Product Data

Electrical Data	
Supply voltage	10-30 V dc / 24V ac or 90-240 V ac
Power consumption	Max. 3.6 VA
Output: relay	250 VAC / 3 A, 120 VAC /5 A
Output: transistor	PNP/NPN 30 V dc/ 100 mA
Alarm output	PNP/NPN 30 V dc/ 100 mA

Environmental Data	
Temperature, operation	-10 to +50 °C
Sealing class	IP 40
Approvals	CE cULus

Applicable Remote Sensors & Sensing Ranges

Remote Sensor Series	Sensing Range	
	More than 1 channel (in multiplexed mode)	Only 1 channel in single mode (Non-multiplexed)
100	12 m	18 m
110	27 m	40 m
120	47 m	70 m

Comments:
The range is reduced to 30 % in short range mode.

Illustration
Please, refer to figure nº 1.

Indicators	
Power On	Green light when power is on
Master/slave	Green light when amplifier is working as master
	Green flashing light if amplifier is master and in error state
	Orange light when amplifier is slave
	Orange flashing light if amplifier is slave and in error state
Signal OK	Green light when signal is sufficient and beam is unbroken
Output	Yellow light when output is activated
LT/LR error	Red light for light transmitter error (disconnection or shorted)
	Yellow light for light receiver error (disconnection or shorted)
	Yellow and red light flashes for insufficient signal level (for instance caused by contamination on sensors)

Connection

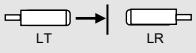
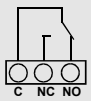
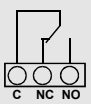
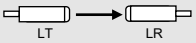
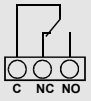
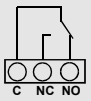
Wiring Diagrams
Please, refer to figure nº2.

Connection Steps	
1	Check the power supply complies with electrical data.
2	Make sure power is off. Connect the amplifiers using the special bus connectors.
3	Mount the amplifiers in the DIN rail. And connect all wires to the terminals according to wiring diagrams.
4	Select the mode of operation and select the address for each amplifier. Switch power on.

Notes:
- The PNP output can optionally be supplied connecting + to terminal E4 and connecting – to the terminals E3 on PAB 10 and F4 on PAB 20 and PAB 30.
- **The amplifiers model X08 (ac version) cannot power other units through the bus. It can, however, be connected to a bus and function together with other units.**

Adjustments

Selectors				
Master/slave	Select M to set the amplifier as master Select addresses 1,..,9 to set the amplifier as slave.			
Short / Long range	●	Short range	●	Long range
Light / Dark operated	●	Light operated	●	Dark operated
Common / Individual	●	Common output	●	Individual outputs
Bus / Single mode	●	Bus mode: multiplexed and optionally common output over bus.	●	Single mode: not multiplexed and not common output over bus.

Output Logic				
Detection (thru beam)	Output mode	Relay Output	Transistor Output	Output indicator
Object present 	Dark operated		Closed	On
	Light operated		Open	Off
Object absent 	Dark operated		Open	Off
	Light operated		Closed	On

Sensitivity Adjustment
Sensitivity can be adjusted in two large steps with long/ short range selector or continuously with the potentiometer. Maximum sensitivity and long range can be used for most applications and is advised for applications with contaminated environments e.g. dirt, water and dust. Chose long range and increase the sensitivity to maximum by turning the potentiometer to full clockwise position.

More accurate sensitivity adjustment may be required in applications where objects to be detected are small or translucent. Proceed with the following steps:

1	Make sure there is no object present between remote transmitter and receiver sensors.
2	Select long or short range according to application.
3	Increase sensitivity slowly from minimum (full anti clockwise) until the yellow output indicator changes. Increase a little further until the green Signal OK indicator is on.
4	Select target object with smallest dimensions and most translucent surface.
5	Place target object between remote transmitter and receiver sensors. If the output changes, the sensitivity is adjusted correct. If the output do not change proceed to step 6.
6	Remove the object and decrease the sensitivity by turning the potentiometer counter clockwise until the green Signal OK indicator is off and the LT/LR error indicator flashes simultaneously with red and yellow light
7	Place target object between remote transmitter and receiver sensors. If the output changes the sensitivity is adjusted to suit the target but the adjustment is very delicate and not advisable, please contact your vendor for further information.
	If the signal level is low, the LT/LR error indicator flashes simultaneously with red and yellow light. Check the following: Alignment of sensors Transmitter and receiver sensors are within sensing range Sensor heads are not excessively contaminated

