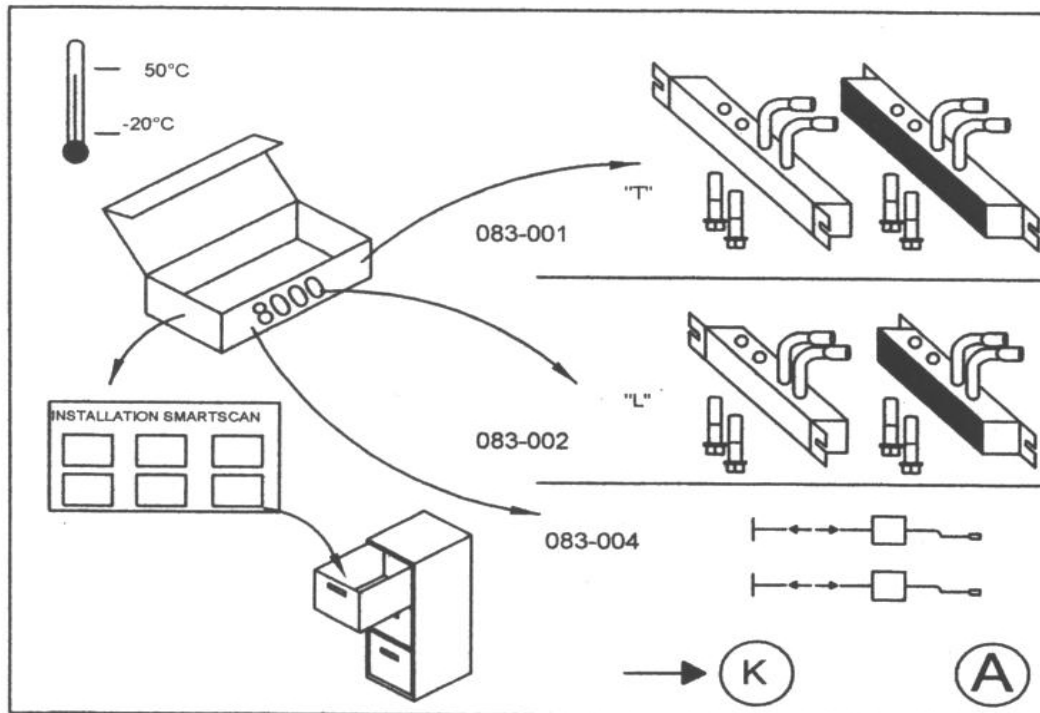


8000 Series Mute Accessories Installation Sheet (CD174/030210)

Unpacking

- ❑ Remove all packaging material and retain it
- ❑ Locate and keep the delivery note
- ❑ Inspect all items for transit damage
- ❑ Match goods supplied to those specified on the delivery note
- ❑ Keep the Installation Sheet in a safe place



An 8000 Series mute accessory kit would normally include:

- ❑ Pair of 'L' or 'T' muting modules with fixing bolts or, a pair of through-beam mute sensors, or polarised retro reflective sensors with cables and connectors affixed, together with mounting brackets.
- ❑ Installation sheet
- ❑ Service questionnaire form

Storage requirements

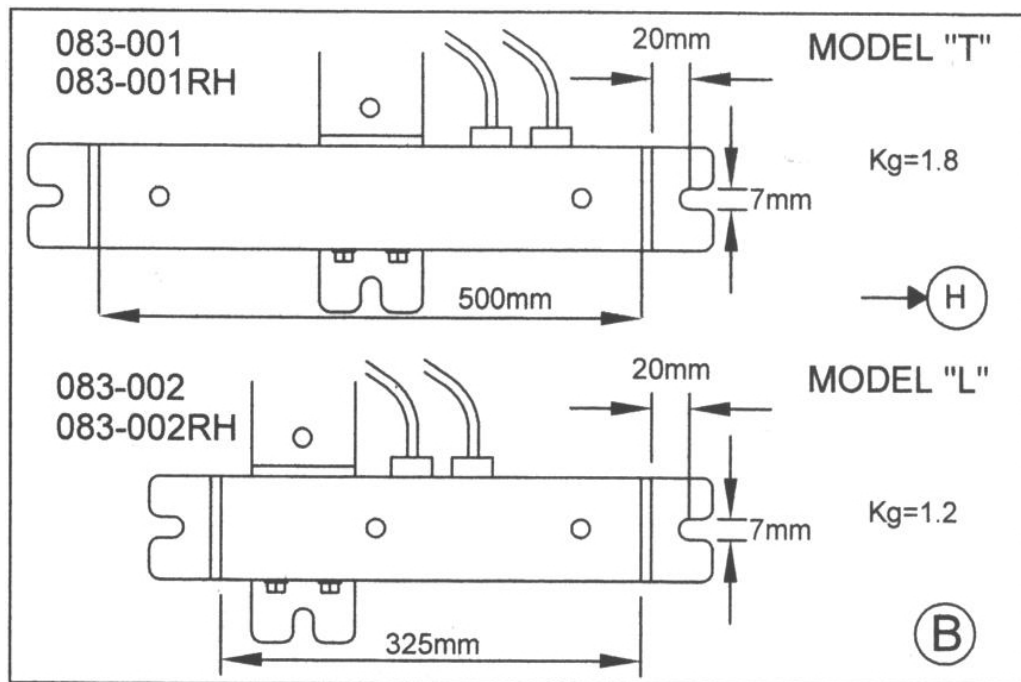
- ❑ Humidity - <95%
- ❑ Temperature range between -20° C and +50°C

Figure B shows the dimensions and weights for the Integral Muting modules.

