



## BEACONS

DA135

DA170

DA180

LN870

P861



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## DA135 Series Intrinsically Safe LED Beacons

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High intensity warning beacons for all hazardous areas

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**ATEX Certified Ex II 1G,  
EEx ia IIC T6**

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**Super-bright LED in five colours**

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**Rugged IP65 corrosion resistant  
casing with separate terminal  
compartment**

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**Can be used in any zone**

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**Single, Dual or Triple flash**

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**Dual colour option**

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**Pipe or wall mounting**

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**Can be linked to Sounder and  
Pushbutton to make a full alarm  
annunciator system**

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**Fully isolated control inputs**

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The DA135 LED Beacon provides an ultra-bright LED flash to warn of abnormal events in any hazardous area.

ATEX certified to Ex II 1G for use in any zone. The ruggedised and encapsulated enclosure is sealed to IP65 to ensure reliable operation in harsh environments and is backed up with our 5 year warranty.

Available in five equally bright colours including white and blue, this Beacon is often used as a simple flashing warning signal but there are further unique display features that allow the user to show additional information. These include single, double and triple flash selection and a dual colour version.

Combined with our Intrinsically Safe Sounder and a pushbutton the unit can be configured as a full single point alarm annunciator.



# General Specification

## Install in Any Zone

The DA135 is ATEX certified for use in Zones 0, 1 and 2. It can be fitted directly to any reasonably flat surface or mounted onto a pipe using the optional mounting kit shown below. The unit can also be used in safe areas and special terminals are provided for this purpose which avoid any of the normal limitations to full brightness.

## Enclosure and wiring, cable entries

The enclosure is made from conductive GRP which provides a rugged IP65 housing suitable for harsh environmental conditions. The unit is also fully encapsulated for even greater protection against corrosive atmospheres and impact damage. A separate terminal housing makes connection a simple matter through the four M20 cable entries. The unit is supplied as standard with a brass tapped plate and blanking plugs in all four entries.

## Fully Protected

As the whole unit is fully encapsulated, the terminal board includes two fuses that protect the internal electronics from damage in the case of incorrect connection.

## Choice of Five Super-bright Colours

One of five equally bright colours must be selected as shown in the ordering information. As all units are clear until illuminated the display colour is shown on the top certification label.

The standard unit has a single colour which can be controlled to flash at a

single, double or triple pulse by triggering different control inputs. This allows users to indicate a change in the process using the same unit

## Dual Colour

As an option, the DA135 Beacon can be supplied with a two colour display where each colour can be triggered separately from the two control inputs. This is an ideal way of warning an operator of multiple site problems or to indicate that a problem is becoming more critical.

Control inputs are fully isolated and the inputs certified as equivalent to "simple apparatus".

## Full Alarm Annunciator

RTK is a leading supplier of quality alarm products for the worldwide process and power industry. This IS Beacon has been developed with some of these unique annunciation features. Not only can the Beacon be linked to a Sounder, it can also latch in alarms and allow the operator to go through the normal Acknowledge and Reset functions.

The method of operation is consistent with our standard range of alarm annunciators and is user selectable for different functions.

## Single Power Feed

An internal current limiting device, combined with the exceptionally high efficiency of LEDs, enables both the DA135 Beacon and a Sounder to be driven through a single barrier/isolator in IIC areas with consequent savings in hardware and plant cabling costs.



## Re-alarm

Another user selectable feature is the re-alarm. This allows the Beacon to be acknowledged so the LED goes steady and the Sounder turns off but if the fault condition has not cleared within a programmable time delay (between 1 and 60 minutes) then the alarm will be re-triggered again. This feature is used to prevent critical faults being ignored for extended periods.

## Control Inputs

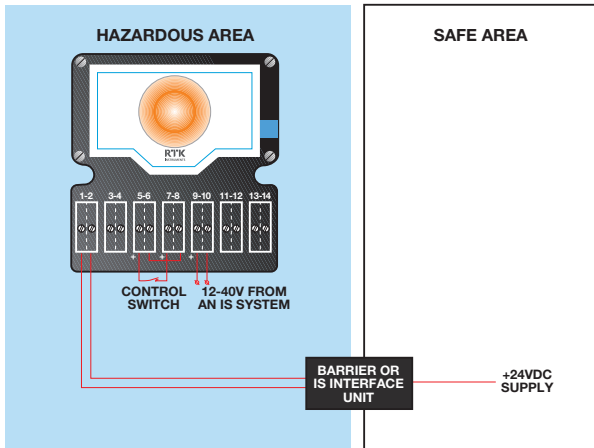
Both control inputs are fully isolated and certified as non-energy storing ( $C_{eq}=0$ ,  $L_{eq}=0$ ) and may be connected into any IS system without affecting the safety, provided the safety input parameters of the unit are not exceeded.

There are two ways of triggering these inputs, as illustrated in the application diagrams below. Firstly by simply linking a control switch/contact from the "control power" available on Terminals 5 and 6, or alternatively, using any 12-40V from an external IS source.

