

JDF200

Field indicator



Engineered solutions for all applications

Measurement made easy

JDF200 indicator

Introduction

Model JDF200 field indicator provides simple and low cost remote indication of a process variable on an easy to read meter, ensuring the most useful display for any specific application..

For more information

Further publications for JDF200 field indicator are available for free download from www.abb.com/pressure

The Company

We are an established world force in the design and manufacture of measurement products for industrial process control, flow measurement, gas and liquid analysis and environmental applications.

As a part of ABB, a world leader in process automation technology, we offer customers application expertise, service and support worldwide.

We are committed to teamwork, high quality manufacturing, advanced technology and unrivalled service and support.

The quality, accuracy and performance of the Company's products result from over 100 years experience, combined with a continuous program of innovative design and development to incorporate the latest technology.

Index

1. Introduction	4	7 Operation	13
1.1 Instruction manual structure	4	7.1 Configuration using the LCD with keypad	13
1.2 Models covered by this manual	4	7.2 Conventional LCD (L1 option)	13
1.3 Product description	4	7.3 LCD menu structure	13
2 General safety information	5	7.3.1 Easy Set-up	15
2.1 Improper use	5	7.3.2 Device Set-up	18
2.2 Technical limit values	5	7.3.3 Process Alarm	19
2.3 Warranty provision	5	7.3.4 Diagnostics	20
2.4 Use of instructions	5	7.3.5 Device Info	20
2.5 Operator liability	6	7.3.6 Display	20
2.6 Qualified personnel	6	7.4 Output functions	21
2.7 Returning devices	6	7.4.1 Linear	21
2.8 Disposal	6	7.4.2 Square root	21
2.9 Information on WEEE Directive 2012/19/EU	6	7.4.3 Square root to the 3 rd power	21
2.10 Transport and storage	6	7.4.4 Square root to the 5 th power	21
2.11 Safety information for electrical installation	6	7.4.5 Custom linearization curve	21
2.12 Safety information for inspection and maintenance	6	7.4.6 Cylindrical lying tank	21
3 Field indicator overview	7	7.4.7 Spherical tank	21
3.1 Field indicator components overview	7	7.5 Software release history	21
4 Opening the box	8	8 Error messages	22
4.1 Identification	8	8.1 LCD Display	22
4.2 Optional wired-on SST plate (I1)	8	8.2 Error states and alarms	22
4.3 Handling	8	9 Maintenance	23
4.4 Storage	8	9.1 Returns and removal	23
5 Mounting	9	9.2 Basic maintenance activities	23
5.1 General	9	10 Hazardous Area considerations	24
5.2 IP protection & designation	9	10.1 Ex Safety aspects and IP Protection (Europe)	24
5.3 General mounting information	9	10.1.1 Entities	28
5.3.1 Transmitter factory configuration consideration	9	11 Requirements for installation & use in US & Canada	29
5.3.2 Hazardous area considerations	9	11.1 General	29
5.4 Mounting JDF200 field indicator	9	11.2 Environmental Conditions	29
5.4.1 Bracket mounting	10	11.3 Entities	29
5.4.2 BB Stainless steel U-bolt for pipe fixing	10	11.4 Instructions for cleaning	29
5.5 Securing the housing cover in flameproof areas	10	11.5 Insulation for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V	29
6 Field indicator wiring	11	11.6 Ex Safety aspects and IP Protection (US)	30
6.1 Cable connection	11	11.6.1 Applicable standards	30
6.2 Supply requirement	12	11.6.2 Classifications	30
6.3 Wiring procedure	12	11.6.3 Special conditions	30
6.4 Grounding	12	11.7 Ex Safety aspects and IP Protection (Canada)	31
		11.7.1 Applicable standards	31
		11.7.2 Classifications	31
		11.7.3 Special conditions	31
		11.8 ETL marking and entities	32
		Trouble Sheet	33
		Return Report	34

1. Introduction

1.1 Instruction manual structure

The present manual provides information on installing, operating, troubleshooting the JDF200 Field Indicator. Every section of the present manual is specifically dedicated to the specific phase of the field indicator lifecycle starting from its receipt and identification, passing to the installation, to the electrical connections, to the configuration and to the troubleshooting and maintenance operations.

1.2 Models covered by this manual

The present manual can be used for JDF200 Field Indicator.

1.3 Product description

Model JDF200 Field Indicator provides simple and low cost remote indication of a process variable on an easy to read LCD display.

Two types of connection configurations are described.

One involves the indicator coupled to an associated transmitter terminal block. The other uses the indicator as a junction box in the 4 to 20 mA line between transmitter and receiver.

2 General safety information

The “Safety” section provides an overview of the safety aspects to be observed for operation of the device.

The device has been constructed in accordance with the state of the art and is operationally safe. It has been tested and left the factory in perfect working conditions. The information in the manual, as well as the applicable documentation and certificates, must be observed and followed in order to maintain this condition throughout the period of operation.

Full compliance with the general safety requirements must be observed during operation of the device. In addition to the general information, the individual sections in the manual contain descriptions of processes or procedural instructions with specific safety information.

Only by observing all of the safety information can you reduce to the minimum the risk of hazards for personnel and/or environment. These instructions are intended as an overview and do not contain detailed information on all available models or every conceivable event that may occur during setup, operation, and maintenance work.

For additional information, or in the event of specific problems not covered in detail by these operating instructions, please contact the manufacturer. In addition, ABB declares that the contents of this manual are not part of any prior or existing agreements, commitments, or legal relationships; nor are they intended to amend these.

All obligations of ABB arise from the conditions of the relevant sales agreement, which also contains the solely binding warranty regulations in full. These contractual warranty provisions are neither extended nor limited by the information provided in this manual.

Caution. Only qualified and authorized specialist personnel should be charged with installation, electrical connection, commissioning, and maintenance of the field indicator. Qualified personnel are persons who have experience in installation, electrical wiring connection, commissioning, and operation of the field indicator or similar devices, and hold the necessary qualifications such as:

- Training or instruction, i.e., authorization to operate and maintain devices or systems according to safety engineering standards for electrical circuits, high pressures, and aggressive media
- Training or instruction in accordance with safety engineering standards regarding maintenance and use of adequate safety systems.

For safety reasons, ABB draws your attention to the fact that only sufficiently insulated tools conforming to DIN EN 60900 may be used.

Since the field indicator may form part of a safety chain, we recommend replacing the device immediately if any defects are detected. In case of use in Hazardous Area non sparking tools only must be employed.

In addition, you must observe the relevant safety regulations regarding the installation and operation of electrical systems, and the relevant standards, regulations and guidelines about explosion protection.

2.1 Improper use

It is prohibited to use the device for the following purposes:

- As a climbing aid, e.g., for mounting purposes
- As a support for external loads, e.g., as a support for pipes.
- Adding material, e.g., by painting over the name plate or welding/soldering on parts
- Removing material, e.g., by drilling the housing.

Repairs, alterations, and enhancements, or the installation of replacement parts, are only permissible as far as these are described in the manual. Approval by ABB must be requested for any activities beyond this scope. Repairs performed by ABB-authorized centers are excluded from this.

2.2 Technical limit values

The device is designed for use exclusively within the values stated on the name plates and within the technical limit values specified on the data sheets.

The following technical limit values must be observed:

- The Maximum ambient operating temperature may not be exceeded.
- The housing protection type must be observed.

2.3 Warranty provision

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 any liability for any resulting damage. This makes the manufacturer's warranty null and void.

2.4 Use of instructions

Danger – <Serious damage to health/risk to life>. This message indicates that an imminent risk is present. Failure to avoid this will result in death or serious injury.

Caution – <Minor injuries>. This message indicates a potentially dangerous situation. Failure to avoid this could result in minor injuries. This may also be used for property damage warnings.

Important. This message indicates operator tips or particularly useful information. It does not indicate a dangerous or damaging situation.

Warning – <Bodily injury>. This message indicates a potentially dangerous situation. Failure to avoid this could result in death or serious injury

Attention – <Property damage>. This message indicates a potentially damaging situation. Failure to avoid this could result in damage to the product or its surrounding area.

2.5 Operator liability

Prior to using corrosive and abrasive materials for measurement purposes, the operator must check the level of resistance of all parts coming into contact with the materials to be measured.

ABB will gladly support you in selecting the materials, but cannot accept any liability in doing so.

The operators must strictly observe the applicable national regulations with regard to installation, function tests, repairs, and maintenance of electrical devices.

2.6 Qualified personnel

Installation, commissioning, and maintenance of the device may only be performed by trained specialist personnel who have been authorized by the plant operator. The specialist personnel must have read and understood the manual and comply with its instructions.

2.7 Returning devices

Use the original packaging or suitably secure shipping package if you need to return the device for repair. Fill out the return form (see the end of the document) and include this with the device.

According to EC guidelines and other local laws for hazardous materials, the owner of hazardous waste is responsible for its disposal. The owner must observe the proper regulations for shipping purposes.

All devices sent back to ABB must be free from any hazardous materials (acids, alkalis, solvents, etc.).

2.8 Disposal

ABB actively promotes environmental awareness and has an operational management system that meets the requirements of DIN EN ISO 9001:2015, EN ISO 14001:2015 and BS-OHSAS 18001:2007. Our products and solutions are intended to have minimum impact on the environment and people during manufacturing, storage, transport, use and disposal.

This includes the environmentally friendly use of natural resources. ABB conducts an open dialog with the public through its publications.

This product/solution is manufactured from materials that can be reused by specialist recycling companies.

2.9 Information on WEEE Directive 2012/19/UE (Waste Electrical and Electronic Equipment)

This product or solution is subject to the WEEE Directive 2012/19/UE or corresponding national laws. Starting from August 15th 2018, electrical and electronic equipment marked with the crossed-out wheeled bin symbol may not be disposed as unsorted municipal waste. Waste of electrical and electronic equipment (WEEE) shall be treated separately using the national collection framework available to customers for the return, recycling and treatment of WEEE.

Proper disposal prevents negative effects on people and the environment, and supports the reuse of valuable raw materials. ABB can accept and dispose of returns for a fee.

2.10 Transport and storage

- After unpacking the field indicator, check the device for transport damage.
- Check the packaging material for accessories.
- During intermediate storage or transport, store the field indicator in the original packaging only.

For information on permissible ambient conditions for storage and transport, see "Technical data". Although there is no limit on the duration of storage, the warranty conditions stipulated on the order acknowledgment from the supplier still apply.

2.11 Safety information for electrical installation

Electrical connections may only be established by authorized specialist personnel in accordance with the electrical circuit diagrams. The electrical connection information in the manual must be observed; otherwise, the applicable protection type may be affected. Ground the measurement system according to requirements.

2.12 Safety information for inspection and maintenance

Warning – Risk to persons. There is no EMC protection or protection against accidental contact when the housing cover is open. There are electric circuits within the housing which are dangerous if touched. Therefore, the auxiliary power must be switched off before opening the housing cover.

Corrective maintenance work may only be performed by trained personnel.

- Before removing the device, remove power supply.
- Check whether hazardous materials have been used in the surroundings before opening the device. Residual amounts of hazardous substances may still be present in the device and could escape when the device is opened.
- Within the scope of operator responsibility, check the following as part of a regular inspection:

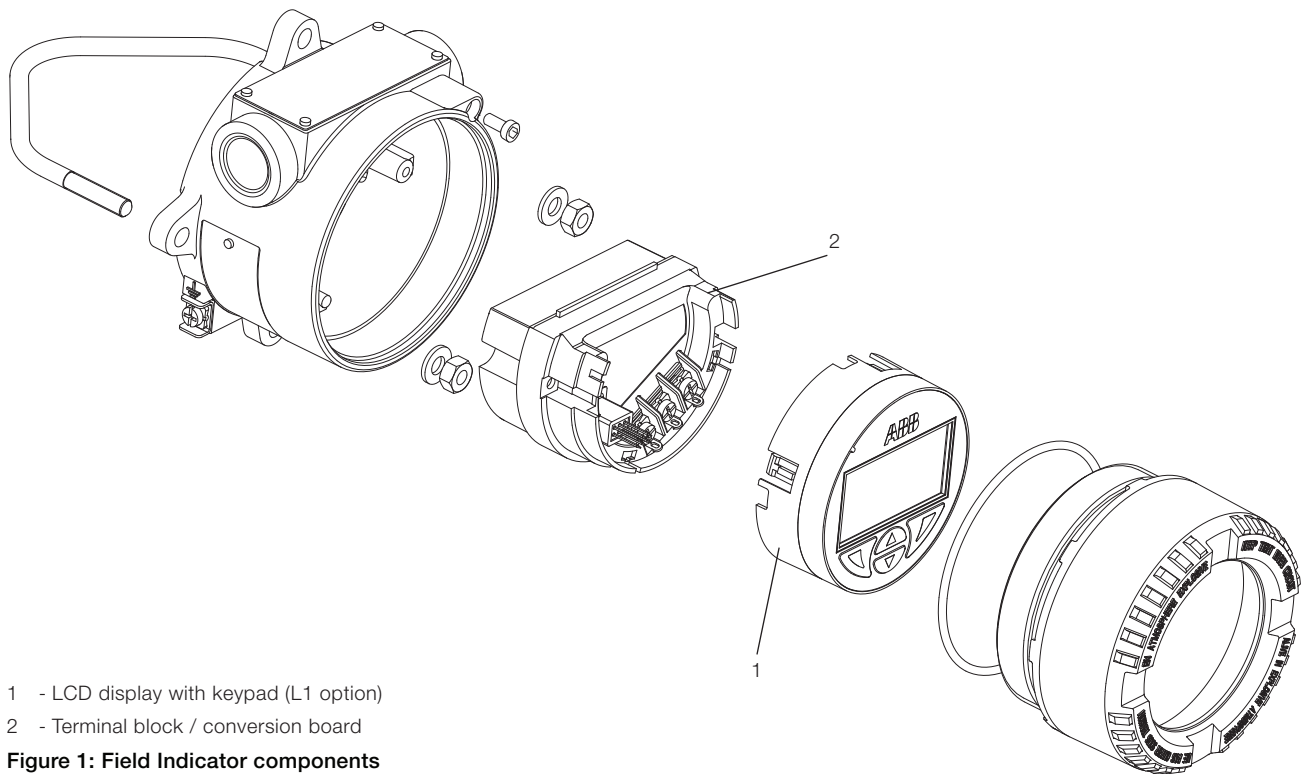
Measurement-related function

Leak-tightness

Wear (corrosion)

3 Field indicator overview

3.1 Field indicator components overview



4 Opening the box

4.1 Identification

The instrument is identified by the plates shown below.
The Nameplate provides information concerning: product code, input signal, tag and product serial number (see Ref. A).
Please refer to this number when making enquiries.
The Safety Marking plate provides information of Ex protection; it is filled with necessary Ex information only when the indicator is required for hazardous area installation (see Ref. B).
An additional nameplate is reporting a warning message for reference to the Operating Instruction (see Ref. C)
The optional, additional wired-on SST Tag plate (ref. C - code I2) can be filled with customized data.
JDF200 field indicator is in compliance with EMC 2014/30/UE.

