1000 SERIES INSTALLATION SUPPLEMENT

Rev. 1-1-12

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1000

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In order for machinery to be guarded by the Smartscan 1000 light curtain system, the machinery must be capable of stopping at any point in the machine cycle. The guarded machine must be wired such that any interruption of the defined area will cause immediate arrest of the dangerous motion of the guarded machine.

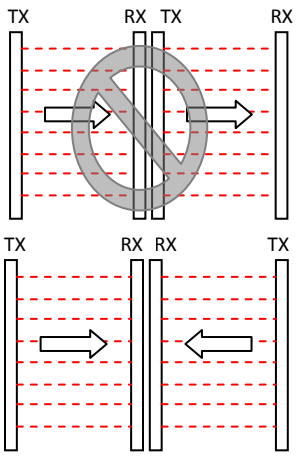
Smartscans 1000's ability to perform this function depends upon the appropriateness of the application and upon the Smartscan1000 's proper mechanical and electrical installation and interfacing to the machine being guarded. If all mounting, installation, interfacing and commissioning procedures are not followed properly the Smartscan 1000 system cannot provide the protection for which is was designed. The user has the responsibility to ensure all local, state, national laws, rules, codes or regulations relating to the installation and use of this system in any particular application are satisfied.

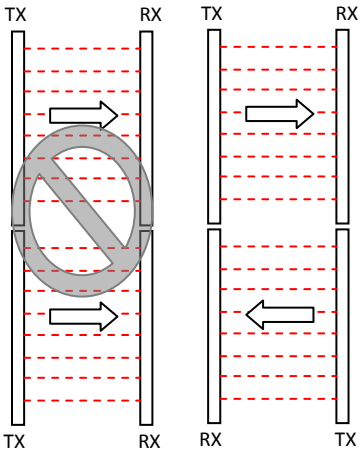
The user has the sole responsibility to ensure that the Smartscan 1000 system is installed and interfaced to the guarded machine by "qualified persons" in accordance with this manual and applicable safety regulations. A "qualified person" is defined as " a person or persons who, by possession of a degree or certificate of professional training, or who, by extensive knowledge, training and experience has successfully demonstrated the ability to solve problems relating to this subject matter and work" (ANSI/AME B30.2-1983)

Light Curtain Mounting Considerations

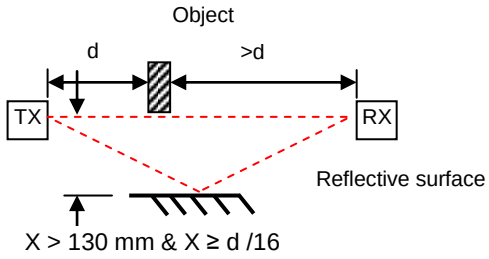
Light Curtain Orientation

TX - Transmitter RX - Receiver



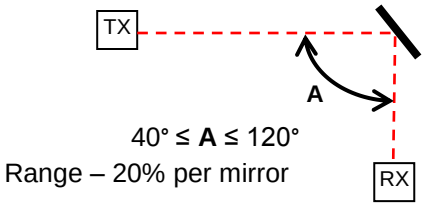


Proximity to reflective surfaces



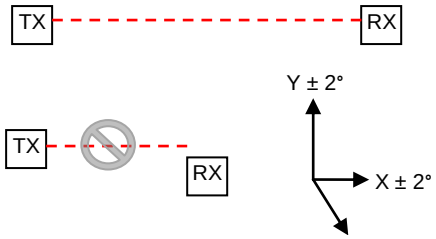
X is minimum distance between the light and the reflective surface. The closest distance of TX or RX to the object approaching the light curtain is d.

Use with Mirrors

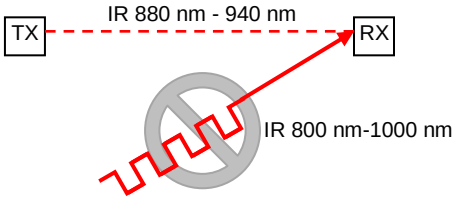


40° ≤ **A** ≤ 120°
Range – 20% per mirror

Light Curtain Alignment



Optical Short Circuit Prevention



Light Curtain Mounting

Light curtain must be securely mounted such that the operator cannot reach the hazard without passing through the light curtain sensing region.

The operator should not be able the reach over, reach under or walk past the protective devise without interrupting its sensing region. Additional guarding may be required to achieve this task.

Warning; Physical damage to the 1000 light curtain system could create an un-safe condition that may cause a serious injuring including death. Contact Smartscan for more information.