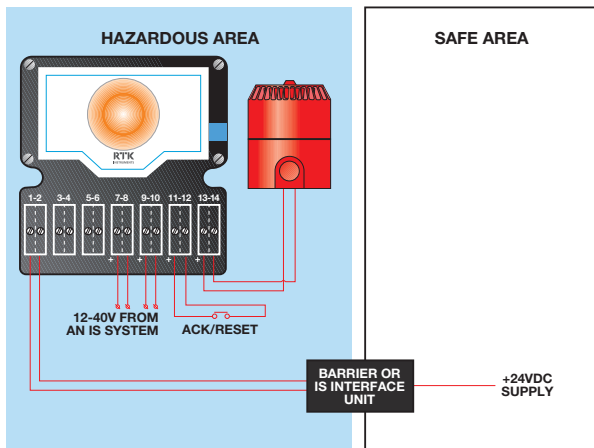


# Typical Applications

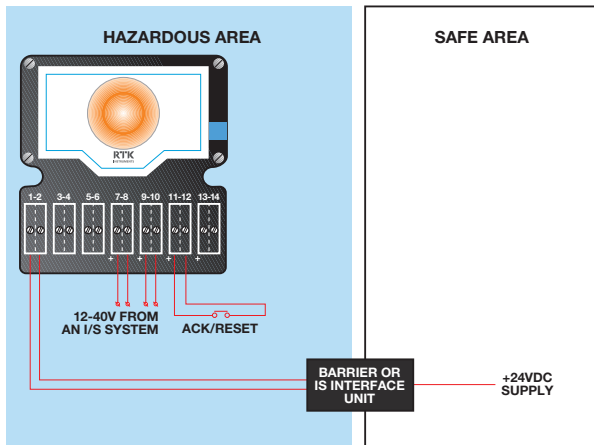
## Stand alone system



## DA135 connected as single point annunciator with sounder

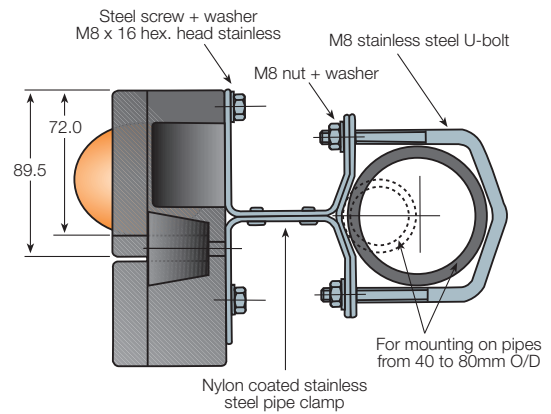


## DA135 connected as single point annunciator without sounder

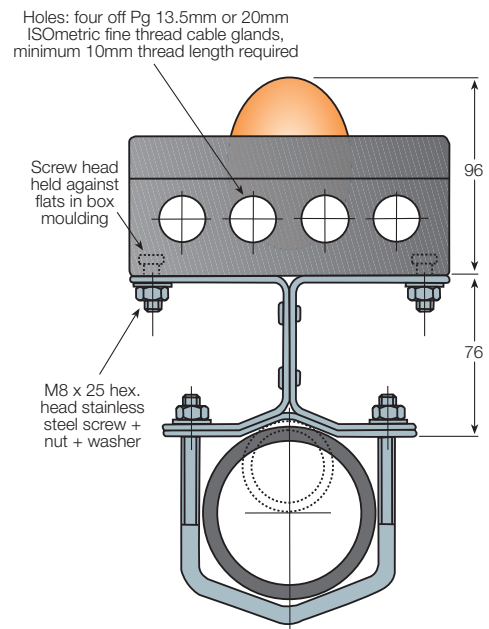


# Mounting

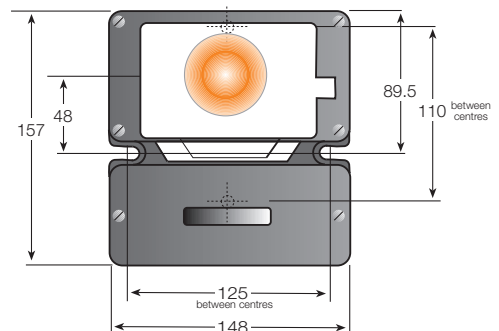
## Horizontal pipe mounting



## Vertical pipe mounting



# Dimensions



# Technical Specification

## Certification

ATEX certified to EN50014:1997,  
EN50020:2002 and EN50284:1999

Group II, Category 1G, EEx ia IIC T6  
(Ta -20°C to +55°C)

## Location

Zones 0, 1 or 2. Gas Group, IIC, IIB or  
IIA, Temp Class up to T6

## Certificate No.

Baseefa03ATEX0669

## Safety Parameter for the supply

Ui = 28V

Ii = 110mA

Pi = 0.8W

The device can be powered from an  
EEx ia IIC certified interface with output  
parameters lower than those shown  
above. Please see the EC Type  
Certificate for all the safety parameters of  
the other inputs and outputs.

## Supply

For best results the supply voltage  
should stay between these limits:  
20-28VDC through IS Isolator  
24-28VDC through Zener Barrier  
12-28VDC in safe area  
Current: typical 20mA without Sounder,  
45mA with Sounder

## Recommended Interfaces

Zener Barriers: MTL7728+ & MTL778AC  
IS Isolators: MTL5025

## Electrical Safety

Non-energy storing simple apparatus.  
Will not store or generate more than 1.5V,  
0.1A, 20mJ or 25mW when connected to  
intrinsically safe equipment with a  
maximum open circuit voltage of not  
more than 28V.

## Construction

GRP (glass reinforced plastic) casing to  
IP65. Transparent acrylic dome for LED  
housing.

Good resistance to hostile environments,  
saline atmospheres and impact damage.

## Output

Single or Dual colours available from  
the following: white, red, amber, green  
and blue.

Brightness typically 0.5J, all colours

Flash rate typically 1 Hz

## Cable Entry

Four clearance holes for glands, internal  
plate tapped to accept 13.5Pg DIN40330  
or M20 Isometric fine thread cable  
glands; shipped with blanking plugs.

