

# AMV 30-041

## Connection Module

for one CLV 21x, CLV 22x or CLV 23x/25x/28x



The AMV 30-041 connection module (below referred as "AMV"), is used to connect one SICK bar code scanner of the CLV 21x/22x or CLV 23x/25x/28x series to the peripheral devices (Host/PLC/sensor) and to the required operating voltage. The AMV realizes the direct connection to the host (point to point) as well as the wiring of simple bus structures (e.g. SICK network). The device supports all types of host interfaces of the bar code scanners and the function inputs and outputs, too.

### 1. Features

- Terminal strips for connection of the bar code scanner
- Internal D Sub connector for access to terminal interface of bar code scanner (operating and parametrization)
- Internal control indicator and fuse for DC 24 V operating voltage
- Integrated and switchable current sources to convert the CL 20 mA host interface (passive - active (AMV) - passive)
- Connecting and forwarding of operating voltage (knot)
- Cable routing and cable clamping via PG conduit thread

### 2. Scope of delivery

- AMV 30-041 connection module for wall mounting without cables
- Notes on device
- this Technical information "AMV 30-041 Connection Module"

### 3. System requirements

The following is needed to set up and operate the AMV:

- ♦ DC 24 V voltage supply to IEC 742 (control voltage)
- ♦ A PC with "CLV Setup" software (SICK) for access to the terminal interface of the bar code scanner
- ♦ a RS 232 interface cable (with 9pin D Sub socket for AMV), e.g. no. 2 014 054

# SICK

### 4. Assembly

- Mount the AMV near the bar code scanner. Therefore use the four fixing holes in the screw well (corresponding hole dimensions see *fig. 9, page 7*). Suitable screw diameter: up to 4 mm.

Recommended cable lengths between the CLV and the host:

Type of interface	Data transmission rate	Distance to host
CL 20 mA	max. 9,600 Bit/s	max. 1,000 m
RS 232	up to 19,200 Bit/s	max. 10 m
	38,400 to 57,600 Bit/s	max. 3 m
RS 422/485 <sup>1)</sup>	max. 38,400 Bit/s	max. 1,200 m
	max. 57,600 Bit/s	max. 500 m

