

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 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.

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 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 & 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](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  
or FM & ATEX gas  
All versions have  
IECEx certification
- ◆ 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 and  
ScreenWriter software
- ◆ 3 year guarantee



# BEKA associates

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## 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 or 4 variables plus bargraph can include: units of measurement 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

Contacts	Two software controlled switch outputs. Isolated single pole solid state switch certified as <i>simple apparatus</i> .
	R <sub>on</sub> less than 5Ω + 0.7V R <sub>off</sub> greater than 1MΩ
Intrinsic safety parameters	U <sub>i</sub> = 28Vdc I <sub>i</sub> = 200mA P <sub>i</sub> = 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, BEKA or Legacy that is compatible with the MTL643 & MTL644
Address	
Modbus protocol	1 - 247
BEKA protocol	0 - 247
Legacy protocol	0 - 15
	Zero reserved for single instrument applications

### Intrinsic safety

<b>Europe ATEX</b>	
Standard Code	EN50020:2002 Group II Category 1G, EEx ia IIC T5 (Tamb = -40 to 60°C) Group II Category 1GD, T80°C IP66 EEx ia IIC T5 (Tamb = -20 to 60°C) ] <i>Dust option, see How to order</i>
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 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

Standard Code 3610 Entity  
CL I, II, III: Div 1: GP A, B, C, D, E, F & G  
T4 @ 60°C  
3025514  
  
Standard Code 3611 Nonincendive  
CL I: Div 2: GP A, B, C & D, T4 @ 60°C  
CL II, III: Div 2: GP E F & G, T4 @ 60°C  
3025514

### International IECEx

Standard Code IEC60079-11:2006  
Ex ia IIC T5 Tamb = -40 to 60°C) ] *Dust option, see How to order*  
or Ex iaD 20 T80 Tamb = -20 to 60°C  
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 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

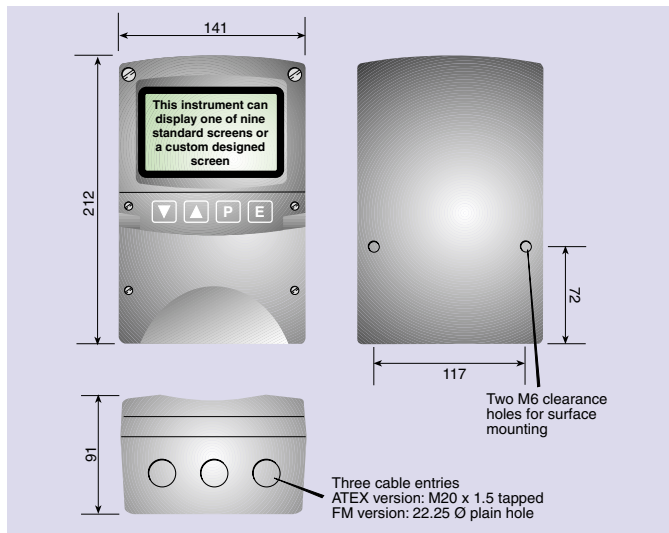
### Mechanical

Terminals Screw clamp for 0.5 to 1.5mm<sup>2</sup> cable.  
Weight 1.6kg

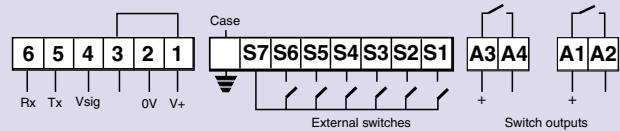
### Accessories

Stainless legend plate Stainless steel plate etched with tagging or additional information secured to the front of the instrument

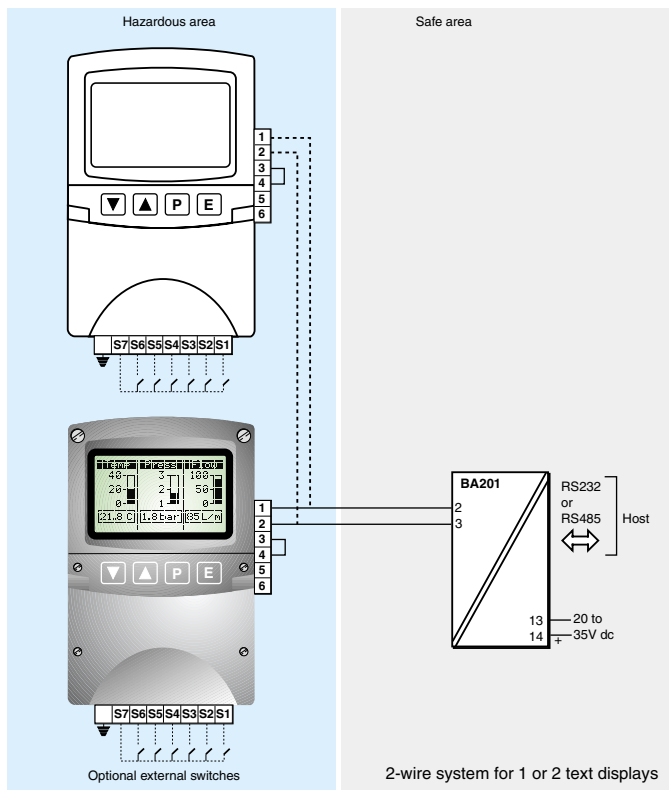
## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



## CONNECTION



Pipe mounting kit BA392D or BA393  
Modbus Guide  
Programming Guide  
Instrument simulator ] May be downloaded from [www.beka.co.uk](http://www.beka.co.uk)

## HOW TO ORDER

Model number BA484D  
Certification ATEX gas ] *All versions have IECEx certification.*  
or ATEX gas & dust ] *Note: Cable entries differ for FM & ATEX versions*  
or FM & ATEX gas ]  
  
Accessories  
Stainless legend plate Please specify if required  
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