PRODUCT INFORMATION SHEET

Memco Elite3D

Model 674

INFRA RED SAFETY CURTAIN FOR LIFTS

- **Light curtain of 154 criss-cross beams**
- **3D proximity detection into the landing**
- **Protection from 25mm to 1800mm above floor**
- **Designed for new and existing installations**
- **Low power consumption**
- **Robust 9.8mm wide profile**
- **3m range**
- **Greatly reduces the chances of passenger injury by the landing doors**
- **Damage to landing doors by trolleys and hospital beds almost eliminated**
- **No increase in installation time compared with conventional infra-red detection system**
- **Conforms to CE EMC industrial specification**
- **Patented internationally**

INTRODUCTION

The Memco élite 674 safety system has 2 independent detection systems (Fig 1). The first is a light-curtain of infra-red beams operating between the lift car doors. The second is a '3D' system of proximity detection operating in the landing zone. Any person or object breaking the light-curtain, or detected within the '3D' zone, will trigger the system and reopen the doors.

The 674 safety system consists of a transmitter detector (TX) and a receiver detector (RX) mounted on the car doors. Each detector is housed in a robust profile only 9.8mm wide (Fig 2). The 674 will automatically sense the door separation and adjust itself for optimum performance.

In many installations a separate controller is unnecessary and the detectors can be connected direct to the door controller or lift operator.

OPERATION

Light Curtain Operation

The 674 light curtain uses 32 transmit diodes in the TX detector and 32 receive diodes in the RX detector. The dense beam pattern will pick up even very small objects between the car doors. The light curtain uses a 154-beam pattern when the doors are fully open. The pattern changes to 94 beams as the door closes below 800mm, and to 32 beams below 300mmm.

3D Operation

The 674 3D system uses 16 transmit diodes in the TX detector and 15 receive diodes in the RX diode. These project upwards, downwards or straight out at an angle of approximately 45° to the plane of the car doors.

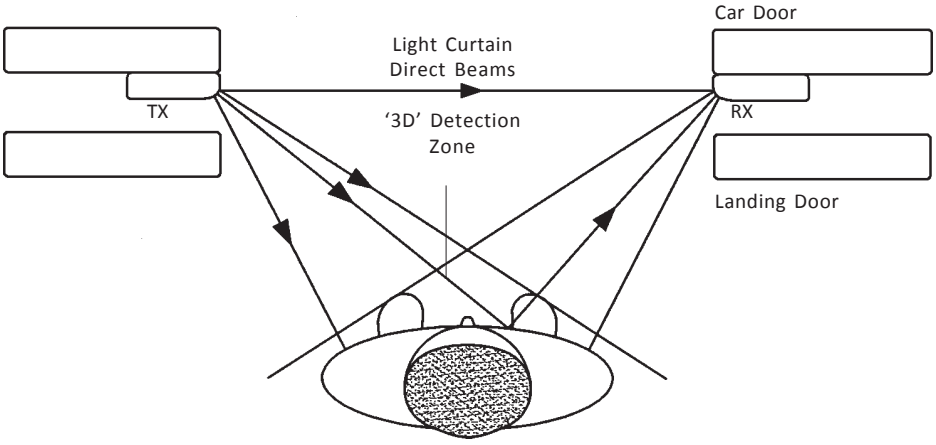

Fig 1 The operating principle of the 674 combining light curtain with 3D detection

The 3D detection range is approximately half the width of the car door opening. For example when the door is open 800mm the most sensitive part of the 3D detection zone is 400mm from the light curtain. As the doors close the 3D detection zone moves inwards and concentrates the sensitive zone close to the landing doors. When the doors are less than 300mm apart the 3D system turns off to allow the doors to close completely.

Two 3D modes are available :-

- "On at 800mm" - 3D operation is turned off for door openings greater than 800mm. This prevents the 3D detection zone from projecting too far into the landing.
- "Always On" - 3D is only turned off when the doors are closed. This is ideal for hospitals and senior citizens homes since the doors will not attempt to close if the 3D zone is occupied. (Note that at door separations greater than 1200mm the 3D system becomes progressively less sensitive).

To prevent the doors being held open by people standing near the lift the 3D detection is automatically disabled after a continuous 3D trigger or after 3 attempts to close. The 3D detection is re-established when the light curtain is broken or the doors close completely. The light curtain still remains active regardless of whether 3D detection is active or not.