## Mounting

Direct mounting to walls or flat surfaces.  
Or pipe/post mounting using PIP68 kit.

## Connections

Rising clamp terminals suitable for  
2.5mm<sup>2</sup> cable.

## EMC Compliance

Immunity to EN61000-6-2:2001  
Emissions to EN61000-6-4:2001

## Environment

Operating Temperature: -20 to 55°C  
Storage Temperature: -20 to 80°C  
Humidity: 0-95% RH, non condensing

## Protection

IP65

## Weight

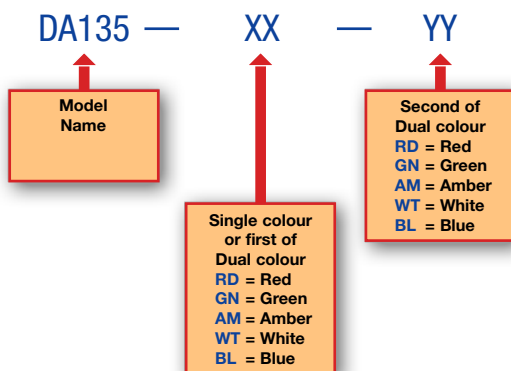
1.9kg

## Accessories

Pipe Mounting Kit PIP68

TAG plate

## Order Code



Due to our policy of continuous product development, we reserve the right to amend specifications without notice.



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## DA170 Series Intrinsically Safe LED Clusters

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Reliable, high brightness visual indication for hazardous areas

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**ATEX Certified Ex II 1G,  
EEx ia IIC T4**

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**Available in six super-bright  
colours**

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**Suitable for all zones and gases**

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**11 year life expectancy**

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**Tough impact-resistant IP65  
housing**

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**Low current (20mA)**

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**Matching pushbuttons and  
selector switches available**

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**Two clusters operable from a  
single IIC power source**

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The DA170 range of LED Clusters provides visual on/off indication of process conditions in hazardous and safe areas. Available in six super-bright colours – red, green, yellow, amber, blue and white – they are standard 22.5mm diameter and seal to IP65 to the panel door.

All colours are matched for equal brightness and all are current limited to 20mA with an integral regulator.

In hazardous areas it is possible to combine LEDs from a single IS interface, two for IIC interfaces and four with a IIB interface. The standard LED Cluster can also be supplied fully mounted in stainless steel boxes ready for immediate mounting on-site.

With the LED's lower power consumption, lower heat dissipation and far greater life expectancy the DA170 is an ideal standard indicator for safe and hazardous areas alike.



# Features & Benefits

## Colours

The DA170 Series of LED Clusters is available in six superbright colours including a true white LED. Colours are red, green, yellow, amber, blue and white.

## Low Current Consumption

The complete DA170 Range features an integral current regulator to limit the current to 20mA, all colours are matched to obtain consistent brightness across the range including white and blue.

## Simple Connections

To avoid any wiring problem on site all the LED Clusters have a unique bi-polar input so can be connected to the supply either way around.

## Use in Hazardous Areas

The typical applications shown below illustrate some of the possible methods of connecting the LED. The way they can be used is extremely varied with numerous means of powering the device and interfacing to third party equipment such as the IS Relays, IS Annunciators and displays.

## Lens Style

The lens is designed to provide the best high intensity, diffused illumination to ensure the maximum visibility in all ambient light conditions. The tough plastic lens will allow side viewing as standard to aid operators.

## Interfaces and Systems

RTK Instruments manufacture a complete range of Zener Barrier and IS Isolators that can be used to power the LED Clusters and provide interfaces to trigger the LEDs. Intrinsically safe alarm and display systems can be designed and constructed to suit individual customer requirements.

## Special Mounting

RTK has a vast range of experience in supplying LED Clusters pre-mounted, and, if required, prewired to terminals. This can comprise anything from a simple standalone stainless steel enclosure to complex alarm mimics. Please contact the sales office for a detailed quotation.

## Simple Installation

It is a simple job to mount the DA170 LED Clusters on any panel door. The lens simply drops through an industry standard 22.5mm diameter hole and the body is screwed securely from the rear. This provides a seal to the panel of IP65.

## Matching Components

As shown opposite, the LED Clusters can be supplied with a wide range of matching pushbuttons and selector switches. These all comply to the standard classification of 'simple apparatus' as defined in EN50014.

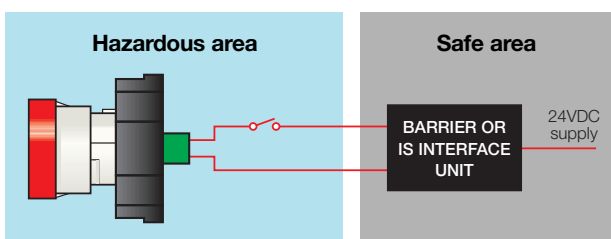
## Alarm Applications

As RTK is a major supplier of industrial alarm systems and components, the DA170 range of LED Clusters can be linked into either the LN1000 IS Alarm Annunciator or safe area mounting alarm annunciator systems. This method of operation will provide the clearest method of indicating alarm information within a Zone 1 hazardous area.

