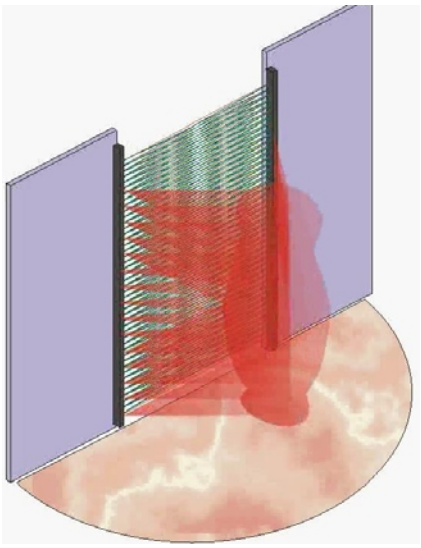
New concept in elevator entrance protection

EXCELLA ELECTRONICS
Specialize in Elevator Automation Products
AN ISO 9001:2008 COMPANY

- "3D" zone to give extended protection into the landing
- 154 criss -cross beams offer protection up to a height of 1830mm
- Selectable modes of 3D operation to suit various installation sites
- Greatly reduces the chances of passenger injury by the landing door
- Damage to landing doors from trolleys and hospital beds is essentially eliminated
- No increase in installation time compared with conventional infra-red detection systems



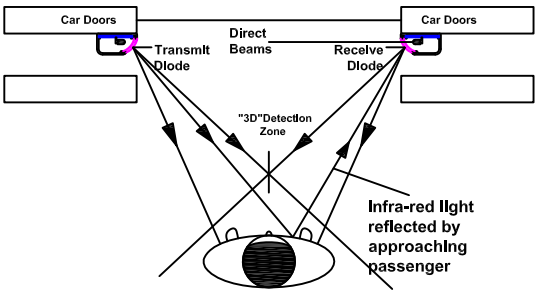
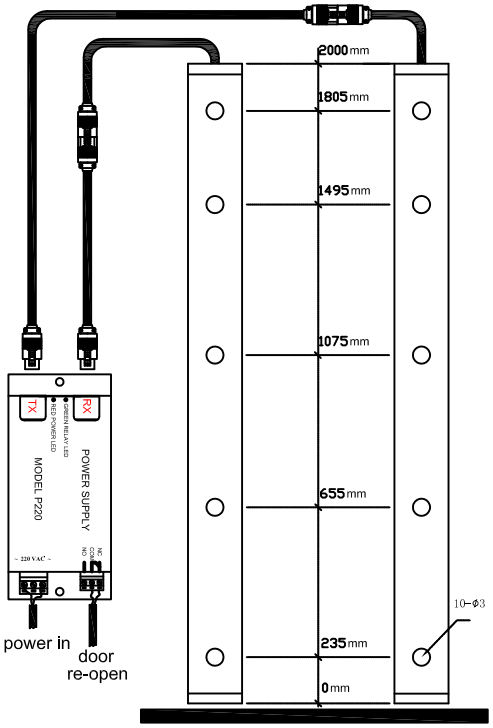


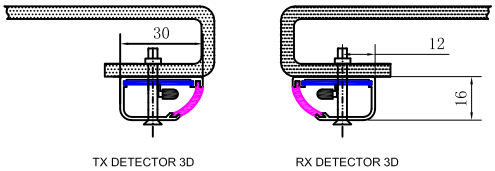
Fig 1 - The operating principle of the "3D" showing the sensitive zone projected into the landing

The E-3D safety system has two independent detection systems(see Fig 1)
Light Curtain-infra-red beams operating directly between the doors.
"3D" Detection-infra-red proximity detection operating in the landing zone.

Any object causing interruption of the direct beams or reflections within the 3D detection zone will trigger the system and re-open the lift doors.

The system can be configured for different operating modes to suit particular installation needs. For example the "3D Timeout" mode is ideal for hospitals because the doors will only start to close if the 3D detection zone is clear.





'Trigger' Tone
An audible 'Trigger' tone will inform users they are preventing the doors closing. A 'Tone' switch is available to disable this feature.

Light Curtain Timeout
Setting the 'Timeout' switch on will allow a partially damaged detector to continue working safely until it can be replaced. It does this by ignoring a permanent trigger on up to 5 non-adjacent beams(e.g.due bo vandalism).

