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ABB MEASUREMENT & ANALYTICS | DATA SHEET

## JDF300

Field indicator with FOUNDATION  
Fieldbus communication



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# Measurement made easy

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**Providing process variable where you need it**  
to increase data availability

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## **FOUNDATION Fieldbus field indicator**

- up to 8 H1 variables
- **one selectable host variable**

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**LAS backup capability**

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## **FOUNDATION Fieldbus blocks**

- **2 enhanced PID blocks**
- **1 arithmetic block**
- **1 input selector block**
- **1 control selector block**

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## **Flexible operation / configuration facilities**

- provided locally via local keys combined with LCD integral display or host configuration platform

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**Product in compliance with Directive 2011/65/UE (RoHS II)**

## Description

FOUNDATION Fieldbus identifies a standardized communication system using a digital, serial, bidirectional protocol.

It is a low hierarchic level network of LAN type, dedicated to process control instrumentation.

## Characteristics

The FOUNDATION Fieldbus Indicator model JDF300 is a field indicator which communicates with any host interface supporting the FOUNDATION Fieldbus protocol. This unit has been designed for implementing different functions to fulfill specific purposes:

- field indication, acting as display for up to 8 variables available on the H1 segment (publisher/subscriber) or written by the host (client/server). The variable selection is performed during the design of the function block application and linked as inputs at the internal MAO Function Block. Any single variable is identified by a proper subtag.
- control function block container, to improve control strategies whenever it is not allowed by the transmitters on the segment. Implemented control function blocks are 1 standard arithmetic, 1 standard input selector, 1 standard control selector and 2 enhanced PID (proportional/integral/derivative), allowing to support specific requirements for different kind of application (cascade control, flow compensation, algorithms, etc).
- LAS capability (Link Active Schedule), backup the link as the functionality, in order to keep alive the loop when the primary LAS element (DCS) fails. This feature on a dedicate unit provides enhanced security both for transmitters which perform specifically the measurement tasks and for LAS function itself performed without using resources assigned to measure.

## Specification – Environmental

### Operating temperature

Model JDF300	Ambient temperature range
Operating range	–40 to 85 °C (–40 to 185 °F)

LCD display may not be clearly readable below –20 °C (–4 °F) or above +70 °C (+158 °F).

### Storage

Model JDF300	Storage temperature range
With integral LCD display	–40 to 85 °C (–40 to 185 °F)

### Note.

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

### Electromagnetic compatibility (EMC)

Comply with 2014/30/UE to standards EN 61326-1:2013.  
Surge immunity level (with surge protector): 4 kV  
(according to IEC 61000-4-5 EN 61000-4-5)

### Humidity

Relative humidity: up to 100% annual average  
Condensing, icing: admissible

### Vibration resistance

Accelerations up to 2g at frequency up to 1000Hz  
(according to IEC 60068-2-6)

### Shock resistance

Acceleration: 50g  
Duration: 11ms  
(according to IEC 60068-2-27)

### Wet and dust-laden atmospheres

The transmitter is dust and sand tight and protected against immersion effects as defined by EN 60529 (2001) to IP66, IP67 or by NEMA type 4X.

## ...Specification – Environmental

### Hazardous atmospheres

#### INTRINSIC SAFETY Ex ia:

- ATEX Europe (code E1) approval  
II 1 G Ex ia IIC T6...T4 Ga, II 1 D Ex ia IIIC T85 °C Da;  
IP66, IP67.
- IECEx (code E8) approval  
Ex ia IIC T6...T4 Ga, Ex ia IIIC T85 °C Da; IP66, IP67.

#### EXPLOSION PROOF:

- ATEX Europe (code E2) approval  
II 2 G Ex db IIC T6 Gb Ta=−50 °C to +75 °C,  
II 2 D Ex tb IIIC T85 °C Db Ta = −50 °C to +75 °C;  
IP66, IP67.
- IECEx (code E9) approval  
Ex db IIC T6 Gb Ta=−50 °C to +75 °C,  
Ex tb IIIC T85 °C Db Ta = −50 °C to +75 °C; IP66, IP67.

