TEIP11, TEIP11-PS
I/P signal converter

Introduction
I/P signal converter for controlling pneumatic actuators or conventional positioners for valve positioning.

Additional Information
Additional documentation on TEIP11, TEIP11-PS is available for download free of charge at www.abb.com/positioners. Alternatively simply scan this code:
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1 Safety

General information and instructions

These instructions are an important part of the product and must be retained for future reference.
Installation, commissioning, and maintenance of the product may only be performed by trained specialist personnel who have been authorized by the plant operator accordingly. The specialist personnel must have read and understood the manual and must comply with its instructions.
For additional information or if specific problems occur that are not discussed in these instructions, contact the manufacturer.
The content of these instructions is neither part of nor an amendment to any previous or existing agreement, promise or legal relationship.
Modifications and repairs to the product may only be performed if expressly permitted by these instructions.
Information and symbols on the product must be observed.
These may not be removed and must be fully legible at all times.
The operating company must strictly observe the applicable national regulations relating to the installation, function testing, repair and maintenance of electrical products.

Warnings

The warnings in these instructions are structured as follows:

⚠️ DANGER
The signal word ‘DANGER’ indicates an imminent danger. Failure to observe this information will result in death or severe injury.

⚠️ WARNING
The signal word ‘WARNING’ indicates an imminent danger. Failure to observe this information may result in death or severe injury.

⚠️ CAUTION
The signal word ‘CAUTION’ indicates an imminent danger. Failure to observe this information may result in minor or moderate injury.

NOTICE
The signal word ‘NOTICE’ indicates possible material damage.

Note
‘Note’ indicates useful or important information about the product.
... 1 Safety

Intended use

I/P signal converters for standard signals TEIP11 and TEIP11-PS are used to control pneumatic actuators or pneumatic positioners for positioning valves.

The device has been designed for use exclusively within the technical limit values indicated on the name plate and in the data sheets.

Improper use

The following are considered to be instances of especially improper use of the device:

- Operation as a flexible compensating adapter in piping, for example for compensating pipe offsets, pipe vibrations, pipe expansions, etc.
- For use as a climbing aid, for example for mounting purposes.
- For use as a bracket for external loads, for example as a support for piping, etc.
- Material application, for example by painting over the housing, name plate or welding/soldering on parts.
- Material removal, for example by spot drilling the housing.

Warranty provisions

Using the device in a manner that does not fall within the scope of its intended use, disregarding this manual, using underqualified personnel, or making unauthorized alterations releases the manufacturer from liability for any resulting damage. This renders the manufacturer's warranty null and void.

Manufacturer’s address

ABB Automation Products GmbH
Measurement & Analytics
Schillerstr. 72
32425 Minden
Germany
Tel: +49 571 830-0
Fax: +49 571 830-1806

Customer service center
Tel: +49 180 5 222 580
Email: automation.service@de.abb.com
2 Use in potentially explosive atmospheres

⚠️ DANGER

Risk of explosion when used with combustible gases
The I / P-signal converter, type Doc. 901069 must be set up outdoors as a pneumatic power supply when used with combustible gases.

- The supplied gas must be kept sufficiently free of air and oxygen to prevent the forming of a hazardous atmosphere.
- Always route the gas to the outside.

Flameproof (enclosure), ATEX ‘Ex d’

<table>
<thead>
<tr>
<th>Marking</th>
<th>II 2G Ex d IIC T4/T5/T6 Gb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type Examination Test Certificate</td>
<td>DMT 02 ATEX E 121 X</td>
</tr>
<tr>
<td>Type</td>
<td>DOC. 900771</td>
</tr>
<tr>
<td>Device class</td>
<td>II 2G</td>
</tr>
<tr>
<td>Standards</td>
<td>EN 60079-0: 2012</td>
</tr>
<tr>
<td></td>
<td>(General requirements)</td>
</tr>
<tr>
<td></td>
<td>EN 60079-1: 2007</td>
</tr>
<tr>
<td></td>
<td>(Flameproof enclosure ‘d’)</td>
</tr>
</tbody>
</table>

