

CLV450/CLV451

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

The CLV45x at a glance:

- Dynamic focus control in real time
- 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

Technical data

Type	CLV450	CLV451
Focus	Dynamic focus control	
Number of distance configurations	Max. 8	
Reading range	150 ... 1,600 mm	150 ... 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 of device	Class 2 (pursuant to EN 60825-1)	
Useful aperture angle	Max. 50°	
Scanning/decoding frequency	400 ... 1,000 Hz	
Resolution	0.25 ... 1.0 mm	0.5 mm
Bar code print contrast (PCS)	≥ 60 %	
Ambient light compatibility	2,000 lx (on bar code)	
Number of bar codes per scan	1 ... 20 (standard decoder), 1 ... 6 (SMART decoder)	
No. of bar codes per reading interval	1 ... 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 ... 3:1	
Number of multiple reads	1 ... 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 ... 57,600 Bd	
Protocols	SICK Standard and 3964 (R)	
Physical configurations	Stand-alone	
"CAN" data interface	CANopen protocol, CAN Scanner Network	
Data transfer rate	10 Kbit/s ... 1 Mbit/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 ... 30 V DC ¹⁾ /6 W	
Housing	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 ... +40 °C/-20 ... +70 °C	
Max. rel. humidity	90 %, non condensing	

¹⁾ UL certificated when class 2 power supply according to UL 1310 is used



Additional technical data of line scanner with oscillating mirror

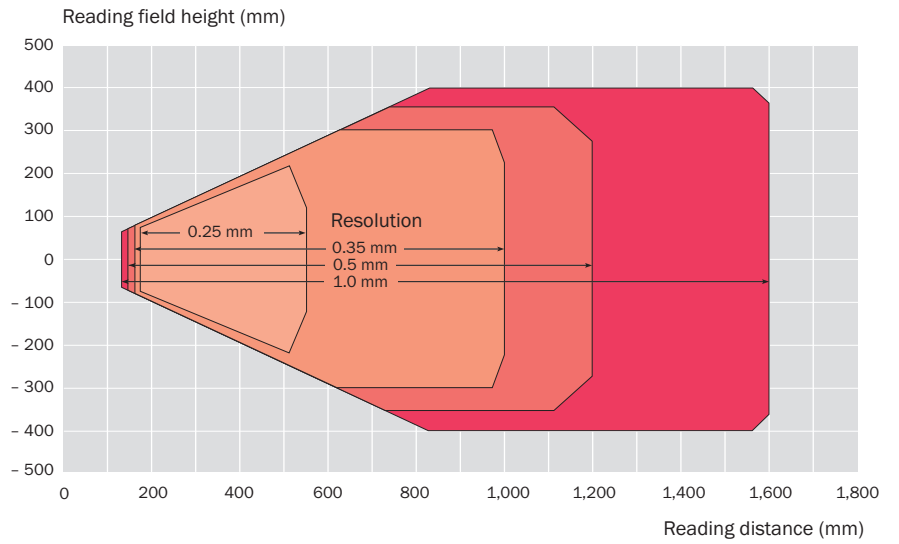
Type	CLV450	CLV451
Reading window	Side	
Trigger source for DC ¹⁾ switchover	Also: oscillating mirror reversal points	
Useful aperture angle	Max. 50°	
Oscillating mirror functions	Permanent (variable position)/oscillating (amplitude per DC variable or fixed)/one-shot	
Oscillating frequency	0.5 ... 4 Hz	
Max. angle of deflection	+20° ... -20° (can be set with software)	
Operating voltage/power consumption	10 ... 30 V DC ²⁾ /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

