

## 15. COP-SHC (Laser scanner control interface)

COP-SHC

611855700

The COP-SHC module has specially been developed for the integration and control of laser scan heads from various producers. As example systems from Arges or SCANLAB. The Arges communication takes place via the HSSI protocol and the SCANLAB communication via the SL2-100 protocol.

Up to three scanner channels per module can be controlled and read back. The scanners are controlled synchronously with other actuators, such as multi servo drives and I/O systems.

Scan heads can easily be connected over a simple Ethernet cable (min. CAT5). The communications exchange takes place via an Ethernet cable (min. Cat 5). The COP-SHC module has fast digital outputs to control the laser enable or shutter coordinated to the axis movement. It is also possible to use the fast outputs as fast inputs, for example for trigger impulses. In addition, an RS485 or TTL level can be selected for the fast digital in- and outputs.

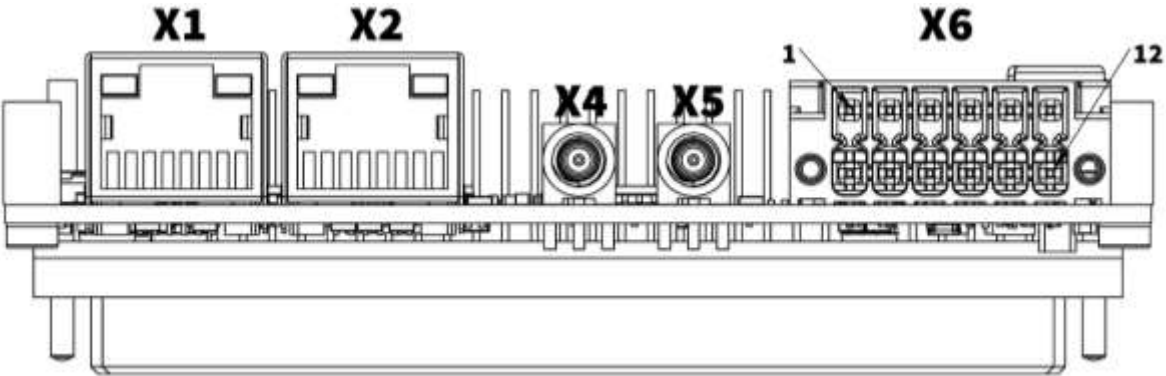


### 15.1. Technical Specifications

| SL2-100 / HSSI-interface                |                               |                 |
|-----------------------------------------|-------------------------------|-----------------|
| Number of Interfaces                    | 1                             |                 |
| Level                                   | RS 485                        |                 |
| Positioning resolution                  | 20 (SL2-100) / 16 (HSSI)      | Bit             |
| Channels                                | 3 (X, Y, Z)                   |                 |
| Sampling rate 2 channels (X, Y)         | 100                           | kHz             |
| Sampling rate 3 channels (X, Y, Z)      | 50                            |                 |
| Maximum cable length                    | 25                            | m               |
| Digital inputs 5V                       |                               |                 |
| Number of inputs                        | 2                             |                 |
| Rated voltage                           | $5 \pm 30\%$                  | V <sub>DC</sub> |
| Switching threshold                     | $V_H \geq 1.9 / V_L \leq 1.2$ | V <sub>DC</sub> |
| Input low-pass filter cut-off frequency | 2                             | kHz             |
| Input impedance                         | 11.5                          | kΩ              |

