

## ADMIRAL



## ADMIRAL

The Admiral Type 4 family of safety light curtains is the ideal solution for the protection of the majority of high-risk industrial applications.

### Its features include:

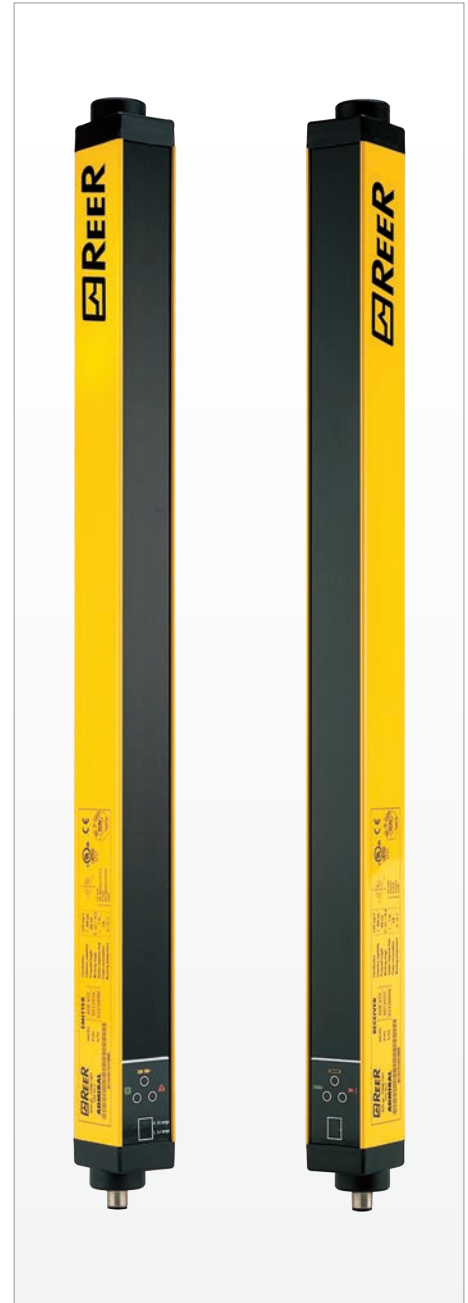
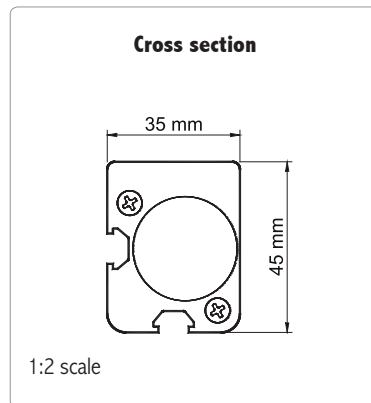
- Extremely easy connection and installation, thanks to the M12 connectors and the use of standard cables up to 100 m.
- Integration of the main safety functions, including self-monitoring of the safety circuits and, for the AX models, the external device monitoring (EDM) and the Start / Restart interlock functions.
- The utmost reliability in the field, thanks to the rugged construction and to the high level of immunity to external interference (optical, EMC, etc.).
- The breadth of the range, including Master / Slave models for cascade connection of two light curtains, models with floating blanking, and the widest variety of heights and resolutions.

Models with 2, 3 and 4 beams Long Range, Max. 60 or 80 meters available.

Special versions in WT/WTB watertight enclosure available on request.

► [See page 197](#)

Admiral light curtains may be connected to the dedicated safety interfaces series AD SR, or directly to contactors actuated and controlled by the light curtain, or to MOSAIC or to suitable commercial safety modules or safety PLCs.



### Safety level: **Type 4 – SIL 3 – SILCL 3 – PL e – Cat. 4**

- 2006/42/CE "Machinery Directive"
- 2004/108/CE "Electromagnetic Compatibility (EMC)"
- 2006/95/CE "Low Voltage Directive (LVD)"
- IEC/EN 61496-1 Ed. 2.1 and IEC/TS 61496-2 Ed. 2 "Safety of machinery - Electro-sensitive protective equipment- General requirements and tests"
- EN ISO 13849-1 "Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design"
- IEC/EN 62061 "Safety of machinery – Functional safety of safety-related electrical, electronic and programmable electronic control systems"
- IEC 61508 "Functional safety of electrical/electronic/programmable electronic safety-related systems"
- IEC/TS 62046 Ed. 2 "Safety of machinery – Application of protective equipment to detect the presence of persons"
- UL (C+US) mark for USA and Canada
- ANSI / UL 1998 "Safety Software in Programmable Components".



### THE ADMIRAL RANGE

ADMIRAL AD	ADMIRAL AX	ADMIRAL AXM - AXS	ADMIRAL AX LR Long Range	ADMIRAL AX LR DB	ADMIRAL AX BK
Automatic Start/Restart	Built-in manual or automatic restart, selectable	Master and Slave models for serial connection of two light curtains even of different height and resolution	Max. range 60 m	Special version of the Admiral Long Range features an innovative Dual Beam System  See <b>NOTE 1</b>	Built-in functions of floating blanking with 5 selectable configurations  See <b>NOTE 2</b>
The ideal light curtain for a simple interface with safety modules or PLC	The ideal light curtain for directly controlling and monitoring the circuits of the machine, without the need for external safety modules	Ideal solution for connecting two light curtains in series to perform a combined detection of the hand and of the presence of the person or of two different sides of the machine	Ideal light curtain for large size protection applications, also on several sides using deflection mirrors	Ideal light curtain in outdoor applications or in harsh environments for decreasing the sensitivity of the light curtain to small objects that could interrupt the light link, i.e. birds or leaves but also heavy rain or snow.	The ideal light curtain for protecting press brakes, automatic machines and robotised areas, where the material being processed or moving parts of the machine cross the field protected by the light curtain
Start/Restart interlock and EDM via external AD SR1 interface	Feedback input for control of external relays (EDM).				Start/Restart interlock and EDM via external AD SR1 interface
Electrical connections: M12 5-pole connectors for emitter and receiver	Electrical connections: M12 5-pole for emitter M12 8-pole for receiver <b>ATTENTION:</b> the electrical connections for the Master and Slave models are described in the section dedicated. (See page 76)				
Max. range: selectable 2 or 5 m for 14 mm resolution selectable 6 or 18 m for 20, 30, 40, 50, 90 mm resolutions and 2, 3, 4 beams			Max. range selectable 22 or 60 m 2, 3, 4 beams	Max. range selectable 25 or 80 m 2, 3 dual beams	Max. range: selectable 2 or 5 m for 14 mm resolution selectable 6 or 18 m for 20, 30, 40, 50, 90 mm resolutions
Types of detection: resolution 14 mm for finger detection resolution 20, 30, 40 mm for hand detection resolution 50, 90 mm for detection of the body in a hazardous area 2, 3, 4 beams for detection of the body in access control			Types of detection: 2, 3, 4 beams for detection of the body in access control	Types of detection: 2, 3 beams for detection of the body in access control	Types of detection: resolution 14 mm for finger detection resolution 20, 40 mm for hand detection resolution 90 mm for detection of the body in a hazardous area
2 self-testing solid state PNP safety outputs protected against short circuits and overloads					