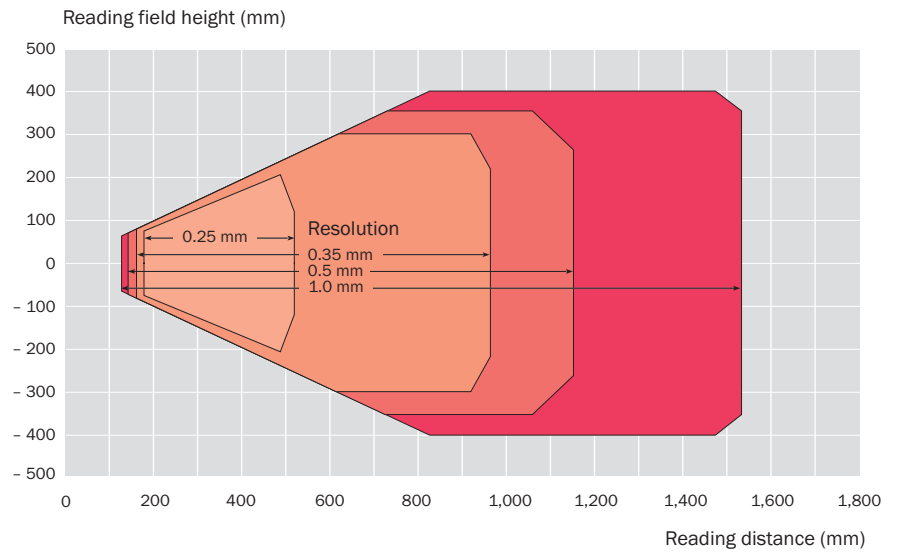
Line scanners

Line scanner
CLV450-0010

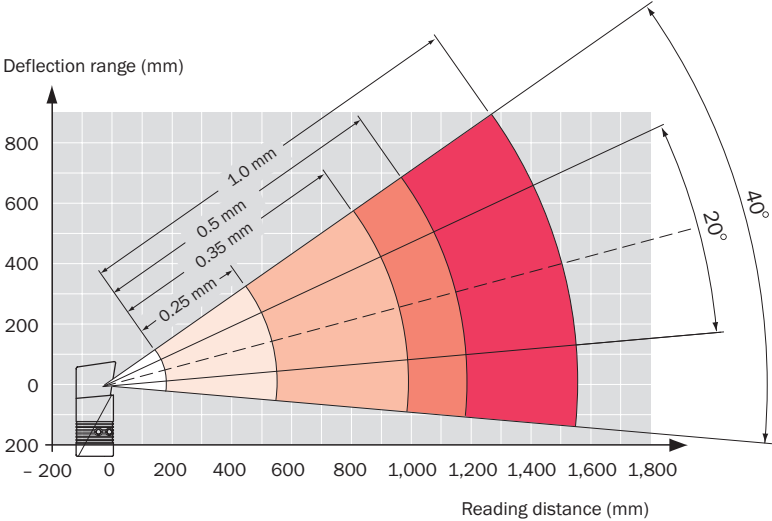


Resolution	Focus position
0.25 mm	200 ... 500 mm
0.35 mm	200 ... 880 mm
0.50 mm	200 ... 980 mm
1.00 mm	200 ... 1,200 mm

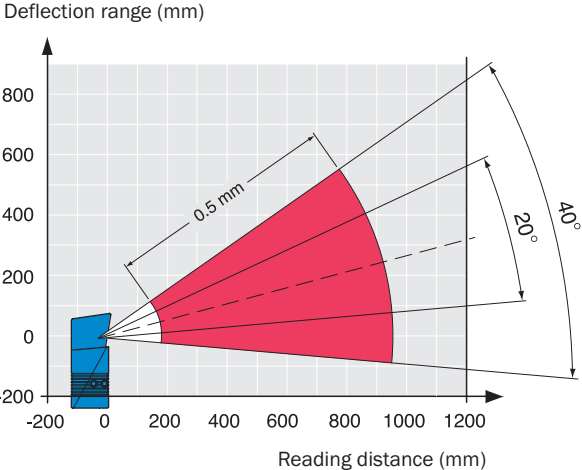
Line scanner with oscillating mirror
CLV450-6010



