

TEIP11, TEIP11-PS I/P signal converter



Short product description

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

Further 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

1.1 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.

1.2 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 useful or important information about the product.

The signal word "NOTICE" is not a signal word indicating a danger to personnel. The signal word "NOTICE" can also refer to material damage.

1.3 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.

1.4 Improper use

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

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

1.5 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.

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 a potentially explosive atmosphere from forming.

Always route the gas to the outside.

2.1 Flameproof (enclosure), ATEX "Ex d"

Labeling	II 2G Ex d IIC T4/T5/T6 Gb
Type examination certificate	DMT 02 ATEX E 121 X
Type	DOC. 900771
Device class	II 2G
Standards	EN 60079-0: 2012 (General requirements) EN 60079-1: 2007 (Flameproof enclosure "d")

Electrical data

Current	≤ 50 mA
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Pneumatic data TEIP11

Supply pressure	1,4 ... 10 bar (20 ... 145 psi)
Output signal	0,2 ... 1 bar (3 ... 15 psi)

Pneumatic data TEIP11-PS

Supply pressure	1,4 bar (20 psi) / 2,5 bar (37 psi) ¹
Output signal	0,2 ... 1 bar (3 ... 15 psi) / 0,4 ... 2 bar (6 ... 30 psi) ¹

¹ Only valid for option 509 - increased input signal.

Thermal data

T4: -40 °C < Tamb < 85 °C
T5: -40 °C < Tamb < 70 °C
T6: -40 °C < Tamb < 55 °C

Special Requirements

The I/P signal converter is suited to use in an ambient temperature range of -40 °C to max. 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.

2.1.1 Operation as intrinsically safe equipment

Labeling	II 2G Ex ia IIC T6 resp. T4 Gb
Type examination certificate	TÜV 99 ATEX 1487 X
Type	TEIP11, Doc. 901068-SMDxxxx TEIP11-PS, Doc. 901068-SMDxxxx TEIP11-PS, Doc. 901069-SMDxxxx
Device class	II 2G
Standards	EN 60079-0:2009 EN 60079-11:2012

Temperature classes for the following versions:

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

Temperature class	Input current	Ambient temperature range
T4	120 mA	-55 ... 60 °C
T4	100 mA	-55 ... 85 °C
T6	60 mA	-55 ... 40 °C

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

Temperature class	Input current	Ambient temperature range
T6	50 mA	-55 ... 60 °C
T6	60 mA	-55 ... 55 °C
T5	60 mA	-55 ... 70 °C
T4	60 mA	-55 ... 85 °C
T5	100 mA	-55 ... 55 °C
T4	100 mA	-55 ... 85 °C
T5	120 mA	-55 ... 45 °C
T4	120 mA	-55 ... 80 °C
T4	150 mA	-55 ... 70 °C

Explosion protection ratings

L_i	U_i	P_i
50 mA	42.5 V	2.125 W
60 mA	38.8 V	2.328 W
100 mA	30 V	3.0 W
120 mA	28 V	3.36 W
150 mA	25.5 V	3.825 W

Special Requirements

The I/P converter TEIP11-PS Doc. type 901069 or Doc. 901069-SMD 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.

2.2 FM/CSA

2.2.1 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/Div 1/Grp A B C D E F G
S.: CL II/Div 2/Grp G
S.: CL III/Div 2

2.2.2 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)

2.2.3 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

2.2.4 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

2.3 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/EC (ATEX) and IEC60079-14 (Installation of electrical equipment in potentially explosive areas).

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

2.3.1 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:

- Check that a valid fire permit is available.
- 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.

2.3.2 Requirements for operation with the "flameproof (enclosure)" (Ex d) type of protection

Prior to mounting, check to ensure that the I/P signal converter meets the measurement and safety requirements that apply at the measuring point.

- When making the electrical connections, the parameters in the specifications and the information in the explosion protection certificate must be complied with.
- The device may only be operated with instrument air that is free of oil, water, and dust. Flammable gases, oxygen or oxygen-enriched gases must not be used.

