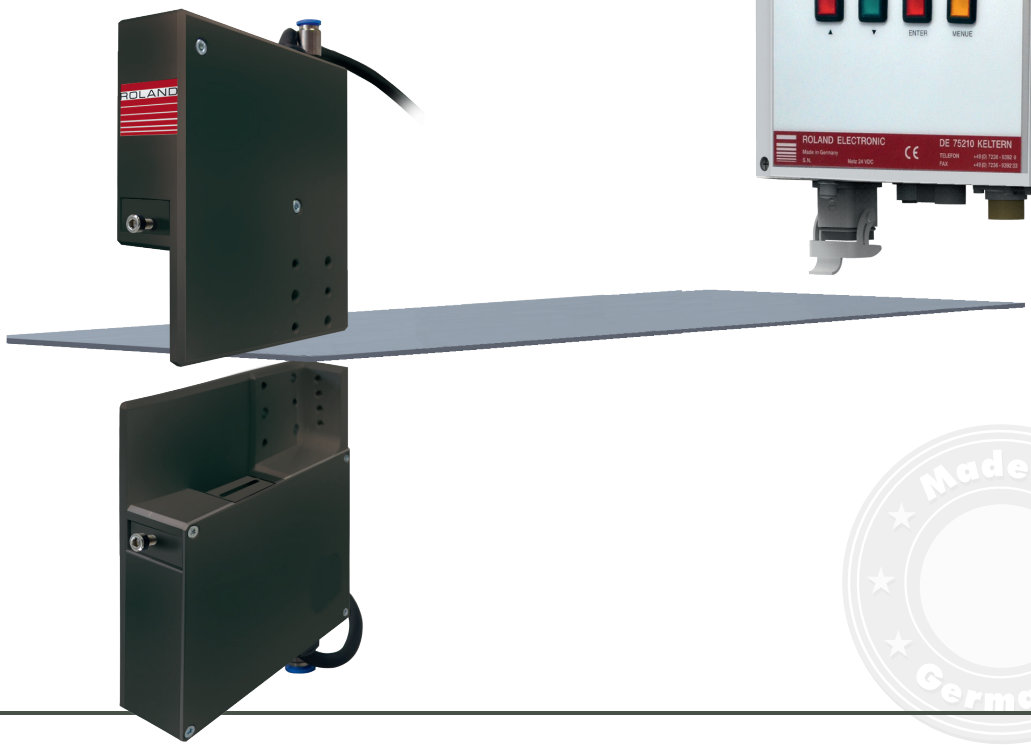
ROLAND
sensor technology

DOUBLE SHEET DETECTION

L20 DOUBLE SHEET

DUAL HEAD SYSTEM, LASER BASED

- For FE and NF, thickness control from 0.3 mm to 15 mm (.012 to .590 in)
- Suitable for magnetic feeder systems without velocity limitations
- Connection of up to three pairs of sensors at one unit (3-channel-version)
- Absolute measuring method
- Digital display of sheet thickness and operational parameters
- Monitoring of over-gauge and under-gauge limits
- Monitoring of laser function and sensor gaps
- Integrated fieldbus interface with process and parameter interface



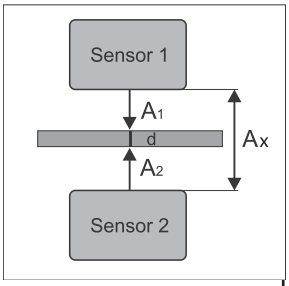
Made in Germany

L20 DOUBLE SHEET

Description:

Flexible manufacturing systems in the sheet processing industry require an automated reliable monitoring in order to protect stamping presses and other sheet processing equipment against damage caused by multiple sheet feeding.
The Double Sheet Control System R1000 L20 was specifically developed for this technical environment. Particular attention was given to maintenance free operation and self monitoring features of the measuring system. New functions have been added to ensure less failure and down times during operation. Thus the investment is recovered within a few months of operation with full process reliability.

