

PRODUCT
INFORMATION
SHEET



MODEL 616

INFRA RED SAFETY CURTAIN FOR LIFTS

- 74 criss-cross beams offer protection up to a height of 1.65m
- Designed for new and existing lifts
- Microcontroller based TX and RX (optional power supply box)
- NPN and PNP output versions available
- Diagnostic LEDs and timeout software
- supplied with new Power Reduction software
- Robust 9mm wide profile
- 4m range

INTRODUCTION

The Memco élite Model 616 is an infra-red, light-curtain system for lift safety and convenience. The dense 74-beam pattern will detect even small objects between the doors (Fig 1) and provide a signal to re-open the lift doors. It can be used on both new and existing installations.

The detectors can often be wired directly to the lift controller or door operator (Fig 2 overleaf). The system consists of one transmitter detector (TX) and one receiver detector (RX). The detectors can be mounted in a dynamic position (on the car doors) or in a static position (on the car itself). No setting up is required.

The detectors will automatically adjust to optimise detection performance. When the doors are open a 74-beam pattern is in operation. As the doors close, and the separation becomes less than approximately 600mm, the pattern changes to 46 beams. When separation is less than approximately 300mm the pattern changes to 16 beams.

Each detector is housed in a robust 9mm profile (Fig 3 overleaf). Both detectors have an internal micro-controller and are manufactured using surface mount devices (SMD). The TX has two easily visible diagnostic LEDs to indicate the system state (Table 1 overleaf).

The system has been designed to a high level of light immunity.

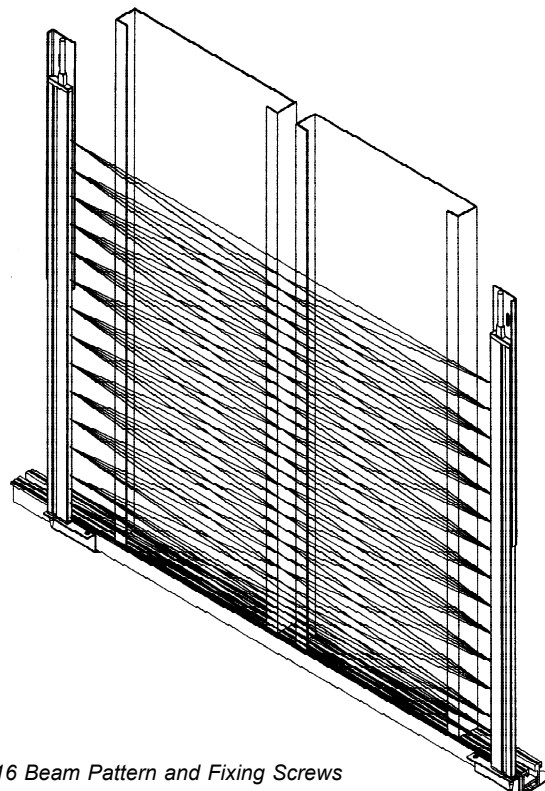
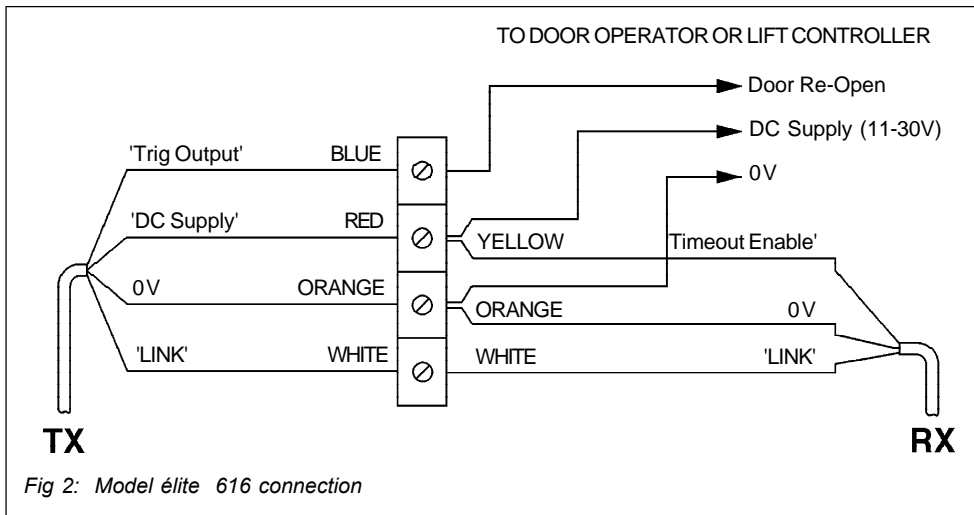


