

The **BA377E-SS** is an intrinsically safe instrument with one input housed in a rugged stainless steel enclosure that may be configured as a Timer or as a Clock. The intrinsic safety certification and the rugged enclosure allow the BA377E-SS to be safely installed in an Ex e, Ex p or Ex t panel enclosure without invalidating the panel enclosure's certification.

**Configuration** may be performed on-site via the front panel push buttons using easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA377E-SS can be supplied configured to customers requirements including a customer defined printed slide-in scalecard for no additional charge.

**Applications as a Timer** include simply displaying the time interval between two events detected by a hazardous area sensor such as a 2-wire proximity detector providing a maintained single input. With the addition of optional dual control outputs, the Timer can perform control functions, for instance repetitively opening a hazardous area solenoid valve for a defined time. The Timer includes a powerful cycle function which can be configured to repeat a timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

**As a Clock** local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads on or off at pre-set times twice during each twenty four hour period.

**The display** has high contrast and a wide viewing angle enabling the instrument to be read in most lighting conditions over a wide temperature range.

**IP66 front panel protection** with a silicone gasket to seal the joint between the instrument and the instrument panel, allow the BA377E-SS to be installed in areas that will be washed down.

**International intrinsic safety certification** permits the BA377E-SS to be installed worldwide. When configured to operate with a sensor having a voltage output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

**Display backlighting** which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

**Optional control outputs** can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA377E-SS display show the status of both control outputs.

**Other models** in the range include the BA377E which is functionally identical to the BA377E-SS in a Noryl enclosure. If a larger display or momentary action inputs are required, the BA378E is a two input timer or clock in a 144 x 72mm Noryl DIN enclosure.

# BA377E-SS

## Rugged one input timer or clock

*Intrinsically safe gas & dust certified for use in an Ex e, Ex p or Ex t panel enclosure or in harsh hazardous areas*

- ◆ **Configurable input:** switch contact, proximity detector, open collector or voltage.
- ◆ **Separate displays**
- ◆ **Intrinsically safe**
- ◆ **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- ◆ **Optional:** Backlight  
Dual control outputs
- ◆ **3 year guarantee**

[www.beka.co.uk/ba377e-ss](http://www.beka.co.uk/ba377e-ss)



