

DIN rail mount enclosure IP00



Machine frame mount enclosure IP65

SINGLE PROBE DOUBLE SHEET DETECTION SYSTEM

for ferromagnetic materials

- 5 interchangeable permanent magnetic sensors
- Single sheet thickness range .04 - 4 mm (.0015in. - .16in.)
- Teach-in set-up by key operation or via control input
- LCD display of nominal and actual values as well as operational and fault messages
- Compact enclosure for DIN-rail mounting, protection class IP00
or
protective enclosure for machine frame mounting, protection class IP65

Application

When feeding sheets automatically, more than one sheet can be inadvertently fed into the processing machine. This can result in damage of the machine and tools, expensive repairs and production loss. The single probe Double sheet detector A100 has been designed to prevent such events.



WARNING! These devices do **NOT** include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. Never use these products as sensing devices for personnel protection. Their use as a safety device may create an unsafe condition which could lead to injury or death.

Function

The permanent magnetic sensors detect electronically magnetic flux changes caused by sheet interference. The magnetic flux changes are transformed by the sensors into electrical signals by Hall probes. These electrical signals are processed by the control unit and sent to the machine controls for use as a switch signal.

The double sheet detector reacts to changes in the air gap between sensor and sheet surface in a similar way as to sheet thickness variations. Therefore the detector can be used to monitor the presence or absence of layers, the correct position of sandwich materials, bimetals or hidden parts.

The sensor recognizes other sheets or metal parts beyond the first one. This permits applications in welding operations where e.g. the welding current is only released when the electrode holder contains the correct number of parts.

Sensors

Mounting

The sensor can be installed in any position: horizontally or vertically.

Recommendations:

- Flush mounting is recommended because this will eliminate wear on the face as well as deposits of chips and shavings.
- Recessed mounting is possible. It is important, however, that none of the above mentioned deposits accumulate in the recessed area (fill recessed area with non ferrous materials).
- A spring loaded movable mounting arrangement is advantageous for thick plates because the sensor can be properly positioned to buckled sheets and reduce the possibility of an uncontrollable air gap developing.

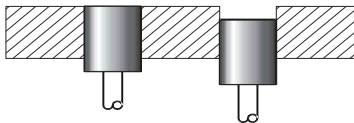


Illustration of flush and recessed mounting of sensor

Dimensions

For sensor dimensions please refer to last page.

Attention!

To control curved sheets it may be advantageous to use a sensor of the next bigger size in order to overcome an undesired air gap. Opposite of the sensor, there must not be any ferromagnetic material closer than 1.5 times the diameter of the sensor because it could distort the measurement. The minimum measuring area should be equal to the sensor diameter. The sensor cable should not be placed next to power cables because of potential noise interference.

Magnetic attraction and air gap between sensor and 1st sheet:

The magnetic attraction is proportional to the thickness of the sheet. When lifting the sensor from the sheet, this force must be overcome by mechanical, hydraulic or pneumatic devices. The magnetic force can be reduced through an air gap between sensor and sheet surface (recessed mounting, use of a roller block).

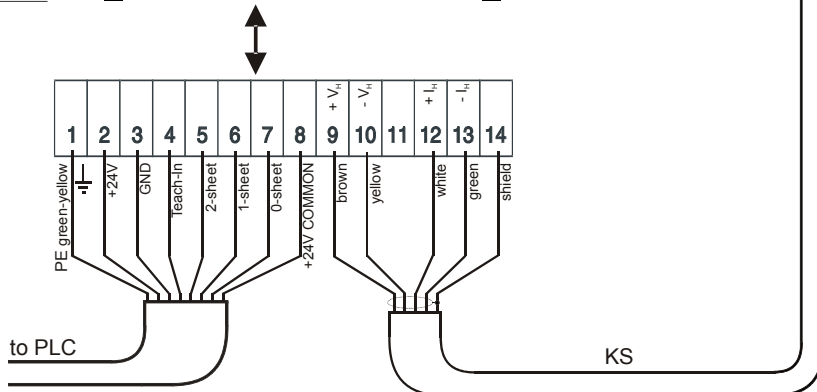
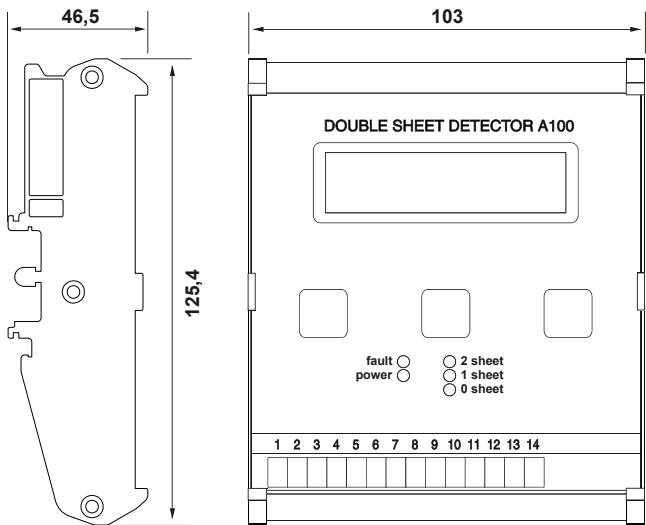