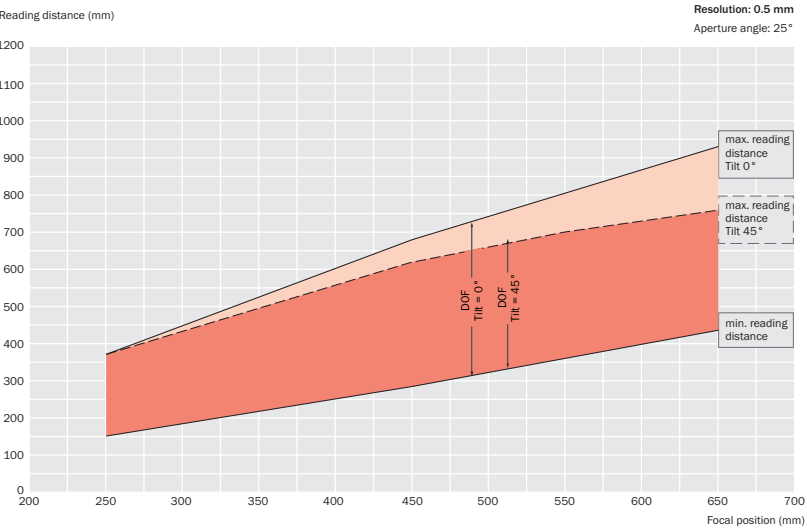
Oscillating mirror



Line scanner with oscillating mirror
CLV450-6010



Line scanner with oscillating mirror
CLV451-6010

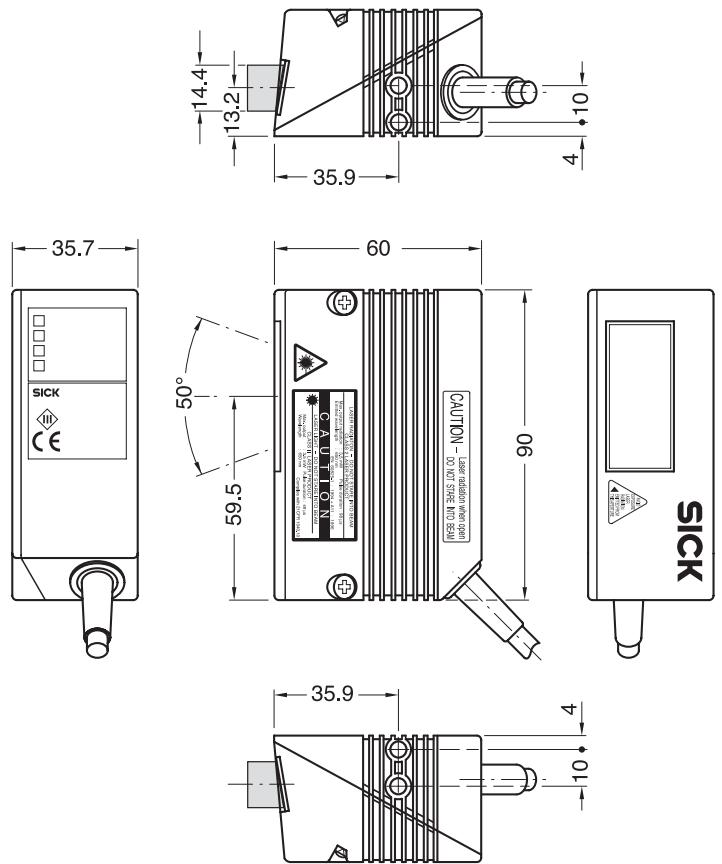


Line scanner with oscillating mirror
CLV451-0010

Depth of field (DOF) = max. reading distance minus min. reading distance

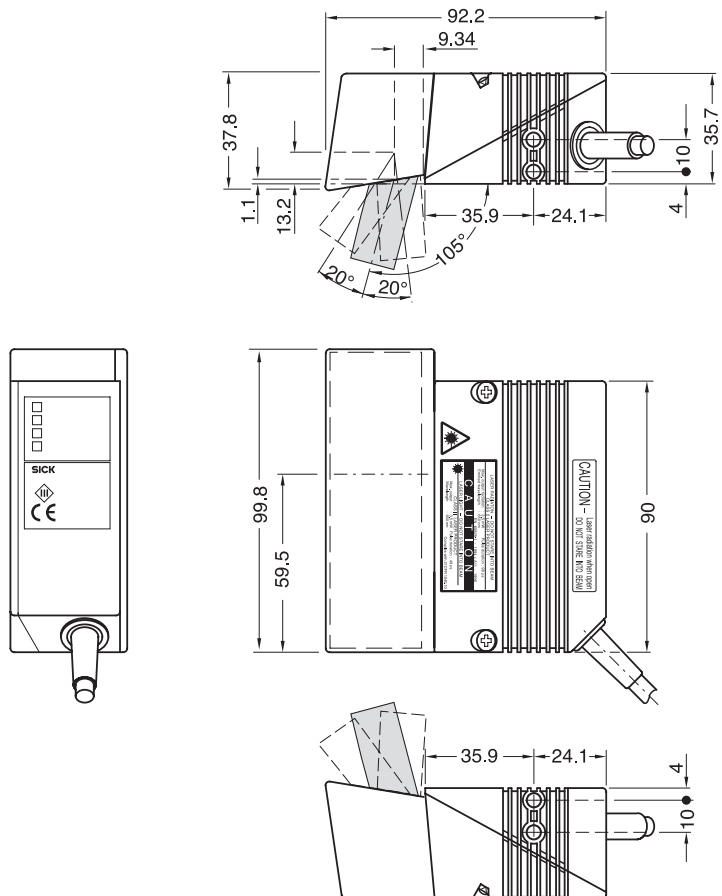
Dimensional drawings

Line scanner
CLV45x-0010



All dimensions in mm

Line scanner with oscillating mirror
CLV45x-6010



Order information

Type	Description	Order no.
CLV450-0010	Line, straight light exit	1018556
CLV451-0010	Line, straight light exit	1019522
CLV450-6010	Line scanner with oscillating mirror	1019218
CLV451-6010	Line scanner with oscillating mirror	1019524

Accessories

Accessories can be found on Page 218

CLV Accessories

	CLV405	CLV410	CLV420	CLV430	CLV440	CLV450	CLV480/CLV490/ CLX490	CLV480/CLV490/ CLX490 with Heating	CLV6xx Standard Version	CLV6xx Ethernet Version	
Cable											
6010075	■	■	■	■	■	■					Extension for connection cable, 2 m, 15-wired, shielded, with 15-pin, D-Sub-HD plug/receptacle
6010137	■	■	■	■	■	■					As 6010075, but with 15-pin D-Sub-HD plug/open end
2014054	■	■	■	■	■	■	■		■	■	Data connection cable (RS-232) for CLV/ICR/CDB/CDM to PC, 3 m, with 2 x 9-pin D-Sub receptacle
6010088	■	■	■	■	■	■					Data cable for extension up to 3 m, Ø 6.6 mm, 15 x 0.09 mm ² , shielded, available per meter
6010019	■	■	■	■	■	■			■	■	D-Sub female connector, 15-pin HD (receptacle), hand soldered terminal
6010020	■	■	■	■	■	■			■	■	D-Sub female connector, 15-pin HD (plug), hand soldered terminal