1) it must be ensured that the correct cable terminations are used

Table 1

### 5. Design

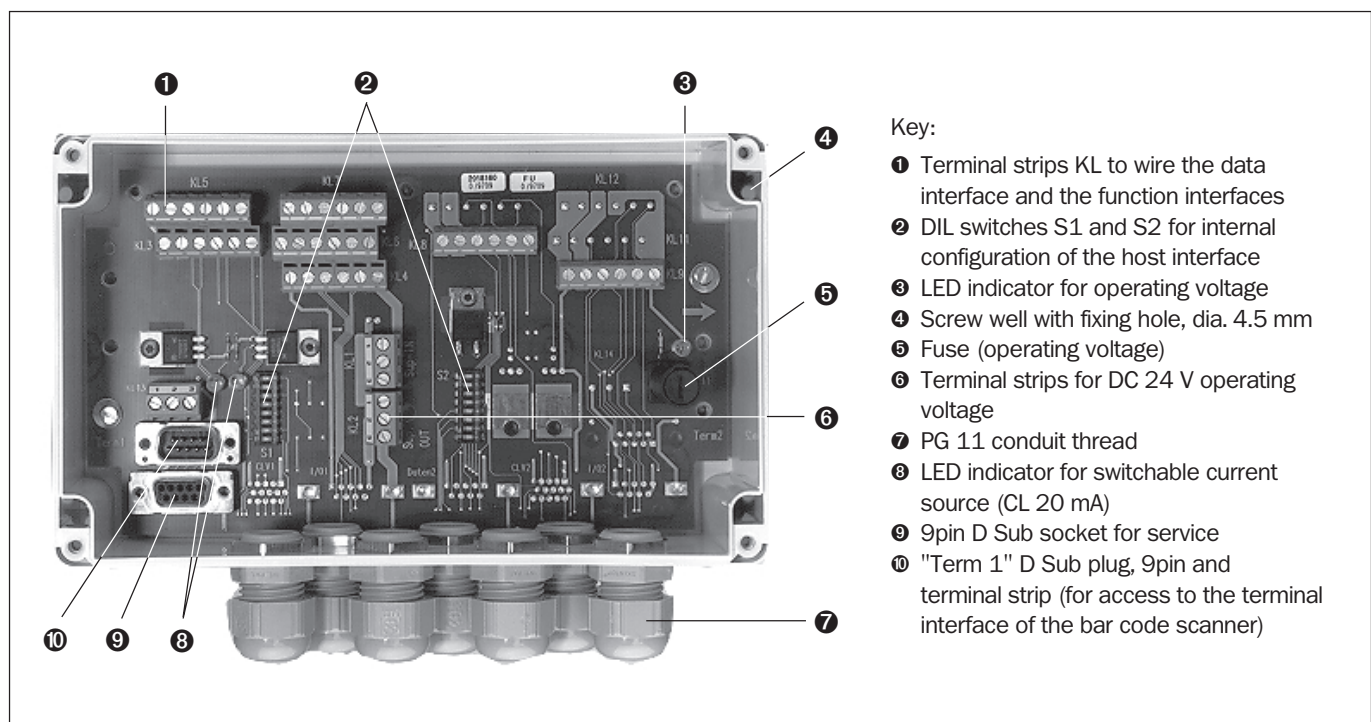


Fig. 1. Construction of the AMV 30-041

#### Overview: functions of S 1 and S 2 DIL switches

DIL	Function	Position for		DIL	Function	Position for	
		stand alone	network			stand alone	network
S 1.1	KL 3: bridge from R- to T-	OFF	ON	S 2.1	-	OFF	OFF
S 1.2	KL 3: bridge from T+ zu R+	OFF	ON	S 2.2	-	OFF	OFF
S 1.3	Bridge T+, KL 3 to Pin 3, KL 8	ON	ON	S 2.3	-	OFF	OFF
S 1.4	Bridge T-, KL 3 to Pin 4, KL 8	ON	ON	S 2.4	Bridge Sen., KL 4 to Sen., KL 9	ON	ON
S 1.5	Bridge R+, KL 3 to Pin 5, KL 8	ON	ON	S 2.5	Bridge T-, KL 3 to GND	OFF/ON <sup>2)</sup>	OFF
S 1.6	Bridge R-, KL 3 to Pin 6, KL 8	ON	ON	S 2.6	-	OFF	OFF
S 1.7	Termination Term-	OFF/ON <sup>1)</sup>	OFF/ON <sup>1)</sup>	S 2.7	-	OFF	OFF
S 1.8	Termination Term+	OFF/ON <sup>1)</sup>	OFF/ON <sup>1)</sup>	S 2.8	Bridge R-, KL 3 to GND	OFF/ON <sup>2)</sup>	OFF

1) optional switchable  
2) for switching the current sources of CL 20 mA interface

Table 2

## 6. Electrical Installation

### 6.1 Terminal assignment (overview)

	<p><b>Terminal block KL 1</b></p> <table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>+24V</td> <td>GND</td> <td>Shield</td> </tr> <tr> <td></td> <td>(0V)</td> <td></td> </tr> </table>	1	2	3	+24V	GND	Shield		(0V)		<p><b>Terminal block KL 2</b></p> <table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>+24V</td> <td>GND</td> <td>Shield</td> </tr> <tr> <td></td> <td>(0V)</td> <td></td> </tr> </table>	1	2	3	+24V	GND	Shield		(0V)		<p><b>Terminal block KL 3</b></p> <table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>Shield</td> <td>GND</td> <td>R+</td> <td>R-</td> <td>T+</td> <td>T-</td> </tr> <tr> <td></td> <td>(0V)</td> <td>RxD</td> <td></td> <td>TxD</td> <td></td> </tr> </table>	1	2	3	4	5	6	Shield	GND	R+	R-	T+	T-		(0V)	RxD		TxD										
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Fig. 2. Terminal assignment of AMV 30-041

For wiring the AMV you are supported by the connection diagram fixed inside the cover of device as well as by the connecting diagrams and notes in this chapter.



The AMV should be installed by trained personnel only. Observe the applicable safety specifications at all times when carrying out work on electrical equipment!

- The external power supply that supplies the AMV with the DC 24 V operating voltage should provide the following permanent power output by nominal voltage:

For device	Power output	Required wire cross-section
CLV 21x/22x	approx. 6 W	at least 0.09 mm <sup>2</sup>
CLV23x to 28x	approx. 15 W	at least 0.28 mm <sup>2</sup>

Table 3

- The AMV is **not** suitable for supplying a bar code scanner with integrated heating



The output circuit of the power supply must be electrically insulated to the input circuit as per IEC 742 by means of double insulation and a safety isolating transformer.

- The routed cables are clamped by the PG conduit threads
- Connect the host interface of the bar code scanner to the host using shielded cables (to fulfill the EMC requirements). See *table 1* for the maximum cable lengths
- To prevent interferences, do not lay the data cables over a long distance parallel to power supply and motor cables, e.g. in cable ducts
- Sick recommends to connect the shield only at one side

## 6.2 Connection procedure



### 1. Configuring the AMV:

Incorrect setting of the DIL switches S1 and S2 (host interface) may destroy internal modules in the connected bar code scanner.

**Basic setting of all switches: OFF.** Overview about functions: *table 2, page 2*

- Configure the host interface (various types!) inside of the AMV with the S1 and S2 DIL switches (see corresponding connection diagram on page 5 to 7)

### 2. Connect the AMV to the CLV, to the host and the external sensors:

- Remove the covering on the cables to be connected approx. 100 mm, strip the insulation on the wires approx. 5 mm. Insert the cables in the PG conduit threads and connect them to the terminal strips. For terminal strip allocation see connecting diagrams. For wire cross-section see *table 3, page 3*
- **Check finally the wiring before applying the DC 24 V operating voltage**
- Unused inlets must be sealed with blank covers (delivered with the AMV) to order to reach the enclosure rating IP 65
- For access to the terminal interface of the bar code scanner (operating menu) connect the PC (Port „COM x“) to the "Term 1" D Sub plug, 9pin inside the AMV
- Set the communication parameters of the PC in the “CLV Setup“ software to: 2,400 Bit/s, 8 data bits, no parity, 1 stop bit

