



PRODUCT INFORMATION SHEET



MODEL 648

INFRA RED SAFETY CURTAIN FOR LIFTS

- Robust 13.5mm wide profile - for increased rigidity
- Easy to install
- 81 criss-cross beams offer protection up to a height of 1.8m as required by EN81-70:2003
- Low power consumption
- Microcontroller based TX and RX (optional power supply box)
- NPN and PNP output versions available
- Diagnostic LEDs and timeout software
- 4m range

INTRODUCTION

The Memco élite 648 infra-red detector system is designed for new and existing installations where the detectors are fitted on car-mounted brackets. The assembly is extremely rigid because of the increased strength offered by the 13.5mm profile. Coupled with this, a more versatile installation bracket allows simple, varied height adjustments when fitting.

In this "static installation" a criss-cross curtain of 81 infra-red beams is generated. The detector cables are not subjected to movement and the detectors are protected from vandalism.

The detectors can also be mounted on the car doors (see Fig 1) and will adjust auto-

matically to optimise detection performance. When the doors open the beam pattern changes from 50 beams to 81 beams at typically 650mm. When the door separation is below 300mm then the beam pattern reduces to 18 beams.

The special filter lens, unique to Memco, used in conjunction with the surface mount transmit and receive diodes enhances the optical performance.

Improved circuit protection has been added which guards against common wiring errors during installation. Lower power consumption using a switched mode power supply makes the detectors compatible with modern elevator control systems.

Surface mount diodes are manufactured by a technique which improves both consistency and reliability of the diodes, therefore improving overall quality.

