



## CLV45x Bar Code Scanner

Advanced line

# CLV45x Bar Code Scanner: Dynamic Focus Control

## Many Applications – One Solution

The high-performance CLV45x scanner with dynamic focus control can identify bar codes across large reading distances of up to 1.6 m (CLV450) with a large depth of field.

With poor-quality code prints, the SMART code recognition technology can enhance the reading rate considerably. In addition, the profile-code programming function enables you to configure the device parameters without the need for additional tools. This functionality is integrated in an extremely small IP 65 cast aluminum housing, thus making the CLV45x one of the most compact devices in its class.

Thanks to its outstanding features, the CLV45x can provide a simple and cost-effective solution for applications in handling and warehousing systems. The product range is complemented by an oscillating mirror version, which can be used to detect bar codes reliably on large areas.

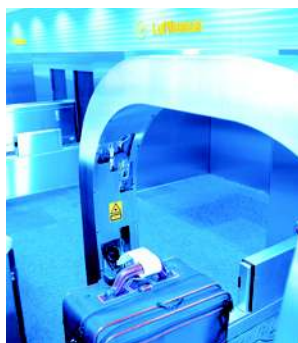


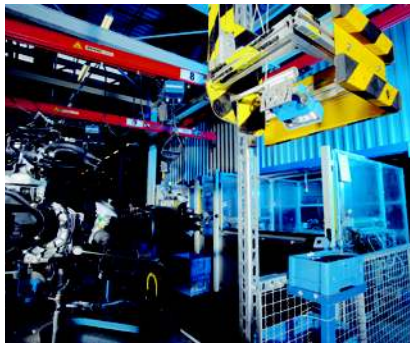
### Your benefits:

- Reliable bar code identification across large reading distances up to 1.6 m (CLV450)
- Extremely large depth of field thanks to dynamic focus control
- High reading rate with damaged, rotated, or dirty bar codes thanks to high scanning frequency of 1,000 Hz combined with SMART decoder
- Compact design facilitates installation in situations where space is at a premium
- Easy to operate
- Short commissioning time
- High system availability
- Extremely reliable

### CLV45x at a glance:

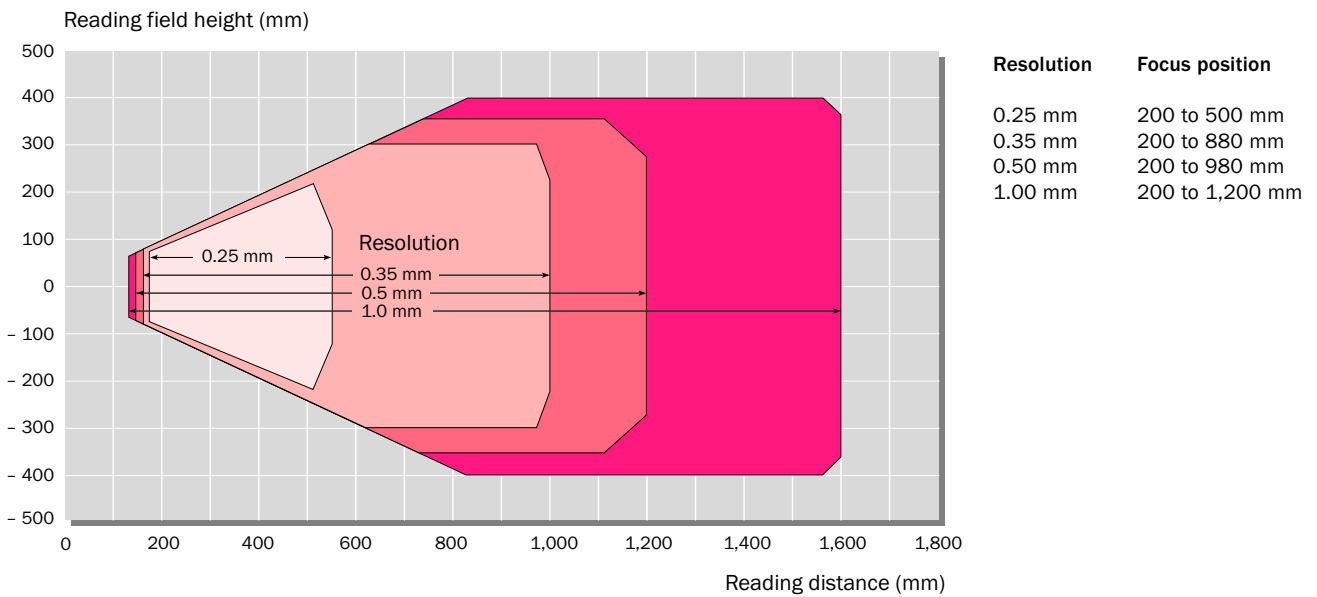
- Dynamic focus control in realtime
- Insensitive to ambient light and glare
- Auto Setup ensures automatic optimizing of reading performance
- Flash memory for firmware
- CAN-Bus compatible
- Integrated power supply tolerates wide range of input voltage



