



Operating Manual



Applicable products:-
Intrinsically safe, industrial pressure transmitter type
**ExIND, IPSAT, ExINDU, IPSUAT, ExIND-LR,
IPSLAT, Ex-IND-LRU and IPSLUAT**
Screw-in transmitter for Zone 0 areas and below.

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1. General information

1.1 Information on the operating manual

This operating manual contains important information on proper usage of the device. Read this operating manual carefully before installing and starting up the pressure measuring device. Adhere to the safety notes and operating instructions which are given in the operating manual. Additionally, applicable regulations regarding occupational safety, accident prevention as well as installation standards must be complied with. For the installation, maintenance and cleaning of the device, you must observe the relevant regulations and stipulations on explosion protection (EN 60079-14:2014 and IEC 60079-14:2013) as well as the occupational safety provisions. The device was constructed in accordance to standards: EN60079-0:2012+A11:2013, IEC60079-0:2011 (Edition 6), EN60079-11:2012 and IEC60079-0:2011 (Edition 6). This operating manual is considered part of the device and must be accessible to all employees.

– Technical modifications reserved –

1.2 Advisory Notes

Throughout this document a number of statements have been made to make the user aware. These, and their level of importance, are:

- DANGER – dangerous situation, which may result in death or serious injuries
- WARNING – potentially dangerous situation, which may result in death or serious injuries
- CAUTION – potentially dangerous situation, which may result in minor injuries
- !CAUTION! – potentially dangerous situation, which may result in physical damage
- tips and information to ensure a failure-free operation

1.3 Target group

- WARNING-To avoid operator hazards and damages to the device, the following instructions have been written to a target audience of qualified technical personnel.

1.4 Limitation of liability

By non-observance of the operating manual, inappropriate use, modification or damage, no liability is assumed and warranty claims will be excluded.

1.5 Intended use

- The pressure transmitters have, according to the type listed, been developed for applications in overpressure and vacuum as well as for absolute pressure measurement. The screw-in transmitters have been particularly developed for process measurement.
- This operating manual applies to devices with explosion protection approval and is intended for the use in IS-areas. A device has an explosion protection approval if this has been specified in the purchase order and confirmed in our order confirmation. In addition, the manufacturing label contains the symbol.
- It is the operator's responsibility to check and verify the suitability of the device for the intended application. If any doubts remain, please contact the vendor sales department in order to ensure proper usage. The vendor is not liable for any incorrect selections and their effects.

- Permissible media are gases or liquids, which are compatible with the media wetted parts described in the data sheet. In addition it has to be ensured, that this medium is compatible with the media wetted parts.

- The technical data listed in the current data sheet is important, if the data sheet is not available please order or download it from the vendor.

⚠ WARNING Danger through improper usage.

1.6 Safety technical maximum values

Connector Version:

U_i = 28 V; I_i = 93 mA; P_i = 650 mW;

C_i = 510 pF, L_i = 0 μH.

Permissible temperatures for environment: T₄: -20... 120°C

Cable Versions:

U_i = 28 V; I_i = 93 mA; P_i = 650 mW;

C_i = 30.81 nF, L_i = 844.5 μH (max values with 50m of cable).

Zone 0 (patm 0.8 bar up to 1.1 bar):

Permissible temperatures for environment: T₄: -20... 75°C

1.7 Package contents

Please verify that all listed parts are undamaged included in the delivery and check for consistency specified in your order:

- Industrial pressure transmitter or screw-in transmitter
- Declaration of Conformity
- Operating manual

2. Product identification

The device can be identified by its label. It provides important data. From the label the product can be clearly identified.

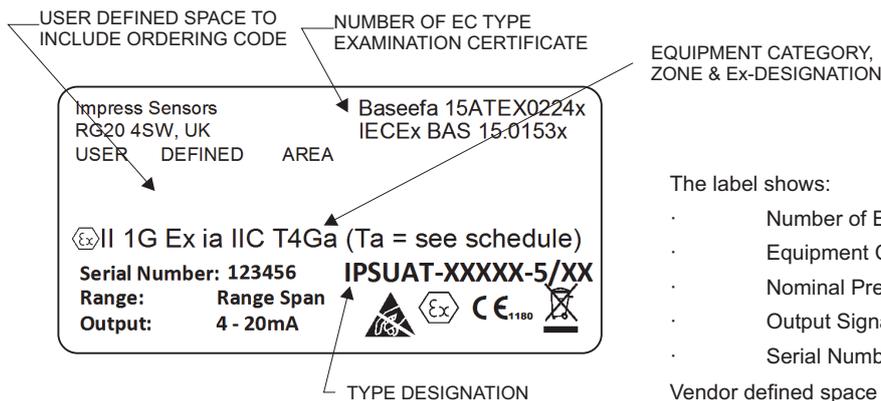


Fig. 1 Identification label

The label shows:

- Number of EC Type examination certificate
- Equipment Category, Zone and Ex Designation
- Nominal Pressure Range
- Output Signal
- Serial Number

Vendor defined space to include ordering information.