Warning: Do not repair or modify the 1000 Light curtain. The 1000 safety light curtain is not cite/field repairable and can only be repaired at the Smartscan.

1000 Series: Light Curtains

(Output Signal Switching Devices) OSSD1 and OSSD2

Two independent electronic switches provide the fail-safe outputs for connection to the machine control system. Outputs 'ON' = 24V DC, Outputs 'OFF' = 0V DC. Maximum switching current for each output = 24V DC, 500mA.

Power Supply

A regulated power supply is required: +24V DC, up to 1.5A dependent on OSSD loads ±20%. Cable colors for power supply connections at both transmitter and receiver

Indicators (Silver Extrusion)

Transmitter column (Transmitter OK) **-** A yellow 'blinking' LED indicates the unit is powered-up and the electronic system operational.

Receiver column (Communication OK) **-** A yellow 'blinking' LED indicates that communication is established between transmitter and receiver.

Receiver column (OSSD's ON) **-** Green LED indicator illuminates when the electronic output switches, OSSD1 and OSSD2 are 'ON' (only when the light curtain detection zone is 'clear' of any obstruction).

Receiver column (OSSD's Off) - Red LED indicator illuminates when the electronic output switches, OSSD1 and OSSD2 are 'OFF' e.g. a trip condition or, when the light curtain detection zone is 'blocked'.

Indicator Fault Detection (Silver Extrusion)

Receiver column (System in LOCKOUT) - Red LED indicator is flashing the system is in lockout. To recover from a lockout condition disconnect the transmitter and receiver from the power source and then re-apply.

Transmitter column (Not Transmitting) **–** Solid Yellow LED indicates the transmitter has an internal fault.

1000 Series: Light Curtains

Indicators (Yellow Extrusion)

Transmitter column (Transmitter OK) **-** 'Synchronously blinking' Yellow LED's indicates the unit is powered-up and the electronic systems are operational.

Receiver column (Communication OK) **–**'Synchronously blinking' Yellow LED's indicates that communication is established between transmitter and receiver. The receiver LED's blink at a slower rate than the transmitter.

Receiver column (OSSD's ON) **-** Green LED indicator illuminates when the electronic output switches, OSSD1 and OSSD2 are 'ON' (only when the light curtain detection zone is 'clear' of any obstruction).

Receiver column (OSSD's Off) - Red LED indicator illuminates when the electronic output switches, OSSD1 and OSSD2 are 'OFF' e.g. a trip condition or, when the light curtain detection zone is 'blocked'.

Indicator Fault Detection (Yellow Extrusion)

Receiver column (Communication OK) **-** 'Non-synchronously blinking' Yellow LED's indicates that there is a fault within receiver communication system.

Receiver column (Output Fault) - Green LED indicator is flashing, the system has detected an output fault. To recover from this condition prevent outputs (OSSD's) from touching or reduce capacitance of user provide cabling then cycle power.

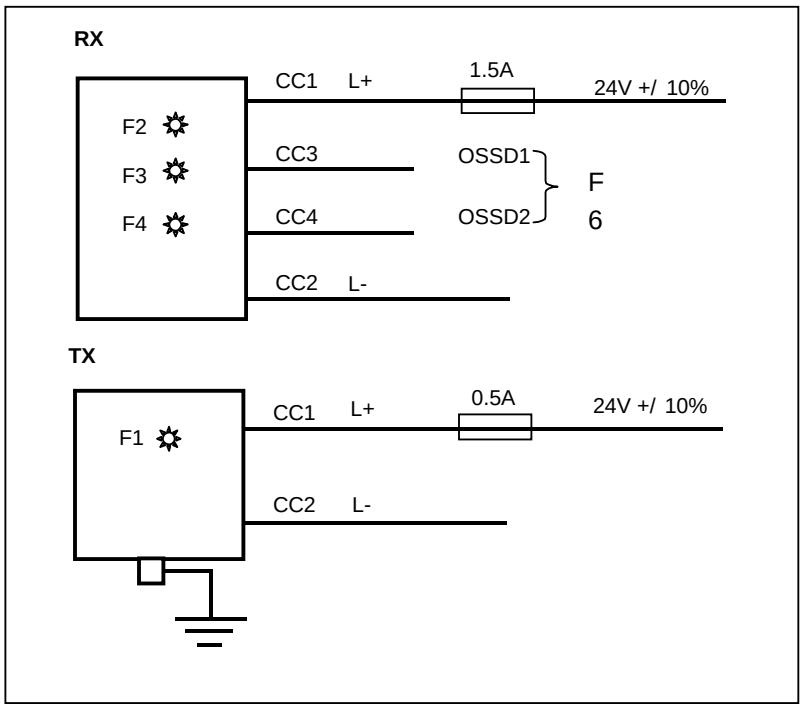
Receiver column (Internal Fault) - Red LED indicator is flashing, the system has detected an internal fault.