6009438	■	■	■	■	■	■			■	■	D-Sub plug housing (metal) for 9-pin/15-pin HD inputs
6020092		■	■	■	■	■					Extension cable 3 m, 15-wired, shielded, with 15-pin D-Sub-HD plug/receptacle
4038847		■	■	■	■	■			■	■	IP 65 sealing ring for extension cable 6010075 and 6020092
2020307							■				Plug housing (IP 65) for CLV/X490, with EEPROM parameter store for the connection to CDM490, with 2 cables, each 3 m, each 15-wired shielded, with 15-pin Sub-HD plug/receptacle
2021806							■				As 2020307, but with a length of 1 m
2020981							■				Plug housing (IP 65) for CLV/X490, with EEPROM parameter store, with 2 cables Ø 8 mm, each 3 m, each 15 x 0.14 mm ² , shielded, open end
6034414										■	Cable, M12 4-pin, Ethernet to Host RJ45, 2 m (plug/plug)
6029630										■	Cable, M12 4-pin, Ethernet to Host RJ45, 3 m (plug/plug)
6034415										■	Cable, M12 4-pin, Ethernet to Host RJ45, 5 m (plug/plug)
6030928										■	Cable, M12 4-pin, Ethernet to Host RJ45, 10 m (plug/plug)
6034420										■	Cable, M12 4-pin, Ethernet to Host M12, 2 m (plug/plug)
6034421										■	Cable, M12 4-pin, Ethernet to Host M12, 3 m (plug/plug)
6034422										■	Cable, M12 4-pin, Ethernet to Host M12, 5 m (plug/plug)
2042916										■	Cable, M12 12-pin, to CDB620/CDM400/CDF600 15-pin D-Sub, 0.9 m (socket/plug)
2041834										■	Cable, M12 12-pin, to CDB620/CDM400/CDF600 15-pin D-Sub, 2.0 m (socket/plug)
2042914										■	Cable, M12 12-pin, to CDB620/CDM400/CDF600 15-pin D-Sub, 3.0 m (socket/plug)
2042915										■	Cable, M12 12-pin, to CDB620/CDM400/CDF600 15-pin D-Sub, 5.0 m (socket/plug)