⚠ The label must not be removed from the device.

3. Mechanical installation

3.1 Mounting and safety instructions



WARNING Install the device only when depressurised and unpowered.



WARNING This device may only be installed by qualified technical personnel who have read and understood the operating manual.



DANGER Due to the explosion hazard the following instructions have to be complied with:

- The technical data listed in the EC type-examination certificate. If the certificate is not available, please order or download it from the vendor.
- Working on supplied (active) parts, except for intrinsically safe circuits, is strictly prohibited during an explosion hazard.
- Make sure that an equipotential bonding is in place for the entire course of the line, both inside and outside the intrinsic area.
- In case of increased danger of lightning strike or damage by overvoltage, increased lightning protection should be included.
- Observe the limiting values specified in the EC type-examination certificate. (Capacitance and inductance of the connection cable are not included in the values.)
- Make sure that the entire interconnection of intrinsically safe components remains intrinsically safe. The operator is responsible for the intrinsic safety of the overall system (installation of intrinsic parts).
- Do not mount the device in a direct forced air flow.
- Excessive dust deposits (over 5 mm) and a complete dust covering must be avoided.

Oxygen



DANGER Explosion hazard, with devices for oxygen applications, when used improperly. To ensure a use without danger, the following points must be adhered to:



- Make sure your device has been ordered and delivered as a special version for oxygen applications. If the ordering code ends with "006", then the device is suitable for oxygen applications.

- At time of delivery the device is packed into a plastic bag in order to prevent it from impurity. Please observe the indication label "Device for oxygen, unpack only directly before assembling". Also, avoid any skin contacts during unpacking and assembly, in order to prevent greasy residues on the device. During installation, the respective explosion protection regulations have to be met.

- For oxygen applications over 25 bar it is recommended that pressure transmitter without seals are used.

 Handle this high-sensitive electronic precision measuring device with care, both in packed and unpacked condition

 There are no modifications/changes to be made on the device.

 Do not throw the package/device.

 To avoid damaging the diaphragm, remove packaging and protective cap (if fitted) directly before starting assembly. The delivered protective cap has to be stored.

 Place the protective cap (if fitted) on the pressure port again immediately after disassembling.

 Handle the unprotected diaphragm very carefully - it is very sensitive and may be easily damaged.

 Do not use unnecessary force when installing the device, to prevent damage of the device and the plant.

 For installations outdoor and in damp areas follow these instructions:

- To prevent moisture ingress in the plug, the device should be immediately connected, electrically, after mounting. Otherwise, any moisture ingress has to be blocked e.g. by using a suitable protection cap. (The ingress protection in the data sheet is valid for the connected device.)

- Choose an assembly position, which allows the flow-off of splashed water and condensation. Avoid permanent fluid at sealing surfaces.

- When using a cable gland and outlet device, turn the outgoing cable downwards. If the cable has to be turned upwards, then point it downward so the moisture can drain.

- Install the device in such a way that it is protected from direct sunlight. Direct sunlight can lead to the maximum permissible operating temperature being exceeded. This is prohibited for applications in IS-areas.

 For devices with gauge reference in the housing (small hole in the electrical connection), install the device in such a way, that the gauge reference is protected from dirt and moisture. Should the device be exposed to fluid ingress, the functionality will be inhibited for the gauge reference. An exact measurement in this condition is not possible. Furthermore this can lead to damages on the device. Take note that no inadmissibly high mechanical stresses occur at the pressure port as a result of the installation, since this may cause a shifting of the characteristic curve. This is especially important for very low pressure ranges. Humidity and dirt can block the. Dust and dirt must be removed from the edge of the thread connection of the electrical connection if before fitting.

3.2 General installation steps

- Carefully remove the pressure measuring device from the package and dispose of the package properly.

- Follow the detailed instructions below.

3.3 Installation steps for DIN 3852

- Check to ensure the proper groove fitting of the o-ring and additionally to ensure no damage to the o-ring.

DO NOT USE ANY ADDITIONAL SEALING MATERIALS.

- Ensure that the sealing surface of the taking part is perfectly smooth and clean.

- Screw the device into the corresponding thread by hand.

- Devices with a spanner flat have to be tightened with an open-end spanner (G1/4": approx. 5 Nm; G3/8": approx. 7 Nm; G1/2": approx. 10 Nm;

- The indicated tightening torques must not be exceeded.

3.4 Installation steps for NPT

- Use a suitable seal (e. g. a PTFE-strip).

- Screw the device into the corresponding thread by hand.