The certification plate (ref.A) shown here is issued by ABB S.p.A, 22016 Tremezzina, Italy, with the numbers:

- IECEx ITS 16.0048X (for Ex ia, Ex d and Ex ec)
- ITS 16 ATEX 10165X (for Ex ia, Ex d)
- ITS 16 ATEX 10166X (for Ex ec)

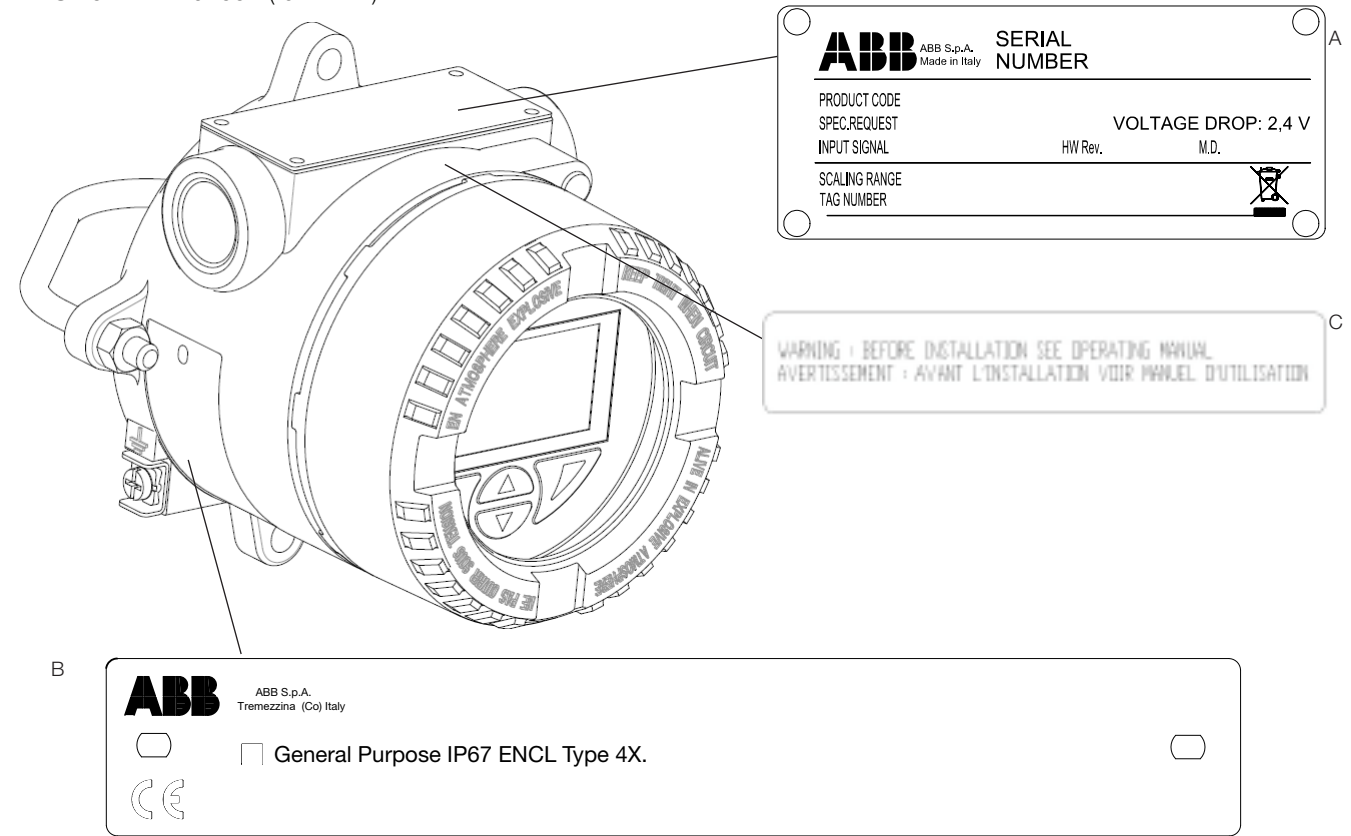


Figure 2: Product identification

4.2 Optional wired-on SST plate (I1)

The 266 transmitter can be supplied with the optional “Wired On Stainless Steel plate” (figure 4) which is permanently laser printed with a custom text specified in phase of order. The available space consists in 4 lines with 32 characters per line. The plate will be connected to the transmitter with a Stainless Steel wire.



Figure 4: 4-line layout of the optional wired-on Stainless Steel plate

4.3 Handling

The instrument does not require any special precautions during handling although normal good practice should be observed.

4.4 Storage

The instrument does not require any special treatment if stored as dispatched and within the specified ambient conditions. There is no limit to the storage period, although the terms of guarantee remain as agreed with the Company and as given in the order acknowledgement.

Model JDF200	Storage temperature limits
With LCD	–40 and 85 °C (–40 and 185 °F)

5 Mounting

5.1 General

Study these installation instructions carefully before proceeding. Failure to observe the warnings and instructions may cause a malfunction or personal hazard. Before installing the field instrument, check whether the device design meets the requirements of the measuring point from a measurement technology and safety point of view. This applies in respect of the:

- Explosion protection certification
- Temperature
- Operating voltage and current

In addition, the relevant directives, regulations, standards, and accident prevention regulations must be observed (e.g., VDE/VDI 3512, DIN 19210, VBG, Ex V, etc.). As far as possible, the setup should be free from critical ambient conditions such as extreme temperatures, vibrations, or shocks.

Important. If unfavorable ambient conditions cannot be avoided for reasons relating to building structure, measurement technology, or other issues, product quality may be affected.

5.2 IP protection & designation

The housings for JDF200 Field Indicator The field indicator is dust and sand tight and protected against immersion effect as defined by IEC60529 to IP67 or by NEMA Type 4X.

The first number indicates the protection of the electronics against the entry of foreign bodies, including dust.

“6” means that the housing is dust-proof (i.e., no ingress of dust). The second number indicates the type of protection the integrated electronics have against the entry of water.

The second number indicates the protection of the electronics against the entry of foreign bodies, including dust.

“7” means that the housing is protected against water; specifically, against the effects of temporary immersion in water under standardized water pressure and temporal conditions.

5.3 General mounting information

5.3.1 Transmitter factory configuration consideration

The field indicator in your hands has been manufactured to reflect the published specification. ABB configures JDF200 field indicator according to the user requirements. A configuration includes:

- TAG number
- LCD display configuration
- Scaling range

5.3.2 Hazardous area considerations

The field indicator can be installed in hazardous area only if certified. The certification plate is permanently fixed on the field indicator housing. JDF200 can have the following certifications:

INTRINSIC SAFETY:

ATEX Europe (code E1) approval

II 1G Ex ia IIC Tx Ga and II 1D Ex ta IIIC Tx Da IP67 and

II 1D Ex ia IIIC Tx Da IP67.

IECEx (code E8) approval

Ex ia IIC Tx Ga and Ex ta IIIC Tx Da IP67 and Ex ia IIIC Tx Da IP67

EXPLOSION PROOF:

ATEX Europe (code E2) approval

II 2G Ex db IIC Tx Gb and II 2D Ex tb IIIC Tx Db IP67

IECEx (code E9) approval

Ex db IIC Tx Gb and Ex tb IIIC Tx Db IP67

Increased safety “ec” and Intrinsically safe Ex ic:

ATEX Europe (code E3) type examination

II 3G Ex ec IIC Tx Gc and II 3G Ex ic IIC Tx Gc and II 3D Ex tc IIIC Tx Dc IP67

IECEx (code ER) type examination

Ex ec IIC Tx Gc and Ex ic IIC Tx Gc and Ex tc IIIC Tx Dc IP67

Intertek US (cod. EV) and Intertek Canada (cod. EU):

— Explosionproof

US: Class I, Div. 2, Groups A, B, C, D T6...T4

Class II, Div 2 Groups F, G T6...T4

Class I, Zone 1 AEx d IIC T6...T4 Gb

Class II, Div 1 Groups E, F, G T6...T4, Zone 20 AEx ta IIIC T85°C...T135°C Da

Canada: Ex d IIC T6...T4 Gb

Ex tb IIIC T85°C...T135°C Db

Ex ta IIIC Tx Da IP67

— Non-sparking

US: Class I, Zone 2 AEx nA IIC T6...T4 Gc

Class I, Div 2 Groups ABCD T6...T4

Canada: Ex ec IIC T6...T4 Gc

— Intrinsically safe

US: Class I, Zone 0 AEx ia IIC T6...T4 Ga

Class I, Division 1 Groups A, B, C, D T6...T4

Class II, Division 1 Groups E, F, G T6...T4

When connected per drawing No. DH3260

Class I, Division 2 Groups A, B, C, D T6...T4

Class I, Zone 2 AEx ic IIC T6...T4 Gc

When connected per drawing No. DH3260

Canada: Ex ia IIC T6...T4 Ga

Ex ia IIIC T85°C...T135°C Da

When connected per drawing No. DH3260

Ex ic IIC T6...T4 Gc

When connected per drawing No. DH3260

— Enclosure type 4X

COMBINED ATEX (cod. EW = E1+E2+E3), (cod. E7 = E1+E2)

COMBINED ATEX, cNRTLus, IECEx Approvals (cod. E5 = EW+EV+EU+EI)

COMBINED NRTL Approvals US and Canada

— Intrinsically safe (code EJ)

— Explosionproof (code EK)

— Nonincendive (code EL)

COMBINED IECEx (cod. EH = E8+E9), (cod. EI = E8+E9+ER)

Warning - General risk for JDF200 used in zone 0

Model JDF200 enclosure contains aluminium and is considered to present a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.

5.4 Mounting JDF200 field indicator

The field indicator model JDF200 can be mounted directly a wall using appropriate fixing screws (not provided by the manufacturer). A mounting bracket for pipe mounting (2" pipe) is also available as an accessory. It is recommended to mount the field indicator to prevent this from being source of possible damage for unskilled operators.