Operation Modes

Single Mode, 1 channel
In single mode the amplifier will operate independently and without communication to other amplifiers on the bus and all multiplexing is disabled. Common output is disabled.

Single Mode, 2 channel and 3 channel
In single mode the amplifier will operate independently and without communication to other amplifiers on the bus and multiplexing across the bus is disabled. The different channels on a single amplifier are still internally multiplexed. If common output is selected, the output of channel 1 is activated if one or more of the channels on the amplifier are activated.

Bus Mode
Bus mode can be used if more amplifiers are connected by bus plugs. In bus mode all sensor pairs are interrogated in sequence (multiplexed), thus preventing crosstalk. One amplifier is selected as a master and the rest is given different slave addresses. Notice that the response time increases with the number of multiplexed channels.

The Common/individual selector is used to obtain common or individual output from one or more amplifiers. If common output is selected for master and a number of slaves working In bus mode, the output of channel 1 on the master is activated if one or more channels among these amplifiers are activated.

If common output on a master is required, and there is no risk of crosstalk, the response time can be reduced giving multiple slaves the same address.

Test Input
The transmitter is disabled if the test input is connected to the internal ground ⏚ (A3). Make sure no object is present in the detection area, between remote transmitter and receiver sensor, when test is activated. When the transmitter is disabled, a change in output should occur.

Alarm output
The alarm output voltage of D1 is high if the amplifier does not indicate errors and low if it indicates an error. The indicated errors are: master/slave error, LT/LR error and insufficient signal level. In the case of insufficient signal level the alarm output is flashing.

Turning off a channel
On a PAB amplifier it is possible to turn off its channels. This is done by turning the sensitivity potentiometer fully anti clock wise. The channel will then be completely ignored by the PAB. If one channel (on PAB 20) or two channels (on PAB 30) are turned off, the PAB will function as a 1 channel amplifier. Consequently if the PAB is in **single** mode it will be non-multiplexed and have sensing range accordingly.

Time Delay Adjustment
The on delay enables output signal to only activate if an object in the detection area is present for the adjusted time period. The off delay enables output signal to remain activated for the adjusted time period. The time delay is adjustable between 0-10 s.

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Warning
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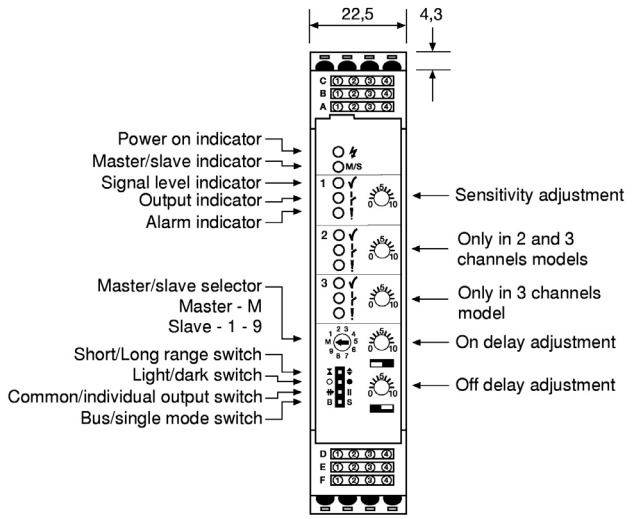
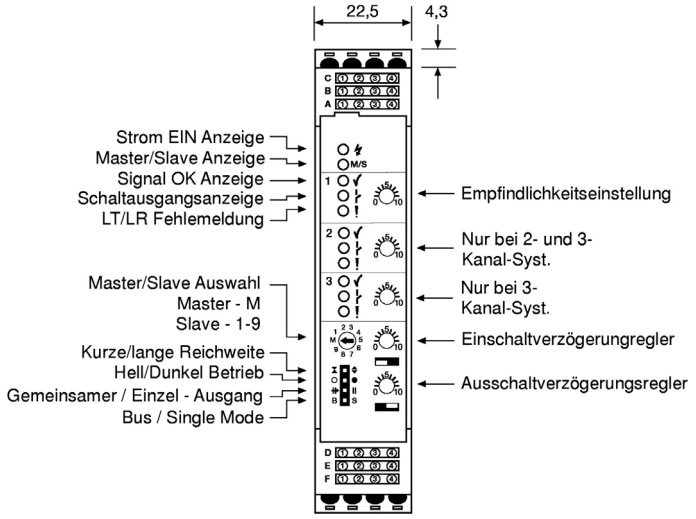
Ilustration	**Fig. 1**