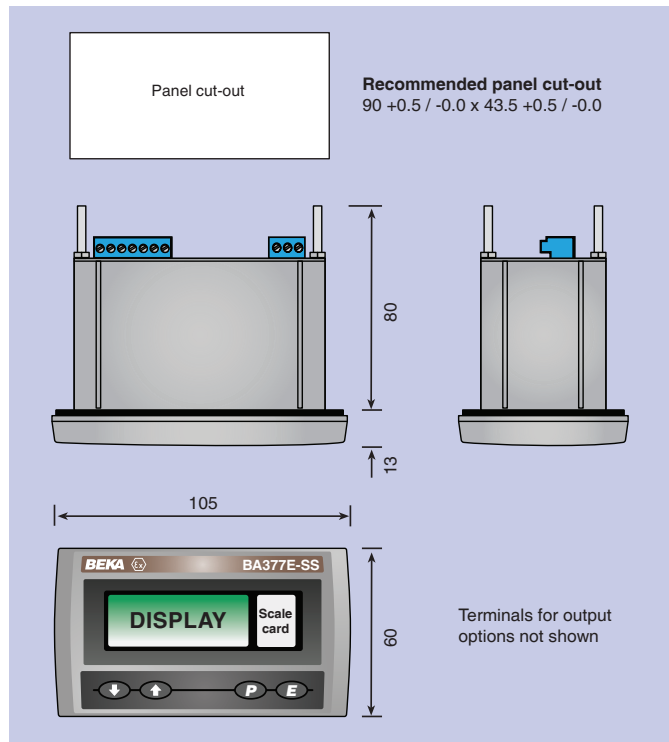
# BEKA associates

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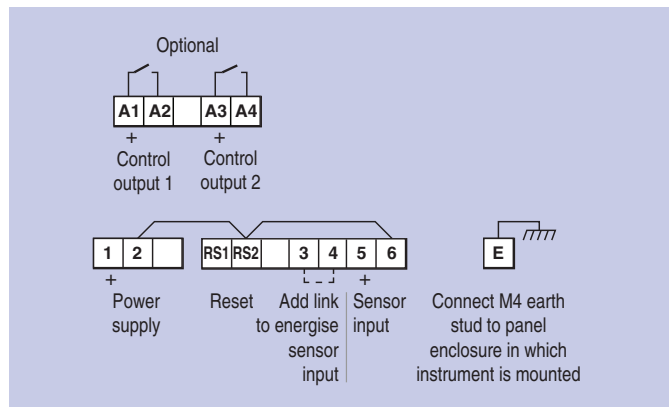
## SPECIFICATION

<b>Power supply</b>	
Voltage	10 to 28V from a Zener barrier or galvanic isolator.
Current	16mA max plus 22.5mA for optional backlight.
<b>Input (Maintained)</b>	
Switch contact	<b>Lower</b> 100Ω <b>Upper</b> 1kΩ
Proximity detector (NAMUR)	1.2mA    2.1mA
Open collector	2kΩ    10kΩ
Voltage (low)	1V    3V    28V max
Voltage (high)	3V    10V    28V max
<b>Display</b>	
Type	Liquid crystal
Primary	9mm high
Secondary	6mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s
<b>Remote Timer reset &amp; Clock sync.</b>	
	Contact closure with resistance less than 10kΩ.
<b>Timer</b>	
Maximum duration	99h 59m and 59s or equivalent in any display format.
Maximum delay between cycles.	99h 59m and 59s or equivalent in any display format.
Grand total run-time	5 x 10 <sup>6</sup> hours maximum
<b>Clock</b>	
Timekeeping accuracy	Less than ±0.43s error per day over operating temperature range.
<b>Intrinsic safety</b>	
<b>Europe ATEX and UK UKCA</b>	
Code	Group II Category 1G Ex ia IIC T5 Ga Group II Category 1D Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡
Cert. No.s	<a href="#">ITS16ATEX28408X</a> <a href="#">ITS21UKEX0098X</a>
<b>International IECEx</b>	
Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡
Cert. No.	<a href="#">IECEx ITS 16.0004X</a>
<b>ETL &amp; cETL</b>	
Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Zone 20 AEx ia IIIC T80°C Da (USA) Ex ia IIC T5 Ga (Canada) Ex ia IIIC T80°C Da (Canada) -40°C ≤ Ta ≤ 60°C ‡
ETL Control No.	<a href="#">4008610</a>
<b>China CCC</b>	As IECEx - <a href="#">see certificate</a>
<b>India CCOE/PESO</b>	As ATEX - <a href="#">see certificate</a>
<b>Nonincendive USA &amp; Canada ETL &amp; cETL</b>	
Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	<a href="#">4008610</a>
‡ +70°C when not relying upon the certified impact and ingress protection provided by the front of the BA377E-SS enclosure to maintain the certification of the panel enclosure in which the BA377E-SS is mounted.	
<b>Environmental</b>	
Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with EU and UK Directives
<b>Mechanical</b>	
Terminals	Screw clamp for 0.5 to 1.5mm <sup>2</sup> cable, removable terminal blocks.
Weight	0.85kg
<b>Accessories</b>	
Backlight	Green LED internally powered
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	1MΩ min

## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application laser etched onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

# See accessory datasheet for details

## HOW TO ORDER

Model number	<b>Please specify</b> BA377E-SS
Function Timer or Clock	
Input	Type *
<b>Accessories</b>	<b>Please specify if required</b>
Display backlight	Backlight
Control outputs	Control outputs
Scale card	Legend required
	<i>No charge if ordered with instrument.</i>
Tag	Legend required
Rear cover and sealing kit	BA495

\* BA377E-SS can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from [www.beka.co.uk/ba377e-ss](http://www.beka.co.uk/ba377e-ss) for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.