System bus, computer interfaces

Current ≤ 50 mA

Pneumatic data TEIP11

<table>
<thead>
<tr>
<th>Supply pressure</th>
<th>1.4 to 10 bar (20 to 145 psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output signal</td>
<td>0.2 to 1 bar (3 to 15 psi)</td>
</tr>
</tbody>
</table>

Pneumatic data TEIP11-PS

<table>
<thead>
<tr>
<th>Supply pressure</th>
<th>1.4 bar (20 psi) / 2.5 bar (37 psi)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output signal</td>
<td>0.2 to 1 bar (3 to 15 psi) / 0.4 to 2 bar (6 to 30 psi)*</td>
</tr>
</tbody>
</table>

* Valid for Option 509 only – increased input signal.

Thermal data

<table>
<thead>
<tr>
<th>T4: –40 °C &lt; Tamb &lt; 85 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>T5: –40 °C &lt; Tamb &lt; 70 °C</td>
</tr>
<tr>
<td>T6: –40 °C &lt; Tamb &lt; 55 °C</td>
</tr>
</tbody>
</table>

Special conditions

The I/P signal converter is suited for use in an ambient temperature range of –40 °C to maximum 85 °C.
If the I/P signal converter is used at an ambient temperature above 60 °C or below –20 °C, use cable entries and cables suited to an operating temperature that corresponds to the maximum ambient temperature plus 10 K or that corresponds to the minimum ambient temperature.

Versions with an intrinsically safe control head may no longer be operated as intrinsically safe if they have been previously operated with the ‘flameproof (enclosure)’ type of protection with a non-intrinsically safe power supply.

Operation as intrinsically safe equipment

<table>
<thead>
<tr>
<th>Marking</th>
<th>II 2G Ex ia IIC T6 resp. T4 Gb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type Examination Test Certificate</td>
<td>TÜV 99 ATEX 1487 X</td>
</tr>
<tr>
<td>Type</td>
<td>TEIP11, Doc. 901068-SMDxxxx</td>
</tr>
<tr>
<td></td>
<td>TEIP11-PS, Doc. 901069-SMDxxxx</td>
</tr>
<tr>
<td>Device class</td>
<td>II 2G</td>
</tr>
<tr>
<td>Standards</td>
<td>EN 60079-0:2009</td>
</tr>
<tr>
<td></td>
<td>EN 60079-11:2012</td>
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</tbody>
</table>
... 2 Use in potentially explosive atmospheres

... Flameproof (enclosure), ATEX ‘Ex d’

Temperature classes for the following versions:
TEIP11 Doc. 901068-SMD and TEIP11-PS Doc. 901068-SMD and
TEIP11-PS Doc. 901069-SMD

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Input current</th>
<th>Ambient temperature range</th>
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<tbody>
<tr>
<td>T4</td>
<td>120 mA</td>
<td>–55 to 60 °C</td>
</tr>
<tr>
<td>T4</td>
<td>100 mA</td>
<td>–55 to 85 °C</td>
</tr>
<tr>
<td>T6</td>
<td>60 mA</td>
<td>–55 to 40 °C</td>
</tr>
</tbody>
</table>

TEIP11 Doc. 901068 and TEIP11-PS Doc. 901068 and TEIP11-PS Doc. 901069

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Input current</th>
<th>Ambient temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>50 mA</td>
<td>–55 to 60 °C</td>
</tr>
<tr>
<td>T6</td>
<td>60 mA</td>
<td>–55 to 55 °C</td>
</tr>
<tr>
<td>T5</td>
<td>60 mA</td>
<td>–55 to 70 °C</td>
</tr>
<tr>
<td>T4</td>
<td>60 mA</td>
<td>–55 to 85 °C</td>
</tr>
<tr>
<td>T5</td>
<td>100 mA</td>
<td>–55 to 55 °C</td>
</tr>
<tr>
<td>T4</td>
<td>100 mA</td>
<td>–55 to 85 °C</td>
</tr>
<tr>
<td>T5</td>
<td>120 mA</td>
<td>–55 to 45 °C</td>
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<tr>
<td>T4</td>
<td>120 mA</td>
<td>–55 to 80 °C</td>
</tr>
<tr>
<td>T4</td>
<td>150 mA</td>
<td>–55 to 70 °C</td>
</tr>
</tbody>
</table>