Power Reduction Function

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. It automatically activates when the detectors

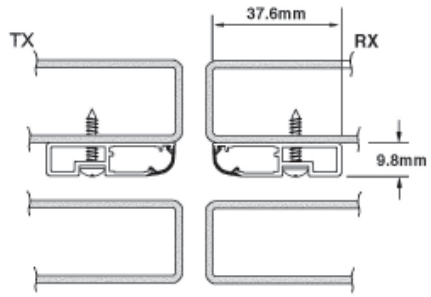

Fig 2: 674 180 Ultraslim élite 3D, fitted on the car door return

are stopped very close together for more than 10 seconds. In this mode scanning is reduced to once every 2 seconds. If the doors start to open, or an obstruction is detected then the normal scanning and trigger mode is resumed.

Timeout Function

This software feature allows up to 5 non-adjacent light-curtain TX diodes to be ignored if they are permanently obstructed. It is automatically activated 10 seconds after a beam is permanently blocked. This is a useful service feature which enables detectors defaced by vandalism to continue working while arrangements are made to replace them.

Trouble-Shooting LEDS

There are two orange trouble-shooting LEDS positioned 29cm and 31cm from the top of the TX detector. The states they can indicate are shown in Table 1.

System Connection

For trouble-free installation we recommend installing the 674 system with a Memco 280 or 281 power supply. However in many situations the 674 can be directly connected to the lift controller or door operator.

Table 1: Trouble Shooting Guide

LED	Status	Possible Cause
✳ ✳	FLASHING ALTERNATELY	Incompatibility between TX & RX software versions
□ □	OFF OFF	No Power
✳ □	FLASHING OFF	TX/RX connection open circuit
■ □	ON OFF	Triggered state obstruction between detectors
■ ■	ON ON	Normal scanning state
■ ✳	ON FLASHING SLOWLY	A diode has been timed out
■ ✳	ON FLASHING FAST	3D trigger state
■ ✳	ON FLASHING MODERATELY	3D timeout mode

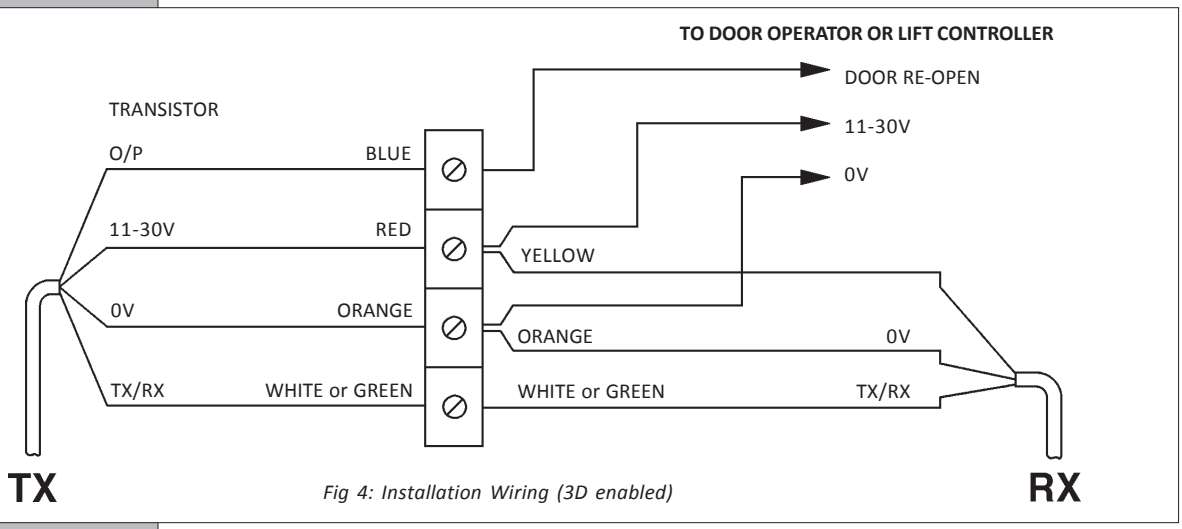

Fig 4: Installation Wiring (3D enabled)

Using a Memco 280 Power Supply

The Memco power supply provides :-

- a regulated DC supply for the 674 detectors
- a relay output for connection to the car door re-open circuit.

This eliminates concern about the electrical environment into which the 674 is being installed and makes wiring straightforward (Fig 3).

The power supply also has a beeper which sounds when an object is detected. A switch is provided to disable this beeper. The unit is factory-set for "failsafe" operation using standard 674 (PNP-N/C) detectors, but switches allows detectors with other transistor configurations to be used.

The power supply is available in two versions; the Model 280 is powered from an AC supply (115/230V) while the Model 281 is powered from a DC supply (15 - 30V).