**NOTE 1** Available with heated IP 67 WTH case for outdoor use (see page 197).

**NOTE 2:** With the blanking models with 14 and 20 mm resolution, it is also possible to have the Master/Slave function (see page 80).



Admiral Long Range with the innovative Dual Beam system



IP 67 watertight enclosure, with heating system

# ADMIRAL AD

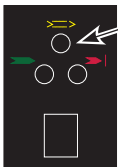
## WITH AUTOMATIC START/RESTART

### MAIN FEATURES

Automatic Start/Restart  
 Max. range: up to 5 m for 14 mm resolution models, up to 18 m for other models.  
 Two self-testing solid state PNP safety outputs.  
 All connections and configurations by means of M12 connectors.  
 Use of unshielded cables up to 100 m.  
 Suppression of optical interference by means of range selection.  
 Start/Restart interlock and EDM via external AD SR1 interface.

### TECHNICAL FEATURES

<b>Safety level</b>	Type 4 according to IEC/TS 61496-2 SIL 3 – SILCL 3 according to IEC 61508 - IEC 62061 PL e – Cat. 4 according to ISO 13849-1
<b>Protected heights (mm)</b>	160 ... 1810
<b>Resolutions (mm)</b>	14, 20, 30, 40, 50, 90
<b>Number of beams for body detection in access control</b>	2, 3, 4
<b>Max. range (m)</b>	selectable 2 or 5 for 14 mm resolution selectable 6 or 18 for 20, 30, 40, 50, 90 mm resolutions and 2, 3, 4 beams
<b>Response time (ms)</b>	6 ... 27
<b>Safety outputs</b>	2 PNP - 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
<b>Signalling</b>	seven-segment display and LEDs for light curtain's status and diagnostic
<b>Start/Restart</b>	automatic
<b>Power supply (VDC)</b>	24 ± 20%
<b>Electrical connections</b>	M12 5-pole for emitter and receiver
<b>Max. cable length (m)</b>	100
<b>Operating temperature (°C)</b>	0 ... 55
<b>Protection rating</b>	IP 65
<b>Fastening modes</b>	back slot, side slot or to the top and lower end with swivel brackets
<b>Cross section (mm)</b>	35 x 45



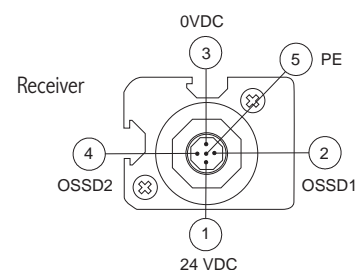
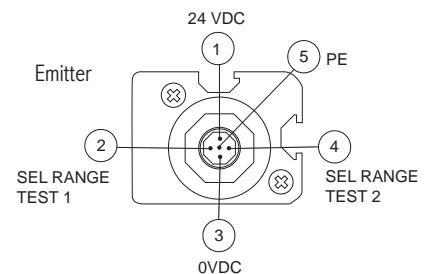
On the receivers of all models, a yellow LED turns ON when the received beam signal intensity is weak.

During the alignment operations, checking the presence of the yellow led weak signal is helpful. Upon completion of alignment and during normal operation, this LED must be off.

Safety level:

# TYPE 4

SIL 3 – SILCL 3  
 PL e – Cat. 4



#### Models with 14 mm resolution - Max. range: selectable 2 or 5 m



Resolution 14 mm	AD 151	AD 301	AD 451	AD 601	AD 751	AD 901	AD 1051	AD 1201	AD 1351	AD 1501	AD 1651	AD 1801
Ordering codes	1330000	1330001	1330002	1330003	1330004	1330005	1330006	1330007	1330008	1330009	1330010	1330011
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