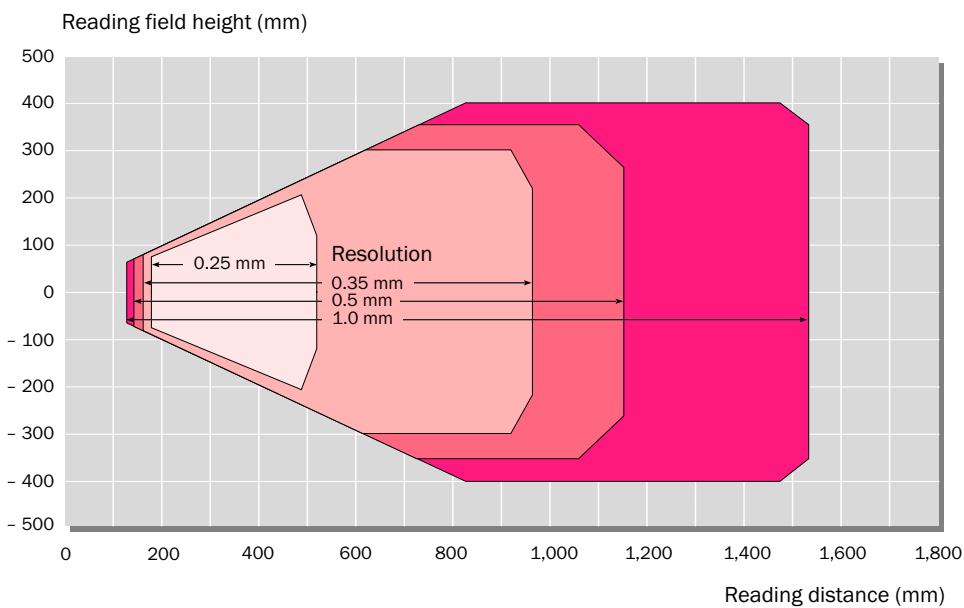


## Reading diagrams

### Line scanner CLV450-0010



### Line scanner with oscillating mirror CLV450-6010

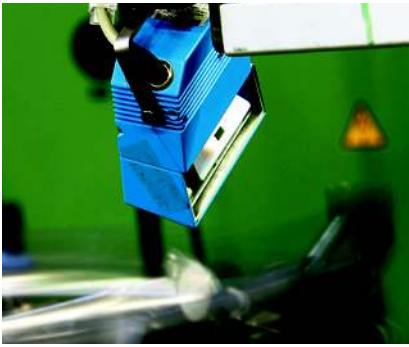


## Technical data CLV45x line scanner

| Type                                  | CLV450   | CLV451  |
|---------------------------------------|--|---|
| Line scanner                          | CLV 450-0010 (order no. 1018556)   | CLV 451-0010 (order no. 1019522)                |
| Focus                                 | Dynamic focus control  |   |
| Number of distance configurations     | Max. 8   |   |
| Reading range                         | 150 to 1,600 mm  | 150 to 950 mm (optimized for resolution 0.5 mm) |
| Focus adjustment time                 | ≤ 50 ms (from min. to max. focus position)   |   |
| Focus trigger source                  | "Sensor 2" switching input/serial interface/timer                                  |   |
| Laser diode (wavelength)              | Red light (λ= 650 nm)  |   |
| MTBF of laser diode                   | 20,000 h   |   |
| Laser class                           | Class 2 (pursuant to EN 60825-1)   |   |
| Useful aperture angle                 | Max. 50°   |   |
| Scanning/decoding frequency           | 400 to 1,000 Hz  |   |
| Resolution                            | 0.25 to 1.0 mm   | 0.5 mm  |
| Bar code print contrast (PCS)         | ≥ 60 %   |   |
| Immunity to ambient light             | 2,000 lx (on bar code)   |   |
| Number of bar codes per scan          | 1 to 20 (standard decoder), 1 to 6 (SMART decoder)                                 |   |
| No. of bar codes per reading interval | 1 to 50 (autodiscriminating)   |   |
| Bar code types (SMART decoder)        | Code 39, Code 128, Code 93, Codabar, EAN, EAN 128, UPC, 2/5 Interleaved            |   |
| Bar code length                       | Max. 50 characters (max. 500 characters across all bar codes per reading interval) |   |
| Print ratio                           | 2:1 to 3:1   |   |
| Number of multiple reads              | 1 to 99  |   |
| Optical indicators                    | 4 x LEDs (status indicators)   |   |
| Acoustic indicator                    | Beeper, can be deactivated and assigned to a function for result status indication |   |
| Reading pulse                         | "Sensor 1" switching input/free running/serial interface                           |   |
