐ No Flow, Full Pipe ☐ Empty Pipe... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Appendix D Digital Signal Processing Safety Messages .... page D-1 Procedures . 00809-0100-4663, Rev BA Rosemount 8732 January 2010 PROCEDURES If the output of your Rosemount 8732 is unstable, first check the wiring and grounding associated with the magnetic flowmeter system. Ensure that the following conditions are met: • Ground straps are attached to the adjacent flange or ground ring? •... Page 139 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 This software technique, known as signal processing, "qualifies" individual flow signals based on historic flow information and three user-definable parameters, plus an on/off control. These parameters are: Number of samples: The number of samples function sets the amount of time that inputs are collected and used to calculate the average value. Page 140 When Should Signal Processing Be Used? The Rosemount 8732 offers three separate functions that can be used in series for improving a noisy output. The first step is to toggle the coil drive to the 37 Hz mode and initialize with an auto zero. Page 141 Diagrams Rosemount Sensors .....page E-3 Brooks Sensors .... page E-6 Endress And Hauser Sensors . Page 142 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table E-1. Sensor Cross References Rosemount Transmitter Sensor Manufacturer Page Number Rosemount Rosemount 8732 Rosemount 8705, 8707, 8711 page E-3 Rosemount 8732 Rosemount 8701 page E-4 Brooks Rosemount 8732 Model 5000 page E-6 Rosemount 8732... Rosemount Connect coil drive and electrode cables as shown in Figure . 8705/8707/8711/8721 Sensors to Rosemount 8732 Transmitter Figure E-1. Wiring Diagram to a Rosemount 8732 Transmitter Table E-2. Rosemount 8705/8707/8711/8721 Sensor Rosemount 8732 Transmitters Rosemount 8705/8707/8711/8721 Sensors Wiring Connections This is a pulsed DC magnetic flowmeter. 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Rosemount 8701 Sensor Connect coil drive and electrode cables as shown in Figure E-2 on page E-4. to Rosemount 8732 Transmitter Figure E-2. Wiring Diagram for Rosemount 8701 Sensor and Rosemount 8732 Transmitter... Verify that the sensor coil is configured for series connection. Other manufacturers sensors may be wired in either a series or parallel circuit. All Rosemount magnetic sensors are wired in a series circuit. (Other manufacturers AC sensors (AC coils) wired for 220V operation are typically wired in parallel and must be rewired in series.) Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 BROOKS SENSORS Connect coil drive and electrode cables as shown in Figure E-3. Model 5000 Sensor to Rosemount 8732 Transmitter Figure E-3. Wiring Diagram for Brooks Sensor Model 5000 and BROOKS MODEL... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Model 7400 Sensor to Connect coil drive and electrode cables as shown in Figure E-4. Rosemount 8732 Transmitter Figure E-4. Wiring Diagram for Brooks Sensor Model 7400 and BROOKS MODEL 7400... SENSORS Endress and Hauser Sensor to Rosemount 8732 Transmitter Figure E-5. Wiring Diagram for Endress and Hauser Sensors ROSEMOUNT 8732 and Rosemount 8732 TRANSMITTER ENDRESS AND HAUSER SENSORS Coils Electrodes Table E-6. Endress and Hauser Sensor Wiring Connections Rosemount 8732 Endress and Hauser Sensors This is a pulsed DC magnetic flowmeter. Rosemount 8732 January 2010 FISCHER AND PORTER Connect coil drive and electrode cables as shown in Figure E-6. SENSORS Model 10D1418 Sensor to Rosemount 8732 Transmitter Figure E-6. Wiring Diagram for Fischer and Porter Sensor Model 10D1418 and Rosemount 8732... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Model 10D1419 Sensor Connect coil drive and electrode cables as shown in Figure E-7. to Rosemount 8732 Transmitter Figure E-7. Wiring Diagram for Fischer and Porter Sensor Model 10D1419 and Rosemount 8732... Rosemount 8732 Transmitter Figure E-8. Wiring Diagram for Fischer and Porter Sensor Model 10D1430 (Remote) and Rosemount 8732 ROSEMOUNT 8732 TRANSMITTER Electrode Connections Coil Connections Table E-9. Fischer and Porter Model 10D1430 (Remote) Fischer and Porter Model 10D1430 (Remote) Sensor Wiring Connections... (Integral) to Rosemount 8732 Transmitter Figure E-9. Wiring Diagram for Fischer and Porter Sensor Model 10D1430 (Integral) and Rosemount 8732 ROSEMOUNT 8732 TRANSMITTER Electrode Connections To L2 Coil Connections To Calibration Device (Disconnect) Table E-10. Fischer and Porter Model 10D1430 (Integral) Rosemount 8732 January 2010 Model 10D1465 and Connect coil drive and electrode cables as shown in Figure E-10. Model 10D1475 Sensors (Integral) to 8732 Transmitter Figure E-10. Wiring Diagram for Fischer and Porter Sensor Model 10D1465 and Model 10D1475 (Integral) and... Fischer and Porter Connect coil drive and electrode cables as shown in Figure E-11. Sensor to Rosemount 8732 Transmitter Figure E-11. Generic Wiring Diagram for Fischer and Porter Sensors and Rosemount 8732 ROSEMOUNT 8732 FISCHER AND PORTER TRANSMITTER SENSORS Electrodes Coils... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 FOXBORO SENSORS Connect coil drive and electrode cables as shown in Figure E-12. Series 1800 Sensor to Rosemount 8732 Transmitter Figure E-12. Wiring Diagram for Foxboro Series 1800 and Rosemount 8732... Series 1800 (Version 2) Connect coil drive and electrode cables as shown in Figure E-13. Sensor to Rosemount 8732 Transmitter Figure E-13. Wiring Diagram for Foxboro Series 1800 (Version 2) and Rosemount 8732 FOXBORO SERIES ROSEMOUNT 1800 SENSOR 8732 (VERSION 2) TRANSMITTER... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Series 2800 Sensor to Connect coil drive and electrode cables as shown in Figure E-14. 8732 Transmitter Figure E-14. Wiring Diagram for Foxboro Series 2800 and FOXBORO SERIES ROSEMOUNT 8732 Rosemount 8732... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Foxboro Sensor to 8732 Connect coil drive and electrode cables as shown in Figure E-15. Transmitter Figure E-15. Generic Wiring Diagram for Foxboro Sensors ROSEMOUNT 8732 FOXBORO and Rosemount 8732 TRANSMITTER... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 KENT VERIFLUX VTC Connect coil drive and electrode cables as shown in Figure E-16. SENSOR Veriflux VTC Sensor to 8732 Transmitter Figure E-16. Wiring Diagram for Kent Veriflux VTC Sensor and... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 KENT SENSORS Connect coil drive and electrode cables as shown in Figure E-17. Kent Sensor to Rosemount 8732 Transmitter Figure E-17. Generic Wiring Diagram for Kent Sensors and KENT SENSORS ROSEMOUNT 8732... Connect coil drive and electrode cables as shown in Figure E-18. Krohne Sensor to Rosemount 8732 Transmitter Figure E-18. Generic Wiring ROSEMOUNT 8732 Diagram for Krohne Sensors KROHNE TRANSMITTER and Rosemount 8732 SENSORS Electrodes Electrode Shield Coil Shield Coils Fuse Table E-19. Krohne Sensor Wiring Connections... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 TAYLOR SENSORS Connect coil drive and electrode cables as shown in Figure E-19. Series 1100 Sensor to Rosemount 8732 Transmitter Figure E-19. Wiring Diagram for Taylor Series 1100 Sensors and Rosemount 8732... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Taylor Sensor to Connect coil drive and electrode cables as shown in Figure E-20. Rosemount 8732 Transmitter Figure E-20. Generic Wiring Diagram for Taylor Sensors and TAYLOR ROSEMOUNT 8732 Rosemount 8732... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 YAMATAKE Connect coil drive and electrode cables as shown in Figure E-21. HONEYWELL SENSORS Yamatake Honeywell Sensor to Rosemount 8732 Transmitter Figure E-21. Generic Wiring Diagram for Yamatake ROSEMOUNT 8732 YAMATAKE... Connect coil drive and electrode cables as shown in Figure E-22. Yokogawa Sensor to Rosemount 8732 Transmitter Figure E-22. Generic Wiring Diagram for Yokogawa Sensors ROSEMOUNT 8732 YOKOGAWA and Rosemount 8732 TRANSMITTER SENSORS Electrodes Chassis Ground Ex 2 Coils Ex 1 Fuse Table E-23. Connect the electrode terminals to Rosemount 8732 terminals 18 and 19. The electrode shield should be connected to terminal 17. Connect the coil terminals to Rosemount 8732 terminals 1, 2, and If the Rosemount 8732 Transmitter indicates a reverse flow condition, switch the coil wires connected to terminals 1 and 2. Page 167 This parameter shows the current alert status, unacknowledged states, unreported states, and disabled states of the alarms associated with the function block. In the Rosemount 8732 Magnetic Flowmeter Transmitter, the two resource block alarms are write alarm and block alarm. Page 168 FEATURES This parameter is used to show supported resource block options. FEATURE_SEL Used to show selected resource block options. The Rosemount 8732 Magnetic Flowmeter Transmitter supports the following options: Unicode: Tells the host to use unicode for string values Reports: Enables alarms; must be set for alarming to work Software Lock: Software write locking enabled but not active;... Page 169 (not used by the device). HARD_TYPES HARD_TYPES shows the types of hardware available as channel numbers. For the Rosemount 8732, this parameter is limited to scalar (i.e., analog) inputs. HARDWARE_REV This parameter represents the hardware revision of the hardware that has the resource block in it. Page 170 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Index Number Parameter Rev 5 Description RESTART Allows a manual restart to be initiated. Several degrees of restart are possible: 1 Run: Nominal state when not restarting 2 Restart resource: Not used 3 Restart with defaults: Set parameters to default values (see START_WITH_DEFAULTS below for which parameters are set). Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 RESOURCE BLOCK Table F-2 lists conditions reported in the BLOCK_ERR parameter. Conditions in italics are inactive for the resource block and are given here only for ERRORS your reference. Table F-2. Resource... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Alarm Detection A block alarm will be generated whenever the BLOCK_ERR has an error bit set. The types of block error for the resource block are defined in Table F-2. A write alarm is generated whenever the WRITE_LOCK parameter is cleared. The transducer block contains the actual flow measurement data. This data includes information about sensor type, engineering units, digital filter settings, damping, and diagnostics. Only a single channel is defined in the Rosemount 8732. Channel 1 provides flow measurements to the analog input (AI) block. www.rosemount.com... Page 174 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 PARAMETERS AND Table G-1 lists all of the configurable parameters of the transducer block, indicating the descriptions and index numbers for each parameters. DESCRIPTIONS Table G-1. Transducer Block Parameters Parameter Index Number... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 FLOW-SPECIFIC BLOCK Once the transmitter is installed and communication is established, configuration must be completed. Three parameters must be entered for CONFIGURATION proper configuration: VALUES • Sensor calibration number • Engineering units (configured via AI block) •... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 TRANSDUCER BLOCK The following conditions are reported in the BLOCK_ERR and XD_ERROR parameters. Conditions in italics are inactive for the transducer block and are ERRORS given here only for your reference. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 TRANSDUCER BLOCK In addition to the BLOCK_ERR and XD_ERROR parameters, more detailed information on the measurement status can be obtained via DIAGNOSTICS DETAILED_STATUS. Table G-5 lists the potential errors and the possible corrective actions for the given values. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 In Auto mode, OUT reflects the value and status quality of the output channels. TROUBLESHOOTING Refer to Table G-6 to troubleshoot transducer block problems. Table G-6. Troubleshooting Symptom Possible Causes Corrective Action... Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Appendix H 375 Field Communicator Operation HandHeld Communicator .....page H-1 Connections and Hardware . Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 CONNECTIONS AND The 375 Field Communicator exchanges information with the transmitter from the control room, the instrument site, or any wiring termination point in the HARDWARE loop. Be sure to install the instruments in the loop in accordance with intrinsically safe or non-incendive field wiring practices. OUNDATION If a F fieldbus compatible device is found, the communicator OUNDATION displays the Online Menu with device ID (8732) and tag (TRANSMITTER). Page Bksp Delete Page Directional Keys Use these keys to move the cursor up, down, left, or right. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Function Key Use the four software-defined function keys, located below the LCD, to perform software functions. On any given menu, the label appearing above a function key indicates the function of that key for the current menu. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Main Menu The Main Menu provides the following options: • Offline - The Offline option provides access to offline configuration data and simulation functions. • Online - The Online option checks for a device and if it finds one, brings up the Online Menu. Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Diagnostic Messages The following is a list of messages used by the Handheld Communicator (HC) and their corresponding descriptions. Variable parameters within the text of a message are indicated with . Page 185 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Table H-1. Handheld Communicator Diagnostic Messages Message Description OFF KEY DISABLED Appears when the user attempts to turn the HC off before sending modified data or before completing a method On-line device disconnected with unsent data – RETRY or OK to There is unsent data for a previously connected device. Page 186 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010... Page 187 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 Index ... . . 5-7 Action Keys Flange Bolts Handheld Communicator . H-3 ..H-3... Page 188 Reference Manual 00809-0100-4663, Rev BA Rosemount 8732 January 2010 . . 3-10 Lower Range Value (LRV) Specifications and Reference Data Wiring Diagrams ..E-6 Functional Specifications Brooks Model 5000 Overrange Capability Endress and Hauser Models ....2-4... Page 190 The Emerson logo is a trade mark and service mark of Emerson Electric Co. Rosemount and the Rosemount logotype are registered trademarks of Rosemount Inc. 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