083-001. Model 'T' (entry / exit) can be configured to provide either cross-beam or parallel beam muting for in-feed or out-feed zones or in situations where a pallet load is required to pass along the conveyor in both directions through the light curtain.

083-002. Model 'L' (exit) is for positioning at out-feed zones only where a pallet load is travelling out from the danger area into the safe area.

083-004. Plug-in retro-reflective polarised muting sensors for applications that require the sensors to be positioned remotely from the light curtain columns. The sensors provide a scanning range of up to 4m between transceiver and a reflector. They come complete with plug-in connectors and 1.5m cables. Refer to Figure K.



The 8000 Series T and L muting modules have the same cross section as the light curtain, 50 x 50mm.

Figure C Fixing 'L' or 'T' mute modules to the main light curtain columns is very easy. Undo the fixing bolts and remove the end-cap fixing bracket and rubber seal from both the transmitter (Tx) and receiver (Rx) columns.

Fit the appropriate 'L' or 'T' module to the base of each column using the longer bolts that are supplied with the units. Tighten the bolts enough to ensure waterproof sealing between the aluminium housings. If an additional guard mounting point is required the bottom end cap bracket can be re-fitted underneath the mute module housing.

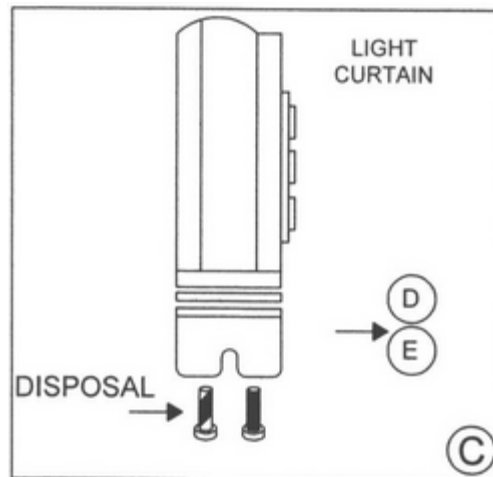
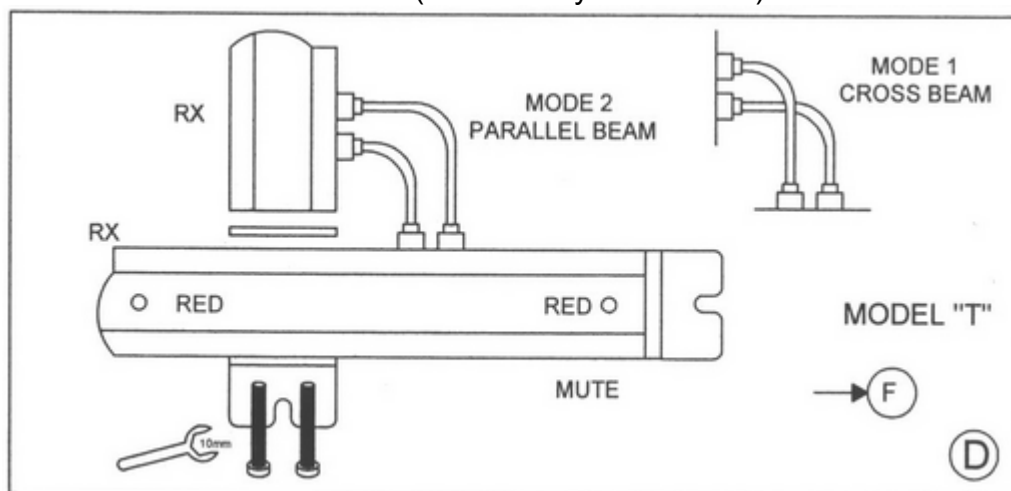


Figure D Plug-in the two cables on the receiver (Rx) mute module to the connectors on the light curtain receiver Rx column as shown. Notice the differences between connections for the cross-beam and parallel-beam configurations. Red LED's in the receiver Rx mute module are illuminated when the mute beams are inactive (clear of any obstruction).



On the Receiver (Rx) the two mute inputs are situated below the B or User cable connection and the A or interconnect cable connection.

On the Transmitter (Tx) mute inputs are situated below the A or interconnect cable connection, refer to **Figure E**.

Plug in the two cables from the transmitter (Tx) mute module to the main light curtain transmitter (Tx) column as shown. Unlike the R/X module there are NO connection differences at the transmitter (Tx) between cross-beam and parallel-beam configurations.

'T' mute modules are suitable for cross-beam and parallel beam whereas only the 'L' module is always configured in cross-beam mode.