CLV Accessories

	CLV405	CLV410	CLV420	CLV430	CLV440	CLV450	CLV480/CLV490/ CLX490	CLV480/CLV490/ CLX490 with Heating	CLV6xx Standard Version	CLV6xx Ethernet Version	
6034605										■	Cable, M12 12-pin, to open end, 5.0 m
6035701									■	■	Extension cable up to 3 m, 16 x 0.14 mm ² (AWG26), shielded, as per meter
6034417									■	■	Extension cable, 2 m, 15-wired, shielded, with 15-pin D-SUB-HD (plug/socket) AWG26
6034418									■	■	Extension cable, 3 m, 15-wired, shielded, with 15 pin D-SUB-HD (plug/socket) AWG26
2043413									■	■	Extension cable, 2 m, 15-wired, shielded, with 15-pin D-SUB-HD (socket/open end) AWG26
2020302							■				Connection cable (3 m), Ø 8 mm, shielded, with 15-pin D-Sub-HD receptacle and 15-pin D-Sub-HD plug
2020264							■				Connection cable for CLV/X490 ("I/O"), Ø 8 mm, 3 m, 15-wired, shielded, with 15-pin D-Sub-HD plug/open end
2020303							■				Connection cable for CLV/X490 ("Host/Term"), Ø 8 mm, 3 m, 15-wired, shielded, with 15-pin D-Sub-HD plug/open end
2027046							■				Connection cable for CLV480, CLV/X490 to CDB420, 3 m, without EEPROM parameter store
2030023							■				Connection cable for CLV480, CLV/X490 to CDB420, 3 m, with EEPROM parameter store
2033325							■				Connection cable for CLV480, CLV/X490 to CDB420, 1 m, with EEPROM parameter store
6007508							■				Data cable for RS-485 network, Ø 8.5 mm, 2 x 2 x 0.23 mm ² , twisted pair, shielded, available per meter
2022714							■	■			Incremental encoder mit wheel resolution 10 mm/pulse max. 100 KHz, power supply DC 18 ... 28 V, with mounting bracket and mounting material (2 x inner hex screw M5 x 30, 2 x nut M5 - A2, 4 x washer A5,3 - A2) (minimal operation temperature: 0° C)
2030065								■			Cold cable (3 m), with plug housing and parameter store (EEPROM), IP 65
2031034								■			Cold cable (10 m), with plug housing and parameter store (EEPROM), IP 65

CLV Accessories

CLV405	CLV410	CLV420	CLV430	CLV440	CLV450	CLV480/CLV490/ CLX490	CLV480/CLV490/ CLX490 with Heating	CLV6xx Standard Version	CLV6xx Ethernet Version
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Holder/Mounting bracket										
2020077		■	■							Mounting bracket, small, with mounting material (2 screws M4 x 8, 2 x washer A 4,3, 2 x spring ring B4)
2020078		■	■							Mounting bracket, large, with mounting material (2 screws M4 x 8, 2 x washer A 4,3, 2 x spring ring B4)
2032868		■	■							Holder for bars, with mounting angles, with mounting material (3 screws M4 x 8, 2 plates A4,3 2 x spring ring B4, grub screw M8 x 16)
2022564				■	■	■				Mounting bracket, U-shaped, with mounting material (3 self-locking screws M 5 x 8, 3 x washer A 5, 2 x screws M 5 x 12, 2 x washer A 5,3)
2021342						■				Mounting bracket, U-shaped, with shock absorber and mounting material (3 self-locking screws M5 x 8, 3 x washer A5, 2 x screw M5 x 16, 2 x washer A5,3)
2023691				■	■	■				Clamp bracket for tubes with 12 ... 20 mm outer diameter, with mounting bracket, U-shapes, with mounting material (1 x grub screw M8 x 16, 3 x self locking screw M5 x 8, 3 x washer A5)
2042802								■	■	Universal holder
2042902								■	■	Bracket with adapter board
2020410				■	■	■		■	■	Mounting set
2025526				■	■	■		■	■	Quick clamp
2016110							■	■		Quick-change clamping device with mounting material (2 screws M6 x 12, 2 screws M6 x 16, 2 x washer A 6,4)
2013824							■	■		Angle bracket, single, with 2 x self-locking screw M6 x 10
2018435							■	■		Joint angle (angle bracket 2013824 double), with 2 screws M6 x 10 mm
2022996							■			Mounting angle, with 2 x screws M6 x 12, self-locking
2032070							■			Mirror shield (for the reduction of the needed mounting area)
8008085				■	■	■				Profile bar codes DIN A5