- Tighten it with a wrench (for 1/8" NPT: approx. 15 Nm; for 1/4" NPT: approx. 30 Nm; for 1/2" NPT: approx. 70 Nm).

- The indicated tightening torques must not be exceeded.

4. Special regulations for IS-Areas

4.1 Protection against electrostatic charge hazards

Avoid friction on the plastic surfaces. Do not clean the device and cable dry Use, for example, a damp cloth.

4.2 Overvoltage protection

If the pressure transmitter is used as electrical equipment of the category 1G, then a suitable overvoltage protection device must be connected in series (attend the valid regulations for operating safety as well as EN60079-14:2014 and IEC 60079-14:2013).

4.3 Schematic circuit

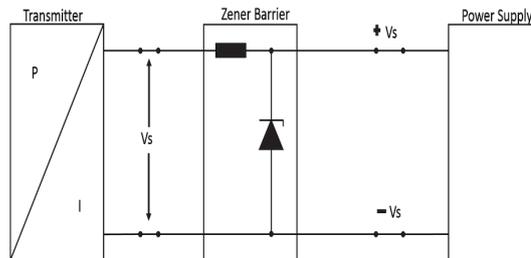
The operation of an intrinsically safe transmitter in intrinsic safe areas requires special care when selecting the necessary Zener barrier or

transmitter repeater devices to allow the utilization of the device's properties to the full extent. The following diagram shows a typical arrangement of power supply, Zener barrier and transmitter.

⚠ Please pay attention to the type examination certificate, which stipulates special conditions for intrinsically safe operation.

4.4 Example circuit description

The supply voltage of e.g. 24 VDC provided by the power supply is across a Zener barrier. The Zener barrier contains series resistances and breakdown diodes as protective components. Subsequently, the operating voltage is applied to the transmitter and, depending on the pressure, a particular signal current flows.



⚠ DANGER When installing the intrinsically safe device as zone-0-equipment, the supplying must be carried out by a power supply which must be galvanically insulated and which must not be grounded.

4.5 Functional selection criteria for Zener barriers and galvanic power supply

The minimum supply voltage $V_{S \text{ min}}$ of the transmitter must not fall short since a correct function of the device cannot be guaranteed. The minimum supply voltage has been defined in the respective product-specific data sheet under "Output signal / supply". When using a galvanically insulated amplifier with linear bonding, note that the terminal voltage of the transmitter will decrease like it does with a Zener barrier. Furthermore, you have to note that the supply will additionally decrease with an optionally used signal amplifier.

4.6 Test criteria for the selection of the Zener barrier

In order not to fall below the minimum supply voltage (V_S), it is important to verify the minimum supply voltage available at full level control of the transmitter. The full level control, i.e. a maximum or nominal output signal (20 mA), can be reached by applying the maximum physical input signal (pressure). The technical data of the barrier will usually provide the information needed for the selection of the Zener barrier. However, the value can also be calculated. If a maximum signal current of 0.02 A is assumed, then – according to Ohm's law – a particular voltage drop will result from the series resistance of the Zener barrier. This voltage drop is subtracted by the voltage of the power supply and as a result, the terminal voltage is obtained which is applied on the transmitter at full level control. If this voltage is smaller than the minimum supply voltage, another barrier or a higher supply voltage should be chosen. When selecting the ballasts, the maximum operating conditions according to the EC type-examination certificate must be observed. When assessing these, refer to their current data sheets to ensure that the entire interconnection of intrinsically safe components remains intrinsically safe.

4.7 Calculation example for the selection of the Zener barrier

The nominal voltage of the power supply in front of the Zener barrier is 24 VDC \pm 5 %.

This results in:

- maximum supply voltage:

$$+V_S (\text{max}) = 24 \text{ V} * 1.05 = 25.2 \text{ V}$$

- minimum supply voltage:

$$+V_S (\text{min}) = 24 \text{ V} * 0.95 = 22.8 \text{ V}$$

The series resistance of the Zener barrier is listed with 295 ohm. The following values must still be calculated:

- voltage drop at the barrier (with full conduction):

$$V_S \text{ Barrier} = 295 \Omega * 0.02 \text{ A} = 5.9 \text{ V}$$

- terminal voltage at the transmitter with Zener barrier:

$$\begin{aligned} V_S \text{ Sensor} &= V_{S+} (\text{min}) - V_{ab} \text{ Barrier} \\ &= 22.8 \text{ V} - 5.9 \text{ V} = 16.9 \text{ V} \end{aligned}$$

- minimum supply voltage of the transmitter:

$$V_S \text{ Sensor} (\text{min}) = 10 \text{ VDC (corresponding to } V_S \text{ min)}$$

Condition: $V_S \text{ Sensor} \geq V_S \text{ Sensor} (\text{min})$

Result: The terminal voltage of the transmitter with Zener barrier lies at 16.9 V and is therefore higher than the minimum supply voltage of the transmitter which lies at 10 VDC. This means, the Zener barrier has been selected correctly regarding the supply voltage.

