

MC4700, MCF4700 and MCJ4700

D
safety light curtains



MCF4700 Series

- Segmented lengths from 100 to 1800 mm (3.9 to 70.9 in.). Segments are connected by interconnect cables.

MCJ4700 Series

- Segmented lengths from 75 mm (3.0 in.) to 1800 mm (71.0 in.). **Electro/mechanical joints** link the segments at a 90° angle.

Options

- DeviceNet™ Interface
- Low ESD models. Consult factory.
- Muting through RM-3 module

MicroSafe®

MC4700, MCF4700 and MCJ4700

- Ultra-compact 26 x 28 mm (1.0 x 1.1 in.) transmitter and receiver;
- Excellent resolutions of 12, 14, 20 and 30 mm
- Protected heights from 100 to 1800 mm (3.9 to 70.9 in.)
- Two-digit diagnostics display visible on controller
- Choice of operating modes
 - Automatic Start
 - Restart Interlock
 - Start/Restart Interlock
- Available enclosures:
 - 100 mm DIN enclosure with removable terminal blocks
 - IP65-rated lockable metal enclosure
- Available outputs:
 - 2 PNP safety outputs
 - 1 N.O. and 1 N.O./N.C. safety relay output
 - 2 auxiliary outputs (1 NPN, 1 PNP), follow or alarm mode
- Individual Beam Indicators
- Exact channel select and floating blanking
- MPCE monitoring
- In-line connector cables
- Adjustable mounting brackets

■ Description

The MicroSafe 4700 series is unique due to superior response time – as fast as 6.69 msec – and excellent resolution of 12 mm. This combination of speed and resolution allow this ultra-compact light curtain to be mounted closer to the point of hazardous operation.

The MicroSafe MC4700 series consists of an identical length transmitter and receiver, combined with an LCM series controller and appropriate cables. The ultra-compact transmitter and receiver dimensions allow the MicroSafe to be mounted on small automatic assembly machines and in other applications where space is at a premium. The in-line connector cables allow the mounting of the transmitter and receiver in crowded locations where a standard connector would not fit. The controller end of the cable is

not terminated, which allows the length to be easily shortened in the field.

The MCF4700 consists of at least two transmitter and receiver segments, combined with an LCM series controller and appropriate interconnecting cables.

The MicroSafe MCJ4700 also consists of at least two transmitter and receiver segments, mechanically linked at a 90° angle. Interconnect cables are not required.

For easy alignment, the MicroSafe series features Omron STI's patented Individual Beam Indicator lights.

DeviceNet Option

The LCM series controller is available with an optional DeviceNet™ interface. DeviceNet™ allows the LCM series controller to communicate non-safety-related data across this popular fieldbus. As the de facto standard for factory fieldbus communications, DeviceNet™ is widely employed in the automotive, semiconductor and other industries.

Monitoring of a DeviceNet™ equipped light curtain provides the process control system with the following *non-safety* information: manufacturer, product name, operating mode, detection zone status, safety output status, MPCE monitoring enabled/disabled, floating blanking active/inactive, exact channel select active/inactive, transmitter, receiver, controller, and relay faults, error codes and descriptions.

DeviceNet™ and the LCM series controller provide a powerful automation solution.

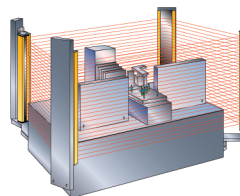
■ Applicable Controllers

The LCM controller includes virtually every desirable safety light curtain feature. There are two options available: DeviceNet™ interface, and a multi-channel select (not CE marked) version capable of storing up to eight selected patterns.

■ Applications

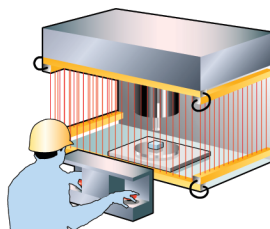
MC4700 Application

Due to its small dimensions, the MicroSafe can be elegantly integrated into table-top automated production equipment. Its in-line connector cables allow it to be mounted in tight, confined spaces. Since cable length can be shortened in the field, it is easy for OEM equipment builders to achieve a custom, built-in look.