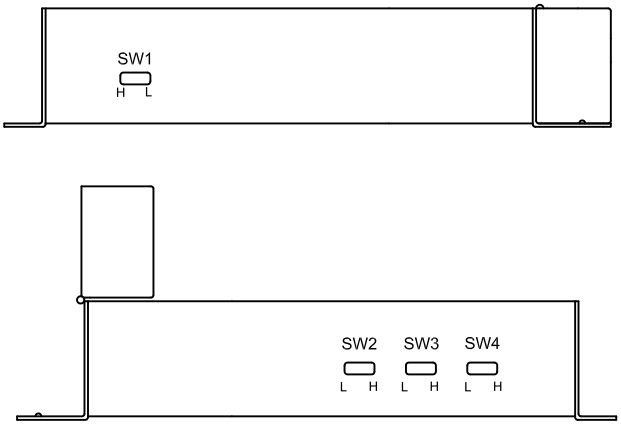
3D Configuration Switches
The controllers are fitted with 4 DIP switches.(see table 1)

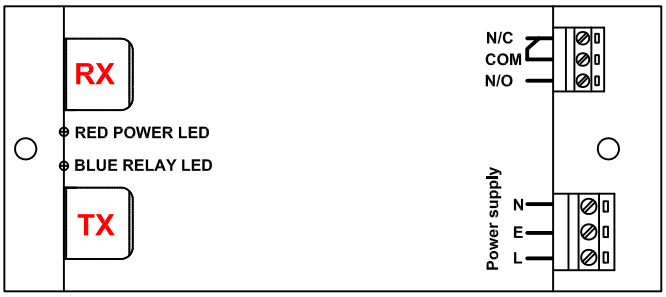
' 3D Timeout-5 seconds'-In this mode the 3D detection is activated when the doors have reached their fully opened position. The system will allow a continuous 3D trigger to hold the door open for 5 seconds. If the 5 second timer expires then the doors are allowed to close with a blue Led to flashing . If the 3D zone becomes clear before the 5 second timer expires then the timer is reset and the doors are allowed to close. If the light curtainis broken then the timer is reset and the doors re-opened.

Operation
The E-3D system consists of a Transmitter Detector(TX), a Receiver De-tector(RX)and a Controller.

LED STATES				Possible Cause
	Green LED(POWER)	Red LED(2D)	Blue LED(3D)	
RX	ON	OFF	OFF	Normal Scanning
	ON	OFF	ON	"3D" beams obstructed or faults
	ON	OFF	FLASHING	"3D Timeout – 10 seconds"
	ON	ON	OFF	"2D" beams obstructed or faults
	ON	FLASHING	OFF	"2D" some diodes have been timed out
	OFF	OFF	OFF	No power, check power supply and cables.
TX	ON	——	——	TX power supply normal.
	OFF	——	——	No power, check power supply and cables.
POWER SUPPLY	Red LED ON	GREEN LED ON		Normal Scanning
	Red LED ON	GREEN LED OFF		Beams obstructed or faults Check cables
	Red LED OFF	GREEN LED OFF		No Power, check power supply.

TABLE 1 LED states





Note : RX and TX cables connection sequence to order

NO.	H	L
SW1	3D sensitivity : Low	3D sensitivity : High
SW2	Buzzer on	Buzzer off
SW3	'3D Timeout - 5s' ON	'3D Continuous effective
SW4	'3D' function off	'3D' function on

TABLE 2 Switches function

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The 3D detection is achieved by infra-red light beams reflecting from objects in the 3D zone. These beams operate upwards downwards or straight out from the detectors at an angle of approximately 45° to the plane of the doors. The TX has 18 transmit diodes while the RX has 18 receive diodes.

Note - the detectors must always be mounted with the TX on the left and the RX on the right so that the 3D detection looks out to the landing and not in towards the lift car(see Fig 1).

The 3D detection range is approximately 400mm to 1200mm.

Note -The system knows the door separation by measuring the direct beam intensity. To ensure reliable operation it automatically disables 3D detection when separation is less than 400mm.
The light curtain remains active regardless of whether the 3D detection is active or not.

TECHNICAL SPECIFICATIONS	
Model	E-3D
Number of diodes	2D:32 3D:18
Distance betw een diodes:	58mm
Maximum beams (distance ⩾400mm)	154 beams
Minimum beams (distance<400mm)	94beams
Highest beam	1823 mm
Low est beam	23 mm
Size	16mm (thickness) × 30mm (w idth) × 2000mm (height)
Detecting distance	0 - 4000mm
Vertical displacement at 0mm	±20mm
Horizontal displacement at 0mm	±3mm
Angular displacement at 0mm	±10degrees
Cable reliability	20 million door movements
Light immunity	⩾100000 LU X
EMC compliance	Emissions to EN12015, Immunity to EN12016
Operating temperature range	-10 ℃~+65 ℃
IP Rating	IP54
Vibration test	Random vibration 20 to 500Hz 0.002g2/Hz 4hrs per axis Sinusoidal vibration 30Hz 3.6g rms 30mins per axis
Response Time (NPN or PNP)	80ms
Response Time (Relay)	110ms
Timeout Function	15Sec 5 non-adjacent diodes
POWER SUPPLY UNIT (see detailed information in Page 12)	
Model P220	Input voltage 220V AC±20% 4VA
Pow er supply relay : 250V AC 7A or 30V DC 7A	