| Digital inputs 24V                                                   |                                |            |
|----------------------------------------------------------------------|--------------------------------|------------|
| Number of inputs                                                     | 2                              |            |
| Rated voltage                                                        | $24 \pm 30\%$                  | $V_{DC}$   |
| Switching threshold                                                  | $V_H \geq 8.9 / V_L \leq 5.5$  | $V_{DC}$   |
| Input low-pass filter cut-off frequency                              | 2                              | kHz        |
| Input impedance                                                      | 12                             | k $\Omega$ |
| Digital inputs TTL level (Fast_input)                                |                                |            |
| Number of inputs                                                     | 2                              |            |
| Rated voltage                                                        | $5 \pm 30\%$                   | $V_{DC}$   |
| Switching threshold                                                  | $V_H \geq 2.3 / V_L \leq 0.9$  | $V_{DC}$   |
| Input impedance                                                      | 10                             | k $\Omega$ |
| Digital outputs TTL level (Laser_On)                                 |                                |            |
| Number of outputs                                                    | 2                              |            |
| Maximum output current per output                                    | 1                              | A          |
| Maximum output current per output when every second output is loaded | 2                              | A          |
| Output impedance                                                     | 50                             | $\Omega$   |
| Digital inputs RS485 level (Fast_input)                              |                                |            |
| Number of inputs                                                     | 2                              |            |
| Common-mode input voltage range                                      | -7 to +12                      | $V_{DC}$   |
| Switching threshold                                                  | $V_H \geq 0.2 / V_L \leq -0.2$ | $V_{DC}$   |
| Input impedance                                                      | 50                             | k $\Omega$ |
| Digital outputs RS485 level (Laser_On)                               |                                |            |
| Number of outputs                                                    | 2                              |            |
| Maximum output current per output                                    | $\pm 250$                      | mA         |
| Output impedance                                                     | 50                             | $\Omega$   |
| Module                                                               |                                |            |
| Maximum power consumption at 24V node power supply                   | 200                            | mA         |

15.2. Pin Assignment



| Identification | Pin No. | Description |
|----------------|---------|-------------|
| X1 / X2        | 1       | Tx0+        |
|                | 2       | Tx0-        |
|                | 3       | Rx0+        |
|                | 4       | Tx1+        |
|                | 5       | Tx1-        |
|                | 6       | Rx0-        |
|                | 7       | Rx1+        |
|                | 8       | Rx1-        |

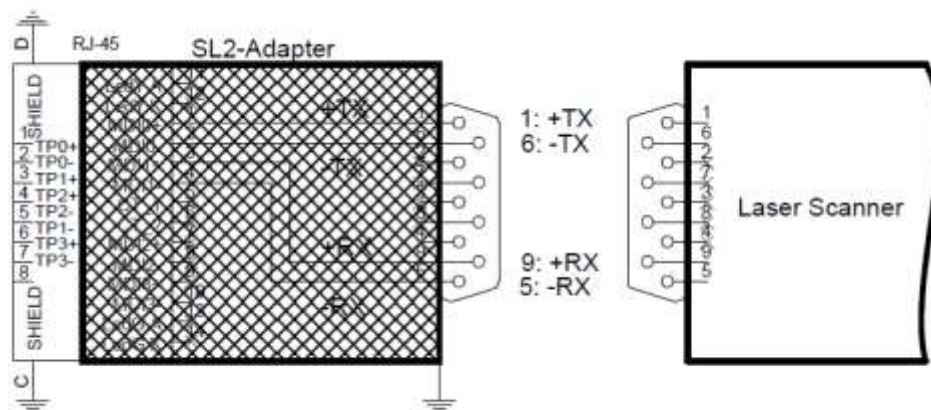
| Identification | Description                           |
|----------------|---------------------------------------|
| X4             | Laser_On_X / Fast input <sup>1)</sup> |
| X5             | Laser_On_Y / Fast input               |