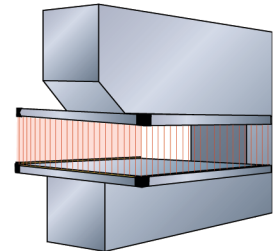
MCF4700 Application

Here, a three-segment MicroSafe Flexible series system forms a “U-shaped” guard zone to protect all unguarded sides of a small machine. Without the MicroSafe Flexible, mirrors or three conventional safety light curtains would have to be used.



MCJ4700 Application

In this application the light curtain is not visible. With the creation of a jointed-segmented MCJ4700, an OEM has the ability to truly build the light curtain into their product. The OEM or integrator is able to apply a CE marked safety solution that meets world-wide standards. With a small size housing of 26 mm x 28 mm (1.0 x 1.1 in.), the ability to mount on a single plane, and segment increments as small as 75 mm (2.95 in.), the MCJ4700 provides the cleanest, most elegant safety solution.



■ Specifications for Transmitter and Receiver

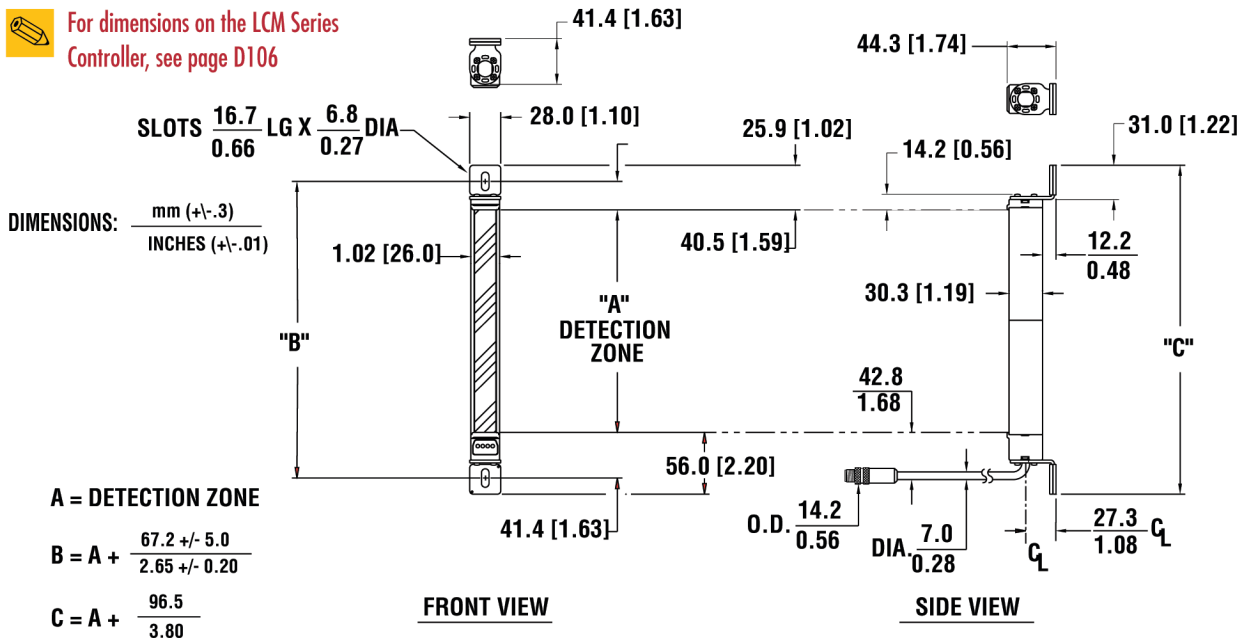
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Performance	
Protected Height:	12 mm — 100 to 1200 mm (3.9 to 62.9 in.) in 100 mm increments 14 mm — 150 to 1800 mm (5.9 to 71.2 in.) in 75 mm increments 20 mm — 150 to 1800 mm (5.9 to 71.2 in.) in 75 mm increments 30 mm — 150 to 1800 mm (5.9 to 71.2 in.) in 150 mm increments
Operating Range:	MC47SR and MC47SRS; MCF47 and MCF47S; MCJ47 and MCJ47S 12 mm — 0.2 to 3 m (0.7 to 10 ft.) 14 mm — 0.3 to 5 m (1 to 17 ft.) for MC4700 and MCJ4700; 14 mm — 0.3 to 3 m (1 to 10 ft.) for MCF4700 20 mm — 0.3 to 7 m (1 to 23 ft.) 30 mm — 0.3 to 7 m (1 to 23 ft.) MC47LR and MC47LRS 12 mm — 0.2 to 5 m (0.7 to 17 ft.) 20 mm — 0.3 to 12 m (1 to 39 ft.) 30 mm — 0.3 to 12 m (1 to 39 ft.)
Resolution:	12 mm — 0.47 in.* 14 mm — 0.55 in.* 20 mm — 0.79 in.* 30 mm — 1.2 in.* * Use of exact channel select and/or floating blanking may increase this value.
Effective Aperture Angle:	±2.5° transmitter and receiver
Light Source:	850 nm LED
Light Source Life:	100,000 hours
Indicators:	Channel Select or Floating blanking – amber; Interlock or Fault – yellow; Machine Stop – red, Individual Beam Indicators – red; Machine Run – green.
Mechanical	
Enclosure:	IP65 transmitter and receiver enclosure. Polyurethane powder-painted aluminum yellow.
Cable Length:	Transmitter – maximum 30 m (100 ft.); standard 3 m (10 ft.) Receiver – maximum 30 m (100 ft.); standard 3 m (10 ft.) *For MCF4700 Series: Interconnect cables are available from 0.3 m (12 in.) to 10 m (33 ft.). Maximum total length of a system is 15 m (49 ft.). Consult factory for longer lengths.
Cable Connections:	Circular style, 5-conductor for transmitter, 8-conductor for receiver
Environmental	
Protection Rating:	Transmitter and receiver – IP65; Available controllers: 35 mm DIN mount - IP20, Metal Chassis - IP65 (for more information see the LCM Series section)
Operating Temperature:	0 to 55°C (32 to 133°F)
Storage Temperature:	-25 to 75°C (-13 to 167°F)
Relative Humidity:	95% maximum, non-condensing
Vibration:	5–60 Hz maximum on all 3 axes
Shock:	10 g for 0.016 seconds; 1,000 shocks for each axis on two axis
Conformity Tested To/Approvals	
Approvals:	IEC61496, CE Mark
Conforming to Standards:	ANSI/RIA R15.06-1999, ANSI B11.19-2003, OSHA 1910.27(c), OSHA 1910.212
Other Approvals:	All MC4700 systems have been EC type examined to the requirements of IEC 61496-1, -2 for a Type 4 ESPE. TUV Registration Number: BB201132801, BB211167401, BB221006201. CSA Certificate 1289466. UL listed.