#### Models with 20 - 30 - 40 - 50 - 90 mm resolution and 2 - 3 - 4 beams - Max. range: selectable 6 or 18 m



Resolution 20 mm	AD 152	AD 302	AD 452	AD 602	AD 752	AD 902	AD 1052	AD 1202	AD 1352	AD 1502	AD 1652	AD 1802
Ordering codes	1330100	1330101	1330102	1330103	1330104	1330105	1330106	1330107	1330108	1330109	1330110	1330111
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 30 mm	AD 153	AD 303	AD 453	AD 603	AD 753	AD 903	AD 1053	AD 1203	AD 1353	AD 1503	AD 1653	AD 1803
Ordering codes	1330200	1330201	1330202	1330203	1330204	1330205	1330206	1330207	1330208	1330209	1330210	1330211
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	8	16	24	32	40	48	56	64	72	80	88	96
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 40 mm	AD 304	AD 454	AD 604	AD 754	AD 904	AD 1054	AD 1204	AD 1354	AD 1504	AD 1654	AD 1804
Ordering codes	1330301	1330302	1330303	1330304	1330305	1330306	1330307	1330308	1330309	1330310	1330311
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	10	15	20	25	30	35	40	45	50	55	60
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 50 mm	AD 305	AD 455	AD 605	AD 755	AD 905	AD 1055	AD 1205	AD 1355	AD 1505	AD 1655	AD 1805
Ordering codes	1330401	1330402	1330403	1330404	1330405	1330406	1330407	1330408	1330409	1330410	1330411
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	8	12	16	20	24	28	32	36	40	44	48
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 90 mm	AD 309	AD 459	AD 609	AD 759	AD 909	AD 1059	AD 1209	AD 1359	AD 1509	AD 1659	AD 1809
Ordering codes	1330501	1330502	1330503	1330504	1330505	1330506	1330507	1330508	1330509	1330510	1330511
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	5	7	9	11	13	15	17	19	21	23	25
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



2, 3, 4 beams	AD 2B	AD 3B	AD 4B
Ordering codes	1330600	1330601	1330602
Num. of beams	2	3	4
Beam spacing (mm)	500	400	300
Protected height (mm)	510	810	910
Overall height (mm)	711	1011	1111

## ADMIRAL AX

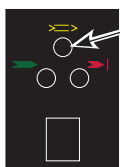
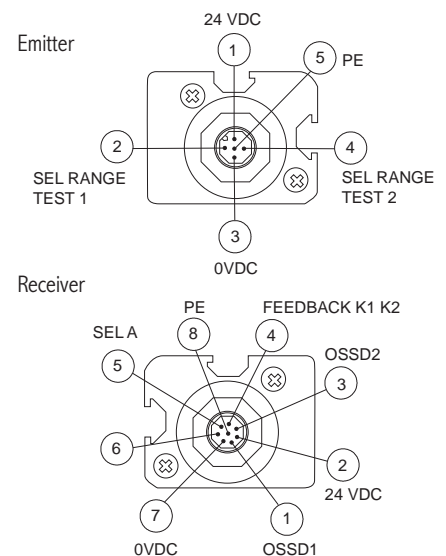
WITH BUILT-IN CONTROL FUNCTIONS

### MAIN FEATURES

Two self-testing solid state PNP safety outputs.  
Built-in start/restart interlock, selectable.  
Max. range: up to 5 m for 14 mm resolution; up to 18 m for other resolution models; 60 m and 80 m for Long Range models as illustrated in the following table.  
Feedback input for external device monitoring (EDM).  
All connections and configurations by means of M12 connectors.  
Use of unshielded cables up to 100 m.  
Suppression of optical interference by means of range selection.  
Master and Slave models for serial connection of 2 light curtains.  
Maximum length of the connections between Master and Slave: 50 metres, with unshielded cables.

### TECHNICAL FEATURES

<b>Safety level</b>	Type 4 according to IEC/TS 61496-2 SIL 3 – SILCL 3 according to IEC 61508 - IEC 62061 PL e – Cat. 4 according to ISO 13849-1
<b>Protected heights (mm)</b>	160 ... 1810
<b>Resolutions (mm)</b>	14, 20, 30, 40, 50, 90
<b>Number of beams for body detection in access control</b>	2, 3, 4
<b>Max. range (m)</b>	selectable 2 or 5 for 14 mm resolution selectable 6 or 18 for 20, 30, 40, 50, 90 mm resolutions and 2, 3, 4 beams selectable 22 or 60 for 2, 3, 4 beams Long Range selectable 25 or 80 for 2, 3 beams Long Range DB
<b>Response time (ms)</b>	6 ... 27
<b>Safety outputs</b>	2 PNP auto-controlled – 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
<b>Signalling</b>	seven-segment display and LEDs for light curtain's status and diagnostic
<b>Start/Restart</b>	selectable automatic or manual
<b>External Device Monitoring</b>	external device monitoring feedback input with enabling, selectable
<b>Power supply (VDC)</b>	24 ± 20%
<b>Electrical connections for AX and AX Master</b>	M12 5-pole for emitter M12 8-pole for receiver
<b>Electrical connections for Master and Slave</b>	M12 5-pole for emitter and receiver
<b>Max. cable length (m)</b>	100 (50 between master and slave)
<b>Operating temperature (°C)</b>	0 ... 55
<b>Protection rating</b>	IP 65
<b>Fastening modes</b>	back slot, side slot or to the top and lower end with swivel brackets
<b>Cross section (mm)</b>	35 x 45



On the receiver, also for these models, a yellow LED turns ON when the received beam signal intensity is weak.



Safety Level

**TYPE 4**

SIL 3 – SILCL 3  
PL e – Cat. 4



#### Models with 14 mm resolution - Max. range: selectable 2 or 5 m



Resolution 14 mm	AX 151	AX 301	AX 451	AX 601	AX 751	AX 901	AX 1051	AX 1201	AX 1351	AX 1501	AX 1651	AX 1801
Ordering codes	1334000	1334001	1334002	1334003	1334004	1334005	1334006	1334007	1334008	1334009	1334010	1334011
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