Ex limit values

<table>
<thead>
<tr>
<th>(I_i)</th>
<th>(U_i)</th>
<th>(P_i)</th>
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</thead>
<tbody>
<tr>
<td>50 mA</td>
<td>42.5 V</td>
<td>2.125 W</td>
</tr>
<tr>
<td>60 mA</td>
<td>38.8 V</td>
<td>2.328 W</td>
</tr>
<tr>
<td>100 mA</td>
<td>30 V</td>
<td>3.0 W</td>
</tr>
<tr>
<td>120 mA</td>
<td>28 V</td>
<td>3.36 W</td>
</tr>
<tr>
<td>150 mA</td>
<td>25.5 V</td>
<td>3.825 W</td>
</tr>
</tbody>
</table>

Special conditions
The I/P signal converter TEIP11-PS Doc. 901068 or TEIP11-PS Doc. 901069 must be set up outdoors as a pneumatic power supply when used with combustible gases.

The supplied gas must be kept sufficiently free of air and oxygen to prevent a potentially explosive atmosphere from forming. The gas must always be routed to the outside.

FM / CSA

**DANGER**

Explosion hazard
The unit may only be used in environments where operation will not result in propagating brush discharge.

Intrinsically safe FM
FM ‘intrinsically safe’ (not for metal field housing units)
I.S.: CL I/Div 1/Grp A B C D

FM ‘intrinsically safe’ (only for metal field housing units)
I.S.: CL I-II-II/Div 1/Grp A B C D E F G
S.: CL II/Div 2/Grp G
S.: CL III/Div 2

Non-incendive FM
N.I.: CL I/Div 2/Grp A B C D (not for metal field housing units)
N.I.: CL I/Div 2/Grp A B C (only for metal field housing units)

Intrinsically safe CSA
CSA ‘intrinsically safe’ (not for metal field housing units)
I.S.: CL I/Div 1/Grp A B C D
CL I / Div 2 / Grp A B C D

CSA ‘intrinsically safe’ (only for metal field housing units)
I.S.: CL I/Div 1/Grp A B C D
CL II / Div 1 / Grp E F G
CL III
CL I / Div 2 / Grp A B C D
CL II / Div 2 / Grp E F G

Non-incendive CSA
FM ‘explosion proof’ (only for metal field housing units)
X.P.: CL I/Div 1/Grp B C D
D.I.P.: CL II III/Div 2/Grp E F G

CSA ‘explosion proof’ (only for metal field housing units)
X.P.: CL I/Div 1/Grp B C D
Installation instructions

The installation, commissioning, maintenance and repair of devices in potentially explosive atmospheres must only be carried out by appropriately trained personnel. Works may be carried out only by persons, whose training has included instructions on different types of protection and installation techniques, concerned rules and regulations as well as general principles of zoning. The person must possess the appropriate competences for the type of work to be conducted.

When operating with combustible dusts, comply with EN 60079-31.

The safety instructions for electrical apparatus in potentially explosive areas must be in accordance with Directive 2014/34/EU (ATEX) and IEC 60079-14 (Installation of electrical equipment in potentially explosive areas).

Comply with the applicable regulations for the protection of employees to ensure safe operation.

Information about opening and closing the housing

⚠️ DANGER
Risk of explosion if the device is operated with the housing or terminal box open!
Before opening the housing or the terminal box, note the following points:
- A valid fire permit must be present.
- Make sure that there is no explosion hazard.
- Switch off the power supply and wait for t > 4 minutes before opening.

