Eletta Flow Monitors

This short manual does not cover all aspects of the Eletta product range.
For complete information, see our technical documentation, www.eletta.com
or call Eletta at +46-8-603 07 80 or your local distributor.

Please note, important safety instructions!!!
Before any installation or maintenance work, disconnect all electrical power and make sure that the piping is not under pressure of liquid or gas! For Ex-installations, please follow local regulations and the full manual for information. All installation or maintenance work shall be performed by qualified and authorized personell.

 # 1. Procedures before installation

Check that the identification tag is showing the right specifications for your application. Make sure that you are going to mount the Monitor at the lowest point in the piping system if you are measuring liquids and at the highest point if you are measuring gases. Also check if the planned flow direction in the system matches the one indicated by an arrow on the Monitor Pipe Section. Make sure that the Monitor dial, if applicable, is clearly visible and easily accessed for after service. If you are using the separate/remote execution i.e. Pipe Section and Control Unit installed in different locations, please check the supplied plastic hoses for any damages or holes. The hoses should not be used in temperatures over 90ºC/16 bar (194ºF/232 PSI). If your application temperature exceeds this temperature/pressure, we recommend using copper or stainless steel tubing, depending on the measured gas or liquid.

 # 2. Installation of the Flow Monitor

It's very important that the Pipe Section is mounted with the correct direction. The piping shall be rigid and free from vibrations and rubber/plastic hoses connected directly into the Monitors should be avoided as much as possible. If needed, support the Monitor with rigid brackets. The straight runs before and after the Monitor should not be to short or disturbed by bends, valves etc. We recommend giving at least 10 -15 straight diameters upstream and 5 diameters downstream. The flanged models, FA- and FSS-versions must be aligned with the counter flange and not placed in stress by tightening the bolts uneven. Also check that the gasket is not disturbing the flow. The threaded Pipe Sections shall have the same inner diameter/thread as the connecting pipe.

 # 3. Adjustment of switch point, V, S and A-series (R-series has no alarms)

If the customer has not specified a switch point for the flow alarm, the V- and S-series Monitor's micro switch is factory preset to a default value of; V-series = 50% of the end value and S-series the two alarms are set to min and max flow of the scale. The A-series relays switches at default values L1=3rd segment on the bar-graph and L2=17th segment. Please note!! We have calibrated each and every Flow Monitor in our flow rig and set the switch according to the Flow values we achieve in the rig under good conditions. There is a possibility to adjust the switch/alarm point in the field by adjust the micro switch position mechanically. To readjust, remove the top (S-/A-series)/ front cover (Vseries) and the adjusting dial / potentiometers is then visible. The adjusting dial are marked the same as the scale in the front and this marking can be used to approximately find the right switch/alarm point for the actual application. Put a screwdriver (V) / tool inside the top cover (S), in the slot of the adjusting dial and gently turn the dial to the desired position. For A-series; turn the potentiometers under the cover anti-clockwise for increase the set point value. For the D-series see separate instruction.

 # 4. Installation and/or changing of the control unit

If you have a Pipe Section designated; -FA, you will find shut off valves under the brass elbow, which connects the Control Unit to the Pipe Section. Turn them counter-wise and this shuts off the pressure up to the Control Unit and you can easily remove this and replace with the new Control Unit. For Pipe Section designated –FSS it is possible to order with shut-off valves (not standard as for –FA sections) and if installed in your application, please follow the above procedure. Otherwise see section # 5. All other Pipe Sections, -GL, -GSS and –FSS without shut-off valves demand an unpressurized pipe system to change Control Unit. Remove the screws that hold the Control Unit to the Pipe Section and replace with a new or serviced Control Unit. Do not forget to open the shut-off valves afterwards, if used.

 # 5. Change of flow direction

For GL-models, first empty the pipe system so it is un-pressurized and has no flow! For FA-models, use the shut-off valves, see above # 4. If, for some reason, the Flow Monitor comes with the wrong Flow direction, it is possible to change flow direction on site. The flow direction selector (only available in the -GL and -FA models.) which is placed between the diaphragm housing and the Pipe Section, determines the flow direction. The flow direction selector can be used for both directions. To change the direction, loosen the four screws, which hold the diaphragm housing to the Pipe Section. Reposition the flow direction selector for the desired flow direction, left or right. Please also remember to turn the red arrow mounted on the Pipe Section. Remount the Control Unit back to its original position. For -FSS and -GSS models, the flow direction selector is an integrated part of the Pipe Section so it is necessary to replace the whole Pipe Section to change flow direction.

 # 6. Gas/liquid leakage

If you find process liquid/gas coming out of the diaphragm housing, most probably you will find a broken diaphragm lever or a broken diaphragm. If the Monitor has been exposed to excessive pressure (over 16 bar/232PSI standard) or if the process liquid/gas is too aggressive to the rubber in the sealing, this can be the cause of the failure. The micro switch (or circuit board) inside the Control Unit normally gets damaged by this. Please check and if necessary see # 7. Do not replace the diaphragm/diaphragm lever only, as it is normally necessary to recalibrate the Monitor.