#### Models with 20 - 30 - 40 - 50 - 90 mm resolution and 2 - 3 - 4 beams - Max. range: selectable 6 or 18 m



Resolution 20 mm	AX 152	AX 302	AX 452	AX 602	AX 752	AX 902	AX 1052	AX 1202	AX 1352	AX 1502	AX 1652	AX 1802
Ordering codes	1334100	1334101	1334102	1334103	1334104	1334105	1334106	1334107	1334108	1334109	1334110	1334111
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 30 mm	AX 153	AX 303	AX 453	AX 603	AX 753	AX 903	AX 1053	AX 1203	AX 1353	AX 1503	AX 1653	AX 1803
Ordering codes	1334200	1334201	1334202	1334203	1334204	1334205	1334206	1334207	1334208	1334209	1334210	1334211
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	8	16	24	32	40	48	56	64	72	80	88	96
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 40 mm	AX 304	AX 454	AX 604	AX 754	AX 904	AX 1054	AX 1204	AX 1354	AX 1504	AX 1654	AX 1804
Ordering codes	1334301	1334302	1334303	1334304	1334305	1334306	1334307	1334308	1334309	1334310	1334311
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	10	15	20	25	30	35	40	45	50	55	60
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 50 mm	AX 305	AX 455	AX 605	AX 755	AX 905	AX 1055	AX 1205	AX 1355	AX 1505	AX 1655	AX 1805
Ordering codes	1334401	1334402	1334403	1334404	1334405	1334406	1334407	1334408	1334409	1334410	1334411
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	8	12	16	20	24	28	32	36	40	44	48
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 90 mm	AX 309	AX 459	AX 609	AX 759	AX 909	AX 1059	AX 1209	AX 1359	AX 1509	AX 1659	AX 1809
Ordering codes	1334501	1334502	1334503	1334504	1334505	1334506	1334507	1334508	1334509	1334510	1334511
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	5	7	9	11	13	15	17	19	21	23	25
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

#### LR Models - Max. range: selectable 22 or 60 m

#### LR DB Models - Max. range: selectable 25 or 80 m



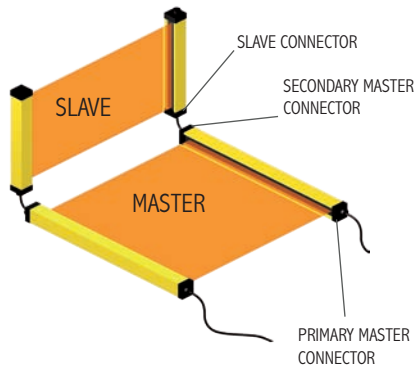
2, 3, 4 beams	AX 2B	AX 3B	AX 4B	AX 2B LR	AX 3B LR	AX 4B LR	AX 2B LR DB	AX 3B LR DB
Ordering codes	1334600	1334601	1334602	1334603	1334604	1334605	1334606	1334607
Num. of beams	2	3	4	2	3	4	2	3
Beam spacing (mm)	500	400	300	500	400	300	500	400
Protected height (mm)	510	810	910	510	810	910	510	810
Overall height (mm)	711	1011	1111	711	1011	1111	772	1072

## ADMIRAL AX

### MASTER/SLAVE MODELS WITH BUILT-IN CONTROL FUNCTIONS

Master/Slave models permit series connection of two light curtains achieving two main advantages:

- A single pair of safety outputs
- No interference between light curtains installed adjacent to one another.

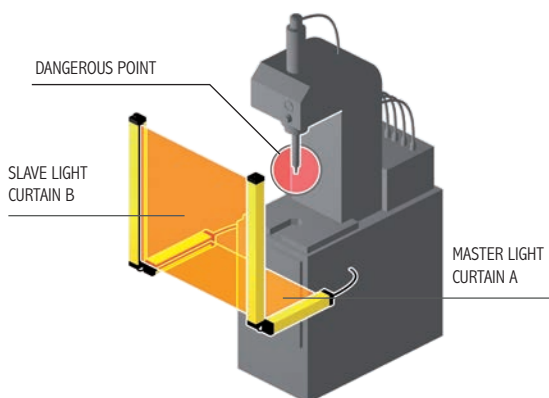


#### EXAMPLE OF SERIAL CONNECTION BETWEEN A MASTER LIGHT CURTAIN AND A SLAVE LIGHT CURTAIN

It is possible to combine any Master model with any Slave model.

All the electrical connections are made using M12 5-pole connectors, except for the Master receiver, which requires an M12 8-pole connector.

Pre-wired cables with twin connectors are available for the connection between Master and Slave.

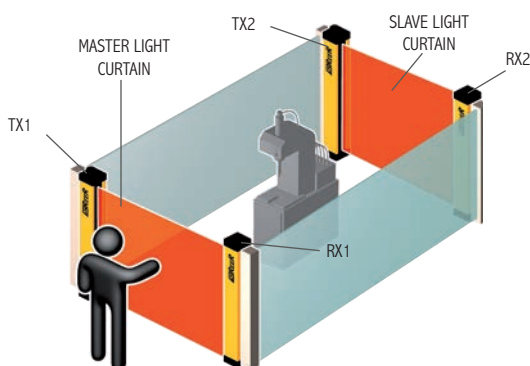


#### EXAMPLE OF SERIAL CONNECTION BETWEEN A MASTER LIGHT CURTAIN AND A SLAVE LIGHT CURTAIN

The Master light curtain is positioned horizontally for detecting the presence of the person while the vertical Slave light curtain detects fingers or hands.

However, it is possible to invert the combination and have the Master light curtain positioned vertically for protection of fingers or hands and the Slave light curtain horizontally for detecting the presence of the person.

The application illustrated is one of the most common: the horizontal light curtain is used for eliminating the possibility for the operator not to be detected between the vertical light curtain and the dangerous machine at the start or restart of the system.



#### EXAMPLE OF SERIAL CONNECTION BETWEEN A MASTER LIGHT CURTAIN AND A SLAVE LIGHT CURTAIN FOR PROTECTION OF 2 SIDES OF THE MACHINE

In the Admiral AX light curtains the connection cable between Master and Slave is a standard unshielded cable that can be up to 50 meters long.

This characteristic allows the application of 2 light curtains in series positioned on the front and on the back of the dangerous machine, with a single connection towards the power and control circuits of the machine.