#### INTRINSIC SAFETY Ex ic:

- ATEX Europe (code E3) type examination  
II 3 G Ex ic IIC T6...T4 Gc, II 3 D Ex tc IIIC T85 °C Dc;  
IP66, IP67.
- IECEx (code ER) type examination  
Ex ic IIC T6...T4 Gc, Ex tc IIIC T85 °C Dc; IP66, IP67.

#### FM Approvals US (code E6) and

#### FM Approvals Canada (code E4):

- Explosionproof:  
Class I, Division 1, Groups A, B, C, D; T4
- Dust-ignitionproof:  
Class II, III Division 1, Groups E, F, G; T4
- Flameproof (US): Class I, Zone 1 AEx db IIC T4 Gb
- Flameproof (Canada): Class I, Zone 1 Ex db IIC T4 Gb
- Intrinsically safe:  
Class I, Zone 0 AEx ia IIC T6...T4 Ga (US)  
Class I, Zone 0 Ex ia IIC T6...T4 Ga (Canada)  
Class I, Division 1, Groups A, B, C, D, T6...T4  
Class II, Division 1, Groups E, F, G, T6...T4  
Class III  
when connected per drawing 3KXP000074U0109  
"FISCO Field Instrument"
- Energy limited (US):  
Class I, Zone 2 AEx nC IIC T6...T4 Gc
- Energy limited (Canada):  
Class I, Zone 2 Ex nC IIC T6...T4 Gc
- Nonincendive: Class I, Division 2, Groups A, B, C, D T6...T4  
when connected per drawing 3KXP000074U0109  
"FISCO Field Instrument"
- Type 4X, IP66, IP67 for all above markings.

**COMBINED ATEX** (code EW = E1 + E2 + E3), (code E7 = E1 + E2)

**COMBINED IECEx** (code EI = E8 + E9 + ER), (code EH = E8 + E9)

#### COMBINED FM Approvals US and Canada

- Intrinsically safe (code EA)
- Explosionproof, Dust-ignitionproof (code EB)
- Nonincendive (code EC)

#### COMBINED ATEX, FM and IECEx Approvals (code EN)

#### NEPSI China approval

- NEPSI IIC Ex ia approval (code EY)  
Ex ia IIC T4/T5/T6 Ga, Ex iaD 20 T85/T100/T135
- NEPSI IIC Ex d approval (code EZ)  
Ex d IIC T6 Gb, Ex tD A21 IP67 T85 °C
- NEPSI IIC Ex ic approval (code ES)  
Ex ic IIC T4/T5/T6 Gc, Ex nA IIC T4/T5/T6 Gc;  
Ex tD A22 IP67 T85 °C

COMBINED NEPSI Ex ia, Ex d and Ex ic approvals  
(code EQ = EY + EZ + ES)

## Electrical characteristics and options

### Integral display with integral keypad (code L1)

Wide screen LCD, 128 x 64 pixel,  
52.5 x 27.2 mm (2.06 x 1.07 in.) dot matrix. Multilanguage.  
Four keys for configuration and management of device.  
Easy setup for quick commissioning.  
User selectable application-specific visualizations.  
Display may also indicate customizable diagnostic  
messages and provides configuration facilities.  
The indicator is user orientable, selecting one of 4  
possible positions at 90°.

### Indications

The LCD display provides the following visualizations:

- top line with 8-digit alphanumeric for tag (left), quality status (middle), node address (right)
- one line of 6-digit with height of 8 mm. for numeric indication of the selected variable.

### Device type

LINK MASTER DEVICE.

Link Active Scheduler (LAS) capability implemented.

### Power supply

The transmitter operates from 9 to 32 V DC, polarity independent, with or without surge protector.

For Ex ia approval power supply must not exceed 24 V DC (FF-816 certification) or 17.5 V DC (FISCO certification).

### Current consumption

operating (quiescent): 15 mA

fault current limiting: 20 mA max.

### Output signal

Physical layer in compliance to IEC 61158-2/EN 61158-2.