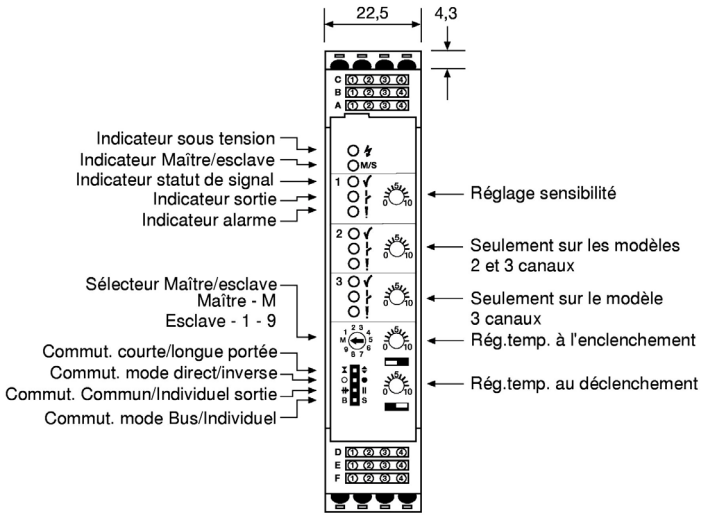
Note: Drawing of PAB 30 model.

Abbildung	**Fig.1**



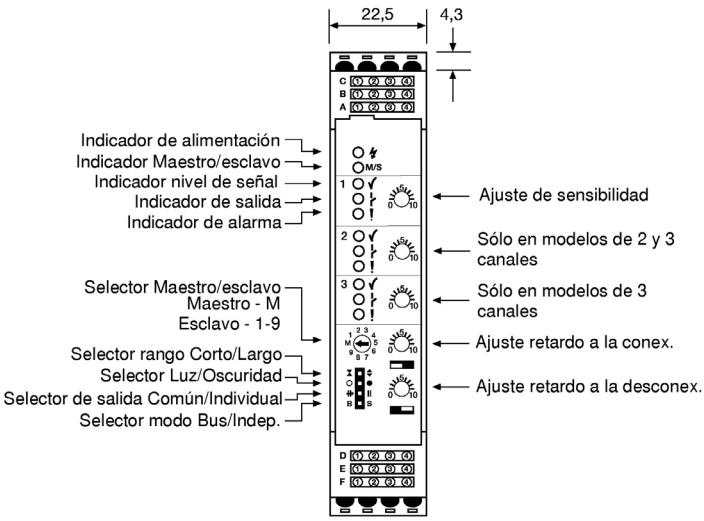
ANM: Zeichnung PAB 30

Ilustration	**Fig.1**



Note: PAB 30

Ilustración	**Fig. 1**



Nota: Dibujo del modelo PAB 30.

