

SAFETY SENSORS



SAFETY SENSORS

SELECTION GUIDE

Optoelectronic safety devices are ideally suited for the control of zones or areas where dangerous processes are carried out, as they ensure adequate protection to the people who might enter such areas or introduce their limbs into them.

It is therefore advisable to break down the applications of optoelectronic safety devices into four groups, which may be summarized as follows:



Finger detection



Hand detection



Detection of the presence of the body in a dangerous area



Detection of the body in access control

In the rest of the catalog, for each of the applications listed above, the appropriate solutions realized with the devices in the Reer range are presented.

Depending on the functions to be performed by the safety system, on the resolution required or on the maximum scanning distance, it is possible to select, among the different families of Reer's safety protective devices, the right tool for the safeguarding of dangerous machines.

SAFETY SENSORS



	ADMIRAL AD	ADMIRAL AX	ADMIRAL AX BK
Sensor	Light curtain	Light curtain	Light curtain
Safety type	4	4	4
Resolution (mm)	14	14	14
Protected heights mm	160÷1810	160÷1810	160÷1810
Max range m	5	5	5
Start/Restart Interlock	-	yes	-
EDM	-	yes	-
Blanking	-	-	yes, floating
Master/Slave	-	yes	yes, master



	ADMIRAL AD	ADMIRAL AX	ADMIRAL AX BK	JANUS M	JANUS J	PHARO	VISION V	VISION VX	VISION VXL	VISION MXL
Sensor	Light curtain	Light curtain	Light curtain	Light curtain	Light curtain	Laser Scanner	Light curtain	Light curtain	Light curtain	Light curtain
Safety type	4	4	4	4	4	3	2	2	2	2
Resolution (mm)	20-30-40	20-30-40	20-40	30-40	40	30-40	20-30-40	20-30-40	30-40	30-40
Protected heights mm	160÷1810	160÷1810	160÷1810	310÷1810	610÷1210	-	160÷1810	160÷1810	160÷1210	160÷1210
Max range m	18	18	18	16/60	60	2,6 (radius)	16	18	8	8
Start/Restart Interlock	-	yes	-	yes	yes	yes	-	yes	yes	yes
EDM	-	yes	-	yes	yes	yes	-	yes	yes	yes
Blanking	-	-	yes, floating	-	-	-	-	-	-	-
Muting	-	-	-	yes	-	-	-	-	-	yes
Master/Slave	-	yes	yes, master	-	-	-	-	yes	-	-
Long Range	-	-	-	yes (up to 60 m)	yes (up to 60 m)	-	-	-	-	-



	ADMIRAL AD	ADMIRAL AX	ADMIRAL AX BK	JANUS M	JANUS J	PHARO	VISION V	VISION VX
Sensor	Light curtain	Light curtain	Light curtain	Light curtain	Light curtain	Laser Scanner	Light curtain	Light curtain
Safety type	4	4	4	4	4	3	2	2
Resolution (mm)	50-90	50-90	40-90	40-90	40	50-70 selez.	50-90	50-90
Protected heights mm	310÷1810	310÷1810	310÷1810	310÷1810	610÷1210	-	310÷1810	310÷1810
Max range m	18	18	18	16/60	60	4 (radius)	16	18
Start/Restart Interlock	-	yes	-	yes	yes	yes	-	yes
EDM	-	yes	-	yes	yes	yes	-	yes
Blanking	-	-	yes, floating	-	-	-	-	-
Muting	-	-	-	yes	-	-	-	-
Master/Slave	-	yes	yes, master	-	-	-	-	yes
Long Range	-	-	-	yes (up to 60 m)	yes (up to 60 m)	-	-	-