5.4.1 Bracket mounting

Mounting bracket is available as standard please refer to the relevant installation drawing below in mm (inch.):

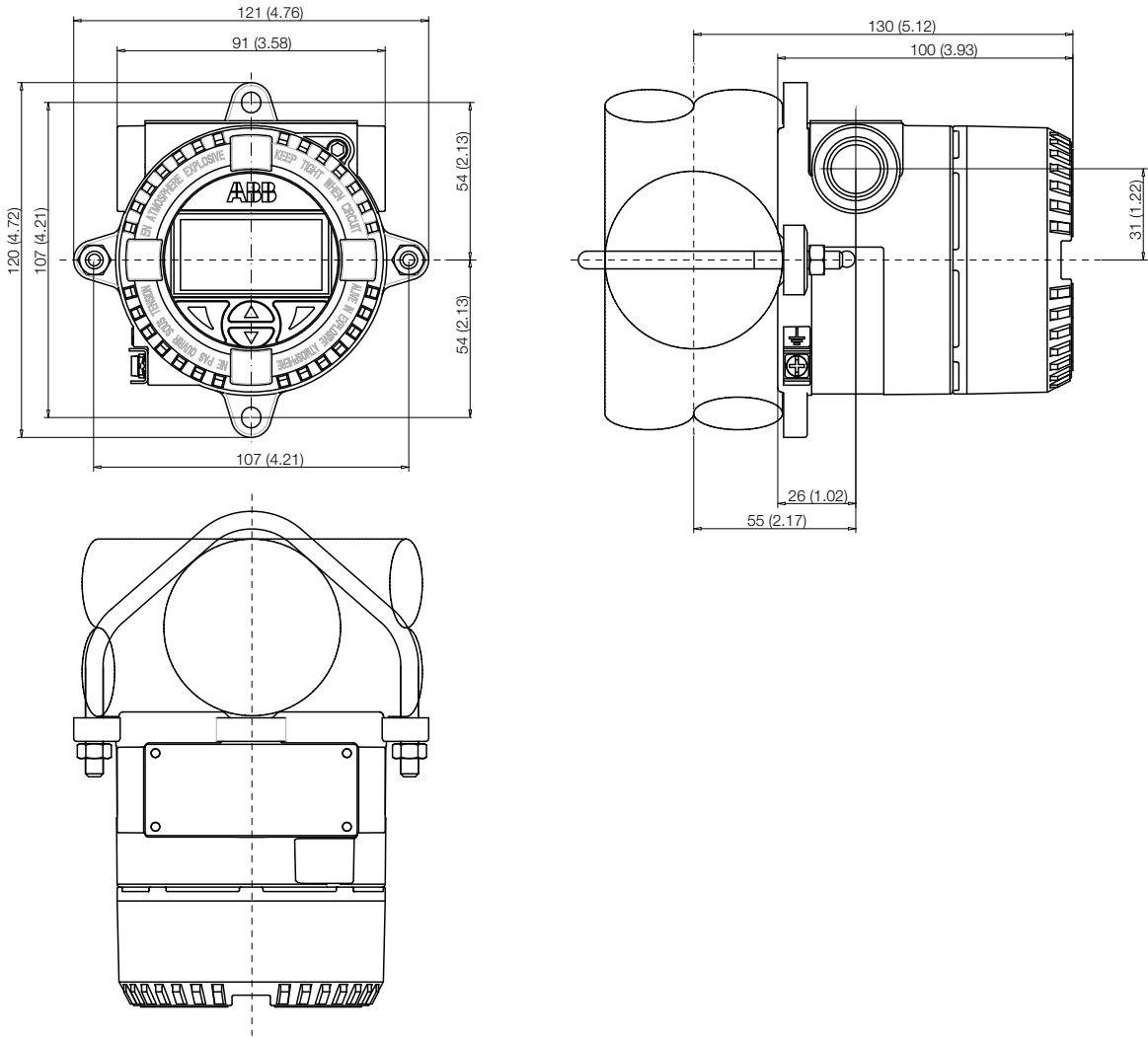


Figure 3: JDF200 field indicator installed on a horizontal or vertical pipe with optional bracket

5.4.2 BB Stainless steel U-bolt for pipe fixing

The U-bolt and nuts supplied are necessary for the installation on pipe. In case of panel or wall installation, the U-bolt and the U-bolt nuts and washers will not have to be used.

The bolts for panel mounting are not within the scope of supply.

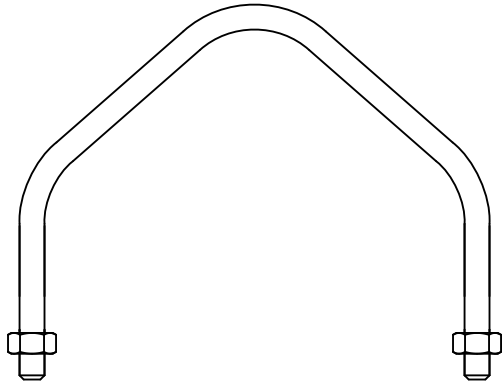


Figure 4: Pipe and wall mounting bracket kit (B2)

5.5 Securing the housing cover in flameproof areas

The front face of the field indicator housing features a locking screw (hex-head socket screw) on the top right-end corner (see picture 5).

- Install the cover on the housing by hand- tightening it.
- Turn the locking screw counterclockwise to secure the housing cover. This involves unscrewing the screw until the screw head stops at the housing cover.

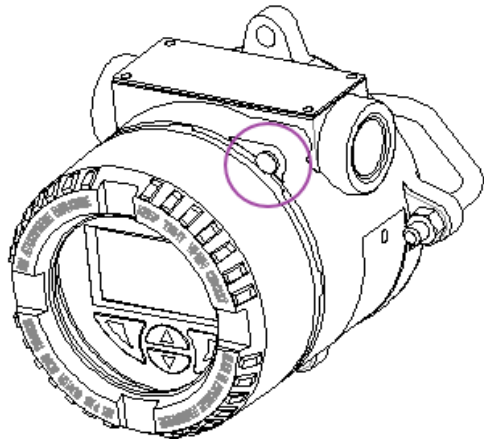


Figure 5: Housing cover locking screws

6 Field indicator wiring

6.1 Cable connection

Warning - General risks. Observe the applicable regulations governing electrical installation. Connections must only be established in a dead-voltage state. JDF200 field indicator has overvoltage/lightening according to IEC 61326 (higher capacity must be provided at the plant). Check that the existing operating voltage corresponds to the needed voltage. The same lines are used for both the power supply and output signal. Furthermore the potential equalization for the entire powering cable must be guaranteed since the intrinsic safety circuit of the field indicator is grounded.

Electrical shock can result in death or serious injury. Avoid contact with the leads and terminals. High voltage that may be present on leads can cause electrical shock. Do NOT make electrical connections unless the electrical code designation agrees with the classification of the area in which the field indicator is to be installed. Failure to comply with this warning can result in fire or explosion.

Access to the signal terminals is gained by removing the integral LCD display.

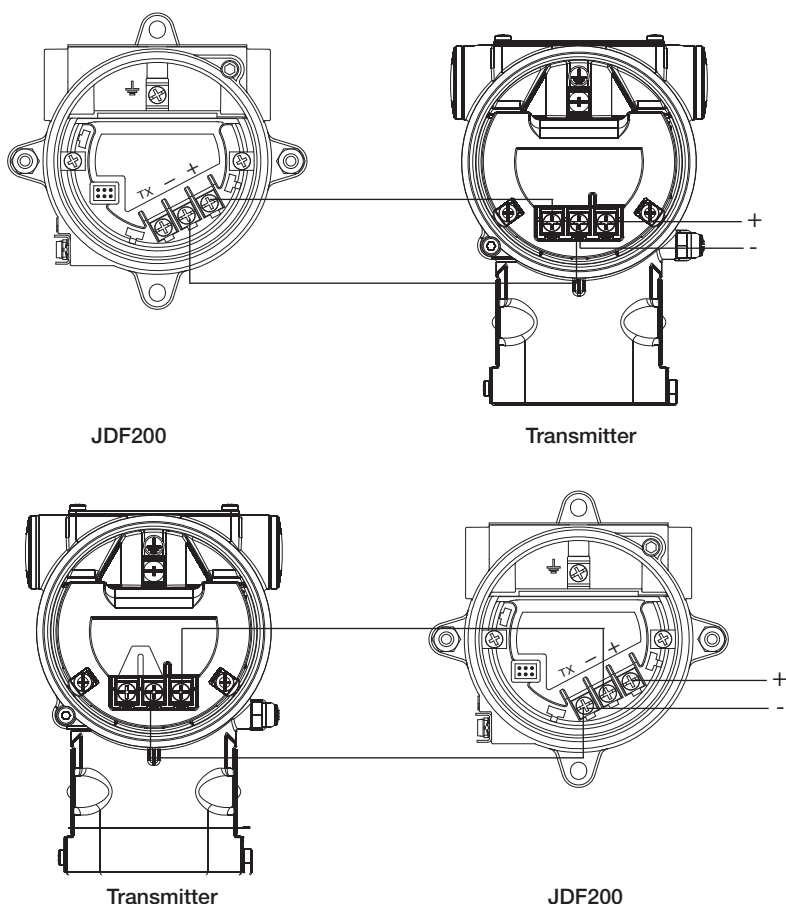
To remove the LCD, first unscrew the housing cover by turning it. Unplug the LCD by pulling it out gently. On the field indicator housing two connection ports for cable glands or conduit fittings are provided. These ports are protected with plastic plugs for transit purpose. The unused port plastic plug must be replaced for Hazardous Area installations with flameproof (explosion proof) protection (see relevant warning). Depending on the design supplied, the electrical connection is established via a cable entry, M20 x 1.5 or 1/2-14 NPT thread. The screw terminals are suitable for wire cross sections of up to 2.5 mm² (AWG 14).

Important. With Category 3 field indicators for use in “Zone 2”, a qualified cable gland for this type of protection must be installed by the customer (see the section “Hazardous Area Consideration”). An M20 x 1.5 or 1/2-14 NPT thread is located in the electronics housing for this purpose. For field indicators with “Flameproof enclosure” (Ex d) type of protection, the housing cover must be secured using the locking screw. At this point, we wish to draw your attention to the fact that increased force will be required to unscrew the housing cover after an interval of several weeks. This is not caused by the threads, but instead is due solely to the type of gasket.

Important. For Hazardous Areas installations, at least six (6) threads on the cover must be engaged in order to meet flameproof (explosion-proof) requirements.

The field indicator can be connected in accordance with the following two configurations:

- Indicator only, i.e. coupled to the transmitter's terminal block.
- Junction box, i.e. inserted in any point of the 4 to 20 mA line connecting the transmitter to its receiver/power supply.



JDF200 wiring scheme as remote indicator

Note. Remote indicator wiring scheme not applicable for 266 pressure transmitters with surge protection option (code S2).

Note. JDF200 to be used as indicator with all devices ensuring minimum voltage drop on the “ext. meter” terminal.

JDF200 wiring scheme as junction box

Figure 6: Field indicator connection schematics

6.2 Supply requirement

For signal/power connection use twisted, stranded pairs of wiring no 18 to 22 AWG / 0.8 to 0.35mm² \varnothing up to 5,000 feet (1500 meters). Longer loops require larger wire. If a shielded wire is used, the shield should be grounded only at one end, not both ends. In case of wiring at transmitter end, use the terminal located inside the housing marked with the appropriate sign.

JDF200 is connected in series with the 4...20 mA loop and takes its power supply from the loop itself regardless from the selected connection scheme (as per paragraph 6.1 Cable connection). The minimum supply voltage must be dimensioned considering the voltage drop on the indicator.

The maximum voltage drop on JDF200 is 2,4Vdc at 22mA. Therefore, the minimum supply voltage from the loop can be calculated as detailed below:

Min. loop voltage = 2,4Vdc + MinVTx + (Rloop * 22mA)

Where:

MinVTx is the transmitter minimum supply voltage

Rloop is the resistance on the loop (in ohms)

JDF200 field indicator minimum operating current is 3,2mA. In case of lower currents, the display turns off not impacting the loop.

Field indicator maximum operating current is 23mA. in case of higher currents, the display will show 23 mA.

JDF200 can withstand up to 400mA for a short period of time without damage.

Important. For EX ia and Intrinsically Safe installations, power supply must not exceed 30 Vdc as well as the values stated in paragraphs 10.1.1 and 10.1.2.

Note. Avoid routing cables with other electrical cables (with inductive load, etc.) or near large electrical equipment.

6.3 Wiring procedure

Follow these steps to wire the field indicator:

- Remove the temporary plastic cap from one of the two electrical connection ports located at both sides in the upper part of the field indicator housing.
- These connection ports may have a 1/2 inch internal NPT or M20 threads. Various adaptors and bushings can be fitted to these threads to comply with plant wiring (conduit) standards.
- Remove the housing cover.
In an Explosion-Proof/Flame-Proof installation, do not remove the field indicator cover when power is applied to the unit.
- Run the cable through the cable gland and the open port.
- Connect the positive lead to the + terminal, and the negative lead to the – terminal.
- Plug and seal the electrical ports. Make sure that when the installation has been completed, the electrical ports are properly sealed against entry of rain and/or corrosive vapors and gases.

Warning - General risks for JDF200 cable glands.

Cables, cable glands and unused port plugs must be in accordance with the intended type of protection (e.g. intrinsically safe, explosion proof, etc.) and degree of protection (e.g. IP6x according to IEC EN 60529 or NEMA Type 4x). See also the addendum for "EX SAFETY" ASPECTS AND "IP" PROTECTION.

In particular, for explosion proof installations, remove the red temporary plastic caps and plug the unused openings with a plug certified for explosion containment

- If applicable, install wiring with a drip loop. Arrange the drip loop so the bottom is lower than the conduit connections and the field indicator housing.
- Put back the housing cover, turn it to seat O-ring into the housing and then continue to hand tighten until the cover contacts the housing metal-to-metal. In Ex-d (Explosion Proof) installation, lock the cover rotation by turning the set nut (use the 2mm Allen key supplied with the field indicator).

6.4 Grounding

Field indicator housing should be grounded or earthed in accordance with national and local electrical codes.

Protective grounding terminals (PE) are available outside and/or inside the housing. Both ground terminals are electrically connected and it up to the user to decide which one to use. The most effective field indicator case grounding method is direct connection to earth ground with impedance equal or less of 5 ohm.

Note. In case of certification for the North America, internal and external grounding points are properly marked with "G".

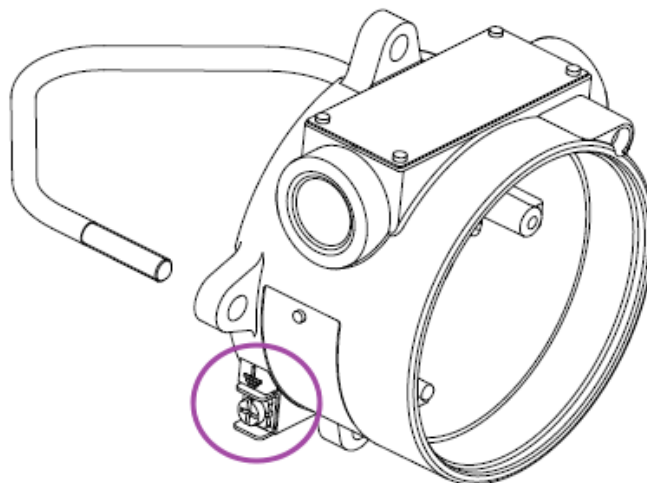


Figure 7: Ground connection on field indicator housing

7 Operation

7.1 Configuration of the field indicator using the optional integral LCD with keypad (menu-controlled)

The integral LCD is connected on the field indicator electronic board. It can be used to visualize the process measured variables as well as to configure the display.