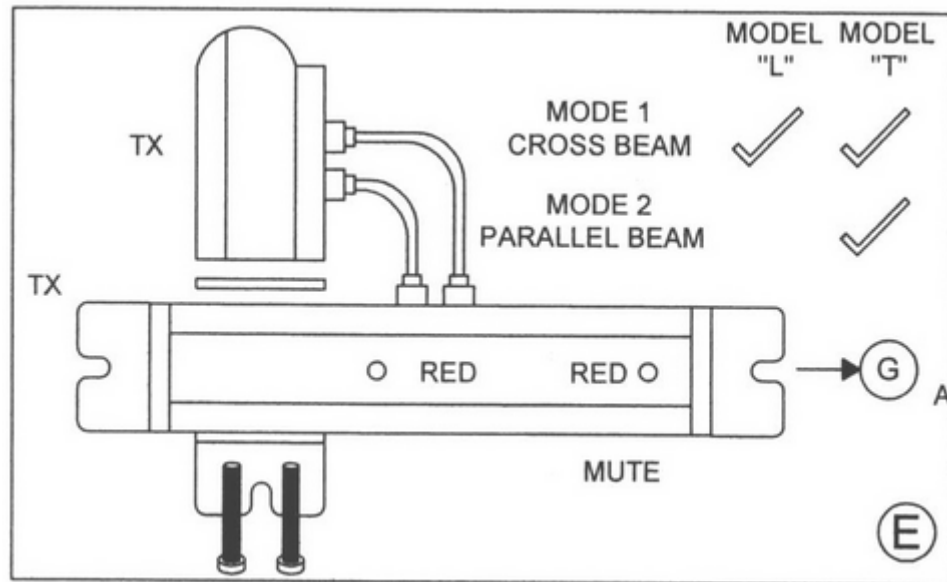


Figure F shows options for configuring an 8000 Series safety light curtain in applications using non-integrated mute sensors.

There are particular applications where standard mute modules are not suitable for example, where there is a limitation in the space available for mounting the modules. In such cases external sensors that allow more flexibility are often used.

Polarised retro-reflective sensor - Type 109-016 Maximum range = 4m

Sensor transceiver comes complete with polarised reflector, a 1.5m cable, mounting brackets and a 4 pin bayonet locking connector for direct connection to the input sockets on the safety light curtain receiver unit.

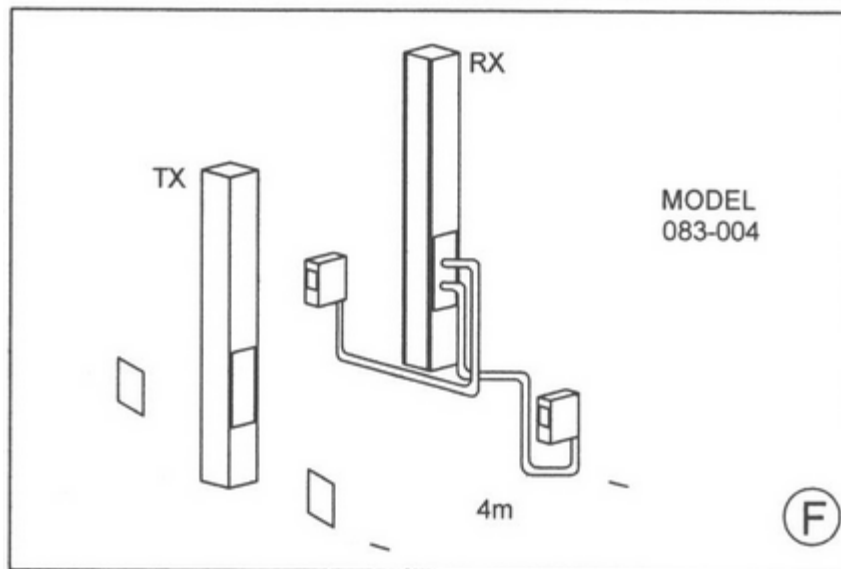


Figure G shows the beam layout for parallel and cross-beam mode configurations associated with the 'T' type mute module (entry / exit).

Mode 1 - Cross-beam muting. To ensure correct operation of the safety system both mute beams must be interrupted by a loaded pallet within 2.5 seconds of each other and both must remain interrupted during the entire period the palletised load is transferring through the light curtain.

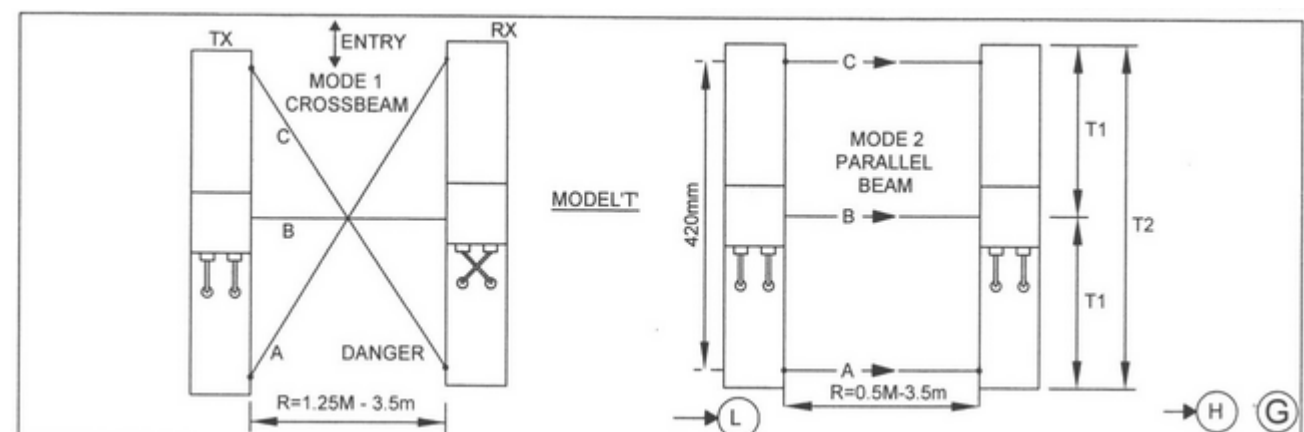
The cross-beam muting configuration is suitable for scanning a range between 1.25m and 3.5m.

