Transit Systems

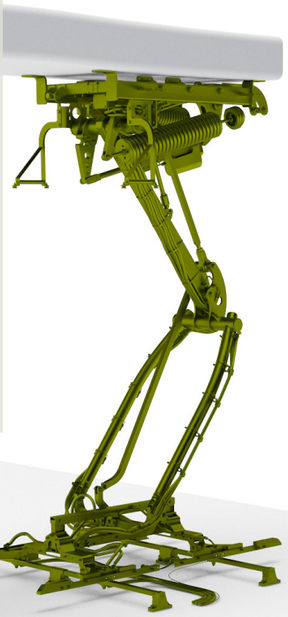
Technical Data Sheet

Inverted Pantograph SLS 201.106

Part no. SB-035533

Example illustration

CONTENTS



01 General

Manufacturer: Schunk Transit Systems
Designation: Inverted Pantograph SLS 201.106
Part no. SB-035533

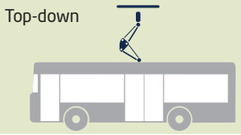
The exact product-specifications depend on the application and customer specifications. Detailed technical coordination with Schunk is necessary before the selection of the final configuration.

The product images shown serve as a reference and may differ from the product, due to special device configurations.

General features

- Reliable contact to the charging station by inverted pantograph
- Multipole design for a safe and reliable charging process
- High-power transmission up to 600 KW
- Imperessive spring drive system: Compensation of vehicle movements during the charging process without contact interuption
- Extremely fast contacting in just a few seconds
- Maximum lifespan of the product via robust frame construction
- Low-maintenance design of the complete system
- Soft Stop function for reducing the docking volume and reducing vibrations

Application information

Application	- Electric vehicles in local public transport - Battery-powered and automated guided vehicles		
System components	- Inverted Pantograph - Contact Rails - Optional Contact Rails	(road side infrastructure) (onboard) (onboard)	Part no. SB-035533 Part no. 10.01.5005.03 Part no. 10.01.5005.02 (HPC)
Contacting principle	Top-down 		

02 Technical data

Mechanical lifetime of the lifting/lowering system	400.000 cycles
Contact force ¬ Upper/lower limit	500 N ±20 %
Resting force	40 ÷ 50 N
Raising time (from resting position)	~ 5 sec
Environmental conditions ¬ Protection Class o Drive unit ¬ Working temperature (min. ÷ max.)	 IP 65 -30 °C ÷ +65 °C

03 Electrical configuration

Inverted Pantograph SLS 201

Number of poles	4
Contact sequence	1. PE 2. DC+ / DC- 3. CP

Main-Power (electronic load)

Nominal operating votlage ¬ Upper limit	750 V DC 1.500 V DC
Charge current ¬ Fast charging ¬ Fast charging max	 500 A (non-stop) 600 A (10 min)

Lowering drive

Operating voltage ¬ Upper / lower limit	24 V DC +30 % ÷ -15 %
Max. operating current	40 A for 1 sec / 16 A in further operation
Max. power-on time	20 % at 25 °C
Limit switches	WB2; WB3 – rest position WB1; WB4 – maximum extension position
Proximity switch	WB5 – soft stop
Fail-Safe-Function	Yes (integrated in electrical drive)

Contact rails

Number of poles	4

Heating elements

Max. operating votlage	24 V DC
Power-on time	100 %
Max. power consumption	224 W (56 W per rail)

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04 Electrical interfaces

Inverted Pantograph SLS 201

Main-power circuit (electric load)

PE	Connection lug (2 x 11 mm Ø – M10)
DC+ / DC-	Connection lug (2 x 11 mm Ø – M10)

Control power

CP (Control pilot)	Terminal box	(terminal block up to 4 mm²)
Drive unit	**HARTING HAN- electrical plug.**	
	¬ Socket housing:	1x Han 2Mod agg — 09 14 002 0301
	¬ Male insert:	1x Han E module, crimp male — 09 14 006 3001 2x Han E M Crimp Contact Ag 2.5 mm - 14AWG — 09 33 000 6102 1x Han DD module, crimp male — 09 14 012 3001 11x R 15-STI-C-0,14-0,37 QMM-AWG26-22 — 09 15 000 6104
	Recommendation for customer interface:	
	¬ Housing:	1x Han 2Mod-gg-M20 — 19 14 002 0400 1x Han 2Mod Carrier Hood — 09 14 002 0311
	¬ Female insert:	1x Han E module, crimp female — 09 14 006 3101 2x Han E F Crimp Contact Ag 2.5 mm - 14AWG — 09 33 000 6202 1x Han DD module, crimp female — 09 14 012 3101 11x R 15-BU-C-0,75 QMM — 09 15 000 6205