In addition, diagnostic information is provided. To access the functionality of the LCD an activation procedure needs to be carried out. The keypad activation procedure is the same for the TTG (Trough The Glass) version and the conventional LCD.

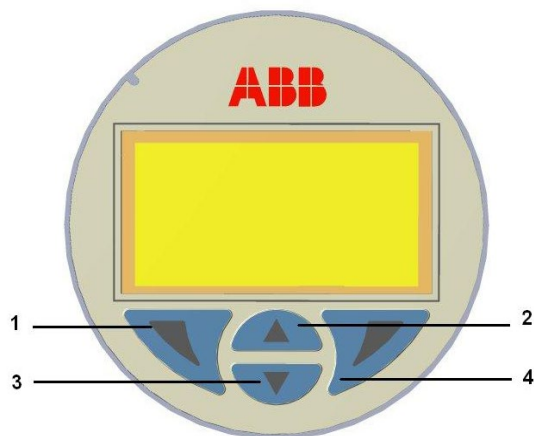


Figure 8: Display keypad

The keys (1) ◀, (4) ▶, (2) ▲ and (3) ▼ are available for the menu-controlled configuration.

- The menu / submenu name is displayed above in the LCD display.
- The number/line of the currently selected menu item is displayed in the upper right of the LCD display.
- A scroll bar is located on the right edge of the LCD display which shows the relative position of the currently selected menu item within the menu.
- Both of the keys (1) ◀ and (4) ▶ can have various functions.
The meaning of these buttons is displayed below in the LCD display above the respective button.
- You can browse through the menu or select a number within a parameter value using both keys (2) ▲ and (3) ▼. The button (4) ▶ selects the desired menu item.

Button (1) functionalities	Meaning
Exit	Exit menu
Back	Back one submenu
Cancel	Exit without saving the selected parameter value
Next	Select next position for entering numerical values or letters

Button (4) functionalities	Meaning
Select	Select submenu/parameter
Edit	Edit parameter
Ok	Save selected parameter and display stored parameter value

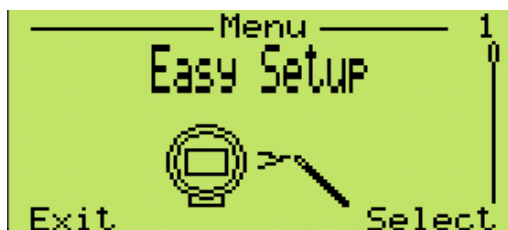
7.2 Conventional LCD (L1 option)

Gain access to the display by unscrewing the windowed cover. Please observe the Hazardous area prescription before proceeding with the cover removal. For activation, see instructions below.

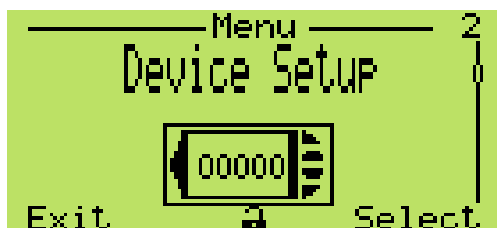
7.3 LCD menu structure

The LCD menu is divided in the following sections which can be selected by acting on the keys (2) ▲ and (3) ▼, once on the display the desired sub-menu icon will be visualized, confirm your selection with the [SELECT] key (4) ▶.

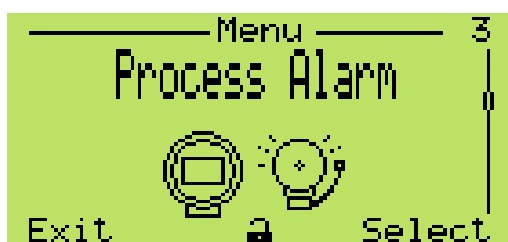
Follow the instruction on the screen to perform the configuration of the different parameters.



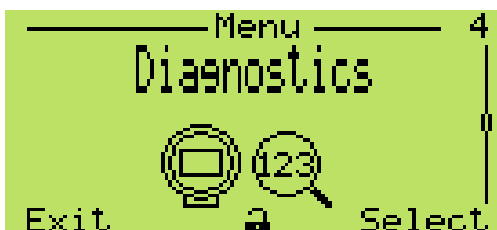
This menu allows the verification and the parameterization of the basic configuration of the JDF200 field indicator. The menu driven structure will guide you to the choice of the interface language, the tag number configuration, the decimal point position, the process variable to be shown and the relevant settings (engineering unit, zero point, full scale and linearization type if flow variables are selected).



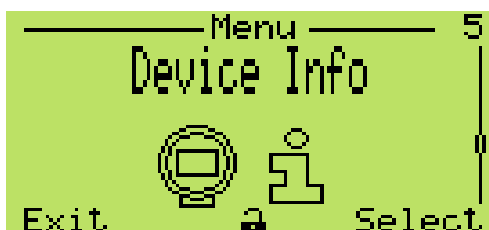
This menu allows the set-up of different functions relevant to the display itself. The menu-driven structure will guide you through the choice of some functional aspects as the display language and contrast. Moreover, it is possible to choose in details what you want to see on the display: one or two lines with bargraph. Display scaling (high and low trimming) can be performed accessing a dedicated section of this sub-menu.



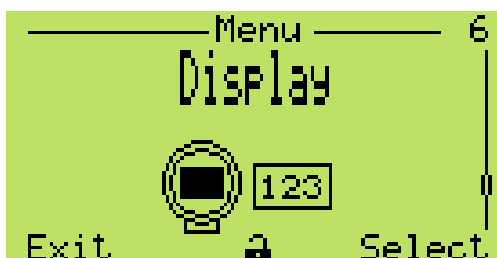
This menu allows the parameterization of the process alarm. The menu-driven structure will guide you through the setting of saturation and alarm limits as well as the customization of alarm messages.



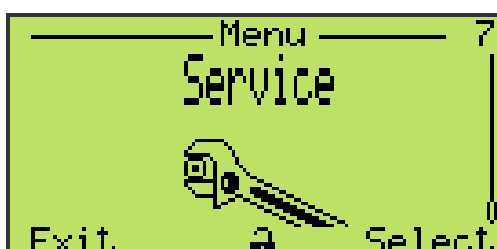
This menu allows you to monitor diagnostics messages counters related to signal alarms or saturations.



This menu allows the visualization of the serial number of JDF200, its hardware and software revisions. Tag number setting is available.

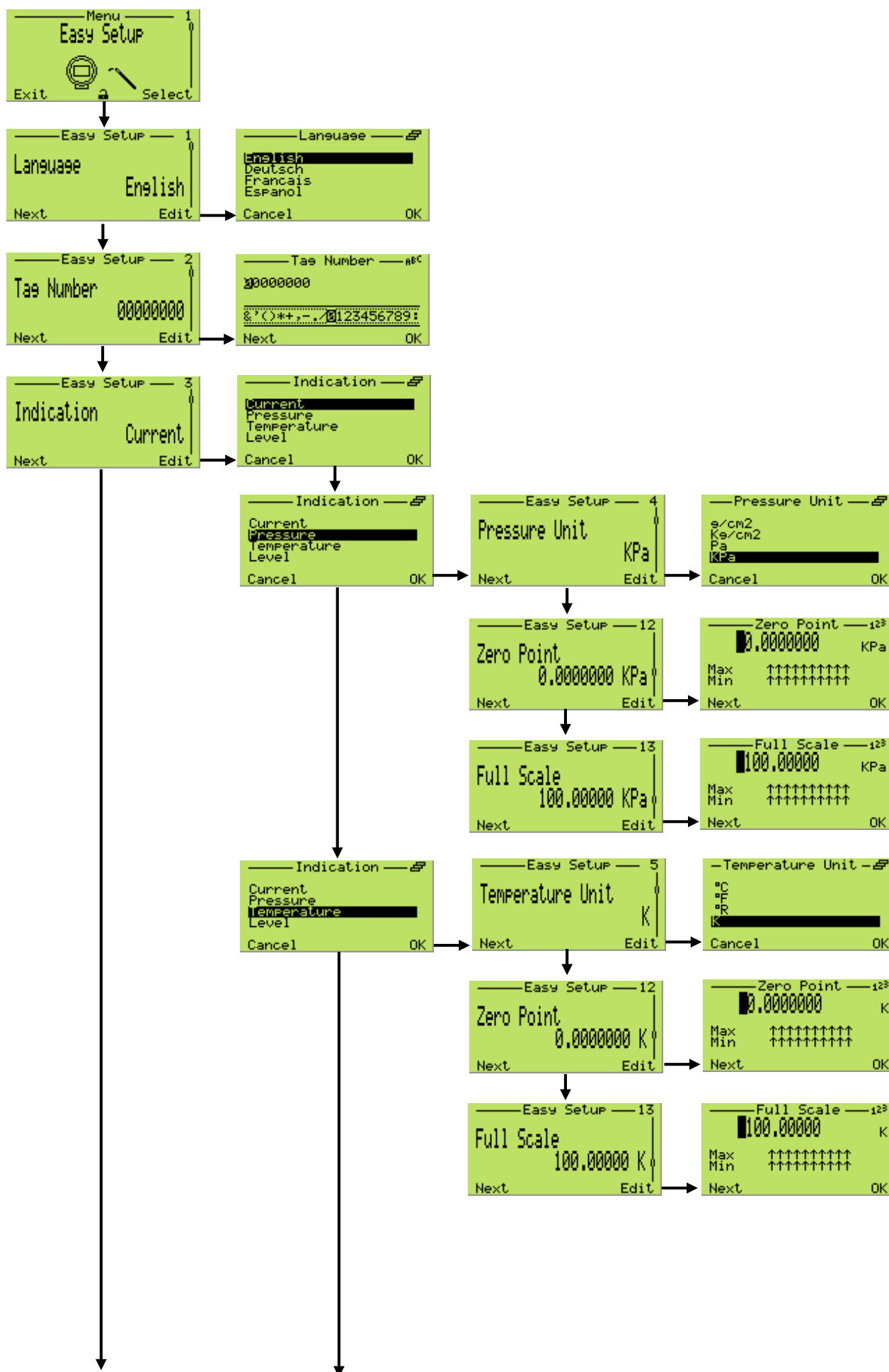


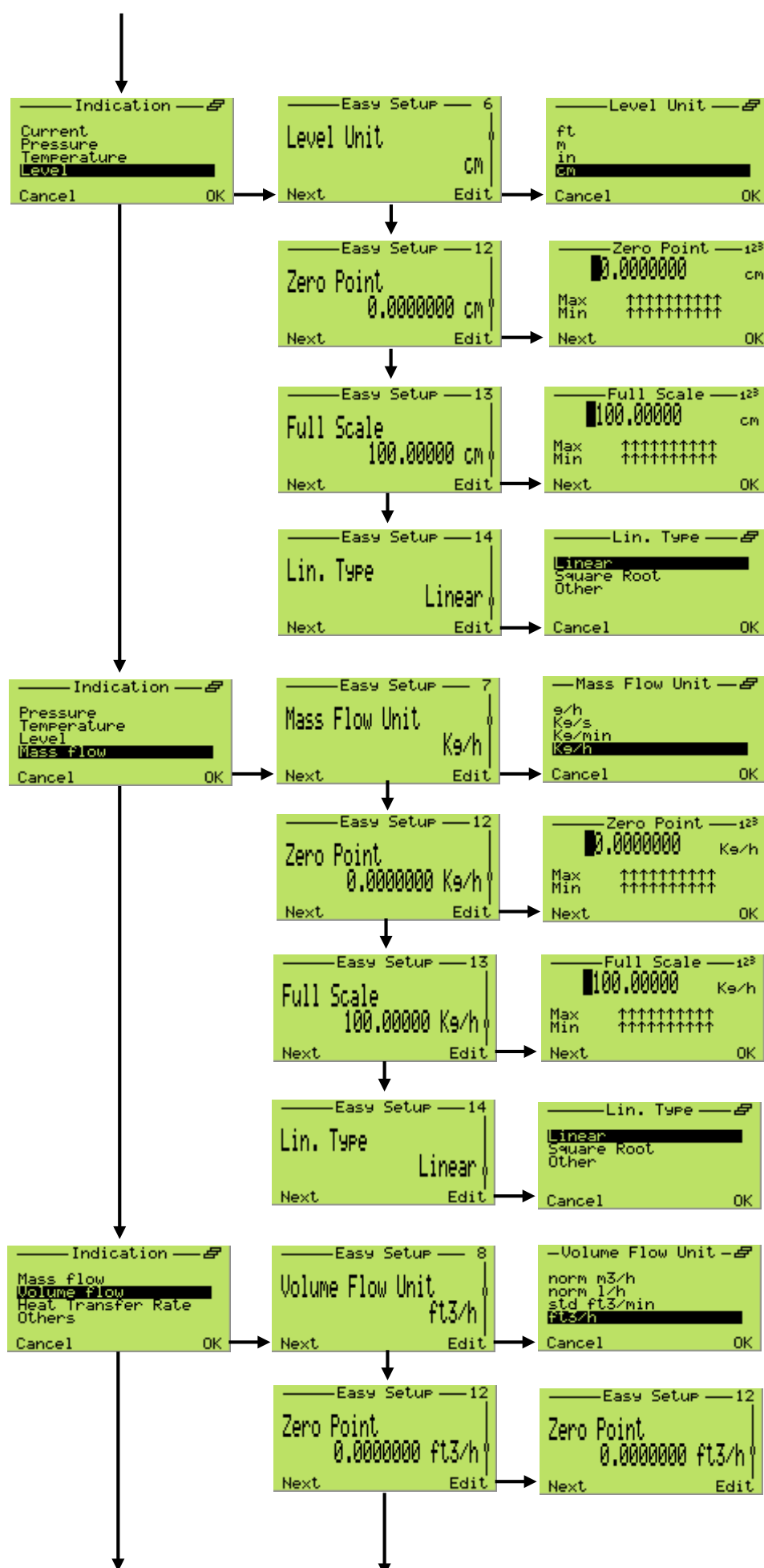
Inside this menu there is the possibility of enabling and setting a password for security reasons.