## 6.3 Connection of function inputs/outputs, operating voltage and terminal interface

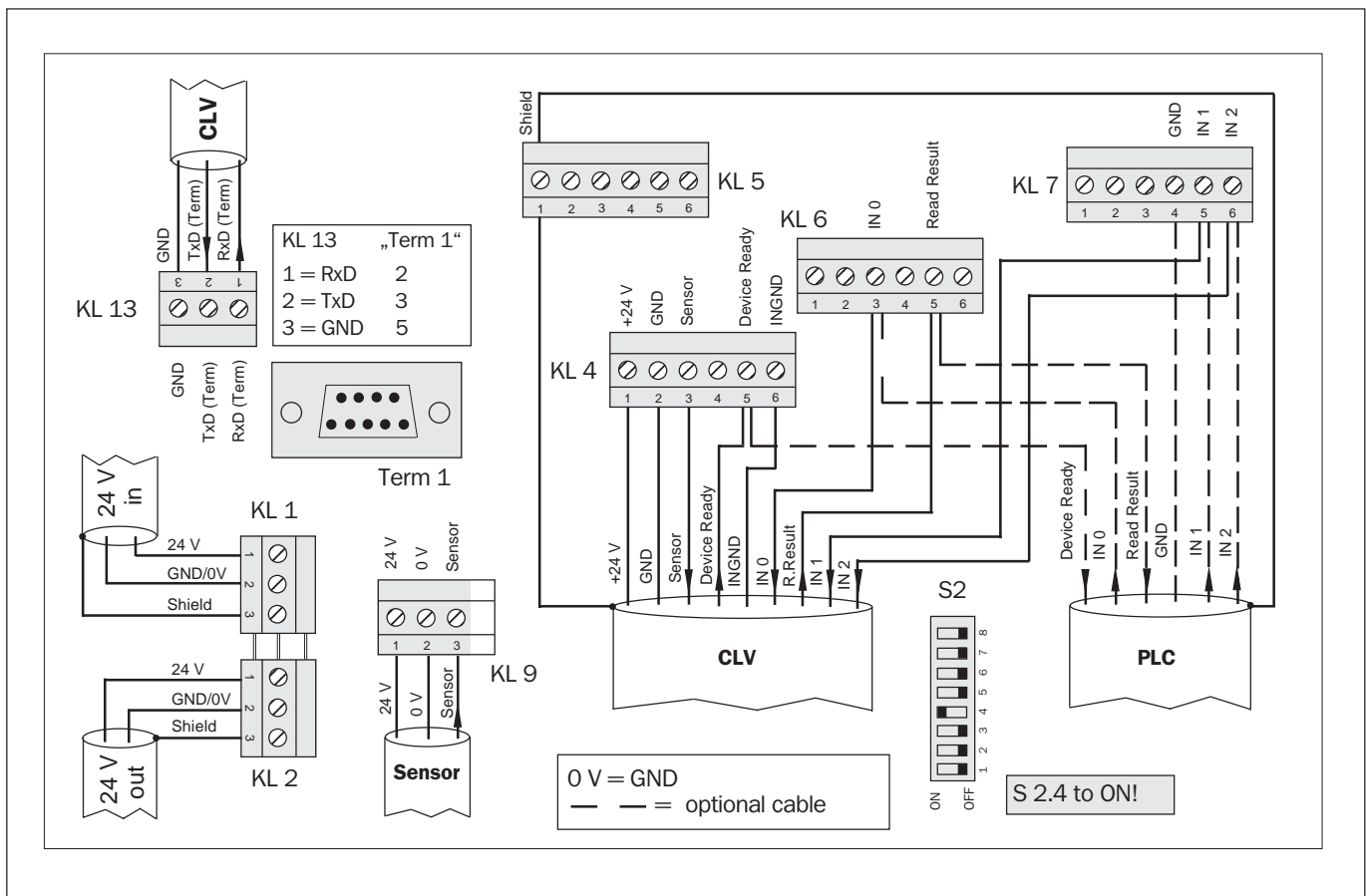


Fig. 3. Allocation diagram of terminal strips in the AMV 30-041 for the function interfaces, operating voltage and terminal interface

