

**SAFETY INSTRUCTIONS FOR PRESSURE TRANSMITTERS
MODELS 6X1ED - EE - EH - EG - EA, 622ED, 6X1ES**



DIFFERENTIAL PRESSURE TRANSMITTERS

BS EN ISO 9001



St Neots, U.K. – Cert. No. Q5907
Stonehouse, U.K. – Cert. No. FM 21106

UNI EN ISO 9001



Lenno, Italy – Cert. No. 9/90A



Stonehouse, U.K. – Cert. No. 0255

Use of Instructions



Warning.

An instruction that draws attention to the risk of injury or death.



Note.

Clarification of an instruction or additional information.



Caution.

An instruction that draws attention to the risk of damage to the product, process or surroundings.



Information.

Further reference for more detailed information or technical details.

Although **Warning** hazards are related to personal injury, and **Caution** hazards are associated with equipment or property damage, it must be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process system performance leading to personal injury or death. Therefore, comply fully with all **Warning** and **Caution** notices.

Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of Technical Communications Department, ABB Automation.

Health and Safety

To ensure that our products are safe and without risk to health, the following points must be noted:

1. The relevant sections of these instructions must be read carefully before proceeding.
2. Warning labels on containers and packages must be observed.
3. Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given. Any deviation from these instructions, will transfer the complete liability, to the user.
4. Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
5. Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
6. When disposing of chemicals ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

PRODUCT IDENTIFICATION

The instrument is identified by the data plates shown in Figure 1.

The Nameplate (ref.A) provides information concerning the code number, maximum process working pressure (PS) and temperature (TS), range and span limits, power supply and output signal. See also the "Operative Limits" section in the following. This plate also shows the transmitter serial number. **Please refer to this number when making enquiries.**

A dedicated label (ref. B) is welded as standard to the primary unit, carrying specific details of the transducer (diaphragms material, fill fluid, range limit and identification number).

A Safety Marking plate (ref. C) is fitted when the transmitter is required to comply with hazardous area regulations, e.g. flame-proof or intrinsic safety protection. Additionally Tag plate (ref. D) provides the customer tag number and calibrated range; this is screwed on the housing and can be removed to be wired-on by the supplied stainless steel wire.

The instrument may be used as a safety accessory (category IV) as defined by the Pressure Equipment Directive 97/23/EC. In this case, near the CE mark, there is the number of the notified body (1130) that verified the compliance.

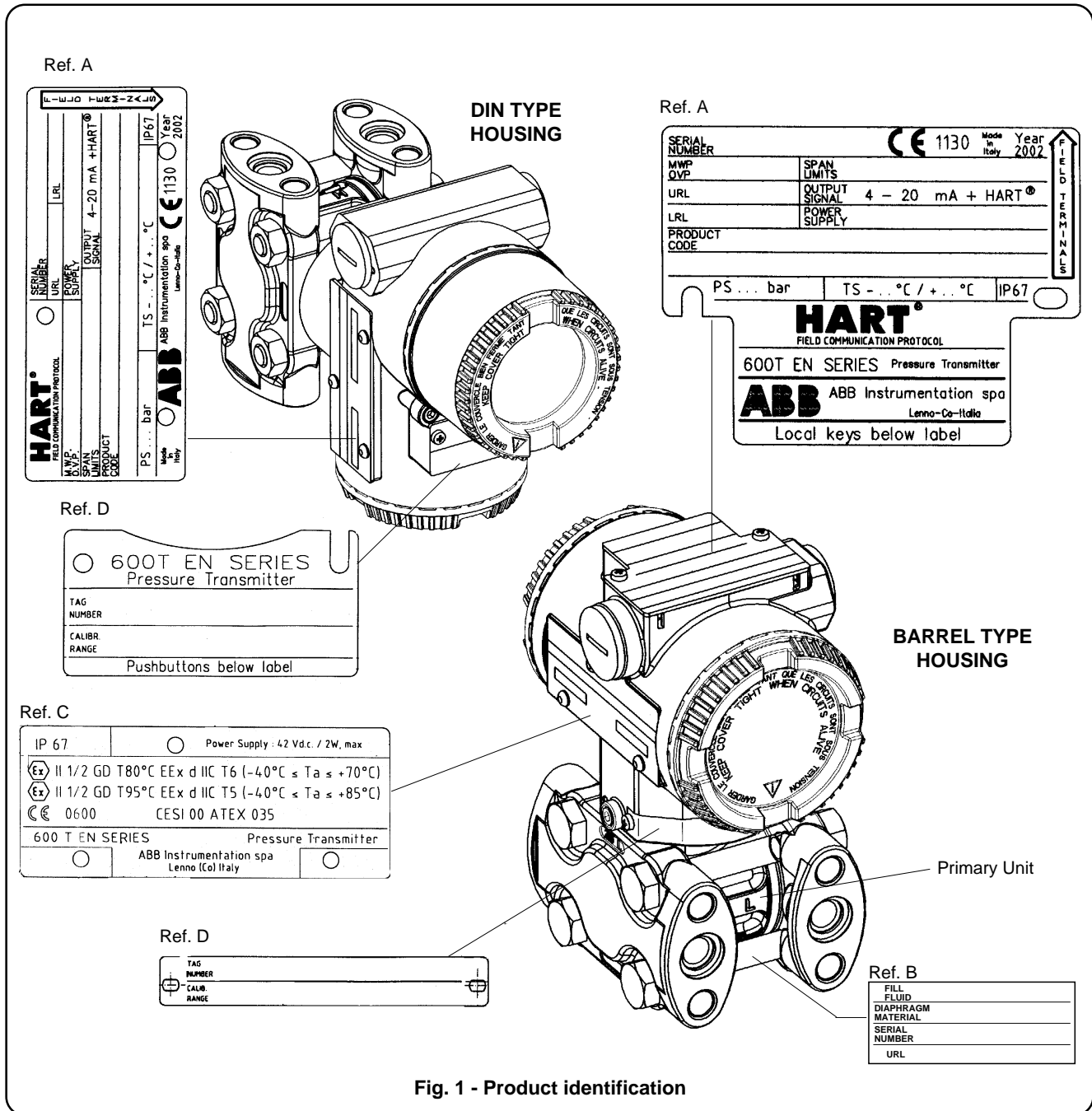


Fig. 1 - Product identification



Important - The instrument serial number must always be quoted when making enquiries.

