JDF300
Field indicator with FOUNDATION Fieldbus communication
Measurement made easy

Providing process variable where you need it to increase data availability

FOUNDATION Fieldbus field indicator
- up to 8 H1 variables
- one selectable host variable

LAS backup capability

FOUNDATION Fieldbus blocks
- 2 enhanced PID blocks
- 1 arithmetic block
- 1 input selector block
- 1 control selector block

Flexible operation / configuration facilities
- provided locally via local keys combined with LCD integral display or host configuration platform

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 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

<table>
<thead>
<tr>
<th>Model JDF300</th>
<th>Ambient temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating range</td>
<td>–40 to 85 °C (–40 to 185 °F)</td>
</tr>
</tbody>
</table>

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

#### Storage

<table>
<thead>
<tr>
<th>Model JDF300</th>
<th>Storage temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>With integral LCD display</td>
<td>–40 to 85 °C (–40 to 185 °F)</td>
</tr>
</tbody>
</table>

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
  
  Il 1 G Ex ia IIC T6...T4 Ga, Il 1 D Ex ia IIC T85 °C Da;
  IP66, IP67.

- IECEx (code E8) approval
  Ex ia IIC T6...T4 Ga, Ex ia IIC T85 °C Da; IP66, IP67.

**EXPLOSION PROOF:**
- ATEX Europe (code E2) approval
  Il 2 G Ex db IIC T6 Gb Ta=–50 °C to +75 °C,
  Il 2 D Ex tb IIC 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 IIC 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 IIC T85 °C Dc;
  IP66, IP67.

- IECEx (code ER) type examination
  Ex ic IIC T6...T4 Gc, Ex tc IIC T85 °C Dc; IP66, IP67.

**FM Approvals US (code E6) and FM Approvals Canada (code E4):**
- Explosion-proof:
  Class I, Division 1, Groups A, B, C, D; T4

- Dust-ignition-proof:
  Class II, III Division 1, Groups E, F, G; T4

- Flameproof (US): Class I Ex 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)

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

- 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

- 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)
- Explosion-proof, Dust-ignition-proof (code EB)
- Nonincendive (code EC)

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

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**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.
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

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 ≤ 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 mm² (14 AWG)

Grounding
Internal and external 6 mm² (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.)

![Diagram of JDF300 Field Indicator](image)

**Electrical connections**

![Diagram of Electrical Connections](image)
Ordering information

Base model
JDF300
X

Multivariable Field Indicator
JDF300
X

Housing material and electrical connection

<table>
<thead>
<tr>
<th>Material</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium alloy (barrel version)</td>
<td>1/2 in. – 14 NPT</td>
</tr>
<tr>
<td>Aluminium alloy (barrel version)</td>
<td>M20 x 1.5 (CM 20)</td>
</tr>
<tr>
<td>AISI 316 L ss (barrel version)</td>
<td>1/2 in. – 14 NPT</td>
</tr>
<tr>
<td>AISI 316 L ss (barrel version)</td>
<td>M20 x 1.5 (CM 20)</td>
</tr>
</tbody>
</table>

Output / Communication

FOUNDATION Fieldbus

ADDITIONAL ORDERING INFORMATION for model JDF300

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

<table>
<thead>
<tr>
<th>Integral LCD</th>
<th>Digital LCD integral display with integrated keypad</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L1</td>
</tr>
</tbody>
</table>

Hazardous area certifications

- ATEX Intrinsic Safety II 1 G Ex ia IIC T6...T4 Ga, II 1 D Ex ia IIIC T85 °C Da; IP66, IP67
- ATEX Explosion Proof II 2 G Ex db IIC T6 Gb, II 2 D Ex tb IIIC T85 °C Db; IP66, IP67
- ATEX Intrinsic Safety II 3 G Ex ic IIIC T6...T4 Gc, II 3 D Ex tc IIIC T85 °C Dc; IP66, IP67
- Combined ATEX - Intrinsic Safety Ex ia, Explosion Proof and Intrinsic Safety Ex ic, Ex tc (E1 + E2 + E3)
- Combined ATEX - Intrinsic Safety Ex ia and Explosion Proof (E1 + E2)
- Combined ATEX, IECEx, FM (USA) and FM (Canada) (EW + E4 + E6 + E1)
- FM (Canada) approval (Intrinsically Safe, Explosion Proof, Dust-ignitionproof and Nonincendive)
- FM (USA) approval (Intrinsically Safe, Explosion Proof, Dust-ignitionproof and Nonincendive)
- FM (USA and Canada) Intrinsically Safe
- FM (USA and Canada) Explosion Proof and Dust-ignitionproof
- FM (USA and Canada) Nonincendive
- IECEx Intrinsic Safety Ex ia IIC T6...T4 Ga, Ex la IIIC T85 °C Da; IP66, IP67
- IECEx Explosion Proof Ex db IIC T6 Gb, Ex tb IIIC T85 °C Db; IP66, IP67
- IECEx Intrinsic Safety Ex ic IIC T6...T4 Gc, Ex tc IIIC T85 °C Dc; IP66, IP67
- Combined IECEx - Intrinsic Safety Ex ia, Explosion Proof and Intrinsic Safety Ex ic, Ex tc (E8 + E9 + ER)
- Combined IECEx - Intrinsic Safety Ex ia and Explosion Proof (E8 + E9)

Surge

- Surge/Transient Protector

Mounting bracket (shape and material)

- For pipe/wall mounting – Carbon steel
- For pipe/wall mounting – AISI 316 L ss

Operating manual (multiple selection allowed)

- German language
- Italian language
- Spanish language
- French language
- English language
- Portuguese language
### Ordering information

#### ADDITIONAL ORDERING INFORMATION for model JDF300

<table>
<thead>
<tr>
<th>Plates language</th>
<th>XX</th>
<th>XX</th>
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<tbody>
<tr>
<td>German</td>
<td>T1</td>
<td></td>
<td></td>
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<tr>
<td>Italian</td>
<td>T2</td>
<td></td>
<td></td>
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<tr>
<td>Spanish</td>
<td>T3</td>
<td></td>
<td></td>
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<tr>
<td>French</td>
<td>T4</td>
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#### Additional tag plate

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<tr>
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<th>XX</th>
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<tbody>
<tr>
<td>Supplemental wired-on stainless steel plate</td>
<td>I1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Tag and certification stainless steel plates and laser printing of tag</td>
<td>I2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tag, certification and supplemental wired-on stainless steel plates and laser printing of tag</td>
<td>I3</td>
<td></td>
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#### Certificates

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<th>XX</th>
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<tbody>
<tr>
<td>Certificate of compliance with the order EN 10204–2.1 of instrument design</td>
<td>C6</td>
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#### Electrical connection plug

<table>
<thead>
<tr>
<th></th>
<th>XX</th>
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<th>XX</th>
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</thead>
<tbody>
<tr>
<td>One certified stainless steel plug (supplied loose with thread according to housing entries)</td>
<td>Z1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1: Not available with Housing code S, T
Notes