Specifications are subject to change without notice.

■ Dimensions for MC4700 Series—mm/in.

 For dimensions on the LCM Series Controller, see page D106



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MicroSafe MC4700 Dimensions

MC4700-12			MC4700-14 and MC4700-20			MC4700-30		
A mm/in.	B mm/in.	C mm/in.	A mm/in.	B mm/in.	C mm/in.	A mm/in.	B mm/in.	C mm/in.
102/4.0	169/6.7	198/7.8	159/6.3	226/8.9	255/10.0	159/6.3	226/8.9	255/10.0
202/8.0	269/10.6	298/11.7	235/9.3	302/11.9	331/13.0	309/12.2	376/14.8	405/15.9
302/11.9	369/14.5	398/15.7	309/12.2	376/14.8	405/15.9	459/18.0	526/20.7	555/21.9
402/15.8	469/18.5	498/19.6	385/15.2	452/17.8	481/18.9	609/24.0	676/26.6	705/27.8
502/19.8	569/22.4	598/23.5	459/18.1	526/20.7	555/21.9	759/29.9	826/32.5	855/33.7
602/23.7	669/26.3	698/27.5	535/21.1	602/23.7	631/24.8	909/35.8	976/38.4	1005/39.6
702/27.6	769/30.3	798/31.4	609/24.0	676/26.6	705/27.8	1059/41.7	1126/44.3	1155/45.5
802/31.6	869/34.2	898/35.4	685/27.0	752/29.6	781/30.7	1209/47.6	1276/50.2	1305/51.4
902/35.5	969/38.1	998/39.3	759/29.9	826/32.5	855/33.6	1359/53.5	1426/56.1	1455/57.3
1002/39.5	1069/42.1	1098/43.2	835/32.9	902/35.5	931/36.7	1509/59.4	1576/62.0	1605/63.2
1102/43.4	1169/46.0	1198/47.2	909/35.8	976/38.4	1005/39.6	1659/65.3	1726/68.0	1755/69.1
1202/47.3	1269/50.0	1298/51.1	985/38.9	1052/41.4	1081/42.6	1809/71.2	1876/73.9	1905/75.0
			1059/41.7	1126/44.3	1155/45.5			
			1135/44.7	1202/47.3	1231/48.5			
			1209/47.6	1276/50.2	1305/51.4			
			1285/50.6	1352/53.2	1381/54.4			
			1359/53.5	1426/56.1	1455/57.3			
			1435/56.5	1502/59.1	1531/60.3			
			1509/59.4	1576/62.0	1605/63.2			
			1585/62.4	1652/65.0	1681/66.2			
			1659/65.3	1726/68.0	1755/69.1			
			1735/68.3	1802/70.9	1831/72.1			
			1809/71.2	1876/73.9	1905/75.0			

