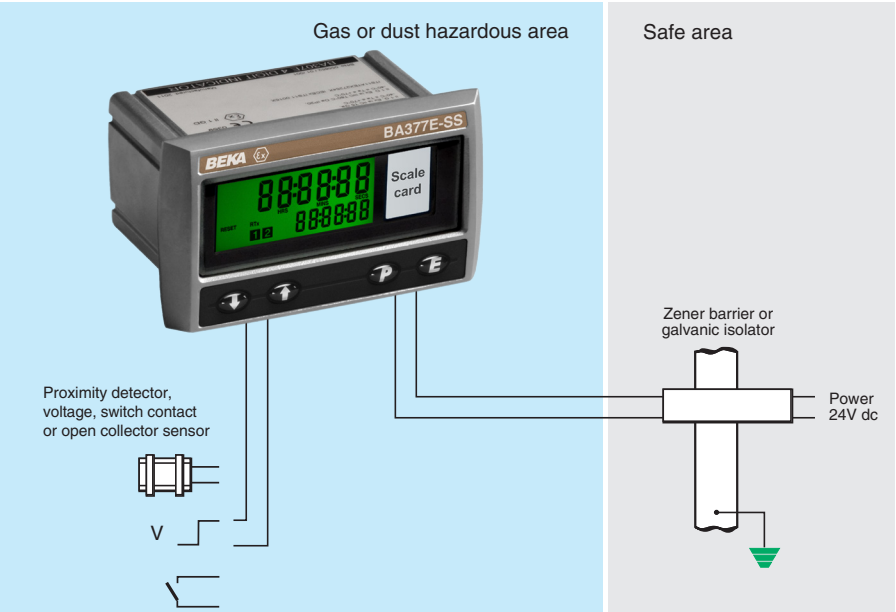

Shown with optional backlight

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

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Tel. (01462) 438301 e-mail sales@beka.co.uk
website: www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator.
Current	16mA max plus 22.5mA for optional backlight.

Input (Maintained)

	Lower	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Voltage (low)	1V	3V 28V max
Voltage (high)	3V	10V 28V max

Display

Type	Liquid crystal
Primary	9mm high
Secondary	6mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s

Remote Timer reset & Clock sync. Contact closure with resistance less than 10kΩ.

Timer

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 10^6 hours maximum

Clock

Timekeeping accuracy	Less than ±0.43s error per day over operating temperature range.

Intrinsic safety

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Db -40°C ≤ Ta ≤ +60°C ‡
Cert. No.	IECEx ITS 16.0004X

Europe ATEX and UKEX

Code	Group II Category 1G Ex ia IIC T5 Ga Group II Category 2D Ex ia IIIC T80°C Db -40°C ≤ Ta ≤ +60°C ‡
Cert. No.s	ITS16ATEX28408X ITS21UKEX0098X

ETL & cETL

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.	4008610

China CCC As IECEx - see certificate

India CCOE/PESO As ATEX - see certificate

Nonincendive USA & Canada ETL & cETL

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.	4008610

‡ +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.

Environmental

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

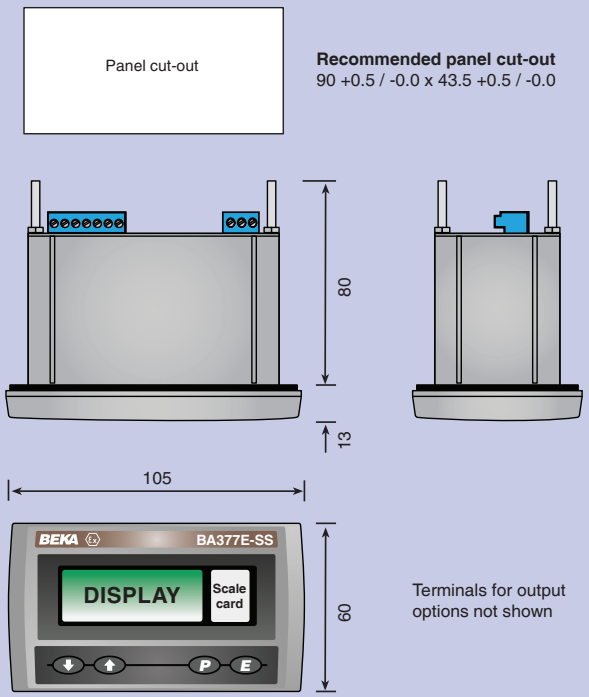
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.85kg

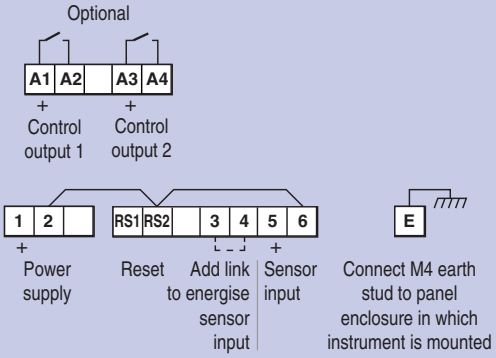
Accessories

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	IMΩ 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

	Please specify
Model number	BA377E-SS
Function Timer or Clock Input	Type *

Accessories	**Please specify if required**
Display backlight	Backlight
Control outputs	Control outputs
Scale card	Legend required *No charge if ordered with instrument.*
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 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.*