SAFETY SENSORS

	ADMIRAL AD	ADMIRAL AX	JANUS M	JANUS J	PHARO	VISION V	VISION VX	VISION VXL	VISION MXL	ILION	ULISSE
Sensor	Light curtain	Light curtain	Light curtain	Light curtain	Laser scanner	Light curtain	Light curtain	Light curtain	Light curtain	Single beam	Single beam
Safety type	4	4	4	4	3	2	2	2	2	2	2
Number of beams	2-3-4	2-3-4	2-3-4	2-3-4	-	2-3-4	2-3-4	2-3-4	2-3-4	1-2-3-4	1-2-3-4
Resolution mm	-	-	-	-	150	-	-	-	-	-	-
Protected heights mm	510÷910	510÷910	510÷910	510÷910	-	510÷910	510÷910	510÷910	510÷910	-	-
Max range m	18	18	16/60	16/60	4 (radius)	16	18	8	8	8	6
Start/Restart Interlock	-	yes	yes	yes	yes	-	yes	yes	yes	yes ^{a, b}	yes ^{a, b}
EDM	-	yes	yes	yes	yes	-	yes	yes	yes	yes ^{a, b}	yes ^{a, b}
Muting	-	-	yes I,L,T models	-	-	-	-	-	yes	yes ^b	yes ^b
Master/Slave	-	yes	-	-	-	-	yes	-	-	-	-
Models with passive retroreflector elements	-	-	yes I,L,T models (3,5 / 6 m range)	yes (6 m range)	-	-	-	-	-	-	-
Long Range	-	-	yes (up to 60 m)	yes (up to 60 m)	-	-	-	-	-	-	-

a: with AUS X control unit
b: with AUS XM control unit

GLOSSARY

Start/Restart interlock: Interlock function (manual restart required) at machine start or restart.

EDM: External Device Monitoring: controls the switching of external contactors via feedback input.

Master/Slave: Two light curtains can be connected in cascade; all the outputs are managed by only one of these (Master).

Blanking: The light curtain can be programmed to ignore a single object of defined dimensions that may also be greater than the resolution (see page 11).

Muting: The protective function of the light curtain can be inhibited under certain safety conditions (see page 22).

I Models: Models with connections for external muting sensors.

L, T Models: Models with built-in muting sensors in pre-assembled kits for pallet outfeed only (L) or infeed/outfeed (T).

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.
- **Integration of the main safety functions**, including self-monitoring of the safety circuits and, only 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 or three light curtains, models with floating blanking, and the widest variety of heights and resolutions.

Each light curtain of the Admiral series can be connected to the dedicated ADSR safety interfaces of the Admiral series, or directly to contactors controlled by the light curtain, or to safety PLCs or suitable commercial safety modules.

New | Special WT versions in watertight housing (see page 45) are available.

New | The AS-i connection interface AS-i CI5 (see page 123) is now available.

Special models conforming to the **“ATEX Directive”** 94/9/EEC - Dust Zone 22 - Gas Zone 2 available on request.



THE ADMIRAL RANGE

ADMIRAL AD

- 7 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
- 2 self-testing solid state PNP safety outputs protected against short circuits and overloads
- Automatic restart
- Electrical connections with 5-pole M12 connectors

The ideal light curtain for a simple interface with safety modules or PLC.

ADMIRAL AX

- 7 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
- 2 self-testing solid state PNP safety outputs protected against short circuits and overloads
- Electrical connections with 5-pole M12 connector for emitter and 8-pole M12 connector for receiver
- Built-in manual or automatic restart, selectable
- Feedback input for control of external relays (EDM)

Master and Slave models for serial connection of two light curtains even of different height and resolution

The ideal light curtain for directly controlling and monitoring the circuits of the machine, without the need for external safety modules. The Master / Slave models are also the 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.

ADMIRAL AX BK

- 4 types of detection:
 - resolution 14 mm for finger detection
 - resolution 20 and 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
- Electrical connections with 5-pole M12 connectors for emitter and 8-pole M12 connectors for receiver
- Automatic restart
- Built-in functions of floating blanking with 5 selectable configurations
- Master and Slave models for serial connection of two light curtains even of different height and resolution

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.

With the blanking models with 14 and 20 mm resolution, it is also possible to have the Master/Slave function (present only on Master models) in a protection system composed of two light curtains connected in series and to perform a combined detection of the hand and of the presence of the person or of two different sides of the machine.

ADMIRAL AD

MAIN FEATURES

Two self-testing solid state PNP safety outputs.
 All connections and configurations by means of M12 connectors.
 Use of standard 5-pole cables.
 Suppression of optical interference by means of range selection.
 Start/Restart interlock and EDM via external ADSR1 interface.

