Data Sheet DS/695FI-EN Rev. G

Model 695FI
Field Indicator

Digital LCD or analog meter
– allows to select the proper indication

Programmable meter and HART configurator
– combines signal display with password protected configuration capabilities for transmitter management

Rugged, compact, lightweight, enclosure to IP67
– enables installation in industrial environments

Compatible with all 4-20 mA, 2-wire systems

Square root signal characterization
– allows measurements linearization

Comprehensive certification approvals
– give high applicability in plant hazardous areas

Model 695FI 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.
Traditional analog indicator is available with standard 0-100% linear or 0-10 square root graduations or special scales to be specified.

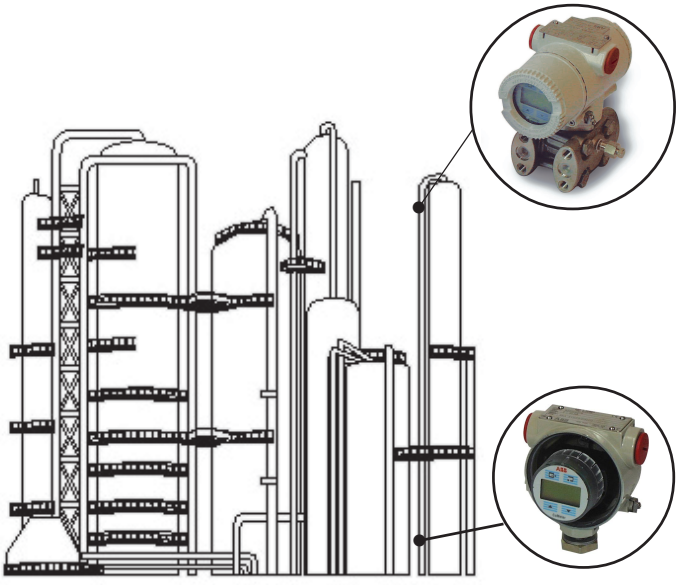
In addition to parallel transmitter wiring the terminal block 695FI provides series wiring through junction box connection facility.
Alternatively to the previous options, model 695FI, offers a programmable signal meter which integrates LCD plus bargraph indications (ProMeter). This kind of display is also available with HART configuration capabilities (CoMeter).
Both these meters feature:

- one 5-digit numeric indication (top)
- one 10-segment bargraph indication (central)
- one 7-digit alphanumeric indication (bottom)
- a membrane keypad with 4 tactile feedback keys

The functionality as METER is achieved by the 10-segment bargraph which gives an analog 0-100% indication and by the 5-digit display which gives a digital indication programmable from the following options:
• 4 to 20 mA • 0 to 100% • engineering unit
Programmability is carried out using the four keys, allowing to define linear or square root indication for mA or engineering unit; for this latter, also indication range (zero and full scale values) can be chosen related to the unit which is defined in HART table; these parameters can be automatically uploaded from the transmitter where 695FI with CoMeter is remotely connected.

As CONFIGURATOR, the device keypad of CoMeter only allows easy management of the associated transmitter; the 7-digit alphanumeric display provides comprehensive feedback via menù driven operations. This configuration device operates in compliance to standard definition of universal and common practice HART commands as explained in the following list:
PV reading
Analog output and % output reading
Secondary variables reading
Transmitter tag reading
Sensor number reading
Up/Down scale setting reading
Upper and Lower Range limit reading
Change output transfer function (square root)
Change units
Change range (ranging)
Change damping
Transmitter number (assembly reference)
Reranging (wet calibration)
Loop test
Output trimming (directly using CoMeter or by external DVM)
Zero alignment (sensor trim)
Overall password protection ensures operational security, avoiding unauthorized access to any CoMeter operation.

A CoMeter remotely installed from transmitter allows convenient capability of configuration at easy accessible site.



- Password
- Configuration
- Trimming
- Damping
- Square root
- etc

Functional specification

Input range

4 to 20mA nominal

Operating range

3.6 to 22mA (for CoMeter ensuring HART functionality)

Maximum overload (for 2 minutes)

Analog indicator : 150% of input range

CoMeter and ProMeter: 110mA (23mA indication).

A current less than 3.4mA will blank the display

Voltage drop

analog indicator : 0.2Vdc

ProMeter : 2Vdc

CoMeter:
– less than 2.6Vdc @ full scale and 20°C
– 2.8Vdc @ max temperature (including HART modulation)

Meter/indication range

CoMeter and Prometer LCD :
5-digit (±99999 counts) programmable with 7.6mm. high (3in), 7-segment numeric characters plus sign and digital point for digital indication of output value in percentage, current or engineer unit;

10-segment bargraph display (10% per segment) for analog indication of output in percentage;

7-digit with 6mm. high (2.3in), 14-segment alphanumeric characters, for engineer units and configuration display

Analog : 36mm (1.4in) scale on 90°; available scales are 0-100% linear, 0-10 square root or special on request.

Update time

Analog indicators : 0.5sec

CoMeter and ProMeter: 0.7sec

Operative limits

Temperature limits

Ambient (is the operating limit)

analog indicator: –40 to +85°C (–40 to +185°F)

CoMeter and ProMeter : –20 to +70°C (–4 to +158°F)

Lower limit can be down to –40°C (–40°F) keeping loop integrity and without meter damage (the display will be blank)

Storage

– 40 to +85°C (–40 to +185°F)

Operative limits

Temperature limits

Ambient (is the operating limit)

analog indicator: –40 to +85°C (–40 to +185°F)

CoMeter and ProMeter : –20 to +70°C (–4 to +158°F)

Lower limit can be down to –40°C (–40°F) keeping loop integrity and without meter damage (the display will be blank)

Storage

– 40 to +85°C (–40 to +185°F)

Environmental limits

Relative humidity

Reference: 60% ±25%

Operative, transportation and storage limits : 0 and 100% condensing permissible

EMI/RFI (SAMA PMC 33.1)

Operative limits : Class 3 abc, field strengths up to 30V/m (Frequency range: 20 to 1000MHz)

Wet and dust-laden atmospheres

The field indicator is dust and sand tight and protected against immersion effect as defined by IEC 529 to IP 67 or by NEMA 4X.

Hazardous atmospheres

– INTRINSIC SAFETY/ EUROPE
ATEX/CESI approval
EC-Type Examination Certificate no. CESI 01ATEX015
Category 1 equipment for Zone 0 (Gas) and Zone 20 (Dust)
For Category 1 Stainless Steel enclosure only
ATEX II 1 G Ex ia IIC T6 T5 Ga (–40°C ≤ Ta ≤ +40°C)
ATEX II 1 G Ex ia IIC T4 Ga (–40°C ≤ Ta ≤ +85°C)
ATEX II 1 D Ex ia IIIC T50°C Da (–40°C ≤ Ta ≤ +40°C)
ATEX II 1 D Ex ia IIIC T95°C Da (–40°C ≤ Ta ≤ +85°C)

Category 2 equipment for Zone 1 (Gas) and Zone 21 (Dust)
For Category 2 Aluminiun or alternatively Stainless Steel enclosure
ATEX II 2 G Ex ia IIC T6 T5 Gb (–40°C ≤ Ta ≤ +40°C)
ATEX II 2 G Ex ia IIC T4 Gb (–40°C ≤ Ta ≤ +85°C)
ATEX II 2 D Ex ia IIIC T50°C Db (–40°C ≤ Ta ≤ +40°C)
ATEX II 2 D Ex ia IIIC T95°C Db (–40°C ≤ Ta ≤ +85°C)

– FLAMEPROOF/EUROPE
ATEX/CESI approval
EC-Type Examination Certificate no. CESI 01ATEX011
ATEX II 2 G Ex d IIC T6 (–40°C ≤ Ta ≤ +70°C)
ATEX II 2 G Ex d IIC T5 (–40°C ≤ Ta ≤ +85°C)
ATEX II 2 D Ex d tD A21 IP67 T80°C (–40°C ≤ Ta ≤ +70°C)
ATEX II 2 D Ex d tD A21 IP67 T95°C (–40°C ≤ Ta ≤ +85°C)

– TYPE "N"/EUROPE
ATEX CESI type examination
Design compliance by Certificate no. CESI 02 ATEX074
II 3 GD T50°C, EEx nL IIC T6 (–40°C ≤Ta ≤+40°C)
T95°C, EEx nL IIC T4 (–40°C ≤Ta ≤+85°C)

– CANADIAN STANDARDS ASSOCIATION and FACTORY MUTUAL:
Explosionproof: Class I, Div. 1, Group B, C, D
Dust ignitionproof: Class II, Div. 1, Group E, F, G
Suitable for: Class II, Div. 2, Group F,G; Class III, Div 1,2
Nonincendive: Class I, Div. 2, Group A,B,C,D
Intrinsically safe: Class I, II, III, Div. 1, Group A,B,C,D,E,F,G

– GOST (Russia), GOST (Kazakistan), Inmetro (Brazil) based on ATEX

Performance specification

Stated at ambient temperature of 23°C ± 3K (75°F ± 5), relative humidity of 50% ± 20% and atmospheric pressure

Indication accuracy

analog indicator : ± 2% fsd

CoMeter and ProMeter
– digital : ± 0.10% of max span(16 mA) ± 1 digit
– analog (bargraph) : 10%

Resolution for CoMeter and ProMeter

± 0.025% (12-bit conversion)

Ambient temperature

Total effect per 1K (1.8°F) change between the limits of –20 and +80°C (–4 and +176 °F).

CoMeter and ProMeter: ± 0.15% of max span (16 mA)

EMI/RFI

Total effect : ± 0.10% from 20 to 1000MHz and for field strengths up to 10V/m when instrument is properly installed.

Physical specification

Materials

Housing and covers

Aluminium alloy with light gray (RAL 4002) baked epoxy finish;

AISI 316 L ss.

Covers O-ring

Buna N

Identification tag

AISI 316 ss permanently mounted.

40 characters max on three lines (legend to be specified).

Mounting bracket (*)

Plated carbon steel with chrome passivation;

AISI 316 L ss

(*) U-bolt material: AISI 400 ss.

Electrical connections

Two 1/2 NPT or M20x1.5 or PG 13.5 or 1/2 GK threaded conduit entries, direct on housing.

Terminal block

Three screw terminals suitable for wirings up to 2.5mm^2 (14AWG) and three connection points for test and communication purposes.

Grounding

Internal and external 6mm^2 (10AWG) ground termination points are provided.

Mounting

Vertical position on a 60mm or 2in pipe by bracket.

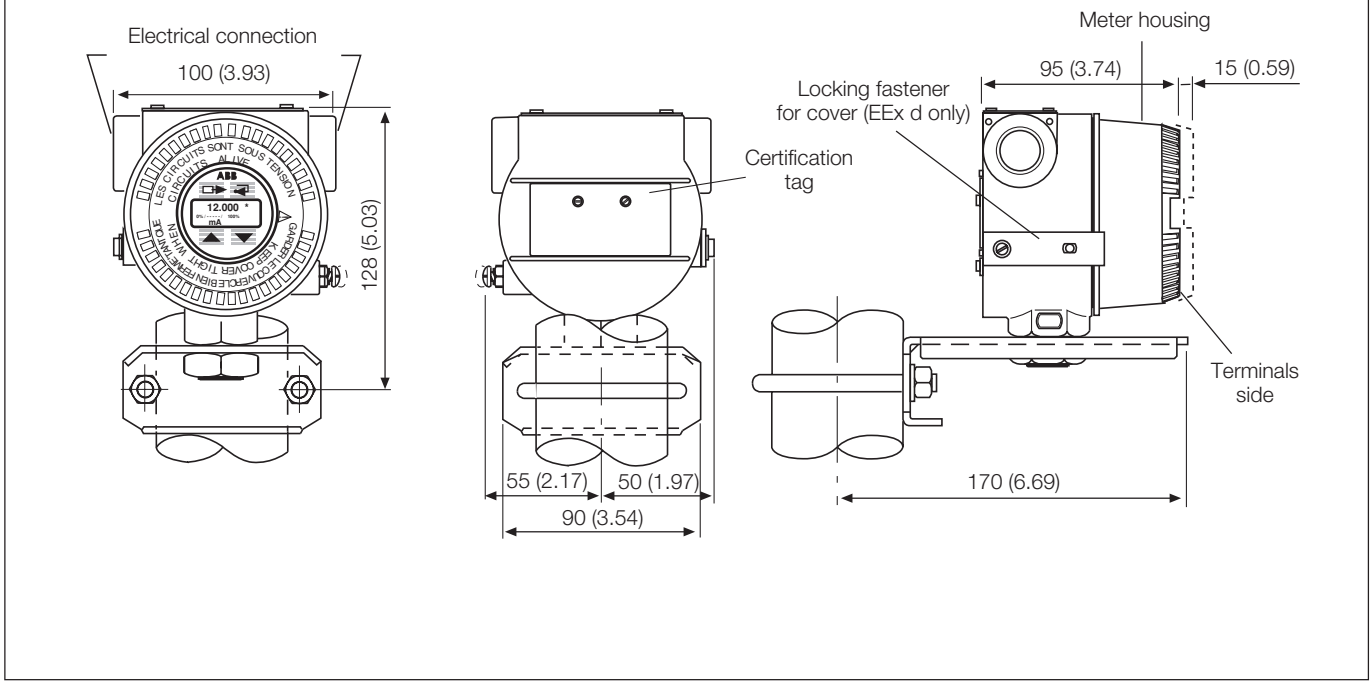
Net weight

0.9kg. approx (2lb) (without mounting bracket).

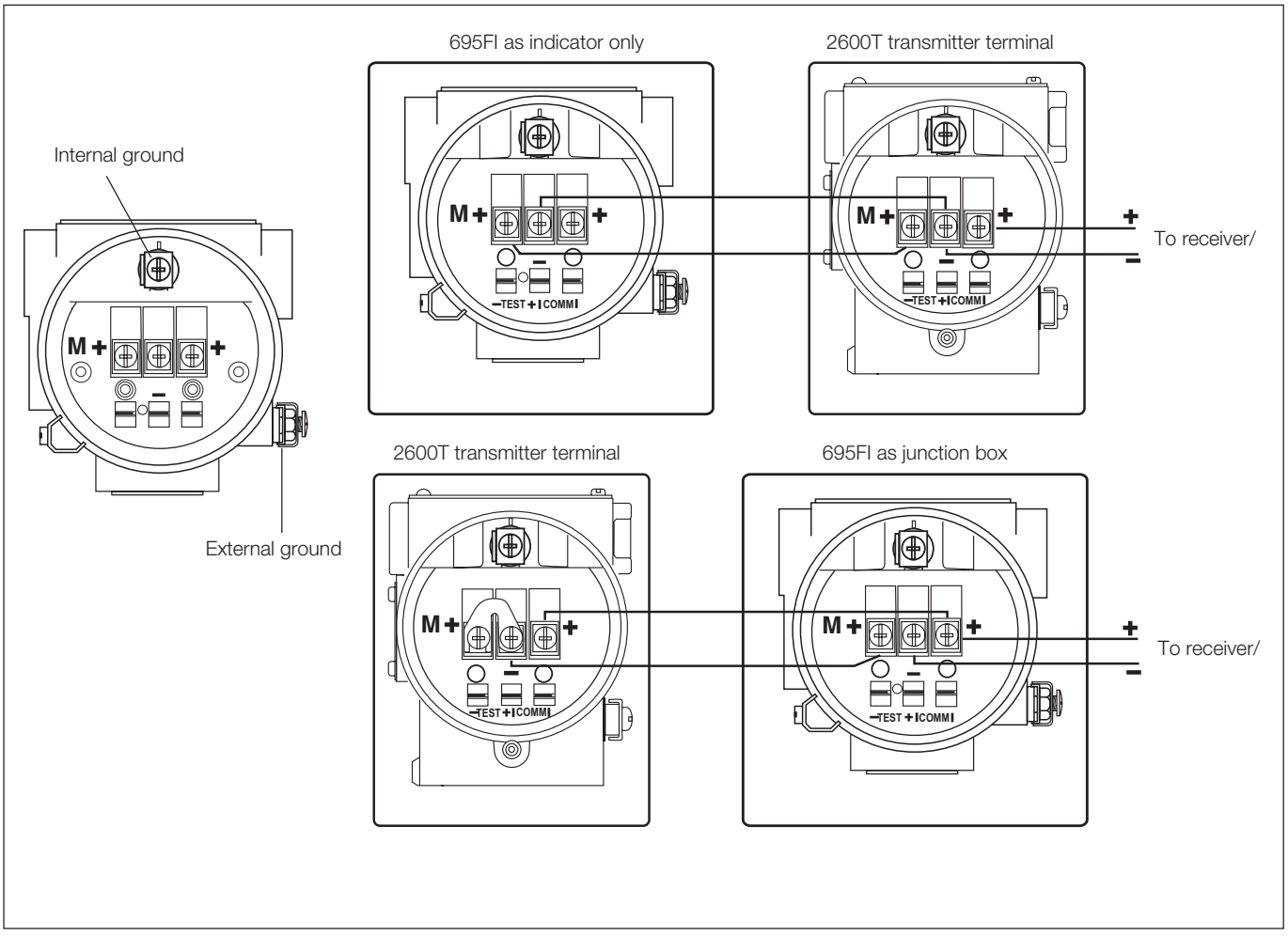
Packing

Expanded polythene box.

MOUNTING DIMENSIONS (not for construction unless certified) - dimensions in mm (in)



WIRING DIAGRAM



ORDERING INFORMATION model 695FI Field Indicator

Select one character or set of characters from each category and specify complete catalog number.

BASE MODEL – 1st to 5th characters						**6**	**9**	**5**	**F**	**I**	**XXXXX**	**X**	**X**	**X**	**X**	**X**
Field Indicator																
6th to 10th characters																
Use code											00000					
Mounting bracket – 11th character																
Carbon steel (not suitable with AISI housing)												2				
AISI 316 ss												3				
Electrical certification – 12th character																
General purpose													1			
ATEX Group II Category 2 GD - Flameproof Ex d II C T6, T5													F			
ATEX Group II Category 1 GD - Intrinsic Safety Ex ia II C T6, T5, T4													L			
ATEX Group II Category 2 GD - Intrinsic Safety Ex ia II C T6, T5, T4													M			
ATEX Group II Category 3 GD - Type of protection "N" Ex nL design compliance													N			
Factory Mutual (FM) and Canadian Standard Association (CSA) approvals													8			
GOST (Russia) EEx ia													R			
GOST (Russia) EEx d													U			
GOST (Kazakistan) EEx ia													K			
GOST (Kazakistan) EEx d													A			
Housing material and electrical connection – 13th character																
Aluminium alloy	1/2in NPT	(Note 3)												1		
Aluminium alloy	M20 x 1.5 (CM20)	(Note 3)												2		
Aluminium alloy	Pg 13.5	(Notes 1, 3)												3		
Aluminium alloy	1/2in GK	(Notes 1, 3)												4		
AISI 316L ss	1/2in NPT	(Note 2)												A		
AISI 316L ss	M20 x 1.5 (CM20)	(Note 2)												C		
AISI 316L ss	Pg 13.5	(Notes 1, 2)												D		
AISI 316L ss	1/2in GK	(Notes 1, 2)												F		
Output meter - 14th character																
ProMeter, Standard calibration															3	
ProMeter, Special calibration															5	
Analog output indicator linear 0–100% scale															7	
Analog output indicator square root 0–10 scale															8	
Analog output indicator, special graduation (to be specified for linear scale)															9	
Analog output indicator, special graduation (to be specified for square root scale)															Z	
Programmable signal meter and HART configurator (CoMeter)															P	
Programmable signal meter and HART configurator (CoMeter – customer configuration)															W	
Labels language - 15th characters																
English																E
German																G

Note 1: Not available with Electrical certification code 8

Note 2: Not available with Carbon steel bracket code 2

Note 3: Not available with Electrical certification code L

Contact us

ABB Ltd.
Process Automation
Howard Road
St. Neots
Cambridgeshire PE19 8EU
UK
Tel: +44 (0)1480 475321
Fax: +44 (0)1480 217948

ABB Inc.
Process Automation
125 E. County Line Road
Warminster
PA 18974
USA
Tel: +1 215 674 6000
Fax: +1 215 674 7183

ABB Automation Products GmbH
Process Automation
Schillerstr. 72
32425 Minden
Germany
Tel: +49 551 905 534
Fax: +49 551 905 555

ABB S.p.A.
Process Automation
Via Statale 113
22016 Lenno (CO)
Italy
Tel: +39 0344 58111
Fax: +39 0344 56278

www.abb.com

DS/695FI-EN Rev. G 03.2012

Power and productivity
for a better world™