INSTALLATION



WARNING - For installation in Hazardous Areas, i.e. areas with dangerous concentrations of e.g. gases or dusts that may explode if ignited, the installation must be carried out in accordance with relative standards either EN 60079-14 or IEC 79-14 and/or with local authority regulations, for the relevant type of protection adopted. Together with safety information here and after enclosed see also the Addendum for "Ex Safety" aspects which is part of this instruction manual.



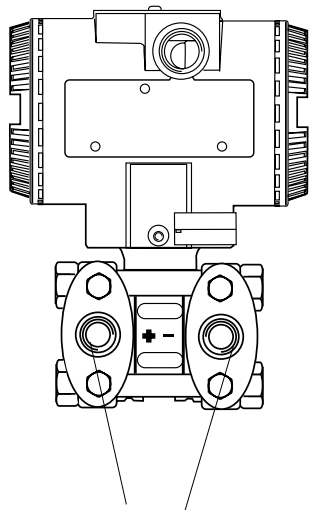
WARNING

In order to ensure operator safety and plant safety it is essential that installation is carried out by suitably trained personnel according to the technical data provided in the "Operative Limits" section in the following of the document.

The transmitter may be mounted on a vertical or horizontal 2-inch pipe (fig. 5 and 6) by means of the same mounting bracket.



Note: for other installation details see the relevant Addendum.



**Fig. 4 - Process Connections
(Diff. Press. Transmitter)**



Note: High side may be marked H or +
Low side may be marked L or -



WARNING: The transmitter when installed in accordance with this instruction manual will not be subjected to mechanical stresses.



WARNING: the transmitter should not be installed where it may be subjected to mechanical and thermal stresses or where it may be attached by existing or foreseeable aggressive substances. ABB cannot guarantee that a construction material is suited to a particular process fluid under all possible process conditions. See also the paragraph on "Operative limits".

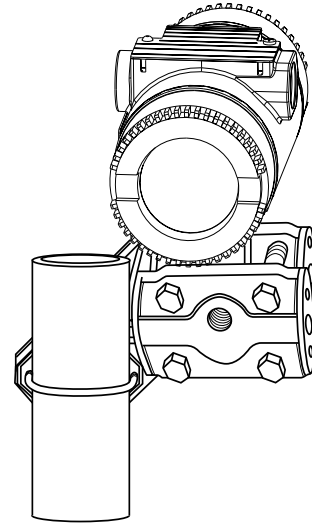


Fig. 5 - Mounting on 2" vertical pipe

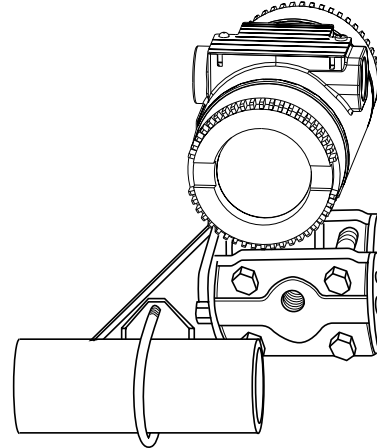


Fig. 6 - Mounting on 2" horizontal pipe



CAUTION - Proper location of the transmitter with respect to the process pipe will depend upon the service for which the instrument is used. Care should be exercised to identify correct process connections.

The secondary unit of the transmitter may be rotated through 360° approx. with respect to the primary unit without degrading performance or damaging the internal wiring. Do not force the primary unit to rotate; use the 2 mm Allen key supplied to unlock and lock the tang grub screw (see Fig. 7). This feature, obtained by unscrewing (one turn is sufficient) the Allen screw, is particularly useful for reaching optimum access to the electrical connections and visibility of the output indicator.

OPERATIVE LIMITS

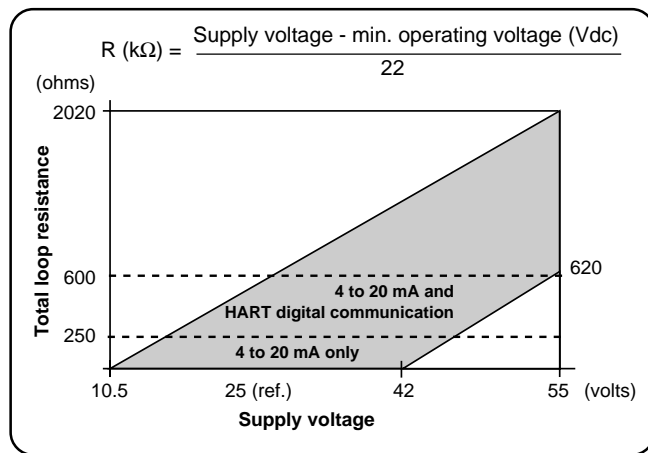
The transmitter operates on a minimum voltage of 10.5 Vdc to a maximum of 55 Vdc and is protected against polarity inversion.

Note - The transmitter operates from 10.5 to 42 Vdc with no load (a load up to 620 Ω allows operation up to 55 Vdc). For EEx ia and intrinsically safe (FM, CSA and SAA) approval power supply must not exceed 30 Vdc. In some countries the maximum power supply voltage is limited to a lower value.

Installing optional devices the minimum voltage increases to:

- 10.5 Vdc with no option or with integral digital display
- 10.7 Vdc with output analog indicator
- 12.5 Vdc with output LCD indicator
- 12.1 Vdc with surge protection
- 14.1 Vdc with LCD indicator and surge protection
- 13.1 Vdc with LCD CoMeter

The total loop resistance is indicated in the figure and expression below.



The total loop resistance is the sum of the resistance of all elements of the loop, including wiring, conditioning resistor, safety barriers and additional indicators (excluding the equivalent resistance of the transmitter).

Where a configuration device (HART), such as the Hand Held Communicator or a Modem is likely to be used, a resistance of 250 ohm minimum should be present between the power supply and the point of insertion of these devices, to allow communication.