TECHNICAL FEATURES

Safety	Type 4
Protected heights mm	160 ÷ 1810
Resolutions mm	14 - 20 - 30 - 40 - 50 - 90
Number of beams for body detection in access control	2 - 3 - 4
Max range m	selectable 2 - 5 for 14 mm resolution selectable 6 - 18 for 20 - 30 - 40 - 50 - 90 mm resolutions and 2 - 3 - 4 beams
Response time ms	6 ÷ 27
Safety outputs	2 PNP - 500 mA at 24 Vdc
Signalling	2 PNP auto-controlled - 500 mA at 24 Vdc with short-circuit, overload, polarity reversal protection
Restart	automatic
Power supply Vdc	24 ± 20%
Electrical connections	M12 - 5 poles for emitter and receiver
Max. cable length m	100
Operating temperature °C	0 ÷ 55
Protection rating	IP 65
Fastening modes	3: back slot, side slot or to the top and lower end
Cross section mm	35 x 45



Safety level: **Type 4.**
 Complying with:
 - 98/37/EEC "Machine Directive"
 - 89/336/EEC "Electromagnetic Compatibility Directive"
 - 73/23/EEC "Low Voltage Directive"
 - EN 61496-1 and IEC 61496-1-2 "Electro sensitive protection devices"
 - UL (C + US) mark for USA and Canada
 - ANSI / UL 1998 "Safety Software in Programmable Components"

ADMIRAL AD



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
Protected heights mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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 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
Protected heights mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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
Protected heights mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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
Protected heights mm	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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
Protected heights mm	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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
Protected heights mm	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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
Number of beams	2	3	4
Distance between beams mm	500	400	300
Protected heights mm	510	810	910
Overall height mm	711	1011	1111

- For accessories list see page 46
- For ordering codes see page 129

ADMIRAL AX

WITH BUILT-IN CONTROL FUNCTIONS

MAIN FEATURES

Two self-testing solid state PNP safety outputs.
 Built-in start/restart interlock, selectable.
 Feedback input for external device monitoring (EDM).
 All connections and configurations by means of M12 connectors.
 Use of standard 5-pole and 8-pole cables.
 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 standard cable.

TECHNICAL FEATURES

Safety	Type 4
Protected heights mm	160 ÷ 1810
Resolutions mm	14 - 20 - 30 - 40 - 50 - 90
Number of beams for body detection in access control	2 - 3 - 4
Max range m	selectable 2 - 5 for 14 mm resolution selectable 6 - 18 for 20 - 30 - 40 - 50 - 90 mm resolutions and 2 - 3 - 4 beams
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
Restart	selectable automatic or manual
External Device Monitoring	external device monitoring feedback input with enabling, selectable
Power supply Vdc	24 ± 20%
Electrical connections per AX e AX Master	M12 - 5 poles for emitter poles for receiver
Electrical connections tra Master e Slave	M12 - 5 poles 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	3: back slot, side slot or to the top and lower end
Cross section mm	35 x 45



Safety level: **Type 4.**

Complying with:

- 98/37/EEC "Machine Directive"
- 89/336/EEC "Electromagnetic Compatibility Directive"
- 73/23/EEC "Low Voltage Directive"
- EN 61496-1 and IEC 61496-1-2 "Electrosensitive protection devices"
- UL (C + US) mark for USA and Canada
- ANSI / UL 1998 "Safety Software in Programmable Components"

ADMIRAL AX

WITH BUILT-IN CONTROL FUNCTIONS

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
Protected heights mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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 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
Protected heights mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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
Protected heights mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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	
Protected heights mm	310	460	610	760	910	1060	1210	1360	1510	1660	1810	
Number 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	
Protected heights mm	310	460	610	760	910	1060	1210	1360	1510	1660	1810	
Number 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	
Protected heights mm	310	460	610	760	910	1060	1210	1360	1510	1660	1810	
Number 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									AX 2B	AX 3B	AX 4B	
Number of beams									2	3	4	
Distance between beams mm									500	400	300	
Protected heights mm									510	810	910	
Overall height mm									711	1011	1111	