Contact rails 10.01.5005.03

Main-power circuit (electric load)

DC+ / DC-	Connection lug (1 x M10) **Recommendation for customer interface:** ¬ Cable lug M10
PE	Connection lug (1 x M10) **Recommendation for customer interface:** ¬ Cable lug M10

Control power

CP (Control pilot)	Connection lug (1 x M5) **Recommendation for customer interface:** ¬ Cable lug M5
Heating elements	**TE HDSCS – electrical plug.** ¬ Socket housing for male terminals: 1-1703841-1 ¬ Male insert (Tab 2.8): 1-962915-1

Contact rails with other configuration available.
Detailed technical coordination with Schunk is necessary before the selection of the final configuration.

05 Dimensions

Inverted Pantograph SLS 201

Main dimensions

Total length ¬ Upper / lower limit	2180 mm ± 20 mm
Total width ¬ Upper / lower limit	817 mm ± 10 mm
Height in resting position ¬ Upper / lower limit	588 mm ± 30 mm
Working range (min. ÷ max.)	779 mm ÷2277 mm
Maximum height (extended)	2377 mm

Contact rails

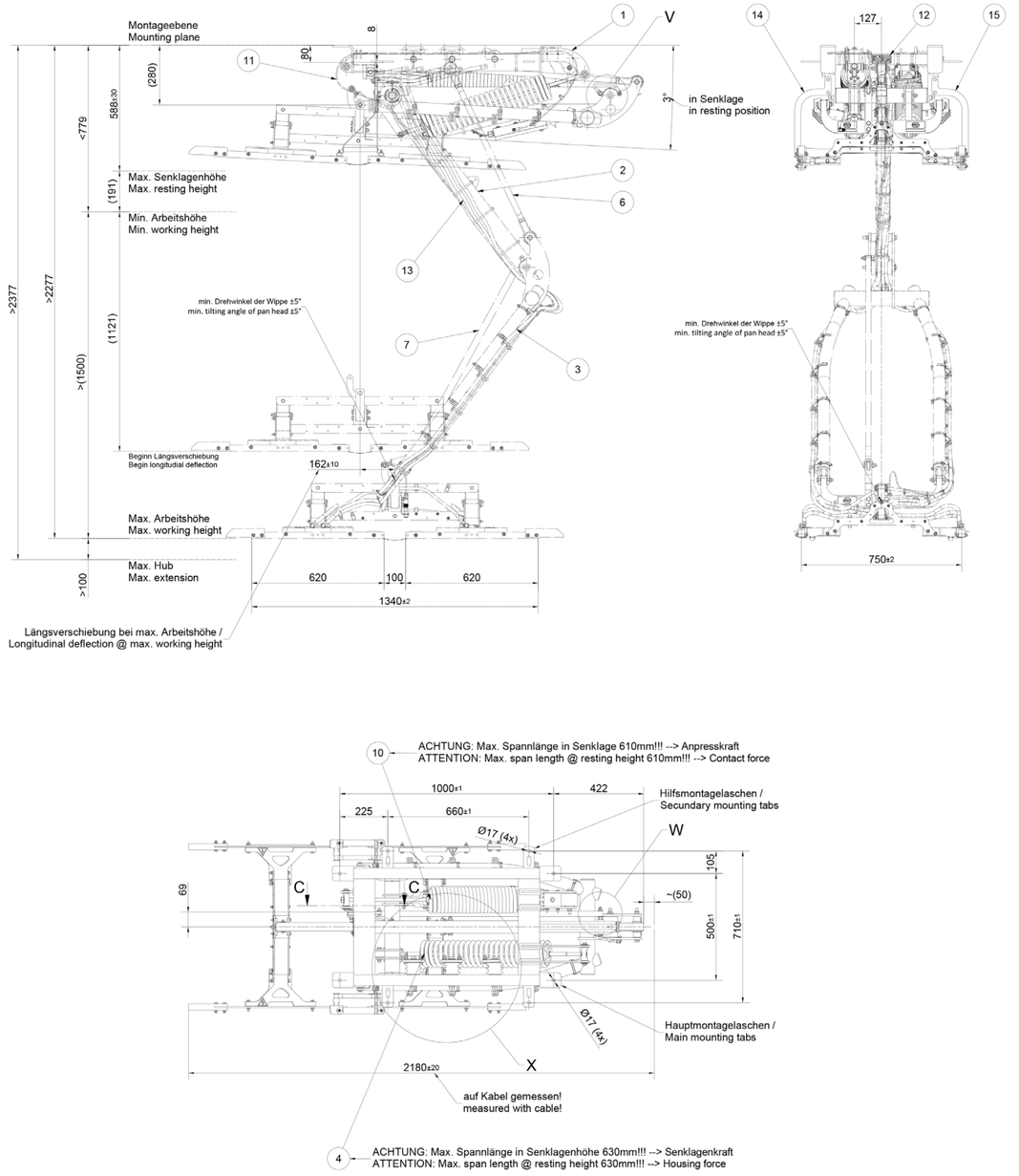
Main dimensions

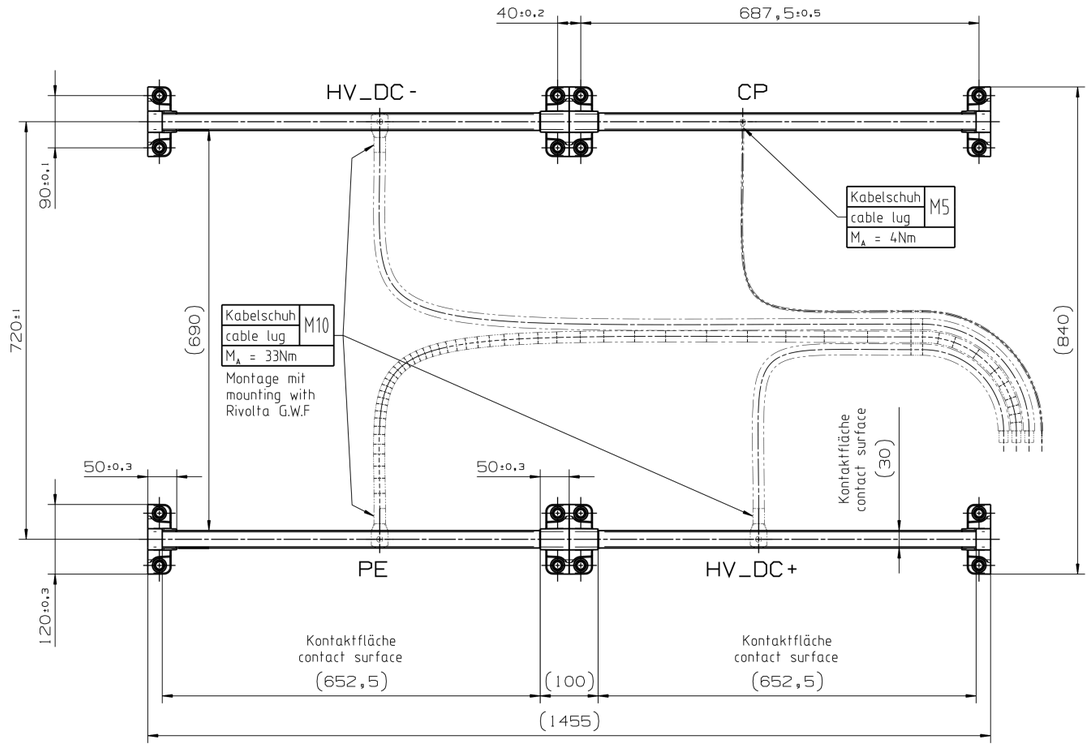
Total length	1455 mm
Total width	840 mm
Height	83.4 mm

06 Weight

Inverted Pantograph SLS 201 ¬ Upper / lower limit	approx. 185 kg ± 10 %
Contact rails	approx. 12.25 kg