Transmitter column (Not Transmitting) **–** Solid Yellow LED's indicate the transmitter has an internal fault.

Warning: -	OSSD's should be wired to prevent machine operation unless the OSSD's are in the ON state.
Warning -	Bypassing the light curtain safety outputs (OSSD's) has been known to cause serious injury including death.

1000 Series: Light Curtains

Input and Output Connections at the Transmitter and Receiver Units



Color Code Number	Style 1	Style 2
CC1	Red	Brown
CC2	Blue	Blue
CC3	Yellow	Black
CC4	Green	White

A 24V DC regulated power supply should be used for connection to the transmitter and receiver units. The transmitter and receiver units operate entirely independently from each other, e.g. there are no electrical connections between the transmitter and receiver units therefore separate 24V DC power supplies may be used if required. In order to protect the 1000 Series electronic systems please remember to install fuses of suitable rating between incoming 24V DC supply and 24V input connections at both the transmitter and receiver units. Recommended fuse ratings, transmitter 0.5A and receiver 1.5A.

OSSD1 and OSSD2 - Each output switch has a maximum current rating of 0.5A. To prevent possible damage never exceed the maximum current rating for the switching devices.

Note: Inductive load suppressors should be used when driving large power relays.

Ensure both transmitter and receiver units are connected to GROUND. Insert an M6 bolt into one of the threaded slots in the extrusion to ensure a good ground connection.

Extending Cable of Transmitter and Receiver Columns: When extending the TX and RX cables the following guidelines must be met.

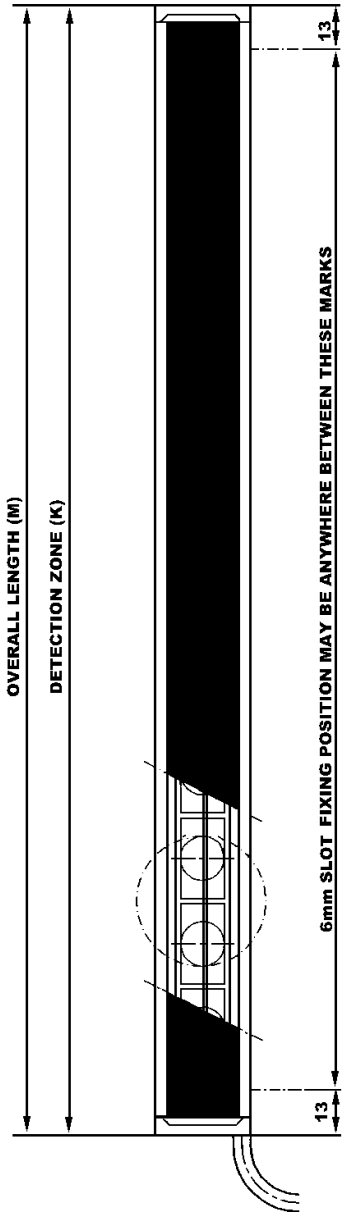
1) Use low capacitance shielded cable with a maximum effective capacitance of 2nF.

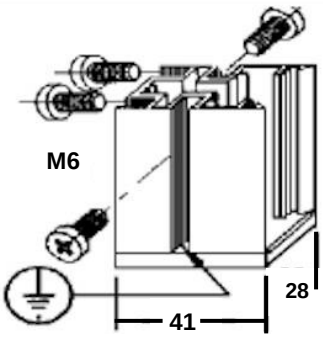
2) Ground the shielded cable to reduce the possibility of EMI.

3) Maximum overall cable length 50 meters.