NOTICE
Adverse effect on the type of protection
Damage to the cover thread results in loss of the ‘flameproof (enclosure) (Ex d)’ type of protection.
- Handle the cover with care.

Requirements for operation with the ‘flameproof (enclosure) (Ex d)’ type of protection
Before installation, you must check if the I/P signal converter fulfills the measurement and safety requirements of the measuring point.

- When performing wiring, the parameters in the specification and the information in the explosion protection certificate must be complied with.
- The device may only be operated using instrument air that is free from oil, water and dust. Flammable gases, oxygen or oxygen-enriched gases must not be used.

Cable entries
When operating with the ‘flameproof (enclosure) (Ex d)’ type of protection, use only cable glands with the corresponding full ‘Ex d’ approval.
- Secure all cable entries against twisting and loosening by using a medium-strength securing adhesive.
- When the I/P signal converter is used at ambient temperatures above 60 °C (140 °F) or below –20 °C (–4 °F), make sure to use cable entries and cables suitable for an operating temperature of up to the maximum ambient temperature plus 10 K, or for an operating temperature down to the minimum ambient temperature.
... 2 Use in potentially explosive atmospheres

Operating instructions

Changing the type of protection
The devices can be operated as delivered with either the
“intrinsically safe (Ex ia)” or “flameproof (enclosure) (Ex d)” types
of protection.
A device that has been operated with the “flameproof
(enclosure) (Ex d)” type of protection must no longer be
operated with the “intrinsically safe (Ex ia)” type of protection,
as the electronics may have been damaged.
For this reason the devices must be permanently marked during
commissioning (e.g. cross out or mask over “Ex ia”).

Protection against electrostatic discharges
The painted surface of the housing and the plastic parts inside
the device can store electrostatic charges.

⚠️ WARNING
Risk of explosion!
The device must not be used in areas in which process-
related electrostatic charging of the housing may occur.
- The device must be maintained and cleaned so that any
dangerous electrostatic charge is avoided.
3 Design and function

The I/P signal converter converts standard electrical signals, e.g. 4 to 20 mA to 0.2 to 1 bar (3 to 15 psi), and therefore forms a connecting link between electrical/electronic and pneumatic systems. The signal conversion process is similar to the patented force balance method.

Special features of the I/P signal converter are its relatively small dimensions and outstanding operational stability when subjected to shock and vibration. The I/P signal converter can be subjected to loads up to 10 g with less than 1 % effect on function.

The housings are available in a variety of designs to meet your installation requirements. For potentially explosive conditions, devices offering intrinsically safe operation or with a flameproof housing enclosure are available with international approval certificates for use worldwide.

Various ranges can be supplied on the input side and the output side for signal conversion (see Additional documents on page 17).

The device requires only compressed air for the power supply.

Principle of operation

Force balancing takes place at the lever arm, which is mounted with a tension band. The coil and yoke generate a magnetic field in the air gap, which applies a force to the magnet on the lever arm. The force changes in proportion to the current (input signal) flowing through the coil.

A counterforce is applied on the other side of the lever arm, through the dynamic air pressure present at the nozzle and the flapper. The force is controlled in such a way that a balance of the two torques is achieved. If a torque imbalance occurs, the lever arm rotates. This rotation changes the air gap between the nozzle and the flapper and, thus, the dynamic air pressure. Air is permanently supplied to the nozzle through the throttle. The converter stage takes the dynamic pressure and guides it to the output as a 0.2 to 1 bar or 3 to 15 psi signal.

Supply air

During operation the pneumatic unit needs a steady supply of air in accordance with the device specifications. The zero point setting is adjusted by turning the tension band suspension, and the range setting is adjusted via the potentiometer.

Filter

The filter prevents malfunctions caused by polluted supply air. Note that the filter capacity is only sufficient for collecting dirt that occurs occasionally (e.g. residual dirt in the pipe during initial commissioning). It is no substitute for proper air conditioning.

