Operating Instructions

RTK Instruments Limited
St James Business Park,
Knaresborough, North Yorkshire,
England. HG5 8PJ

Telephone: +44 (0)1423 580500
Facsimile: +44 (0)1423 580501
Web: www.rtkinstruments.com
Email: enquiry@ rtkinstruments.com

LN870 Intrinsically Safe Light Tower

Description

The LN870 light tower provides visual on/off indication of process conditions in hazardous and safe areas. The unit is factory supplied between 1 to 5 tiers and in a choice of five super-bright colours (red, amber, green, blue and white)

Each tier has a unique prism cut lens and an internal reflective cone to improve visibility. Each tier requires one LED lamp module (part number P862-xx where xx is the colour) for illumination which is current-limited to take a maximum of only 20mA.

The light tower is suitable for use in safe and hazardous areas in both zones 1 and 2. Two RED or AMBER LED lamps can be driven from a single IIC interface. The WHITE, BLUE and GREEN LED lamps require one IIC interface each for consistent brightness.

The unit can be supplied suitable for pole or direct mounting, and both incorporate 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.

Configuration

If the order of the colours requires changing, this can easily by achieved by unscrewing the lens cap and moving the LED lamp modules and corresponding lens to any desired position within the light tower.

Installation

The LN870 is supplied with two blue flying leads per tier coming from the base of the unit or a multicore cable on IP54 versions. Each wire is numbered according to the tier with tier 1 being the lowest level. The LED lamp modules fitted to the light tower are not polarised and therefore can be wired either way round. When using multicore cables to connect the tiers, these must be of type A or Type B as specified in EN 60079-14 clause 12.2.2.8.

Termination box should be suitable for the environment and be at least IP20. Terminations must be separated in accordance with EN50020 clause 6.3.1.

A single green and yellow wire is provided to earth the metal components within the unit.

When there is a risk of mechanical damage, the flying leads must be installed such that they are mechanically protected.

Sample connection diagrams are provided for both safe and hazardous area installation.

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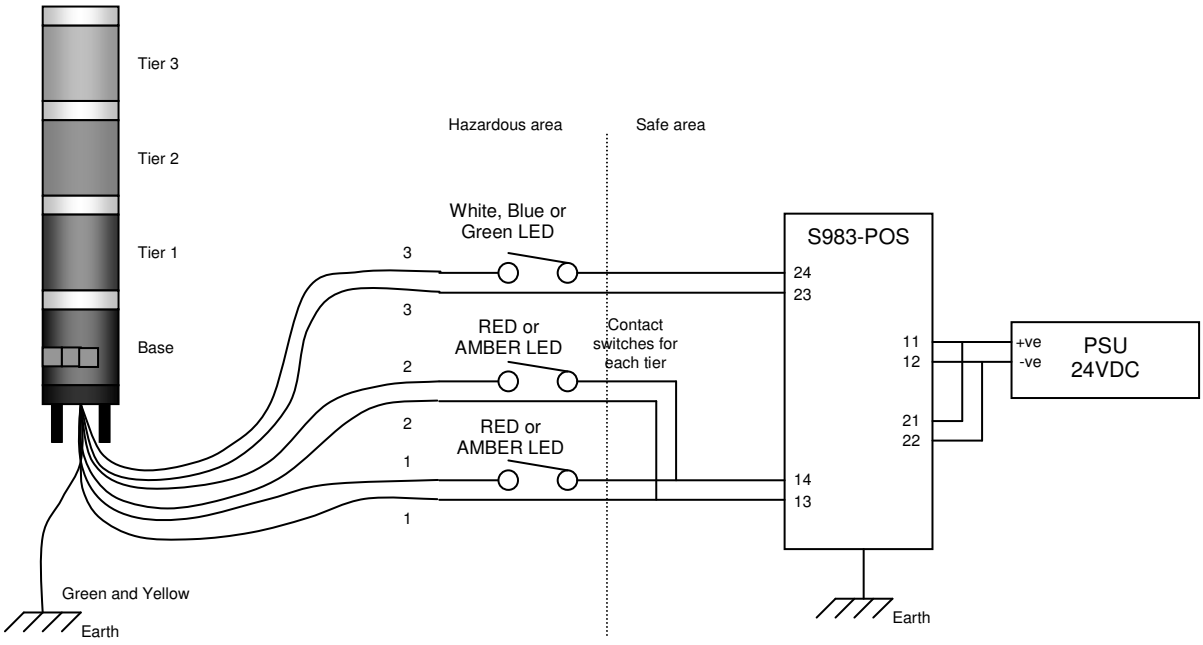

3-tier for example only. Shown with example barrier

Figure 1 – Hazardous area installation

Hazardous area use

If the unit is to be installed in a hazardous area, the light tower LED lamps must be powered through a suitable intrinsically safe isolator or barrier. All terminations must be rated to a minimum of IP20.