- For accessories list see page 46
- For ordering codes see page 129

ADMIRAL AX

WITH BUILT-IN CONTROL FUNCTIONS

MASTER / SLAVE MODELS



MASTER Resolution 14 mm		AX 301M	AX 451M	AX 601M	AX 751M	AX 901M	AX 1051M	AX 1201M	AX 1501M
SLAVE Resolution 14 mm	AX 151S	AX 301S	AX 451S	AX 601S	AX 751S	AX 901S	AX 1051S	AX 1201S	AX 1501S
Protected heights mm	160	310	460	610	760	910	1060	1210	1510
Number 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 20 mm		AX 302M	AX 452M	AX 602M	AX 752M	AX 902M	AX 1052M	AX 1202M	AX 1502M
SLAVE Resolution 20 mm	AX 152S	AX 302S	AX 452S	AX 602S	AX 752S	AX 902S	AX 1052S	AX 1202S	AX 1502S
Protected heights mm	160	310	460	610	760	910	1060	1210	1510
Number 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
SLAVE Resolution 30 mm	AX 153S	AX 303S	AX 453S	AX 603S	AX 753S	AX 903S	AX 1053S	AX 1203S	AX 1503S
Protected heights mm	160	310	460	610	760	910	1060	1210	1510
Number 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
SLAVE Resolution 50 mm		AX 305S	AX 455S	AX 605S	AX 755S	AX 905S	AX 1055S	AX 1205S	AX 1505S
Protected heights mm		310	460	610	760	910	1060	1210	1510
Number 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
SLAVE 2-3 beams								AX 2BS	AX 3BS
Number of beams								2	3
Distance between beams mm (mm)								500	400
Protected heights mm								510	810
Overall height mm *								711	1011

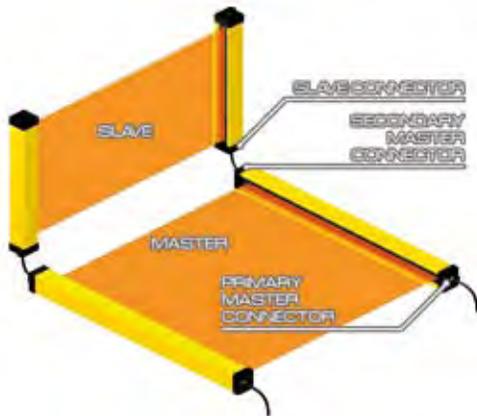
* In the Master models the total light curtain height is increased by 10 mm due to the presence of the secondary connector.

- For accessories list see page 45
- For ordering codes see page 129

ADMIRAL AX

WITH BUILT-IN CONTROL FUNCTIONS

MASTER / SLAVE MODELS

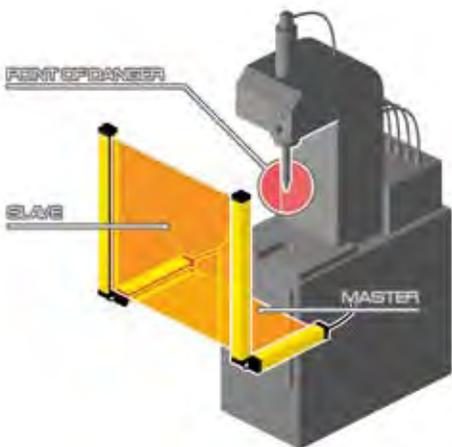


Example of serial connection between a Master light curtain and a Slave light curtain

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

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

Accessory cables pre-wired with 2 connectors are available for the connection between Master and Slave.

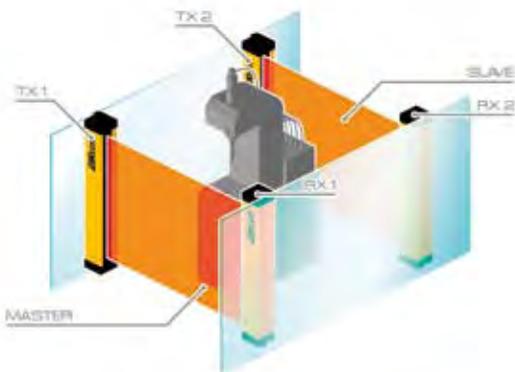


Example of serial connection between a Master light curtain and a Slave light curtain

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 cable that can be up to 50 metres 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.

ADMIRAL AX BK

WITH BLANKING FUNCTION

MAIN FEATURES

Two self-testing solid state PNP safety outputs.
 Built-in floating blanking function with 5 configuration modes.
 All connections and configurations by means of M12 connectors.
 Use of standard 5-pole and 8-pole cables.
 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 standard cable.
 Start/Restart interlock and EDM via external ADSR1 interface.