Special features

Special features of the I/P signal converter TEIP11, TEIP11-PS include its relatively small dimensions and outstanding operational stability when subject to shock and vibration. The stability is due to the light weight (only around 100 mg) of the moving system, which consists of the lever arm with the magnet and the flapper with balancing weight.

Available versions

The available versions of the I/P signal converter and accessories can be found in the data sheets. The data sheets also indicate each item’s order number.
3 Design and function

Designs

Control room housing unit for rail mounting
The control room housing for rail mounting is the simplest and lowest priced version of the I/P signal converter. A mounting base that is compatible with all commercially available EN rails is used for installation. The housing unit with plastic cap has an IP 20 protection rating.

Control room housing unit for block mounting
The control room housing unit for block mounting enables you to install a number of converters in a small space. This design features central air supply via connection block and stop valves in the air connectors of the integrated signal converter.

A maximum of 4 signal converters can be fitted on the connection blocks required for block mounting. If necessary, 2 or 3 (or max. 4) connection blocks can be connected to each other to create block units of 4-8-12-16 signal converters. Stop valves allow you to mount or remove individual converters during operation.

Field mount housing
The field mount housing is suited for installation on-site or in open areas. The housing can be made from plastic with IP rating IP 54, from aluminum with IP rating IP 65 and from stainless steel with IP rating IP 65. The housing is suited for wall mounting and for 2 in pipe mounting.

Figure 2: TEIP11-PS designs

1 Control room housing for rail mounting
2 Control room housing unit for block mounting
3 Plastic field mount housing
4 Aluminum or stainless steel field mount housing
4 Product identification

Name plate

![Name plate example]

- **Type designation**
- **Ordering number**
- **Input signal**
- **Output signal**
- **Supply air pressure**
- **Serial number**
- **Manufacturer address**

Figure 3: Name plate (example)

Scope of delivery

- Check the goods for completeness, signs of damage, design and scope of delivery immediately upon receipt.
- Check that the delivery matches your order.

Accessories

The following loose accessories are delivered with the unit as extra items:

- Aluminum or stainless steel mounting bracket for the field mount housing in two designs:
  - For wall mounting only
  - Universal for wall or 2 in pipe mounting
- Cable entry for I/P signal converter with the ‘flameproof (enclosure) (Ex d)’ type of protection.

5 Transport and storage

Inspection

Check the devices immediately after unpacking for possible damage that may have occurred from improper transport. Details of any damage that has occurred in transit must be recorded on the transport documents. All claims for damages must be submitted to the shipper without delay and before installation.

Storage conditions

Bearing the following points in mind when storing devices:

- Store the device in its original packaging in a dry and dust-free location.
- Observe the permitted ambient conditions for transport and storage.
- Avoid storing the device in direct sunlight.
- In principle, the devices may be stored for an unlimited period. However, the warranty conditions stipulated in the order confirmation of the supplier apply.

<table>
<thead>
<tr>
<th>Ambient conditions during storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage temperature</td>
</tr>
<tr>
<td>Humidity</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Returning devices

For the return of devices, follow the instructions in Repair on page 16.
6 Installation

Mounting

Note
Installation location requirements
Prior to installation, check to make sure that the TEIP11 and TEIP11-PS I/P signal converters meet the measurement and safety requirements applicable at the installation location (see Additional documents on page 17).

Only qualified specialists who have been trained for these tasks are authorized to mount and adjust the unit, and to make the electrical connection.

When carrying out any work on the device, always observe the local accident prevention regulations and the regulations concerning the construction of technical installations.

Control room housing unit for rail mounting
This model is snap-mounted on a DIN top-hat rail.

Design
The TEIP11 and TEIP11-PS I/P signal converters have a special mounting base which fits all mounting rails in accordance with EN 50022 - 35 × 7.5, EN 50045 - 15 × 5, and EN 50035 - G32.

Installation instructions
For mounting rails that are mounted in a vertical position, the electrical connection for the device should preferably face to the left.
For mounting rails that are mounted in a horizontal position, the electrical connection for the device should preferably be facing up.

