

### MODULAR FLAT PACK SENSORS

Altech Modular Flat Pack Sensors are used on conveyor belts and chutes to detect all types of metal in the material being handled. They are used for quality checks and machine protection. Other applications include counting of objects and completeness checks.



#### Features

- Most Flexible and Modular System
- Dynamic output for highest sensitivity
- 1 and 10 Channel Control Unit
- IP65

#### Technical Specifications

Electrical/ Supply Data	see Control Unit (Page 16)
Operating Temperature	-10°C..+50°C
Storage Temperature	-10°C..+50°C
Housing Material	Aluminum
Protection Class	IP65
Detection Speed	1...300 ft/min
Connection	2m PVC cable (other on request)

#### Sensitivity

Fe Plate 30x30x1mm	75mm
Fe Plate 12x12x1mm	55mm
Nut M6	45mm
Nut M4	35mm
Nut M2.5	26mm
Fe Ball 7mm	35mm
Fe Ball 3mm	15mm
Fe Ball 2mm	5mm

\* Sensitivity show max. distance between sensor and target.

### FLEXIBLE SYSTEM

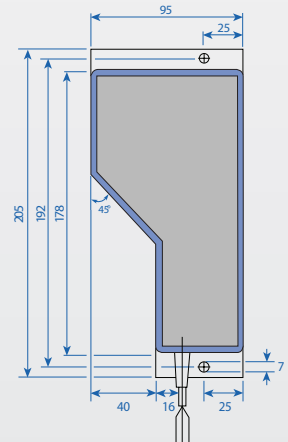
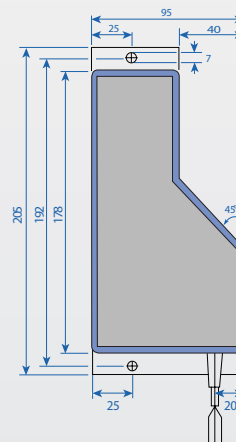
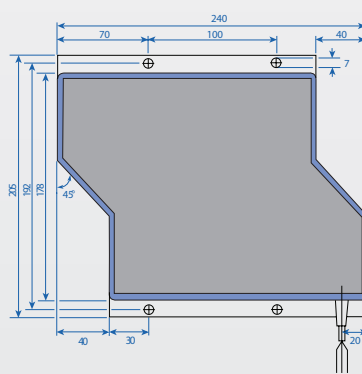
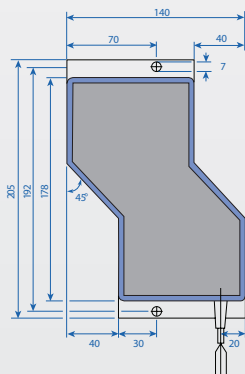
The Flat Packs are available in 3 different sizes, all of which can be lined up with one another. This makes it a simple matter to create the required detector width from 3 standard elements. The width can also be changed at a later date when using the system. Control units are used to evaluate the signal from the flat packs.

### SENSOR MODULES

	Module M140	Module M240	Module M95L	Module M95L
Frequency F1	NO/ NC	NO/ NC	NO/ NC	NO/ NC
Frequency F2	100Hz	100Hz	100Hz	100Hz
Frequency F3	LED	LED	LED	LED
Frequency F4	M12, 4 pole	M12, 4 pole	M12, 4 pole	M12, 4 pole

#### Dimensions

Width	140mm (5.5")	240mm (9.4")	95mm (3.7")	95mm (3.7")
Length	205mm (8.1")	205mm (8.1")	205mm (8.1")	205mm (8.1")
Height	28mm (1.1")	28mm (1.1")	28mm (1.1")	28mm (1.1")
Weight	1250g (2.75lb)	2500g (5.5lb.)	800g (1.76lb.)	800g (1.76lb.)



### RULES FOR LINING UP ADJACENT FLAT SENSORS

Flat Sensors are designed to engage with neighboring modules. This ensures that all modules lined up in series have the same sensitivity.

- 1) A distance of at least 300mm must be maintained between sensors with the same module number (Figure 1).

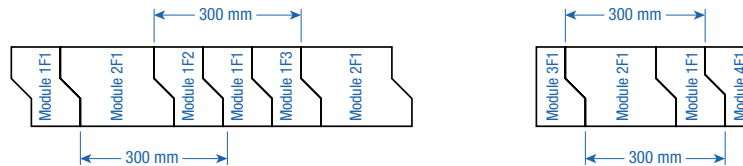


FIGURE 1

- 2) Flat sensors of different types can be lined up regardless of frequency (Figure 2).