The L20 is based on the product platform R1000 and consists in the standard version of:
- a control unit
- the sensor system
- the cables



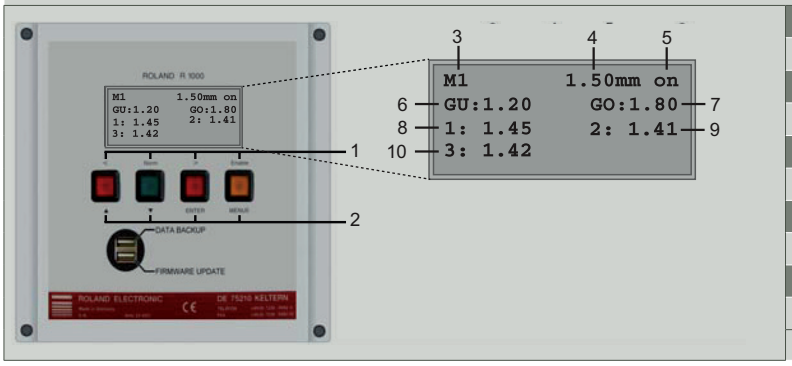
Function:

The function of the double sheet control system is based on the principle of laser triangulation.
The sensor system consists of two sensors measuring the distance „d".

$$d = Ax - (A1 + A2)$$

The thickness of the material is the difference of the sensor gaps „Ax" and the sum of the sensor gaps of „A1" and „A2".

Front view of the L20 with enlarged display detail



1	LED functions
2	Pushbutton functions
3	Program number
4	Nominal thickness
5	Status of measurement
6	Lower limit value
7	Upper limit value
8	Measured value from measuring channel 1
9	Measured value from measuring channel 2
10	Measured value from measuring channel 3

Control unit L20 with optocoupler interface

L20 -O-S
L20-3-O-S
A B C D

A	Type of unit	L20	
B	Measuring channels	3	1 channel unit 3 channel units
C	Outputs	O	Optocoupler
D	Connection	S	Cable pluggable

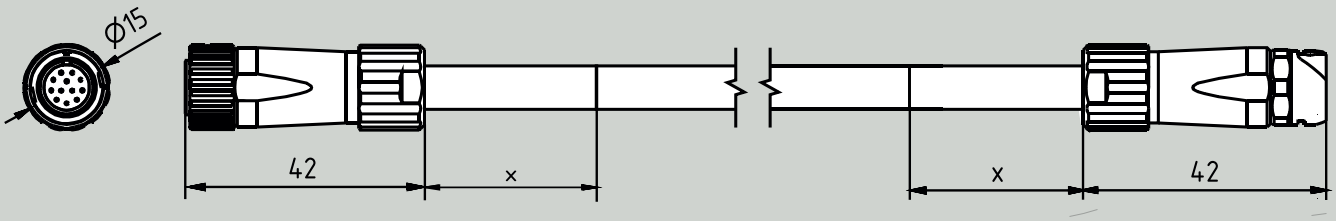
Control unit L20 with fieldbus interface

L20 -xx-S
L20-3-xx-S
A B C D

A	Type of unit	L20	
B	Measuring channels	3	1 channel unit 3 channel units
C	Fieldbus code	XX	Bus code
D	Connection	S	Cable pluggable

XX Bus code
PR = Profibus-DP; CN = ControlNet; DNT = DeviceNet;
PN = Profinet IO; CP = CanOpen; CC = CC-Link;
EN = EtherNet/IP; ET = EtherCAT;

Sensor cable SCL20S-GG

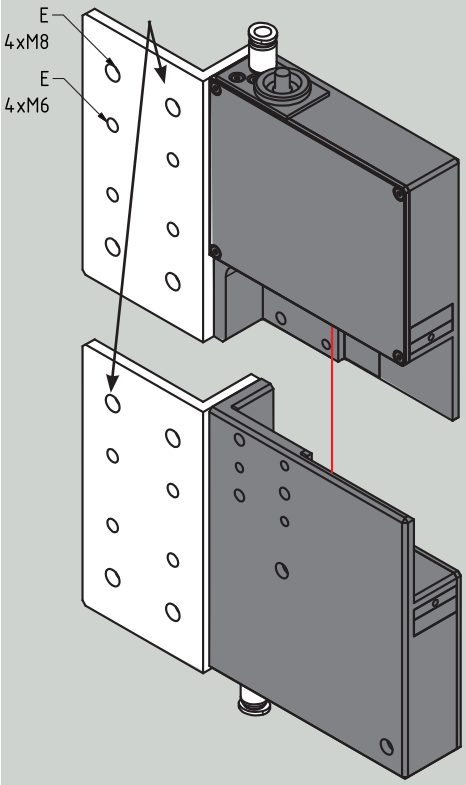


x = Cable bending radius, min. 50 mm at fixed wiring, min. 100 mm at flexible wiring.