Control room housing unit for block mounting
For this design, a special connection block is used to mount the unit.

Design
The connection block is designed for mounting a maximum of 4 I/P signal converters. The connection blocks can be expanded to units of 2, 3 or 4 blocks to create block units of 4, 8, 12 or 16 I/P signal converters.

Installation Material
The material for forming the block units is delivered separately for self-installation; in addition to the connection blocks, it includes the necessary screws and gaskets (O-rings).

Supply air connection
The supply air connection for the connected devices is provided via a central connection block. The connection block features a non-return coupling for each individual I/P signal converter. This allows connection sites to remain unused, and individual I/P signal converters can be dismounted or mounted during operation.
Aluminum / stainless steel field mount housing
The sturdy housing unit can be installed outdoors without protection.

![Diagram of Aluminum / stainless steel field mount housing](image1)

1. Terminal for signal input (covered)
2. Cable entry
3. Supply air connection
4. Output (covered)

Figure 6: Aluminum / stainless steel field mount housing

Installation instructions
Position the housing so that the cable gland is facing downwards or sideways, to prevent humidity from penetrating the device.

Accessories
A stainless steel mounting bracket is available as an accessory for installation.
The mounting bracket is available in two designs:
- For wall mounting only
- Universal for wall or 2 in pipe mounting

Field mount housing as a mounting module for OEM applications (TEIP11)

![Diagram of Field mount housing as a mounting module for OEM applications](image2)

1. Terminal for signal input (covered)
2. Cable entry
3. Supply air connection
4. Output (covered)

Figure 7: Aluminum / stainless steel field mount housing

Installation instructions
Units can be mounted on walls or vertically on a 2 in pipe. The connections for the input and output signals should face downwards, to prevent humidity from penetrating the device.

Plastic field mount housing
The plastic housing is suitable for installation on-site.

![Diagram of Plastic field mount housing](image3)

1. Output (covered)
2. Supply air connection
3. Combustible gas discharge line, crimp connection, 6 mm (0.24 in)
4. Cable entry
5. Terminal for signal input (covered)

Figure 8: Plastic field mount housing

Installation instructions
Position the housing so that the cable gland is facing downwards or sideways, to prevent humidity from penetrating the device.

Accessories
A stainless steel mounting bracket is available as an accessory for installation.
The mounting bracket is available in two designs:
- For wall mounting only
- Universal for wall or 2 in pipe mounting
6 Installation

Electrical connections

**WARNING**
Risk of injury due to live parts!
When the housing is open, contact protection is not provided and EMC protection is limited.
- Before opening the housing, switch off the power supply.

**Note**
For electrical installation, the following standards, data, and documents must be complied with:
- The relevant regulations and safety standards pertaining to the installation and operation of electrical systems
- The additional regulations, standards, and directives pertaining to the installation and operation of explosion-proof systems, if explosion-proof units are used
- Values for the electrical connection (see chapter Electrical Data on page 14).
- The information from explosion protection certificate, for an explosion-proof design.

**NOTICE**
Adverse effect on input signals
Power supply leads in the immediate vicinity of the signal lines produce interference which can impair the input signals to the devices.
- Do not install the signal line together with power supply leads.

---

Cable glands
The field mount housings feature a PG 11 cable entry.

**Aluminum or stainless steel field mount housing**

<table>
<thead>
<tr>
<th>Ex Protection</th>
<th>Cable entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard / Ex ia</td>
<td>Screw connection ½ in NPT</td>
</tr>
<tr>
<td>Ex d</td>
<td>Threaded hole M20 × 1.5</td>
</tr>
<tr>
<td>FM / CSA 'Intrinsically Safe' / 'Explosion Proof'</td>
<td>Threaded hole ⅛ in NPT</td>
</tr>
</tbody>
</table>

**Position of the terminals**
The electrical connection is provided by 2-pin screw terminals for conductor cross-sections up to a maximum of 2.5 mm² (14 AWG). Do not reverse the polarity (+/-) when connecting the signal line.