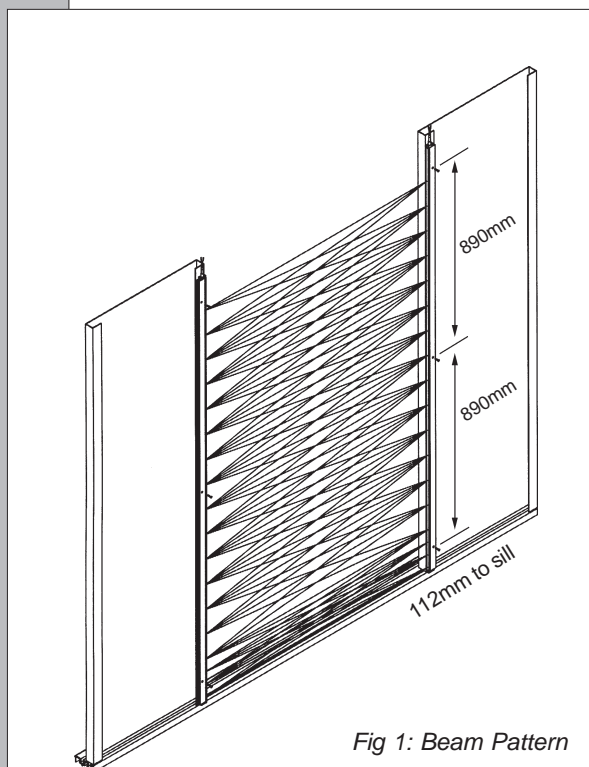


Fig 1: Beam Pattern

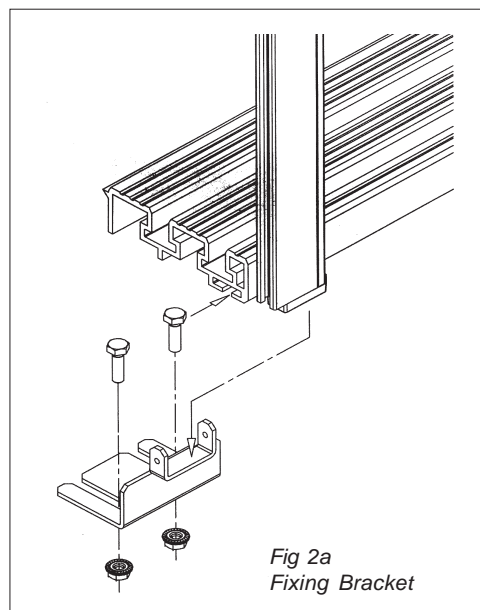


Fig 2a
Fixing Bracket

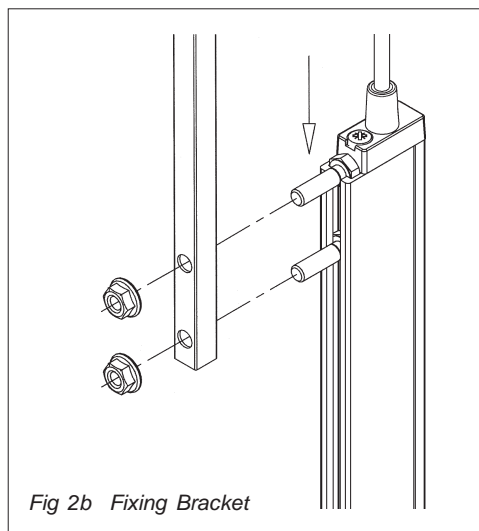


Fig 2b Fixing Bracket

The detectors are simple to install either dynamically or statically. Figs 2a, 2b and 2c show the brackets used for static installation, which are available from Memco (ref. 662 800-011). Dynamic installation is by three No 6 self-tapping screws as shown in Fig 1. The detectors are wired directly to the door operator/lift controller, as shown in Fig 3.

The dense beam pattern will pick up even small objects between the doors and any interruption to the infra-red beams across the door-opening causes the NPN or PNP output to switch state. No setting-up is required. Both detectors are supplied with a highly flexible cable, 4m long. Each cable core is terminated using boot lace ferrules. They are connected to the door operator/lift controller as shown in Fig 3.

Each detector is housed in a robust 13.5mm profile (see Fig 4). Both detectors use an internal microcontroller and are manufactured using surface mount devices (SMD). The TX has two diagnostics LEDs that are visible through the lens and provide an indication of a trigger and a possible RX or TX fault. The RX has been designed to provide a high level of light immunity.

System Connection

The system has been designed to connect directly to the door operator or lift controller (Fig 3). When the infra-red beams are obstructed, a system trigger occurs and switches a transistor output. This is used by the door/lift controller to re-open the doors.

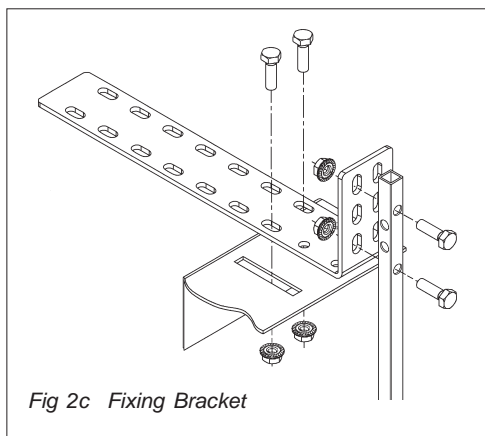


Fig 2c Fixing Bracket

The standard transistor output is PNP Normally-Closed (PNP-N/C). Other transistor configurations (PNP-N/O, NPN-N/C, NPN-N/O) are available on request but PNP-N/C is recommended because it offers fail-safe operation.

The transistor may be used to drive a load such as a relay coil or an opto-isolated input on the lift controller. A PNP configuration means the load should be connected between the output and 0V (i.e. when the transistor is turned on the load will draw current from the transistor output). A Normally-Closed (N/C) configuration means the transistor is turned on when the light curtain is unobstructed.

If it is not possible to use the system transistor output, or a regulated DC supply is unavailable, then a Model 280 or 281 Power Supply unit can be used. See Fig 5.

System Software

The microcontroller to control the Model élite 648 is positioned in the top part of the TX and RX detector assembly. In addition to generating the infra-red beam pattern and detecting obstructions, the system has additional software features, as follows.