Recommended RTK barriers and isolators are listed in the specification on page 3. Typical connection details are given in figure 1.

Safe area use

A power source of 14-26VDC is applied to each pair of wires in order to light the corresponding tier. The supply may be connected either way round. Each lamp will draw a maximum of 20mA. An earth wire is provided which is internally connected to the metal chassis inside. Refer to figure 2.

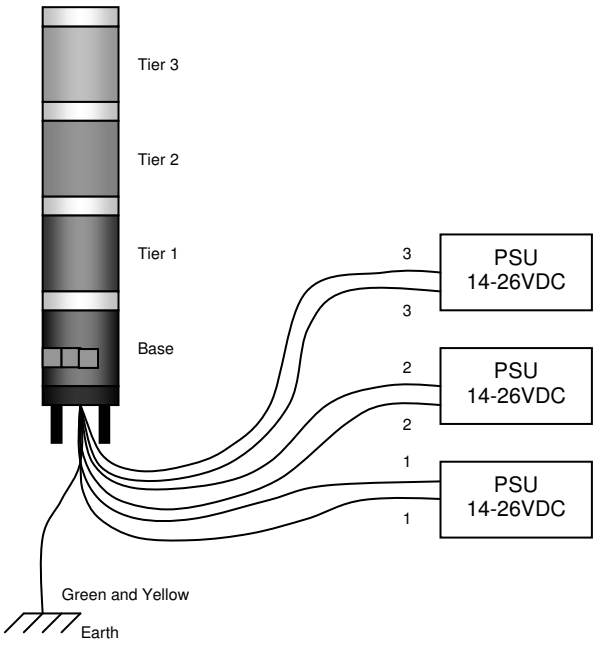

Figure 2 – Safe area installation

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ISO 9001
FM 14290

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Specification

GENERAL

Lifetime
100,000 hours minimum (11 years) continuous illumination at 40°C ambient temperature

Casing
Heat and shock resistant polycarbonate

Mounting
Direct base or pole mounting

Connections
Two flying leads per lamp/tier
Terminations must be rated to IP20 minimum

Environment
Humidity: 0-95% RH, non-condensing
Protection: IP40

EMC compliance
Immunity to EN50082-2:1995
Emissions to EN50081-2:1994

Safe Area Use

Power supply requirements
Direct connection: 14-26VDC
Current consumption: 20mA maximum per lamp

Ambient temperature
Operating: -20°C to +50°C
Storage: -55°C to +70°C

Example of Certification Label on the Product

Light Tower Type LN870/x
Certification: EEx ia IIC T4 Ex II 2 G
Cert No: KEMA03ATEX1022X
Serial No: P870-XXXX
Ui ≤ 45V, Ii ≤ 2A, Ci = 0, Li = 0
Pi ≤ 1.3W @ Tamb = 40°C
Pi ≤ 1.2W @ Tamb = 60°C
RTK INSTRUMENTS HG5 8PJ UK
CE 1180 Year 2XXX
CAUTION: CLEAN WITH DAMP CLOTH ONLY

Hazardous Area Use

Certification
ATEX certified to Ex II 2 G EEX ia IIC T4 to CENELEC standards.
Certificate number: KEMA03ATEX1022X

Location
Zones 1 or 2, Gas group IIC, IIB or IIA, Temp class up to T4

Electrical safety
Only for connection to certified intrinsically safe circuits with the following maximum values:
Ui = 45V,
Ii = 2A,
Pi = 1.3W ($T_{amb} \leq 40°C$) Pi = 1.2W ($T_{amb} \leq 60°C$)
Ci and Li = 0

Recommended Interfaces
Barriers: S967POS, S983POS, S985POS
Isolators: WIS1212, WIS1215
WIS1213, WIS1216 (IIB only)
All available from RTK Instruments.

Current consumption
20mA maximum per LED

Ambient temperature
Operating: -20°C to +40°C (Pi ≤ 1.3W)
-20°C to +60°C (Pi ≤ 1.2W)
Storage: -55°C to +70°C

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Maintenance

Under normal circumstances, this product should not require any regular maintenance. However if damage should occur, the unit should not be used until an assessment of the damage has taken place. If the environment is particularly dirty, periodic cleaning of the lenses may be required to ensure the light intensity remains constant. When cleaning use only a soft damp cloth, do not use any kind of solvents to eliminate the risk of generating static electricity.