| "Host" data interface                 | RS 232 or RS 422/485, variable data output format                                  |   |
| Data transfer rate                    | 300 to 57,600 Bd   |   |
| Protocols                             | SICK Standard and 3964 (R)   |   |
| Physical configurations               | Stand-alone  |   |
| "Host" data interface                 | CANopen protocol, CAN Scanner Network  |   |
| Data transfer rate                    | 10 KBits/s to 1 MBits/s  |   |
| "Terminal" data interface             | RS 232, 9,600 Bd, 8 data bits, no parity, 1 stop bit, fixed output format          |   |
| Switching inputs/outputs              | 2 ("Sensor 1", "Sensor 2")/2 ("Result 1", "Result 2")                              |   |
| Electrical connection                 | 15-pin D Sub HD connector, cable length 0.9 m                                      |   |
| Operating voltage/power consumption   | 10 to 30 V DC*/6 W   |   |
| Housing                               | Cast zinc die-cast, does not represent a problem in paint shops                    |   |
| Enclosure rating/protection class     | IP 65 (to DIN 40 050)/Class 3 (to VDE 0106/IEC 1010-1)                             |   |
| EMC/vibration/shock tested            | To EN 61000-6-4, EN 61000-6-1, EN 61000-6-2/to EN 61010-1/to EN 60068-2-27         |   |
| Weight                                | 530 g with connecting cable  |   |
| Operating/storage temperature         | 0 to +40 °C/-20 to +70 °C  |   |
| Max. rel. humidity                    | 90 %, non condensing   |   |

\*) UL certificated when class 2 power supply according to UL 1310 is used





# CLV45x Bar Code Scanner

## Oscillating mirror

The oscillating mirror enables the CLV45x to deflect the scan line so that it is perpendicular to the scanning direction. By doing so, the CLV45x can identify bar codes in large areas.

Various operating modes are provided:

**Free selectable angular position**  
The oscillating mirror can be positioned at any angle.

**Oscillating mirror with variable deflection range**

Deflects the scan line up to the amplitude setting (max.  $\pm 20^\circ$ ).

**One shot**

Single oscillating movement for each reading gate, comprising one forward and return phase of the oscillating mirror.