Note that no line resistances have been listed in this calculation. However, these will lead to an additional voltage drop that must be taken into account.

5. Electrical Installation

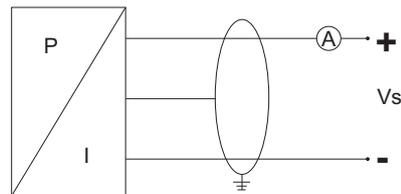
-  WARNING. Install the device only when depressurised and unpowered.
-  DANGER. Danger of explosion when surpassing the maximum supply of 28 VDC.

Establish the electrical connection of the device according to the technical data shown on the label, the following table and the wiring diagram.

Connector	+V	-V	Earth
M12	1	2	3
DIN 43650A	1	2	Earth
DIN 43650C	1	2	Earth

Cable	+V	-V	Earth
PVC-0672VBS/BKT	Red	Blue	Green
PUR-12300900	Red	Blue	White

Wiring Diagram:



-  For devices with cable gland as well as cable socket, ensure that the external diameter of the used cable is within the allowed clamping range. Moreover ensure that it lies in the cable gland firmly.
-  For the installation of a device with cable outlet the following bending radii have to be complied with:
Cable without ventilation tube:
Static installation: 5-times cable diameter
Dynamic application: 10-times cable diameter
Cable with ventilation tube:
Static installation: 10-times cable diameter
Dynamic application: 20-times cable diameter
-  Prevent the damage or removal of the PTFE filter which is fixed over the end of the air tube on devices with cable outlet and integrated air tube. Gauge / relative devices are equipped with cable with integrated air tube for atmospheric pressure reference. Install cable end in a control cabinet or suitable terminal box in dry area which is free of aggressive gasses, to avoid damage.

6. Initial start-up

-  WARNING. Before start-up, the user has to check for proper installation and for any visible defects.
-  WARNING. Only authorised personnel, who have read and understood the operating manual.
-  WARNING The device has to be used within the technical specifications, only. (compare the data in the data sheet and the EC type-examination certificate).

7. Placing out of service

-  WARNING Disassemble the device only in unpowered and pressure less condition. Check before disassembly, if it is necessary to drained off the media before dismantling.
-  WARNING Depending on the medium, it may cause danger for the user. Comply therefore with adequate precautions for purification.

8. Maintenance

-  DANGER. The operator is obligated to observe the information concerning operation and maintenance work on the warning signs possibly affixed to the device.

In principle, this device is maintenance-free. If desired, the housing of the device can be cleaned using a damp cloth and non-aggressive cleaning solutions, in unpowered state. With certain media, however, the diaphragm may be polluted or coated with deposit. It is recommended to define corresponding service intervals for control. After placing the device out of service correctly, the pressure port can usually be cleaned carefully with a non-aggressive cleaning solution and a soft brush or sponge. If the pressure port is blocked, it is recommended to send the device to the vendor for cleaning. Please note the chapter "Service/Repair" below.

-  Any poor cleaning of the device can cause irreparable damages on the device. Therefore, never use pointed objects or pressured air for cleaning the pressure port.

9. Service / Repair



9.1 Recalibration

During the life-time of a transmitter, the value of offset and span may shift. As a consequence, a deviating signal value in reference to the nominal pressure range starting point or end point may be transmitted. If one of these two phenomena occurs after prolonged use, a recalibration is recommended to ensure furthermore high accuracy.

9.2 Return

Before every return of your device, whether for recalibration, cleaning, modifications or repair, it has to be cleaned carefully and packed. You have to enclose a notice of return with detailed defect description when sending the device. If your device came in contact with harmful substances, a declaration of decontamination is additionally required. Should you dispatch a device without a declaration of decontamination and if there are any doubts in our service department regarding the used medium, repair will not be started until an acceptable declaration is sent. If the device came in contact with hazardous substances, certain precautions have to be complied with for purification.

10. Disposal

The device has to be disposed of according to the European Directives 2002/96/EG and 2003/108/EG (on waste electrical and electronic equipment). It is prohibited to place electrical and electronic equipment in domestic refuse.

⚠ WARNING Depending on the used medium, deposit on the device may cause danger for the user and the environment. Comply with adequate precautions for purification and dispose of it properly.

11. Warranty conditions

The warranty conditions are subject to the legal warranty period of 12 months from the date of delivery. In case of improper use, modifications or damages to the device, we do not accept warranty claims. Damaged diaphragms will also not be accepted. Furthermore, defects due to normal wear are not subject to warranty services.