### 6.4 Connection of the host interface

#### RS 232 interface

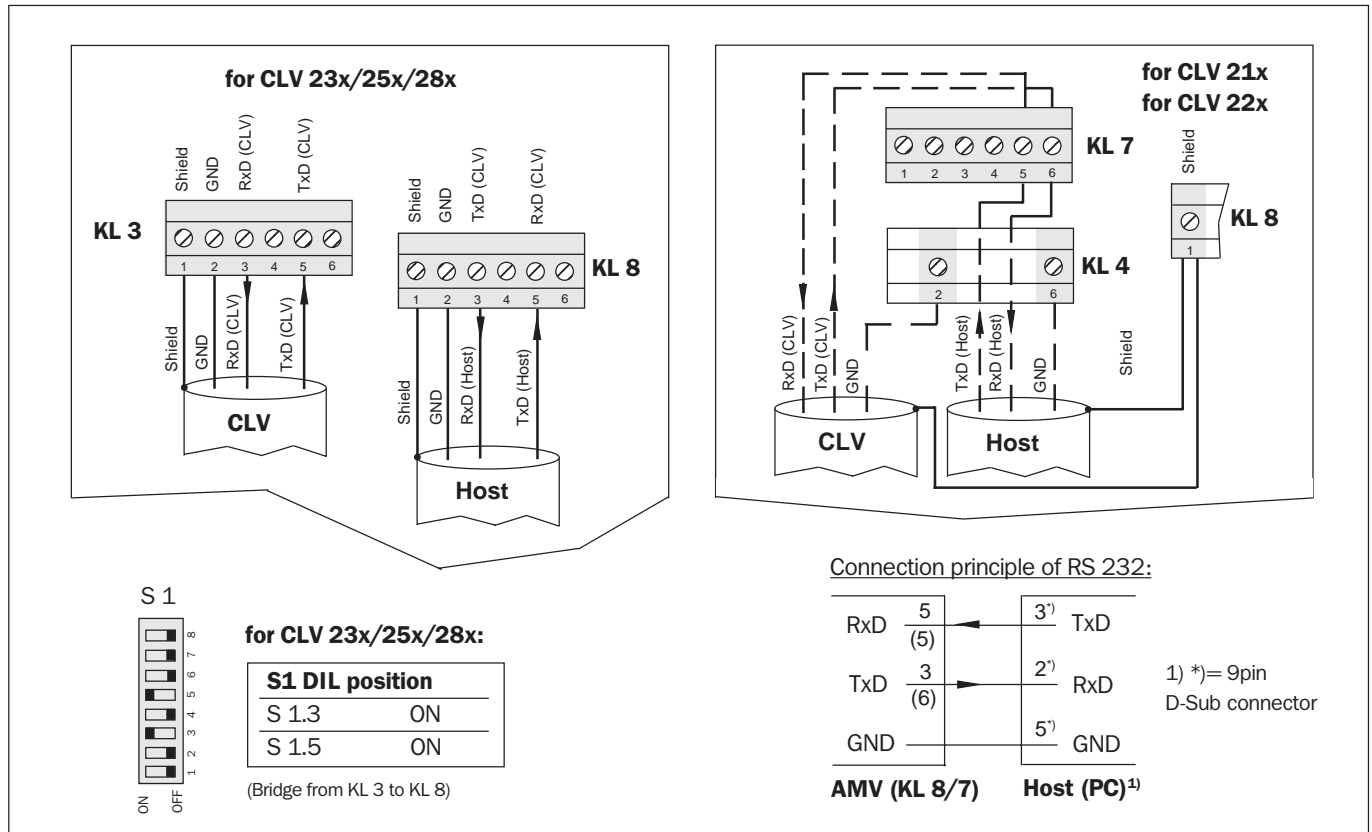


Fig. 4. Allocation diagram of terminal strips in the AMV 30-041 for host interface (RS 232)