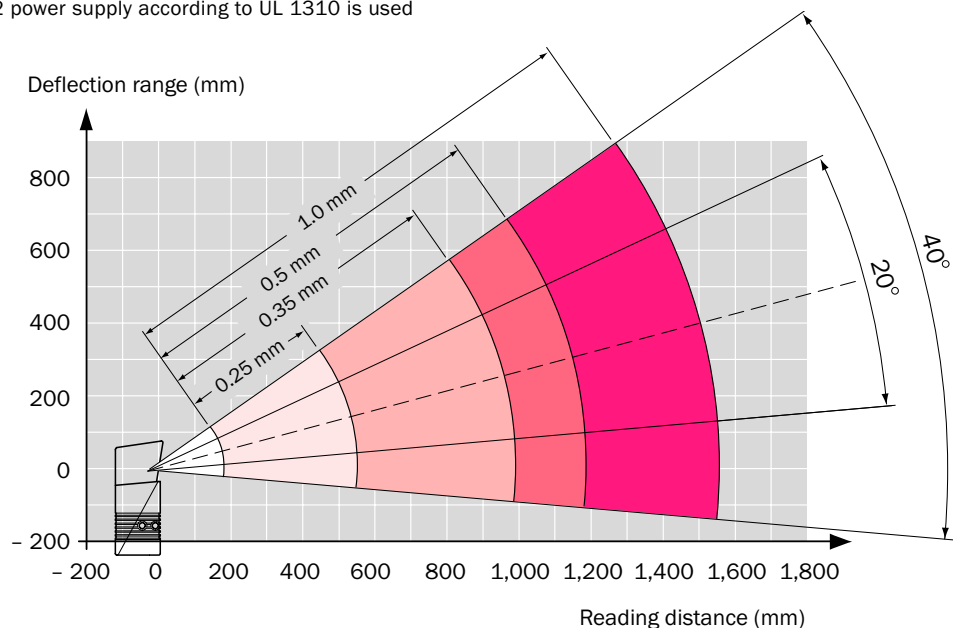
## Additional technical data of line scanner with oscillating mirror

| Type   | CLV 450   | CLV 451                          |
|--|---|----------------------------------|
| Line scanner with oscillating mirror           | CLV 450-6010 (order no. 1019218)  | CLV 451-6010 (order no. 1019524) |
| Reading window                                 | Side  |                                  |
| Angle of emergence                             | 105° (center position CW=50)  |                                  |
| Trigger source for DC <sup>1)</sup> switchover | Also: oscillating mirror reversal points  |                                  |
| Useful aperture angle                          | Max. 50°  |                                  |
| Oscillating mirror functions                   | Permanent (variable position)/oscillating (amplitude per DC variable or fixed)/one-shot |                                  |
| Oscillating frequency                          | 0.5 to 4 Hz   |                                  |
| Max. angle of deflection                       | +20° to -20° (can be set with software)   |                                  |
| Operating voltage/power consumption            | 10 to 30 V DC <sup>2)</sup> /max. 7.2 W   |                                  |
| Weight   | 700 g with connecting cable   |                                  |

