CALEX
ELECTRONICS LIMITED

User Manual
DL - Series

Infrared Temperature Switch for
Non-Contact Temperature Monitoring

V-032006-1

CONTENT

1. General

Congratulations on choosing the high quality and highly efficient CALEX ELECTRONICS pyrometer.

Please read this manual carefully before beginning any operation with the pyrometer and keep it at a save place. It contains all the necessary information to set up and operate the pyrometer.

Should you require any further assistance please contact our customer service on **+44 (0)1525 373178** or email us: info@calex.co.uk

1.1 Scope of delivery

- *DL*-Series model
- Inspection sheet
- User manual

1.2 Technology

The infrared temperature switch **DL-1*4/15*** is suitable for applications where a fix adjusted temperature is used to start switching operations. You can find it in practice to count or position hot parts.

With a **response time** of just **1s** (t_{95}) the sensor is able to react very quickly on temperature changes. Along that very small measuring field diameter from 4 mm up can be realised to detect little measuring objects.

The *DL-14/15* comes with **compact dimensions.**
The sensor is covered by a strong **stainless steel housing** which allows a usage of the temperature switch in rough industrial environments. Its compact size and the robust housing is a primary advantage to implement it in industrial systems.

The switching threshold of the sensor is adjustable within a temperature range by a potentiometer at the rear of the device. The switching status will be indicated by a LED. The LED lights when the adjusted value of temperature is reached. The device is equipped with a white **LED pilot light** to focus the sensor exactly on the measuring object. During the application the pilot light is still on but will not influence the operability at all.

The infrared temperature switch *DL-14/ 15* is on offer for two temperature ranges.
An integration of the sensor in existing automation systems via PLC (Programmable logic controller) or SPC (stored programm control) is also possible without problems.

2. Technical data

Product	*DL-14*	*DL-15*
Switching marks:	400 … 1400°C	700 … 1500 °C
Spectral range:	0.85..1.8 µm	0.85..1.05 µm
Output:	transistor, switching threshold adjustable by potentiometer at rear of the device (output 20 V or 30 mA shorted to ground)	
Accuracy:	0.75% of measured value at ε=1 and 23°C ambient temperature	
Reproducibility	< 0.3% of measured value	
Response time (t_{95})	1 ms	
Emissivity:	fixed, ε=1	
Standard optics:	fixed optics, please refer to table page 5	
Aiming device	LED pilot light	
Ambient temperature	0...70°C	
Power supply	24 V DC ± 15%, 50 mA	
Degree of protection	IP 65	
Housing	stainless steel	
Housing dimensions	25 mm x 125 mm (∅ x length)	
Test base	EN 55 011: 1998, limit class A	
CE- symbol	according to EU directives	

3. Optics

3.1 Standard optics

The temperature switch DL can be delivered with different standard optics. The following fixed optics are possible.

Measuring distance [mm]	300	800	1200
Measuring field ∅ [mm] – focal point	6	12	18

Table1: Overview fixed optics

4. Installation and initial operation

4.1 Mechanical installation

The mechanical installation of DL series is kept simple.

The pyrometer can be mounted stable and safe with the help of our extensive accessory range. You can chose between mounting support with retaining pin Ø 10 mm, fixed or adjustable mounting angle or a ball and socket mounting.

4.2 Electrical installation

4.1.1 Connecting the temperature switch

To operate *DL-14/15* a power supply of 24 V DC ± 15% is necessary.

Please connect the device via its 3-pin flange plug at the rear side of the temperature switch. The connecting cable (**please order it separately by choosing your desired length!**) has a 3-pin plug at one end. The 3-pin assignment you can see in the following drawing:

