

The BA484D is an intrinsically safe instrument that can display text and simple graphics in a hazardous area. Incorporating six push-buttons and two solid state outputs, the BA484D is a low cost operator interface ideal for simple machine and process control applications. Incorporating Modbus, BEKA and Legacy protocol the instrument may be used for new installations or to upgrade existing intrinsically safe systems.

Data and power are normally supplied by a 2 wire serial data link from a certified galvanic communications isolator in the safe area. This isolator, which can power and communicate with one or two BA484D serial text displays, can be configured with an RS232 or RS422 safe area port. Alternatively, a 3 wire system requiring an additional isolator may be used to communicate with up to four BA484D text displays.

The high contrast liquid crystal display incorporates a green backlight that is powered by the serial data link enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Four push-buttons which may be used for operator acknowledgments or controls are included below the display. If larger industrial switches are required, up to six external push-buttons may be connected to the text display. When the remote switches are activated, the front panel push-buttons are automatically disabled.

Two isolated switch outputs, which are controlled via the serial data link, comply with the requirements for simple apparatus and may be used to switch almost any certified intrinsically safe device such as a sounder, beacon or a valve.

Nine selectable standard screen formats display one, two, three or four variables, with units of measurement, tag descriptions and bargraphs on some screens. The use of a standard display screen format greatly simplifies system design.

Modbus protocol enables up to eight process variables together with their units of measurement and tag descriptions to be displayed. When used with one of the nine standard screen formats, no programming is required apart from setting the BA484D communication parameters and writing each Modbus variable into the BA484D Modbus register address map. If a custom screen layout is required in a Modbus system this can be constructed using the BEKA protocol.

BEKA protocol allows custom screens using five different font sizes together, lines, boxes and bargraphs to be produced and stored in non-volatile memory. Simple bit map graphics may be downloaded and stored. Information can also be written to a hidden screen that may be displayed when required.

Legacy protocol enables the BA484D to replace an MTL643 to provide ATEX certification and a display backlight. No software or galvanic isolator changes are required. Simple modifications to the host software will allow the enhanced features of the BA484D to be used i.e. five font sizes, simple graphics, additional operator buttons and a second solid state output.

ATEX intrinsic safety certification allows installation in all gas and dust hazardous areas. Both solid state outputs comply with the requirements for simple apparatus and may be used to switch almost any certified intrinsically safe device such as a sounder, beacon or a valve.

Scripts are a sequence of commands, downloaded to and stored in non-volatile memory by the BA484D text display, that can be executed by the instrument without intervention from the host. For example a routine may be written to monitor the instruments push-buttons and to change the displayed screen or variable depending upon which button has been operated.

Pattern matching is a powerful feature that allows the BA484D to capture and display data contained in a proprietary ASCII serial string, such as that from a weighing system or barcode reader primarily intended for printing.

The enclosure which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection. A separate terminal compartment allows the BA484D to be installed and terminated without exposing the display electronics.

To simplify system design the instruction manual is supplemented by comprehensive Modbus and programming guides plus a free instrument simulator which will run on a PC. All are available from the BEKA sales office or may be downloaded from [www.beka.co.uk](http://www.beka.co.uk)

# BA484D

## Serial text display

*Intrinsically safe for use in gas and dust hazardous areas*

- *Intrinsically safe ATEX gas or ATEX gas & dust*
- *High contrast display with backlight*
- *Modbus, BEKA and Legacy protocols*
- *9 standard screen formats*
- *Four operator push-buttons & two switch outputs*
- *IP66 field mounting GRP enclosure*
- *Free simulator runs on PC*
- *3 year guarantee*