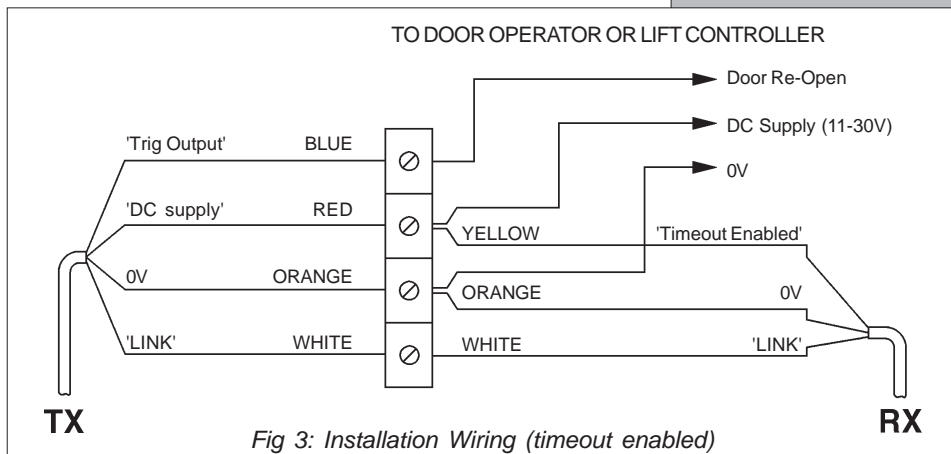


Fig 3: Installation Wiring (timeout enabled)

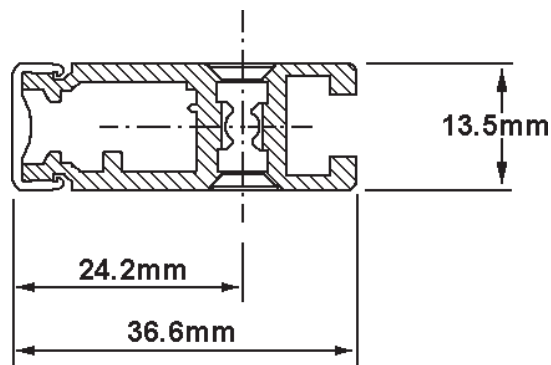


Fig 4 Model élite 648 profile

• Power Reduction Software

This patented software feature is designed to put the system into a less active state when the lift is not in use and prolong the life span of the detectors. When the detectors stop very close to each other, the Power Reduction mode is operated after a delay of 10 secs. In this mode the scan speed is reduced to once every 2 secs. If the doors start to open, or an obstruction is detected, then the normal scanning and trigger mode is resumed. The Power Reduction software will not function if the detectors are fitted in a static position.

• Timeout Function

If the timeout option is selected during installation, then this software feature will allow up to 3 non-adjacent infra-red TX diodes to be ignored, if they are permanently obstructed. There is a delay of 10 secs before the trigger is ignored and the beam scanning is resumed. This is a useful service feature which enables TX diodes damaged by vandalism to be ignored while arrangements are made to replace the unit.

• Power Supply Unit - AC Supply

The Model 280 Power Supply should be used if only an AC supply voltage is available or if the door operator/lift controller cannot accept a transistor output. It provides a regulated DC supply for the detectors

and a relay output for connection to the door re-open circuit.

The Model 280 Power Supply is factory-set to work with the standard Model 648 transistor configuration (PNP-N/C) for fail-safe operation. However, it can easily be changed to work with other Model 648 transistor configurations (PNP-N/O, NPN-N/C or NPN-N/O) using two simple switches.

The unit is also fitted with a beeper and beeper on/off switch.

• Power Supply Unit - DC Supply

The Model 281 Power Supply should be used only if an unregulated DC supply voltage (15V to 36V) is available, or if the door operator/lift controller cannot accept a transistor output. It provides a regulated DC supply for the detectors and a relay output for connection to the door re-open circuit.

The Model 281 Power Supply is factory-set to work with the standard Model 648 transistor configuration (PNP-N/C) for fail-safe operation. However, it can easily be changed to work with other Model 648 transistor configurations (PNP-N/O, NPN-N/C or NPN-N/O) using two simple switches.

The unit is also fitted with a beeper on/off switch.