Direct Connection

The 674 can be connected directly to the lift-controller or door-operator if it has a suitable power supply and "door reopen" circuit (Fig 4). The power supply must be *regulated* DC (11-30V) with no transients. The door reopen circuit must accept a transistor drive and guarantee the signal current will never exceed 100mA.

The standard 674 transistor configuration is PNP Normally-Closed (PNP-N/C). A PNP transistor means the load will be connected between the output and OV (i.e. when the transistor is turned on the load will draw current from the transistor output). Normally Closed means the transistor is turned on when a person or object is not being detected. Other transistor configurations are available on request but PNP Normally-Closed offers "fail-safe" operation.

Contact Memco to discuss direct connection in more detail.

MODEL 280 or 281 Power Supply

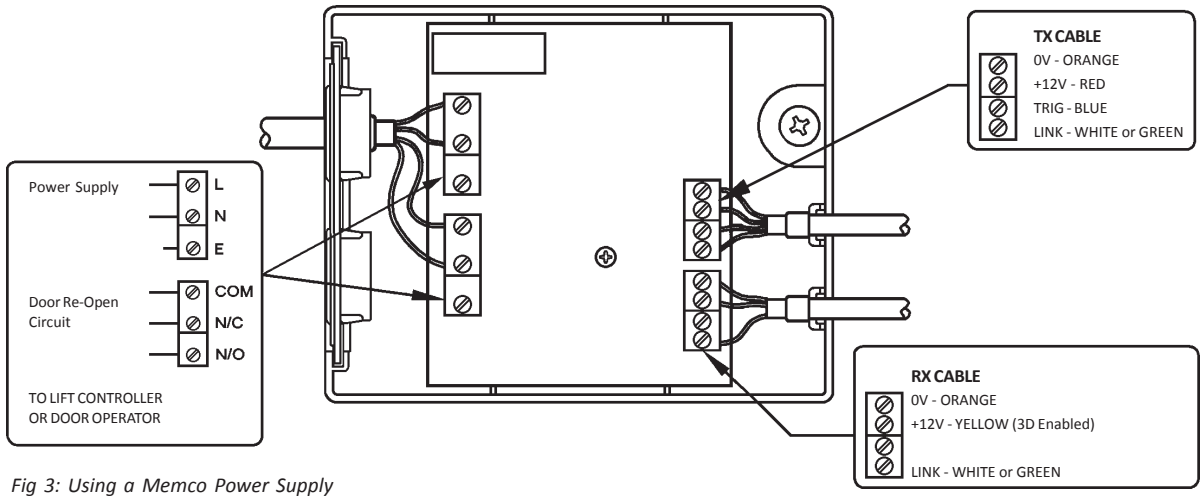

Fig 3: Using a Memco Power Supply

674 SPECIFICATION		
Range		3m
Maximum no of beams		154 beams
Distance between bottom beam and bottom of detector		20mm
Distance between top beam and bottom of detector		1831mm
Number of light-curtain diodes		32 (TX), 32 (RX)
Number of 3D diodes		16 (TX), 15 (RX)
Maximum supply voltage		30V DC
Minimum supply voltage		11V DC
Maximum power consumption		0.3W
Maximum current consumption (Note – does not include current required by "door reopen" circuit on door controller or lift operator)		100mA DC
Maximum transistor current ("door reopen" circuit)		100mA
Operating temperature		-10° to +55°C
Storage temperature		-25° to +85°C
EMC compliance		Emissions to EN12015:1998 Immunity to EN12016:1998
IP Rating		IP54 Cat 2 as per EN60529:1992
Vibration (BS2011 Part 2.1)	Random vibration:- Sinusoidal vibration:-	20-500Hz, 1.0g rms, 3 axis, 3 hrs. 30Hz, 3.6g rms, 3 axis, 30 min.
Light immunity		50,000 lux
Weight per detector		2.1kg
Cable length (with supplied extension cable)		4.7m
European Patent Number Canadian Patent Number Japanese Patent Number New Zealand Patent Number USA Patent Number		0699619 2153514 198245/95 272549 08/510,189
Sleep Software Patent Numbers	UK Germany Japan USA	9822359.7 29918009.3 291527/1999 09/416,585

Part Numbers
674 180 Set of 674 Detectors (PNP-N/C) *Other transistor configurations available on request*
280 000 Power Supply 230/115V AC
281 000 Power Supply 15-36V DC
Spares
015 256 Extension Lead TX Green
015 258 Extension Lead RX Orange

This product is designed for use in elevators with powered automatic doors where the closing force is 25N/mm or less as per EN81 requirements. It should be installed by qualified personnel only, therefore any use outside of this application is at the installer's own risk and should be assessed appropriately.

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.

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