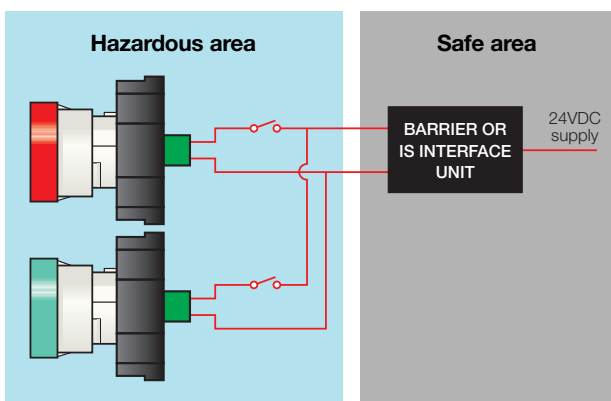
## Labelling

Two accessories can be supplied with the LEDs, pre-engraved labels and a plastic label holder.

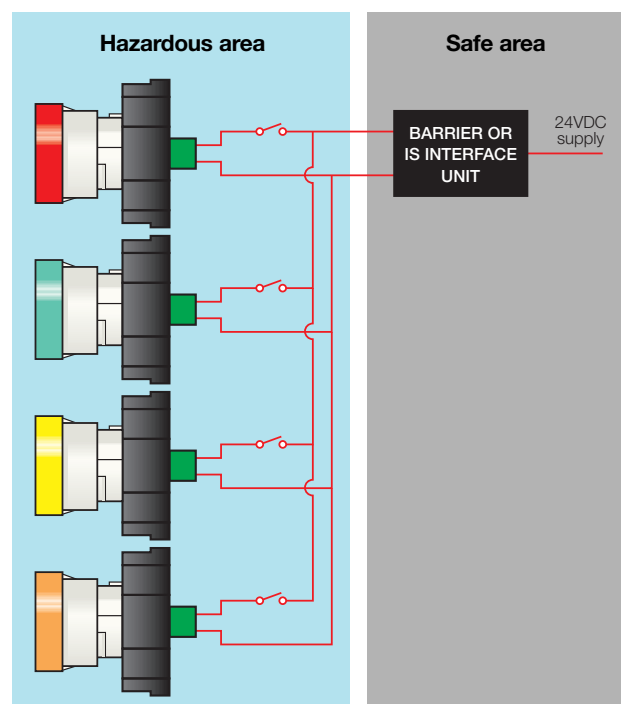
# Typical System Configurations



Single Cluster System: IIC Gas Group



Double Cluster System: IIC Gas Group



Four Cluster System: IIB Gas Group

# Technical Specification

## Certification

ATEX certified to EN50014:1997,  
EN50020:1994 and EN50284:1999

Group II, Category 1G, EEx ia IIC T4  
(Ta -20°C to +60°C)

## Location

Zones 0, 1 or 2. Gas Group IIC, IIB  
or IIA. Temp Class up to T4

## Certificate No.

BAS02ATEX1311

## Safety Parameters

Ui = 40V

Pi = 1.2W (max ambient temp. = 60°C)

Pi = 1.3W (max ambient temp. = 40°C)

Ci = Li = 0

The device can be powered from an  
EEx ia IIC certified interface with output  
parameters lower than those shown above

## Supply

14-26VDC, current 20mA

## Recommended Interfaces

Zener Barriers: MTL7728+

IS Isolators: MTL5052

## Environment

Operating Temperature: -20 to 60°C

Storage Temperature: -20 to 80°C

Humidity: 0-95% RH, non condensing

## Protection

IP65 from the front, IP20 from the rear

## Construction

Housing and Mounting Collar

- Polyamide 6.6/reinforced fibreglass FR4

Lens - Polycarbonate

## Connections

Raising clamp terminals suitable for  
2.5mm<sup>2</sup> cable

## Compliance

Immunity to EN61000-6-2:2001

Emissions to EN61000-6-4:2001

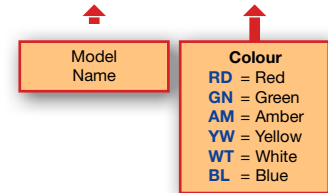
## Accessories

DA658: Label Holder

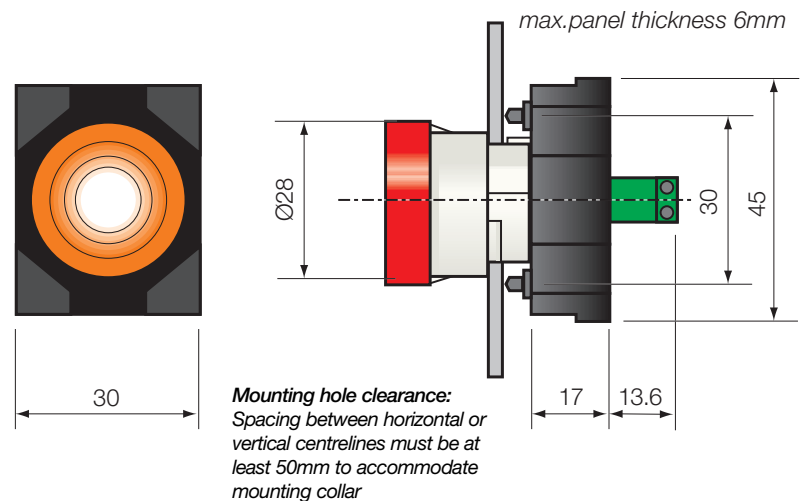
DA659: interchangeable label

## Order Code

DA170 — XX



## LED Cluster Dimensions



## Matching Switches and Pushbuttons

In addition to the standard LED Clusters,  
RTK can provide a complete matching  
range of pushbuttons, selector switches  
and emergency-stop buttons. These can  
be selected using the following order  
code, taking note of the limitations as  
listed in the additional information panel.

