Data Sheet

BA484D

Supplied by

247able.com

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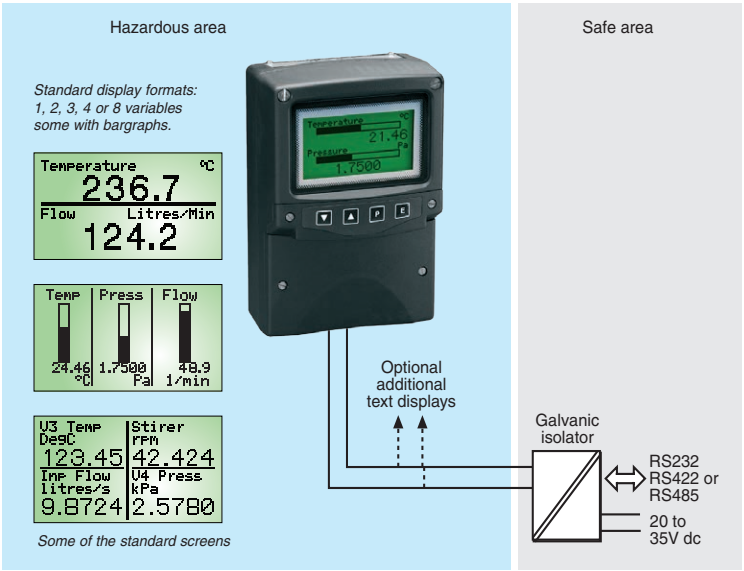

BA484D

Serial text [Data] display

Intrinsically safe for use in gas and dust hazardous areas

- **Intrinsically safe ATEX gas *or* ATEX gas & dust *or* FM, cFM & ATEX gas**
  All models have IECEx certification.
- **High contrast display with backlight.**
- **Modbus RTU slave**
- **BEKA and Legacy protocols.**
- **11 standard screen formats.**
- **Four operator push-buttons & two switch outputs.**
- **IP66 field mounting GRP enclosure.**
- **Free simulator and ScreenWriter software.**
- **3 year guarantee**

www.beka.co.uk/ba484d

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 RTU, BEKA and Legacy protocol the instrument may be used for new installations or to upgrade existing intrinsically safe systems.

Data and power are supplied via a 2 wire serial data link from a galvanic isolator in the safe area. Two isolators are available, the BA201 has RS232 and RS485 safe area ports and the MTL5051 can be configured with an RS232 or an RS422 port. Both isolators can power and communicate with one or two BA484D serial text displays. Using a 3 wire system, the BA201 can power and communicate with up to four serial 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.

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

The BA484D is a Modbus RTU slave that can display up to eight process variables together with units of measurement and tag descriptions. When used with one of the eleven 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 enables custom screen formats to be designed and stored in non-volatile memory using a wide selection of lines, boxes, bargraphs and fonts. Although screens can be manually designed, free BEKA ScreenWriter software which will run on a PC simplifies the process.

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.

ATEX, FM, cFM & IECEx intrinsic safety certification allows installation in most 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

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BEKA associates

ABLE Instruments & Controls

SPECIFICATION

Display

Type	120 x 64 pixel liquid crystal.
Size	86.5mm x 45mm.
Backlight	Powered from serial link.
Screens	
Standard format	1, 2, 3, 4 or 8 variables plus bargraph can include: units of measurement and tag information
Custom format	See Programming Guide ASCII character set, 5 font sizes
Hidden screen	May be written to at any time and displayed when required.

Controls

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

Outputs Two software controlled switch outputs.

Contacts	Isolated single pole solid state switch certified as *simple apparatus.*
	Ron less than 5Ω + 0.7V
	Roff greater than 1MΩ
Intrinsic safety parameters	Ui = 28Vdc
	Ii = 200mA
	Pi = 0.85W

Data transmission

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* **Depends upon configuration & type of cable - see instruction manual.*
Format	1 or 2 stop bits; odd, even or no parity bit; 7 or 8 data bits.
Protocol	Selectable Modbus RTU, BEKA or Legacy that is compatible with the MTL643 & MTL644
Address	
Modbus protocol	1 – 247
BEKA protocol	0 – 247] Zero reserved for single
Legacy protocol	0 – 15] instrument applications

