

## Double Sheet Control System L20

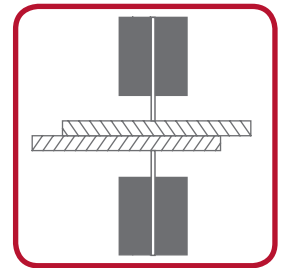
Dual Head Double Sheet Control System  
for Metals and Non metal materials  
Laser based function principle

Thickness Control from 0.3 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

### THE ROLAND PLUS

- ▶ All common Fieldbus standards
- ▶ Maintenance-free
- ▶ For compound materials too



## 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:

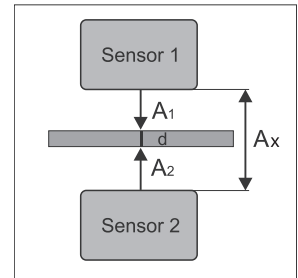
- a control unit
- the sensor system
- the cables

## 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“.

$$d = A_x - (A_1 + A_2)$$

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



## Technical Data:

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
Switching capacity:	max. 50 VAC, 0.15 A, 0.15 W

## 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

<b>L20 -O-S</b> <b>L20-3-O-S</b> /     \ <b>A B C D</b>	A	Type of unit	L20	
	B	Measuring channels	3	1 channel unit 3 channel unit
	C	Outputs	O	Optocoupler
	D	Connection	S	Cable pluggable

## Control unit L20 with fieldbus interface

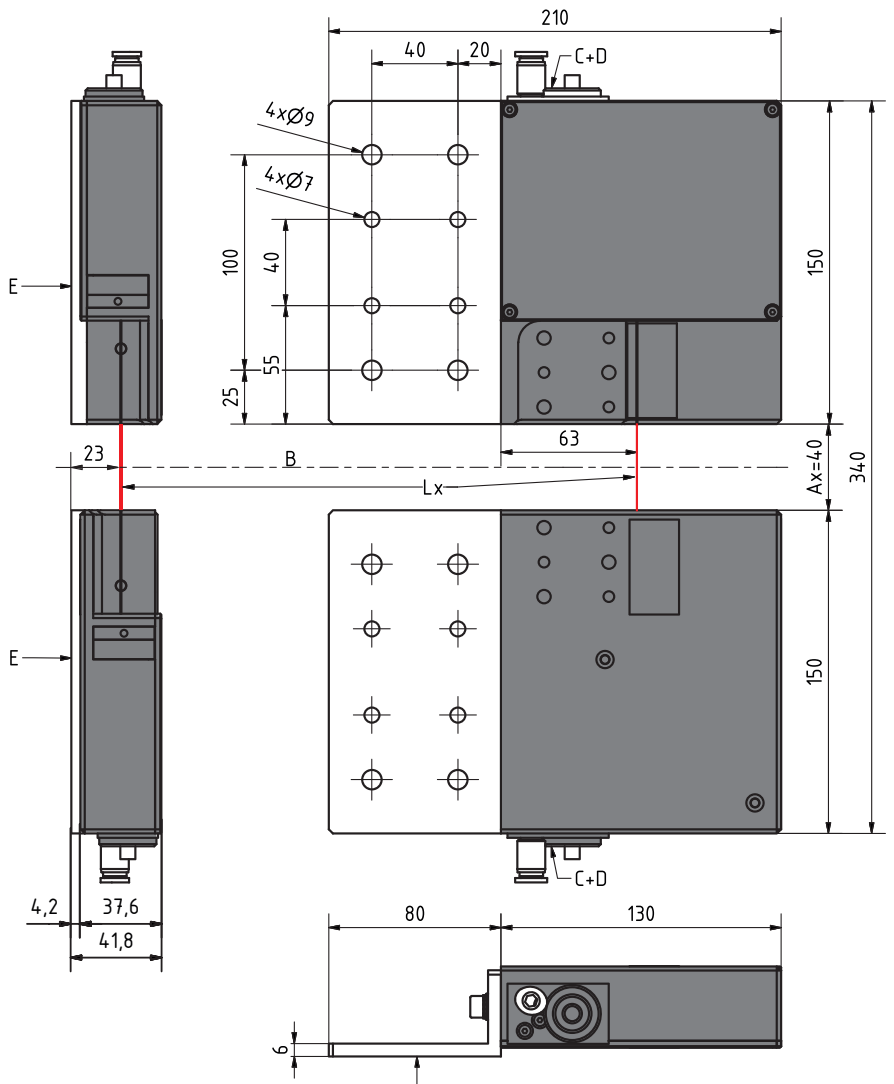
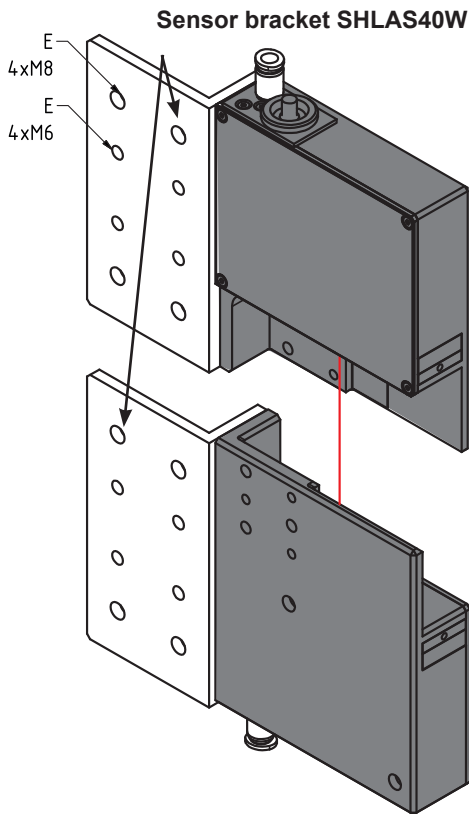
<b>L20 -xx-S</b> <b>L20-3-xx-S</b> /     \ <b>A B C D</b>	A	Type of unit	L20	
	B	Measuring channels	3	1 channel unit 3 channel unit
	C	Fieldbus code	xx	Bus code
	D	Connection	S	Cable pluggable

