

## INSTALLATION AND MAINTENANCE INSTRUCTIONS POSITION TRANSMITTER

### GENERAL

- These instructions must be carefully read before any work involving products supplied by VALSTEAM ADCA ENGINEERING S.A. is undertaken.
- The installation procedure is a critical stage in a life of a valve and care should be taken to avoid damage to the valve or equipment.
- The electrical position transmitter is additional equipment either installed in the factory or up-dated. It converts the stroke or rotary movement of an actuator into an electrical standard signal 4 ... 20 mA.

### Note:

- Current regional safety regulations should be taken in to account and followed, while doing the installation and maintenance work.
- Handling, installation and maintenance work must be carried out by trained personnel. A supervisor must follow and check all activities.
- For the problems that cannot be solved with the help of these instructions, please contact the supplier or the manufacturer.
- The manufacturer reserves the right to change the design and material of this product without notice.



ATTENTION

- Manual handling of products may present a risk of injury. You are advised to assess the risks taking into account the task, the individual, the load and the working environment.
- Before starting the work ensure that you have suitable tools and/or consumables available.
- Do not remove the nameplate attached to the equipment. Serial number and other useful information is stamped on it.
- During the assembly work, apply protective measures against dirt.
- Correct installation of the equipment is full responsibility of the contractor
- We recommend special constructions or protective measures for applications on the outside or in adverse environments like corrosion-promoting conditions (sea water, chemical vapors, etc).

### TRANSPORT AND STORAGE



ATTENTION

- The valves and equipments should be protected from impacts and forces during transportation and storage.
- The manufacturer doesn't assume the responsibility of damaged equipments due to inappropriate handling during the transportation and storage.

## FUNCTION

- The stroke or rotary angle of an actuator is transmitted to the position controller with a built-in electrical position converter via control lever. The angle setting is converted proportionately into a voltage with a potentiometer. This voltage is converted into the electric standard signal 4 ... 20 mA. Adaptation to the stroke of the actuator takes place internally. The start and end of the measuring range are set via 2 push buttons.

## SAFETY REQUIREMENTS

### Accident prevention:

- This device complies with the regulations for the prevention of accidents Power-Driven Work Aids (VBG 5) of October 1st, 1985.

### Electrical safety:

- General requirements:
  - This device fulfils the requirements stipulated in IEC 1010-1, Class III equipment.
  - When the housing is open, repair and maintenance operations must always be carried out by service personnel if any power sources are connected to the device.
  - The device contains no built-in fuses. Protection against shock must be provided in the system for Class I equipment.
- Regulations for Connection:
  - The device is to be used according to its purpose and is to be connected in compliance with its connection plan (see section 3). The locally effective national directives for electrical installations are to be observed, e.g. in the Federal Republic of Germany DIN VDE 0100 resp. DIN VDE 0800.
  - The device may be connected to extra low voltage circuits, the insulation of which, against hazardous voltages (e.g. 220 V mains) at least meets the requirements for basic insulation.
  - Before connection of other leads and during operation the protective conductor must be connected to the appropriate terminal.
  - If the connected circuits fulfill the requirements stipulated in IEC 348 relating to the safety extra low voltage, the device may be operated without a protective conductor (Class III equipment).

### Explosion protection (only if ordered specifically):

- The setup regulations VDE 0165 or the ElexV or the corresponding national setup regulations must be observed when setting up.



ATTENTION

- Observe the corresponding national requirements for repairing explosion-protected devices.
- The following applies to the Federal Republic of Germany: Repairs on parts on which the explosion protection depends must either be done by the manufacturer or must be checked by an authorized expert and approved by his test mark or a certificate.

## EMC and CE

- For references pertaining to electro-magnetic compatibility EMC and regarding CE certification see product specifications PSS EVE0102 A-(en).

## ELECTRICAL CONNECTIONS

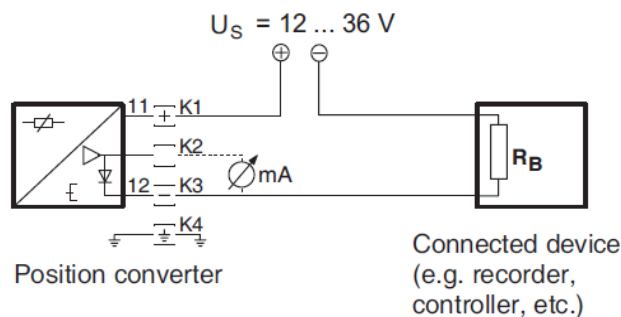
- During installation, the installation requirements by DIN VDE 0100 and/or DIN VDE 0800, as well as locally applicable requirements must be observed.
- In addition, the requirements of VDE 0165 must be observed for systems associated with hazardous areas.
- If an earth connection or potential equalization is required, the appropriate connections must be set up for an internal earth connection 36 or an external earth connection 37.
- The units must be operated in a stationary position.
- The line (cable) is guided through a screwed gland 7 Pg 13.5. This is suitable for line diameters of 6 to 12 mm.
- The electrical connections for the command variable  $w$  is made at the + and – screw terminals 38, which are suitable for wire cross-sections of up to 2.5 mm<sup>2</sup> (see the figure below).
- Check polarity!