**Control room housing unit for rail and block mounting**
The terminals are located on the side of the housing unit.

**Plastic, aluminum, and stainless steel field mount housing**
The terminals are located inside the housing unit. Therefore, the field mount housing must be opened in order to connect the cable.

**Electrical Data**

**Signal range**
- 0 to 20 mA or 4 to 20 mA
- 0 to 10 mA or 10 to 20 mA
- 4 to 12 mA or 12 to 20 mA
  (additional ranges available upon request)

**Input resistance**
- \( R_i = 260 \, \Omega \text{ at } 20 \, ^\circ \text{C (68}^\circ \text{F}, \, T_k + 0.4 \% / K) \)

**Overpressure limit**
- 30 mA (for Ex devices see Use in potentially explosive atmospheres on page 5).

**Capacitance / inductance**
- Negligible
Pneumatic connections

Note
- The TEIP11 and TEIP11-PS I/P signal converters may only be operated with instrument air that is free of oil, water, and dust.
- If a version with a plastic housing is operated with combustible gas, an additional line must be installed to route the gas to a safe place in the open air.

**NOTICE**

**Damage to components**
Contamination on the air pipe and signal converter can damage components.
- Before connecting the pipe, it is imperative that you remove any dust, chips or other dirt particles by blowing them out.

**NOTICE**

**Damage to components**
Pressure higher than 4 bar (60 psi) can damage the signal converter or actuator.
- Precautions must be taken, for example using a pressure reducer, to make sure that the pressure does not go over 4 bar (60 psi), even in case of a malfunction.

Threaded holes $\frac{1}{8}$, $\frac{1}{4}$ or $\frac{3}{8}$ NPT are provided for connecting the air pipes (supply air and output pipes).
The connections for the power supply (supply air) and the output are marked accordingly.

### Pneumatic data TEIP11

**Instrument air**
- Free of oil, water, and dust acc. to DIN/ISO 8573-1
- Pollution and oil content according to Class 3
- Pressure dew point 10 K below operating temperature

**Supply pressure**
- 1.4 to 10 bar (20 to 145 psi)

**Output signal**
- 0.2 to 1 bar (3 to 15 psi)

**Air consumption**
- Equivalent to air capacity

### Pneumatic data TEIP11-PS

**Instrument air**
- Free of oil, water, and dust acc. to DIN/ISO 8573-1
- Pollution and oil content according to Class 3
- Pressure dew point 10 K below operating temperature

**Supply pressure**
- 1.4 bar (20 psi)
- 2.5 bar (36 psi)*

**Output signal**
- 0.2 to 1 bar (3 to 15 psi)
- 0.4 to 2 bar (6 to 30 psi)*

* Valid for Option 509 only – increased input signal.

**Air consumption**
- $\leq 0.2 \text{ kg/h} = 0.16 \text{ Nm}^3/\text{h} = 0.1 \text{ scfm}$
7 Commissioning

Once the installation is complete and the electrical and pneumatic components are connected, the I/P signal converter is ready to use. No further adjustment is required.

8 Maintenance

Note
Manipulation by users shall immediately render the warranty for the device invalid.
To ensure fault-free operation, it is essential that the device is supplied with instrument air that is free of oil, water, and dust.

The I/P signal converters are adjusted prior to delivery.
After an extensive operating time the signal conversion may exceed the tolerance limits due to aging or drift.
If the tolerance limits are exceeded, this can be corrected through adjustment.

Two adjustment screws are used for the adjustment process.

Note
When using a field mount housing first remove the cover to access the screws.

9 Repair

Repair and maintenance activities may only be performed by authorized customer service personnel.
When replacing or repairing individual components, use original spare parts.