#### RS 422 interface

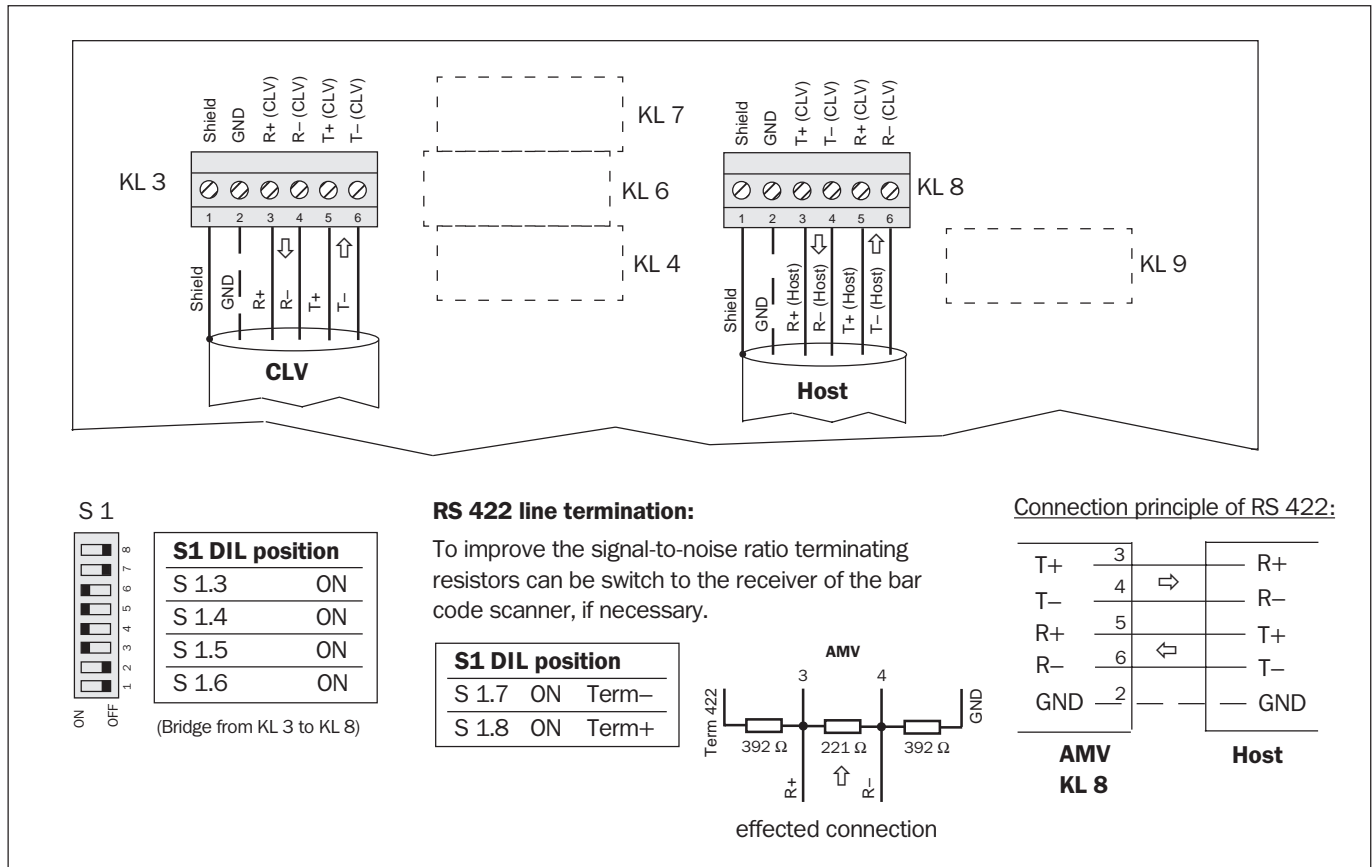


Fig. 5. Allocation diagram of terminal strips in the AMV 30-041 for host interface (RS 422)

**CL 20 mA interface (passive CLV via AMV to active host)**

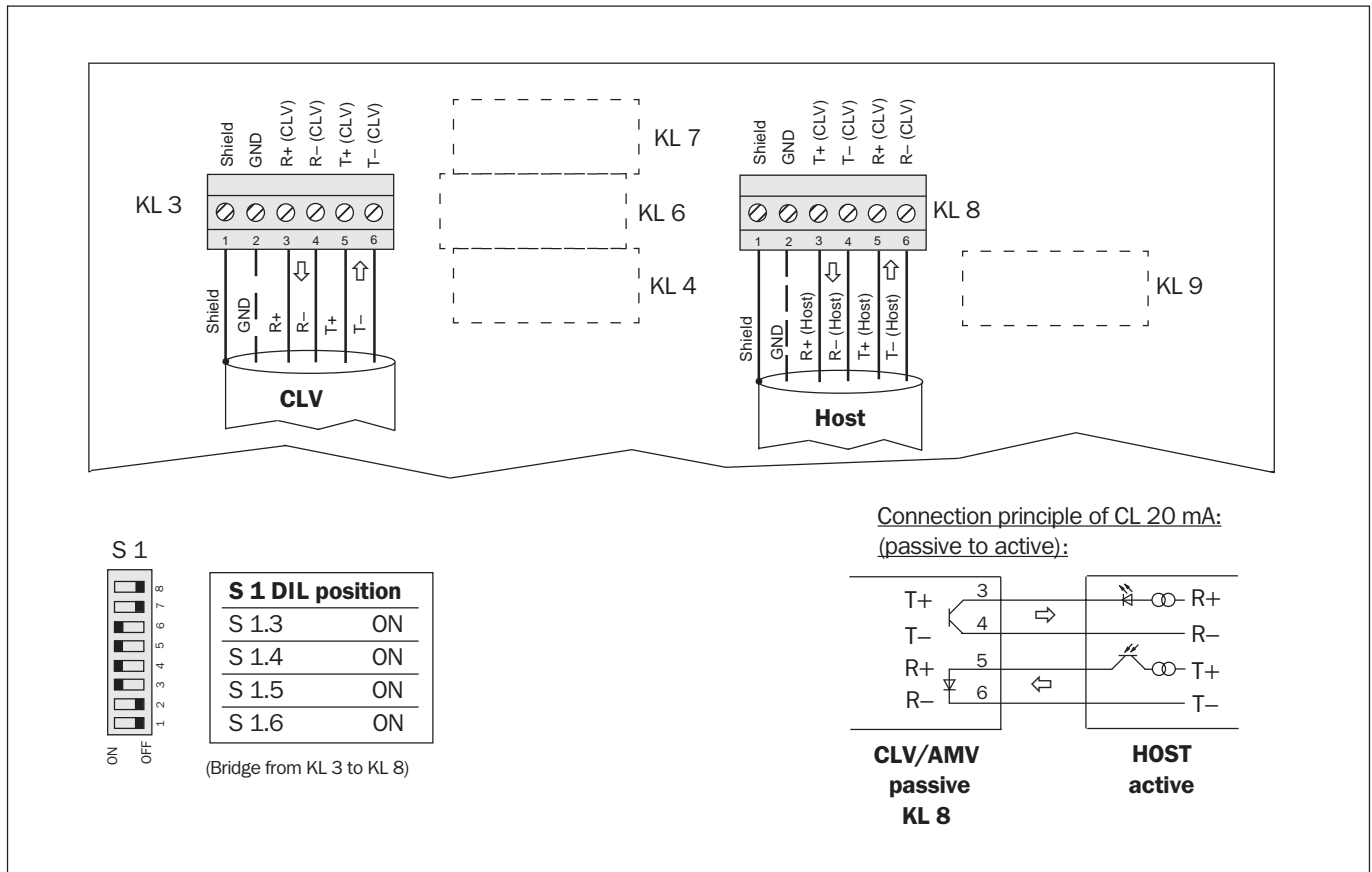


Fig. 6. Allocation diagram of terminal strips in the AMV 30-041 for host interface (CL 20 mA, passive to active)

