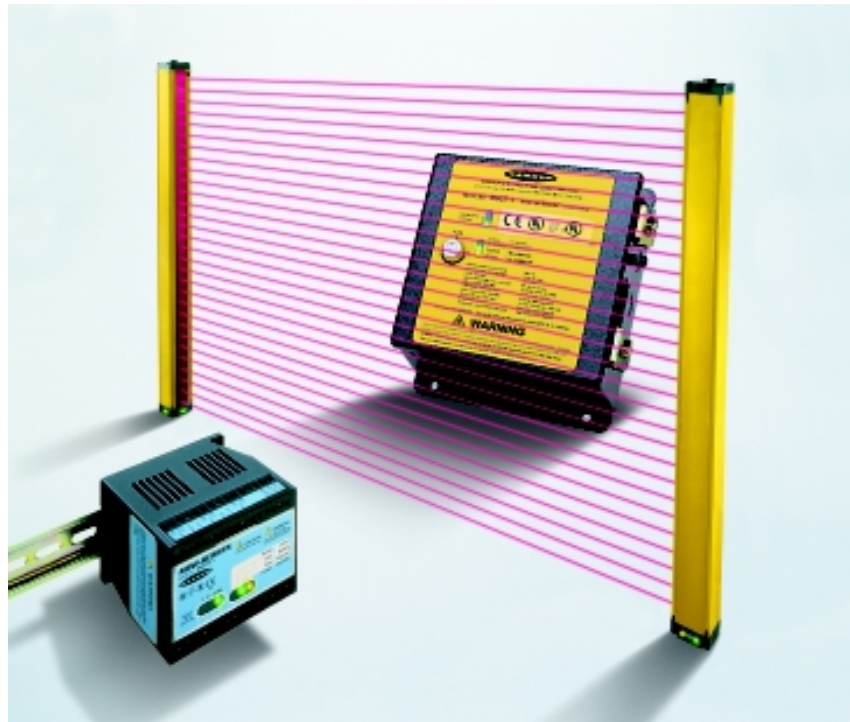




MINI-SCREEN™ Long range machine safety light curtain

- Safety light curtain type 4 according to IEC61496-1, -2 and EN61496 -1, -2
- 10 cm to 120 cm height
- 18 m emitter/receiver range
- 38,1 x 38,1 mm emitter/receiver arrays
- Highly immune to RFI, ambient light, weld flash and strobe light
- EMI according to EN 60947-5-2 Annex ZA
- Self-checking every 20 ms
- FMEA tested to ensure control reliability
- EC-type examination certificate



The Banner MINI-SCREEN is a microprocessor controlled opposed mode optoelectronic "curtain of light". It is designed for use as a point-of-operation guarding device, and is especially suited to smaller production machinery.

Banner's microprocessor-based circuit establishes a higher level of control reliability in machine guard design. The MINI-SCREEN System has a "diverse redundant" design, in which two microprocessors of different design, running from different instruction sets, constantly check all system components, including each other.

Banner MINI-SCREEN Systems are extensively FMEA (Failure Mode and Effects Analysis) tested to establish an extremely high degree of confidence that no system component will ever, even if it does fail, cause a *failure to danger*.

In typical operation, if any part of an operator's body enters the guarded area of the

machine, the output relays of the MINI-SCREEN System will open. The contacts of the output relays are connected to the guarded machine's primary control elements (MPCEs), which immediately stop the motion of the guarded machine. The output relays have forced-guided contacts for enhanced control reliability.

The Banner MINI-SCREEN is a modular machine guard system. Each system includes an MSXLE Series emitter, an MSXLR Series receiver, each in a compact aluminium housing (38,1 mm x 38,1 mm), and a control box. The control box can be either a DIN-rail-mountable plastic housing or a rugged wall-mountable welded steel box.

Emitters have a row of synchronized modulated infrared LEDs. Receivers have a corresponding row of synchronized phototransistors. Emitters and receivers are available in 12 lengths from 10 cm to 120 cm.

Control boxes and receivers have LED indicators for system operating status and alignment. Each receiver has three sets of status LEDs (front and both sides) for high visibility. Emitters have Power ON indicators. Control boxes can be easily configured for floating blanking and automatic power-up.

MINI-SCREEN system components may be purchased separately, or they may be purchased bundled together in kit form. A kit contains one control box, one emitter, one receiver and 2 shielded cables.