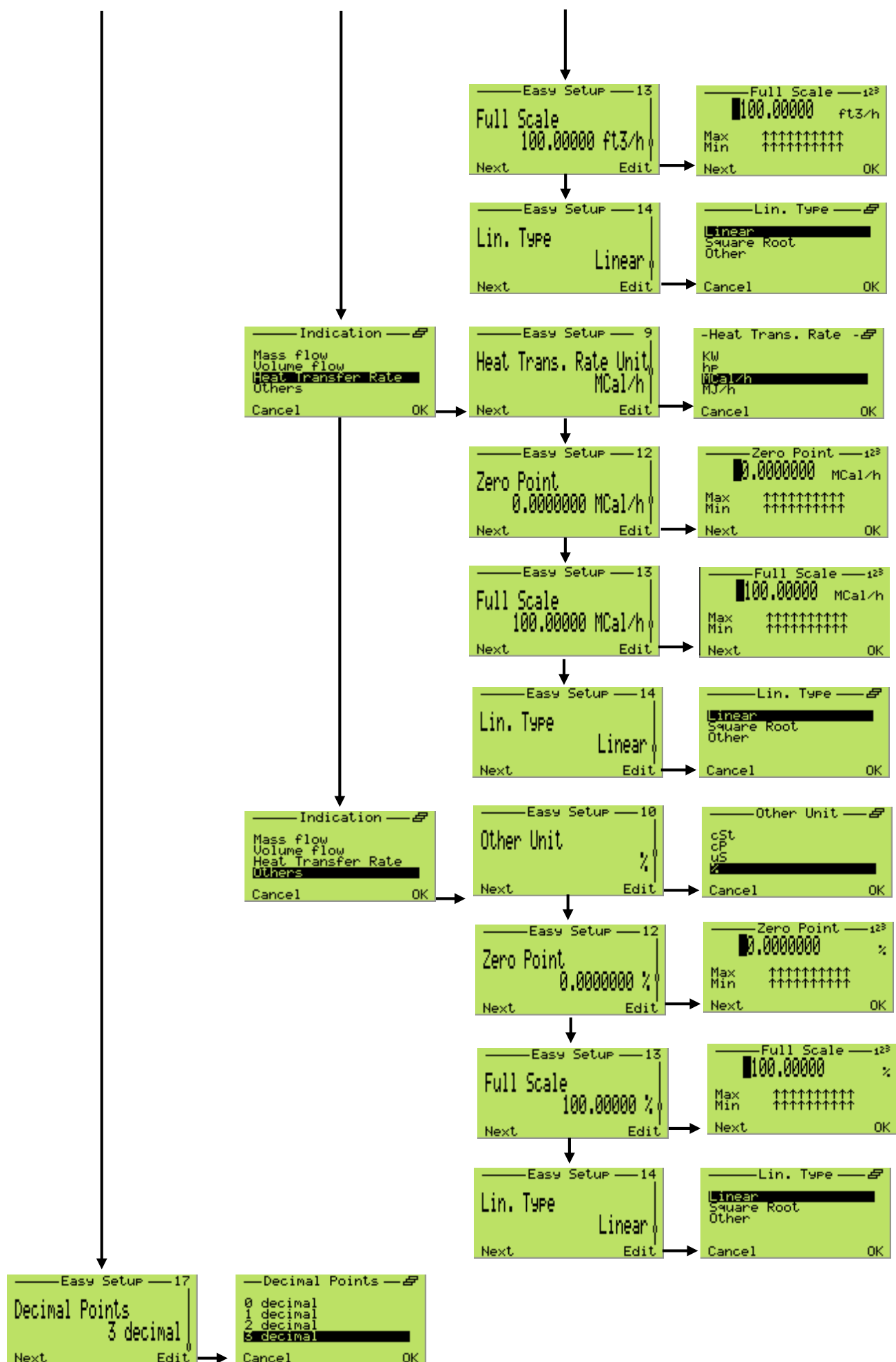


Service menu is to be used by ABB personnel only and allows JDF200 detailed configuration visualization.

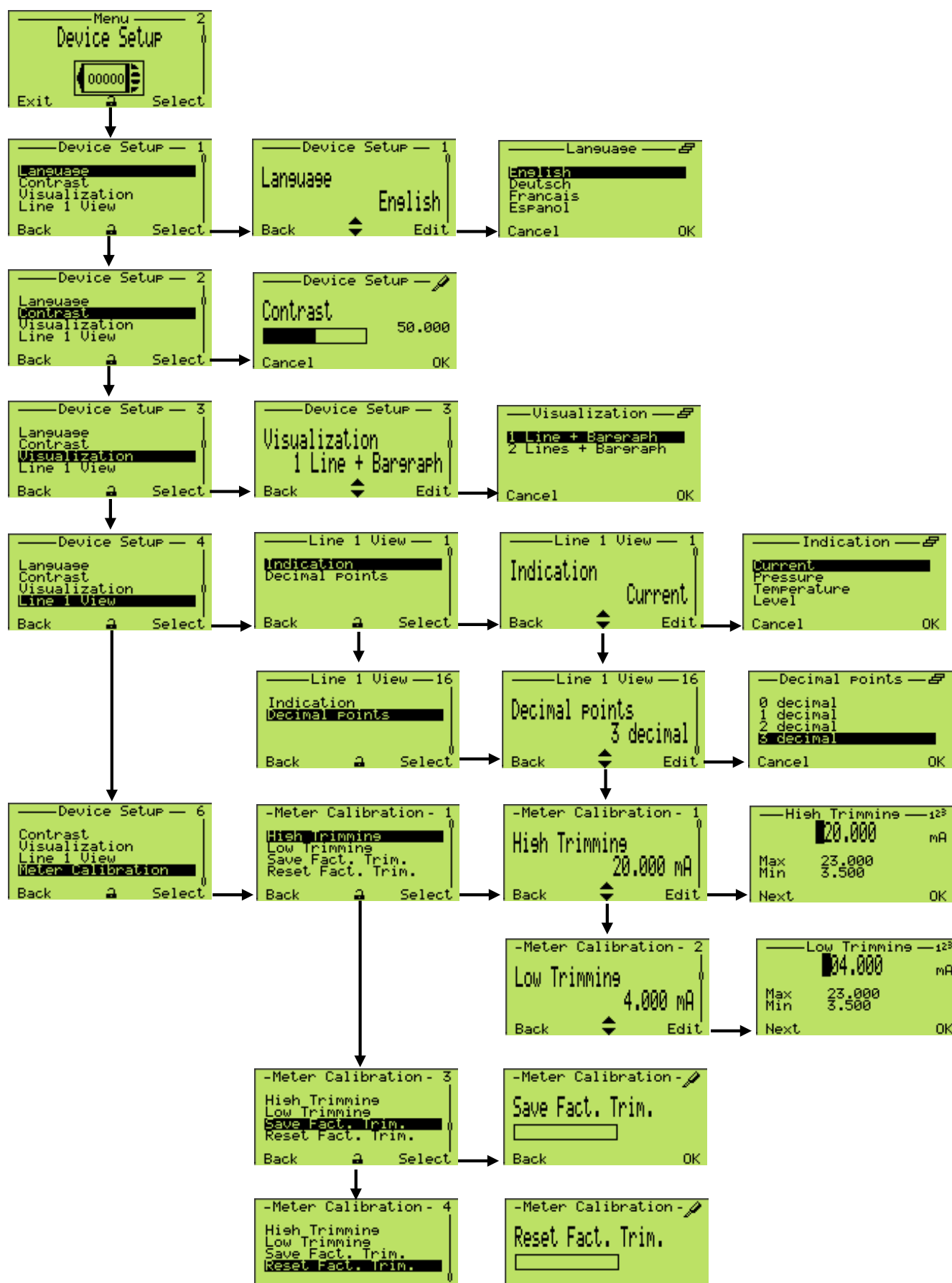
7.3.1 Easy Set-up



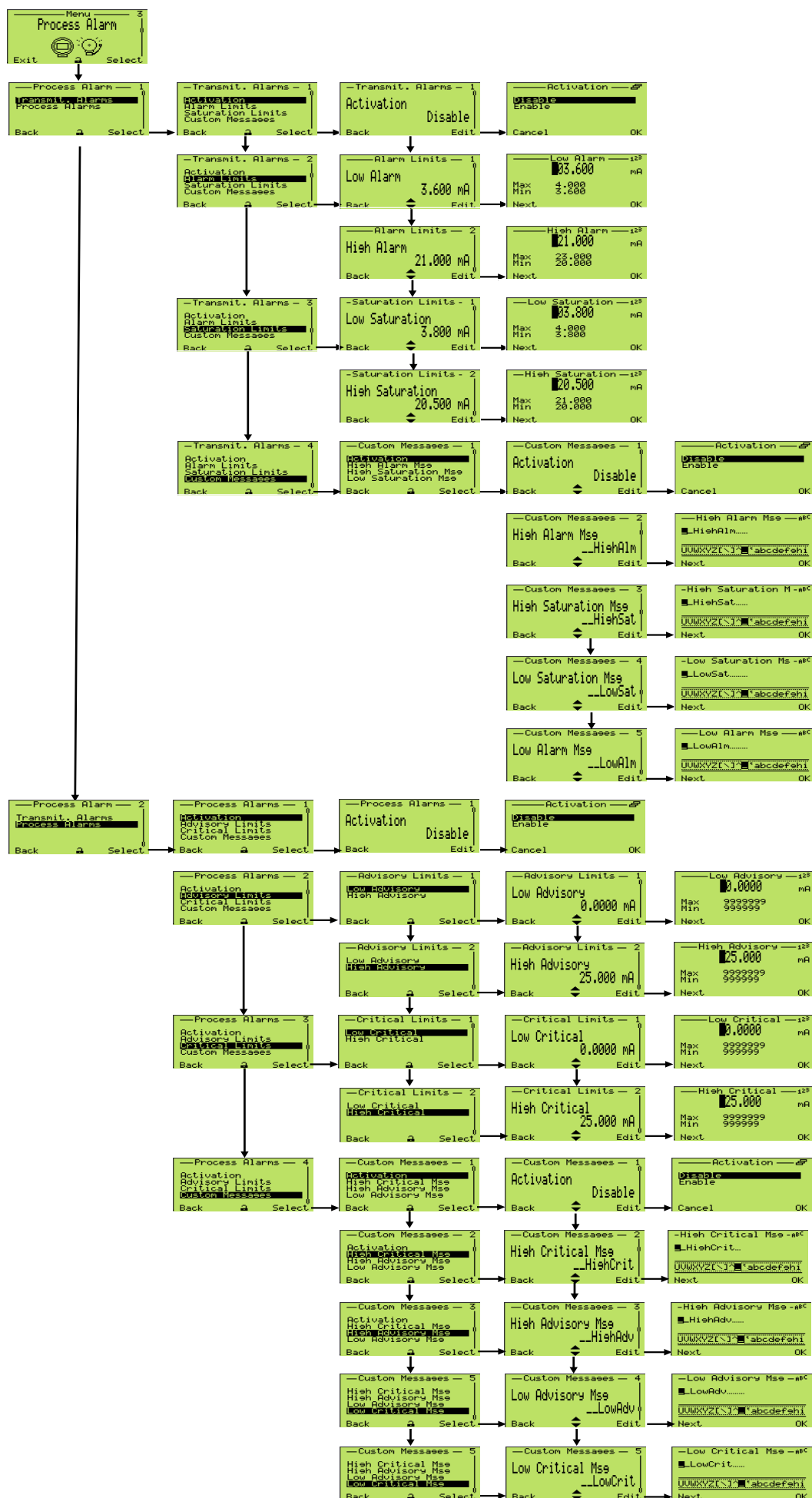




7.3.2 Device Set-up



7.3.3 Process Alarm



7.4 Output functions

JDF200 provides a selection of output functions, as follows:

- Linear (default setting)
- Sq. Root (x)
- Sq. Root (x^3)
- Sq. Root (x^5)
- Custom linearization table.
- Cylindrical lying tank.
- Spherical tank.

These output functions can be activated through the LCD menu.

Important. Before selecting a transfer function different than “linear”, the input value (4...20 mA) should be verified to be linear with the process primary variable otherwise the indication on the display will be affected by a double operation.

7.4.1 Linear

Using this function, the relation between the indicator scale / output value and the input value is linear (i.e. 4 mA input corresponds 0% indicator scale, at 20 mA input corresponds 100% indicator scale).