12. Error handling

See Table

13. Declaration of conformity / CE

The delivered device fulfils all legal requirements. The applied directives, harmonised standards and documents are listed in the EC declaration of conformity.

Malfunction	Possible cause	Error detection / corrective
no output signal	wrongly connected	inspect the connection
	line break	inspect all line connections necessary to supply the device (including the connector plugs)
analogue output signal too low	load resistance too high	verify the value of the load resistance
	supply voltage too low	verify the output voltage of the power supply
	defective energy supply	inspect the power supply and the applied supply voltage at the device
small shift of output signal	diaphragm is highly contaminated	careful cleaning with non-aggressive cleaning solution and a soft brush or sponge; incorrect cleaning can cause irreparable damages on diaphragm or seals
	diaphragm is coated with deposit	if possible, it is recommended to send the device to Impress Sensors for cleaning
large shift of output signal	diaphragm is damaged (caused by overpressure or manually)	check the diaphragm
wrong or no output signal	manually, thermal or chemically damaged cable	check the cable

⚠ If you detect an error, please try to eliminate it by using this table or send the device to our service address for repair. Improper action and opening can damage the device. Therefore repairs on the device may only be executed by the manufacturer



Certificate Number
Baseefa15ATEX0224X
Issue 1



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1 **EU - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
Directive 2014/34/EU**

3 EU - Type Examination Certificate Number: **Baseefa15ATEX0224X – Issue 1**

4 Product: **ExIND / ExIND-LR / ExIND-SF / ExIMSL / ExIMTG Series Pressure Sensors**

5 Manufacturer: **Impress Sensors and Systems Limited**

6 Address: **Regency House, 22-25 Kingsclere Park, Kingsclere, Berkshire, RG20 4SW**

7 This re-issued certificate extends EU Type Examination Certificate No. **Baseefa15ATEX0224X** to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Baseefa, Notified Body number 1180, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. See Certificate History.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012 +A11:2013 EN 60079-11:2012

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following :

⊕ II IG Ex ia IIC T4 Ga (Ta – See Schedule)

SGS Baseefa Customer Reference No. 7377

Project File No. 15/0451

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R S SINCLAIR
TECHNICAL MANAGER

On behalf of SGS Baseefa Limited

PP DISCRETION



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Schedule

14

Certificate Number Baseefa15ATEX0224X – Issue 1

15 Description of Product

The ExIND / ExIND(LR) / ExIND(SF) / ExIMSL / ExIMTG Series Pressure Sensors are a range of different products utilising a number of pressure sensing media within a range of housings constructed from either 303/316L Stainless Steel or Hastelloy having an output 4-20mA signal proportional to the measured pressure.

Electrical connections will be made either using a plug and socket, or via a fixed cable.

Model ExIND, ExINDU, IPSAT, and IPSUAT units are pressure transmitters with a piezo-resistive ceramic pressure sensor in stainless steel housing.

Model ExIND-LR, ExIND-LRU, IPSLAT, and IPSLUAT units are low range pressure transmitters with a piezo resistive silicon pressure sensor which comprises an oil filled isolated diaphragm fitted within a stainless steel housing and a variety of O ring seals dependent on application.

Model ExIND-SF, ExIND-SFU, IPSSAT, and IPSSUAT units are semi-flush mount pressure transmitters with a piezo-resistive silicon or ceramic pressure sensor fitted within a stainless steel body and a variety of O ring seals dependent on application.

Model ExIMTG, ExIMTGU, ILLSA, and ILLSUAT units are submersible device using a silicon pressure sensor within a stainless steel housing and fitted to a choice of PUR,FEP or TPE cable materials dependent on the media of use (fuel, oils, water.)

Model ExIMSL, ExIMSLU, ILSAT, and ILSUAT units are designed for continuous submersion in water with a piezo-resistive media isolated pressure sensor and a stainless steel diaphragm within a stainless steel body.

Input Parameters

The following entity parameters apply to all models:

$U_i = 28V$

$I_i = 93mA$

$P_i = 650mW$

The transmitters are designed to operate from a 24V d.c. $\pm 5\%$ supply.