Several types of safety barriers, either passive or active, can be satisfactorily used in conjunction with the Smart 600T EN transmitter. Nevertheless, in case of use of active barriers, check with the supplier if the model is suitable for use with smart transmitters allowing the connection of the configuration devices in the "safe" or non-hazardous area.

WARNING - The transmitter may be used as a safety accessory (as defined by the Pressure Equipment Directive 97/23/EC) i.e. as part of a shutdown system. In this case it is recommended to select the correct fail safe mode for the 4-20 mA signal (as per Namur NE43 recommendation). See also the instructions relevant to fail safe selection (Up/Down scale mode) in the addendum to the instruction manual on "Use of hardware links on the secondary electronics".

Temperature limits °C (°F) :

• Ambient (is the operating temperature)

All models and sensors can withstand without damages or leakages temperatures from -40 to +85 °C, -40 to +185 °F. -20 °C, -4 °F for Viton gaskets.

See the instrument data sheets for temperature effect on response time and accuracy.

Note: For Hazardous Atmosphere application see the temperature range specified on the certificate/approval relevant to the aimed type of protection.

• Process (1)

Lower limit

- refer to lower ambient limits
- -20°C (-4°F) for Viton gaskets

Upper limit

- Silicone oil and KTFILL-1 filling : 120°C (248°F) (2)
- Inert fluid filling : 100°C (212°F) (3)

- (1) Process temperature above 85°C (185 °F) requires derating the ambient limits by 1.5 : 1 ratio.
- (2) 100°C (212°F) for application below atmospheric pressure
- (3) 65°C (150°F) for application below atmospheric pressure

Pressure Limits

For model number see the first five characters of Product Code on label Ref. A.

The sensor code is the sixth character.

- Lower : 0.067 kPa abs, 0,67 mbar abs, 0.01 psia (0.13 kPa abs, 1.33 mbar abs, 0.02 psia for sensor code A). Double the lower limit with inert filling

• Upper

- model 6X1ED, EG, EA
sensor codes B to W : 14 MPa, 140 bar, 2030 psi
sensor code A : 8 MPa, 80 bar, 1160 psi
sensor code U : 25 MPa, 250 bar, 3620 psi
- model 6X1EE :
all sensor codes : 25 MPa, 250 bar, 3620 psi
- model 6X1EH :
all sensor codes : 1 MPa, 10 bar, 145 psi
- model 622ED :
sensor codes R, E, F : 42 MPa, 420 bar, 6090 psi
sensor code L : 32 MPa, 320 bar, 4640 psi
- model 6X1ES
10 MPa, 100 bar, 1450 psi or the following flange/fitting rating of the seal, whichever is less.

• flanged seals (S6E/S6F)

- ANSI CL 150 : 2 MPa, 20 bar, 290 psi
- ANSI CL 300 : 5 MPa, 50 bar, 725 psi
- ANSI CL 600 : 10 MPa, 100 bar, 1450 psi
- ANSI CL 900 : 16 MPa, 160 bar, 2320 psi
- DIN ND 16 : 1.6 MPa, 16 bar, 230 psi
- DIN ND 40 : 4 MPa, 40 bar, 580 psi
- DIN ND 64 : 6.4 MPa, 64 bar, 930 psi
- DIN ND 100 : 10 MPa, 100 bar, 1450 psi
- DIN ND 160 : 16 MPa, 160 bar, 2320 psi

• sanitary seals (S6S)

- 2in Triclamp : 3.8 MPa, 38 bar, 550 psi
- 3in Triclamp : 2.4 MPa, 24 bar, 350 psi
- 4in Triclamp : 1.7 MPa, 17 bar, 250 psi
- F50/F80 Union nut : 2.5 MPa, 25 bar, 360 psi

... OPERATIVE LIMITS

Proof pressure

The transmitter meets SAMA PMC 27.1 requirements and can be exposed without leaking to line pressure of up to:

- 48 MPa, 480 bar, 6960 psi for 6X1ED-EE-EH;
- 28 MPa, 280 bar, 4060 psi for 6X1EG, 6X1EA;
- 77 MPa, 770 bar, 11160 psi for 622ED;
- 20 MPa, 200 bar, 2900 psi or two times the flange/fitting rating of the seal, whichever is less for 6X1ES.

Environmental limits

Wet and dust-laden atmospheres

The transmitter is dust and sand tight and protected against immersion effects as defined by IEC 529 (1989) to IP 67 (IP 68 on request) or by NEMA to 4X or by JIS to C0920.

Electromagnetic compatibility (EMC)

Comply with EN 50081-1 for emission and EN 50082-2 for immunity requirements and test; CE mark.

Fill fluid warning

Be sure that the fill fluid can mix safely with the process fluid in case of rupture of the sensor membrane.

CORROSION

In the attached table the following abbreviations apply:

- A** = Generally suitable Corrosion rate < 0.12 mm, 0.005 in per year.
- B** = Concentration and Temperature Limited
- NR** = Not Recommended
- = No Data Available

Numbers indicate the maximum allowable temperature (°C) for a generally suitable material.



NOTE

Data of the following table are based on information from manufacturers.

All data is based on a temperature of 20 °C, 70 °F unless noted otherwise.

Since corrosion involves many more variables than this table considers, such as trace contaminants, aeration or temperature-concentration profile, stress corrosion cracking and pitting, the table should be used only as a reference in narrowing the choice of materials that merit further investigation. Suitability of a particular material is best determined by field test.

At this purpose, please contact our local ABB representatives.



WARNING

For safety purpose the design corrosion allowance of differential pressure instrument flanges is of about 1.5 mm 0.04 in. Therefore from the viewpoint of safe containment of liquids compatible with a specific material according to the following table, the expected instrument lifetime is more than 10 years, but the previous note apply.