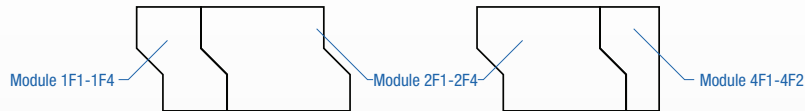


FIGURE 2

### RULES FOR SANDWICH CONSTRUCTION

Flat Packs can also be installed above and below the material being handled. This guarantees higher sensitivities.

- 1) In Sandwich construction, a minimum height of 40mm must be maintained between upper and lower sensors.
- 2) For sandwich construction there is different options:

a) Flat sensors of the same housing type are always used in pairs (above and below). Re-using a module number in such construction is not allowed. Therefore the max. width is 750mm. Size 95mm modules should always have different frequency numbers in a sandwich construction (Figure 3).

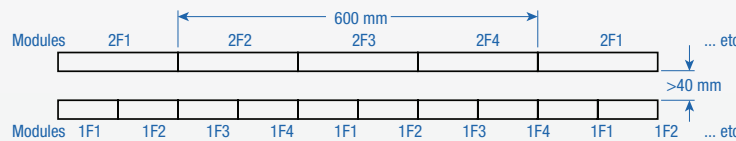


FIGURE 3

b) Only wide sensors are used for the upper layer and only narrow sensors for the bottom layer or vice versa. In this case there is no limit in combinations, except to keep a distance of at least 600mm between identical sensors (Figure 4).

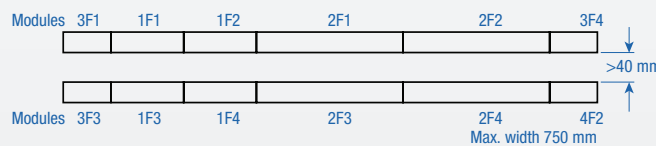


FIGURE 4

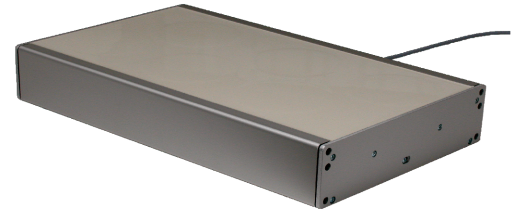
### POSSIBLE COMBINATIONS

Total Sensor Width	Flat Sensor Combination	Total Sensor Width	Flat Sensor Combination
95mm	M95	595-600mm*	M95-M140-M240-M240
140mm	M140	640mm	M240-M240-M240
150-160mm*	M95-M95	650-660mm*	M95-M140-M240-M240-M95
240mm	M240	695-700mm*	M95-M240-M240-M240
250-260mm*	M95-M140-M95	740mm	M140-M240-M240-M240
295-300mm*	M95-M240	750-760mm*	M95-M240-M240-M240-M95
340mm	M140-M240	795-800mm*	M95-M140-M240-M240-M240
350-360mm*	M95-M240-M95	840mm	M240-M240-M240-M240
395-400mm*	M95-M140-M240	850-860mm*	M95-M140-M240-M240-M240-M95
440mm	M240-M240	895-900mm*	M95-M240-M240-M240-M240
450-460mm*	M95-M140-M240-M95	940mm	M140-M240-M240-M240-M240
495-500mm*	M95-M240-M240	950-960mm*	M95-M240-M240-M240-M240-M95
540mm	M140-M240-M240	995-1000mm*	M95-M140-M240-M240-M240-M240
550-560mm*	M95-M240-M240-M95	1040mm	M240-M240-M240-M240-M240

The Gaps between a M95 module and its neighboring flat pack must not exceed 5mm, otherwise the sensitivity will be impaired. The overall width can be increased accordingly this way.

### SP SERIES FLAT SENSORS

Altech SP Series Flat Sensors are used on conveyor belts and chutes to detect all types of metal in the material being handled. They are used for quality checks and machine protection. Other applications include counting of objects and completeness checks.



#### Features

- Various Width available
- No Metal Free Zones necessary
- Stable and Shock proof Aluminum housing
- IP65
- Sensitivity adjustable via control unit

#### Technical Specifications

Electrical/ Supply Data	see Control Unit (Page 16)
Connection	2m PVC cable (other on request)
Housing Material	Aluminum
Active Surface	Polyurethane
Dimensions	Width x 210 x 60.5mm
Length	150..1200mm

#### Environmental Data

Operating Temperature	0°C..+50°C
Storage Temperature	-10°C..+50°C
Protection Class	IP65

#### Control Unit (Page 16)

1-Channel	8349005010/ 8349005012
10-Channel	8349005000/ 8349005001

#### Sensitivity

Fe Plate 30x30x1mm	95mm
Fe Plate 12x12x1mm	68mm
Nut M6	56mm
Nut M4	44mm
Nut M2.5	33mm
Fe Ball 7mm	44mm
Fe Ball 3mm	20mm
Fe Ball 2mm	8mm

\*Sensitivity show max. distance between sensor and target.