The C_i , L_i , and ambient temperature range are as shown below:

ExIND*****5**-z**_****_***

ExIND-LR*****5**-z**_****_***

ExIND-SF*****5**-z**_****_***

ExIND-SFU*****5**-z**_****_***

ExINDU*****5**-z**_****_***

ExINDU-LRU*****5**-z**_****_***

	C_i	L_i	Ambient Temperature Range
Where z = A or B	510pF	0	$-20^{\circ}C \leq T_a \leq +120^{\circ}C$
Where z = C or E	30.81nF	844.5 μ H	$-20^{\circ}C \leq T_a \leq +75^{\circ}C$
Where z = D	510pF	0	$-20^{\circ}C \leq T_a \leq +75^{\circ}C$



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ExIMSL*****5**-z**_***_***
ExIMSLU*****5**-z**_***_***
ExIMTG*****5**-z**_***_***
ExIMTGU*****5**-z**_***_***

	C_i	L_i	Ambient Temperature Range
Where z = E, F or H	510pF	0	$-20^{\circ}\text{C} \leq T_a \leq +75^{\circ}\text{C}$
Where z = G	30.81nF	844.5 μH	$-20^{\circ}\text{C} \leq T_a \leq +75^{\circ}\text{C}$

IPSAT*****5/yy
IPSLAT*****5/yy
IPSLUAT*****5/yy
IPSSAT*****5/yy
IPSSUAT*****5/yy
IPSUAT*****5/yy

	C_i	L_i	Ambient Temperature Range
Where yy are digits	30.81nF	844.5 μH	$-20^{\circ}\text{C} \leq T_a \leq +75^{\circ}\text{C}$
Where yy are NOT digits	510pF	0	$-20^{\circ}\text{C} \leq T_a \leq +120^{\circ}\text{C}$

ILLSAT_*****5/**
ILLSUAT_*****5/**
ILSAT_*****5/**
ILSUAT_*****5/**

C_i	L_i	Ambient Temperature Range
30.81nF	844.5 μH	$-20^{\circ}\text{C} \leq T_a \leq +75^{\circ}\text{C}$

16 Report Number

GB/BAS/ExTR16.0187/00

17 Specific Conditions of Use

1. Parts of the enclosure are plastic which may present an electrostatic hazard and must not be rubbed or cleaned with a dry cloth.

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject	Compliance
1.2.7	LVD type requirements	Standards require manufacturer's declaration, supplied.
1.2.8	Overloading of equipment (protection relays, etc.)	Covered by installation rules and manufacturer's instructions
1.4.1	External effects	The Purchaser should make the manufacturer aware of such issues. Covered in Instructions
1.4.2	Aggressive substances, etc.	The Purchaser should make the manufacturer aware of such issues. Covered in Instructions

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
B1001 SCHEMATIC 001	1	5	01/07/16	ZSC31050 ASIC PCB
B1001-ZSC31050 ASIC PCB ASSEMBLY-001	1-2	5	05/07/16	ZSC31050 ASIC PCB Assembly



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Number	Sheet	Issue	Date	Description
B1001-ZSC31050 ASIC PCB LAYERS -001	1 of 11	5	05/07/16	ZSC31050 ASIC PCB –Bottom Paste
B1001-ZSC31050 ASIC PCB LAYERS -002	2 of 11	5	05/07/16	ZSC31050 ASIC PCB –Top Resist
B1001-ZSC31050 ASIC PCB LAYERS -003	3 of 11	5	05/07/16	ZSC31050 ASIC PCB –Top Silk
B1001-ZSC31050 ASIC PCB LAYERS -004	4 of 11	5	05/07/16	ZSC31050 ASIC PCB –Top Paste
B1001-ZSC31050 ASIC PCB LAYERS -005	5 of 11	5	05/07/16	ZSC31050 ASIC PCB –Drill
B1001-ZSC31050 ASIC PCB LAYERS -006	6 of 11	5	05/07/16	ZSC31050 ASIC PCB –Bottom Silk
B1001-ZSC31050 ASIC PCB LAYERS -007	7 of 11	5	05/07/16	ZSC31050 ASIC PCB –Bottom Resist
B1001-ZSC31050 ASIC PCB LAYER -008	8 of 11	5	05/07/16	ZSC31050 ASIC PCB –Bottom Copper
B1001-ZSC31050 ASIC PCB LAYERS -009	9 of 11	5	05/07/16	ZSC31050 ASIC PCB –Top Copper
B1001-ZSC31050 ASIC PCB LAYERS -010	10 of 11	5	05/07/16	ZSC31050 ASIC PCB –Top Copper Track Detail
B1001-ZSC31050 ASIC PCB LAYERS -011	11 of 11	5	05/07/16	ZSC31050 ASIC PCB –Bottom Copper Track Detail

All drawings are common to, and held with, IECEx BAS 15.0153X Issue 1.