CORROSION TABLE

	316 L SS	Hastelloy-C	Monel	Tantalum	PTFE (Teflon)	Elastomer (Viton)
A = Generally suitable						
B = Concentration and Temperature Limited						
NR = Not Recommended						
- = No Data Available						
Numbers indicate the maximum allowable temperature (°C) for a generally suitable material						
Acetaldehyde	B	A	A	A	A	A
Acetic Acid 0.25%	B	A	22	A	A	NR
Acetic Acid 50%	B	A	100	A	A	NR
Acetic Acid 99.7%	B	A	NR	A	A	NR
Aluminum Chloride	NR	B	B	A	A	A
Aluminum Fluoride	NR	A	A	NR	A	A
Aluminum Hydroxide	B	B	B	NR	A	A
Aluminum Nitrate	A	A	A	A	A	21
Aluminum Potassium Sut.	A	NR	B	A	A	21
Ammonium Bisulfate					A	A
Ammonium Chloride	NR	B	B	A	A	A
Ammonium Fluoride	A	NR	B	NR	A	A
Ammonium Hydroxide	A	A	B	NR	A	A
Ammonium Nitrate	A	B	NR	A	A	66
Ammonium Phosphate	B	A	B	A	A	-
Ammonium Sulfate	NR	B	NR	A	A	21
Ammonium Sulfide	A			A	A	
Ammonium Sulfite	B	B	NR	A	A	A
Barium Chloride	NR	NR	B	A	A	A
Barium Hydroxide	A	NR	B	NR	A	NR
Barium Nitrate	A	B	B	A	A	A
Barium Sulfate	B	B	B	A	A	
Barium Sulfide	NR	-	NR	A	A	A
Beef Sugar Liquor	A	-			A	A
Beer	A	A	A	A	A	
Black Liquor	NR	A	NR	A	A	A
Blood	A	A	A	A	A	A
Borax	B	NR	A		A	A
Boric Acid	A	A	B	A	A	21
Brine	NR	A	NR	A	A	A
Butyric Acid	B	A	B	A	A	NR
Cadium Bromide	NR	A			A	82
Cadium Chloride	B	A		A	A	82
Cadium Nitrate	A	A			A	A
Cadium Sulfate	NR	A			A	A
Calcium Carbonate	B	B	A	A	A	A
Calcium Chlorate	B	A	A	A	A	
Calcium Chloride	NR	A	B	A	A	A
Calcium Fluoride	A	A	A	NR	A	
Calcium Hydroxide	A	A	A	A	A	71
Calcium Hypochlorite 6%	NR	NR	NR	A	A	71
Calcium Nitrate	B	B	A	A	A	A
Calcium Sulfate	B	B	B	A	A	71
Carbolic Acid	B	A	B	A	A	A
Cellulose Acetate	A	A	A	A	A	NR
Chlorinated Water	B	A	NR	A	A	A

CORROSION TABLE

	316 L SS	Hastelloy-C	Monel	Tantalum	PTFE (Teflon)	Elastomer (Viton)
A = Generally suitable						
B = Concentration and Temperature Limited						
NR = Not Recommended						
- = No Data Available						
Numbers indicate the maximum allowable temperature (°C) for a generally suitable material						
Chromic Acid	NR	NR	NR	A	A	NR
Cider	A	A	A	A	A	A
Citric Acid (all conc.)	B	A	B	A	A	A
Citric Acid 10%	A	100	A	A	A	A
Clay Slurry	A	A			B	A
Coal & Water Slurry	B	A			NR	A
Coffee	A	A	A		A	A
Coke Syrup	A				A	A
Copper Chloride	NR	NR	NR	A	A	A
Copper Cyanide	B	B	A	A	A	A
Copper Fluoride	NR	NR			A	
Copper Nitrate	B	NR	NR	A	A	A
Copper Ore Slurry	A					A
Copper Sulfate	B	A	B	A	A	71
Dairy Products	A	A			A	-
Dichloroacetic Acid	NR	NR		A	A	NR
Dyes	A	A			A	NR
Fatty Acids	A	A	B	A	A	NR
Ferric Chloride	NR	B	NR	A	A	A
Ferric Sulfate	B	B	NR	A	A	A
Ferrous Chloride	NR	B	NR	A	A	A
Ferrous Nitrate	NR	B			A	
Ferrous Sulfate	NR	B	B	A	A	A
Fluosilicic Acid	NR	NR	A	A	B	A
Formaldehyde	A	B	A	A	A	A
Formic Acid (all conc.)	24	21	NR	A	A	NR
Fresca (soft drink)	A	A			A	
Fruit Juices	A	NR	B		A	NR
Gin	A	A			A	A
Ginger Ale	A	A			A	
Ginger Beer	A	A			A	A
Glucose	A	A	A	A	A	A
Glutaric Acid		24			A	NR
Grape Juice	A	A			A	
Green Liquor (NaOH)	B	A	A	A	A	-
Hydrobromic Acid	NR	NR	NR	A	A	66
Hydrochloric Acid	NR	NR	NR	A	A	NR
Hydrocyanic Acid	NR	NR	NR	A	A	NR
Hydrofluoric Acid	NR	NR	B	NR	A	71
Hydrogen Peroxide	B	A	NR	A	A	71
Hydrogen Sulfide	A	A	NR	A	A	A
Iodic Acid	NR				A	
Lactic Acid 10-85%	NR	NR	B	A	A	A
Lactic Acid 5%	A	38	NR	A	A	A
Latex	A	A			A	
Lead Acetate	B	B	B	A	A	A