TECHNICAL FEATURES

Safety	Type 4
Protected heights mm	160 ÷ 1810
Resolutions mm	14 - 20 - 40 - 90
Max range m	selectable 2 - 5 for 14 mm resolution selectable 6 – 18 for 20 – 40 – 90 mm resolutions
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
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 per AX e AX Master	M12 - 5 poles for emitter M12 - 8 poles for receiver
Electrical connections tra Master e Slave	M12 - 5 poles 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	3: back slot, side slot or to the top and lower end
Cross section mm	35 x 45



Safety level: **Type 4.**

Complying with:

- 98/37/EEC "Machine Directive"
- 89/336/EEC "Electromagnetic Compatibility Directive"
- 73/23/EEC "Low Voltage Directive"
- EN 61496-1 and IEC 61496-1-2 "Electrosensitive protection devices"
- UL (C + US) mark for USA and Canada
- ANSI / UL 1998 "Safety Software in Programmable Components"

ADMIRAL AX BK

WITH BLANKING FUNCTION

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
Protected heights mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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 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
Protected heights mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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
Protected heights mm	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number 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
Protected heights mm	610	760	910	1060	1210	1360	1510	1660	1810
Number 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
Protected heights mm	310	460	610	760	910	1060	1210	1510
Number 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
Protected heights mm	310	460	610	760	910	1060	1210	1510
Number 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.

- For accessories list see page 46
- For ordering codes see page 130

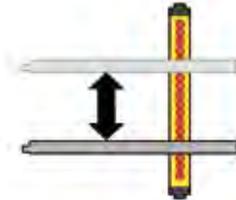
ADMIRAL AX BK

WITH BLANKING FUNCTION

THE BLANKING FUNCTION

Information on the blanking function can be found on page 24 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 ADSR1 or ADSRM 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 WT

WITH IP 67 WATERTIGHT HOUSING

MAIN FEATURES

The **WT watertight housing** enables the use of Admiral light curtains in harsh working environments characterised by the presence of water, steam, and low temperatures. This solution is ideal for applications in the food processing industry and in washing systems, including those under pressure. Models are available for protecting light curtains with protected height from 160 to 1810 mm.

TECHNICAL FEATURES

All the main technical features are the same of ADMIRAL AX

Protection rating	IP 67
Operating temperature °C	0 ÷ 55
Max water pressure (jets)	40 bar (with temperature from 10° to 40°)
Max range m	5 – 15 selectable
Available Resolution mm	30
Number of beams for body detection in access control	2 – 3 - 4
Light curtain electrical connections	cable 10 metres pre-wired with cable gland
Fastening	by means of set of 4 WFB ring brackets (included)
Dimensions mm	Total light curtain height + 124 x 75 Ø



MODELS

Resolution 30 mm	AX 153 WT	AX 303 WT	AX 453 WT	AX 603 WT	AX 753 WT	AX 903 WT	AX 1053 WT	AX 1203 WT	AX 1353 WT	AX 1503 WT	AX 1653 WT	AX 1803 WT
Protected heights mm	160	310	460	610	760	910	1060	1210	1360	1510	1660	1810
Number of beams	8	16	24	32	40	48	56	64	72	80	88	96
Overall height mm	375	525	675	825	975	1125	1275	1425	1575	1725	1875	2025



2-3-4 beams	AX 2B WT	AX 3B WT	AX 4B WT
Number of beams	2	3	4
Distance between beams mm	500	400	300
Protected heights mm	510	810	910
Overall height mm	825	1125	1225



- The light curtains are supplied already housed in the WT watertight housings.
- Cables and ring brackets are included in the kit.

Please contact Reer preventively to assess adequacy to your application.

ADMIRAL

ORDERING INFORMATION (for ordering codes see page 129)

Each Admiral light curtain comprises:

- Emitter and Receiver pair
- Mounting brackets and T-nuts
- CD-ROM containing the multi-language instruction manual complete with CE declaration of conformity

ACCESSORIES

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

- AD SR Safety Relays see page 105
- LAD laser alignment device see page 124
- FMC floor mounting columns see page 120
- SP deflection mirrors see page 122
- SFB swivel fixing brackets see page 125
- SAV vibrations dampers see page 125
- Connectors see below:

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

Model	Description
CD 5	M12, straight connector, 5 poles, pre-wired cable 5 m
CD 10	M12, straight connector, 5 poles, pre-wired cable 10 m
CD 15	M12, straight connector, 5 poles, pre-wired cable 15 m
CD 20	M12, straight connector, 5 poles, pre-wired cable 20 m
CD 95	M12, 90° angle connector, 5 poles, pre-wired cable 5 m
CD 910	M12, 90° angle connector, 5 poles, pre-wired cable 10 m
CD 915	M12, 90° angle connector, 5 poles, pre-wired cable 15 m
CDM 9	M12, straight connector, 5 poles with screw terminal, PG9 cable gland
CDM 99	M12, angle connector, 5 poles with screw terminal, PG9 cable gland