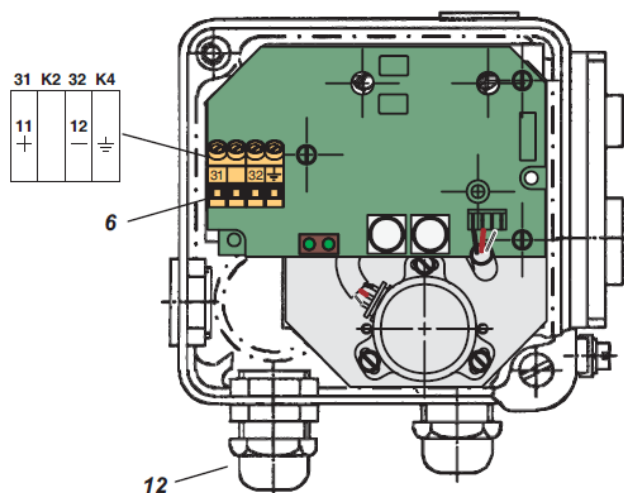


Fig. 21: Electrical connections

## CONNECTION LAYOUT

- The cable is inserted through the M20 x 1.5 cable gland 12 (suitable for lead diameters 6 ... 12 mm) and is connected at the terminal block 6. The terminals are suitable for wire cross-sections of up to 2.5 mm<sup>2</sup>.





- The terminals are connected as follows:
  - 31 - Auxiliary energy (+)
  - K2 - Uninterrupted signal current measurement with a low resistance amperimeter ( $R_i \leq 10 \text{ Ohm}$ )
  - 32 - Auxiliary energy (-)
  - K4 - Protective earth connection
- The power supply ( $U_s = 12 \dots 36 \text{ V DC}$ ) originates from the signal circuit in two wire connection.
- The maximum permissible load impedance  $R_{Bmax}$  is calculated with the following equation:

$$R_{Bmax} = (U_s - 12 \text{ V}) / 0.02 \text{ A [Ohm]}$$

$U_s =$  Supply voltage in V

### SETTING AND START UP OF POSITION TRANSMITTER 4-20 mA

- The electronic connection of the position transmitter must be assured. Both LEDs are then light up.
- Adjusting the start of the measuring range (4 mA):
  - a) Move the actuator to the starting position.
  - b) Press push button S1 "Config Output 4 mA" longer than 2 seconds. During this time LED 1 lights up. After 2 seconds both LEDs are light up again, the value for 4 mA is stored.
- Adjusting the end of the measuring range (20 mA):
  - a) Move the actuator to the end position.
  - b) Press push button S2 "Config Output 20 mA" longer than 2 seconds. During this time LED 2 lights up. After 2 seconds both LEDs are light up again, the value is stored.
- Random adjustment of the current values at the end points:
  - a) Move the actuator to the end position, where you want to adjust the current.
  - b) Press both buttons simultaneously for about 2 seconds. Then both LEDs are alternating flashing in a slow frequency.
  - c) With push button S1 "Config Output 4 mA" the output current value can be decreased and with push button S2 "Config Output 20 mA" the output current value can be increased. Pressing the buttons for a short moment results in a small change and pressing the button for a longer time results in a fast mode for a bigger change. The value of the current can be freely decreased between about 3.3 and increased up to 22.5 mA.
  - d) Without any additional manipulations of the push buttons the new value is automatically saved. After a few seconds, the device returns into the normal operating mode, indicated by both LEDs that are then light up again.

## MAINTENANCE

- No maintenance is required.