1) Output and Input have TTL-Level

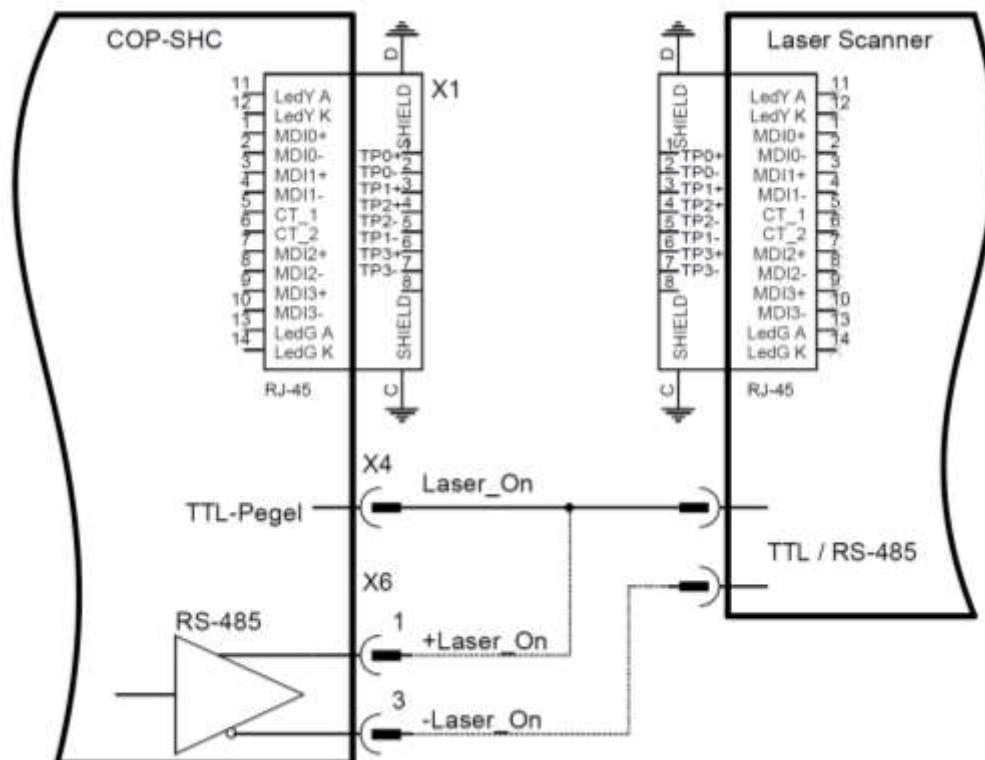
| X6  |     |                    |             |     |     |
|-----|-----|--------------------|-------------|-----|-----|
| No. | Dir | Id.                | Id.         | Dir | No. |
| 2   |     | Laser_On_Y+        | Laser_On_X+ |     | 1   |
| 4   |     | Laser_On_Y-        | Laser_On_X- |     | 3   |
| 6   |     | GND                | GND         |     | 5   |
| 8   | In  | Din_24V            | Din0_5V     | In  | 7   |
| 10  | In  | Din_24V            | Din1_5V     | In  | 9   |
| 12  | Out | +24V <sup>2)</sup> | +5V         | Out | 11  |

### 15.3. Connection Examples

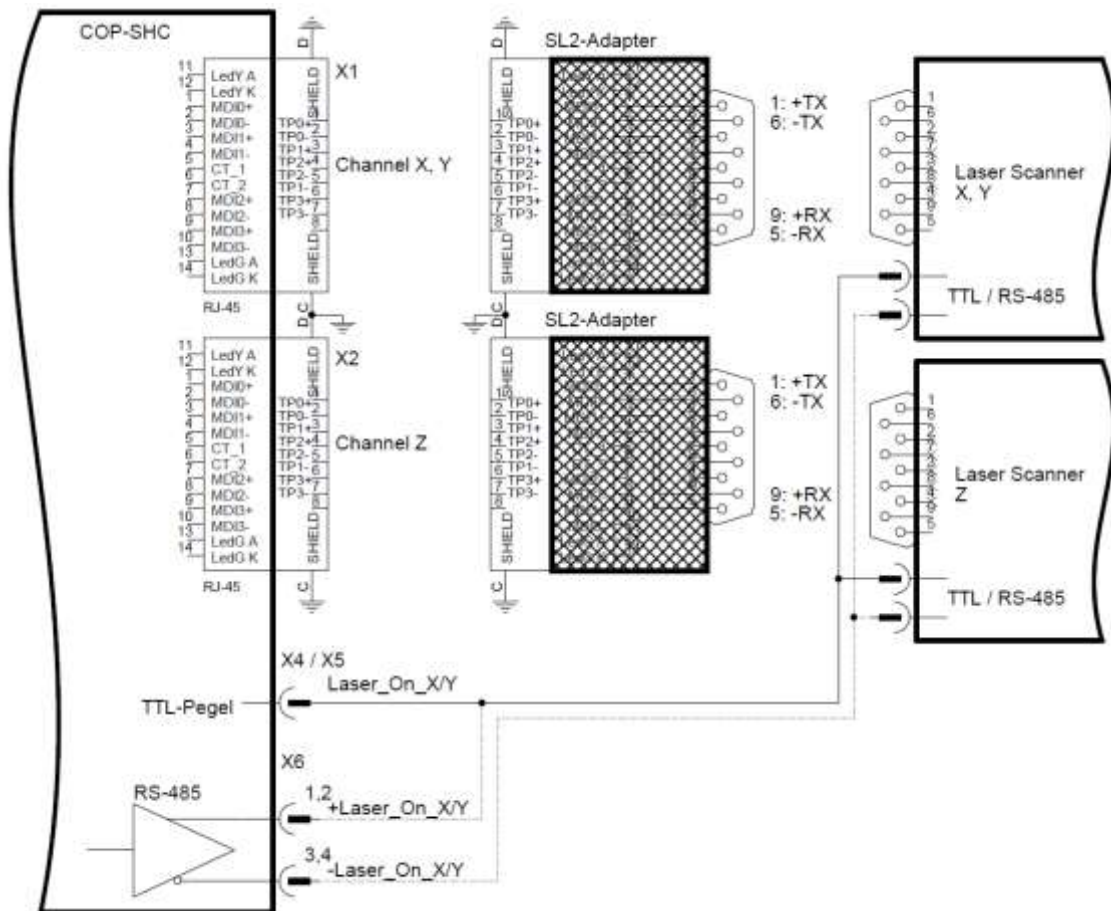
#### RJ-45 to D-Sub9 adapter for SCANLAB scan heads