Most of the pushbuttons and selector  
switches can be supplied in either  
illuminated or non-illuminated versions so  
your complete intrinsically safe control  
panel can have a consistent appearance.

The illuminated versions contain a  
certified BA9s LED Lamp Type P861 this  
is suitable for use in Zone 1 or 2  
hazardous area, see separate datasheet.



# Technical Specification for Illuminated Pushbuttons

## Certification

ATEX certified to EN50014:1997 and EN50020:2002

Group II, Category 2G, EEx ia IIC T4 (Ta -20°C to +60°C)

## Location

Zones 1 or 2. Gas Group IIC, IIB or IIA. Temp Class up to T4

## Certificate No.

Kema03ATEX1021X

## Safety Parameters

U<sub>i</sub> = determined by I<sub>i</sub> and P<sub>i</sub>

I<sub>i</sub> = 2A

P<sub>i</sub> = 1W

C<sub>i</sub> = L<sub>i</sub> = 0

The device can be powered from an EEx ia IIC certified interface with output parameters lower than those shown above

## Supply

With suitable certified interface  
18-35VDC, current 20mA

## Recommended Interfaces

Zener Barriers: MTL7728+

IS Isolators: MTL5025

## Environment

Operating temperature: -20 to 60°C

Storage temperature: -20 to 80°C

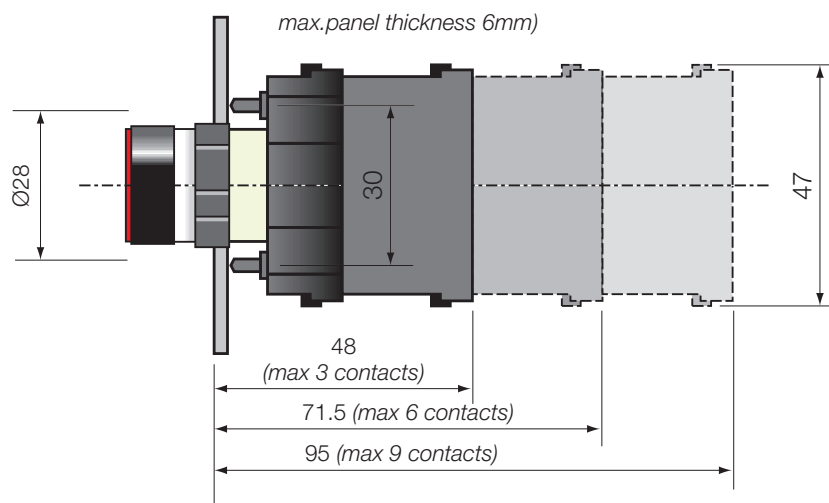
Humidity: 0-95% RH, non condensing

## Compliance

Immunity to EN61000-6-2:2001

Emissions to EN61000-6-4:2001

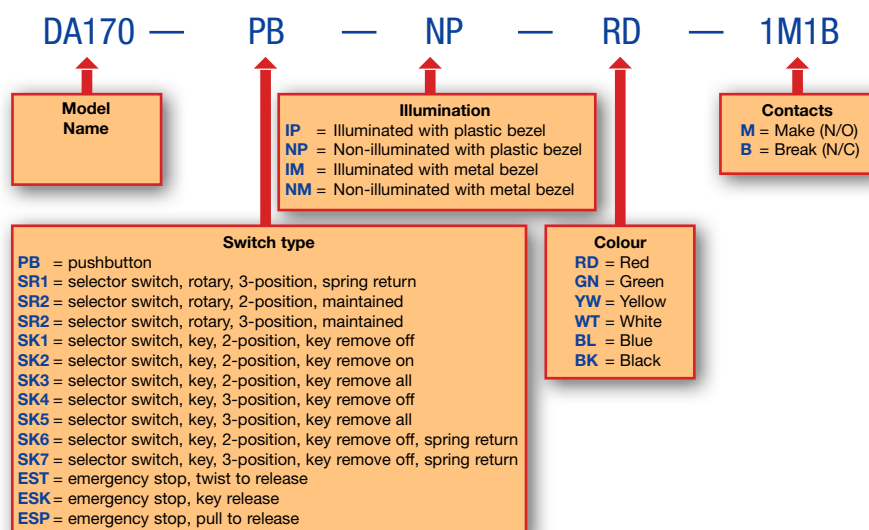
## Pushbutton dimensions



## Additional Information

- 1 Illumination is not available on emergency-stop pushbuttons
- 2 All the pushbuttons are momentary except the emergency-stop pushbuttons
- 3 Non-illuminated rotary selector switches are only available in black
- 4 Illuminated selector switches are available with a clear lens only
- 5 The maximum number of contacts is nine on non-illuminated units and six on illuminated versions

## Order Code



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## DA180 Series Intrinsically Safe Giant LED Clusters

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For clear indication from a distance and from the side

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**ATEX Certified Ex II 2G,  
EEx ia IIC T4**

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**Available in six colours**

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**Suitable for zones 1 & 2**

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**Tough impact-resistant IP65  
housing**

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**Low current (20mA)**

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**Can be supplied as loose parts  
or as a wall mounting display**

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**Two clusters operable from a  
single IIC power source**