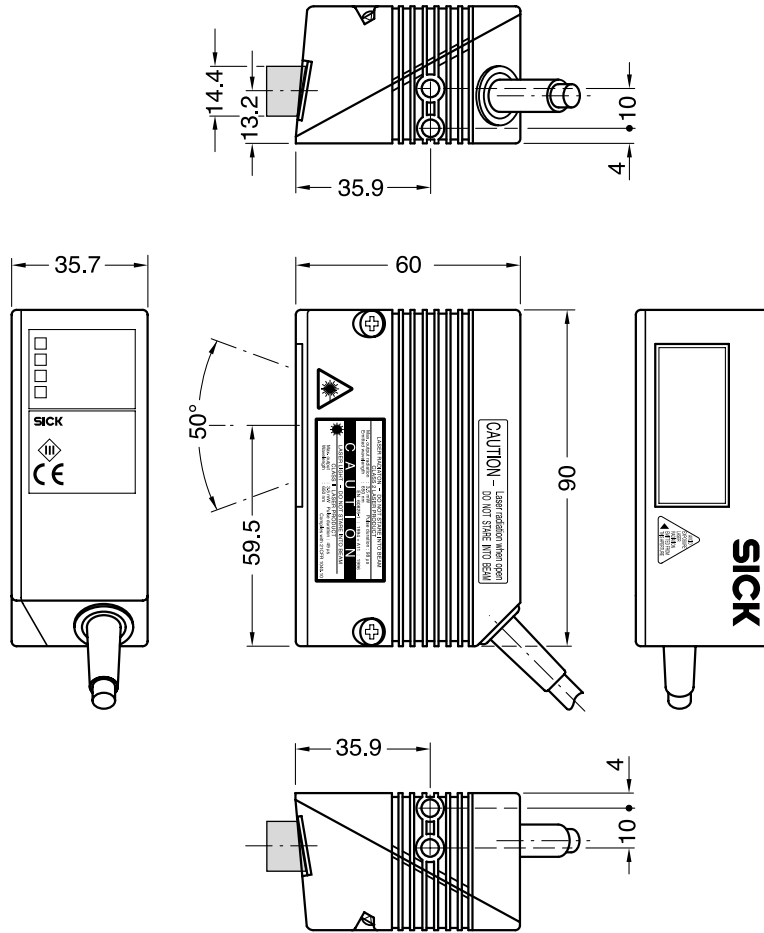
1) DC = distance configuration

2) UL certificated when class 2 power supply according to UL 1310 is used

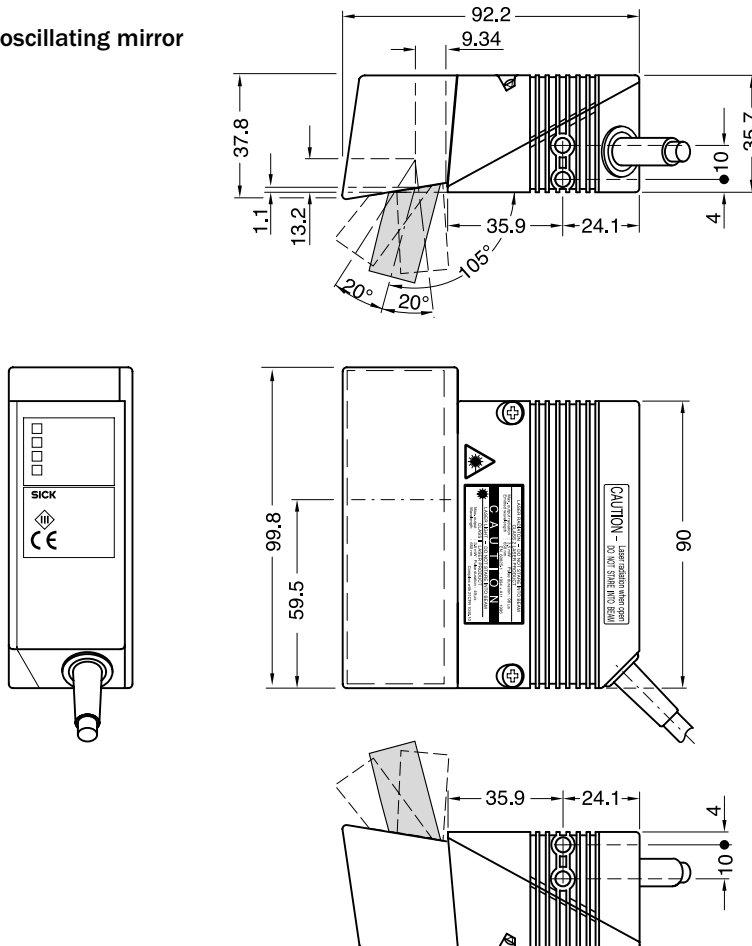
## Line scanner with oscillating mirror CLV450-6010