CORROSION TABLE

	316 L SS	Hastelloy-C	Monel	Tantalum	PTFE (Teflon)	Elastomer (Viton)
A = Generally suitable						
B = Concentration and Temperature Limited						
NR = Not Recommended						
- = No Data Available						
Numbers indicate the maximum allowable temperature (°C) for a generally suitable material						
Lemon Juice	A	A			A	
Lime (Calcium Hydroxide)	A	A	A	A	A	60
Machine Broke	A	A			A	A
Magnesium Carbonate	B	B	A	A	A	
Magnesium Chloride	B	A	B	A	A	B
Magnesium Hydroxide	B	B	B	A	A	
Magnesium Nitrate	B	B	B	A	A	71
Magnesium Sulfate	38	B	A	A	A	71
Maleic Acid	A	A	A	A	A	A
Malic Acid	A	B	B	A	A	A
Mercuric Chloride	NR	NR	A	A	A	B
Milk (Skim or Regular)	A	A	B		A	
Molasses (Zuelaluf)	A	A	A	A	A	
Nickel Chloride	NR	B	B	A	A	A
Nickel Nitrate	B	B	A	A	A	A
Nickel Sulfate	B	B	B	A	A	A
Nitric Acid (all conc.)	B	NR	NR	A	A	
Nitric Acid 5%	A	NR	NR	A	A	A
Oxalic Acid	NR	NR	B	A	71	NR
Paper Pulp	A	A			A	
Phosphate Slurry	NR	A			A	A
Phosphoric Acid 30%	B	26	100	A	A	71
Phosphoric Acid 80%	NR	B	100	A	A	71
Potassium 5-50%	30	A			A	66
Potassium Aluminum Sulfate	B	B	B		A	A
Potassium Bisulfate	B				A	A
Potassium Bromide	B	A	B	A	A	A
Potassium Carbonate	B	B	B	NR	A	
Potassium Chlorate	B	B	B	A	A	A
Potassium Chloride	B	A	B	A	A	A
Potassium Cyanide	NR	B	B	A	A	A
Potassium Permanganate	B	B	B	A	A	
Potassium Phosphate	B	B	A	A	A	A
Potassium Sulfate	NR	B	A	A	A	A
Potassium Sulfide	A	NR	B	A	A	A
Root Beer	A	A			A	A
Rosin Size	A	A	A	A	A	
Rum	A				A	A
Salicylic Acid	B	B	A	A	A	NR
Sea Water	B	A	A	A	A	A
Sewage	A	B	A	A	A	A
Silver Nitrate (all conc.)	B	NR	NR	A	A	A
Sodium Acetate 50%	B	A	A	A	A	A
Sodium Chloride (Salt)	B	A	B	A	A	A
Sodium Hydroxide	B	B	A	NR	A	A
Sodium Hypochlorite	NR	NR	NR	A	A	A

CORROSION TABLE

	316 L SS	Hastelloy-C	Monel	Tantalum	PTFE (Teflon)	Elastomer (Viton)
A = Generally suitable						
B = Concentration and Temperature Limited						
NR = Not Recommended						
- = No Data Available						
Numbers indicate the maximum allowable temperature (°C) for a generally suitable material						
Sodium Nitrate	B	B	A	A	A	NR
Sodium Phosphate	B	B	A	A	A	A
Sodium Sulfate	B	NR	NR	A	A	71
Sodium Sulfide	B	B	A	B	A	71
Sodium Sulfite	B	B	B	A	A	71
Starch	B				A	A
Sulfuric Acid	NR	22	NR	A	A	A
Sulfurous Acid	NR	B	NR	A	A	A
Tab	A	A			A	A
Tartaric Acid	B		B		A	77
Titanium Dioxide	A	A			A	
Tomato Juice	A	A			A	A
Urea	B	A	B	A	A	
Vinegar	A	A	A		A	
Water (impure)	A	A			A	A
Whiskey	A	A			A	A
White Liquor	A	A	B	A	A	A
Wines	A	A			A	
Zinc Chloride (all conc.)	NR	B	B	A	A	71
Zinc Sulfate	B	B	B	A	A	71

DISMANTLING AND REASSEMBLY



WARNING - Process fluids and/or pressure retained in the transmitter primary unit can cause severe injury and death or damage to the equipment. It is the user responsibility to make sure that the instrument is not under pressure before removing the instrument from service or when draining or venting.

Dangerous fluids

In case of toxic or otherwise dangerous process fluid, take any precautions as recommended in the relevant Material Safety Data Sheet.



CAUTION - Dismantling and reassembly should not be carried out on site because of the risk of damage to components and printed circuits as a result of adverse environmental conditions such as humidity, dust, etc. The dismantling and reassembly procedures given below should be carried out in the listed order to avoid instrument damage.

Required tools

- 2 mm Allen key
- 3 mm Allen key
- Small Phillips screwdriver
- Small flat-bladed screwdriver
- 17 mm spanner (22 mm for mod. 622ED)
- 17 mm torque wrench (22 mm for mod. 622ED)
- (Range > 52 Nm - 39 foot lbs)

Dismantling

- a) Screw down completely the cover locking screw, electronics side, using the 3 mm Allen key
- b) Unscrew and remove the covers
- c) Unscrew the two fixing screws and remove the secondary electronic assembly
- d) Unplug the sensor cable
- e) Remove the tang grub screw using the 2 mm Allen key
- f) Unscrew the housing taking care not to damage the sensor cable or the connector
- g) Loosen and remove the four flange fixing bolts using a 17 mm. spanner (22 mm for mod. 622ED).

Reassembly

Check that the "O" rings are not damaged : if in replace.



WARNING - Assembling flanges with incorrect fixing bolts and nuts and improper "O rings" can cause fracture or overstressing of bolts and release of pressurized process material. Use only official spare parts (*) and do not exceed the specified torque limits. **DO NOT REMOVE** the "O ring" fitted in the sensor neck: it provides the housing a degree of protection.

- a) Refit the flange fixing bolts with a torque of 20 Nm (15 ft lbs) using a 17 mm. torque wrench (52 Nm - 39 ft lbs for mod. 622, using a 22 mm torque wrench).
1 Nm is equivalent to 0.738 ft lbs (8.85 in lbs)
- b) Insert the sensor cable in its recess at the bottom of the housing.
- c) Screw the housing down completely until the nesting of housing/sensor assy is reached, then unscrew by one complete turn maximum. Rotate the topwork in the desired position and lock it with the tang grub screw previously removed.
- d) Plug the sensor cable to the secondary electronics. Fix the electronic circuit by its screws.
- e) Refit the covers and tighten securely.



WARNING - For Hazardous Location installations, at least eight (8) threads on the cover must be engaged in order to meet the flameproof (explosion-proof) requirements.

- f) Unscrew the cover locking screw to secure the covers. This is **mandatory** to meet "**Flameproof requirements**" for **Hazardous Areas installation**.



PRESSURE TEST WARNING

Once reassembled the process flanges and the transducer, a pressure test is required. At this purpose, apply a hydrostatic pressure of the maximum overrange pressure rating to both process connections simultaneously. Wait for one minute, then verify that no leakages occurred, otherwise repeat the assembly procedure and the pressure test.