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
B1100A	1-6	1	25/05/16	ExIND and IPSAT (Ceramic) Assembly Drawing and Notes
B1101A	1-6	1	25/05/16	ExIND-LR and IPLAT (Silicon) Assembly Drawing and Notes
B1090A	1-6	1	25/05/16	ExIND-SF and IPSSAT (Silicon) Assembly Drawing and Notes
B1091A	1-6	1	25/05/16	ExIND-SF and IPSSAT (Silicon) Assembly Drawing and Notes
B1103A	1-5	1	08/06/16	ExIMSL and ILSAT (Silicon) Assembly Drawing and Notes
B1104A	1-5	1	08/06/16	ExIMTG and ILSAT (Silicon) Assembly Drawing and Notes
A1575	1-2	1	29/02/16	ATEX Labelling Detail
B1001-ZSC31050 ASIC PCB Iss4 BOM	3 of 4	4	23/02/16	ZSC31050 ASIC PCB 4-20mA Config (3A)
B1035 SCHEMATIC 001	1	3	23/02/16	ATEX Schottky Diode PCB
B1035-SCHOTTKY DIODE PCB ASM-001	1-2	3	23/02/16	Schottky Diode PCB Assembly
B1035-SCHOTTKY PCB Iss3 BOM	1	3	23/02/16	B1035 Schottky PCB
B1035-ATEX DIODE PCB LAYERS-001	1 of 11	3	23/02/16	B1035 ATEX Diode PCB Layers Drill Plot
B1035-ATEX DIODE	2 of 11	3	23/02/16	B1035 ATEX Diode PCB Layers Bottom Paste



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Number	Sheet	Issue	Date	Description
PCB LAYERS-002				
B1035-ATEX DIODE PCB LAYERS-003	3 of 11	3	23/02/16	B1035 ATEX Diode PCB Layers Top Paste
B1035-ATEX DIODE PCB LAYERS-004	4 of 11	3	23/02/16	B1035 ATEX Diode PCB Layers Top Resist
B1035-ATEX DIODE PCB LAYERS-005	5 of 11	3	23/02/16	B1035 ATEX Diode PCB Layers Top Silk
B1035-ATEX DIODE PCB LAYERS-006	6 of 11	3	23/02/16	B1035 ATEX Diode PCB Layers Bottom Silk
B1035-ATEX DIODE PCB LAYERS-007	7 of 11	3	23/02/16	B1035 ATEX Diode PCB Layers Bottom Resist
B1035-ATEX DIODE PCB LAYERS-008	8 of 11	3	23/02/16	B1035 ATEX Diode PCB Layers Bottom Copper
B1035-ATEX DIODE PCB LAYERS-009	9 of 11	3	23/02/16	B1035 ATEX Diode PCB Layers Top Copper
B1035-ATEX DIODE PCB LAYERS-010	10 of 11	3	23/02/16	B1035 ATEX Diode PCB Layers Bottom Copper Track
B1035-ATEX DIODE PCB LAYERS-011	11 of 11	3	23/02/16	B1035 ATEX Diode PCB Layers Top Copper Track
B1088 SCHEMATIC 001	1	1	18/04/16	ATEX Schottky Diode PCB
B1088 ATEX DIODE DIODE PCB ASM-001	1-2	1	19/04/16	Schottky Diode PCB Assembly
B1088 ATEX DIODE PCB Iss1 BOM	1	1	18/04/16	B1088 SCHOTTKY PCB
B1088-ATEX DIODE PCB LAYERS-001	1 of 10	1	19/04/16	B1088 ATEX Diode PCB Layers Top Silk
B1088-ATEX DIODE PCB LAYERS-002	2 of 10	1	19/04/16	B1088 ATEX Diode PCB Layers Bottom Silk
B1088-ATEX DIODE PCB LAYERS-003	3 of 10	1	19/04/16	B1088 ATEX Diode PCB Layers Top Resist
B1088-ATEX DIODE PCB LAYERS-004	4 of 10	1	19/04/16	B1088 ATEX Diode PCB Layers Bottom Resist
B1088-ATEX DIODE PCB LAYERS-005	5 of 10	1	19/04/16	B1088 ATEX Diode PCB Layers Top Solder Mask
B1088-ATEX DIODE PCB LAYERS-006	6 of 10	1	19/04/16	B1088 ATEX Diode PCB Layers Drill Plot
B1088-ATEX DIODE PCB LAYERS-007	7 of 10	1	19/04/16	B1088 ATEX Diode PCB Layers Bottom Copper
B1088-ATEX DIODE PCB LAYERS-008	8 of 10	1	19/04/16	B1088 ATEX Diode PCB Layers Top Copper
B1088-ATEX DIODE PCB LAYERS-009	9 of 10	1	19/04/16	B1088 ATEX Diode PCB Layers Bottom Copper Track
B1088-ATEX DIODE PCB LAYERS-010	10 of 10	1	19/04/16	B1088 ATEX Diode PCB Layers Top Copper Track

All drawings are common to, and held with, IECEx BAS 15.0153X.