### ORDERING INFORMATION

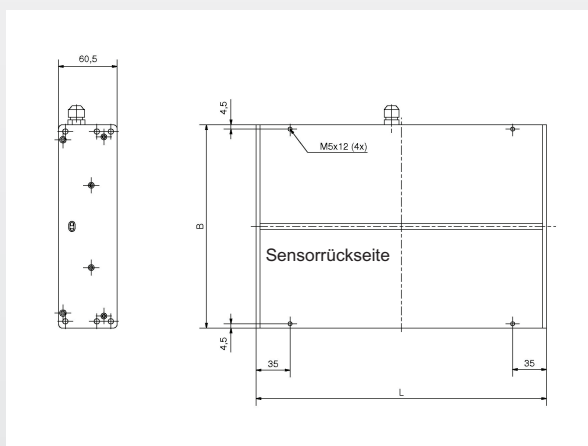
Width	Part No.
150mm	AMD-SP150
200mm	AMD-SP200
250mm	AMD-SP250
300mm	AMD-SP300
350mm	AMD-SP350
400mm	AMD-SP400
450mm	AMD-SP450
500mm	AMD-SP500
XXXmm	AMD-SPXXX

The Flat Sensor has a Dynamic working principle which allows it to detect moving metal objects. Non-moving objects will not be detected. However the dynamic principle allows it to operate with a much higher sensitivity. Even small metal targets can be detected. The control unit is necessary for analysis of the sensor signal and it is power supply at the same time.

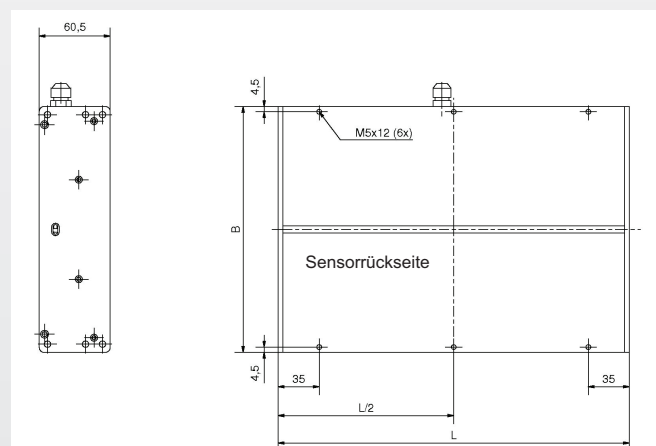
Standard Flat Sensors are available in steps of 50mm, any other length on request. Max. Length is 1200mm.

#### Dimensions

##### SP-Series 150-350mm length



##### Dimensions SP-Series 350-1200mm length



### 1-CHANNEL CONTROL UNIT FOR FLAT SENSORS

The Control Units can be operated with all Flat Pack and SP Series Flat Sensors. They allow evaluation of the sensor signals and at the same time they are their power supply.

#### Features

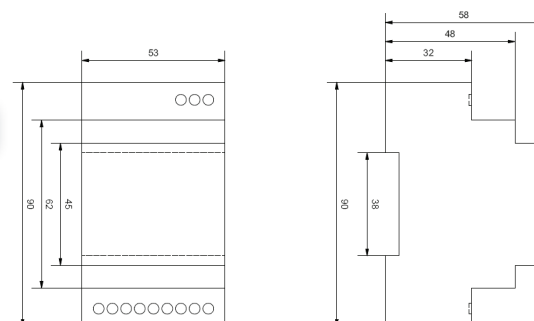
- DIN Rail Mount
- For Use with all Flat Pack and SP Series Sensors
- 115V AC and 230V AC version
- Operation with 24VDC
- Transistor and Relay Output
- Adjustable Pulse Duration of Output Signal

#### Technical Specifications

Part No.	8349005010	8349005012
Supply Voltage	230 VAC (50/60Hz), 24 VDC	115 VAC (50/60Hz), 24 VDC
Sensor Supply	15VDC, max. 80mA (Overload and Short Circuit Protected)	
Transistor Output	1 x NPN, 1 x PNP, 20mA open collector	
Relay Output	1 x SPDT, max. 250 VAC, 5A	
Speed	1..10/ 1..30/1-100/1-150 m/min	
Output Pulse Duration	1..10s/ 1..60s adjustable	
Operating Temperature	-10°C..+50°C	
Storage Temperature	-10°C..+60°C	
Protection Class	IP20	
Housing Material	Polycarbonate (UL94V-0)	



#### Dimensions



### 10-CHANNEL CONTROL UNIT FOR FLAT SENSORS

The Control Unit provides 10 inputs and can analyse either several Flat Pack or RP Series sensors. If one of the connected sensors (max. 10) sends a signal it will be evaluated. With the outputs it is possible to e.g either activate an Alarm or stop the conveyor belt.