2.3.3 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 operating the I/P signal converter at an ambient temperature above 60 °C (140 °F) or below -20 °C (-4 °F), ensure that the cable entries and cables used are suited to an operating temperature of up to the maximum ambient temperature plus 10 K, or to an operating temperature down to the minimum ambient temperature.

2.4 Operating instructions

2.4.1 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").

3 Function and system design

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

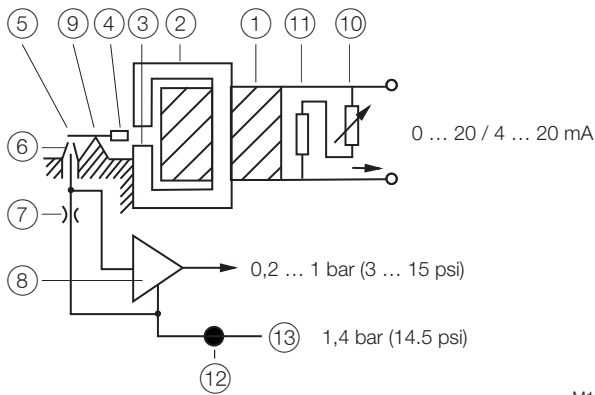
Special features of the I/P signal converter are its relatively small dimensions and outstanding operational stability when subjected to shock and vibration. The I/P signal converter can be subjected to loads up to 10 g with less than 1 % effect on function.

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 section "Additional documents" on page 14).

The device requires only compressed air for the power supply.

3.1 Principle of operation



M10918

Fig. 1: Schematic structure

- ① Coil ② Yoke ③ Air gap ④ Magnet ⑤ Flapper ⑥ Nozzle
- ⑦ Throttle ⑧ Power stage ⑨ Lever arm ⑩ Potentiometer
- ⑪ Resistor ⑫ Filter ⑬ Air supply

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 power stage converts the dynamic air pressure into a 0.2 ... 1 bar or 3 ... 15 psi output 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.

3.1.1 Special features

Special features of the TEIP11, TEIP11-PS I/P signal converter are 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.

3.1.2 Deliverables

Details of the available I/P signal converter variants and accessories can be found in the data sheets. The data sheets also indicate each item's order number.

3.2 Designs

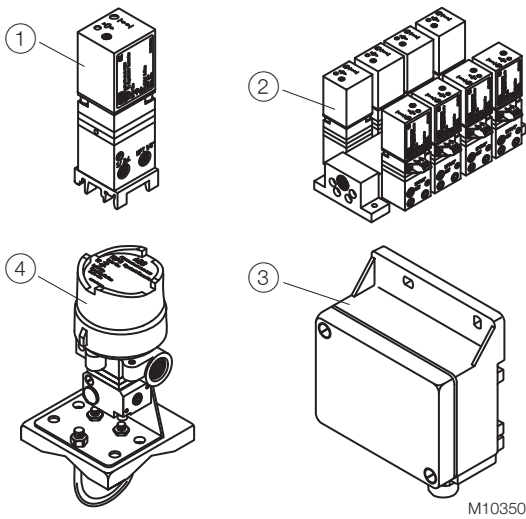


Fig. 2

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

3.2.1 Control room housing unit for rail mounting

The control room housing unit for rail mounting is the most user-friendly and lowest priced model in the signal converter line.

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 class.

3.2.2 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.

3.2.3 Field mount housing

The field housing unit is designed for installation onsite or in the field. Housing units are available in the following models (and protection classes): plastic (IP 54), aluminum (IP 65) and stainless steel (IP 65). The housing units are suitable for wall mounting and 2" pipe mounting.