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20 Certificate History

Certificate No.	Date	Comments
Baseefa15ATEX0224X	28 June 2016	The release of the prime certificate. The associated test and assessment against the requirements of EN 60079-0:2012+A11:2013 and EN 60079-11:2012 is documented in Test Report Number GB/BAS/ExTR15.0351/00 and Project File 15/0451.
Baseefa15ATEX0224X Issue 1	06 July 2016	This issue of the certificate permits changes to PCB track layout and component designation within the ASIC PCB Schematics and associated minor drawing changes. The associated test and assessment against the requirements of EN 60079-0:2012+A11:2013 and EN 60079-11:2012 is documented in Test Report Number GB/BAS/ExTR16.0187/00 and Project File 15/0451.

For drawings applicable to each issue, see original of that issue.

EU DECLARATION OF CONFORMITY
DIRECTIVE 2014/34/EU

Provisions of the directive fulfilled by the equipment:	Group II Category 1G Ex ia IIC T4 Ga Ta = (see schedule)
Notified Body for EC-Type Examination:	Baseefa 1180 Buxton UK
EC –Type Examination Certificate:	Baseefa 15ATEX0224x and IECEx BAS 15.0153x
Harmonised Standardised used:	EN 60079-0:2012+A11:2013 EN 60079-11:2012
Other Standards and Specifications used:	IEC 60079-0: 2011 (Edition 6) IEC 60079-11:2011 (Edition 6)
Model Types	ExIND, ExINDU, IPSAT, IPSUAT ExIND-LR, ExIND-LRU, IPSLAT, IPSLUAT ExIND-SF, ExIND-SFU, IPSSAT, IPSSUAT ExIMTG, ExIMTGU, ILLSAT, ILLSUAT ExIMSL, ExIMSLU, ILSAT, ILSUAT
Declaration:	On behalf of the above named company, I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives.
Manufacturer Address	Impress Sensor & Systems Ltd Regency House 22-25 Kingsclere Park Kingsclere Hampshire RG20 4SW UK
Signed	Date
On behalf of the above named company, I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives.	
 David Woolrich - Engineering Manager	2 nd August 2016



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEX BAS 15.0153X	issue No.:1	Certificate history: Issue No. 1 (2016-7-6) Issue No. 0 (2016-6-28)
Status:	Current		
Date of Issue:	2016-07-06	Page 1 of 4	
Applicant:	Impress Sensors and Systems Limited Regency House, 22-25 Kingsclere Park, Kingsclere, Berkshire, RG20 4SW United Kingdom		
Equipment: Optional accessory:	ExIND / ExIND(LR) / ExIND(SF) / ExIMSL / ExIMTG Series Pressure Sensors		
Type of Protection:	Intrinsic safety		
Marking:	Ex ia IIC T4 Ga (T_{amb} = See Schedule)		
Approved for issue on behalf of the IECEx Certification Body:	R S Sinclair		
Position:	Technical Manager		
Signature: (for printed version)			
Date:	7/7/16		

Certificate issued by:

SGS Baseefa Limited
Rockhead Business Park
Staden Lane
Buxton
Derbyshire
SK17 9RZ
United Kingdom





IECEX Certificate of Conformity

Certificate No.: IECEX BAS 15.0153X
Date of Issue: 2016-07-06 Issue No.: 1
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Manufacturer: **Impress Sensors and Systems Limited**
Regency House,
22-25 Kingsclere Park,
Kingsclere,
Berkshire,
RG20 4SW
United Kingdom

Additional Manufacturing location (s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Explosive atmospheres - Part 0: General requirements
Edition: 6.0
IEC 60079-11 : 2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition: 6.0

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:
[GB/BAS/ExTR15.0351/00](#)

[GB/BAS/ExTR16.0187/00](#)

Quality Assessment Report:

[GB/BAS/QAR16.0011/00](#)



IECEX Certificate of Conformity

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The ExIND / ExIND(LR) / ExIND(SF) / ExIMSL / ExIMTG Series Pressure Sensors are a range of different products utilising a number of pressure sensing media within a range of housings constructed from either 303/316L Stainless Steel or Hastelloy having an output 4-20mA signal proportional to the measured pressure.
Electrical connections will be made either using a plug and socket, or via a fixed cable.

Input Parameters

The following entity parameters apply to all models:

Ui = 28V
Ii = 93mA
Pi = 650mW

For full breakdown of the range of sensors and ambient temperature ranges please see Annex.

CONDITIONS OF CERTIFICATION: YES as shown below:

1. Parts of the enclosure are plastic which may present an electrostatic hazard and must not be rubbed or cleaned with a dry cloth.



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Certificate No.: IECEx BAS 15.0153X
Date of Issue: 2016-07-06 Issue No.: 1
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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Variation 1.1

To permit changes to ASIC PCB layout and minor drawing changes not affecting the original assessment.

ExTR: GB/BAS/ExTR16.0187/00

File Reference: 15/0451

Annex: IECEx BAS 15.0153X-Annex.pdf