#### MASTER/SLAVE Models with 14 mm resolution - Max. range: selectable 2 or 5



MASTER Resolution 14 mm	-	AX 301M	AX 451M	AX 601M	AX 751M	AX 901M	AX 1051M	AX 1201M	AX 1501M
Ordering codes	-	1334021	1334022	1334023	1334024	1334025	1334026	1334027	1334029
SLAVE Resolution 14 mm	AX 151S	AX 301S	AX 451S	AX 601S	AX 751S	AX 901S	AX 1051S	AX 1201S	AX 1501S
Ordering codes	1334040	1334041	1334042	1334043	1334044	1334045	1334046	1334047	1334049
Protected height (mm)	160	310	460	610	760	910	1060	1210	1510
Num. of beams	15	30	45	60	75	90	105	120	150
Overall height (mm) *	261	411	561	711	861	1011	1161	1311	1611

#### MASTER/SLAVE Models with 20 - 30 - 40 - 50 - 90 mm resolution and 2 - 3 - 4 beams - Max. range: selectable 6 or 18 m



MASTER Resolution 20 mm	-	AX 302M	AX 452M	AX 602M	AX 752M	AX 902M	AX 1052M	AX 1202M	AX 1502M
Ordering codes	-	1334121	1334122	1334123	1334124	1334125	1334126	1334127	1334129
SLAVE Resolution 20 mm	AX 152S	AX 302S	AX 452S	AX 602S	AX 752S	AX 902S	AX 1052S	AX 1202S	AX 1502S
Ordering codes	1334140	1334141	1334142	1334143	1334144	1334145	1334146	1334147	1334149
Protected height (mm)	160	310	460	610	760	910	1060	1210	1510
Num. of beams	15	30	45	60	75	90	105	120	150
Overall height (mm) *	261	411	561	711	861	1011	1161	1311	1611



MASTER Resolution 30 mm	-	AX 303M	AX 453M	AX 603M	AX 753M	AX 903M	AX 1053M	AX 1203M	AX 1503M
Ordering codes	-	1334221	1334222	1334223	1334224	1334225	1334226	1334227	1334229
SLAVE Resolution 30 mm	AX 153S	AX 303S	AX 453S	AX 603S	AX 753S	AX 903S	AX 1053S	AX 1203S	AX 1503S
Ordering codes	1334240	1334241	1334242	1334243	1334244	1334245	1334246	1334247	1334249
Protected height (mm)	160	310	460	610	760	910	1060	1210	1510
Num. of beams	8	16	24	32	40	48	56	64	80
Overall height (mm) *	261	411	561	711	861	1011	1161	1311	1611



MASTER Resolution 50 mm	AX 305M	AX 455M	AX 605M	AX 755M	AX 905M	AX 1055M	AX 1205M	AX 1505M
Ordering codes	1334421	1334422	1334423	1334424	1334425	1334426	1334427	1334429
SLAVE Resolution 50 mm	AX 305S	AX 455S	AX 605S	AX 755S	AX 905S	AX 1055S	AX 1205S	AX 1505S
Ordering codes	1334441	1334442	1334443	1334444	1334445	1334446	1334447	1334449
Protected height (mm)	310	460	610	760	910	1060	1210	1510
Num. of beams	8	12	16	20	24	28	32	40
Overall height (mm) *	411	561	711	861	1011	1161	1311	1611

MASTER 2, 3 beams	AX 2BM	AX 3BM
Ordering codes	1334620	1334621
SLAVE 2, 3 beams	AX 2BS	AX 3BS
Ordering codes	1334640	1334641
Num. of beams	2	3
Beam spacing (mm)	500	400
Protected height (mm)	510	810
Overall height (mm) *	711	1011

\* Overall height is referred to the slave models. In the Master models the total light curtain height is increased by 10 mm due to the presence of the secondary connector.

► "ACCESSORIES" on page 84

ADMIRAL AX BK  
WITH BLANKING FUNCTION

MAIN FEATURES

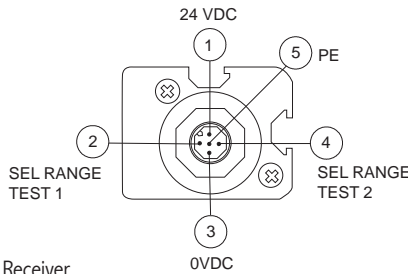
- Automatic Start/Restart
- Two self-testing solid state PNP safety outputs.
- Max. range: up to 5 m for 14 mm resolution; up to 18 m for other resolution models
- Built-in floating blanking function with 5 configuration modes.
- All connections and configurations by means of M12 connectors.
- Use of unshielded cables up to 100 m.
- Suppression of optical interference by means of range selection.
- Master and Slave models for serial connection of 2 light curtains.
- Maximum length of the connections between Master and Slave: 50 meters, with standard unshielded cable.
- Start/Restart interlock and EDM via external AD SR1 interface.

TECHNICAL FEATURES

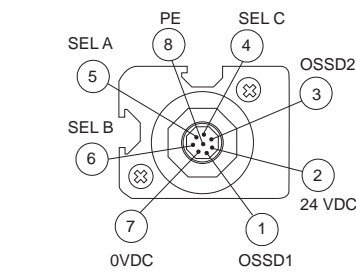
Safety level	Type 4 according to IEC/TS 61496-2 SIL 3 – SILCL 3 according to IEC 61508 - IEC 62061 PL e – Cat. 4 according to ISO 13849-1
Protected heights (mm)	160 ... 1810
Resolutions (mm)	14, 20, 40, 90
Max. range (m)	selectable 2 or 5 for 14 mm resolution selectable 6 or 18 for 20, 40, 90 mm resolution
Response time (ms)	6 ... 27
Safety outputs	2 PNP auto-controlled – 500 mA at 24 VDC with short-circuit, overload, polarity reversal protection
Signalling	seven-segment display and LEDs for light curtain's status and diagnostic
Start/Restart	automatic
Blanking	floating, selectable
Blanking configurations	5 modes: 1, 2 or 3 beams without compulsory object presence 1 or 2 beams with compulsory object presence
Power supply (VDC)	24 ± 20%
Electrical connections for AX and AX Master	M12 5-pole for emitter M12 8-pole for receiver
Electrical connections between Master and Slave	M12 5-pole for emitter and receiver
Max. cable length (m)	100 (50 between master and slave)
Operating temperature (°C)	0 ... 55
Protection rating	IP 65
Fastening modes	back slot, side slot or to the top and lower end lower end with swivel brackets
Cross section (mm)	35 x 45



Emitter



Receiver



Safety Level

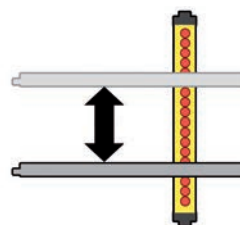
TYPE 4

SIL 3 – SILCL 3  
PL e – Cat. 4

### THE BLANKING FUNCTION

Information on the blanking function can be found on page 43 in the Safety Guide section.