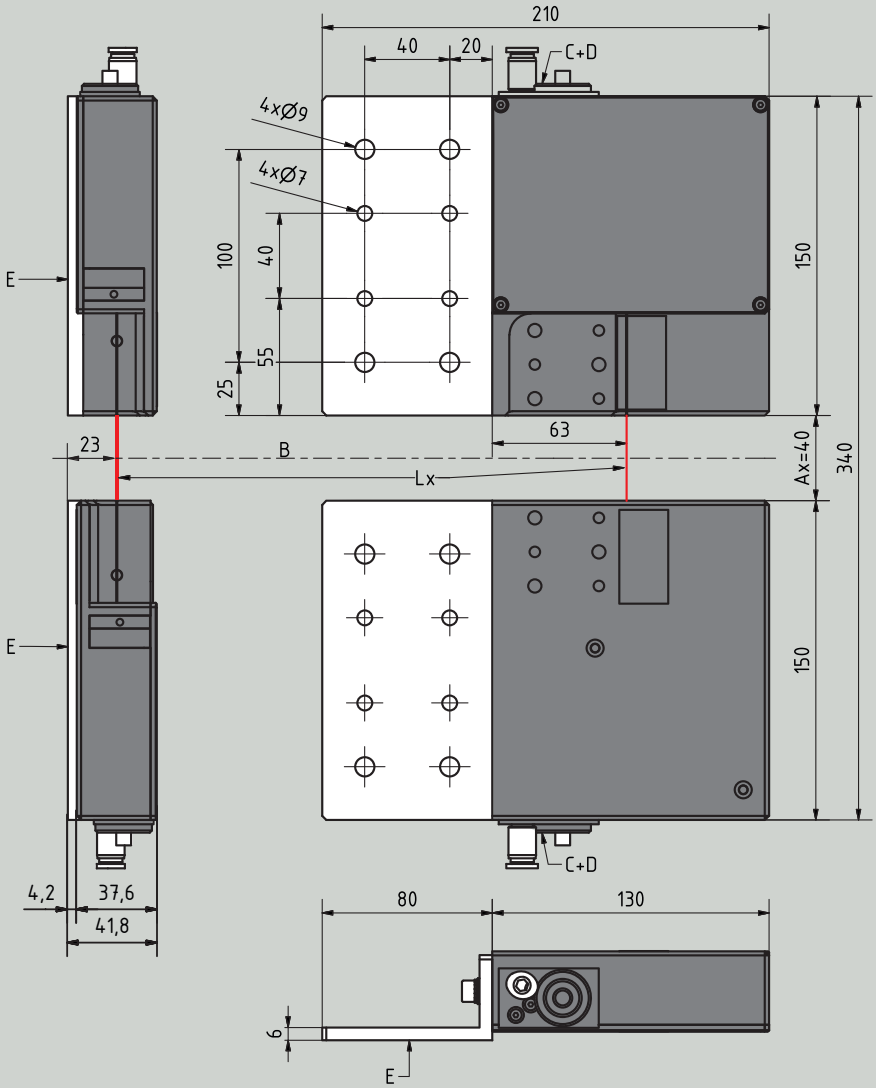
Sensor system:

The Sensor System LAAS40+ consists of two laser distance sensors LAS40 and LAS40+, which can be easily installed with the mounting kit. The mounting is done without the usually time-consuming adjusting of the laser beam. The laser distance sensor LAS40+ is equipped with a photo element to monitor the laser function. This makes it possible to achieve an outreaching process security, since a contamination or a misalignment of the laser is detected reliably. This feature allows to control the mounting distance Ax of both measuring sensors. It makes sense especially at wide spread plant components since thermally or mechanically induced distance deviations of the steel components are not always avoidable. Both sensor systems have an air connection which permits the lower placed sensor to be cleaned by a dry and oil-free air jet.