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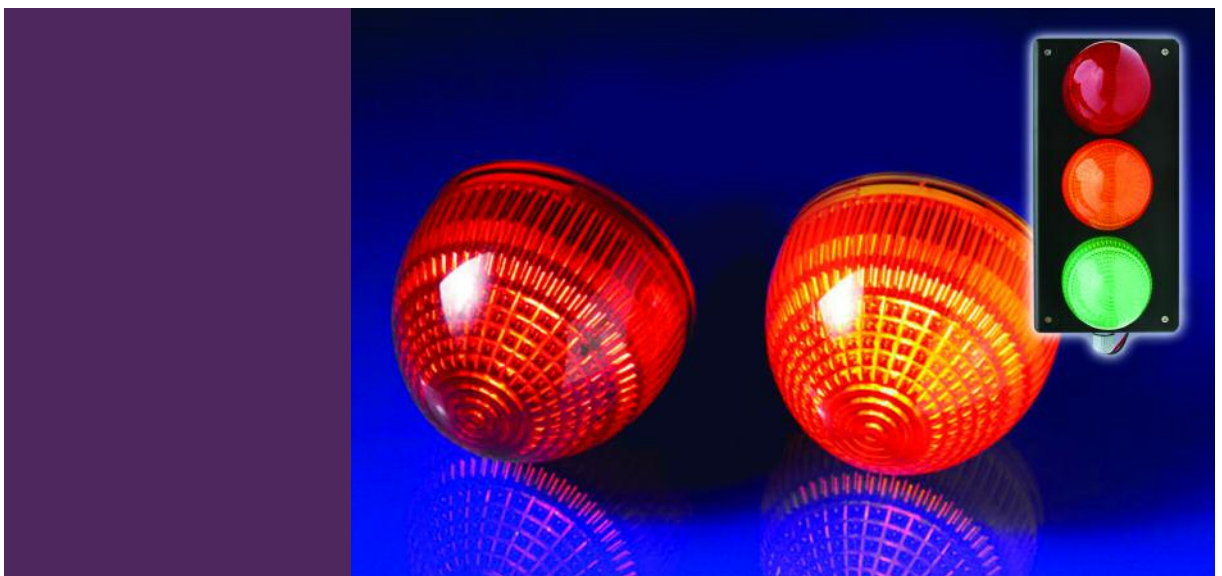
**66mm diameter lens**

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The DA180 range of Giant LED Clusters provides extremely clear indication of process conditions for use in both safe and hazardous area. The 66mm diameter lens not only provides clear indication from a distance but is also visible from the side. Available in a choice of six colours (red, green, yellow, amber, blue and white), the DA180 is a perfect choice for many visual warning tasks.

All colours are matched for equal brightness and all are current limited to 20mA with an integral regulator.

In hazardous areas it is possible to combine LEDs from a single IS interface, two for IIC interfaces and four with a IIB interface. The standard LED Cluster can also be supplied fully mounted in a stainless steel or polycarbonate box ready for immediate mounting on-site.



# Technical Specification

## Colours

The DA180 Series of LED Clusters is available in six colours. Colours are red, green, yellow, amber, blue and white

## High Reliability

All LED lamps are designed to provide a minimum of 100,000 hours service life

## Low Current Consumption

All LED lamps operate at 20mA or less and feature integral current limiting to maintain consistent brightness over the operating range of the voltage supply

## Use in Hazardous Areas

In hazardous areas the LED lamps must be powered through suitable intrinsically safe Isolators or Barriers. Up to two LED lamps can be driven from a single IIC interface

## Configuration

It is a simple procedure to replace or change the colour of a panel indicator. Access is from the front of the panel and no tools are required. Simply unscrew the lens and replace the BA9s LED lamp

## Certification

ATEX certified to EN50014:1997 and EN50020:2002  
Group II, Category 2G, EEx ia IIC T4  
(Ta -20°C to +60°C)

## Location

Zones 1 or 2. Gas Group IIC, IIB or IIA, Temp Class up to T4

## Certificate No.

Kema03ATEX1021X

## Safety Parameters

Ui = determined by li and Pi

li = 2A

Pi = 1W

Ci = Li = 0

The device can be powered from an EEx ia IIC certified interface with output parameters lower than those shown above

## Supply

With suitable certified interface  
18-35VDC, current 20mA

## Recommended Interfaces

Zener Barriers: MTL7728+  
IS Isolators: MTL5025

## Environment

Operating temperature: -20°C to 60°C  
Storage temperature: -20°C to 80°C  
Humidity: 0-95% RH, non condensing

## Compliance

Immunity to EN61000-6-2:2001  
Emissions to EN61000-6-4:2001

## Construction

Lens – Polycarbonate

## Protection

IP65 when panel mounted

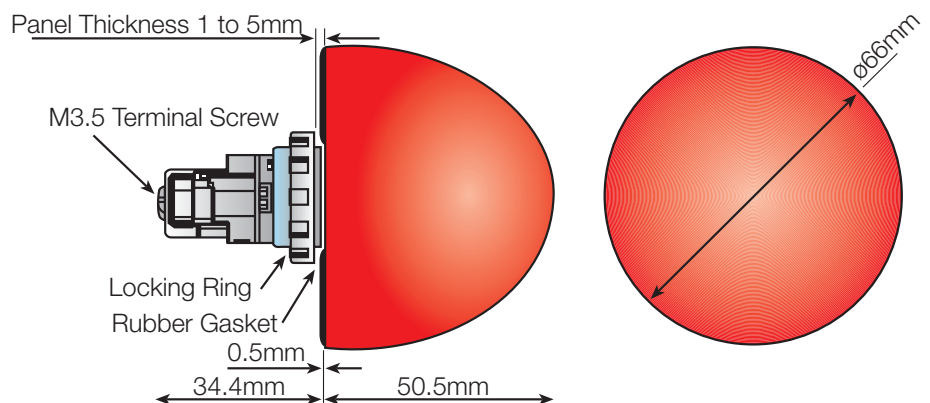
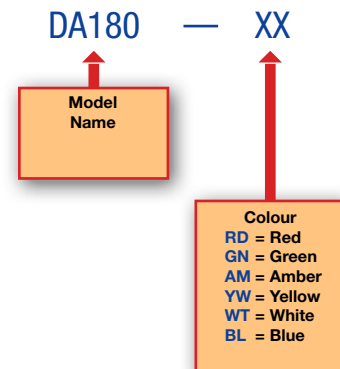
## Connections