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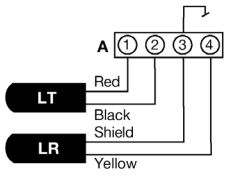
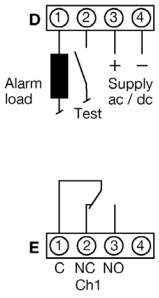
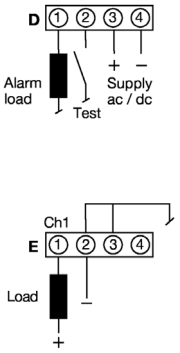
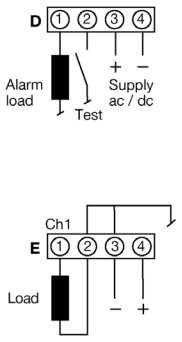
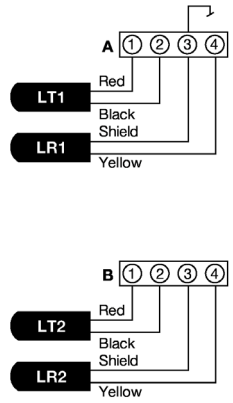
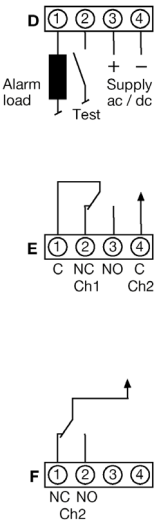
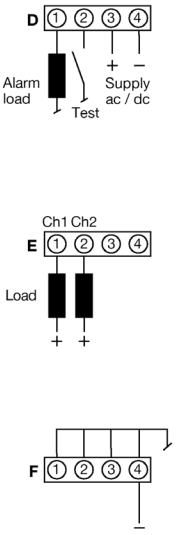
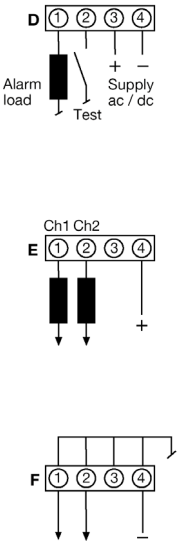
Connections

Fig. 2

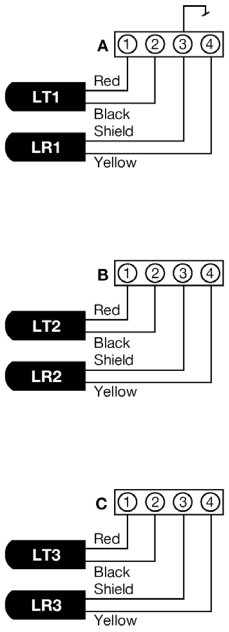
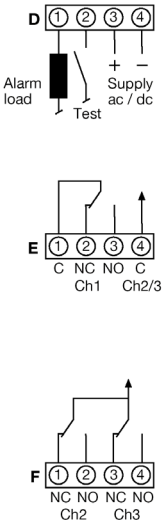
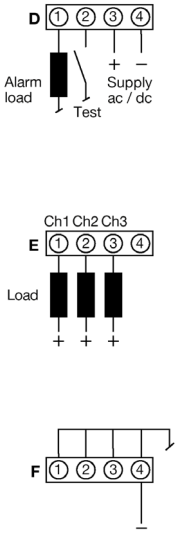
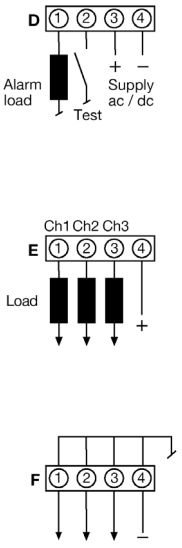
PAB 10

Sensors Connections	Relay output (PAB 10 A 00x)	NPN output (PAB 10 A 10x)	PNP output (PAB 10 A 20x)
			

PAB 20

Sensors	Relay output (PAB 20 A 00x)	NPN output (PAB 20 A 10x)	PNP output (PAB 20 A 20x)
			

PAB 30

Sensors	Relay output (PAB 30 A 00x)	NPN output (PAB 30 A 10x)	PNP output (PAB 30 A 20x)
			

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