Mode 2 - Parallel-beam muting. To ensure correct operation of the safety system the beams must be interrupted in a specific sequence and within a pre-set time period.

Refer to the separate section 'Parallel Beam Muting' for further details regarding parallel-beam mute sequencing. The parallel-beam muting configuration is suitable for scanning a range between 0.5m and 3.5m.

Mute Enable Input

The 'mute enable' signal is a control system requirement that a 'conveyor run' signal be provided. This third signal is normally taken from the conveyor transport system (conveyor run). Inclusion of the signal indicates to the safety control that the conveyor is transferring products towards the light curtain detection field, thus instructing the controller to activate a MUTE ON condition during a pallet transfer through the light curtain.



Note: The mute sensors inside the muting module for the 'T' system are positioned approximately 420mm apart.

Figure H shows the 'L' type muting module (exit only) for safeguarding the area across a conveyor out-feed zone.

Warning: The 'L' type module must *NOT* be used at in-feed zones, (out-feed only). Always configure an 'L' type mute module as mode 1 - cross-beam.

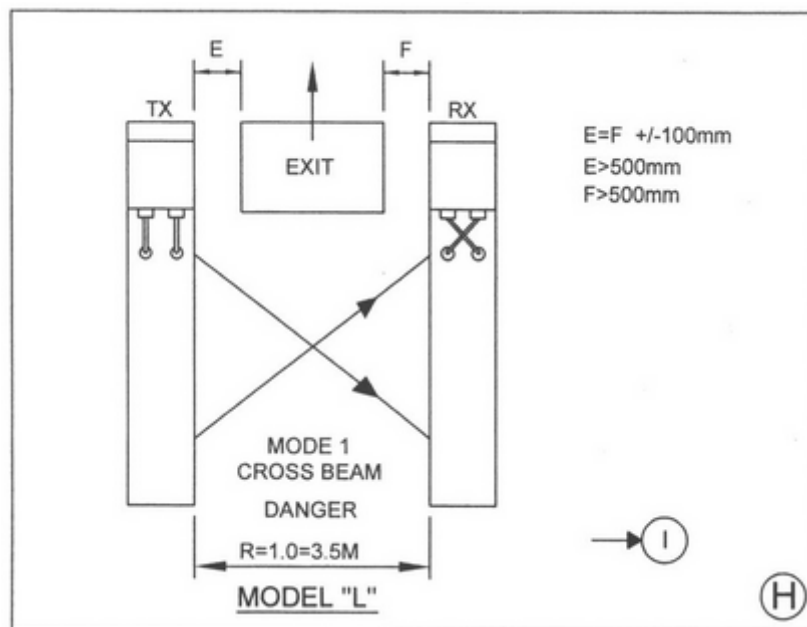
To ensure correct operation of the safety system both mute beams must be interrupted by a loaded pallet within 2.5 seconds of each other and both must remain interrupted during the entire period the palletized load is transferring through the light curtain.

There is a short period of time when the trailing edge of a pallet load 'clears' the detection field of both mute sensors but is still interrupting the light curtain. A timer is incorporated within the safety control system that allows a period of 2.5 seconds between the pallet load 'clearing' the mute sensors and 'clearing' the light curtain. If the 2.5 second period is exceeded the safety system will trip.

Position the light curtain to ensure a pallet load does not stop after clearing both the mute beams and the light curtain.

Pallet load minimum gap requirement (cross-beam mode 1)

Pallet load positioning relative to transmitter and receiver (note distances for A and B)



Ensure that the pallet when entering and exiting the light curtain is central on the conveyor. The distance for A and B as shown on the diagram should be approximately the same.

Figure I shows the electrical connection differences between cross-beam and parallel-beam muting configurations.

Cross-beam muting for 'T' and 'L' mute modules

Activate switch - (F7). Connect the red/white wire in cable B to a normally open switch contact. Connect the other side of the switch contact to +24V DC. The switch could either be a spring return to off key switch or push button.

Mode - (F8). Connect the black / white wire in cable B to 0V DC.

Parallel-beam muting for 'T' modules only

Activate switch - (F7). Connect the red/white wire in cable B to a normally closed switch contact. Connect the other side of the switch contact to +24V DC. The switch could either be a spring-return to on key switch or push button.

Mode - (F8). Connect the black / white wire in cable B to +24V DC.