CONNECTORS FOR ADMIRAL AX and AX BK receiver

Model	Description
C8D 5	M12, straight connector, 8 poles, pre-wired cable 5 m
C8D 10	M12, straight connector, 8 poles, pre-wired cable 10 m
C8D 15	M12, straight connector, 8 poles, pre-wired cable 15 m
C8D 95	M12, 90° angle connector, 8 poles, pre-wired cable 5 m
C8D 910	M12, 90° angle connector, 8 poles, pre-wired cable 10 m
C8D 915	M12, 90° angle connector, 8 poles, pre-wired cable 15 m
C8DM 9	M12, straight connector, 8 poles with screw terminal, PG9 cable gland
C8DM 99	M12, angle connector, 8 poles with screw terminal, PG9 cable gland
C8DM 11 new	M12, straight connector, 8 poles with screw terminal, PG9/11 cable gland
C8DM 911 new	M12, angle connector, 8 poles with screw terminal, PG9/11 cable gland

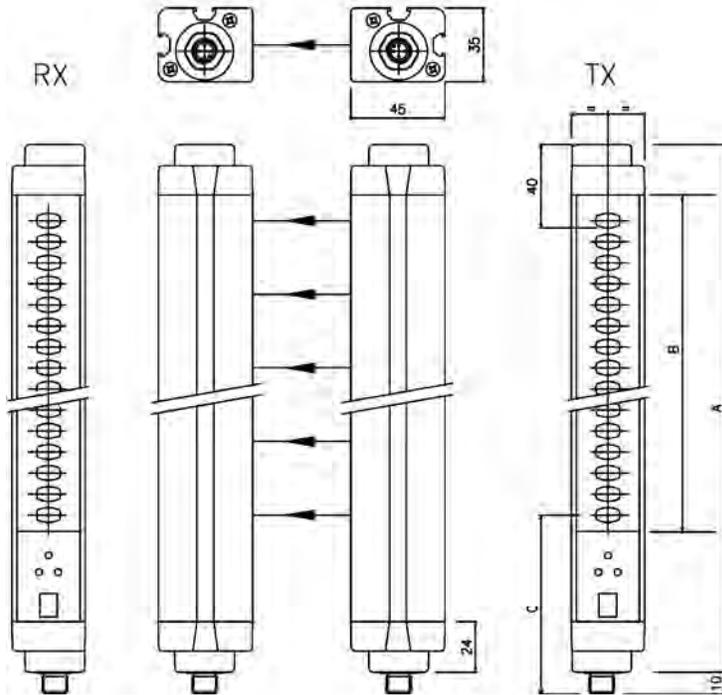
CONNECTION BETWEEN MASTER AND SLAVE

Model	Description
CDS 03	0.3 m pre-wired cable with 2 straight connectors, M12, 5 poles
CIBE 3	3 m pre-wired cable with 2 straight connectors, M12, 5 poles
CIBE 5	5 m pre-wired cable with 2 straight connectors, M12, 5 poles
CIBE 10	10 m pre-wired cable with 2 straight connectors, M12, 5 poles

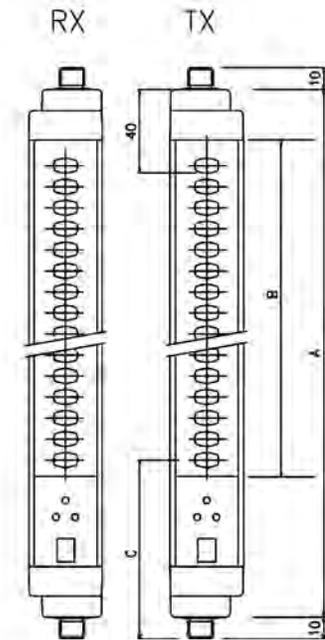
ADMIRAL

DIMENSIONS (mm)

STANDARD AND SLAVE MODELS



MASTER MODELS



Model	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 (1st beam position)	85											
Mounting	2 LS type brackets with 2 inserts						3 LS type brackets with 3 inserts					

Model	2B	3B	4B
A	701	1001	1101
B	510	810	910
C (1st beam position)	135		
Mounting	2 LS type brackets with 2 inserts		

! 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 brackets SWB.