On the device there are buttons for "Start"/ "Stop". Two potentiometer inside of the control unit allow adjustments to the sensitivity of the Flat sensor.

#### Features

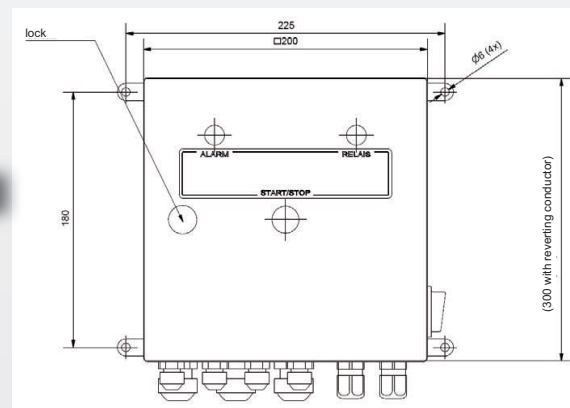
- Panel or DIN Rail Mount
- For Use with all Flat Pack and SP Series Sensors
- Universal Supply Voltage 110-250VAC
- Operation with 24VDC
- Transistor and Relay Output

#### Technical Specifications

Part No. (Mounting)	8349005010 (Panel)	8349005012 (DIN RAIL)
Supply Voltage	110-250 VAC (50/60Hz), 24 VDC	
Sensor Supply	15VDC, max. 120mA (Overload and Short Circuit Protected)	
Transistor Output	1 x NPN, 1 x PNP, 20mA open collector	
Relay Output	1 x SPDT, max. 250 VAC, 5A	
Speed	1..10/ 1..30/1-100/1-150 m/min	
Output Pulse Duration	1..60s	
Operating Temperature	-10°C..+50°C	
Storage Temperature	-10°C..+60°C	
Protection Class	IP54/ IP20	
Housing Material	Steel	

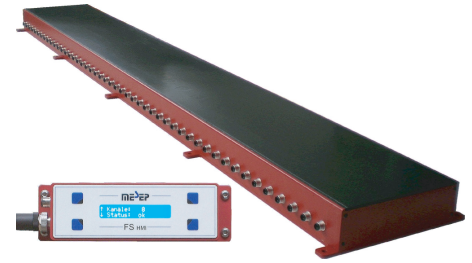


#### Dimensions



### FS SERIES MULTI-CHANNEL FLAT SENSORS

Altech FS Series Flat Sensors are high Sensitivity Flat Sensors which are not only detecting smallest metal pieces, they are also capable of localizing them. They are mainly used in Recycling Industry Applications. It allows the user to separate metallic particles precisely from other parts. It can be used on conveyor belts, slides or free-fall applications.



#### Features

- Various width available (50-2,000mm)
- Various resolutions, channel sizes (12.5-100mm)
- No Metal Free Zones necessary
- Stable and Shock proof  
Aluminum housing
- Interface fro PC or PLC
- Sensitivity adjustable via control unit

#### Technical Specifications

Electrical/ Supply Data	20..25VDC
Power consumption	10mA per channel
Connection	2m PVC cable (other on request)
Housing Material	Aluminum
Active Surface	POM
Dimensions	Width x 210 x 60.5mm
No. of Channels	4...160
Resolution (Channel Width)	12.5..120mm
Length	(No Channels +1) X Resolution

#### Sensitivity

Channel size	12.5...19mm	50...120mm
FE Ball 4.5mm	24mm	30mm
FE Ball 3.0mm	15mm	20mm
FE Ball 2.5mm	11mm	14mm
FE Ball 2.0mm	7mm	8mm

\*Sensitivity show max. distance between sensor and target.

#### Environmental Data

Operating Temperature	-10°C..+60°C
Storage Temperature	-10°C..+70°C
Protection Class	IP65
Conveyor Speed	5...300m/min (16...984ft/min)

#### Control Unit

FS HMI	8310200003
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### ORDERING INFORMATION

Sensor Type	Resolution (mm)	No. Channels
AMD-FS2	35	12

#### Possible Configurations Examples

Resolution	No. Channels	Part No.
35mm	18	AMD-FS2-35-18
35mm	32	AMD-FS2-35-32
25mm	16	AMD-FS2-25-16
25mm	25	AMD-FS2-25-25
20mm	20	AMD-FS2-20-20
20mm	25	AMD-FS2-20-25

The Flat Sensor has a Dynamic working principle which allows it to detect moving metal objects. Non-moving objects will not be detected. However the dynamic principle allows it to operate with a much higher sensitivity. Even small metal targets can be detected. The sensor provides several channels in parallel. Each of them is equipped with its own sensor coil and evaluation board. Therefore the position of the object is also detectable. It can be controlled and adjusted by either a PC or separate control unit.

#### Dimensions