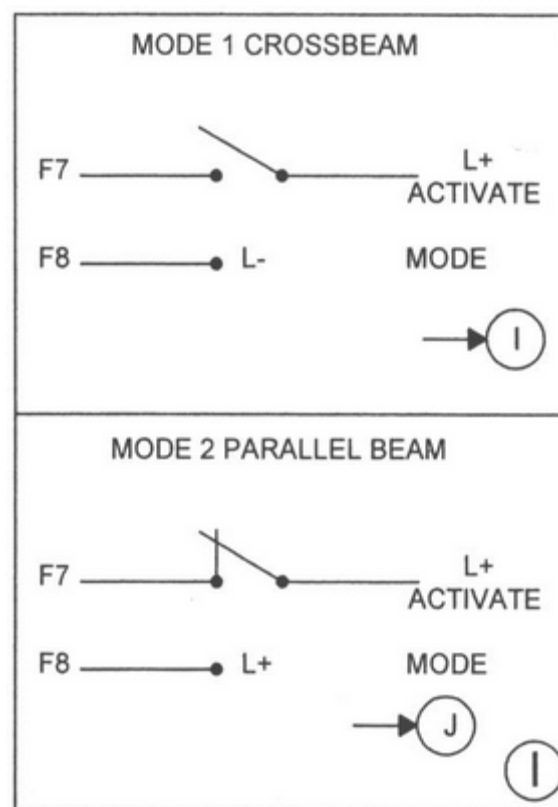
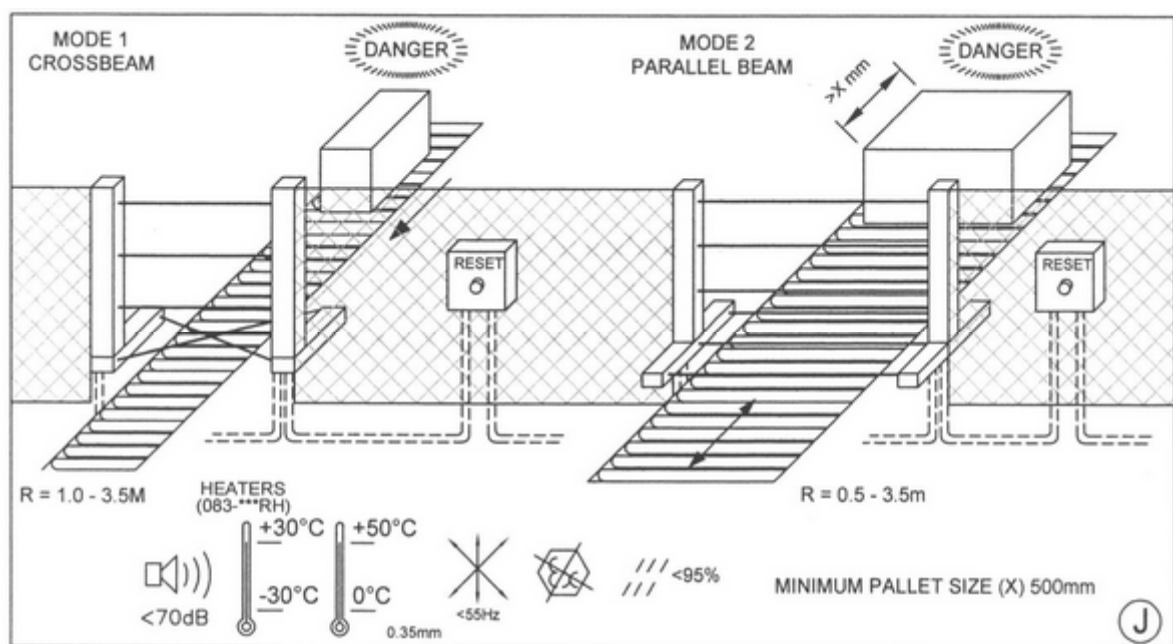


Figure J shows a 8000 Series safety light curtain application using both an 'L' type (exit system) and a 'T' type (entry / exit) muting module.

The 'L' muting module is for out-feed zones ONLY. In this configuration the transmitter (TX) and receiver (RX) should not exceed 3.5 metres.

The diagram shows the muting beams configured in the parallel-beam mode for the 'T' mute module. In this configuration the transmitter (TX) and receiver (RX) column must not be positioned greater than 3.5m apart whereas, if configured in the cross-beam mode the distance apart must not exceed 3.5m.

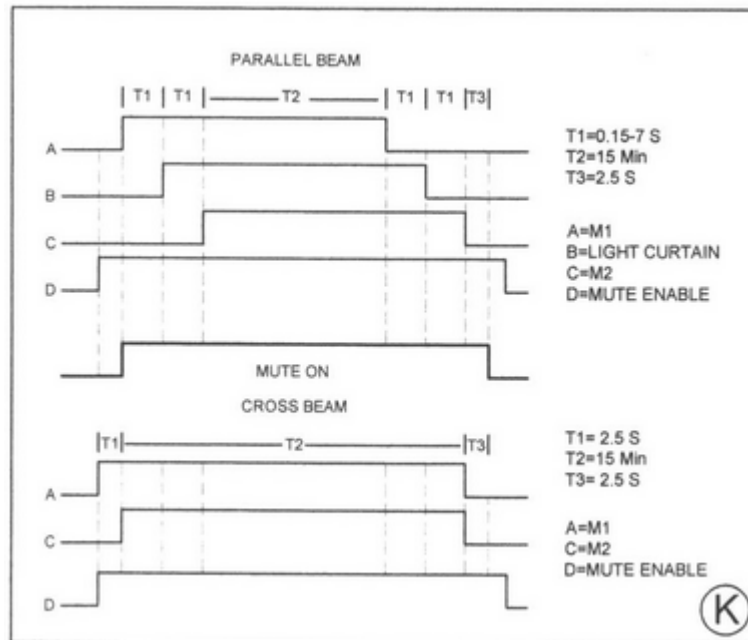


When using Parallel beam mute configuration the distance between the 2 parallel mute beams (X mm) must be less than the minimum pallet / load length.