# BEKA

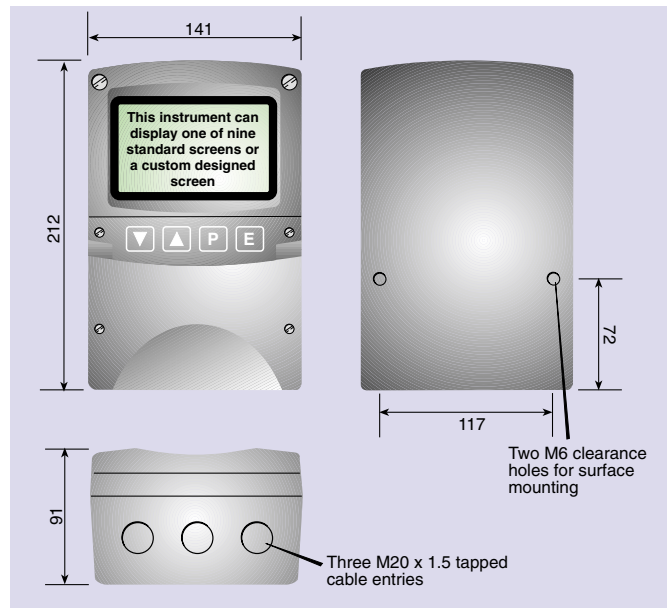
## associates

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K. Tel. (01462) 438301 Fax (01462) 453971 e-mail [sales@beka.co.uk](mailto:sales@beka.co.uk) [www.beka.co.uk](http://www.beka.co.uk)

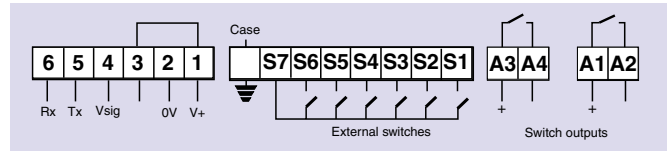
## SPECIFICATION

<b>Display</b>											
Type	120 x 64 pixel liquid crystal.										
Size	86.5mm x 45mm.										
Backlight	Powered from serial link.										
<b>Screens</b>											
Standard format	1, 2, 3 or 4 variables plus bargraph can include: units of measurement tag information										
Custom format	See Programming Guide										
Hidden screen	ASCII character set, 5 font sizes May be written to at any time and displayed when required.										
<b>Controls</b>											
Front panel	Four push-buttons which can be software interrogated.										
External switches	Control may be transferred to six external switches, front panel buttons are inhibited.										
Switch cable length	5m max										
<b>Outputs</b>											
Contacts	Two software controlled switch outputs. Isolated single pole solid state switch certified as <i>simple apparatus</i> .										
Intrinsic safety parameters	<table border="0"> <tr> <td>R<sub>on</sub></td> <td>less than 5Ω + 0.7V</td> </tr> <tr> <td>R<sub>off</sub></td> <td>greater than 1MΩ</td> </tr> <tr> <td>U<sub>i</sub></td> <td>= 28Vdc</td> </tr> <tr> <td>I<sub>i</sub></td> <td>= 200mA</td> </tr> <tr> <td>P<sub>i</sub></td> <td>= 0.85W</td> </tr> </table>	R <sub>on</sub>	less than 5Ω + 0.7V	R <sub>off</sub>	greater than 1MΩ	U <sub>i</sub>	= 28Vdc	I <sub>i</sub>	= 200mA	P <sub>i</sub>	= 0.85W
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I <sub>i</sub>	= 200mA										
P <sub>i</sub>	= 0.85W										
<b>Data transmission</b>											
Baud rate	0.3, 0.6, 1.2, 2.4, 4.8, 9.6 or 19.2k bps.*										
Cable length between isolator(s) & BA484D.	100m max at Baud rate of 9.6k bps*										
	<i>*Depends upon configuration &amp; type of cable - see instruction manual.</i>										
Format	1 or 2 stop bits; odd, even or no parity bit; 7 or 8 data bits.										
Protocol	Selectable Modbus, BEKA or Legacy that is compatible with the MTL643 & MTL644										
Address	<table border="0"> <tr> <td>Modbus protocol</td> <td>1 – 247</td> <td rowspan="3">] Zero reserved for single instrument applications</td> </tr> <tr> <td>BEKA protocol</td> <td>0 – 247</td> </tr> <tr> <td>Legacy protocol</td> <td>0 – 15</td> </tr> </table>	Modbus protocol	1 – 247	] Zero reserved for single instrument applications	BEKA protocol	0 – 247	Legacy protocol	0 – 15			
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BEKA protocol	0 – 247										
Legacy protocol	0 – 15										
<b>Intrinsic safety Europe ATEX</b>											
Standard Code	EN50020:2002 Group II Category 1G, EEx ia IIC T5 (T <sub>amb</sub> = -40 to 60°C)										
or	Group II Category 1GD, T80°C IP66 EEx ia IIC T5 (T <sub>amb</sub> = -20 to 60°C)										
Cert. No.	ITS02ATEX2035 Ex02E2037 2 wire system Ex02E2038 3 wire system Ex02E2039 4 wire system										
Location	Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22										
Interface	MTL5051 serial communications isolator Input/output RS232 or RS422 Powers one or two text displays With MTL5025 powers up to four text displays										
2-wire system											
3-wire system											
<b>Environmental</b>											
Operating temp	-20 to 60°C (ATEX gas certification -40 to 60°C)										
Humidity	To 95% @ 40°C										
Enclosure	IP66										
EMC	In accordance with EU Directive 89/336/EEC full report available.										
Immunity	No error for 10V/m field strength between 150kHz and 1GHz.										
Emissions	Complies with the requirements for Class B equipment										
<b>Mechanical</b>											
Terminals	Screw clamp for 0.5 to 1.5mm <sup>2</sup> cable.										
Weight	1.6kg										
<b>Accessories</b>											
Engraved tag plate	Stainless steel plate attached to the side of the instrument										
Pipe mounting kit	BA392D or BA393										
Modbus Guide	] May be downloaded from <a href="http://www.beqa.co.uk">www.beqa.co.uk</a>										
Programming Guide											
Instrument simulator											