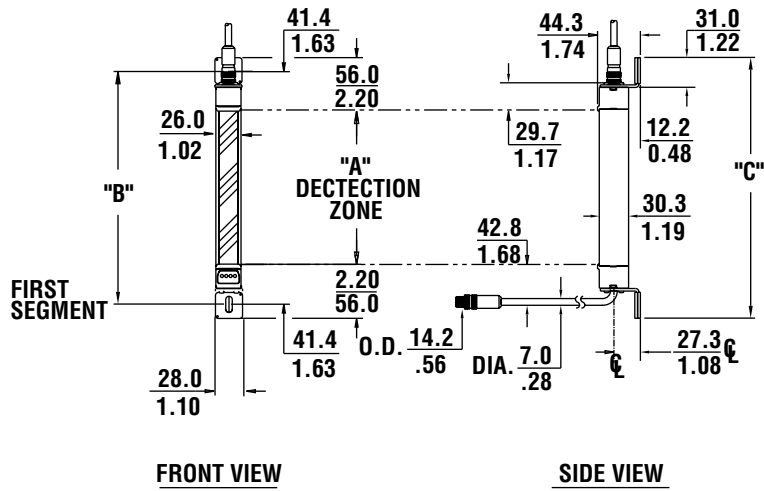
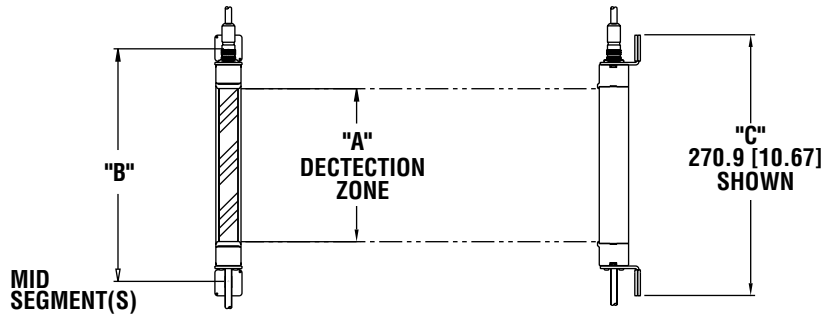
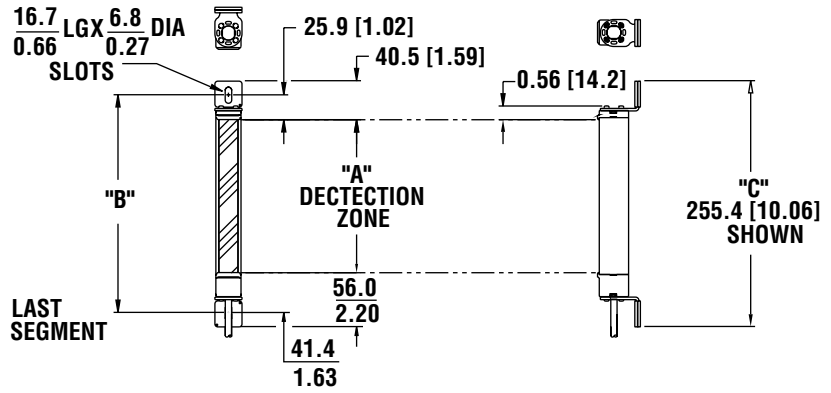
■ Dimensions for MCF4700 Series—mm/in.