**CL 20 mA interface with conversion (passive CLV via active AMV to passive host)**

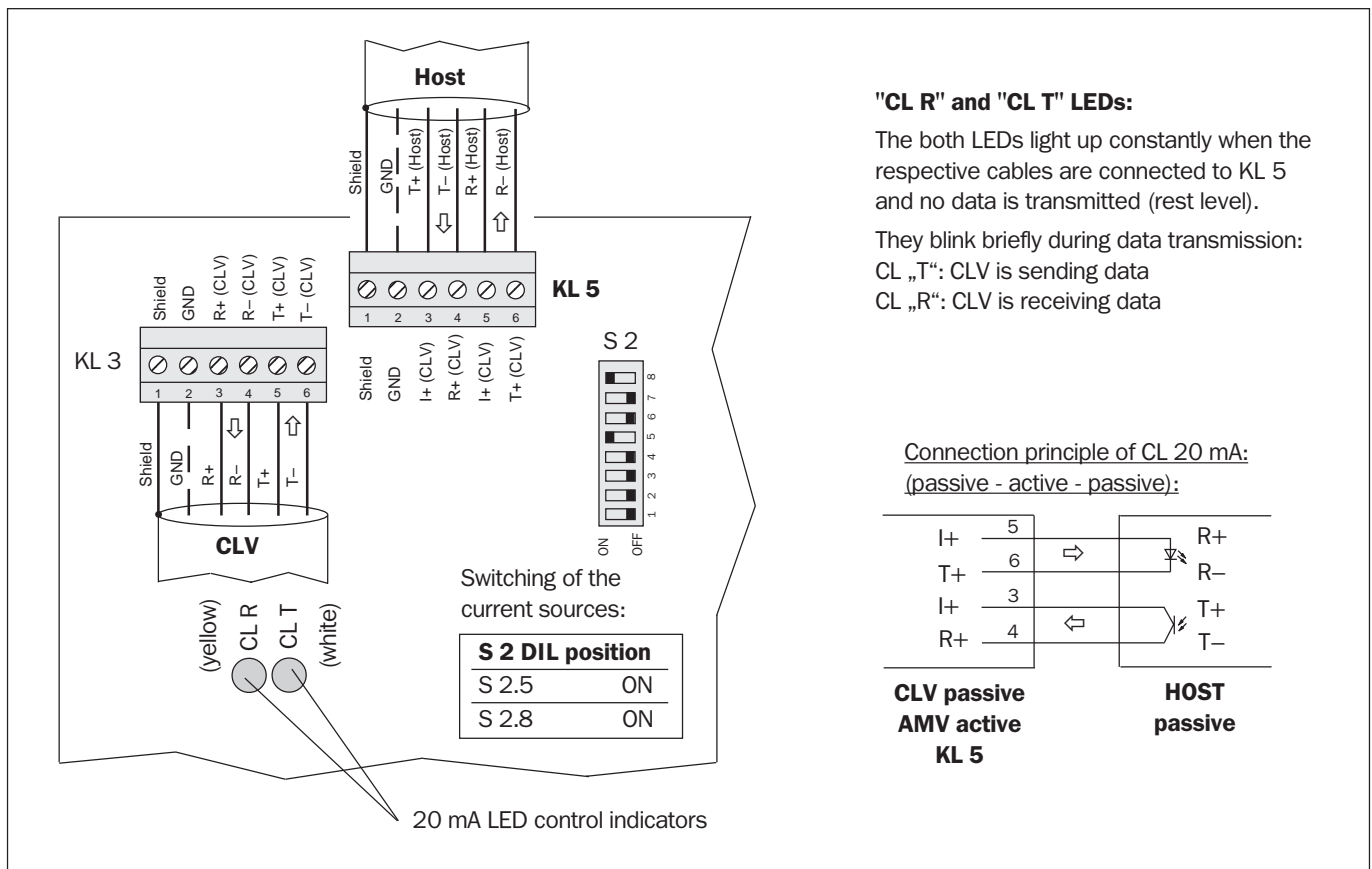


Fig. 7. Allocation diagram of terminal strips in the AMV 30-041 for host interface (CL 20 mA, active to passive)