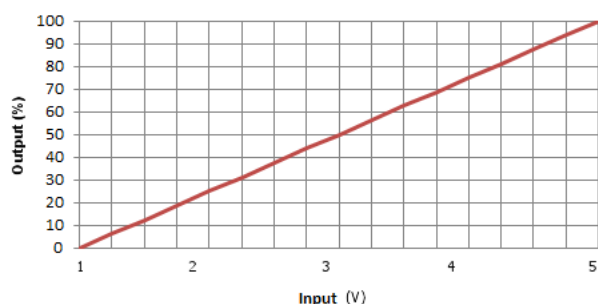


Figure 9: Linear Output

7.4.2 Square root

Using this function, the relation between the indicator scale / output value and the input value is square root.

To avoid the extremely high gain errors with the input value approaching 4 mA, the indicator scale / output value is equal to Zero Point up to a programmable CUTOFF value. Cutoff value can be customized between 0% and 20%, referred to the indicator scale / output range; default value is 6%.

The indicator scale / output value can then be linear with proper slope and intercept zero up to a programmable LIN POINT value. The linearization point value could either be 0% or in between 5% and 20% referred to the indicator scale / output range; default value is 5%. Square root transfer function is finally applied.

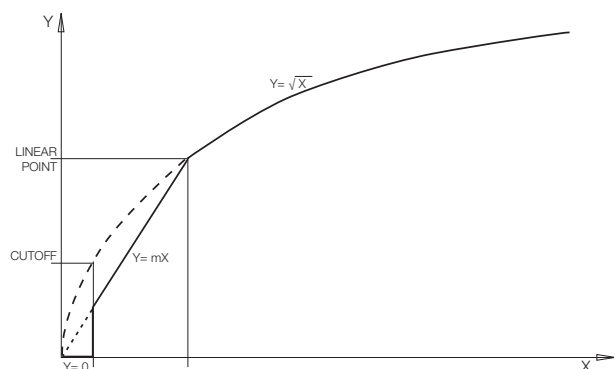


Figure 10: Square root transfer function

7.4.3 Square root to the 3rd power

Using this function, the relation between the indicator scale / output value and the input value is square root to the 3rd power.

7.4.4 Square root to the 5th power

Using this function, the relation between the indicator scale / output value and the input value is square root to the 5th power.

7.4.5 Custom linearization curve

Using this function, the relation between the indicator scale / output value and the input value is identified by a table with a maximum of 22 points (input, output), in between 0% and 100%. The first point is always 0% and the last is 100%. The predefined table can be uploaded at factory as option on request.

7.4.6 Cylindrical lying tank

Using this function, the relation between the indicator scale / output value and the input value is identified by a polynomial proxy describing the cylindrical lying tank shape.

7.4.7 Spherical tank

Using this function, the relation between the indicator scale / output value and the input value is identified by a polynomial proxy describing the spherical tank shape.




7.5 Software release history

Revision		Description	Release date
From	To		
	1.0.6	First release	04/2016
1.0.6	1.1.0	Bug Fixing: <ul style="list-style-type: none"> — Corrected bug that caused the ‘%’ unit not to be applied to any linearization type different from “Linear” — Corrected bug of Spanish HMI menus. Improvements <ul style="list-style-type: none"> — Differentiation between Transmitter alarms and Process alarms. — Static dataclasses objects reviewed. 	05/2016

8 Error messages

8.1 LCD Display

The LCD HMI in case of errors or malfunctioning is able to display specific error/fault messages to help the user in identifying the problem and resolve it. In case of an alarm, a message consisting of an icon and text appears at the bottom of the display. Use the left-hand navigation key to call up the information level. Use the “Diagnostics” menu to call up the error description with a help text. The device status is divided into three groups. The message text beside this icon in the display provides information about where to look for the error. There are the following areas: Electronic, Operation and Process.

Icon	Description
	Error / Failure
	Functional check
	Maintenance required

8.2 Error states and alarms

— Communication Board / Electronic related error messages.

Error message	LCD message	Possible cause	Suggested action
F255.004	Electronic Memory Failure	Electronic NV memory corrupted	The electronic must be replaced
F250.003	Output ReadBack Failure	Voltage reference failure	Power off and on the field indicator and check if the error persists. If yes replace the communication board as soon as possible.
F245.002	Electronic Interface Error	Voltage reference failure	Power off and on the field indicator and check if the error persists. If yes replace the communication board as soon as possible.

—Operation related error messages.

Error message	LCD message	Possible cause	Suggested action
C110.005		NV memory malfunctioning	Power off and on the field indicator and check if the error persists. If yes replace the communication board as soon as possible.

—Process related error messages

Error message	LCD message	Possible cause	Suggested action
F240.000		Input current exceeding HiHi or LoLo alarm limits	Check cable connection, check connected device and/or process.
C150.001		Input current exceeding LoHi or HiLo alarm limits	Check cable connection, check connected device and/or process.

9 Maintenance

If the field indicator is used as intended under normal operating conditions, no maintenance is required. It is sufficient to check the output signal at regular intervals (in accordance with the operating conditions). If deposits are expected to accumulate, the equipment should be cleaned on a regular basis, in accordance with the operating conditions. Cleaning should ideally be carried out in a workshop.

Repair and maintenance activities may only be performed by authorized customer service personnel.

When replacing or repairing individual components, original spare parts must be used.

Attention – Potential damage to parts. The electronic components of the printed circuit board can be damaged by static electricity (observe ESD guidelines). Make sure that the static electricity in your body is discharged when touching electronic components.

Warning – <Bodily injury>. Explosion-proof field indicator must be either repaired by the manufacturer or approved by a certified expert following repair work. Observe the relevant safety precautions before, during and after repair work. Only disassemble the field indicator to the extent necessary for cleaning, inspection, repairs, and replacement of damaged components.

9.1 Returns and removal

Defective field indicator sent to the repairs department must, wherever possible, be accompanied by your own description of the fault and its underlying cause.

Warning – General risks. Before removing or disassembling the device, check for hazardous process conditions such as high temperatures, aggressive or toxic media, and so on. Read the instructions in the sections “Safety” and “Electrical connection”, and perform the steps outlined there in reverse order.

9.2 Basic maintenance activities

Essentially maintenance is not required for JDF200 field indicator. Anyway the following items should be checked periodically:

- Check the integrity of the housing and covers (no cracks should be visible).
- Check that there is no tear or corrosion on electrical connection(s).

In case one of the check points above fails, please replace the damaged part with an original spare part.

Please contact your local ABB office for spare parts support information or refer to the spare part list.

The use of non original spare parts makes the warranty void. In case you want ABB to perform the repair, please send back the field indicator to your local ABB office complete with the return form that you find in this manual appendix and include it with the device.

Attention – Potential damage to parts. Do not use sharp or pointed tools.

10 Hazardous Area considerations

10.1 Ex Safety aspects and IP Protection (Europe)

According to ATEX Directive (European Directive 2014/34/UE of 26 February 2014) and relative European Standards which can assure compliance with Essential Safety Requirements, i.e., EN 60079-0 (General requirements) EN 60079-1 (Flameproof enclosures "d") EN 60079-11 (Equipment protection by intrinsic safety "i") EN 60079-26 (Equipment with equipment protection level -EPL- Ga) the field indicator has 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 1G Ex ia IIC Tx Ga and II 1D Ex ia IIIC Tx Da IP67

INTERTEK Approvals certificate numbers

ITS 16 ATEX 10165X

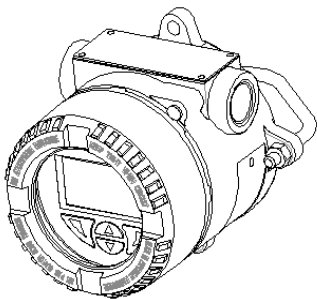
IECEX ITS 16.0048X

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)
- Tx°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.

Application for field indicator Ex ia categories 1G and 1D

Application with Gas



Zone 0

JDF200 Category 1G Ex ia

Note: the field indicator must be connected to a supply (associated apparatus) certified [Ex ia]

Certificate IECEX Ex ia IIC Tx Ga and Ex ia IIIC Tx Da IP67

ATEX certificate number

ITS 16 ATEX 10165X

IECEX certificate number

IECEX ITS 16.0048X

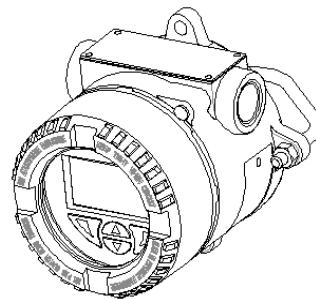
Important. The number close to the CE marking of the field indicator safety label identifies the Notified Body which has responsibility for the surveillance of the production.

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

- Ex ia: Intrinsic safety, protection level "Ga"
- IIC: Gas group
- T4: Temperature class of the field indicator (corresponding to 135°C max) with a Ta from -50°C to +85°C
- T5: Temperature class of the field indicator (corresponding to 100°C max) with a Ta from -50°C to +40°C
- T6: Temperature class of the field indicator (corresponding to 85°C max) with a Ta from -50°C to +40°C

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

Application with Dust



Zone 20

JDF200 Category 1D IP6x (Ex ia)

Note: the protection is mainly assured by the "IP" degree associated to the low power from supply. This can either be [ia] or [ib] certified [Ex ia]

Warning. When the equipment is used in zone 20, using only an application with type of protection Ex ta, it is necessary to limit the current as indicated in the following table. In case of use together with an Ex ia application is not needed to limit the current.

For example the current can be limited with a fuse, as indicated in the table, installed in the control panel.

T4/T135	T4/T135	T5/T100	T6/T85
-50°C < Ta < +85°C	-50°C < Ta < +70°C	-50°C < Ta < +40°C	-50°C < Ta < +40°C
V= 30 Vdc	V= 30 Vdc	V= 30 Vdc	V= 30 Vdc
Limited at 58mA	Limited at 95mA	Limited at 58mA	Limited at 28mA
Fuse : 50mA	Fuse : 90mA	Fuse : 50mA	Fuse : 25mA

b) Certificate ATEX II 1D Ex ta IIIC Tx Da IP67

INTERTEK Approvals certificate number

ITS 16 ATEX 10165X

IECEx ITS 16.0048X

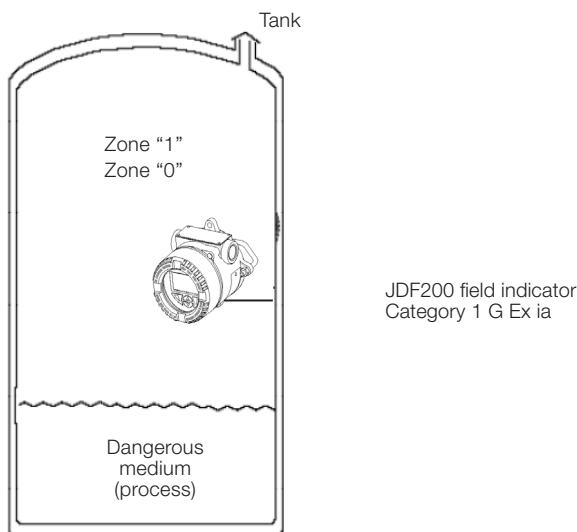
Important. This ATEX Category depends on the application (see below) and also on the intrinsic safety level of the field indicator supply (associated apparatus) which can sometimes suitably be [ib] instead of [ia]. As it is well known, the level of an intrinsic safety system is determined by the lowest level of the various apparatus used, i.e., in the case of [ib] supply, the system takes over this level of protection.

The meaning of ATEX code is as follows:

- II: Group for surface areas (not mines)
- 1: Category - It means that only a part of the transmitter complies with category 1 (see next application sketch).
- G: Gas (dangerous media)
- D: Dust (dangerous media)
- Tx°C: Maximum surface temperature of the transmitter enclosure with a Ta from -50°C to +40°C for Dust (not Gas) with a dust layer up to 50 mm depth. T85°C: as before for Dust for a Ta +85°C.

Application for field indicator Ex ta category 1 D

Application with Gas



Note: the field indicator can be connected to either [ib] or [ia] supply (associated apparatus)certified [Ex ia]

Certificate IECEx Ex ta IIIC Tx Da IP67

ATEX certificate number

ITS 16 ATEX 10165X

IECEx certificate number

IECEx ITS 16.0048X

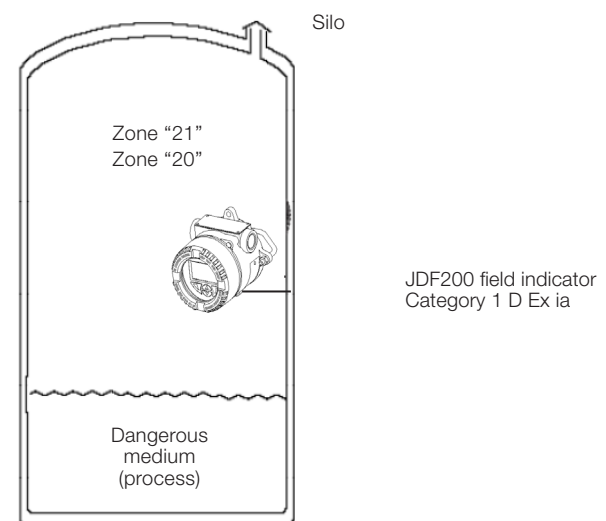
The other marking refers to the protection type used according to relevant EN standards:

- Ex ia: Intrinsic safety, protection level “a”
- IIC: Gas group
- T4: Temperature class of the field indicator (corresponding to 135°C max) with a Ta from -50°C to +85°C
- T5: Temperature class of the field indicator (corresponding to 100°C max) with a Ta from -50°C to +40°C
- T6: Temperature class of the field indicator (corresponding to 85°C max) with a Ta from -50°C to +40°C

About the applications, this field indicator can be used in Zone “0” (Gas) classified areas (continuous hazard).