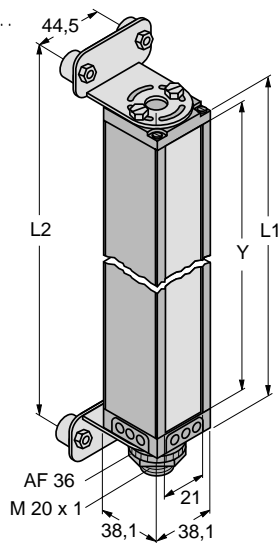
The emitter and the receiver are delivered with swivel mounting brackets for easy alignment and anti-vibration mounts. Optional accessories include corner mirrors, stands and lens shields of different lengths.

MINI-SCREEN™

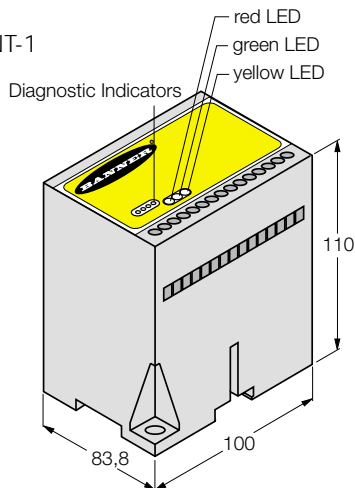
Long range machine safety light curtain

Dimensions [mm]

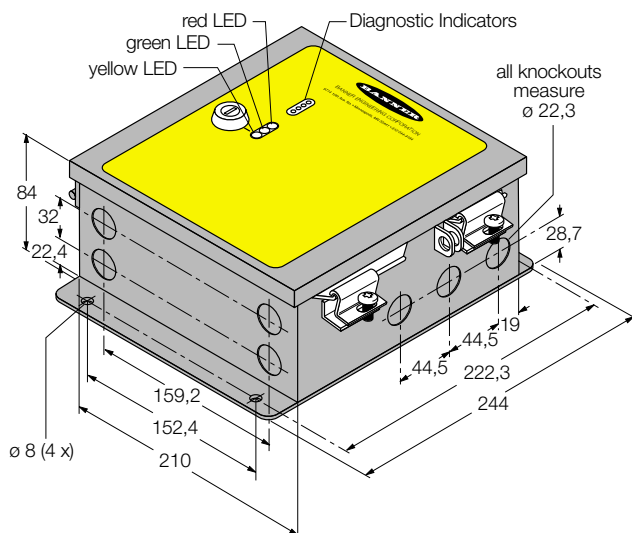
MSXLE.../MSXLR...



Controller MSDINT-1



Controller MSC...-1



Wave length

IR 880 nm

Safety class

4

Supply U_B (control unit)

MSCB-1 230 VAC $\pm 15\%$ (50/60 Hz), 55 VA
 MSCA-1 115 VAC $\pm 15\%$ (50/60 Hz), 55 VA
 MSCT-1/MSDINT-1 24 VDC $\pm 15\%$
 Ripple V_{pp} $\leq 10\%$
 Continuous load current $\leq 1,5$ A

Resolution

Object Detection Capability 25 mm/51 mm (floating blanking)

Range

Emitter/receiver separation 0,15...18 m

Response time

Emitter/receiver $\leq 0,4$ m < 48 ms
 Emitter/receiver $\leq 0,8$ m < 60 ms
 Emitter/receiver $\leq 1,2$ m < 72 ms
 Self-checking interval 20 ms

Output

FSD1, FSD2, SSD

Type force guided contact relays
 Rating 250 VAC, 4 A (resistive load)

Auxiliary monitor contact

Type Reed relay
 Rating 125 VAC, 500 mA (10 VA max.)

Material

Emitter/receiver
 Housing aluminium, yellow painted finish
 Lens acrylic
 Protection class IP65
 (IEC 60529/EN 60529)
 Temperature range 0...50 °C

Controller

Type MSCA-1/MSCB-1/MSCT-1
 Housing welded steel, black polyester finish
 Protection class IP64
 (IEC 60529/EN 60529)

Type MSDINT-1

Housing black polycarbonate
 Protection class IP20
 Removable wiring bloc

Accessories

included with emitter and receiver:
 brackets (2 x)
 vibration mount (4 x)