Transmission to Manchester II modulation, at 31.25 kbit/s.

### Function blocks/execution period

2 enhanced PID block/40 ms max.

1 standard Arithmetic block/25 ms

1 standard Input Selector block/25 ms

1 standard Control Selector block/25 ms

### Number of link objects

35

**Number of VCRs**

35

**Output interface**

FOUNDATION fieldbus digital communication protocol to standard H1, compliant to specification V. 1.7.

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## Specification – performance

**Supply voltage**

Within voltage / load specified limits the total effect is negligible

**Load**

Within load / voltage specified limits the total effect is negligible

**Electromagnetic field**

Meets all the requirements of EN 61326-1:2013 for surge immunity level (of IEC 61000-4-5 EN 61000-4-5 with surge protector)

**Common mode interference**

No effect from 100 V RMS @ 50Hz or 50 V DC

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## Specification – physical specification

**Integral display**

Plug-in rotatable (4 positions at 90°) type, LCD

**Materials****Mounting brackets \***

Zinc plated carbon steel with chrome passivation; 316 L ss

**Electronic housing and covers**

Aluminium alloy (copper content  $\leq 0.3\%$ ) with baked epoxy finish (colour RAL9002); AISI 316 L ss

**Covers O-ring**

Buna N.

**Local adjustments**

External non-intrusive local adjustments in glass filled polyphenylene oxyde

**Plates**

Transmitter nameplate: AISI 316 ss screwed to the electronics housing.

Certification plate and tag/calibration plate : self-adhesive attached to the electronics housing or AISI 316 ss fastened to the electronics housing with rivets or screws

**Optional extras****Mounting brackets (code Bx)**

For 60mm. (2in) pipes or wall mounting.

**Surge protection (code S2)****Test Certificate (codes C6)****Tag and manual language (codes Tx and Mx)****Conduit plug (code Z1)****Electrical connections**

Two 1/2 in. – 14 NPT or M20 x 1.5 threaded conduit entries, direct on housing.

One certified stainless steel plug (supplied loose with thread according to housing entries) available as option.

**Terminal block**

Two terminals for signal wiring (bus connection) up to 2.5 mm<sup>2</sup> (14 AWG)

**Grounding**

Internal and external 6 mm<sup>2</sup> (10 AWG) ground termination points are provided

**Mass (without options)**

1.2 kg approx. (2.2 lb); add 650g (1.5 lb) for packing

**Packing**

Carton 26 x 26 x 18 cm approx. (10 x 10 x 7 in.)

\* U-bolt material: high-strength AISI 316 L ss; bolt/nuts material: high-strength AISI 316 ss

## Dimensions

(not for construction unless certified) – dimensions in mm. (in.)