The Floating Blanking function is available on the Admiral AX BK models. Floating Blanking allows the detected object to move freely inside the light curtain's protected field, under the condition that the intercepted beams are adjacent and that their number is not higher than the configured one.



### CONFIGURATION MODES OF THE BLANKING FUNCTION IN THE ADMIRAL AX BK MODELS:

Mode	Type of blanking configuration	N. of beams in blanking	Detection characteristics
A1	1 beam without compulsory object presence	1	1 beam can be obstructed with the light curtain remaining in an ON condition
A2	2 beams without compulsory object presence	2	1 or 2 adjacent beams can be obstructed with the light curtain remaining in an ON condition
A3	3 beams without compulsory object presence	3	1, 2 or 3 adjacent beams can be obstructed with the light curtain remaining in an ON condition
B1	2 beams with compulsory object presence	1/2	at least 1 beam and no more than 2 adjacent beams must be obstructed for the light curtain to remaining in an ON condition
B2	3 beams with compulsory object presence	1/2/3	at least 1 beam and no more than 3 adjacent beams must be obstructed for the light curtain to remaining in an ON condition



### WARNING!

The AX BK light curtains with blanking function do not have the feedback input (EDM); therefore, they cannot be combined with the AD SRO and AD SROA relay modules but they should be connected with the AD SR1 or AD SRM safety interfaces.

The use of the blanking function and the type of configuration selected depend on the characteristics of the application to be protected. You need to verify, based on the risk analysis of your application, whether the use of this function is permitted or not and what configuration it is possible to use. ReeR SpA does not assume responsibility for the improper use of the blanking function and for any consequent damage.

The use of the blanking function may need a recalculation of the safety distance due to the modified detection capability.

## ADMIRAL AX BK WITH BLANKING FUNCTION

**Models with 14 mm resolution - Max. range: selectable 2 or 5 m**



Resolution 14 mm	AX 151 BK	AX 301 BK	AX 451 BK	AX 601 BK	AX 751 BK	AX 901 BK	AX 1051 BK	AX 1201 BK	AX 1351 BK	AX 1501 BK	AX 1651 BK	AX 1801 BK
Ordering codes	1334060	1334061	1334062	1334063	1334064	1334065	1334066	1334067	1334068	1334069	1334070	1334061
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911

**MASTER/SLAVE Models with 20 - 30 - 90 mm resolution and 2 - 3 beams - Max. range: selectable 6 or 18 m**



Resolution 20 mm	AX 152 BK	AX 302 BK	AX 452 BK	AX 602 BK	AX 752 BK	AX 902 BK	AX 1052 BK	AX 1202 BK	AX 1352 BK	AX 1502 BK	AX 1652 BK	AX 1802 BK
Ordering codes	1334160	1334161	1334162	1334163	1334164	1334165	1334166	1334167	1334168	1334169	1334170	1334171
Protected height (mm)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	15	30	45	60	75	90	105	120	135	150	165	180
Overall height (mm)	261	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 40 mm	AX 304 BK	AX 454 BK	AX 604 BK	AX 754 BK	AX 904 BK	AX 1054 BK	AX 1204 BK	AX 1354 BK	AX 1504 BK	AX 1654 BK	AX 1804 BK
Ordering codes	1334361	1334362	1334363	1334364	1334365	1334366	1334367	1334368	1334369	1334370	1334371
Protected height (mm)	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	10	15	20	25	30	35	40	45	50	55	60
Overall height (mm)	411	561	711	861	1011	1161	1311	1461	1611	1761	1911



Resolution 90 mm	AX 609 BK	AX 759 BK	AX 909 BK	AX 1059 BK	AX 1209 BK	AX 1359 BK	AX 1509 BK	AX 1659 BK	AX 1809 BK
Ordering codes	1334563	1334564	1334565	1334566	1334567	1334568	1334569	1334570	1334571
Protected height (mm)	610	760	910	1060	1210	1360	1510	1660	1810
Num. of beams	9	11	13	15	17	19	21	23	25
Overall height (mm)	711	861	1011	1161	1311	1461	1611	1761	1911

**MASTER MODELS WITH BLANKING**



Resolution 14 mm	AX 301 BKM	AX 451 BKM	AX 601 BKM	AX 751 BKM	AX 901 BKM	AX 1051 BKM	AX 1201 BKM	AX 1501 BKM
Ordering codes	1334081	1334082	1334083	1334084	1334085	1334086	1334088	1334089
Protected height (mm)	310	460	610	760	910	1060	1210	1510
Num. of beams	30	45	60	75	90	105	120	150
Overall height (mm)	421	571	721	871	1021	1171	1321	1671



Resolution 20 mm	AX 302 BKM	AX 452 BKM	AX 602 BKM	AX 752 BKM	AX 902 BKM	AX 1052 BKM	AX 1202 BKM	AX 1502 BKM
Ordering codes	1334181	1334182	1334183	1334184	1334185	1334186	1334187	1334189
Protected height (mm)	310	460	610	760	910	1060	1210	1510
Num. of beams	30	45	60	75	90	105	120	150
Overall height (mm)	421	571	721	871	1021	1171	1321	1671

- The Master with Blanking models are combined with the Slave models of the Admiral series AX.
- The blanking function is only present on the Master models with resolution 14 and 20 mm.