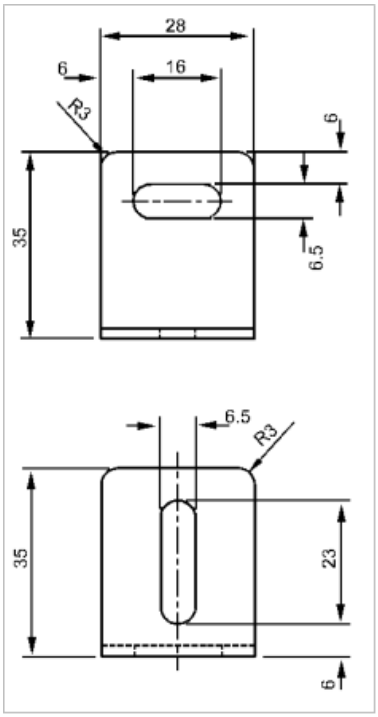
1000 Series: Dimensions

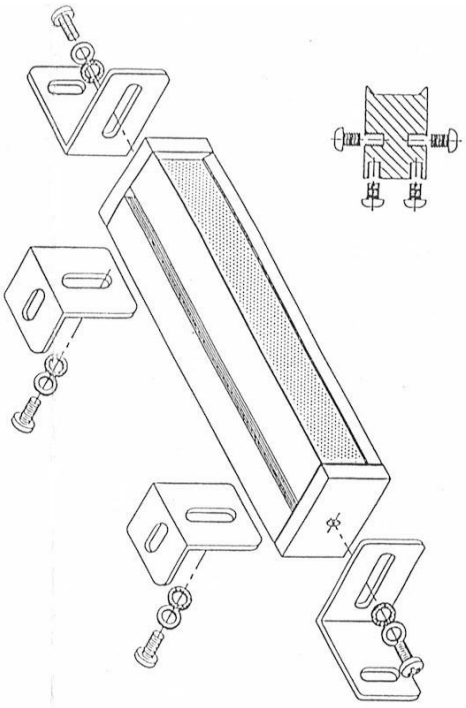
1000 Series





Optional Angle Adjustment Brackets





1000 Series: Dimensions

30mm Detection Capability — 5 Meter Max Range

Model Number	Item Number	Detection zone (K) mm	Overall length (M) mm	Response Time
1000-30-06	012-098			
1000-30-12	012-100	330	340	15.4 ms
1000-30-18	012-102	480	490	17.8 ms
1000-30-24	012-104	630	640	21.0 ms
1000-30-30	012-106	780	790	22.4 ms
1000-30-36	012-108	930	940	25.8 ms
1000-30-42	012-110	1080	1090	27.2 ms
1000-30-48	012-112	1230	1240	30.4 ms

Includes 5m transmitter cable & 5m receiver cable.

40mm Detection Capability — 10 Meter Max Range

Model Number	Item Number	Detection zone (K) mm	Overall Length (M) mm	Response Time
1000-40-06	012-099			
1000-40-12	012-101	340	340	15.4 ms
1000-40-18	012-103	490	490	17.8 ms
1000-40-24	012-105	640	640	21.0 ms
1000-40-30	012-107	790	790	22.4 ms
1000-40-36	012-109	940	940	25.8 ms
1000-40-42	012-111	1090	1090	27.2 ms
1000-40-48	012-113	1240	1240	30.4 ms

Includes 5m transmitter cable & 5m receiver cable.

Perimeter Guarding — 10 Meter Max Range

Model Number	Item Number	Number of Beams	Detection zone (K) mm	Overall length (M) mm
1000-600-24	012-128	2	630	640
1000-450-46	012-123	3	980	990
1000-400-48	012-124	4	1280	1290

Includes 5m transmitter cable & 5m receiver cable.

1000 Series: Light Curtain Specifications

Number of beams	2 -72
Object detection	30mm, 40mm plus 2, 3 & 4 beam perimeter systems
Detection zone	330mm to 1240mm
Range	0.5 - 10m (model dependent)
Light type	Infra-Red 880nm
Response time	40ms
Operating temperature	0°C to +50°C (32°F to 122°F)
Light curtain enclosure	•IP65 (HxWxD) Hx28x41mm
Status indicators	TX - Yellow TX 'ACTIVE' RX - Red (steady) OSSDs 'OFF' (trip condition) - Red (flashing) system lockout RX - Green OSSDs 'ON' RX - Yellow (flashing) TX to RX communications established
Power supply requirement	24V DC ± 10% reg
Current consumption	200mA transmitter + 200mA receiver (OSSD LOAD ADDITIONAL)
Light curtain connection	5m cables connected to both TX & RX units
Finish	Silver anodized aluminum extrusion
Classification	BS EN 61496-1 Type 2 BS IEC 61496-2 Type 2 BS EN 954-1 Category 3
Warranty	Two Years

OUTPUTS	
Safety Outputs OSSD1 & OSSD2	2 x electronic switches, each rated at 24V DC, 500mA - ON = 24V DC, OFF = 0V

- For more information about IP or wash down rating contact Smartscan.