 # 7. Spares

Please contact your Eletta representative, www.eletta.com or Eletta Sweden: +46-8-6030780

8. Temperature

Control Unit V-and S-series: 0°C to 90°C (32°F-200°F) standard (120°C/250°F max as option) Higher process temperature possible with remote installation. Control Unit A-, D- and R-series: 0°C to 65°C (32°F to 150°F) Higher process temperature possible with remote installation. Pipe Section: The pipe sections (GL all sizes and FA >40 mm <100 mm) are equipped with spacers made of Polyamide (PA) plastic material which can handle liquid/ gas temperature up to120°C (248°F). For higher process temperature, we recommend to use the stainless steel pipe section, whitout spacers.

9. Material

Pipe Section: Type -GL; de-zincificated copper alloy. Type GSS; sea worthy stainless steel Type FA;<DN50 (ANSI 2 ") copper alloy >DN50 (ANSI 2") epoxy polyester painted cast iron. Type FSS; stainless steel. Diaphragm; HNBR; Textile reinforced Hydrated Nitrile rubber is standard for all models except stainless steel. EPDM; textile reinforced rubber, optional for all models. FPM; Textile reinforced Fluorinated rubber, standard in stainless steel models, optional for others. O-rings and sealings; Follow the diaphragm materials.

10. Electrical connections

For V-series: A SPDT potential free micro switch with silver plated (standard) surfaces. Max 460VAC/15A. Please see inside cover for wiring diagram label. For S-series: Dual SPDT potential free micro switches with silver plated (standard) surfaces. Max. 460 VAC/15A. Please see back of terminal box for wiring diagram label. For R-series: Power supply: 24 VDC. Output: Isolated analog current 4 – 20 mA/1000 ohm and frequency 200-1000 Hz, 0-10VDC or open collector max 24 VDC. Please see inside cover for wiring diagram label. For A-series: Power supply: 24 VDC. Output: Dual relays, max. 50 AC/DC min. 0,1 VDC, 10 mA. for flow alarm and an analog current output 4 – 20 mA/1000 ohm. Please remove terminal box for wiring diagram. For the D-series see separate instruction.

11. The Ex versions

The Ex versions of our flow monitors are designed to be used in explosive atmospheres. The monitors are approved according to the IECEx certification scheme as an intrinsically safe apparatus according to standards IEC 60079-0:2007, IEC 60079-11:2007 and IEC 60079-26:2006.
According to the ATEX directive (94/9/EC) our EX flow monitors are considered as "simple apparatuses" according to EN 60079-11:2006. The monitors contain mechanical parts that move slowly and with low power input, incapable of forming hot surfaces or other ignition sources even in cases of rare malfunction. The ATEX directive is not applicable for "simple apparatuses" or for slow moving mechanical parts with low power input. The monitors have been designed and examined as simple apparatus according to EN 60079-0:2009, EN 60079-11:2006, EN 60079-26: 2007 and EN 13463-1:2009.

Note! Installation and maintenance of Ex versions should be executed according to applicable national laws and regulations. Within EU, directive 1999/92 EC should be considered. EU members within CENELEC should consider the requirements within national standards, based on EN-60079-14 and EN60079-17.

Specific for Ex versions

Each flow monitor approved for use in explosive environment is marked with a yellow label that contains information of: The Explosion protection code, Certificate Id and the Intrinsically safe parameters that apply for connection of the flow monitor.

The spacers inside of the FA and GL pipe sections are made in stainless steel.

Service/Installation/Replacement

The control unit may be delivered without a mounted pipe section, in case a unit needs to be replaced. The type designation on the product label of the control unit then applies for the complete assembled Flow monitor (control unit and pipe section). An Ex version control unit should only be mounted with a pipe section in accordance to the information on the product label.

To avoid a potential difference between pipe system and the flow monitor there are two ring cable shoes supplied with our Ex products. The ring cable shoes may be attached onto the diaphragm housing screws and used as ground terminals to ensure terminal grounding between pipe section and the connecting pipe system.
Special conditions for safe use

1 The blue enclosure and surfaces of the control unit are made of aluminum. This light metal part shall not be subject to impacts or friction in order to avoid sparks.

2 The process connection to the Flow monitor must be performed to be sufficiently sealed between the inside and outside of the process connection.

3 To avoid electrostatic charging of the enclosure the internal earth connection must be connected to earth.

4 The ambient temperature range for the equipment deviates from the standard range.
The temperature class for the equipment depends on the ambient temperature. Note! Ambient temperature must not exceed the maximum temperature of the medium.

ELETTA
FLOW MONITORS

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