► **"ACCESSORIES" on page 84**

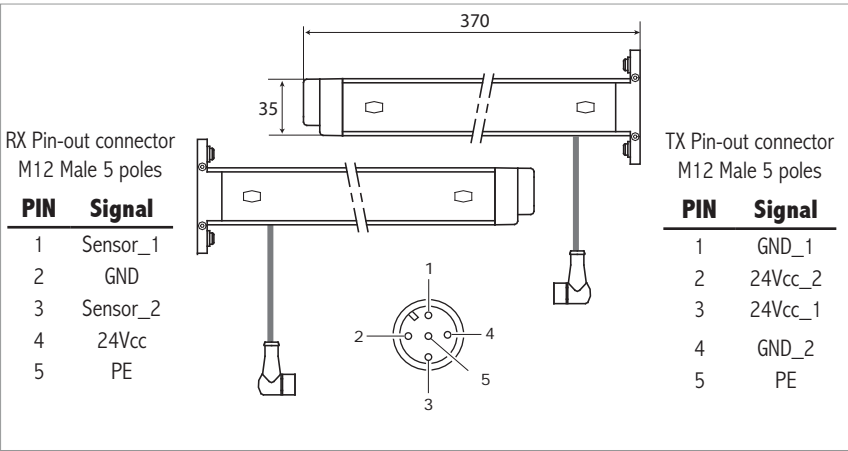
ADDITIONAL ARMS FOR L MUTING - ACCESSORY FOR ADMIRAL AND VISION

MAIN FEATURES

The 2 SLA additional arms with built-in muting crossed beams photoelectric sensors, combined with the ADMIRAL or VISION (page 145) light curtains series form a one way access control system with L logic (exit only). Can be mounted on ADMIRAL or VISION light curtains of any height and resolution.

The muting function is realized by using an external module: MOSAIC or AD SRM, on which must be connected light curtains and the sensors of the arms.

**Installation note:** on the light curtain receiver must be mounted the arm transmitter and vice versa.



TECHNICAL FEATURES

MODEL	SLA
Ordering codes	1330920
Built-in sensors	2 crossed beams
Max. range (m)	1 - 2,5

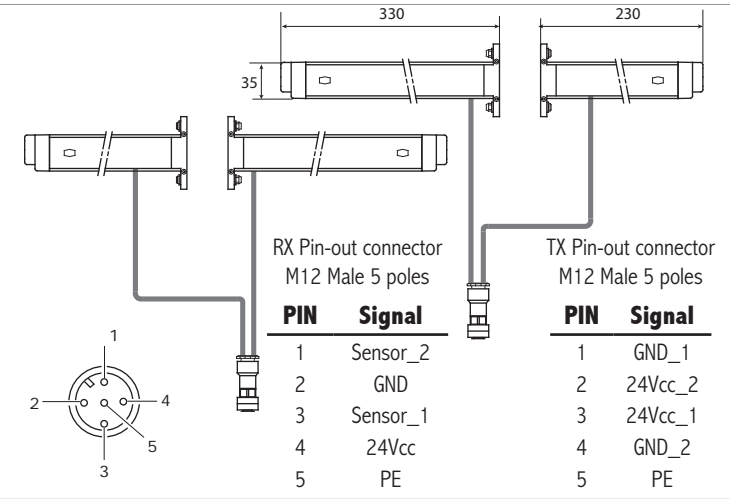
ADDITIONAL ARMS FOR T MUTING - ACCESSORY FOR ADMIRAL AND VISION

MAIN FEATURES

The 4 SLA additional arms with built-in muting crossed beams photoelectric sensors, combined with the ADMIRAL or VISION (page 145) light curtains series form a bi-directional access control system with T logic (entry and exit). Can be mounted on ADMIRAL or VISION light curtains of any height and resolution.

The muting function is realized by using an external module: MOSAIC or AD SRM, on which must be connected light curtains and the sensors of the arms.

**Installation note:** on the light curtain receiver must be mounted the arm transmitter and vice versa.



TECHNICAL FEATURES

MODELS	STA
Ordering codes	1330921
Built-in sensors	2 crossed beams
Max. range (m)	1 - 2,5

## ADMIRAL

### ORDERING INFORMATION

#### Each Admiral light curtain comprises:

Emitter and Receiver pair	CD-ROM containing the multi-language instruction manual complete with CE declaration of conformity
Brackets and inserts	Quick installation guide

### ACCESSORIES

#### For Admiral light curtains the following accessories, to be ordered separately, are available:

AD SR Safety relays	► See page 183
FMC floor mounting columns	► See page 220
SP deflection mirrors	► See page 223
LAD laser alignment device	► See page 224
SAV vibrations dampers	► See page 225
SFB swivel fixing brackets	► See page 226
Connectors	► See list hereunder:

#### CONNECTORS FOR ADMIRAL (AD emitter and receiver / AX - AX BK emitter)

Model	Code	Description
CD 5	1330950	M12 straight connector 5 poles pre-wired, cable 5 m
CD 10	1330956	M12 straight connector 5 poles pre-wired, cable 10 m
CD 15	1330952	M12 straight connector 5 poles pre-wired, cable 15 m
CD 20	1330957	M12 straight connector 5 poles pre-wired, cable 20 m
CD 25	1330949	M12 straight connector 5 poles pre-wired, cable 25 m
CD 50	1330965	M12 straight connector 5 poles pre-wired, cable 50 m
CD 95	1330951	M12 90° angle connector 5 poles pre-wired, cable 5 m
CD 910	1330958	M12 90° angle connector 5 poles pre-wired, cable 10 m
CD 915	1330953	M12 90° angle connector 5 poles pre-wired, cable 15 m
CDM 9	1330954	M12 straight connector 5 poles with screw terminal, PG9 cable gland
CDM 99	1330955	M12 90° angle connector, 5 poles with screw terminal, PG9 cable gland