M3.5 screw terminal for cables from 0.5 to 2.5mm<sup>2</sup>

## Mounting

22.5mm diameter hole  
85mm apart

## Order Code



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# LN870 Intrinsically Safe Light Tower

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A multi-tier Light Tower for status indication in hazardous areas

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**ATEX certified EX II2G,  
EEx ia IIC T4**

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**Available in five super-bright  
colours**

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**Suitable for zones 1 and 2**

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**11 year life expectancy**

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**Low current**

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**Two tiers operable from a single  
IIC power source**

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**Built-in vibration shock absorber**

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**Direct or pole mounting**

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The LN870 Light Tower provides visual on/off indication of process conditions in safe and hazardous areas. The unit is available up to a maximum of five tiers and each tier can be selected from five super-bright colours: red, amber, white, blue and green.

Each tier has a unique prism cut lens and internal reflective cone to improve visibility and requires one LED Lamp for illumination which is current-limited to take a maximum of only 20mA. Available for hazardous area use in both zones 1 and 2, up to two tiers can be driven from a single IIC interface.

There is a choice of pole or direct mounting, both incorporating a special vibration absorber.

With the LED's low power consumption, low heat dissipation and long life expectancy, the LN870 is an ideal indicator for safe and hazardous areas alike.



# Technical Specification

## Tiers

Can be stacked up to five tiers high using five different colours in any order.

## Colours

Each tier available in five super-bright colours. Colours are red, amber, green, blue and white.

## High Reliability

All tiers illuminated with high reliability LED lamps designed to provide a minimum of 100,000 hours service life.

## Low Current Consumption

All LED Lamps operate at 20mA or less and feature integral current limiting to maintain consistent brightness over the operating range of the voltage supply.

## Use in Hazardous Areas

In hazardous areas the light tower LED lamps must be powered through suitable intrinsically safe isolators or barriers. Up to two LED lamps and therefore two tiers can be driven from a single IIC interface.

## Mounting

A special anti-vibration absorber built into the lower portion of the moulding effectively reduces vibration to the LED Lamps.

The unit can be pole or direct base mounting.

## Configuration

It is easy to change the order of the colours. Lenses simply unscrew and LED Lamps can be installed in any position.

## Certification

ATEX certified to EN50014:1997 and EN50020:2002

Group II, Category 2G, EEx ia IIC T4 (Ta -20°C to +60°C)

## Location

Zones 1 or 2. Gas Group, IIC, IIB or IIA, Temp Class up to T4

## Certificate No.

Kema03ATEX1022X

## Safety Parameters

Ui = 45V

Ii = 2A

Pi = 1.2W (max ambient temp. = 60°C)

Pi = 1.3W (max ambient temp. = 40°C)

Ci = Li = 0

The device can be powered from an EEx ia IIC certified interface with output parameters lower than those shown above.

## Supply

With suitable certified interface 18-35VDC, current 20mA per tier

## Recommended Interfaces

Zener Barriers: MTL7728P+

IS Isolators: MTL5021 only

## Environment

Operating temperature: -20°C to 40°C (Pi <=1.3W)

Operating temperature: -20°C to 60°C (Pi <=1.2W)

Storage temperature: -20 to 80°C

Humidity: 0-95% RH, non condensing

## Protection

IP40, IP54 option available

## Construction

Heat and shock resistant polycarbonate

## Connections

Two flying leads per lamp/tier both marked with tier number. Terminations must be rated to IP20 minimum

## Mounting

Direct base or optional pole mounting, both have vibration absorbing base

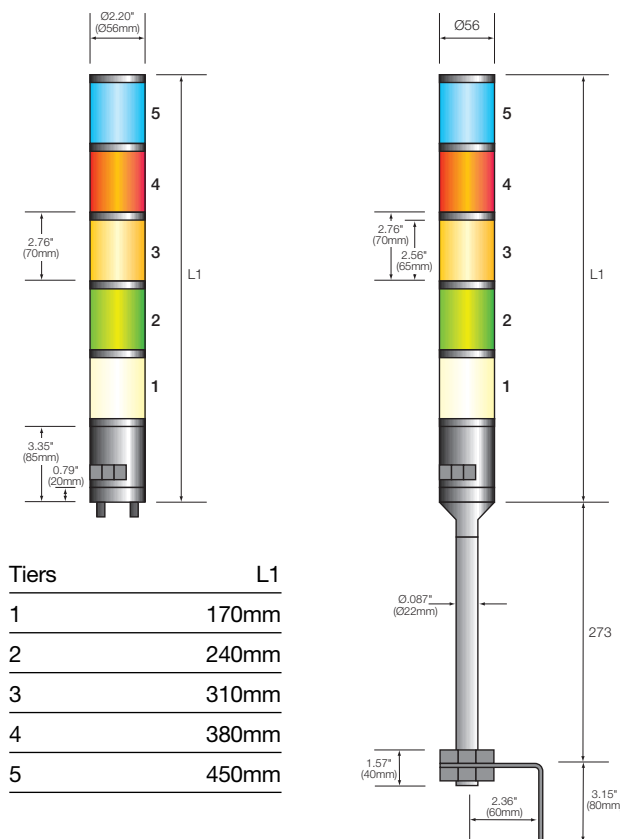
## Compliance

Immunity to EN61000-6-2:2001

Emissions to EN61000-6-4:2001

## Weight

350g for one tier and 50g for each additional tier



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# P861 Intrinsically Safe LED Lamp