About Dust application, the field indicator is suitable for “Zone 21” according to the EN 60079-0 and EN 60079-11 as it is shown on the relevant part of the sketches.

Application with Dust



Note: the protection is mainly assured by the “IP” degree associated to the low power from supply. This can either be [ia] or [ib]

c) Certificate ATEX II 2G Ex db IIC Tx Gb and

II 2D Ex tb IIIC Tx Db IP67

INTERTEK Approvals Certificate number

ITS 16 ATEX 10165X

IECEX ITS 16.0048X

The meaning of ATEX code is as follows:

- II: Group for surface areas (not mines)
- 2: Category - It means that the field indicator complies with category 2 (see next application sketch).
- G: Gas (dangerous media)
- D: Dust (dangerous media)
- Tx°C: Maximum surface temperature of the field indicator enclosure with a Ta (ambient temperature) +75°C for Dust (not Gas) with a dust layer up to 50 mm depth.

Important. The number close to the CE marking of the field indicator safety label identifies the Notified Body which has responsibility for the surveillance of the production.

Certificate IECEX Ex db IIC Tx Gb and Ex tb IIIC Tx Db IP67

ATEX certificate number

ITS 16 ATEX 10165X

IECEX certificate number

IECEX ITS 16.0048X

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

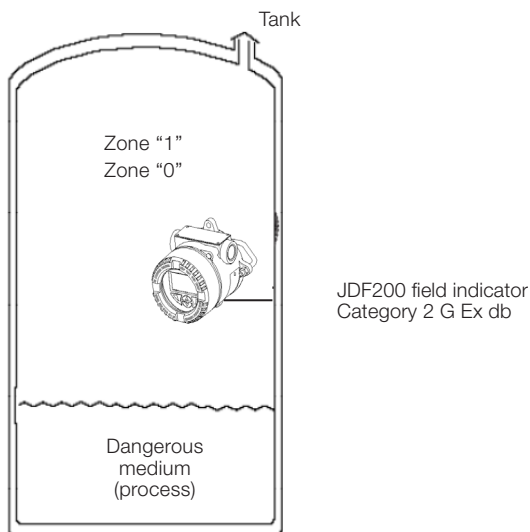
- Ex d: Explosion proof
- IIC: Gas group
- Tx: Temperature class of the transmitter (corresponding to 85°C max) with a Ta from -50°C to +75°C.

About the applications, this field indicator can be used in Zone "0" (Gas) classified areas (continuous hazard)

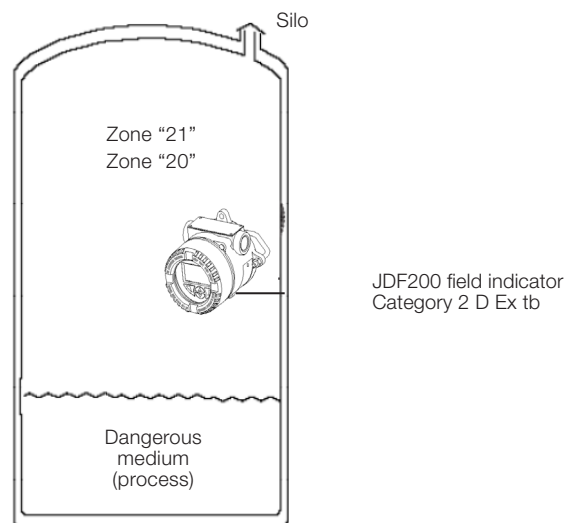
About Dust application, the transmitter is suitable for "Zone 21" according to the EN 60079-1 as it is shown on the relevant part of the sketches.

Application for field indicator Ex d categories 2G and 2D

Application with Gas



Application with Dust



IP code

About the degree of protection provided by the enclosure of the field indicator has been certified IP67 according to EN 60529 standard. 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.

According to ATEX Directive (European Directive 2014/34/UE of 26 February 2014) and relative Standards which can assure compliance with Essential Safety Requirements, i.e., EN 60079-0 (General requirements) EN 60079-11 (Specification for electrical apparatus with type of protection “n”) JDF200 has 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.

d) Certificate ATEX II 3G Ex **ec** IIC Tx Gc and II 3G Ex ic IIC Tx Gc and II 3D Ex tc IIIC Tx Dc IP67

ITS 16 ATEX 10166X

IECEX ITS 16.0048X

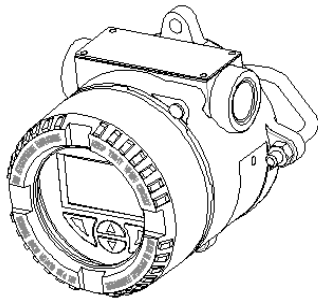
The meaning of Atex code is as follows :

- II 3G Ex **ec** IIC T4/T5/T6 (for $T4 = -50^{\circ}\text{C} < T_a < +85^{\circ}\text{C}$)
(for $T5$ and $T6 = -50^{\circ}\text{C} < T_a < +40^{\circ}\text{C}$)
- II: Group for surface areas (not mines)
- 3: Category of equipment
- G: Gas (Dangerous media)
- Ex **ec**: type of protection “**ec**” with “**increased safety**” technique
- Ex **ic**: type of protection “**ic**” with “**intrinsic safety**” technique
- IIC: gas group
- Tx: Temperature class of the transmitter
(which corresponds to 135°C max) with a T_a from -50°C to $+85^{\circ}\text{C}$

Important. It is the technical support for the ABB Declaration of Conformity

Application for field indicator Ex **ec** categories 3G and 3D

Application with Gas

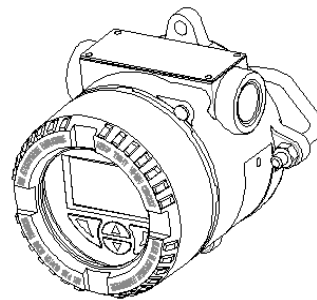


Zone 2

JDF200 Category 3G Ex **ec**

Note: the field indicator must be connected to a supply with 42V d.c. max output voltage as above indicated. The I_{max} of the field indicator is shown in chart 10.1.2 “Entities for Ex D and Ex **ec**”.

Application with Dust



Zone 22

JDF200 Category 3D IP6x
(Ex tc)

Note: the protection is mainly assured by the “IP” degree associated to the low power from supply.

Important. When installed this field indicator must be supplied by a voltage limiting device which will prevent the rated voltage of 42 V d.c. being exceeded.

About the applications, this field indicator can be used in Zone 2 (Gas) (unlikely/infrequent hazard) as it shown on the following sketch (left side)

- II 3D Ex tc IIIC Tx Dc IP67
- II: Group for surface areas (not mines)
- 3: Category of equipment
- D: Dust (Dangerous media)
- Ex tc: type of protection “tc” means protection by enclosure technique
- IIIC: for Dust application
- Tx: Temperature class of the transmitter
- Dc: Energy Protection Level
- IP67: degree of protection of the transmitter acc. EN60079

About the applications, this transmitter can be used in Zone 22 (Dust) (unlikely/infrequent hazard) as it shown on the following sketch (right side)

Important - Note for field indicator with combined approval. Before installation of the field indicator, the customer should permanent mark his chosen Protection Concept on the safety label. The field indicator can only be used with according to this Protection Concept for the whole life. If two or more types of protection box (on safety label) are permanent marked, the field indicator must be removed from hazardous classified locations. The selected Type of Protection is allowed to be changed only by manufacturer after a new satisfactory assessment.

10.1.1 Entities

Type of protection	T4/T135	T4/T135	T5/T100	T6/T85
Ex ia IIC Tx Ga Ex ia IIIC Tx Da IP67	-50°C < Ta < +85°C Ui= 30 Vdc Ii= 100 mA Pi= 0.75 W	-50°C < Ta < +70°C Ui= 30 Vdc Ii= 160 mA Pi= 1 W	-50°C < Ta < +40°C Ui= 30 Vdc Ii= 100 mA Pi= 1,75 W	-50°C < Ta < +40°C Ui= 30 Vdc Ii= 50 mA Pi= 0.4 W
Ex ta IIIC Tx Da IP67*	-50°C < Ta < +85°C V= 30 Vdc Limited at 58mA*	-50°C < Ta < +70°C V= 30 Vdc Limited at 95mA*	-50°C < Ta < +40°C V= 30 Vdc Limited at 58mA*	-50°C < Ta < +40°C V= 30 Vdc Limited at 28mA*
Ex db IIC Tx Gb II 2D Ex tb IIIC Tx Db IP67	-50°C < Ta < +75°C V= 42Vdc I= 100 mA	N/A	-50°C < Ta < +75°C V= 42Vdc I= 100 mA	-50°C < Ta < +75°C V= 42Vdc I= 100 mA
Ex ec IIC Tx Gc Ex tc IIIC Tx Dc IP67	-50°C < Ta < +75°C V= 42Vdc I= 100 mA	-50°C < Ta < +70°C V= 30Vdc I= 160 mA	-50°C < Ta < +40°C V= 42Vdc I= 40 mA	-50°C < Ta < +40°C V= 42Vdc I= 40 mA
Ex ic IIC Tx Gc	-50°C < Ta < +75°C Ui= 42Vdc Ii= 100 mA Pi= 1 W	-50°C < Ta < +70°C Ui= 30Vdc Ii= 160 mA Pi= 1 W	-50°C < Ta < +40°C Ui= 42Vdc Ii= 40 mA Pi= 1 W	-50°C < Ta < +40°C Ui= 42Vdc Ii= 40 mA Pi= 1 W

*The current limitation is applicable only if the equipment is used only with the Ex ta type of protection. See details in the instruction manual.

11 Requirements for installation and use in US and Canada

11.1 General

Important - Note for field indicator with combined approval. Before installation of the field indicator, the customer should permanent mark his chosen Protection Concept on the safety label. The field indicator can only be used with according to this Protection Concept for the whole life. If two or more types of protection box (on safety label) are permanent marked, the field indicator must be removed from hazardous classified locations. The selected Type of Protection is allowed to be changed only by manufacturer after a new satisfactory assessment.

11.2 Environmental Conditions

JDF200 is designed to be safe under the following conditions:

- Outdoor use
- Altitude up to 2000 m
- Mains supply voltage fluctuation up to $\pm 10\%$ of the nominal voltage
- No temporary overvoltages occurring on the mains supply
- Pollution degree 2
- Maximum relative humidity 80 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C
- Transient overvoltages up to the levels of Overvoltage Category II

11.3 Entities

Nominal voltage drop 2,4 Vdc.

For ordinary location, it is necessary to use a fuse with $I_f \leq 400\text{mA}$ or current limiter. See table at paragraph 11.8 for reference.

11.4 Instructions for cleaning

Clean the external enclosure with soft rag and, if it is necessary, use mild cleaning solution and rains with clear water.

If deposits are expected to accumulate, the equipment should be cleaned on a regular basis, in accordance with the operating conditions. Cleaning should ideally be carried out in a workshop.

11.5 Insulation for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V

The power supply of the loop must be achieved by a transformer in which the primary windings are separated from the secondary windings by REINFORCED INSULATION, DOUBLE INSULATION or a screen connected to the PROTECTIVE CONDUCTOR TERMINAL.

11.6 Ex Safety aspects and IP Protection (US)

Important. For ambient temperature range from -50°C to -40°C before installation permanently protect window cover from accidental impact.

11.6.1 Applicable standards

According to Intertek here is the list of Standards which can assure compliance with Essential Safety Requirements

- UL 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, General Requirements
- UL 60079-0: Electrical Equipment for use in Hazardous (Classified) Locations, General Requirements.
- UL 60079-1: Electrical Equipment for use in Hazardous (Classified) Locations, protection by flameproof enclosures “d”.
- UL 60079-7: Electrical Equipment for use in Hazardous (Classified) Locations, protection by **increased** safety “e”.
- UL 60079-11: Electrical Equipment for use in Hazardous (Classified) Locations, protection by intrinsic safety “i”.
- UL 60079-31 Electrical Equipment for use in Hazardous (Classified) Locations, dust ignition protection by enclosure “t”.

11.6.2 Classifications

The field indicator has been certified for the following Class, Divisions and Gas groups, hazardous classified locations, temperature class and types of protection.

- Explosionproof (US) for Class I, Division 2, Groups A, B, C and D, hazardous (classified) locations, Class I Zone 1 AEx d IIC Tx Gb, as Ex d type of protection.
- Dust ignition proof for Class II, III Division 1, Groups E, F and G, hazardous (classified) locations, as Ex ta type of protection.
- Suitable for Class II, III, Division 2, Groups F and G, hazardous (classified) locations as Ex tb type of protection.
- NonIncendive for Class I, Division 2, Groups A, B, C and D, in accordance with Nonincendive field wiring requirements for hazardous (classified) locations, as Ex ic type of protection.
- Intrinsically Safe for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G in accordance with Entity requirements for hazardous (classified) locations, as Ex ia and Ex iaD type of protection..
- Temperature class T4 to T6 (dependent on the maximum input current and the maximum ambient temperature). See table at paragraph 11.8 for reference.
- Ambient Temperature range -40°C to +85°C (dependent on the maximum input current and the maximum temperature class), and -50°C to +85°C when protected by impact because the impact test was made at 2J.
- Electrical Supply range Minimum 4 mA, Maximum 20 mA.
- Type 4X applications Indoors/Outdoors.