Operating requirements for 8000 Series safety light curtains:

- ❑ Humidity <95%
- ❑ Vibration: Frequency <55Hz. Movement <0.35mm
- ❑ Temperature range from 0°C to 50°C
- ❑ The units are not 'EX' rated. Do not use the equipment in explosive atmospheres. For further information on explosive-proof enclosures contact Smartscan Ltd.

Figure K shows the timing sequence for mute beams and light curtain when configured in the parallel beam mode (mode 2) and cross-beam mode (mode 1).



Parallel Beam Muting

Refer to Figure F and Figure L

As a pallet load travels along towards the safety light curtain it first interrupts mute beam (A). With the cross-beam muting system it is a control system requirement that a 'conveyor run' signal be provided, so as to maintain a high level of safety integrity. Providing a mute enable signal (D) is present at input (F6) in the 8000 light curtain control, then interruption of beam (A) initiates a mute condition of the light curtain, at the same time starting the timing sequence as follows:

- ❑ Initiate mute enable. (D)
- ❑ Interrupt beam A (timing sequence starts).
- ❑ Interrupt beams (A + B) within period 0.15 – 7 seconds.
- ❑ Now interrupt beams A + (B + C) within a period 0.15 – 7 seconds.
- ❑ With beams (A + B + C) interrupted the safety system will remain active (on) for up to 15 minutes. If this timed period is exceeded the system will trip.
- ❑ Clear beam A, with B + C interrupted, for a period 0.15 – 7 seconds
- ❑ Clear beams A + B, with C interrupted for a period 0.15 – 7 seconds.
- ❑ Clear beams A + B + C, within a period 0.15 – 7 seconds.
- ❑ Deactivate mute enable (D)
- ❑ Timing sequence ends – mute enable off.

Parallel Beam Control Timers

T1 (Pallet Transfer Time) = Minimum to maximum time during the pallet transfer between activation of mute beam 1 (M1) and the light curtain. Then T1 is repeated again for pallet transfer between the light curtain and mute beam 2 (M2).

T2 (Mute Time Out Period) = A maximum pre-determined time the light curtain will remain in a muted condition. Following this timed period, if the pallet is still interrupting the mute beams (M1 and M2) and the light curtain then the OSSD's will de-energise thus initiating a stop condition. Providing the pallet clears the mute beams and the light curtain before the maximum time T2 is exceeded then automatic transfer of the pallet will continue.

T3 (Mute Off Delay Time) = A predetermined time that the light curtain will remain in a muted condition following de-activation of one or both of the mute signals.

Software version example

The standard 8000 Series is supplied with 'E' version software, for example, 083E903. This provides the following functions for parallel beam,
T1 = 0.15 - 7.0 Sec T2 = 15 min T3 = 2.5 Sec.

Cross Beam

T1 (Mute 1 and Mute 2 Disparity Time) = Maximum time allowed between activation of signals mute 1 (M1) and mute 2 (M2) prior to the pallet entering the light curtain.

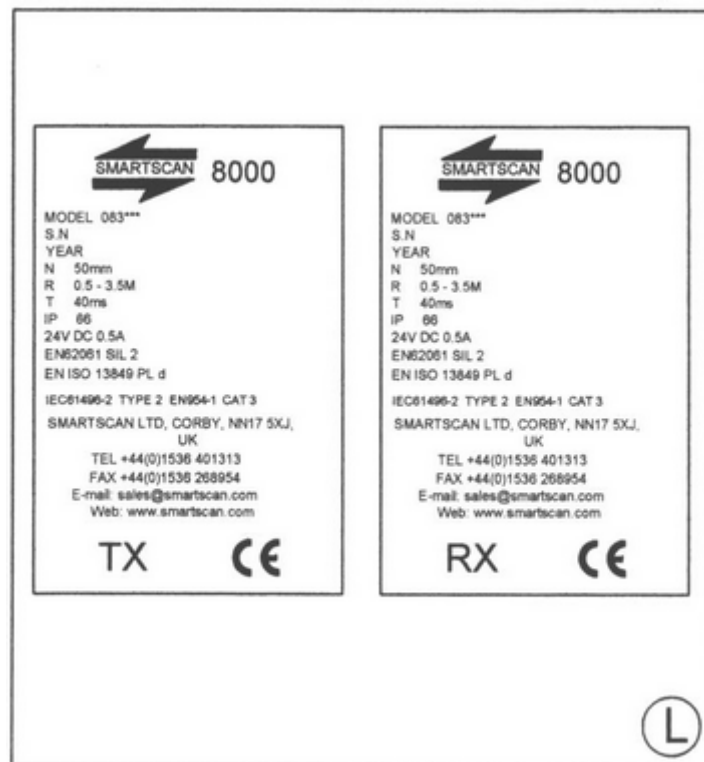
T2 (Mute Time Out Period) = A maximum pre-determined time the light curtain will remain in a muted condition. Following this timed period, if the pallet is still interrupting the mute beams or light curtain the OSSD's will de-energise thus initiating a stop condition. Providing the pallet clears the light curtain before the maximum time T2 is exceeded then automatic transfer of the pallet will continue.

T3 (Mute Off Delay Time) = A predetermined time that the light curtain will remain in a muted condition following de-activation of one or both of the mute signals.