**RS 485 interface (SICK network)**

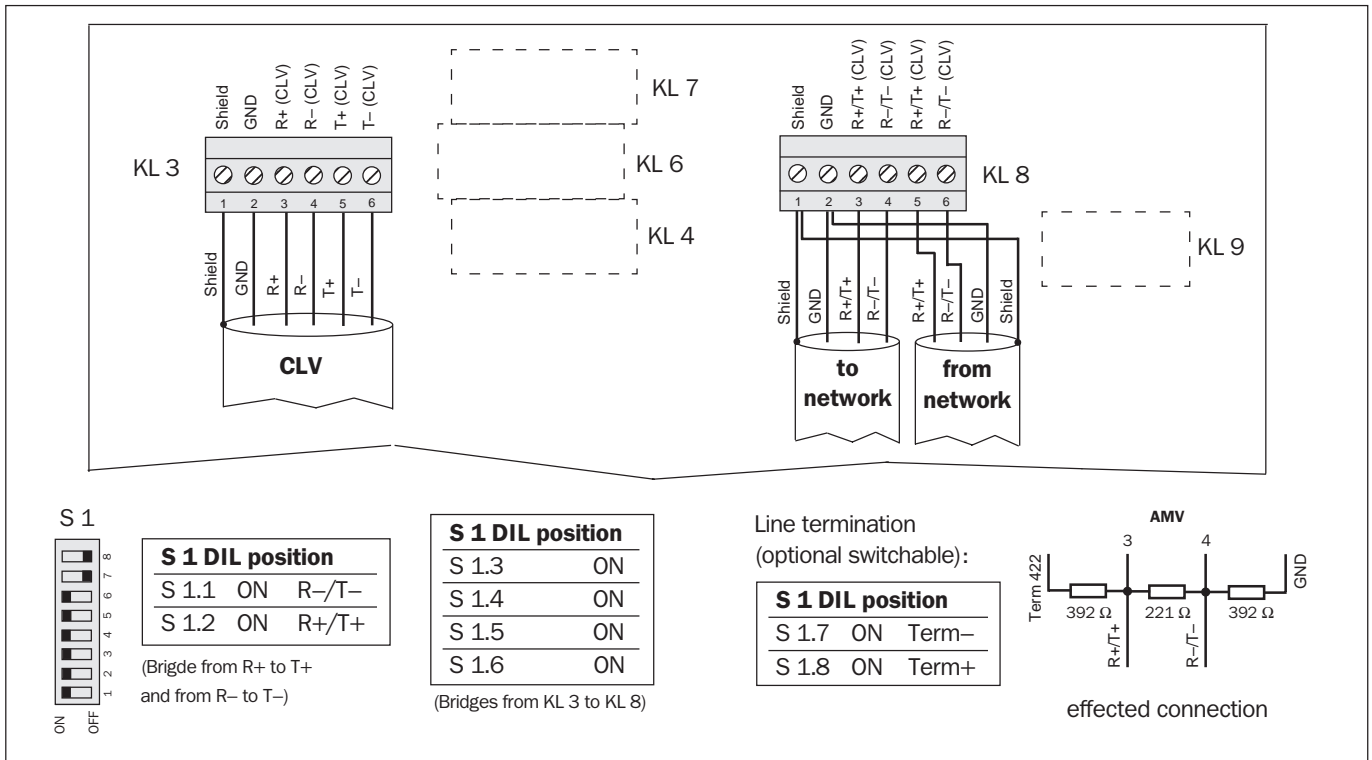


Fig. 8. Allocation diagram of terminal strips in the AMV 30-041 for host interface (RS 485)