#### Connect a scan head over RJ-45 (for example Arges)



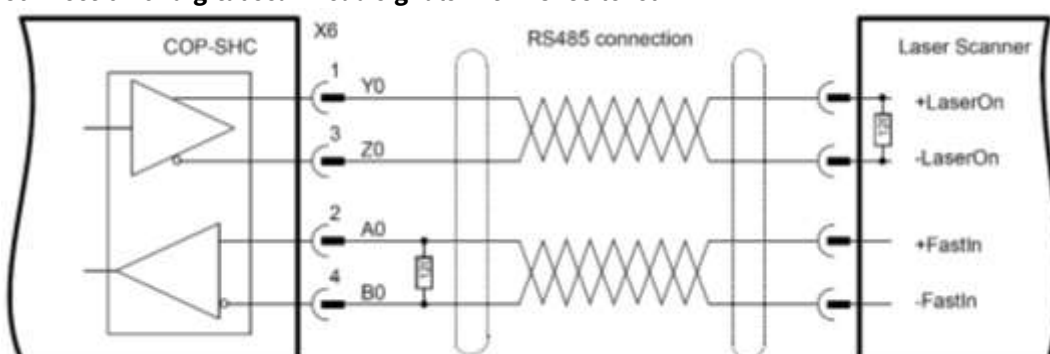
### Connect a scan head over D-Sub9 (for example SCANLAB)



### Ordering informations:

- When using the X and Y channels of COP-SHC (SL2), only 1 piece of the SL2 adapter is required.
- When using the X, Y, and Z channels, 2 pieces of the SL2 adapter are required.

### Connection of digital scan head signals with RS485 level



#### 15.4. Available Options

| Item Number | Label   | Option | Description                                                                                                                                                                                                                                                                                                             |
|-------------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 611855720   | COP-SHC | HSSI   | <ul style="list-style-type: none"> <li>• 1x HSSI protocol</li> <li>• 3x channels for X, Y and Z</li> <li>• 1x RJ-45 Interface</li> <li>• 1x RS485 Interface</li> <li>• 2x Fast digital inputs or outputs</li> <li>• 2x digital input for 5V and 24V</li> <li>• 1x Power supply 5V and 24V for pilot laser</li> </ul>    |
| 611855740   | COP-SHC | SL2    | <ul style="list-style-type: none"> <li>• 1x SL2-100 protocol</li> <li>• 3x channels for X, Y and Z</li> <li>• 2x RJ-45 Interface</li> <li>• 1x RS485 Interface</li> <li>• 2x Fast digital inputs or outputs</li> <li>• 2x digital input for 5V and 24V</li> <li>• 1x Power supply 5V and 24V for pilot laser</li> </ul> |

#### 15.5. Accessories

| Item Number | Label       | Option | Description                                                     |
|-------------|-------------|--------|-----------------------------------------------------------------|
| 611855745   | SL2-Adapter |        | Adapter (RJ45 to D-SUB9 SL2-100 Scanlab) for COP-SHC Option SL2 |