4 Product identification

4.1 Name plate

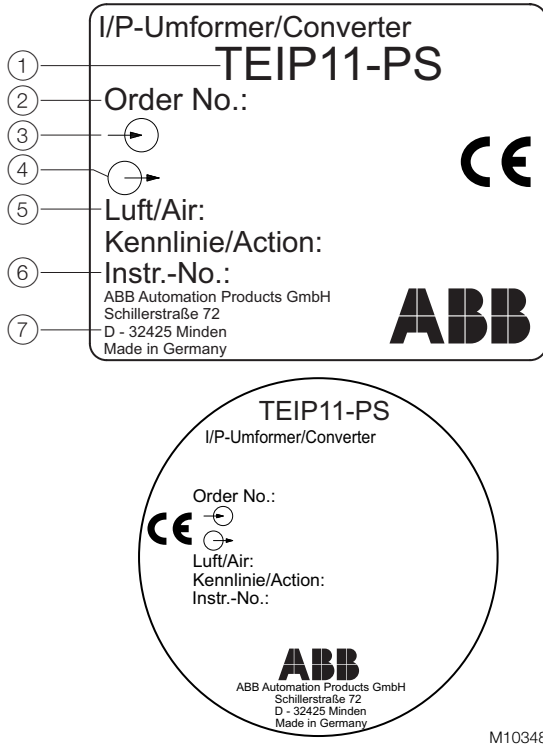


Fig. 3: Name plate (example)

① Type designation ② Order number ③ Input signal ④ Output signal ⑤ Supply air pressure ⑥ Serial number ⑦ Manufacturer's address

4.2 Scope of delivery

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

4.2.1 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" pipe mounting.
- Cable entry for I/P signal converter with the "flameproof (enclosure) (Ex d)" type of protection.

5 Transport and storage

5.1 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.

5.2 Storage conditions

Bear 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.

Ambient conditions during storage

Storage temperature	-40 ... 85 °C (-40 ... 185 °C)
Humidity	Store device in a dry location. The device is also protected by a desiccant included in the original packaging.

5.3 Returning devices

For the return of devices, follow the instructions in the chapter "Repair" on page 14.

6 Installation

6.1 Mounting

i NOTICE

Installation location requirements

Prior to installation, check to ensure that the TEIP11 and TEIP11-PS I/P signal converters meet the measurement and safety requirements applicable at the installation location (see section "Additional documents" on page 14).

6.1.1 Control room housing unit for rail mounting

This model is snap-mounted on a DIN top-hat rail.

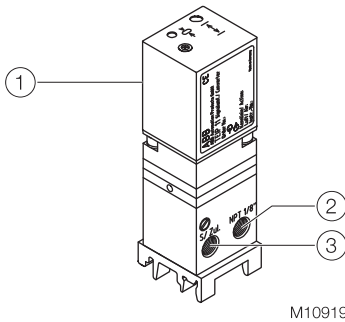


Fig. 4: Control room housing unit for rail mounting

- ① Terminal for signal input (covered)
- ② Output
- ③ Supply air connection

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 x 7.5, EN 50045 - 15 x 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.

6.1.2 Control room housing unit for block mounting

For this design, a special connection block is used to mount the unit.

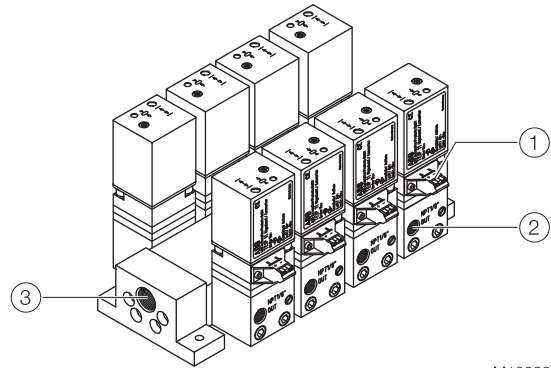


Fig. 5: Control room housing unit for block mounting

- ① Terminal for signal input
- ② Output
- ③ Supply air connection

Design

The connection block is designed for mounting a maximum of four 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 to be dismantled or mounted during operation.

6.1.3 Aluminum/stainless steel field mount housing

The sturdy housing unit can be installed outdoors without protection.

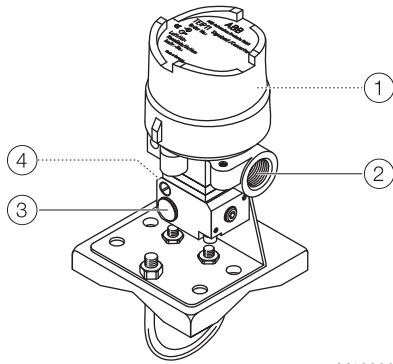


Fig. 6: Aluminum/stainless steel field mount housing

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

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" pipe mounting.