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

## Sensor 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  $A_x$  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.

Sensors LAS / LAS40+ Technical Data	
Application:	Double Sheet Control
Material thickness:	0.3 - 15 mm (0.012 - 0.590 in) (at nominal sensor distance $A_x = 40$ mm)
Measuring principle:	Laser triangulation, Laser class 2, EN 60825-1
Protection class:	IP 54
Weight:	approx. 1 kg (2.204 lbs)
Material of enclosure:	Aluminum
Sensor cable:	pluggable, 0.5 m (19.68 in) length
Air connection:	Tube, 8 mm (0.31 in) outer diameter



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

Sensor System LAAS40+ (incl. sensor bracket)

## Versions of control unit L20, fieldbus included:

<b>L20-O-S</b>	Unit for 1 measuring channel	Control unit in wall mount enclosure, data backup via USB port
<b>L20-3-O-S</b>	Unit for 3 measuring channels	Control unit in wall mount enclosure, data backup via USB port (*planned)
<b>Profibus-DP</b>		
<b>L20-PR-S</b>	Unit for 1 measuring channel	Control unit in wall mount enclosure, data backup via Profibus-DP or USB port
<b>L20-3-PR-S</b>	Unit for 3 measuring channels	Control unit in wall mount enclosure, data backup via Profibus-DP or USB port

Other available fieldbus options:

CN = ControlNet; DNT = DeviceNet; CP = CanOpen; PN = ProfiNet IO; CC = CC-Link; EN = EtherNet/IP; ET = EtherCAT

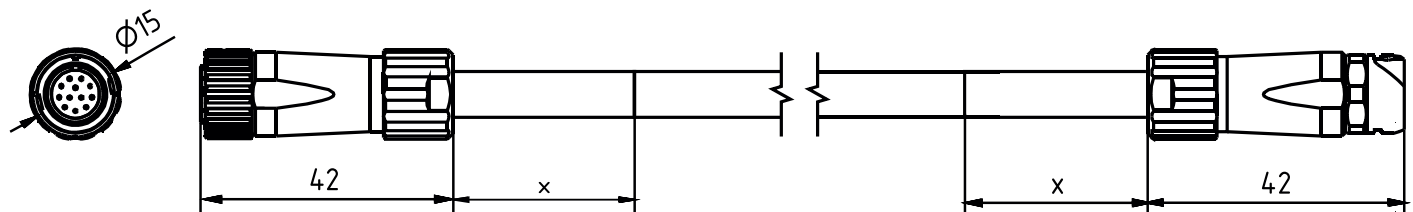
## Sensor systems:

Order information	Description
<b>LAAS40</b> 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.
<b>LAAS40+</b> 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 monitoring separately. (For 3-channel-systems only).

## Cables:

Order information	Specification	Description
<b>SCL20S-GG</b>	Superflex TRONIC[C]PUR TP 4 x 2 x 0,25 mm <sup>2</sup>	Cable for connecting the sensors LAS40 / LAS40+ to 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 2 m, other on request. 2 pcs. per measuring channel with LAAS40.
<b>SC5M12S-GG</b>	Superflex TRONIC[C]PUR UL 5 x 0,25 mm <sup>2</sup>	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+.

## Sensor cable SCL20S-GG



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

## Sensor systems:

Order information	Description
<b>LAS40</b>	Laser distance sensor in enclosure, with a measuring gap of 40 mm and compressed air connection for sensor cleaning
<b>LAS40+</b>	Laser distance sensor in enclosure, with a measuring gap of 40 mm and photoreceptor for additional processing security
<b>SHLAS40W</b>	Mounting bracket for LAS40 and LAS40+
<b>SHLAS40H</b>	Directional bracket for a simple and exact mounting of a pair of LAS40 sensors