Sensor bracket SHLAS40W



Ax	Measuring range, distance
B	Optimum material guiding (central)
C	Cable outlet
D	Air connection
E	Mounting area
Lx	Laser axis



Sensor system LAAS40 (incl. Sensor bracket)

Sensors LAS40 / LAS40+: Technical Data

Application:	Double Sheet Control	Weight:	approx. 1 kg
Material thickness:	0.3 - 15 mm (0.012 - 0.590 in) (at nominal sensor distance Ax = 40 mm)	Material of enclosure:	Aluminum
Measuring principle:	Laser triangulation, laser class 2, EN 60825-1	Sensor cable:	pluggable; 0.5 m (19.68 in) length
Protection class:	IP 54	Air connection:	Tube, 8 mm (0.31 in) outer diameter

Technical Data

L20	
Operating Voltage:	24 V DC +6 V / -2 V
Power consumption:	< 18 W
Class of protection:	IP 65
Ambient temperature:	0°C - 50°C (32°F - 122°F) during operation
Weight:	approx. 3.5 kg (7.71 lbs) / 3.9 kg (8.59 lbs)
Signal inputs:	potential free, 24 V DC with common reference
Switching outputs 0- 1- 2 sheet:	opto coupler, high side switching

Order Information

L20 Fieldbus version		
Order information	Description	
L20-PR-S	Unit for 1 measuring channel	ProfiBus-DP, (Other available fieldbus options = XX), wall mount enclosure, data backup via Profibus-DP, XX or via USB port
L20-3-PR-S	Unit for 3 measuring channels	
XX: CN=ControlNet, DNT=DeviceNet, CP=CanOpen, PN=ProfiNet IO, EN=Ethernet/IP, ET=EtherCAT		
L20 Optocoupler version		
Order information	Description	
L20-O-S	Unit for 1 measuring channel	(O) = Optocoupler, wall mount enclosure, data backup via USB port
L20-3-O-S	Unit for 3 measuring channels	
Sensor systems		
Order information	Description	
LAAS40 Sensor system	Sensor unit, assembled with two LAS40, adjusted, incl. mounting kit (2x SHLAS40W, SHLAS40H) for simple and precise mounting. Please order 2 sensor cables separately.	
LAAS40+ Sensor system	Sensor unit, assembled with two LAS40 and LAS40+, adjusted, incl. mounting kit (2x SHLAS40W, SHLAS40H) for simple and precise mounting. Please order 2 sensor cables and 1 cable for laser beam monitorung separately. (For 3-channel-systems only).	
Cables		
Order information	Specification	Description
SCL20S-GG	Superflex TRONIC[C]PUR TP 4 x 2 x 0.25 mm²	Cable for connecting the sensors LAS40 / LAS40+ to L20, both cable ends plug-gable, with straight cable plug at the unit and straight cable socket and straight cable socket at the sensor side. Standard cable length is 2 m, other on request. 2 pcs. per measuring channel with LAAS40.
SC5M12S-GG	Superflex TRONIC[C]PUR UL 5 x 0.25 mm²	Connection cable for sensor LAS40+ for laser beam monitoring, at L20, both cable ends pluggable, with straight cable plug at the unit and straight cable socket and straight cable socket at the sensor side. Standard cable length is 5 m, other on request. 1 pc. per measuring channel with LAAS40+.
Spare parts		
Order information	Description	
LAS40	Laser distance sensor in enclosure, with a measuring gap of 40 mm and compressed air connection for sensor cleaning	
LAS40+	Laser distance sensor in enclosure, with a measuring gap of 40 mm and photoreceptor for additional processing security	
SHLAS40W	Mounting bracket for LAS40 and LAS40+	
SHLAS40H	Directional bracket for a simple and exact mounting of a pair of LAS40 sensors	

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