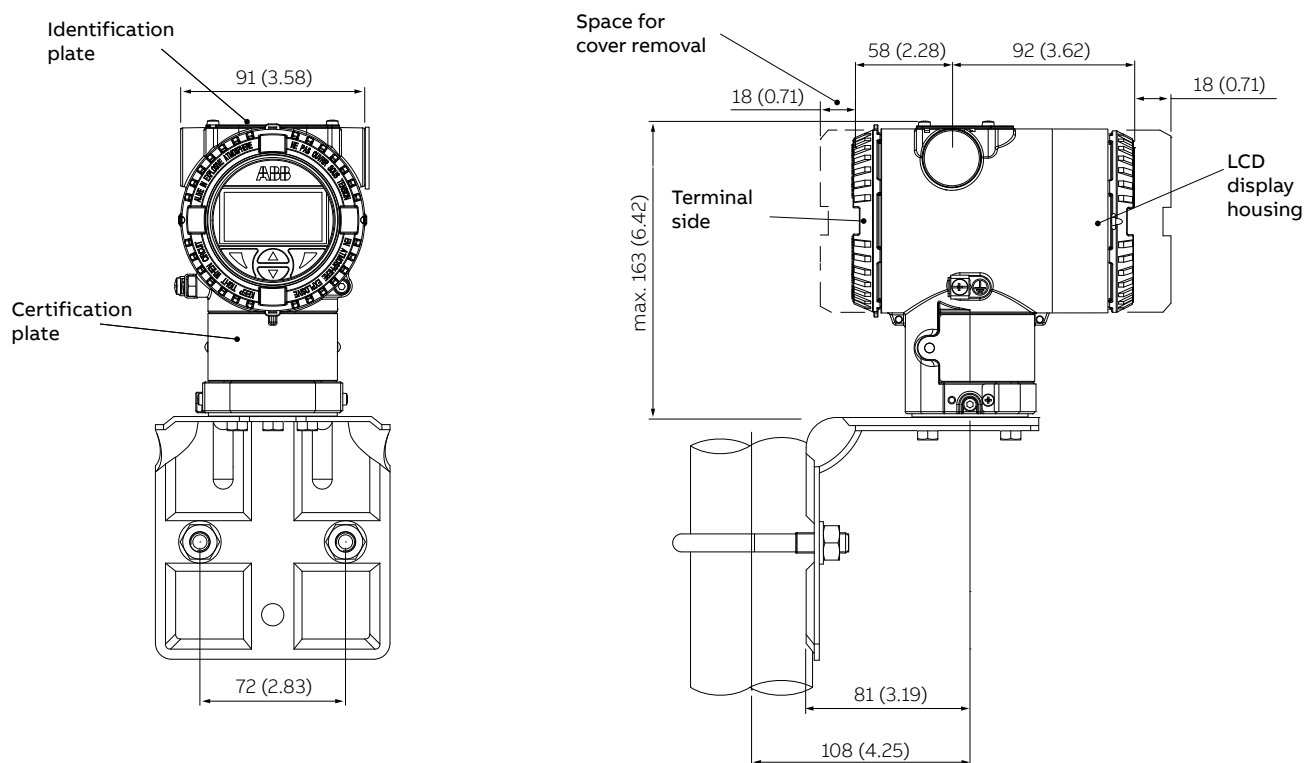
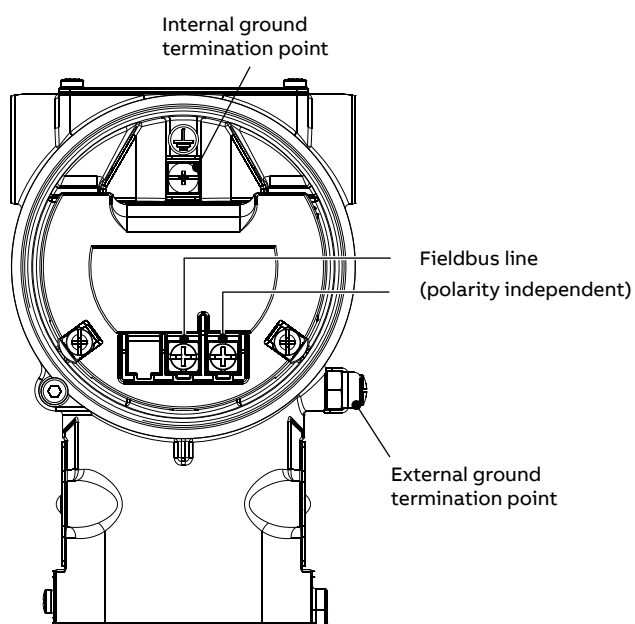


Fig. 1 Indicator with barrel aluminum housing on bracket for vertical or horizontal 60mm (2 in.) pipe mounting.