Mounting

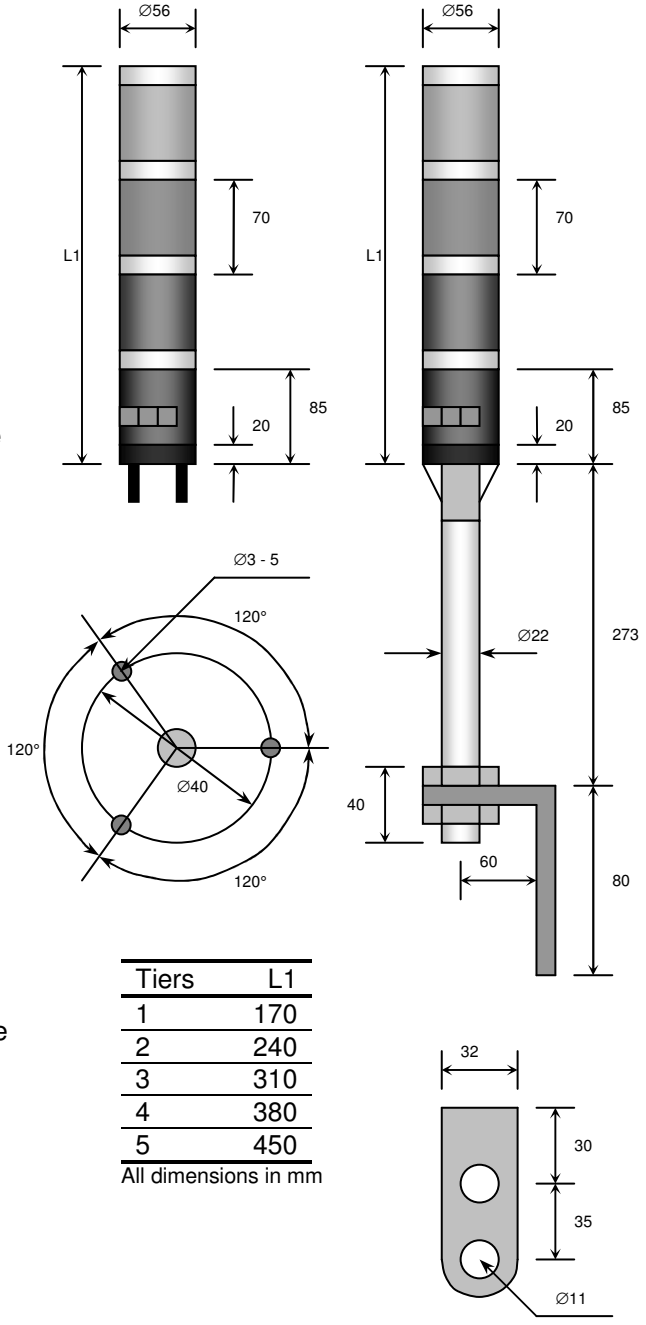
A special anti-vibration absorber built into the lower portion of the moulding effectively reduces vibration to the LED lamps. The unit can be mounted directly on the base using the fixing hardware provided, or by the optional mounting pole secured to the base.

Fixing locations and overall dimensions are shown in figure 3 opposite.

Special Conditions for Safe Use

The 'X' on the end of the certificate denotes "Special Conditions for Safe Use". These conditions are shown on the certificate and listed below:-

1. The wires of each LED Lamp in the Light Tower shall be connected via a termination box providing a degree of ingress protection, which is suitable for the applicable environmental conditions, with a minimum of IP20 in accordance with EN 60529
2. The terminations of each intrinsically safe circuit to the LED Lamp shall be separated in accordance with EN 50020 clause 6.3.1
3. When there is a risk for mechanical damage, the flying leads or cable of the Light Tower shall be installed in such a way that they are mechanically protected
4. The Green/Yellow wire of the Light Tower shall be connected to the potential equalising system within the hazardous area



Tiers	L1
1	170
2	240
3	310
4	380
5	450

All dimensions in mm

Figure 3

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

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EC DECLARATION OF CONFORMITY

This is to certify that the LN870 Light Tower

Manufactured by:-

RTK INSTRUMENTS LTD
ST JAMES BUSINESS PARK
KNARESBOROUGH
NORTH YORKSHIRE
HG5 8PJ

Conforms to the protection requirements of the following directives:

- Council directive 89/336/EEC (EMC Directive) to BS EN 61000-6-4 and BS EN 61000-6-2
- Council Directive 94/9/EC (ATEX Directive) to EN50014 and EN50020

The product is certified to:
Ex II 2 G EEX ia IIC T4

Certificate No: KEMA03ATEX1022X

The Quality System is certified and monitored by Baseefa Ltd, Rockhead Business Park, Staden Lane, Buxton, Derbyshire, SK17 9RZ

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PAUL HARTLEY - MANAGING DIRECTOR
Date: 12th March 2008

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