

The **BA304E loop powered 4/20mA indicator** is a fourth generation field mounting instrument that is electrically and mechanically compatible with the earlier BA304D. It has a much larger full 4 digit display and guaranteed performance between -40 and $+70^{\circ}\text{C}$. Like its predecessor, the BA304E is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA304E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The **bold 34mm high 4 digit display** provides maximum contrast and has a very wide viewing angle, allowing the BA304E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999 .

The **robust GRP enclosure** has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and $+70^{\circ}\text{C}$. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

International intrinsic safety certification permits the BA304E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA304E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA304D, thus allowing the BA304E to safely replace the earlier model.

A **backlight** which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA324E which has a similar specification but has a five digit 29mm high display plus a 31 segment bargraph.

BA304E

2-wire 4/20mA

4 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- ◆ Loop powered only
1.2V drop
- ◆ 4 digit 34mm high display
- ◆ Intrinsically safe
ATEX & IECEx
certification
- ◆ IP66 GRP enclosure
with separate terminal
compartment
- ◆ Root extractor and
16 segment lineariser
- ◆ Optional backlight,
alarms & external
keypad
- ◆ 3 year guarantee



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associates

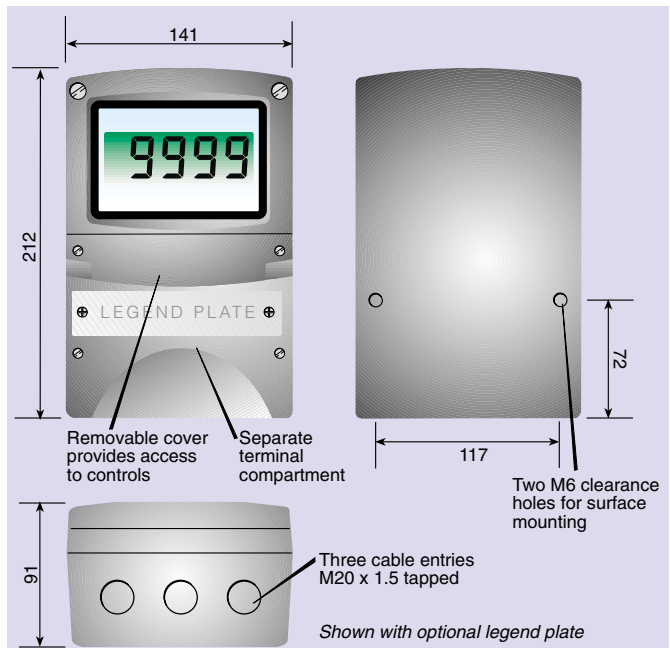
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SPECIFICATION

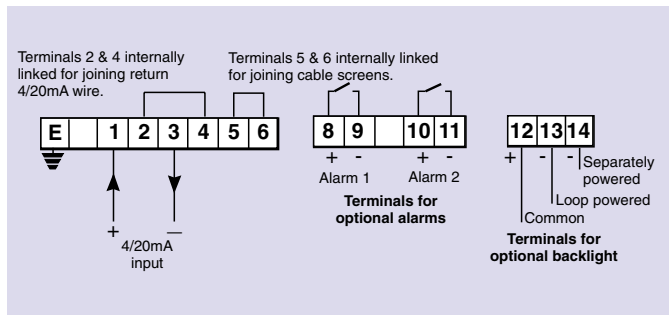
Input	
Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.
Display	
Type	Liquid crystal, non-multiplexed 4 digits 34mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overrange	9999 or -9999 with all decimal points flashing.
Push buttons	
▼	(Function in display mode) Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function
Accuracy at 20°C	
Linear	±0.02% of span ±1 digit
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.
Intrinsic safety	
Europe ATEX	
Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66- Ta = -40 to +70°C <small>[Dust option, see How to order]</small>
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	
Uo	1.1V
Io	3mA
Po	4.5mW
Cert. No.	Complies with requirements for simple apparatus. ITS11ATEX27253
USA	
	Pending
Canada	
	Pending
International IECEx	
Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66- Tamb = -40 to 70°C <small>[Dust option, see How to order]</small> IECEx ITS11.0014
Cert. No.	
Environmental	
Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive 2004/108/EC.
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ² cable
Weight	1.7kg
Accessories	
Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage 5V
Separately powered	11V at 35mA from IS interface
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch complying with requirements for <i>simple apparatus</i> .
Ron	5Ω + 0.7V max
Roff	1MΩ min
External keypad	Membrane keypad enables indicator to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon.#
Tag legend	Tag number or application marked onto display escutcheon.#
Stainless steel legend plate	Etched legend plate with tag number or application attached to front of the instrument.#
Pipe mounting kit	BA392D or BA393 #

See accessory datasheet for details

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

Model number	BA304E
Certification	ATEX gas ATEX gas & dust <small>[All models have IECEx certification.]</small>
Display mode	Linear, root or lineariser*
Display at:	XXXX <small>[Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.*]</small> 20.000mA
Accessories	Please specify if required
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	Legend required
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA393D or BA393

* Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.