## Electrical connections



## Ordering information

<b>Base model</b>	<b>JDF300</b>	<b>X</b>	<b>X</b>
<b>Multivariable Field Indicator</b>			
<b>Housing material and electrical connection</b>			
Aluminium alloy (barrel version)	1/2 in. – 14 NPT	A	
Aluminium alloy (barrel version)	M20 x 1.5 (CM 20)	B	
AISI 316 L ss (barrel version) (I2 or I3 required)	1/2 in. – 14 NPT	S	
AISI 316 L ss (barrel version) (I2 or I3 required)	M20 x 1.5 (CM 20)	T	
<b>Output / Communication</b>			
FOUNDATION Fieldbus			3

### ADDITIONAL ORDERING INFORMATION for model JDF300

Add one or more 2-digit code(s) after the basic ordering information to select all required options

	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>
<b>Integral LCD</b>					
Digital LCD integral display with integrated keypad	L1				
<b>Hazardous area certifications</b>					
ATEX Intrinsic Safety II 1 G Ex ia IIC T6...T4 Ga, II 1 D Ex ia IIIC T85 °C Da; IP66, IP67	E1				
ATEX Explosion Proof II 2 G Ex db IIC T6 Gb, II 2 D Ex tb IIIC T85 °C Db; IP66, IP67	E2				
ATEX Intrinsic Safety II 3 G Ex ic IIC T6...T4 Gc, II 3 D Ex tc IIIC T85 °C Dc; IP66, IP67	E3				
Combined ATEX - Intrinsic Safety Ex ia, Explosion Proof and Intrinsic Safety Ex ic, Ex tc (E1 + E2 + E3)	EW				
Combined ATEX - Intrinsic Safety Ex ia and Explosion Proof (E1 + E2)	E7				
Combined ATEX, IECEx, FM (USA) and FM (Canada) (EW + E4 + E6 + EI)	EN				
FM (Canada) approval (Intrinsically Safe, Explosion Proof, Dust-ignitionproof and Nonincendive)	E4				
FM (USA) approval (Intrinsically Safe, Explosion Proof, Dust-ignitionproof and Nonincendive)	E6				
FM (USA and Canada) Intrinsically Safe	EA				
FM (USA and Canada) Explosion Proof and Dust-ignitionproof	EB				
FM (USA and Canada) Nonincendive	EC				
IECEX Intrinsic Safety Ex ia IIC T6...T4 Ga, Ex ia IIIC T85 °C Da; IP66, IP67	E8				
IECEX Explosion Proof Ex db IIC T6 Gb, Ex tb IIIC T85 °C Db; IP66, IP67	E9				
IECEX Intrinsic Safety Ex ic IIC T6...T4 Gc, Ex tc IIIC T85 °C Dc; IP66, IP67	ER				
Combined IECEX - Intrinsic Safety Ex ia, Explosion Proof and Intrinsic Safety Ex ic, Ex tc (E8 + E9 + ER)	EI				
Combined IECEX - Intrinsic Safety Ex ia and Explosion Proof (E8 + E9)	EH				
NEPSI China IIC Ex ia approval	EY				
NEPSI China IIC Ex d approval	EZ				
NEPSI China IIC Ex ic approval	ES				
COMBINED NEPSI China Ex ia, Ex d and Ex ic approvals (EY + EZ + ES)	EQ				
<b>Surge</b>					
Surge/Transient Protector			S2		
<b>Mounting bracket (shape and material)</b>					
For pipe/wall mounting – Carbon steel	(Note 1)			B6	
For pipe/wall mounting – AISI 316 L ss				B7	
<b>Operating manual (multiple selection allowed)</b>					
German language					M1
Italian language					M2
Spanish language					M3
French language					M4
English language					M5
Chinese language					M6

...Ordering information

...ADDITIONAL ORDERING INFORMATION for model JDF300

	XX	XX	XX	XX	XX
<b>Plates language</b>					
German	T1				
Italian	T2				
Spanish	T3				
French	T4				
<b>Additional tag plate</b>					
Supplemental wired-on stainless steel plate		I1			
Tag and certification stainless steel plates and laser printing of tag		I2			
Tag, certification and supplemental wired-on stainless steel plates and laser printing of tag		I3			
<b>Certificates</b>					
Certificate of compliance with the order EN 10204–2.1 of instrument design			C6		
<b>Approvals</b>					
CCC (China Compulsory Certificate) Mark				Y9	
<b>Electrical connection plug</b>					
One certified stainless steel plug (supplied loose with thread according to housing entries)					Z1

Note 1: Not available with Housing code S, T



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## Notes



## Notes



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