Kit Part numbers

	<i>Defined area Y [mm]</i>	<i>Type with two 4,5 m cables</i>	<i>Ident number</i>	<i>Type with two 7,5 m cables</i>	<i>Ident number</i>	<i>Type with 4,5 and 7,5 m cables</i>	<i>Ident number</i>
MINI-SCREEN kits Ruggedised control box MSCB-1¹⁾ 230 VAC Yellow emitter and receiver	114	MSXLKB424C1Y	30 498 51	MSXLKB424C2Y	30 498 63	MSXLKB424C3Y	30 498 75
	215	MSXLKB824C1Y	30 498 52	MSXLKB824C2Y	30 498 64	MSXLKB824C3Y	30 498 76
	305	MSXLKB1224C1Y	30 498 53	MSXLKB1224C2Y	30 498 65	MSXLKB1224C3Y	30 498 77
	406	MSXLKB1624C1Y	30 498 54	MSXLKB1624C2Y	30 498 66	MSXLKB1624C3Y	30 498 78
	508	MSXLKB2024C1Y	30 498 55	MSXLKB2024C2Y	30 498 67	MSXLKB2024C3Y	30 498 79
	610	MSXLKB2424C1Y	30 498 56	MSXLKB2424C2Y	30 498 68	MSXLKB2424C3Y	30 498 80
	711	MSXLKB2824C1Y	30 498 57	MSXLKB2824C2Y	30 498 69	MSXLKB2824C3Y	30 498 81
	813	MSXLKB3224C1Y	30 498 58	MSXLKB3224C2Y	30 498 70	MSXLKB3224C3Y	30 498 82
	914	MSXLKB3624C1Y	30 498 59	MSXLKB3624C2Y	30 498 71	MSXLKB3624C3Y	30 498 83
	1016	MSXLKB4024C1Y	30 498 60	MSXLKB4024C2Y	30 498 72	MSXLKB4024C3Y	30 498 84
	1118	MSXLKB4424C1Y	30 498 61	MSXLKB4424C2Y	30 498 73	MSXLKB4424C3Y	30 498 85
	1219	MSXLKB4824C1Y	30 498 62	MSXLKB4824C2Y	30 498 74	MSXLKB4824C3Y	30 498 86
MINI-SCREEN kits Ruggedised control box MSC-T 24 VDC Yellow emitter and receiver	114	MSXLKT424C1Y	30 498 87	MSXLKT424C2Y	30 498 99	MSXLKT424C3Y	30 499 11
	215	MSXLKT824C1Y	30 498 88	MSXLKT824C2Y	30 499 00	MSXLKT824C3Y	30 499 12
	305	MSXLKT1224C1Y	30 498 89	MSXLKT1224C2Y	30 499 01	MSXLKT1224C3Y	30 499 13
	406	MSXLKT1624C1Y	30 498 90	MSXLKT1624C2Y	30 499 02	MSXLKT1624C3Y	30 499 14
	508	MSXLKT2024C1Y	30 498 91	MSXLKT2024C2Y	30 499 03	MSXLKT2024C3Y	30 499 15
	610	MSXLKT2424C1Y	30 498 92	MSXLKT2424C2Y	30 499 04	MSXLKT2424C3Y	30 499 16
	711	MSXLKT2824C1Y	30 498 93	MSXLKT2824C2Y	30 499 05	MSXLKT2824C3Y	30 499 17
	813	MSXLKT3224C1Y	30 498 94	MSXLKT3224C2Y	30 499 06	MSXLKT3224C3Y	30 499 18
	914	MSXLKT3624C1Y	30 498 95	MSXLKT3624C2Y	30 499 07	MSXLKT3624C3Y	30 499 19
	1016	MSXLKT4024C1Y	30 498 96	MSXLKT4024C2Y	30 499 08	MSXLKT4024C3Y	30 499 20
	1118	MSXLKT4424C1Y	30 498 97	MSXLKT4424C2Y	30 499 09	MSXLKT4424C3Y	30 499 21
	1219	MSXLKT4824C1Y	30 498 98	MSXLKT4824C2Y	30 499 10	MSXLKT4824C3Y	30 499 22
MINI-SCREEN kits DIN control box MSDINT-1 24 VDC Yellow emitter and receiver	114	MSXLDKT424C1Y	30 481 85	MSXLDKT424C2Y	30 481 97	MSXLDKT424C3Y	30 482 09
	215	MSXLDKT824C1Y	30 481 86	MSXLDKT824C2Y	30 481 98	MSXLDKT824C3Y	30 482 10
	305	MSXLDKT1224C1Y	30 481 87	MSXLDKT1224C2Y	30 481 99	MSXLDKT1224C3Y	30 482 11
	406	MSXLDKT1624C1Y	30 481 88	MSXLDKT1624C2Y	30 482 00	MSXLDKT1624C3Y	30 482 12
	508	MSXLDKT2024C1Y	30 481 89	MSXLDKT2024C2Y	30 482 01	MSXLDKT2024C3Y	30 482 13
	610	MSXLDKT2424C1Y	30 481 90	MSXLDKT2424C2Y	30 482 02	MSXLDKT2424C3Y	30 482 14
	711	MSXLDKT2824C1Y	30 481 91	MSXLDKT2824C2Y	30 482 03	MSXLDKT2824C3Y	30 482 15
	813	MSXLDKT3224C1Y	30 481 92	MSXLDKT3224C2Y	30 482 04	MSXLDKT3224C3Y	30 482 16
	914	MSXLDKT3624C1Y	30 481 93	MSXLDKT3624C2Y	30 482 05	MSXLDKT3624C3Y	30 482 17
	1016	MSXLDKT4024C1Y	30 481 94	MSXLDKT4024C2Y	30 482 06	MSXLDKT4024C3Y	30 482 18
	1118	MSXLDKT4424C1Y	30 481 95	MSXLDKT4424C2Y	30 482 07	MSXLDKT4424C3Y	30 482 19
	1219	MSXLDKT4824C1Y	30 481 96	MSXLDKT4824C2Y	30 482 08	MSXLDKT4824C3Y	30 482 20