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

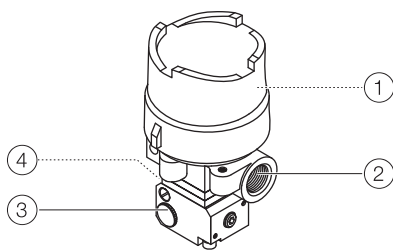


Fig. 7: Aluminum/stainless steel field mount housing

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

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" pipe mounting.

6.1.5 Plastic field mount housing

The plastic housing is suitable for installation on-site.

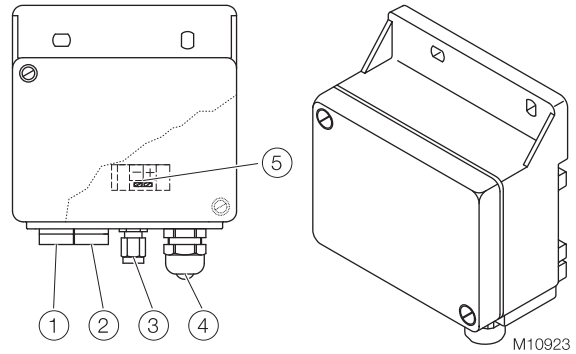


Fig. 8: Plastic field mount housing

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

Installation instructions

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

6.2 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.

i NOTICE

For electrical installation, the following standards, data, and documents must be complied with:

- The applicable regulations and safety standards for the installation and operation of electrical systems.
- The additional regulations, standards, and directives for the installation and operation of explosion-proof systems, if explosion-proof devices are in use.
- The values for the electrical connection (see section "Electrical data" on page 12).
- The information on the explosion protection certificate, for an explosion-proof design.

i 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.

6.2.1 Cable glands

The field mount housings feature a Pg 11 cable entry.

Aluminum or stainless steel field mount housing

Ex Protection	Cable entry
Standard / Ex ia	Cable gland 1/2" NPT
Ex d	Tapped bore M20 x 1.5
FM / CSA "Intrinsically Safe" / "Explosion Proof"	Tapped bore 1/2" NPT

6.2.2 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, or 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.

6.2.3 Electrical data

Signal range

0 ... 20 mA or 4 ... 20 mA

0 ... 10 mA or 10 ... 20 mA

4 ... 12 mA or 12 ... 20 mA

(additional ranges available upon request)

Input resistance

$R_i = 260 \Omega$ at 20 °C (68 °F), $T_k + 0.4 \text{ %/K}$

Overload limit

30 mA (for explosion-proof devices, see the information in chapter "Use in potentially explosive atmospheres" on page 5)

Capacitance/inductance

Negligible

6.3 Pneumatic connections

i NOTICE

Damage to components!

Always blow dust, splinters, and any other dirt particles off the air inlet line before it is connected. Such particles could block the unit.

Take precautions to ensure that in the event of an error the pressure does not rise above 4 bar (60 psi). This could result in mechanical damage to the unit.

i NOTICE

- 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.

1/8, 1/4, and 3/8 NPT threaded holes 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.

6.3.1 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 ... 10 bar (20 ... 145 psi)

Output signal

0,2 ... 1 bar (3 ... 15 psi)

Air consumption

Equivalent to air capacity

6.3.2 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)¹

Output signal

0,2 ... 1 bar (3 ... 15 psi)

0,4 ... 2 bar (6 ... 30 psi)¹

¹ Only valid for option 509 - 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

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.

i NOTICE

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

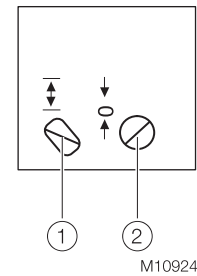


Fig. 9: Adjustment screws

① Span ② Zero point

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.

9.1 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 the Appendix) and include this with the device.

According to 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 2 for nearest service location.

10 Recycling and disposal

10.1 Disposal

i NOTICE



Products that are marked with this symbol may not be disposed of through municipal garbage collection points.