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For use in pilot lights and illuminated pushbuttons

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**ATEX certified to Ex II 2G  
EEx ia IIC T4**

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**Available in six super-bright  
colours**

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**Suitable for zones 1 & 2**

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**11 year life expectancy**

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**Two lamps operable from a  
single IIC power source**

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**Can be supplied as a complete  
assembly or a simple certified  
LED Lamp**

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**Intensity matched to provide  
equally super-bright  
performance for all colours**

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The P861 LED Lamp provides visual on/off indication of process conditions in both safe and hazardous areas. Available in a choice of six super-bright colours (red, orange, yellow, green, blue and white), they are ideally suited for use as part of a panel mounting indicator or illuminated pushbutton assembly.

The P861 itself is a standard BA9s Intrinsically Safe LED Lamp which can be supplied as part of a pilot light or illuminated pushbutton or alternatively supplied separately to be used in any suitable standard switch or lamp assembly.

With the LED lamp being current limited to take a maximum of only 20mA, it is possible to drive two lamps from a single IIC interface without any effect on the brightness.



# Technical Specification

## Colours

The P861 Series of LED Lamps are available in six super-bright colours. Colours are red, orange, yellow, green, blue and white.

## High Reliability

All LED lamps are designed to provide a minimum of 100,000 hours service life.

## Low Current Consumption

All LED lamps operate at 20mA or less and feature integral current limiting to maintain consistent brightness over the operating range of the voltage supply.

## Use in Hazardous Areas

In hazardous areas the LED lamps must be powered through suitable intrinsically safe Isolators or Barriers. Up to two LED lamps can be driven from a single IIC interface.

## Configuration

Easy to replace or change the colour of a panel indicator. Access is from the front of the panel and no tools are required. Simply unscrew the lens and replace the BA9s LED lamp.

## Certification

ATEX certified to EN50014:1997 and EN50020:2002  
Group II, Category 2G, EEx ia IIC T4  
(Ta -20°C to +60°C)

## Location

Zones 1 or 2. Gas Group IIC, IIB or IIA,  
Temp Class up to T4

## Certificate No.

Kema03ATEX1021X

## Safety Parameters

Ui = determined by li and Pi  
li = 2A  
Pi = 1W  
Ci = Li = 0

The device can be powered from an EEx ia IIC certified interface with output parameters lower than those shown above

## BA9s LED Lamp

The P861 LED Lamp itself has a standard BA9s fitting and, when installed in accordance with the certificate and relevant standards, can be used in any suitable pilot light or pushbutton.

## Supply

With suitable certified interface  
18-35VDC, current 20mA

## Recommended Interfaces

Zener Barriers: S951-POS, S967-POS  
IS Isolators: WIS1211, WIS1212

## Environment

Operating temperature: -20°C to 60°C  
Storage temperature: -20°C to 80°C  
Humidity: 0-95% RH, non condensing

## Compliance

Immunity to EN61000-6-2:2001  
Emissions to EN61000-6-4:2001

## Illuminated Pushbutton and Pilot Light

The P861 LED Lamp can be supplied as an integral part of the DA170 Series of Illuminated Pushbuttons. These are industry standard 22mm pushbuttons which can be supplied in a range of different formats such as rotary, non-illuminated and emergency stop.

*See separate datasheet for full details*

## Construction

Housing/mounting collar – Polyamide6.6 and FR4 fibreglass  
Lens – Polycarbonate

## Protection

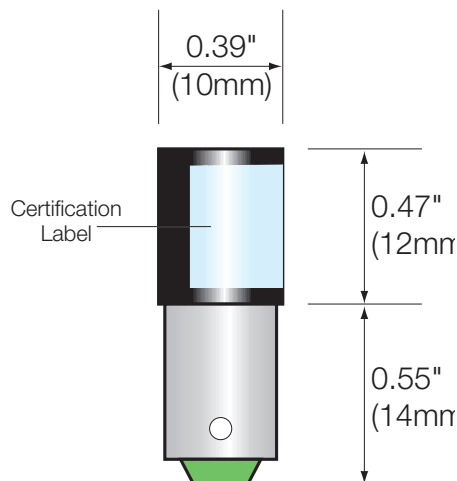
IP65 when panel mounted, IP20 from the rear

## Connections

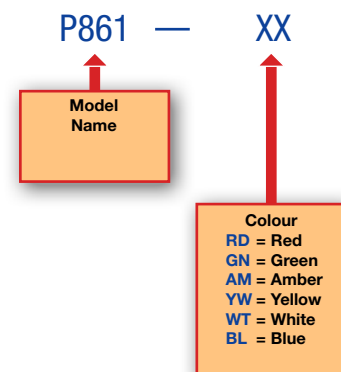
Screw terminals rated to IP20 minimum for cables from 0.5 to 2.5mm<sup>2</sup>

## Mounting

Lamp – BA9s bulb holder  
Pushbutton, Pilot Light – Through 22.5mm diameter hole



## Order Code



Due to our policy of continuous product development, we reserve the right to amend specifications without notice.



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