Intrinsic safety

Europe ATEX	
Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40 to 60°C)
or	Group II Category 1D Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66] *Dust option, see How to order*
Cert. No.	ITS02ATEX2035
Location	Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22
Interface	BA201 (See datasheet)
or	MTL5051 serial communications isolator Input/output RS232 or RS422
2-wire system	Powers one or two text displays
3 wire system	With MTL5025 powers up to four text displays
USA FM	*Option, see How to order*
Standard	3610 Entity
Code	CL I, II, III: Div 1: GP A, B, C, D, E, F & G T4 @ 60°C
File	3025514
Standard	3611 Nonincendive
Code	CL I: Div 2: GP A, B, C & D, T4 @ 60°C CL II, III: Div 2: GP E F & G, T4 @ 60°C
File	3025514
Canada cFM	
File No	3032633C
International IECEx	
Code	Ex ia IIC T5 Ga (Tamb = -40 to 60°C)
or	Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66] *Dust option, see How to order*
Cert. No	IECEx ITS 07.0020

Environmental

Operating temp	-20 to 60°C (ATEX gas certification -40 to 60°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC
Immunity	No error for 10V/m field strength between 150kHz and 1GHz.
Emissions	Complies with the requirements for Class B equipment

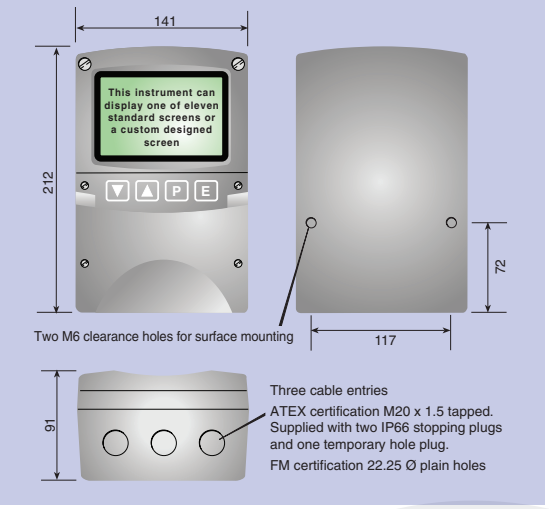
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

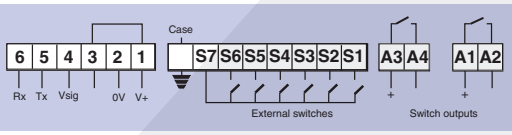
Accessories

Stainless legend plate	Stainless steel plate etched with tagging or applicational information secured to the front of the instrument
Pipe mounting kit	BA392D or BA393

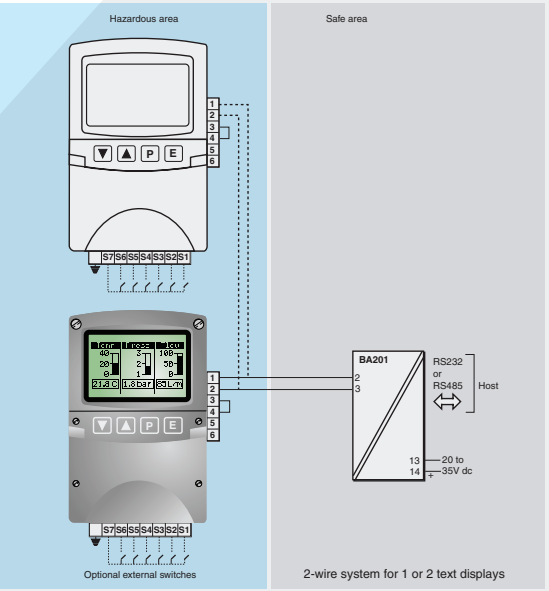
DIMENSIONS (mm)



TERMINAL CONNECTIONS



CONNECTION



Modbus Guide
Programming Guide
Instrument simulator] May be downloaded from www.beka.co.uk

HOW TO ORDER

	Please specify
Model number	BA484D
Certification	ATEX gas] *All versions have IECEx certification. **Note:** Cable entries differ for FM & ATEX versions*
or	ATEX gas & dust
or	FM, cFM & ATEX gas

Accessories	**Please specify if required**
Stainless legend 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
BEKA ScreenWriter	Custom screen design aid for personal computer

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