Returning devices

Use the original packaging or a secure transport container of an appropriate type if you need to return the device for repair or recalibration purposes.
Fill out the return form (see Return form on page 18) and include this with the device.
In accordance with the EU Directive governing hazardous materials, the owner of hazardous waste is responsible for its disposal or must observe the following regulations for shipping purposes:
All devices delivered to ABB must be free from any hazardous materials (acids, alkalis, solvents, etc.).

Please contact Customer Center Service acc. to page 4 for nearest service location.
10 Recycling and disposal

Note

Products that are marked with the adjacent symbol may **not** be disposed of as unsorted municipal waste (domestic waste). They should be disposed of through separate collection of electric and electronic devices.

This product and its packaging are manufactured from materials that can be recycled by specialist recycling companies.

Bear the following points in mind when disposing of them:

- As of 8/15/2018, this product will be under the open scope of the WEEE Directive 2012/19/EU and relevant national laws (for example, ElektroG - Electrical Equipment Act - in Germany).
- The product must be supplied to a specialist recycling company. Do not use municipal waste collection points. These may be used for privately used products only in accordance with WEEE Directive 2012/19/EU.
- If there is no possibility to dispose of the old equipment properly, our Service can take care of its pick-up and disposal for a fee.

11 Additional documents

Note

All documentation, declarations of conformity and certificates are available in ABB's download area.

www.abb.com/positioners
12 Appendix

Return form

Statement on the contamination of devices and components

Repair and/or maintenance work will only be performed on devices and components if a statement form has been completed and submitted. Otherwise, the device/component returned may be rejected. This statement form may only be completed and signed by authorized specialist personnel employed by the operator.

Customer details:
Company:
Address:
Contact person: Telephone:
Fax: Email:

Device details:
Type: Serial no.:
Reason for the return/description of the defect:

Was this device used in conjunction with substances which pose a threat or risk to health?
☐ Yes ☐ No
If yes, which type of contamination (please place an X next to the applicable items):
☐ biological ☐ corrosive / irritating ☐ combustible (highly / extremely combustible)
☐ toxic ☐ explosive ☐ other toxic substances
☐ radioactive

Which substances have come into contact with the device?
1.
2.
3.

We hereby state that the devices/components shipped have been cleaned and are free from any dangerous or poisonous substances.

Town/city, date Signature and company stamp
Hazardous Area
Class I Division 1 Groups A, B, C, D

Intrinsically safe circuit

Note: Location is allowed in Class II, III,
Division 1, Group E, F, G, for models 22/06-66,
22/06-67, 22/06-68, 22/06-69 only.
An approved seal must be used at the enclosure conduit
opening to maintain intrinsic safe circuit integrity.

No revision can be made without FM notification

Characteristics: direct acting

01..03
Nominal resistance 125mA, R1 according label
Voltage rating of Zener diodes = 7.5V
Power rating of Zener diodes = 5W
ABB Automation Products
Control Document No. 900842
for I/P-Converter Type 22/06-a

Hazardous Area
Class I Division 1 Groups A, B, C, D

FM Approved

Intrinsically safe circuit
V_{\text{max}} = 40 \text{ V}, I_{\text{max}} = 125 \text{ mA}
C = 0, L = 5 \text{ mm}

Note: Location is allowed in Class II, III, I.
Division I, Group E, F, G, for models 22/06-66,
22/06-67, 22/06-68, 22/06-69 only.
An approved seal must be used at the enclosure conduit
opening to maintain life circuit integrity.

No revision can be made without FM notification

D1...D3
NTE 333 or comparable type

Characteristic reverse acting

20...0(4) mA
Entity: \text{Imax} = 125 \text{ mA}, RI according label

Voltage rating of Zener diodes = 7.5 V
Power rating of Zener diodes = 5 W
Connection diagram 900842 CSA
12 Appendix

Control Document
Notes
**Introduction**

I/P signal converter for controlling pneumatic actuators or conventional positioners for valve positioning.

**Additional Information**

Additional documentation on TEIP11, TEIP11-PS is available for download free of charge at www.abb.com/positioners. Alternatively simply scan this code:

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