Line scanner  
CLV45x-0010



Line scanner with oscillating mirror  
CLV45x-6010



All dimensions in mm  
All tapped blind holes  
5M, 5 mm deep

## Accessories

### Mounting brackets

| Order no. | Description  |
|-----------|--|
| 2020410   | Mounting bracket with installation material  |
| 2022564   | Mounting bracket (U-shaped), CLV45x can be adjusted in two axes, including installation material   |
| 2023691   | Rod clamp with mounting bracket (U-shaped), CLV45x can be adjusted in two axes, for rods and tubes with 12 to 20 mm external diameter, including installation material |
| 2021342   | Mounting bracket (U-shaped) with shock absorber, CLV45x can be adjusted in two axes, including installation material   |
| 2025526   | Quick clamp with installation material   |

### Connectivity<sup>1)</sup>

|         |  |
|---------|--|
| 1023885 | CDB420-001 Connection Module for one CLV45x, with 15-pin D Sub HD socket, 4 x cable glands, 9-pin D Sub plug (internal), terminal strips for signal distribution, 5 x LEDs, polycarbonate housing, max. IP 65                            |
| 1025362 | CDM420-0001 Connection Module for one CLV45x, with 15-pin D Sub HD socket, 6 x cable glands, 9-pin D Sub plug (internal), terminal strips for signal distribution, 5 x LEDs, polycarbonate housing, max. IP 65                           |
| 1040002 | CDM420-0105 Connection Module, as no. 1025362 but with pre-installed CMF400-1001 Fieldbus Gateway (slave) to connect one CLV45x to PROFIBUS-DP via 9-pin D Sub socket (IP 20), CMC400-101 Cloning Module included                        |
| 1029854 | CDM420-0205 Connection Module, as no. 1025362 but with pre-installed CMF400-1101 Fieldbus Gateway (slave) to connect one CLV45x to PROFIBUS-DP via 2 x 5-pin M12-circular-plug-in-connectors (IP 65), CMC400-101 Cloning Module included |
| 1023850 | CMC400-101 Cloning Module for using in the CDB420-001 or CDM420-0001 Connection Module to save the scanner parameter values  |
| 2029466 | Cover with CMD400 Display Module <sup>2)</sup> for using in the CDM420 Connection Module, LCD, 4 x 20 characters, illuminated, 5 keys for menu management  |
| 1026241 | CMF400-1001 Fieldbus Gateway (slave) for using in the CDM420-0001 Connection Module to connect the CLV45x to PROFIBUS-DP via 9-pin D Sub socket, IP 20   |
| 1026643 | CMF400-1101 Fieldbus Gateway (slave) for using in the CDM420-0001 Connection Module to connect the CLV45x to PROFIBUS-DP via two 5-pin M12-circular-plug-in-connectors, IP 65  |
| 1026242 | CMF400-2101 Fieldbus Gateway (slave) for using in the CDM420-0001 Connection Module to connect the CLV45x to DeviceNet, IP 65  |
| 1026357 | CMF400-3101 Fieldbus Gateway (slave) for using in the CDM420-0001 Connection Module to connect the CLV45x to Ethernet TCP/IP, IP 65  |
| 2029468 | CMP400 Power Supply Module for using in the CDM420-0001 Connection Module to supply one CLV45x   |

1) Further modules available on request

2) CMC400-101 Cloning Module required

### Cables<sup>\*)</sup>

|         |   |
|---------|---|
| 6010075 | Extension for CLV45x connecting cable, 2 m, shielded, with 15-pin D sub HD plug and socket              |
| 6020092 | Extension for CLV45x connecting cable, 3 m, shielded, with 15-pin D sub HD plug and socket              |
| 2014054 | RS 232 data cable (null modem), 3 m, shielded, with 2 x 9-pin D sub sockets, for configuring the CLV45x |
| 4038847 | IP 65 seal for extension cable no. 6010075/no. 6020092  |

\*) Further cables available on request

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