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For dimensions on the LCM Series Controller, see page D106



A Go to the Engineering Guide
For in-depth information on
safety standards and use.

MicroSafe Flexible MCF4700 Dimensions

MCF4700-12			MCF4700-14, MCF4700-20 and MCF4700-30					
A mm/in.	B mm/in.	C mm/in.	A mm/in.	B mm/in.	C mm/in.	A mm/in.	B mm/in.	C mm/in.
FIRST, MIDDLE SEGMENT			FIRST, MIDDLE SEGMENT			LAST SEGMENT		
102/4.0	185/7.3	214/8.4	159/6.3	242/9.5	271/10.7	159/6.3	226/8.9	255/10.0
202/8.0	285/11.2	314/12.4	*235/9.3	318/12.5	347/13.7	*235/9.3	302/11.9	331/13.0
302/11.9	385/15.2	414/16.3	309/12.2	392/15.4	421/16.6	309/12.2	376/14.8	405/15.9
402/15.8	485/19.1	514/20.2	*385/15.2	468/18.4	497/19.6	*385/15.2	452/17.8	481/18.9
502/19.8	585/23.0	614/24.2	459/18.1	542/21.3	571/22.5	459/18.1	526/20.7	555/21.9
602/23.7	685/27.0	714/28.1	*535/21.1	618/24.3	647/25.5	*535/21.1	602/23.7	631/24.8
702/27.6	785/30.9	814/32.0	609/24.0	692/27.2	721/28.4	609/24.0	676/26.6	705/27.8
802/31.6	885/34.8	914/36.0	*685/27.0	768/30.2	797/31.4	*685/27.0	752/29.6	781/30.7
902/35.5	985/38.8	1014/39.9	759/29.9	842/33.1	871/34.3	759/29.9	826/32.5	855/33.7
1002/39.5	1085/42.7	1114/43.9	*835/32.9	918/36.1	947/37.3	*835/32.9	902/35.5	931/36.7
1102/43.4	1185/46.7	1214/47.8	909/35.8	992/39.1	1021/40.2	909/35.8	976/38.4	1005/39.6
LAST SEGMENT			*985/38.9	1068/42.0	1097/43.2	*985/38.9	1052/41.4	1081/42.6
102/4.0	169/6.7	198/7.8	1059/41.7	1142/45.0	1171/46.1	1059/41.7	1126/44.3	1155/45.5
202/8.0	269/10.6	298/11.7	*1135/44.7	1218/48.0	1247/49.1	*1135/44.7	1202/47.3	1231/48.5
302/11.9	369/14.5	398/15.7	1209/47.6	1292/50.9	1321/52.0	1209/47.6	1276/50.2	1305/51.4
402/15.8	469/18.5	498/19.6	*1285/50.6	1368/53.9	1397/55.0	*1285/50.6	1352/53.2	1381/54.4
502/19.8	569/22.4	598/23.5	1359/53.5	1442/56.8	1471/57.9	1359/53.5	1426/56.1	1455/57.3
602/23.7	669/26.3	698/27.5	*1435/56.5	1518/59.8	1547/60.9	*1435/56.5	1502/59.1	1531/60.3
702/27.6	769/30.3	798/31.4	1509/59.4	1592/62.7	1621/63.8	1509/59.4	1576/62.0	1605/63.2
802/31.6	869/34.2	898/35.4	*1585/62.4	1668/65.7	1697/66.8	*1585/62.4	1652/65.0	1681/66.2
902/35.5	969/38.1	998/39.3	1659/65.3	1742/68.6	1771/69.7	1659/65.3	1726/68.0	1755/69.1
1002/39.5	1069/42.1	1098/43.2	*1735/68.3	1818/71.6	1847/72.7	*1735/68.3	1802/70.9	1831/72.1
1102/43.4	1169/46.0	1198/47.2	1809/71.2	1892/74.5	1921/75.6	1809/71.2	1876/73.9	1905/75.0

* Not available in 30 mm resolution

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