- (*) The spare parts list is available at:
<http://138.221.224.36> or from local ABB representatives.

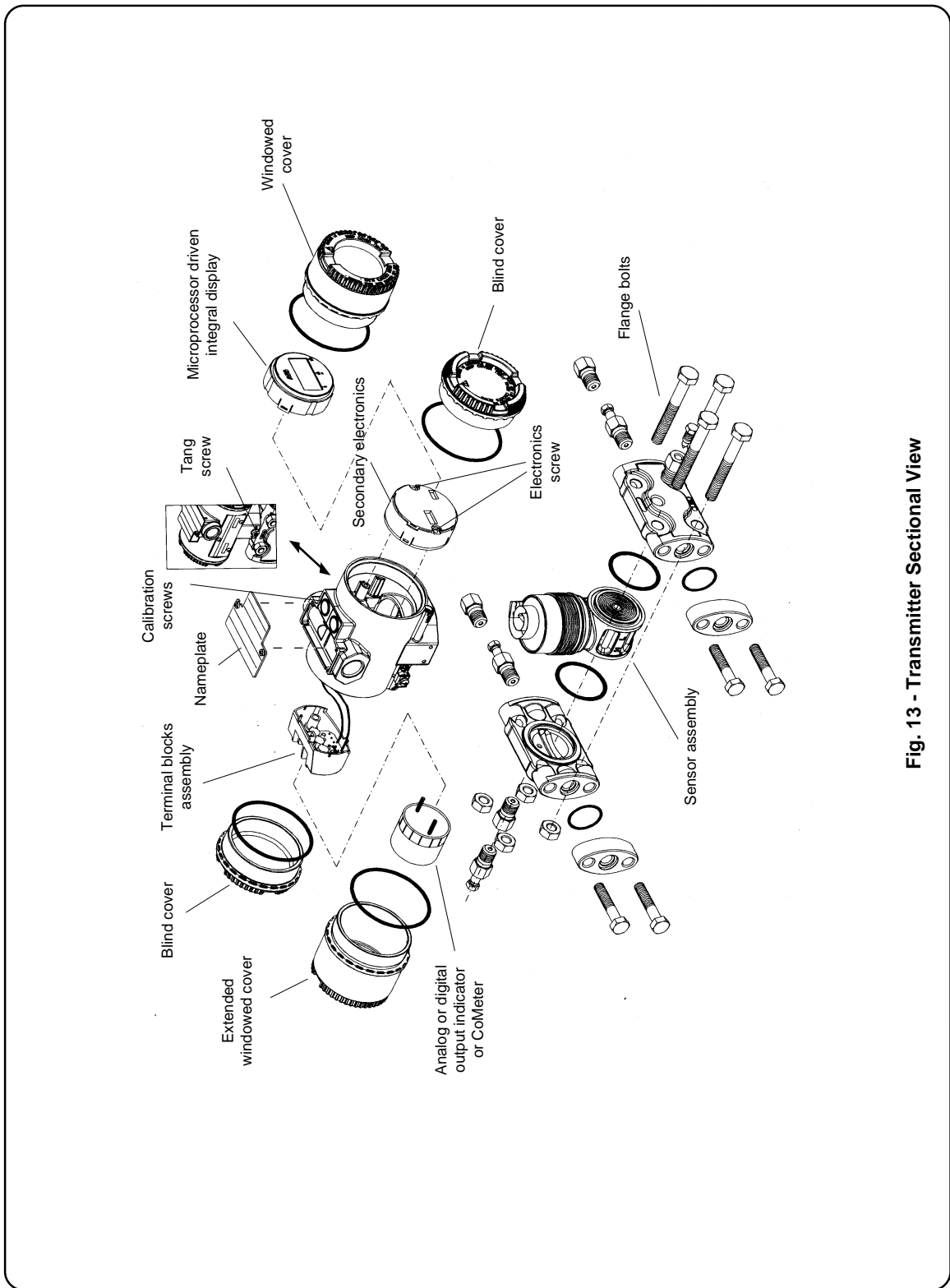


Fig. 13 - Transmitter Sectional View

ADDENDUM FOR "EX SAFETY" ASPECTS AND "IP" PROTECTION (EUROPE)

According to ATEX Directive (European Directive 94/9/EC of 23 March 1994) and relative European Standards which can assure compliance with Essential Safety Requirements, i.e., EN 50014 (General requirements) EN 50018 (Flameproof enclosures "d") EN 50020 (Intrinsic safety "i") EN 50284 (Equipments, group II, category 1G) EN 50281 (Apparatus for use with combustible dusts), the pressure transmitters of the 600T EN SERIES have been certified for the following group, categories, media of dangerous atmosphere, temperature classes, types of protection. Examples of application are also shown below by simple sketches.

- a) Certificate ATEX II 1G DT50°C, EEx ia IIC T5 (-40°C ≤ Ta ≤ +40°C)
DT95°C, EEx ia IIC T4 (-40°C ≤ Ta ≤ +85°C)

BASEEFA certificate number BAS 99ATEX 1180

The meaning of ATEX code is as follows:

II : Group for surface areas (not mines)

1 : Category

G : Gas (dangerous media)

D : Dust (dangerous media)

T50°C: Maximum surface temperature of the transmitter enclosure with a Ta (ambient temperature) +40°C for Dust (not Gas) with a dust layer up to 50 mm depth.