**7. Dimensional drawing**

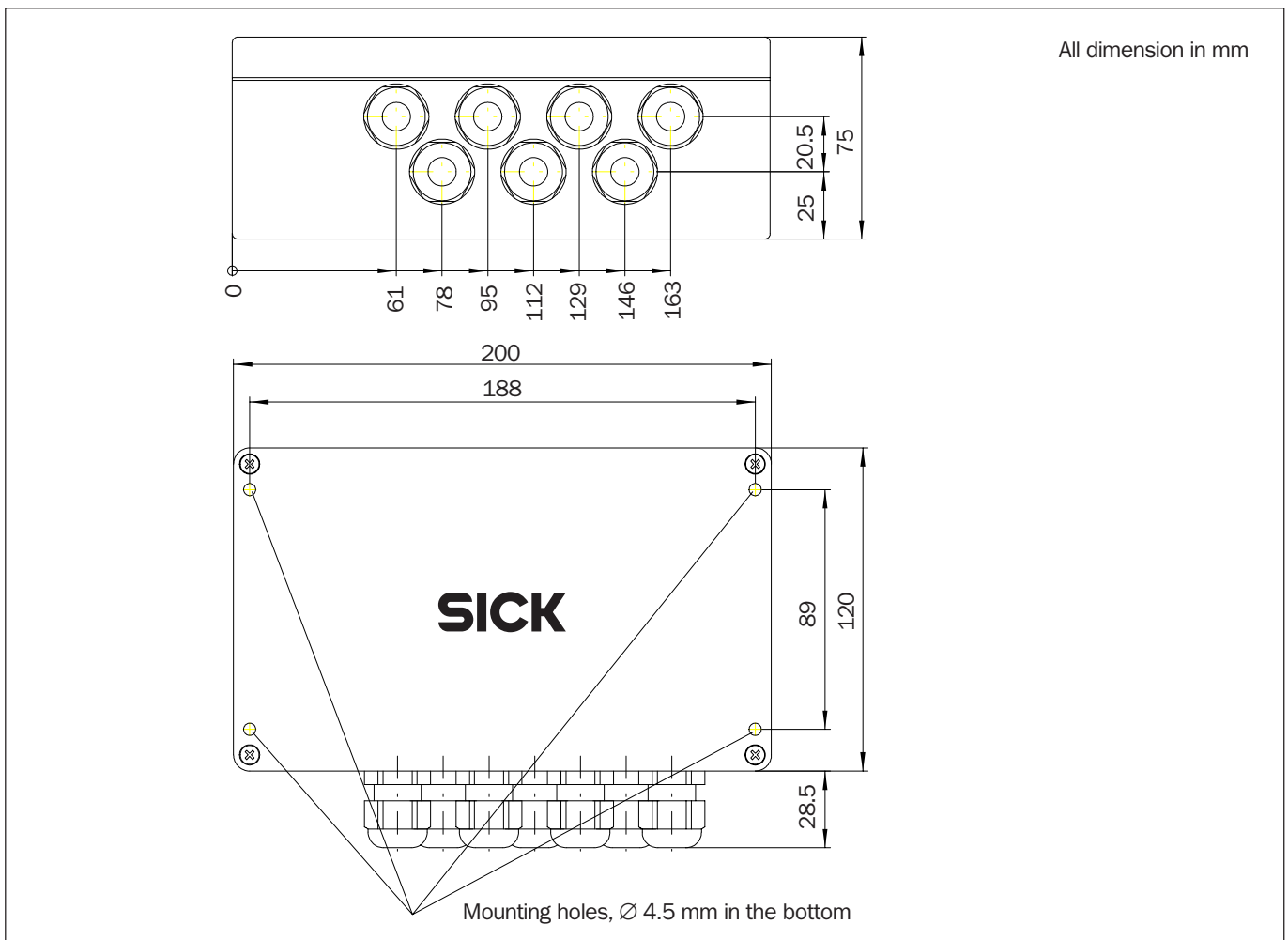


Fig. 9. Dimensions of the AMV 30-041



## 8. Technical data AMV 30-041

LED indicator (internal)	3
Fuse (operating voltage)	4 A, slow-blowing, dia. 5 mm x 20 mm
Terminal interface	9pin D Sub plug/ terminal strips
Service interface (host interface)	9pin D Sub socket
Electrical connections	Terminal strips/ 7 x PG 11 conduit thread (for cable dia. 4 to 10 mm)
Operating voltage	DC 24 V $\pm$ 20 % (to IEC 742)
Housing	Poly carbonate
Enclosure rating/ protection class	IP 65 (to DIN 40 050)/ class 3 (to VDE 0106)
Weight	approx. 600 g
Ambient operating/storage temperature	0 to +40 °C/ -20 to +75 °C
Max. rel. air humidity	90%, non-condensing

Table 4

## 9. Ordering information

### Connection module

Order No.	Type	Description	For device
1 015 435	AMV 30-041	Connection module with terminal strips and PG conduit threads, internal plug for access to the terminal interface of the CLV, service socket, enclosure rating IP 65	CLV 21x/22x CLV 23x to 28x

Table 5

### Cables and connectors

Order No.	Description	Wires	Length	Connection
6 010 137	Connection cable for data and function interfaces, dia. 6.5 mm, shielded, with 15pin D Sub HD socket and open end (stripped)	15	2 m	CLV 21x/22x to AMV 30
2 020 262	Connection cable for data interfaces („Host/Term“ connection), dia. 7.4 mm, shielded, with 9pin D Sub socket and open end (stripped)	9	3 m	CLV 23x...28x to AMV 30
2 013 574	Connection cable for function interfaces („I/O“ connection), dia. 7.4 mm, shielded, with 9pin D Sub plug and open end (stripped)	9	3 m	CLV 23x...28x to AMV 30
2 014 054	RS 232 data cable, dia. 5 mm, shielded, with two 9pin D Sub sockets	3	3 m	PC to AMV
6 005 695	Data cable, dia. 7 mm, twisted pair, shielded, for CL 20 mA, RS 422 and RS 232 interfaces as well as common use	4 x 2 x 0.2 mm <sup>2</sup>	by meter	AMV 30 to host
6 007 508	Data cable, dia. 8,5 mm, twisted pair, shielded, for RS 485 network	2 x 2 x 0.23 mm <sup>2</sup>	by meter	AMV 30 to network
6 009 438	D Sub connector housing (metal) for 9pin as well as 15pin HD inserts	-	-	-
6 007 335	D Sub connector insert, 9pin socket connector	-	-	-
6 007 336	D Sub connector insert, 9pin plug connector	-	-	-
6 010 019	D Sub connector insert, 15pin HD socket connector	-	-	-
6 010 020	D Sub connector insert, 15pin HD plug connector	-	-	-

Table 6

# SICK

SICK AG  
Auto Ident  
Nimburger Straße 11  
79276 Reute  
Germany  
Local sales offices see  
internet homepage  
<http://www.sick.de>

Handed over by your SICK partner: