E 490 Datasheet

Your success counts

FLUIDWELL

Loop Powered, Multi-Purpose Indicator

for universal applications

PRELIMINARY INFO

Application examples: *Salty Off-Shore conditions*

Extreme cold weather at polar regions

Hot and sandy deserts

The E-Series provides unequalled safety and ease of use, opening the cover is history. The through-glass keypad enables operability without interruptions. The E-Series saves time, money and hassle and delivers user-friendliness in the toughest conditions.

Advantages

- Save time and gain flexibility with the easy-to-operate through glass keypad: no need to remove the front cover or to arrange a work permit.
- Intuitive "Know one, know them all!" configuration menu, saving time, cost and aggravation.
- Cost saving with an easy to install, spacious chamber, plug and play connectors and 1" NPT thread for flow meter mounting.
- Durable high grade stainless steel 316L Ex d enclosure for extremely salty atmospheres (offshore).

Features

- Explosion proof according ATEX and IECEx.
- Universal loop powered indicator.
- Input signal: 4 - 20mA with ultra low voltage drop <1.5V DC.
- Displays the actual value, measuring unit and loop current.
- Large 17.3mm (0.7") digits.
- Bargraph indication: ten segments of 10%.
- Number of digits: 5.
- LED backlight circuit, separated from the input circuit.
- Selectable engineering units for many different applications: L- NL- mL - M^3- AM^3- NM^3 - mg - g - Kg - TON- OZ- GAL - USGAL - IGAL - lb - bbL- cf - CUFt - scf - p - rev - °C - °F - °K - % - M - mm - CM - mtr - inch - Ft - SQFt – Yd - PSI - psig - mbar - MbARG - bar - barg – bara – PA - PAG - KPA – KPAG - MPA - INHG – mmHg - mmH_2O - MH_2O – INH_2O- Ph – mV – mA - A - uS – PPM – RPM or no unit. (others on request).
- Auto backup of all settings.

Introduction

The E490 is a local multi-purpose indicator to display the actual process value, range and loop current. The measuring unit to be displayed is simply selected through an alfa-numerical configuration menu. The E-series distinguishes itself by its quality and functionality driven European design and manufacturing. It is more than fulfilling the rules for explosion proof design, it is about safety during the daily operation. Often, the environment is much tougher than the explosion proof requirements demand. Thus dangerous conditions may be experienced due to a broken enclosure or a poorly made flame path. Ruggedness and reliability is where Fluidwell stands for and it is now available in a comprehensive well designed and purpose driven explosion proof multi-purpose indicator.

Hazardous areas

The E-Series has been certified according ATEX and IECEx. with an ambient temperature of -40°C up to +70°C (-40°F to +158°F). For stainless steel 40°C to +67°C (-40°F to +153°F).

- The ATEX markings for gas and dust applications are:
  II 2 G Ex db IIC T6 Gb.
  II 2 D Ex tb IIIC T85°C Db.
- The IECEx markings for gas and dust applications are:
  Ex db IIC T6 Gb.
  Ex tb IIIC T85°C Db.
- The FM and CSA c-us markings are pending.

Display

The unique LCD display provides multiple process data at a glance. The main information is displayed with 5 digits (17.3mm, 0.7"). At the bottom line, 11 (7mm, 0.3") alfanumerical digits are available to display the measuring unit and additional messages in case of an alarm or range error. The bargraph offers a quick impression of the actual process value. The loop can even lit up the backlight, but for good readings in full sunlight and darkness, the E490 can be externally powered for a bright backlight.

Operation

Operation is done via the optical, easy-to-operate, through glass keypad without having to remove the front cover. These optical keys can be disabled. For easy handheld configuration there are three mechanical push buttons on the bottom side of the display collar when the cover is removed. All settings are accessed via a simple operator menu that can be passcode protected.

Configuration

The E-Series uses the highly appreciated configuration structure of our F-, D- and N-Series product lines. Each setting is clearly indicated with an alphanumerical description, which avoids confusing abbreviations. Once familiar with one E-series product, you will be able to program all models in all series without a manual. For example: an (intrinsically safe) F490 operates identical to an explosion proof E490 and has the same three buttons! In other words: know one, know them all.

Remote configuration

Even more user-friendly is the remote configuration via a PC using the free downloadable E-Series Configuration Software. Just connect the E490 to your PC via the service connector and special Configuration Cable (ordernr. ACE02).

All info at a glance
Easy to install
Easy to program
Know one know them all!
Reliable
User-friendly

PRELIMINARY INFO

Overview application E490

The E490 takes operating energy from an input current (2-wire 4 - 20mA) and reduces installation cost. It accepts a wide range of process instruments, including flow (linear or square root), level, pressure and temperature transmitters. The proces values of all these types of instruments, can be displayed in their own engineering units.

The E490 offers you a multi-purpose indicator designed to be used in rough and tough applications, beyond being just explosion proof. Its sturdy design and ease of use are unequaled by any other explosion proof indicator in the market! The E-Series is always your first and safest choice in explosion proof applications. For intrinsically safe applications we offer our F490 multi-purpose indicator.

PRELIMINARY INFO

Signal input

The E490 accepts 4 - 20mA input signals only. When backlight is disabled, the voltage drop is <1.5V. The input signal type can be tuned and set in the configuration menu without having to adjust any sensitive mechanical dip-switches / jumpers.

Backlight

The input circuit is separated from the backlight circuit, but is still able to provide minimal illumination. When the backlight is enabled and loop powered, the voltage drop is approx. 6.5V. When the backlight is externally powered it lights up at full intensity and will not influence the voltage drop in the loop.

Power requirements

The E490 is a loop powered indicator, so it takes its operating energy from an input current (2-wire 4 - 20mA). It can also be powered externally, then the backlight lights up at full intensity.

Enclosures

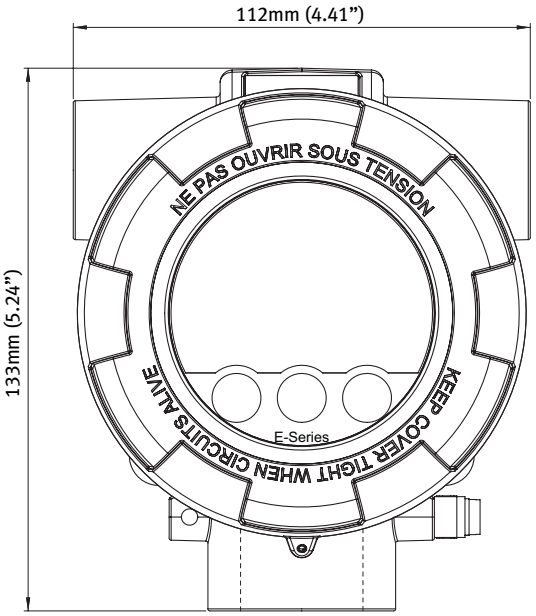
Two versions of our IP66/IP67, NEMA Type4X/7/9 explosion proof enclosures are available: a solid die cast aluminum or a high grade stainless steel 316L enclosure resistant to extremely salty atmospheres (offshore). The aluminum enclosure has an industrial two component coating and is better suitable for outdoor and chemical plant applications than powder coated alternatives. A major advantage for the installation engineer is the spacious mid-chamber for the cable entry and the plug-and-play connectors.

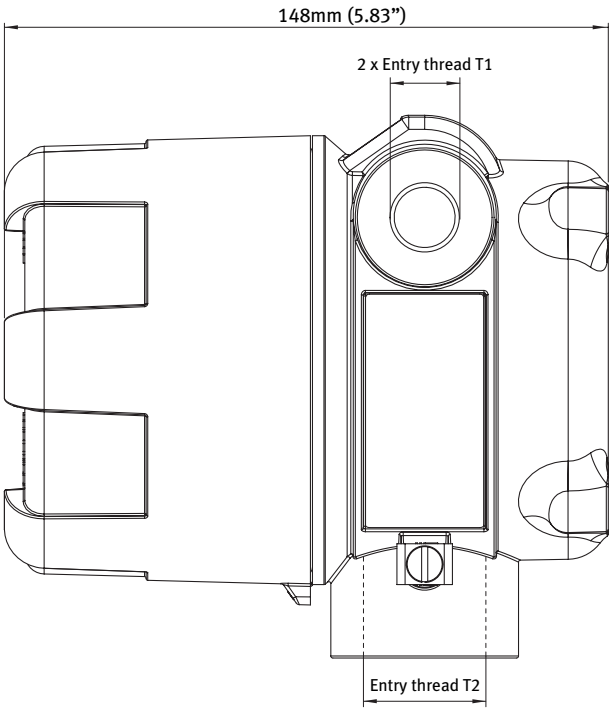
Easy-to-operate through glass keypad

High grade Stainless Steel 316L enclosure

Dimensions enclosures

Aluminum & Stainless Steel 316L enclosure





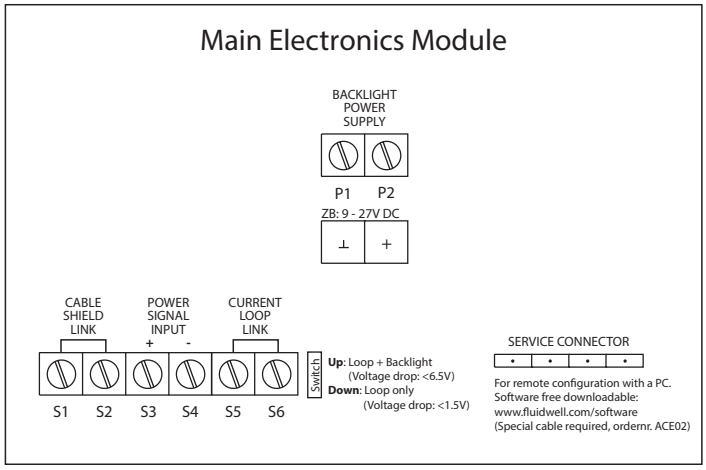
Enclosure types

Type HA_	Aluminum Ex d enclosure.
Weight	1300 gr.
Type HS_	Stainless steel 316L Ex d enclosure.
Weight	3600 gr.

Enclosure drillings

Type H_A	T1: 2 x ¾"NPT / T2: 1 x 1"NPT
Type H_B	T1: 2 x ¾"NPT / T2: 1 x ¾"NPT
Type H_C	T1: 2 x ½"NPT / T2: 1 x 1"NPT
Type H_D	T1: 2 x ½"NPT / T2: 1 x ¾"NPT
Type H_G	T1: 2 x M20 / T2: 1 x M25
Type H_H	T1: 2 x M25 / T2: 1x M25

Terminal connections



Display example

Display

Type	High intensity transflective numeric and alphanumeric LCD, UV-resistant, with bright backlight (when externally powered). Intensity can be adjusted via the keypad.
Dimensions	Ø 65 x 45mm (2.56" x 1.77").
Digits	Five 17.3mm (0.7") and eleven 7mm (0.3") digits. Various symbols and measuring units.
Refresh rate	User definable: 8 times/sec. - 30 secs.

Bargraph

Digits	10 segments of each 10%.
Relation	To the min. and max. input signal (0 - 100%).

Displayed information

Digits	5 digits. (height: 17.3mm / 0.68").
Units	L – NL – mL – M^3 – AM^3 – NM^3 – mg – g – Kg – TON – OZ – GAL – USGAL – IGAL – lb – bbL– cf – CUFt – scf – p – rev – °C – °F – K – % – M – mm – CM – mtr – inch – Ft – SQFt – Yd – PSI – psig – mbar – MbARG – bar – barg – bara – PA – PAG – KPA – KPAG – MPA – INHG – mmHg – mmH2O – MH2O – INH2O – Ph – mA – A – uS – PPM – RPM – no unit.
Time units	/SEC – /S – /MIN – /M – /HR – /H – /DAY – /D
Note	Selecting "/-----" disables the time unit.
Decimals	0 - 1 - 2 - 3 or 4.

PRELIMINARY INFO

Operating temperature

Ambient HA_	-40°C to +70°C (-40°F to +158°F).
Ambient HS_	-40°C to +67°C (-40°F to +153°F).

Power requirements

Type PL	Input loop powered from sensor signal 4 - 20mA
Voltage drop PL	Backlight disabled: < 1.5V @ 20mA. Backlight enabled: approx. 6.5V @ 20mA.
Type ZB	9 - 27V DC. Consumption max. 0.6 Watt.
Note ZB	When the backlight is externally powered it lights up at full intensity and will not influence the voltage drop in the loop.