DOUBLE SHEET DETECTOR A100

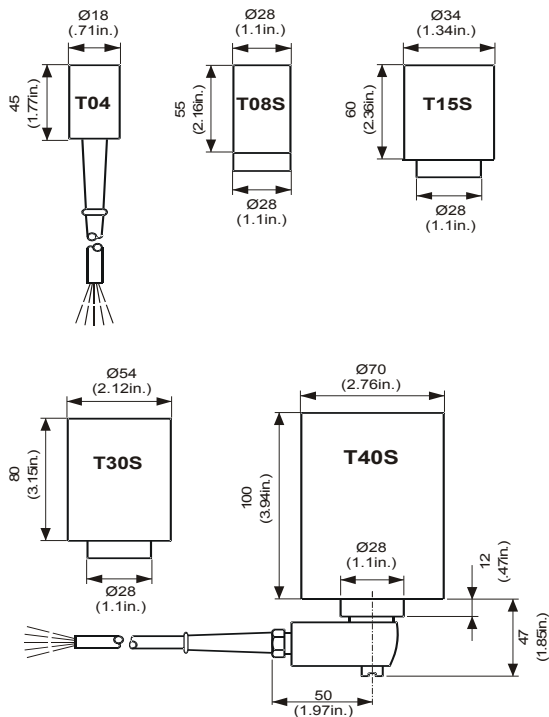
Technical data

Supply voltage	24 V DC / 110 mAmps.
Power consumption	approx. 2.5 VA
Fuse	375 mAmps. slow-blow size 1206 (SMD)
Power / Switching indication	5 LEDs
Display	LCD display, 2 lines, 16 characters each
Ambient temperature	0° - 50°C (32° - 122°F) during operation
Switching outputs 0-1-2 - Sheet	Open Emitters (NPN) of opto coupler outputs
Temperature depending drift of switching point	± 0,02 % / °C
Switching capacity	max. 50V, max. 50mAmps.
Measurement period	The min. dwell time of the sheet on the sensor is 15 ms.
Enclosure	A100: for DIN-rail mounting (EN50022, BS5584) A100-IP65: plastic enclosure for machine frame mounting, with transparent lid
Class of protection	A100: IP 00 A100-IP65: IP65
Weight	approx. 0,2 kg (0.44 lbs)
Connections	Terminal block wiring
Dimensions (I100)	125,4 × 103 × 46,5 mm (H × W × D)

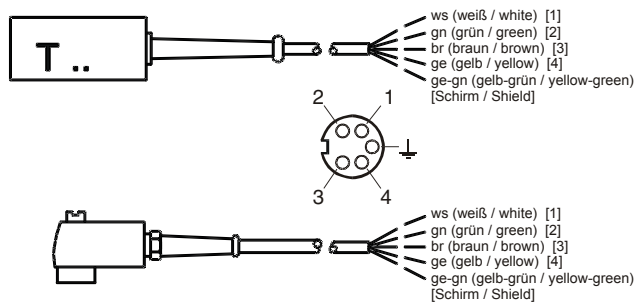
Dimensions of control unit and connections



Sensor dimensions



Cables



Sensor data

Sensor with fixed cable		T04					
Sensor with connecting socket			T08S	T15S	T30S	T40S	
Single sheet thickness	min.	0,04	0,08	0,1	0,2	0,3	mm
	max.	0,4	0,8	1,5	3,0	4,0	
Minimal adhesive force at axial stalling		1,5	8	15	35	55	kg
Diameter		18	28	34	54	70	mm
Length		45	50	60	80	100	mm
Weight of sensor appr.		0,15	0,32	0,38	1,1	2,3	kg
Operating temperature		0° - 50°C (32° - 122°F) on operation					
Class of protection		IP 65					

Order information

Control units	
Part name	Comment
A100	Control unit, for single head sensors, operating voltage 24 V DC.
A100-IP65	As A100, but unit mounted in plastic enclosure for machine frame mounting, with transparent lid, protection class IP65

Sensors	
Part name	Comment
T04	with fixed cable for terminal wiring, standard cable length is 2 meters, lengths up to 20 meters upon order.
T08S	
T15S	with terminal socket for connecting the sensor cable
T30S	(order cable "KS" separately).
T40S	

Cables (for pluggable sensors)	
Part name	Comment
KS	Sensor cable, for connecting the TxxS sensors, one end with cable socket, the other end with open wire ends for pin terminal connection. Standard length of cables is 2m, lengths up to 20 m upon order, larger lengths upon request.

Abbreviated Set-up / Teach-in instructions

(for detailed instructions refer to the Operating manual)

- Put a sheet with nominal thickness fully onto the sensor (see connection sketch).
- Press the SETUP key and then the NEW key, a new Teach-In procedure will then be performed.
- The green LED (1-SHEET) lights up now, the measuring value is stored.
- Functional check:
If a second sheet is placed in front of the sensor (double sheet condition), the red LED (2-SHEET) lights up. If both sheets are removed, the red LED (0-SHEET) lights up.

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