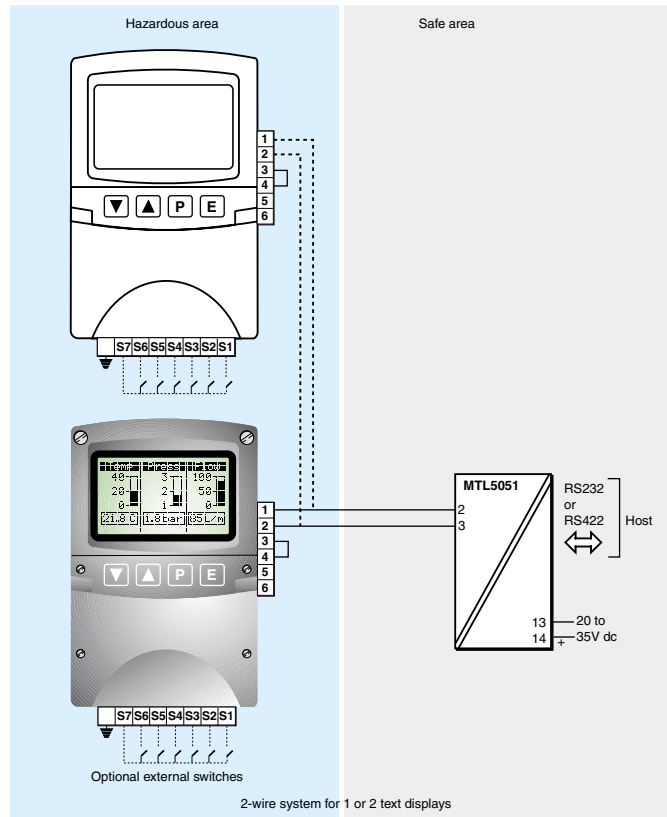
## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



## CONNECTION



## HOW TO ORDER

Model number	<b>Please specify</b>
Certification	BA484D
	ATEX gas
	or
	ATEX gas & dust
<b>Accessories</b>	<b>Please specify if required</b>
Tag plate	Legend
Pipe mounting kit	BA392D or BA393
Modbus Guide	Serial Text Display - Modbus Guide
Programming Guide	Serial Text Display - Programming Guide
Instrument simulator	Instrument simulator for personal computer