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:

- This product is not subject to WEEE Directive 2012/19/EU or relevant national laws (e.g. ElektroG in Germany).
- The product must be surrendered to a specialist recycling company. Do not use municipal garbage collection points. Only privately used products may be disposed of in the municipal garbage according to the WEEE directive 2012/19/EU
- If it is not possible to dispose of old equipment properly, ABB Service can take receipt of and dispose of returns for a fee.

11 Additional documents

i NOTICE

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

www.abb.com/positioners

12 Appendix

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: _____ E-Mail: _____

Device details:

Typ: _____ 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	<input type="checkbox"/>	Corrosive / irritating	<input type="checkbox"/>	Combustible (highly / extremely combustible)	<input type="checkbox"/>
Toxic	<input type="checkbox"/>	Explosiv	<input type="checkbox"/>	Other toxic substances	<input type="checkbox"/>
Radioactive	<input type="checkbox"/>				

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

12.1 Control Document

12.1.1 Connection diagram 900842 FM

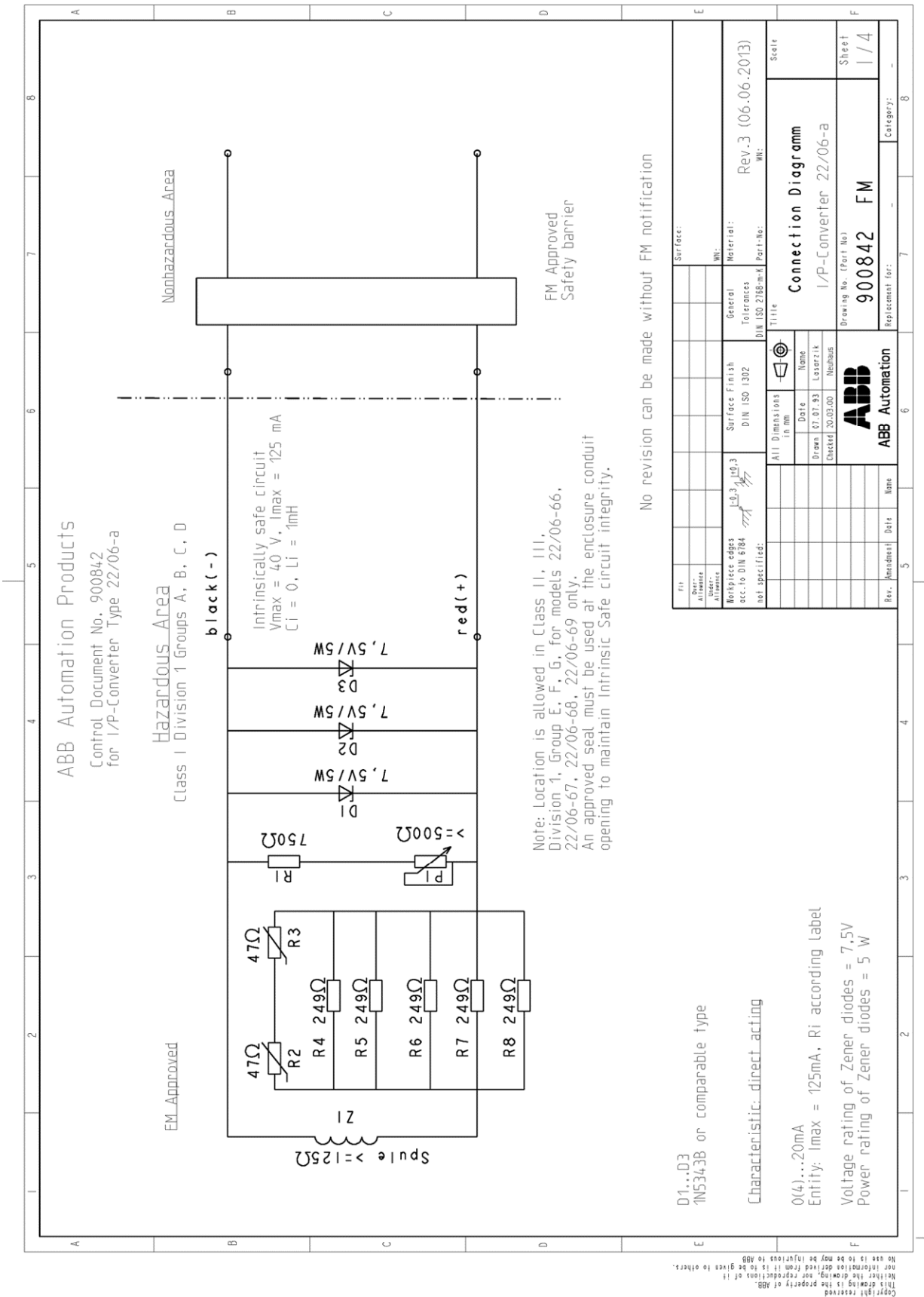
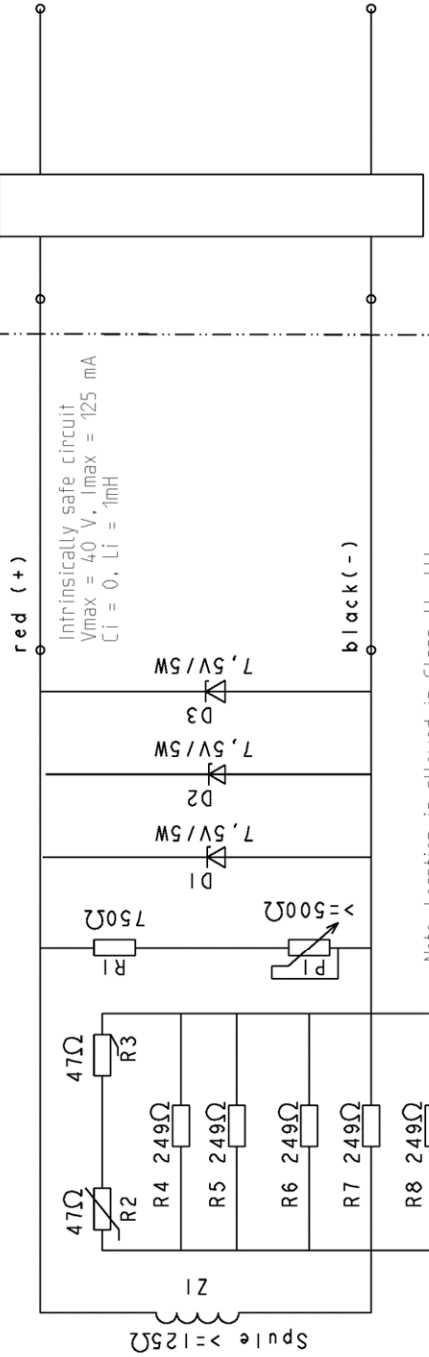