Fig 1: Model élite 616 Beam Pattern and Fixing Screws



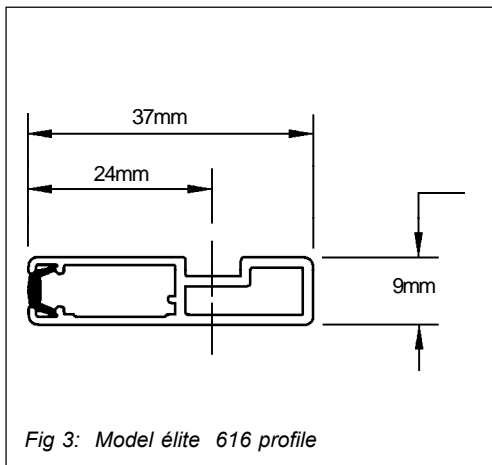
- **System Connection**

The system has been designed to connect directly to the door operator or lift controller (Fig 2). 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.

The standard transistor output is PNP Normally-Closed (PNP-N/C). Other transistor configurations (PNP-N/O, NPN-N/C, NPN-N/C) 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 4.



- **System Software**

The system operation is controlled by micro-controllers positioned in the TX and RX detectors. In addition to generating the infra-red beam pattern and detecting obstructions the system has additional software features which are described below.

- **Power Reduction Software**

This software feature prolongs the life span of the detectors by putting them into a less active state when the lift is not in use. If the detectors stop very close to each other for more than 10 seconds then the scan speed is reduced to once every 2 seconds. If the doors start to re-open, or an obstruction is detected, then 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**

This software allows a detector damaged by vandalism to continue working while arrangements are made for it to be replaced. It is an option which can be enabled during installation to allow up to 3 non-adjacent beams to be permanently obstructed. The diagnostic LEDs will clearly indicate if this has happened.

- **Trouble-Shooting LEDs**

The two red trouble-shooting LEDs are located in the TX detector and are positioned at 26cm and 32cm from the top of the detector. The various LED statuses are tabulated below with the associated causes:

LED Status	Possible Cause
<input type="checkbox"/> OFF <input type="checkbox"/> OFF	No Power
<input checked="" type="checkbox"/> FLASHING <input type="checkbox"/> OFF	TX/RX connection open circuit
<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	Triggered state, obstruction between detectors
<input checked="" type="checkbox"/> ON <input checked="" type="checkbox"/> ON	Normal scanning state
<input checked="" type="checkbox"/> ON <input checked="" type="checkbox"/> FLASHING	Beam(s) timed out

- **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 616 transistor configuration (PNP-N/C) for fail-safe operation. However, it can easily be changed to work with other Model 616 transistor configurations (PNP-N/O, NPN-N/C or NPN-N/O) using two simple switches.

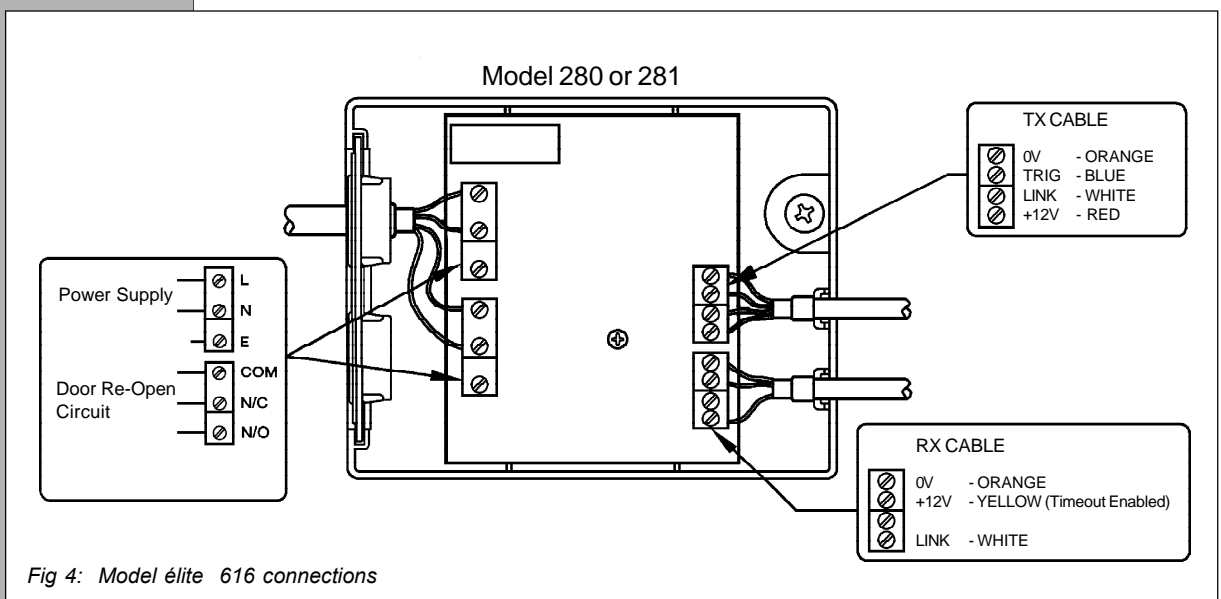
The unit is also fitted with a beeper and a beeper on/off switch

- **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 616 transistor configuration (PNP-N/C) for fail-safe operation. However, it can easily be changed to work with other Model 616 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.



SPECIFICATIONS - Model 616

Detector size:	9mm ($\frac{3}{8}$ ") x 37.3mm ($1\frac{7}{16}$ ") x 1767mm (5ft $9\frac{3}{16}$ ")
Detector cable:	2.7 on both TX and RX terminated with boot lace ferrules
Fixing kit:	10 x 6mm 'P' Clips 10 x No.6 x 20mm CSK Screws 10 x No.8 x 12mm S/T Screws 10 x No.6 x 16mm S/T Pan Head Screws 10 x M3.5 shakeproof washers
Distance between bottom beam & bottom of housing:	20.5mm ($\frac{13}{16}$ ")
Distance between top beam & bottom of housing:	1560mm (5ft $1\frac{7}{16}$ ")
Number of diodes per detector:	16
Range:	4m
Number of beams:	74 when detectors are more than 600mm apart
Input Voltage:	11-30V DC @ 80mA excluding PNP load current
Output Stage:	NPN or PNP (factory set)
Indicators:	2 red LEDs on TX (visible through the lens)
Light immunity:	100,000 lux
Operating temperature range:	-10°C to 65°C as per BS2011 Part2.1 Ab and Part2.2 Bb
Temperature storage:	-20°C & +80°C for 24 hours at each temperature
High temperature/high humidity	BS2011:Part2.1b:1981, Variant2 at +55°C
EMC compliance	Emissions to EN12015, Immunity to EN12016
IP Rating	IP54 in accordance with BS EN 60529:1992
Vibration	Random vibration 20 to 500Hz 0.002g ² /Hz 4hrs per axis Sinusoidal vibration 30Hz 3.6g rms 30mins per axis

ORDERING INFORMATION**Normal Range**

616 180	Set of Model 616 Detectors each with 2.7m cable	PNP-N/C output
616 180-B	Set of Model 616 Detectors each with 4m cable	PNP-N/C output

Available on Request

616 080	Set of Model 616 Detectors each with 2.7m cable	NPN-N/C output
616 090	Set of Model 616 Detectors each with 2.7m cable	NPN-N/O output
616 190	Set of Model 616 Detectors each with 2.7m cable	PNP-N/O output

Accessories

280 000	Power Supply: 115/230V AC
281 000	Power Supply: 15-36V DC
616 800-005	Static Fixing Kit

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