T95°C: As before for Dust for a Ta +85°C

(Note: the number close to the CE marking of the transmitter safety label identifies the Notified Body which carries out the surveillance for the production of the transmitter)

The other marking refers to the protection type used according to relevant EN standards:

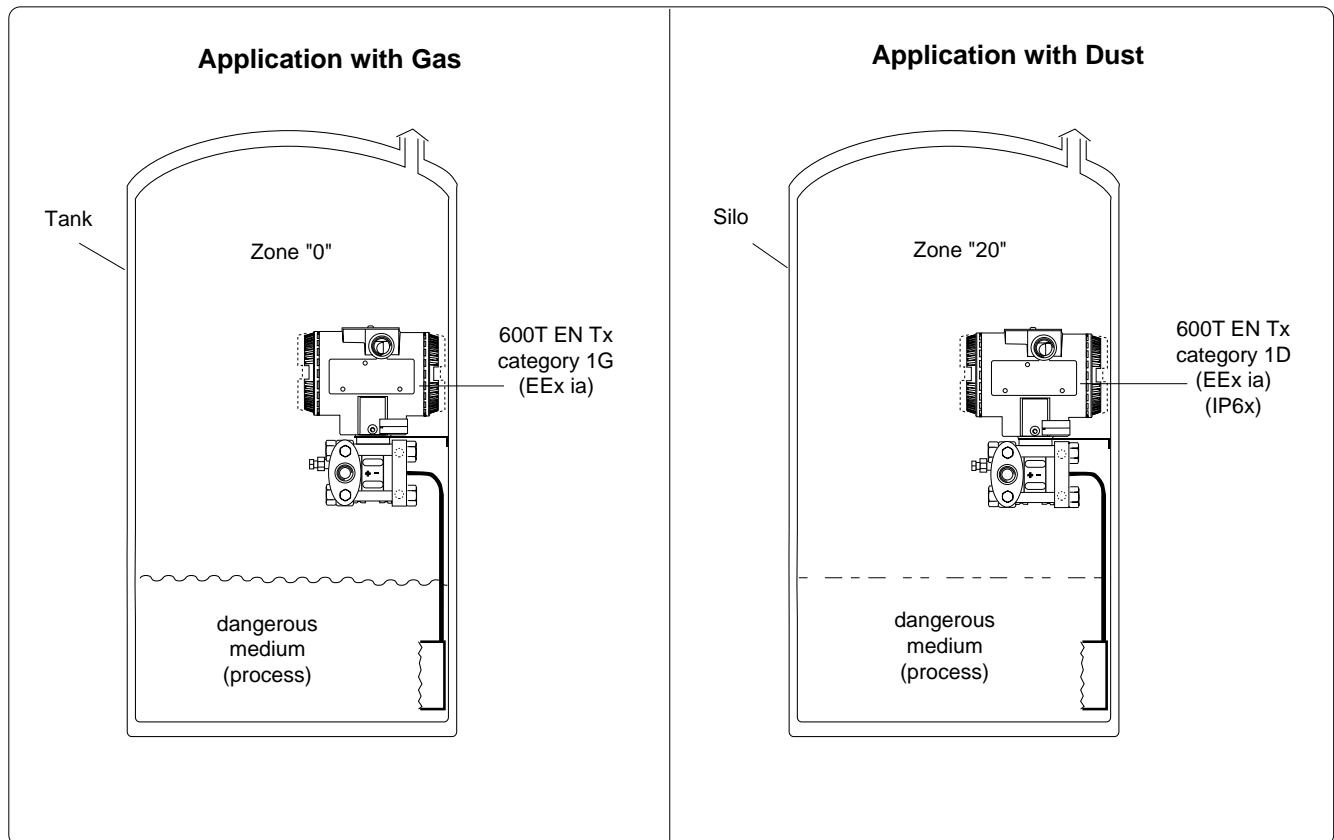
EEx ia : Intrinsic safety, protection level "a"

IIC : Gas group

T5 : Temperature class of the transmitter (which corresponds to 100°C max) with a Ta (ambient temperature) +40°C

T4 : Temperature class of the transmitter (which corresponds to 135°C max) with a Ta (ambient temperature) +85°C

About the applications, this transmitter can be used in "Zone 0" (Gas) and "Zone 20" (Dust) classified areas (continuous hazard) as it is shown on the following sketch:



ADDENDUM FOR "EX SAFETY" ASPECTS AND "IP" PROTECTION (EUROPE)

- b) Certificate ATEX II 1/2 G DT80°C, EEx d IIC T6 (-40°C ≤ Ta ≤ +70°C)
DT95°C, EEx d IIC T5 (-40°C ≤ Ta ≤ +85°C)

CESI Certificate number CESI 00ATEX 035

The meaning of ATEX code is as follows:

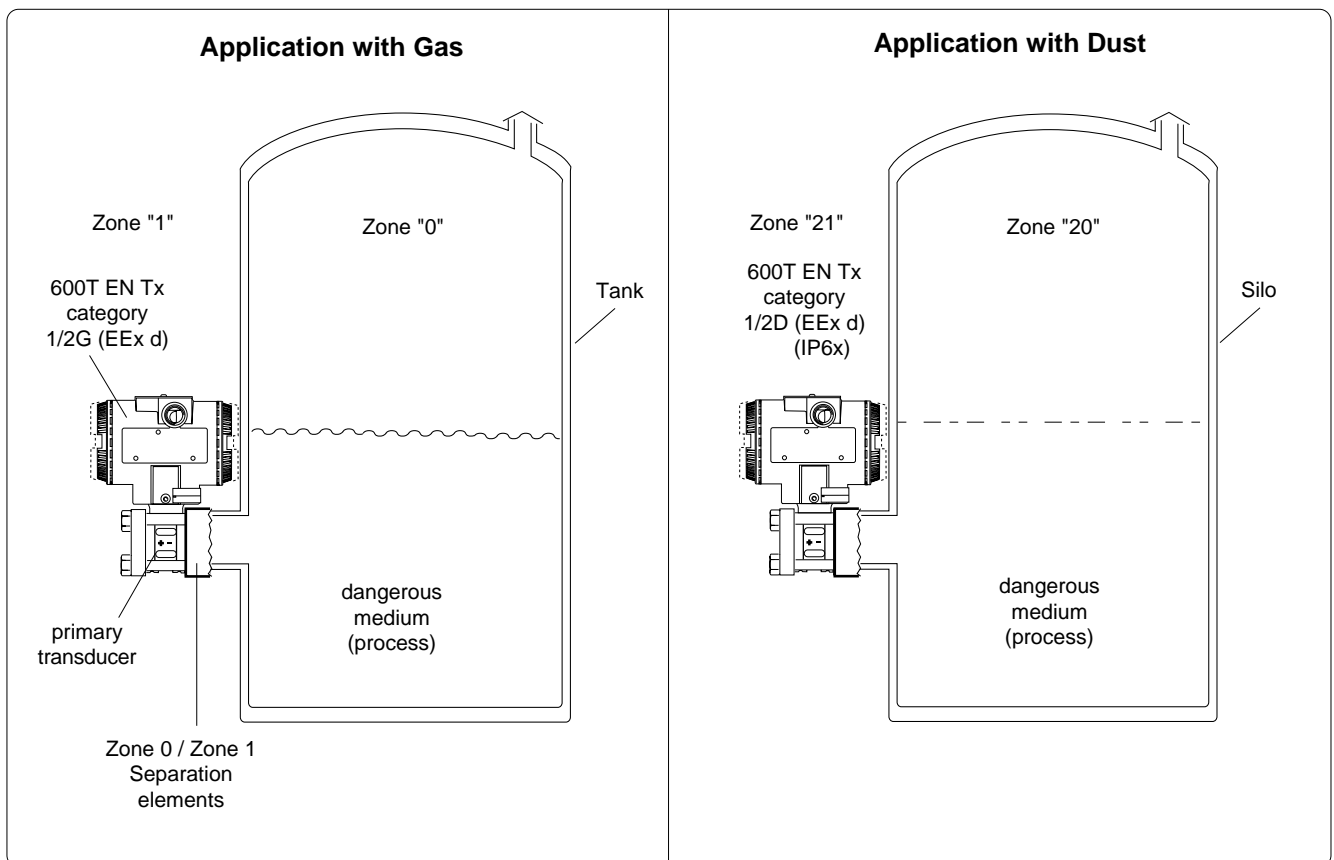
- II : Group for surface areas (not mines)
- 1/2 : Category - It means that only a part of the transmitter complies with category 1 and a second part complies with category 2 (see next application sketch)
- G : Gas (dangerous media)
- D : Dust (dangerous media)
- T80°C: Maximum surface temperature of the transmitter enclosure with a Ta (ambient temperature) +70°C for Dust (not Gas) with a dust layer up to 50 mm depth.
- T95°C: As before for Dust for a Ta +85°C