ABB Automation Products
Control Document No. 900842
for I/P-Converter Type 22/06-a

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

Nonhazardous Area



Intrinsically safe circuit
 $V_{max} = 40\text{ V}$, $I_{max} = 125\text{ mA}$
 $C_i = 0$, $L_i = 1\text{ mH}$

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.

FM Approved
Safety barrier

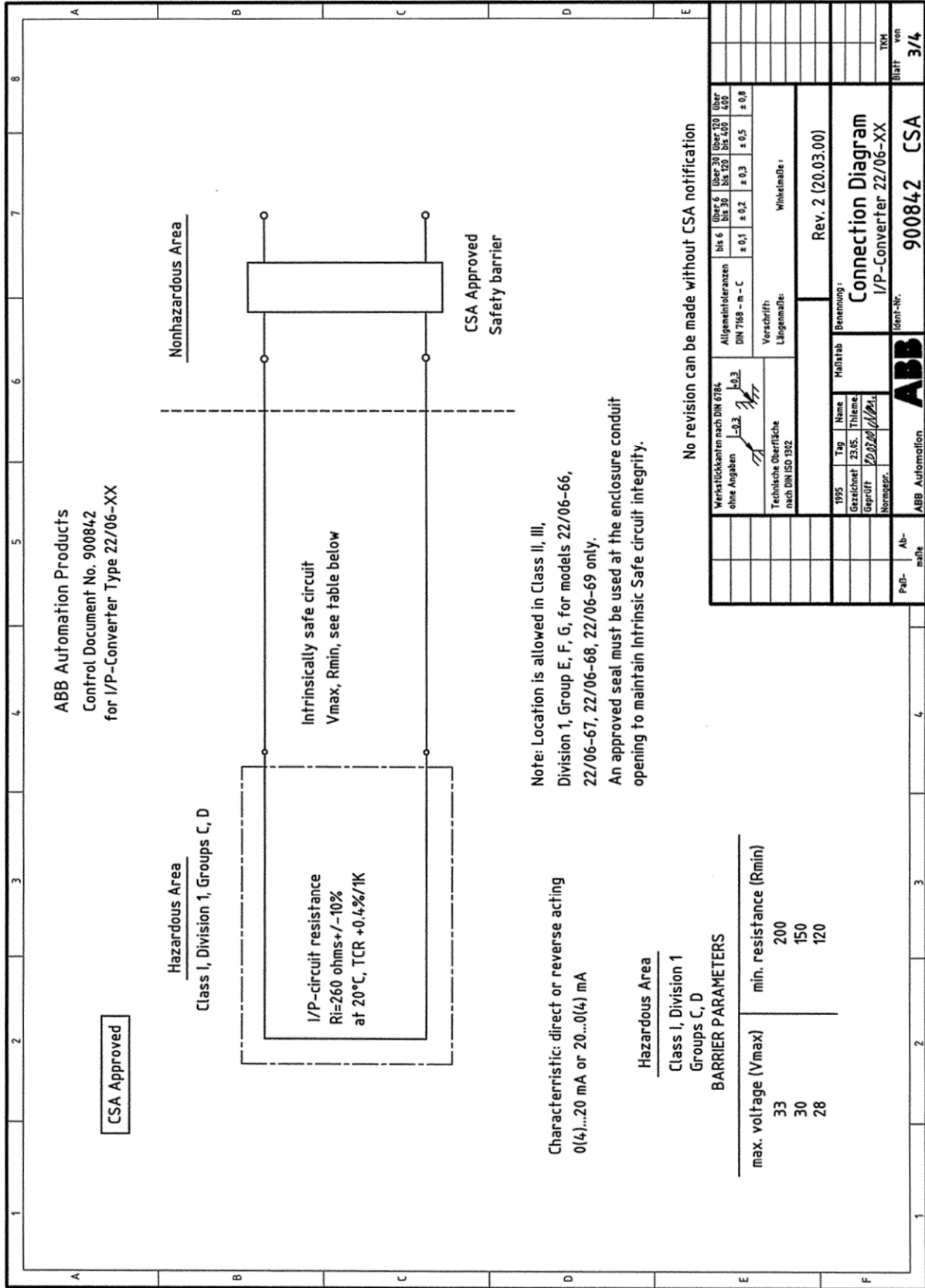
No revision can be made without FM notification

D1...D3
1N5343B or comparable type

Characteristic: reverse acting
20...0(4) mA
Entropy: $I_{max} = 125\text{ mA}$, R_i according label
Voltage rating of Zener diodes = 7.5V
Power rating of Zener diodes = 5 W