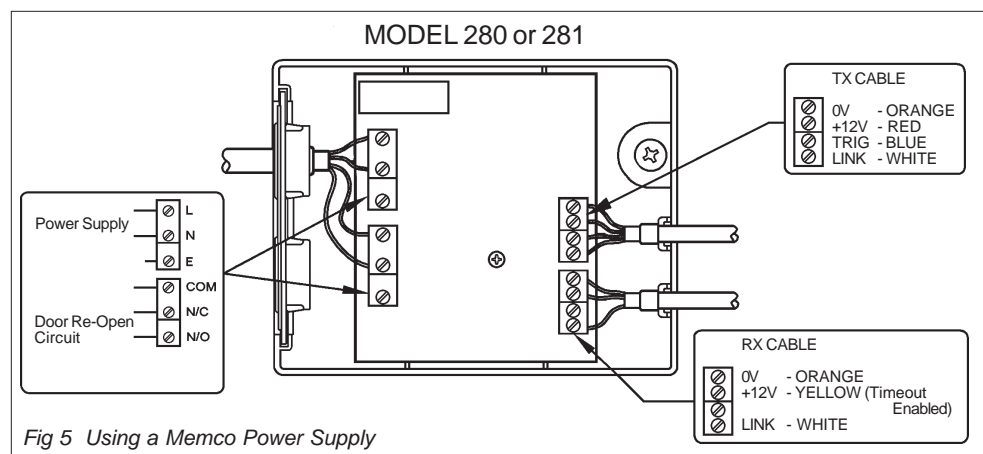


Fig 5 Using a Memco Power Supply

| 648 SPECIFICATION | | |
|--|---|--|
| Detector size | 13.5mm ($1\frac{17}{32}$ ") x 36.6mm ($1\frac{7}{16}$ ") x 2000mm ($6' 6\frac{3}{4}$ ") | |
| Detector cable | 4m on both TX and RX terminated with bootlace ferrules | |
| Fixing kit | 10 x 6mm 'P' Clip 10 x No.8 12mm S/T screws 6 x No.6 20mm S/T CSK Head screws | |
| Distance between bottom beam and bottom of housing | 20mm ($\frac{25}{32}$ ") | |
| Distance between top beam and bottom of housing | 1833mm ($6' 5\frac{5}{32}$ ") | |
| Range | 4m | |
| Number of diodes per detector | 18 | |
| Distance between diodes | bottom 4 diodes 58.5mm, top 14 diodes 117mm | |
| Number of beams | 81 when detectors are more than 650mm apart, 50 when less than 650mm apart, 18 when detectors are closer than 300mm | |
| Input Voltage | 11-30V DC max @ 80mA max (excluding PNP load current). Supply must have a ripple voltage of no more than 36V peak | |
| Output Stage | NPN or PNP transistor (factory set) | |
| Indicators | 2 red LEDs on TX (visible through the lens) | |
| Light immunity | >100,000 lux | |
| Operating temperature range | 0°C to 55°C as per BS201 1 Part2.1 Ab and Part 2.2 Bb | |
| Temperature storage | -20°C & 65°C for 16 hours at each temperature | |
| High temperature/high humidity | BS2011:Part2.1Db:1981, Variant2 at +55°C | |
| EMC compliance | Emissions to EN12015, Immunity to EN12016 | |
| IP Rating | IP55 in accordance with BS EN60529:1992 | |
| Sleep Software Patent Nos | UK Germany Japan USA | 9822359.7 29918009.3 291527/1999 09/416,585 |

| Ordering Information | |
|-----------------------------|--|
| Normal Product Range | |
| 648 180 | Set of Model 648 Detectors each with 4m cable PNP-N/C output |
| Available on Request | |
| 648 080 | Set of Model 648 Detectors each with 4m cable NPN-N/C output |
| 648 090 | Set of Model 648 Detectors each with 4m cable NPN-N/O output |
| 648 190 | Set of Model 648 Detectors each with 4m cable PNP-N/O output |
| Accessories | |
| 280 000 | Power Supply: 115/230V AC |
| 281 000 | Power Supply: 15-36V DC |
| 662 800-011 | Static Fixing Kit |

As a result of our policy of continual improvement, the information in this document is subject to change without notice and it is intended only as general guidance on product performance and suitability. This information shall not form part of any contract.

A
HALMA GROUP
COMPANY



MEMCO LTD, CLYDE HOUSE
WALDECK ROAD, MAIDENHEAD
BERKS SL6 8BY, UK
TELEPHONE: +44 1628 770734
FACSIMILE: +44 1628 621947
www.memco.co.uk