Note: the number close to the CE marking of the transmitter safety label identifies the Notified Body which carries out the Surveillance for the production of the transmitter.

The other marking refers to the protection type used according to relevant EN Standards:

- EEx d: Flameproof
- IIC : Gas group
- T6 : Temperature class of the transmitter (which corresponds to 85°C max) with a Ta (ambient temperature) +70°C
- T5 : Temperature class of the transmitter (which corresponds to 100°C max) with a Ta (ambient temperature) +85°C

About the applications, this transmitter can be used in Zone "0" (Gas) classified areas (continuous hazard) with its "process part" only, whereas the remaining part of the transmitter, i.e. its enclosure, can be used in Zone 1 (Gas), only (see sketch below). Reason of this is the process part of the transmitter (normally called primary transducer) that provides inside separation elements to seal off the electrical sensor from the continuously hazardous process, according to the EN50284 and EN50018. About Dust application, the transmitter is suitable for "Zone 21" according to the EN 50281 as it is shown on the relevant part of the sketch:



IP code

About the degree of protection provided by the enclosure of the pressure transmitter, the 600T EN SERIES has been certified IP67 according to EN 60529 standard (this is equivalent to IEC 529).

The first characteristic numeral indicates the protection of the inside electronics against ingress of solid foreign objects including dusts. The assigned "6" means an enclosure dust-tight (no ingress of dust).

The second characteristic numeral indicates the protection of the inside electronics against ingress of water. The assigned "7" means an enclosure water-protected against a temporary immersion in water under standardized conditions of pressure and time.



EC DECLARATION OF CONFORMITY

We: ABB Instrumentation S.p.A.
Via Statale, 113
22016 Lenno (Como)
Italy

declares under our sole responsibility that the pressure transmitters of 600T and 2600T series, as below specified:

are in compliance with the requirements of 97/23/CE PED Directive

in details, when applicable, have been used for the compliance demonstration, as defined in the annex III of the Directive considering the transmitter as category IV, the D and B modules.

For the D Module has been released by Consorzio RINA OMECO the certificate n° D/1 2002 MI PP 11

For the B Module have been released by Consorzio RINA OMECO the certificates:

n° B/1 2002 MI PP 11 for the models:

611ED, 621ED, 611EE, 621EE, 611EG, 621EG, 611EA, 621EA, 611EH, 621EH, 262DS, 264DS, 262PS, 264PS, 262VS, 264VS, 266DS, 268DS, 266PS, 268PS, 266VS, 268VS, 262DF, 264DF, 262PF, 264PF, 262VF, 264VF

n° B/2 2002 MI PP 11 for the models:

614EG, 624EG, 614EA, 624EA, 262NS, 264NS, 262HS, 264HS, 266NS, 268NS, 266HS, 268HS, 262NF, 264NF, 262HF, 264HF

n° B/3 2002 MI PP 11 for the models:

614EGS, 624EGS, 614EAS, 624EAS, 262HSxT, 264HSxT, 262NSxT, 264NSxT

Lenno, 28 Maggio 2002

ABB Instrumentation S.p.A..
Technical Manager
A. Moroni

ABB Instrumentation spa

Automation

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Hartmann & Braun

EC DECLARATION OF CONFORMITY

We: ABB Instrumentation Spa
Via Statale, 113
22016 Lenno (Como)
Italy

declares under our sole responsibility that the products:

600T EN Series (Transmitters, Hand Held Terminal, Field Indicator) in all the communication configurations (4÷20 mA + HART®, Profibus, FOUNDATION Fieldbus, Safety)

are in conformity with the following standards:

EN 50 081-1 (1992) Electromagnetic compatibility - Generic emission standard - Residential, commercial and light industry
according to: EN55022 (1995)

EN 50 082-2 (1995) Electromagnetic compatibility - Generic immunity standard - Industrial environment
according to: EN61000-4-2 (1998)
EN61000-4-3 (1998)
EN61000-4-4 (1995)
EN61000-4-5 (1995)
ENV50141 (1993)

following the provisions of the EMC Directives 89/336/EEC and 93/68/EEC.

Lenno, October 10, 2001

ABB Instrumentation Spa
Technical Manager
A. Moroni