For a correct installation in field of JDF200 field indicator please see the related control drawing No DH3260

11.6.3 Special conditions

Installation cables suitable for specific maximum temperature are indicated in the table here below:

Tamb	Power supply	Cable type
Type of protection AEx ta		
-50°C up to +85°C	Up to 100mA	Cables suitable for a temp of 93°C
-50°C up to +70°C	Up to 160mA	Cables suitable for a temp of 87°C
Type of protection AEx tb and AEx db		
-50°C up to +75°C	Up to 100mA	Cable suitable for a temp of 77°C
Type of protection AEx ec		
-50°C up to +75°C	Up to 100mA	Cable suitable for a temp of 77°C
-50°C up to +70°C	Up to 160mA	Cable suitable for a temp of 72°C
-50°C up to +40°C	Up to 40mA	All cable can be used

The ambient temperature is not indicated on the label but on this user manual.

The enclosure can be made in aluminium. The installation of the equipment must take this into account with respect of impact and friction sparking for it to be suitable for Group II from EPL Ga. That is not indicated on the label but only in this user manual.

The final user can choose the level of protection of the equipment when the equipment is with the option E5, EJ, EK or EL on the type of code for Hazardous areas certifications. When the selection is made, it is not possible to change it. The same procedure has to be applied for all the other codes when it is present a multiple choice for the type of protection.

Important. When installed with a conduit, a seal shall be installed within 50mm of the enclosure.

11.7 Ex Safety aspects and IP Protection (Canada)

Important. For ambient temperature range from -50°C to -40°C before installation permanently protect window cover from accidental impact.

11.7.1 Applicable standards

According to Intertek here is the list of Standards which can assure compliance with Essential Safety Requirements

CSA 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, General Requirements

CSA 60079-0: Electrical Equipment for use in Hazardous (Classified) Locations, General Requirements.

CSA 60079-1: Electrical Equipment for use in Hazardous (Classified) Locations, protection by flameproof enclosures “d”.

CSA 60079-7: Electrical Equipment for use in Hazardous (Classified) Locations, protection by **increased safety “e”**.

CSA 60079-11: Electrical Equipment for use in Hazardous (Classified) Locations, protection by intrinsic safety “i”.

CSA 60079-31 Electrical Equipment for use in Hazardous (Classified) Locations, dust ignition protection by enclosure “t”.

11.7.2 Classifications

The field indicator has been certified for the following Class, Divisions and Gas groups, hazardous classified locations, temperature class and types of protection.

- Explosionproof (Canada) for zone 1 gas, group IIC, hazardous (classified) locations.
- Dust ignition proof for Class II, III Division 1, Groups E, F and G, hazardous (classified) locations, as Ex ta type of protection.
- Suitable for Class II, III, Division 2, Groups F and G, hazardous (classified) locations.
- NonIncendive for Class I, Division 2, Groups A, B, C and D, in accordance with Nonincendive field wiring requirements for hazardous (classified) locations, as Ex ic type of protection.
- Intrinsically Safe for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F, and G in accordance with Entity requirements for hazardous (classified) locations.
- Temperature class T4 to T6 (dependent on the maximum input current and the maximum ambient temperature). See table at paragraph 11.8 for reference.
- Ambient Temperature range -40°C to +85°C (dependent on the maximum input current and the maximum temperature class), and -50°C to +85°C when protected by impact because the impact test was made at 2J.
- Electrical Supply range Minimum 4 mA, Maximum 20 mA.
- Type 4X applications Indoors/Outdoors.

For a correct installation in field of JDF200 field indicator please see the related control drawing No DH3260

11.7.3 Special conditions

Installation cables suitable for specific maximum temperature are indicated in the table here below:

Tamb	Power supply	Cable type
Type of protection Ex ta		
-50°C up to +85°C	Up to 100mA	Cables suitable for a temp of 93°C
-50°C up to +70°C	Up to 160mA	Cables suitable for a temp of 87°C
Type of protection Ex tb and Ex db		
-50°C up to +75°C	Up to 100mA	Cable suitable for a temp of 77°C
Type of protection Ex ec		
-50°C up to +75°C	Up to 100mA	Cable suitable for a temp of 77°C
-50°C up to +70°C	Up to 160mA	Cable suitable for a temp of 72°C
-50°C up to +40°C	Up to 40mA	All cable can be used

The ambient temperature is not indicated on the label but on this user manual.

The enclosure can be made in aluminium. The installation of the equipment must take this into account with respect of impact and friction sparking for it to be suitable for Group II from EPL Ga. That is not indicated on the label but only in this user manual.

The final user can choose the level of protection of the equipment when the equipment is with the option E5, EJ, EK or EL on the type of code for Hazardous areas certifications. When the selection is made, it is not possible to change it. The same procedure has to be applied for all the other codes when it is present a multiple choice for the type of protection.

Important. When installed with a conduit, a seal shall be installed within 50mm of the enclosure.

11.8 ETL marking and entities



- Conforms to UL 61010-1, UL 60079-0, UL 60079-1, UL 60079-7, UL 60079-11 and UL 60079-31
- Certified with CSA C22.2.61010-1, CSA C22.2.60079-0, CSA C22.2.60079-11, CSA C22.2.60079-15 and CSA C22.2.60079-31

ETL approval	Type of protection	T4/T135	T4/T135	T5/T100	T6/T85
US	CL I, Zone 0 AEx ia IIC T6...T4 Ga CL I, Div 1 GP ABCD T6...T4 CL II, Div 1 GP EFG T6...T4 When connected per DWG DH3260	-40°C<Ta<+85°C Ui/Vmax= 30 Vdc Ii/Imax= 100 mA Pi/Pmax= 0.75 W	-40°C<Ta<+70°C Ui/Vmax= 30 Vdc Ii/Imax= 160 mA Pi/Pmax= 1 W	-40°C<Ta<+40°C Ui/Vmax= 30 Vdc Ii/Imax= 100 mA Pi/Pmax= 1,75 W	-40°C<Ta<+40°C Ui/Vmax= 30 Vdc Ii/Imax= 50 mA Pi/Pmax= 0.4 W
Canada	Ex ia IIC T6...T4 Ga Ex ia IIIC T85°C...T135°C Da When connected per DWG DH3260				
US*	CL II, Div 1 GP EFG T6...T4 Zone 20 AEx ta IIIC T85°C...T135°C Da	-50°C<Ta<+85°C Ui/Vmax = 30Vdc Ii/Imax = 58 mA*	-50°C<Ta<+70°C Ui/Vmax = 30Vdc Ii/Imax = 95 mA*	-50°C<Ta<+40°C Ui/Vmax = 30Vdc Ii/Imax = 58 mA*	-50°C<Ta<+40°C Ui/Vmax = 30Vdc Ii/Imax = 28 mA*
Canada*	Ex ta IIIC Tx Da IP67				
US	CL I, Div 2 GP ABCD T6...T4 CL II, Div 2 GP FG T6...T4 CL I, Zone 1 AEx d IIC T6...T4 Gb	-40°C<Ta<+75°C Ui/Vmax = 42Vdc Ii/Imax = 100 mA	N/A	-40°C<Ta<+75°C Ui/Vmax = 42Vdc Ii/Imax = 100 mA	-40°C<Ta<+75°C Ui/Vmax = 42Vdc Ii/Imax = 100 mA
Canada	Ex d IIC T6...T4 Gb Ex tb IIIC T85°C...T135°C Db				
US	CL I, Zone 2 AEx ec IIC T6...T4 Gc CL I, Div 2 GP ABCD T6...T4	-40°C<Ta<+75°C Ui/Vmax = 42Vdc Ii/Imax = 100 mA	-40°C<Ta<+70°C Ui/Vmax = 30Vdc Ii/Imax = 160 mA	-40°C<Ta<+40°C Ui/Vmax = 42Vdc Ii/Imax = 40 mA	-40°C<Ta<+40°C Ui/Vmax = 42Vdc Ii/Imax = 40 mA
Canada	Ex ec IIC T6...T4 Gc				
US	CL I, Div 2 GP ABCD T6...T4 CL I, Zone 2 AEx ic IIC T6...T4 Gc When connected per DWG DH3260	-40°C<Ta<+75°C Ui/Vmax= 42Vdc Ii/Imax= 100 mA Pi/Pmax= 1 W	-40°C<Ta<+70°C Ui/Vmax= 30Vdc Ii/Imax= 160 mA Pi/Pmax= 1 W	-40°C<Ta<+40°C Ui/Vmax= 42Vdc Ii/Imax= 40 mA Pi/Pmax= 1 W	-40°C<Ta<+40°C Ui/Vmax= 42Vdc Ii/Imax= 40 mA Pi/Pmax= 1 W
Canada	Ex ic IIC T6...T4 Gc When connected per DWG DH3260				

*The current limitation is applicable only if the equipment is used only with the Ex ta type of protection (CL II Div 1 GP EFG T6...T4 and Zone 20 AEx ta IIIC T85°C...T135°C Da for US and Ex ta IIIC Tx Da IP67 for Canada)



TROUBLE SHEET

WARRANTY REPAIR ☐

☐ REPAIR ORDER

Rejection or discrepancy Reports

copy attached ☐

not available ☐

- **IDENTIFICATION**

Customer _____

Purchase order No _____

Plant _____

Name of person to contact _____

Instrument Tag No _____

Model _____

Serial Number _____

- **OPERATING CONDITIONS**

Specify location, environmental conditions, type of service and approximate number of operating hours or date of installation if known

- **REASON FOR RETURN**

- **DANGEROUS FLUIDS**

In case of toxic or otherwise dangerous fluid, please attach the relevant Material Safety Data Sheet

Trouble found during.

Installation ☐
At start up ☐

Commissioning ☐
On service ☐

Maintenance ☐

Shipping information for the return of the equipment

Material returned for factory repair should be sent to the nearest ABB Service Center; transportation charges prepaid by the Purchaser

Please enclose this sheet duly completed to cover letter and packing list

Date _____ Signature _____ Originator _____

ABB S.p.A

Process Automation Division

Sales Office: Via Vaccani, 4 - 22016 Tremezzina (CO) Italy

Tel. +39 0344 58 111

Fax +39 0344 56 278

e-mail: abb.instrumentation@it.abb.com



RETURN REPORT – No.: _____

*) Please always fill in. Otherwise the case will not be handled as return

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH (C.O.S.H.H.)

Decontamination declaration - EQUIPMENT RETURNED FOR REPAIR, CALIBRATION OR CREDIT

From _____

Description _____

Return authorization no. _____

Model number _____

Serial number _____

A) The above equipment has not been in contact with any material which is hazardous to health.

B) The above equipment has been in contact with the material(s) noted below but that it has now been completely de-contaminated and is now safe to handle and dismantle without any special precautions. Material(s) which have been in contact with this equipment:

C) If A) or B) are not applicable full instructions for the safe handling of this equipment **for disposal** must be supplied.

Please delete A), B) or C) above as applicable, complete the signature section below, then send the completed declaration either with the returned items, or by fax for the attention of the Calibration & Repair Centre..

Note – no action to examine or repair equipment will be undertaken until a valid COSHH declaration has been received, completed by an authorized officer of the end user company.

Signed _____

Name _____

Position _____

Date _____

ABB S.p.A

Process Automation Division

Uffici Commerciali / Sales Office:

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Products and customer support

ABB's portfolio for valve automation:

- Continuous electrical actuators and pneumatic actuators
- Electro-pneumatic, pneumatic, and digital positioners
- I/P signal converters

ABB's pressure measurement:

- Absolute, gauge and differential pressure transmitters
- IEC 61508 SIL2/3 certified pressure transmitters and switches
- Multivariable transmitters
- Interface level/density transmitters
- Pressure measurement remote seals
- Pressure measurement accessories
- Pneumatic pressure transmitters

ABB's temperature measurement:

- Universal temperature sensors
- High-temperature sensors
- Temperature sensors for sanitary applications
- Mineral isolated temperature sensors
- Thermowells
- Temperature transmitters
- IEC 61508 SIL2/3 certified temperature sensors and transmitters

ABB's portfolio of recorders and controllers:

- Process controllers and indicators
- Videographic recorders
- Paper chart recorders
- Field mountable indicators and controllers

ABB's portfolio of level measurement:

- Magnetic level gauges
- Magnetostrictive and guided wave radar level transmitters
- Laser and scanner level transmitters
- Ultrasonic, capacitance and vibrating fork level transmitters and switches
- Rotating paddle and thermal dispersion level switches
- IEC 61508 SIL2/3 certified level transmitters

ABB's portfolio of device management:

- Fieldbus and wireless solutions
- Scalable asset & device management
- Asset vision software
- Mobility handhelds

Customer Support

We provide a comprehensive after sales service via a Worldwide Service Organization.

Contact one of the following offices for details on your nearest Service and Repair Centre.

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Fax: +1 215 6747183

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Fax: +1 905 6812810

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Bangalore, Karnataka, India
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ABB Engineering (Shanghai) Ltd.

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Shanghai 201319 - P.R. China
Tel: +86 21 6105 6666
Fax +86 21 6105 6677

Client Warranty

Prior to installation, the equipment referred to in this manual must be stored in a clean, dry environment, in accordance with the Company's published specification. Periodic checks must be made on the equipment's condition. In the event of a failure under warranty, the following documentation must be provided as substantiation:

- A listing evidencing process operation and alarm logs at time of failure.
- Copies of all storage, installation, operating and maintenance records relating to the alleged faulty unit.

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