#### CONNECTORS FOR ADMIRAL AX and AX BK receiver

Model	Code	Description
C8D 5	1330980	M12 straight connector 8 poles pre-wired, cable 5 m
C8D 10	1330981	M12 straight connector 8 poles pre-wired, cable 10 m
C8D 15	1330982	M12 straight connector 8 poles pre-wired, cable 15 m
C8D 25	1330967	M12 straight connector 8 poles pre-wired, cable 25 m
C8D 40	1440966	M12 straight connector 8 poles pre-wired, cable 40 m
C8D 95	1330983	M12 90° angle connector 8 poles pre-wired, cable 5 m
C8D 910	1330984	M12 90° angle connector 8 poles pre-wired, cable 10 m
C8D 915	1330985	M12 90° angle connector 8 poles pre-wired, cable 15 m
C8DM 11	1330978	M12 straight connector 8 poles with screw terminal, PG9/11 cable gland
C8DM 911	1330979	M12 90° angle connector 8 poles with screw terminal, PG9/11 cable gland

#### CONNECTION BETWEEN MASTER AND SLAVE

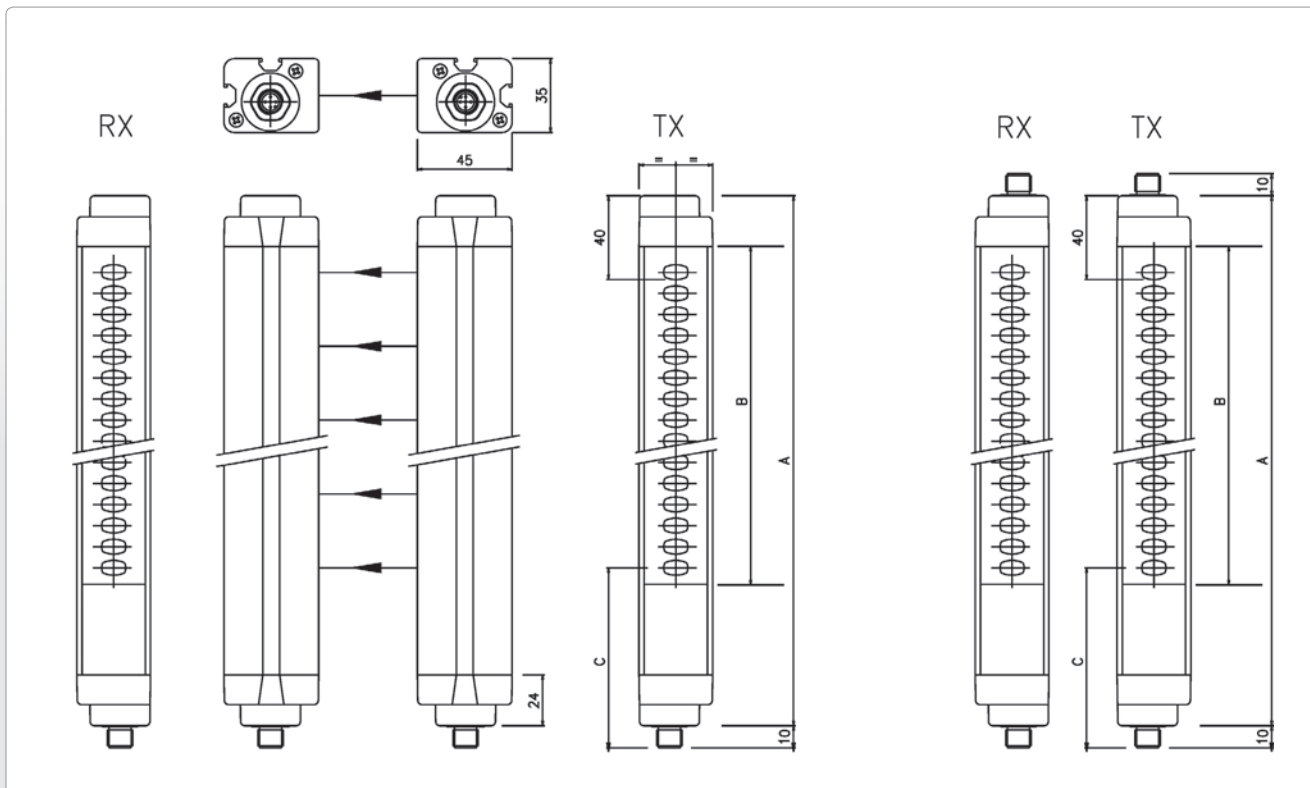
Model	Code	Description
CDS 03	1330990	0,3 m pre-wired cable with 2 straight connectors M12 5-pole
CIBE 3	1360960	3 m pre-wired cable with 2 straight connectors M12 5-pole
CIBE 5	1360961	5 m pre-wired cable with 2 straight connectors M12 5-pole
CIBE 10	1360962	10 m pre-wired cable with 2 straight connectors M12 5-pole
CIBE 25	1360963	25 m pre-wired cable with 2 straight connectors M12 5-pole



### DIMENSIONS (mm)

#### STANDARD AND SLAVE MODELS

#### MASTER MODELS



Models	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800
A	251	401	551	701	851	1001	1151	1301	1451	1601	1751	1901
B (protected Height)	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
C	85											
Mounting	Complete set of 4 LS type brackets included in the package							Complete set of 6 LS type brackets included in the package				

Models	2B	3B	4B
A	701	1001	1101
B (protected Height)	510 *	810 *	910 *
C	135		
Mounting	Complete set of 4 LS type brackets included in the package		

\* for these models the protected height is only indicative and is calculated based on the beams spacing.



### WARNING!

When the light curtain works in the presence of strong vibrations (presses, weaving machines etc.), in order to avoid damages to the light curtain it is necessary to use the vibration dampers SAV (available as accessories)

When long range protections or perimeter protections employing mirrors have to be realised it is advisable to use the LAD laser pointer as an alignment aid, as well as the adjustable swivel fastening brackets SFB.