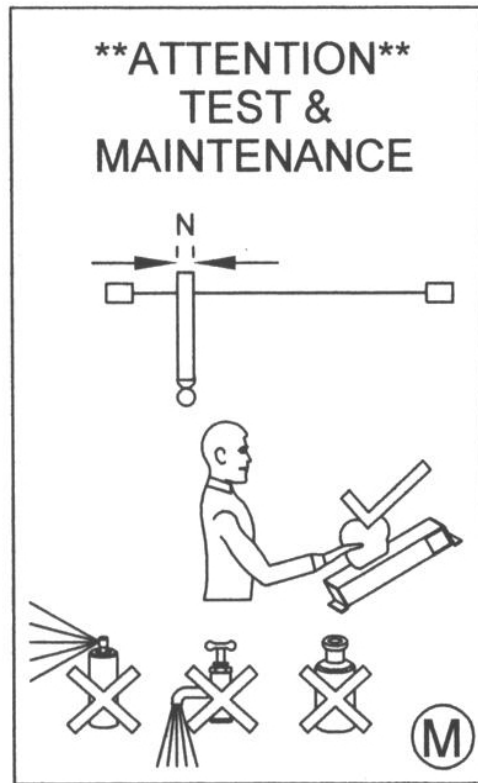
Software version example

The standard 8000 Series is supplied with 'E' version software, for example 083E903. This provides the following functions for cross-beam,
T1 = 2.5 Sec T2 = 15 min T3 = 2.5 Sec.

Figure L shows examples of the identification labels that are affixed to the transmitter (TX) and receiver (RX) columns.



Test and Maintenance



Power-up the light curtain and activate the output switching circuits to an ON condition.

MODE 1 – CROSS-BEAM

Insert a test piece of appropriate size into the detection zone of one of the mute sensors. After 2.5 seconds the safety outputs will turn OFF. Repeat this operation for the second mute sensor, again the outputs should turn OFF within 2.5 seconds.

MODE 2– PARALLEL-BEAM

Insert a test piece of appropriate size into the detection zone of one of the mute sensors for at least 8 seconds. With the mute beam still obscured interrupt the light curtain. At this point the safety outputs should turn OFF. Repeat this operation for the second mute sensor, again the outputs should turn OFF if the mute sensor has been obscured for over 8 seconds.

The Transmitter (Tx) and Receiver (Rx) windows should be cleaned regularly as indicated on the Installation Sheet.

Dirt build up on the windows may lead to intermittent tripping or a totally blocked condition of the light curtain. Clear adhesive tape may be applied to the windows of curtains in dirty or abrasive conditions. Renew the clear adhesive tape periodically.

Clean the windows with a clean damp cloth using a mild detergent. Never use abrasive, corrosive cleaners or spray detergents.

Figure N shows an operations chart for the 8000 mute modules and sensors.

- ❑ Before installation, read and understand the Installation Sheet provided paying particular attention to the information provided in Figures D, E and I.
- ❑ Refer to Figure M for test and maintenance procedures.
- ❑ Every six months, check the entire installation paying particular attention to the additional maintenance checks contained in the document - Light Curtain Installation Sheet Explained - CD 246.
- ❑ Every 24 hours carry out tests as indicated in Figure M.
- ❑ If the equipment fails to operate as intended check the electrical connections as shown in Figure 1.

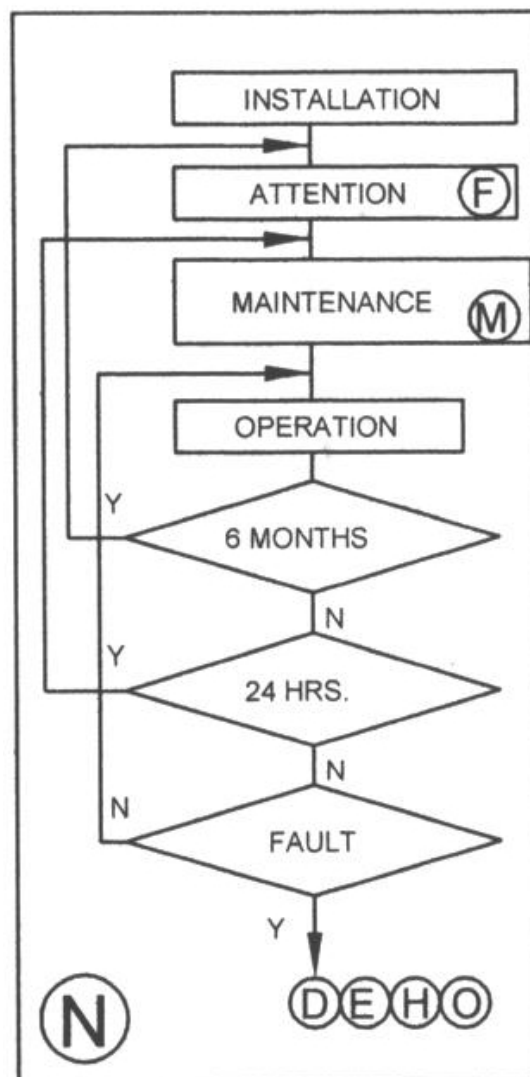



Figure P shows a copy of the Declaration of Conformity.