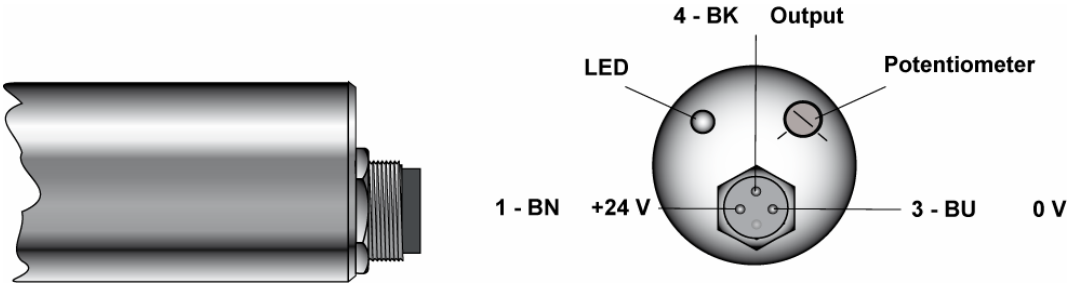
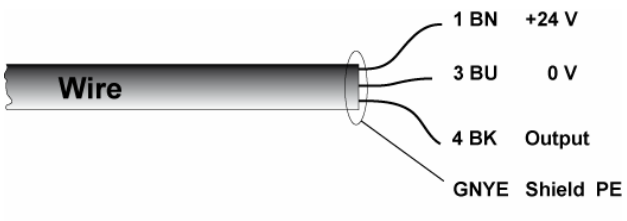


Fig 2: 3-pin assignment at rear side of the device

At the other end of the connecting cable you can find single coloured wires shown in the following figure. Those wires are used to connect the temperature switch to a power supply.



1 BN – brown, 24 V power supply
3 BU – blue, 0V power supply
4 BK – black output
GNYE shield PE – green-yellow shield/ housing

Fig 3: wire assignment

Please connect the power supply of 24 V DC ± 15% to the brown and blue wire.

Between blue and black wire connection an output of 20 V is available. The internal resistance is 1 kΩ. The device is short-circuit proof.

4.1.2 Operating elements

At the rear side of the device is the potentiometer. With the help of an appropriate screw driver you can adjust the switching marks of the temperature switch. For details please refer to 4.2.2.

4.2 Initial operation

After you have finished mechanical and electrical installation please make sure you have placed the switch in a safe place and stable position and is correctly connected are as written in this manual. The DL-14/15 is now ready to work.

4.2.1 Adjusting the temperature switch to the measured object

The DL temperature switches are equipped with an **LED pilot light** at the rear side for exactly adjustment of the device to the measured object. The given measuring distance (please see table at page 5) has to be kept for the whole measuring process. During the operation of the temperature switch the pilot light is always switched on. It does **not** affect functionality of the device in any way.

Important: Please adjust the optics of temperature switch to the measured object **before** starting initial operation!

4.2.2 Adjusting a switch mark

The potentiometer at the rear side of the device helps to adjust the switching marks. The state of switching is shown via LED. LED at the rear sight of the device lights by reaching or exceeding the pre-adjusted temperature switch marks “HIGH”

1. We suggest finding out the switching mark by a comparing measurement either with the help of a pyrometer or with contact temperature sensor. Changing the switch mark is possible if you measure the temperature with a comparing measurement (with or without contact) of the object.

2. Please change now the potentiometer with the help of a suitable screw driver and without resort to violence until the temperature measured with the comparing device has reached and DL-14/ 15 switches.

3. You now have got a new switching mark for your application and the temperature switch is now ready for use.

5. Accessories

5.1 Mechanical accessories

- Cooling jacket with air purge and mounting
- Air purge unit
- Ball and socket mounting support
- Mounting support, fix
- Mounting support, adjustable

6. Additional information

6.1 Maintenance

The temperature switch DL almost does not need any maintenance.
Since an infrared thermometer is an optical instrument its function depends essentially on the condition of the optics. Therefore the optics and the lens have to be cleaned from time to time (depending on dirt or dust at lens surface) by using a smooth cloth and spirit or ethyl alcohol.

6.2 Packaging instructions

To transport or store the temperature switch please use the original box or a box padded with sufficient shock-absorbing material. For storage in humid areas or shipment overseas the device should be placed in welded foil (ideally along with silica gel) to protect it from humidity.

6.3 Warranty

Calex Electronics Ltd offers a two year warranty from date of invoice.

This warranty covers manufacturing defects and faults which arise during operation only if they are the result of defects caused by Calex Electronics Ltd. User-induced faults are not covered with this warranty.

6.4 Reliability and Copy Right

Calex Electronics Ltd is not liable for any damages that arise from the use of any examples or processes mentioned in this manual.

Specifications are subject to be changed without notice.

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