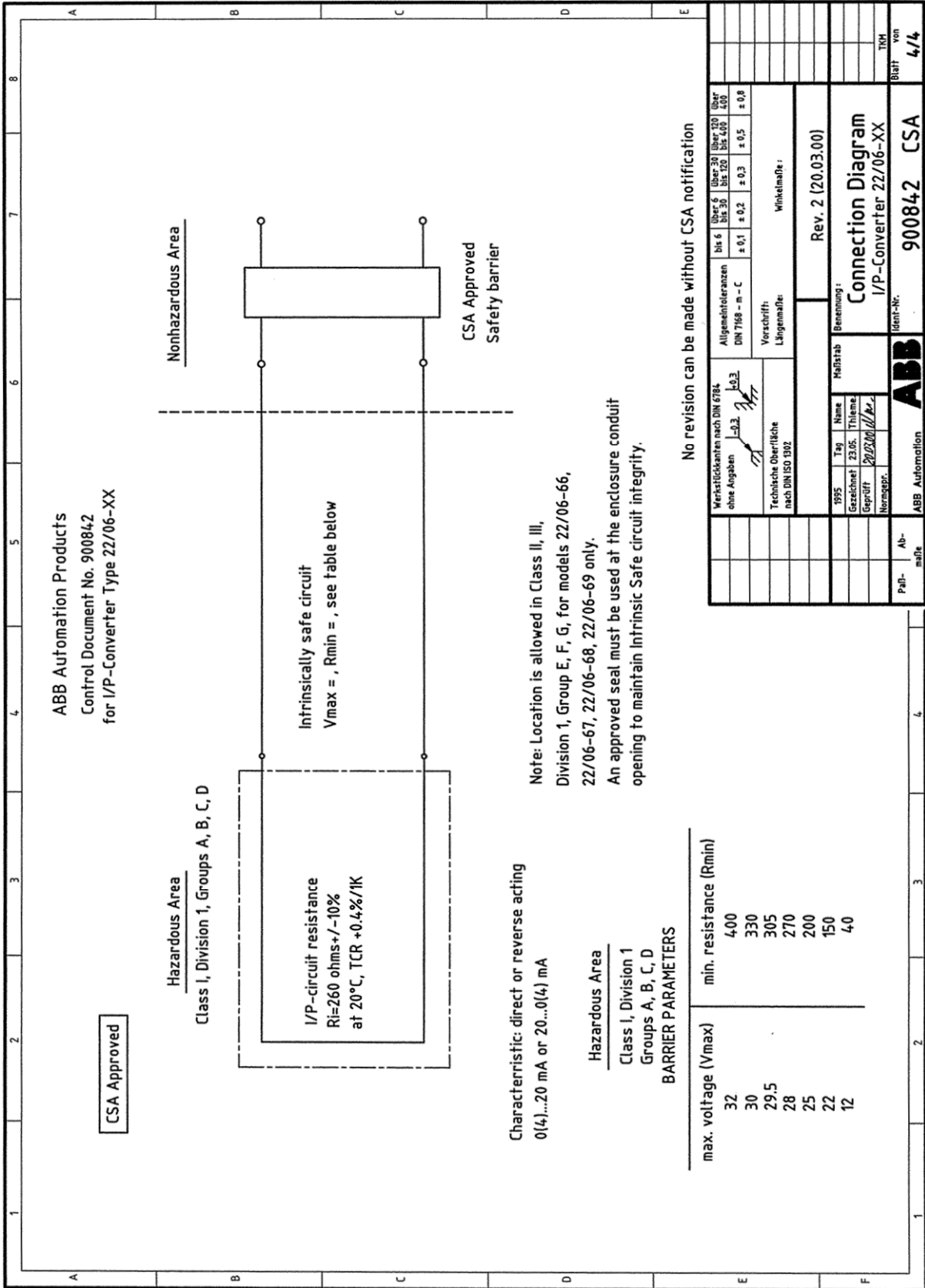
Fit	Surface:								
Part- alltime alter-	Material:								
Workpiece edges acc. to DIN 9134 not specified:	General Tolerances DIN ISO 2768-mS	Surface Finish DIN ISO 1302	Material: Rev.3 (06.06.2013)	Title Connection Diagram					
	All Dimensions in mm	Date	Name	Scale					
		Drawn: 07.07.13	Lesertix	Drawing No. (Part No)					
		Checked: 20.03.00	Nonabus	900842 FM					
Rev.	Handled	Date	Name	Replacement for: - - - - -					
			ABB Automation	Category: - - - - -					
				Sheet 2 / 4					

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ABB Automation



Werksstücknummern nach DIN 6784 ohne Angaben		bis 6 bis 30 bis 120 bis 400 über 400	
Allgemeine Toleranzen DIN 7168 - m - C		± 0,1 ± 0,2 ± 0,3 ± 0,5 ± 0,8	
Technische Oberflächennach DIN ISO 1502		Winkelmaße:	
1995 Tag Name Gezeichnet 23.05. Thiele Geprüft 20/06/00/AV		Maßstab Benennung:	
Normgegr.		Rev. 2 (20.03.00)	
ABB Automation		Connection Diagram I/P-Converter 22/06-XX	
Ident-Nr.		900842 CSA	
Blatt von		4/4	

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Original instruction