## TROUBLESHOOTING



ATTENTION

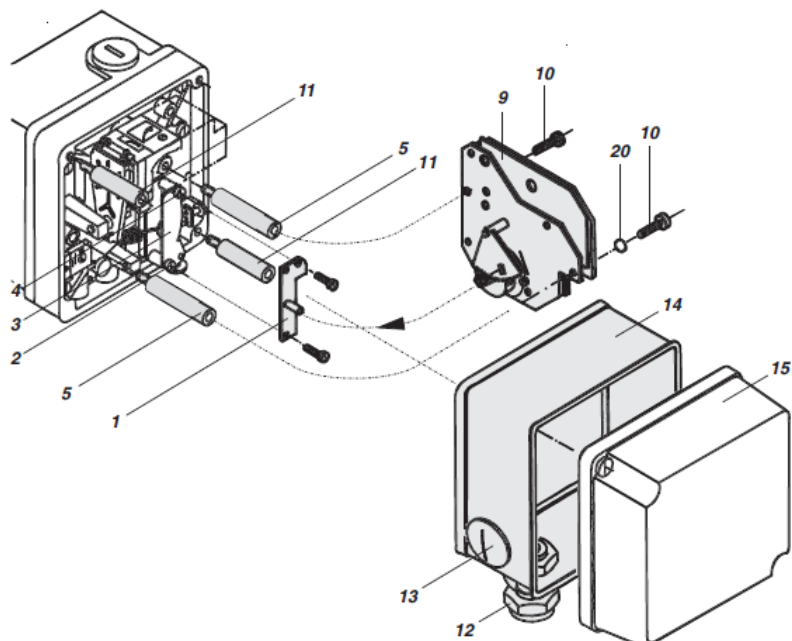
- If the malfunctions cannot be solved with the help of the following, please consult the manufacturer.

- The components of the position transmitter are under constant surveillance by the installed micro controller.
- Errors are detected and indicated when both LEDs are off or both LEDs are parallel flashing at a fast frequency.
- In the event of a fatal error, e.g. potentiometer not connected, an output current of more than 24 mA will be shown in addition to the error indication given by the LEDs (fast flashing).
- In this case check the following:
  - a) if the potentiometer is correctly connected to the electronic board.
  - b) if the potentiometer is within its working span.
- When both LEDs are off, the supply voltage should be checked (minimum tension, polarity).

## SUBSEQUENT INSTALLATION OR EXCHANGE

- For subsequent installation there are kits available. Safety measures indicated in the next title are to be absolutely observed!
- Kit components:

- 1 - Driver plate for transmitting the rotary motion
- 5 - Support Ø 7 mm for converter plate
- 9 - Converter plate with 2 fillister head screws 10 and one lock washer 20
- 11 - Support for cover
- 12 - Cable screw connection
- 13 - Screw plug
- 14 - Frame with rubber seal



## Installation:

- a) Unscrew lower screw 2 of stroke factor adjustment facility 3.
- b) Position driver plate 1, turning screw 2 again and tighten gently.
- c) Hold the stroke factor adjustment unit together manually and remove upper screw 4 . Swivel in driver plate and return screw. Tighten screws 2 and 4 .
- d) Screw in the 2 supports 5 Ø 7 mm as follows: Longer support left, shorter support right.
- e) Secure converter plate 9 with screws 10 and a lockwasher 20 (left screw) to the two supports so that the pin on the driver plate 1 engages into the slot on the tooth segment.
- f) Screw two supports 11 into the female thread for securing the cover. In installation position, these are the female threads in the top left corner and in the bottom right corner.
- g) Secure cable screw connection 12 and screw plug 13 to frame 14 using the nuts supplied. Position the frame so that the rubber seal faces towards the position controller and so that the cable screw connection 12 is next to the terminals.
- h) Screw on cover 15 so that the ventilation slot is at the bottom when the unit is attached.

## SAFETY REQUIREMENTS FOR OPTIONS

- Repair and maintenance operations with open housing may only be performed by qualified personnel if any voltage sources are connected to the device.
- The units must be used for their intended purpose and connected in accordance with the connection diagram. The locally valid national regulations relating to setting up electrical systems must be followed, e.g. in the Federal Republic of Germany DIN VDE 0100 and DIN VDE 0800.
- Device may be grounded upon requirement.
- The protective measures provided in the units can become ineffective if the unit is not used in accordance with the operation instructions.

## Regulations for Position transmitter:

- The attachment of the position transmitter to the positioner is to be regarded as a modification to an explosion-protected unit and is therefore permissible only in accordance with the national legal regulations. The technical design of the kit is the same as that of the certified version of positioners with a built-in option electrical position transmitter.
- The following applies to the Federal Republic of Germany: In accordance with § 9 ElexV, the attachment must be certified by an approved expert.

## PRODUCTS RETURNING



ATTENTION

- Information regarding any hazards and precautions to be considered because of contaminating fluids and residues or mechanical damage that may represent a health, safety or environmental risk, must be provided in writing by the distributors and costumers when returning products to Valsteam ADCA engineering.
- Health and safety data sheets regarding substances identified as hazardous or potentially hazardous must be provided with the information mention above.



ATTENTION

- **LOSS OF WARRANTY:** Total or partial disregard of above instructions involves loss of any right to warranty.