CD174P/031209

EC Declaration of Conformity

Product: Smartscan 8000 mute accessories
Model: 083-001RH and 083-002RH

Smartscan Limited, Pywell Road, Willowbrook Industrial Estate, Corby, Northamptonshire, NN17 5XJ

Declares that the safety components(s) described:
 Serial Numbers: Between 400 000 and 479 999

Fulfills the following safety function: Muting accessories for Smartscan 8000 equipment - Active Opto-electronic Protective Device (safety light curtain).

Conforms to the following Directives when applied to a Smartscan 8000 series AOPD:

Machinery Directive	98/37/EC, 2006/42/EC
Electromagnetic Conformity Directive	2004/108/EC
Low Voltage Directive	2006/95/EC

Complies with the relevant requirements of the following Standards:

EN 61496-1, IEC 61496-2	Type 2
EN 954-1	Category 3
IEC 62061	SIL 2
EN ISO 13849-1	PL d

Uses the following standards:
 ISO 12100-1, ISO 12100-2, EN 60204-1, EN415-4

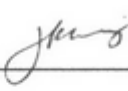
Complies with the examples to which the EC type examination certificate below relates, and is in conformity with the protection requirements of Council Directive 2004/108/EC, as amended, on the approximation of the laws of the Member States relating to electromagnetic compatibility.

The component is of a type listed in Annex IV of the Machinery Directive. Examples have been submitted for type examination by the approved body identified below.

Safenet Limited Notified Body Number 1674

Address Pywell Road, Corby, Northamptonshire, NN17 5XJ

Certificate No. 518040609

Signed:  Date: 25. 11. 2009

Title: Project Manager




Figure Q provides a glossary of words and terminology used in the Installation Sheet in a number of International languages:

GLOSSARY	GLOSSAIRE	GLOSSAR	BIBLIOGRAFIE	GLOSSARIO	GLOSSARIO	ORDUSTA	ORDBOG
ENGLISH	FRANCAIS	DEUTSCHE	DUTCH	ITALIANO	ESPAÑOL	SVENSKA	DANSK
ACTIVATE	ACTIVER	AKTIVEREN	ACTIVEREN	ATTIVAZIONE	ACTIVAR	AKTIVERING	AKTIVERE
ATTENTION	ATTENTION	ACHTUNG	ATTENTIE	ATTENZIONE	ATENCIÓN	OBSERVERA	ATTENTION
AUTHORISED PERSON	PERSONNE AUTORISÉE	AUTORISIERTE PERSON	BEVOEGDE PERSOON	PERSONALE AUTORIZZATO	PERSONA AUTORIZADA	BEHÖRIG PERSON	PERSON MED AUTORITET
BEAM	FASCEAUX	GITTER	LICHTSTRAAL	RAGGI	HAZ	STRÅLAR	STRÅLE
CONTROL	CONTROLE	STEUERUNG	BESTURING	CONTROLLO	CONTROLAR	KONTROLL	KONTROL
CROSS-BEAM	RAYONS DIAGONALE	KREUZ STRAHL	DIAGONALE STRALEN	RAGGI INCROCIATI		KRYSS-STRÅLAR	KRYSS STRÅLE
DAANGER	DAANGER	GEFAHR	GEVAAR	PERICOLO	PELIGRO	FARA	FARE
DISPOSAL	DISPOSITION	ENTFERNEN	VERMILDEREN	SMALTIMENTO	DISPOSICION	UPPLÖSNING	RADIGHED
ENTRY	ENTREE	ENGANG	INGANG	ENTRATA		INPASSAGE	INGANG
EXIT	EXIT	AUSGANG	UTGANG	USCITA		UTTPASSAGE	UDGANG
FAULT	DEFAULT	FEHLER	FOUT	GUASTO	INCIDENTE	FEL	FEJL
INSTALLATION	INSTALLATION	INSTALLATION	INSTALLATIE	INSTALLAZIONI	INSTALLAZIONE	INSTALLATION	INSTALLATION
LIGHT CURTAIN	BARRIERE	LICHTGITTER	LICHTSCHERM	BARRIERA OTTICA	CORTINA DE SEGURIDAD	LJUS BARRIER	LYSTAEPPER
MAINTENANCE	ENTRETIEN	WARTUNG	ONDERHOUD	MANUTENZIONE	MANTENIMIENTO	UNDERHÅLL	VEDLIGEHOLDE
MODE	MODE	MODUS	MODUS	MODO	MODO	FUNKTIONSLAGE	MODE
MODEL	MODELE	TYP	MODEL	MODELLO	MODELO	MODELL	MODEL
MONTHS	MOIS	MONATE	MAANDEN	MESE	MESES	MANÅDER	MANED
MUTE	OPPRESSION	STUMMER	ONDERDRUKKEN	INIBIZIONE	MUDO	FORBIDKOPPLING	MUTE
OPERATION	OPERATION	IN BETRIEB	IN BEDRIJF	FUNZIONAMENTO	OPERACION	DRIFT	OPERATION
PARALLEL BEAM	RAYONS PARALLEL	PARALLEL STRAHL	PARALLELE	RAGGI PARALLELI		PARALLELLA STRÅLAR	PARALLELL STRÅLE
RED	ROUGE	ROT	ROOD	ROSSO	ROJO	ROD	ROD
REPAIR	REPARATION	REPARATUR	HERSTELLING	RIPARAZIONE	REPARAR	REPARATION	REPARERE
SUPPLIER	FOURNISSEUR	LIEFERANT	LAVERANCIER	FORNITORE	PROVEEDOR	LEVERANTOR	LEVERANDØR