**MSXLE.../MSXLR...
Dimensions [mm]
to Fig. left**

Y	114	215	305	406	508	610	711	813	914	1016	1118	1219
L1	153	254	356	457	558	659	761	862	963	1064	1166	1267
L2	187	288	390	491	592	693	795	896	997	1098	1200	1301

MINI-SCREEN™

Long range machine safety light curtain

Separate Component Part Numbers

	Defined area Y [mm]	Type	Ident number	Defined area Y [mm]	Type	Ident number
MINI-SCREEN emitters and receivers	114	MSXLE424Y emitter	30 481 25	114	MSXLR424Y receiver	30 481 26
	215	MSXLE824Y emitter	30 481 27	215	MSXLR824Y receiver	30 481 28
	305	MSXLE1224Y emitter	30 481 29	305	MSXLR1224Y receiver	30 481 30
	406	MSXLE1624Y emitter	30 481 31	406	MSXLR1624Y receiver	30 481 32
	508	MSXLE2024Y emitter	30 481 33	508	MSXLR2024Y receiver	30 481 34
	610	MSXLE2424Y emitter	30 481 35	610	MSXLR2424Y receiver	30 481 36
	711	MSXLE2824Y emitter	30 481 37	711	MSXLR2824Y receiver	30 481 38
	813	MSXLE3224Y emitter	30 481 39	813	MSXLR3224Y receiver	30 481 40
	914	MSXLE3624Y emitter	30 481 41	914	MSXLR3624Y receiver	30 481 42
	1016	MSXLE4024Y emitter	30 481 43	1016	MSXLR4024Y receiver	30 481 44
	1118	MSXLE4424Y emitter	30 481 45	1118	MSXLR4424Y receiver	30 481 46
	1219	MSXLE4824Y emitter	30 481 47	1219	MSXLR4824Y receiver	30 481 48
Controller	Supply voltage		Housing		MSCB-1* MSCA-1* MSCT-1* MSDINT-1*	30 379 32 30 379 31 30 435 36 30 444 69
	230 VAC		heavy-duty, welded steel			
	115 VAC		heavy-duty, welded steel			
	24 VDC		heavy-duty, welded steel			
24 VDC		DIN-rail-mountable box				
Corner mirrors and lens shields	Height [mm]			Height [mm]		
	165	MSM4A mirror	30 431 62	102	MSS4 lens shield	30 443 08
	267	MSM8A mirror	30 431 63	203	MSS8 lens shield	30 443 09
	356	MSM12A mirror	30 431 64	305	MSS12 lens shield	30 443 10
	457	MSM16A mirror	30 431 65	406	MSS16 lens shield	30 443 11
	559	MSM20A mirror	30 431 66	508	MSS20 lens shield	30 443 12
	660	MSM24A mirror	30 431 67	610	MSS24 lens shield	30 443 13
	762	MSM28A mirror	30 431 68	711	MSS28 lens shield	30 443 14
	864	MSM32A mirror	30 431 69	813	MSS32 lens shield	30 443 15
	965	MSM36A mirror	30 431 70	914	MSS36 lens shield	30 443 16
	1067	MSM40A mirror	30 431 71	1016	MSS40 lens shield	30 443 17
	1168	MSM44A mirror	30 431 72	1118	MSS44 lens shield	30 443 18
	1270	MSM48A mirror	30 431 73	1219	MSS48 lens shield	30 443 19
Mounting stands	Height [mm]					
	600	MSA-S24-1 mount. stand	30 431 74			
	1050	MSA-S42-1 mount. stand	30 431 75			
	1500	MSA-S66-1 mount. stand	30 431 76			
Cables	Length [m]					
	4,5	QDC-515C cable	30 374 42			
	7,5	QDC-525C cable	30 374 43			
15,2	QDC-550C cable	30 374 98				
Test pieces	Ø [mm]					
	25,4	STP-7	30 439 57			
	51	STP-8	30 439 58			

* These controller boxes have a trip function, but are also available with latch function. Please contact your Banner representative for additional information.