Terminal connections

Type	Removable plug-in terminal strip. Wire max. 2.5mm^2

Data protection

Type	Backup of all settings. Data retention at least 10 years.
Password	Configuration settings can be password protected.

Directives & Standards

EMC	Directive 2014/30/EU, FCC 47 CFR part 15.
Low voltage	Directive 2014/35/EU
RoHS	Directive 2011/65/EU
ATEX / IECEx	Directive 2014/34/EU, IEC 60079-0, IEC 60079-1, IEC 60079-31.
FM	Class 3600, 3615, 3616, 3810.
CSA	CSA 22.2 No. 25, No. 30, No. 61010-1-12.
UL	UL 61010-1.
IP & NEMA	EN 60529 & NEMA 250.

Hazardous area - Explosion proof

ATEX certification	Gas:	Ⓔx II 2 G Ex db IIC T6 Gb.
	Dust:	Ⓔx II 2 D Ex tb IIIC T85°C Db.
IECEx certification	Gas:	Ex db IIC T6 Gb.
	Dust:	Ex tb IIIC T85°C Db.
FM & CSA c-us	Pending.	

Enclosure - General

Window	Glass window.
Sealing	Silicone.
Control keys	Three infra-red keys with operation through the glass front window.
Rating	IP66, IP67 / NEMA Type4X / Type7 / Type9.
Dimensions	112 x 133 x 148mm (4.41" x 5.24" x 5.83") - W x H x D.
Mounting threads	4 x M6 at the backside of the enclosure.

Enclosure - Types

Type HA_	Aluminum Ex d enclosure.
Weight	1550 gr. (3.41 lbs).
Type HS_	Stainless steel 316L Ex d enclosure.
Weight	3600 gr. (9.65 lbs).

Enclosure - Drillings

Type H_A	Entry threads: 2 x ¾"NPT / 1 x 1"NPT
Type H_B	Entry threads: 3 x ¾"NPT
Type H_C	Entry threads: 2 x ½"NPT / 1 x 1"NPT
Type H_D	Entry threads: 2 x ½"NPT / 1 x ¾"NPT
Type H_G	Entry threads: 2 x M20 / 1 x M25
Type H_H	Entry threads: 3 x M25

General E-Series accessories

ACE02	Remote configuration cable for service connector.
ACE03	Stainless steel wall mounting kit (inc. screws+plugs).
ACE04	Stainless steel pipe mounting kit.

Signal inputs - Sensor

Type A	4 - 20mA. Analog input signal can be scaled to any desired range within 4 - 20mA.
Accuracy	Resolution: 14 bit. Error < 0.01mA / ± 0.05% FS. Low level cut-off programmable.
Span	1 - 99,999 with variable decimal position.
Offset	-99,999 / +99,999 units.
Update time	Four times per second.
Voltage drop	Backlight disabled: < 1.5V @ 20mA. Backlight enabled: approx. 6.5V @ 20mA.
Relationship	Linear and square root calculation.

Operator functions

Displayed info	• Top line: process value. • Bottom line: measuring unit and messages. • Bargraph: 10 blocks related to input signal. • Actual sensor input value in mA. • Displayed value at 0%/100% of the input signal.

PRELIMINARY INFO

		Description
Model	**E490**	**Loop Powered, Multi-Purpose Indicator.**
Input	**A**	**4 - 20mA input.**
Enclosures	**HA_**	**Die-cast aluminum Ex d enclosure.**
	HS_	Stainless steel 316L Ex d enclosure.
	H_A	**Entry threads: 2 x ¾"NPT / 1 x 1"NPT.**
	H_B	Entry threads: 3 x ¾"NPT.
	H_C	Entry threads: 2 x ½"NPT / 1 x 1"NPT.
	H_D	Entry threads: 2 x ½"NPT / 1 x ¾"NPT.
	H_G	Entry threads: 2 x M20 / 1 x M25.
	H_H	Entry threads: 3 x M25.
Power	**PL**	**Input loop powered from sensor signal type "A".**
Hazardous	**XD**	**Explosion proof according ATEX and IECEx.**
Options	**ZB**	**Backlight is included as standard.**

The **bold** marked text contains the standard configuration: E490-A-HAA-PL-XD-ZB.

PRELIMINARY INFO

Important: specifications are subject to change without notice.
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