07 Dimension drawing (dimensions in mm)

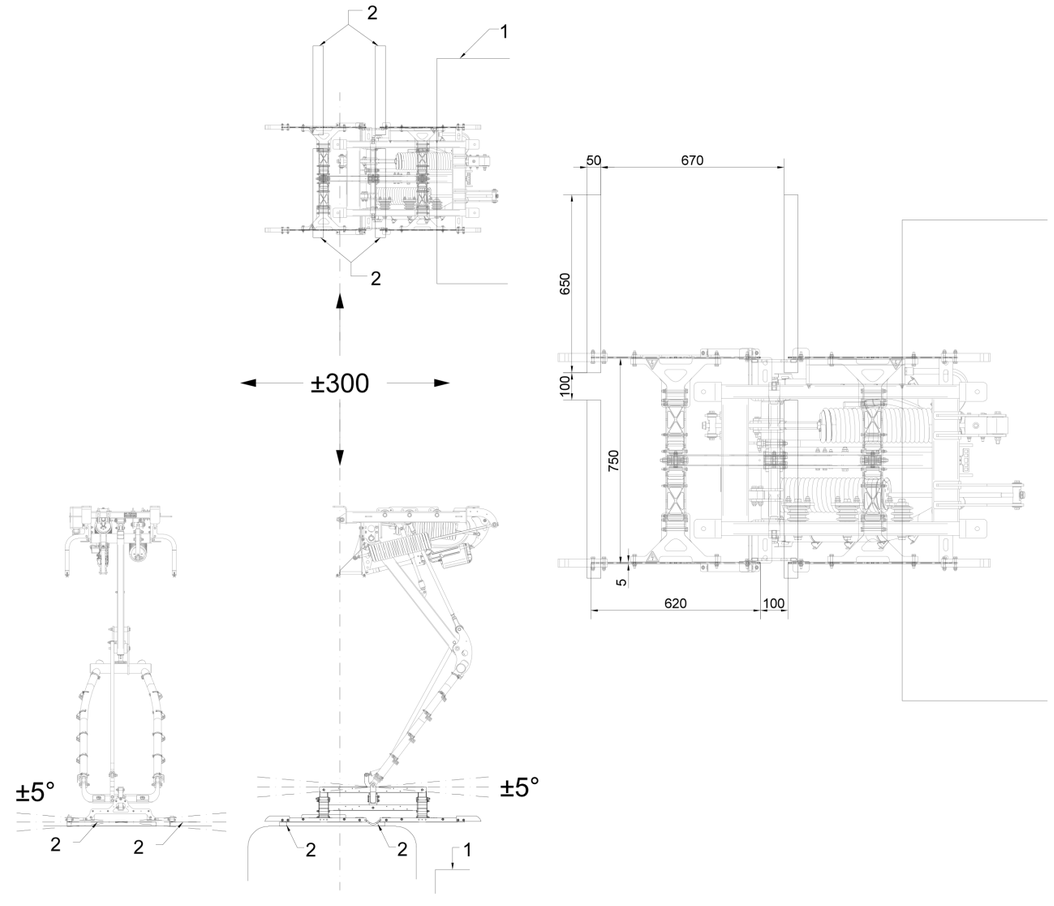




Subject to technical changes; separate dimension drawing available on request.

08 Maximum permissible position deviation

X-axis (vertical axis)	1498 mm
Y-axis (transverse axis)	± 300 mm
Z-axis (longitudinal axis)	± 300 mm
angle position - bus in longitudinal axis	-5 ° / +5 °
Kneeling process (lateral lowering of the bus including angle position)	-5 ° / +5 °
angle position - bus to the curb	min. - 2 ° / +2 ° For example, if parking tolerance in longitudinal axis is ± 200 mm, the angel position - bus to the curb is - 10 ° / +10 °



(1) Curb
(2) Contacting Rail

The precise maximum position deviations depend on the positioning of the pantograph on the road side infrastructure and measurements of the contact rails on the bus roof. Detailed technical coordination with Schunk is necessary before the selection of the final configuration.

Schunk – A worldwide success
Always at your side

With its globally active business unit Transit, Schunk is one of the world's leading providers of efficient power transmission and charging systems for local and long-distance transportation. Its pioneering developments set technological milestones.

With Schunk Smart Charging, the intelligent charging systems for electric buses and other electrically powered vehicles, Schunk is a leading technology partner on the way to emission-reduced local transport.

Within the highly specialized technology portfolio for the railway industry, Schunk offers current collectors (pantographs) for overhead wire and third-rail systems, grounding contacts, shaft grounding systems and wheel flange lubrication systems as well as perfectly matched carbon collector strips, carbon collector shoes and carbon brushes including brush holders.

Schunk Group

The Schunk Group is a globally operating technology company with a global business unit structure. The company is a leading supplier of products made of high-tech materials – such as carbon, technical ceramics and sintered metal – as well as machines and systems – from environmental simulation and air conditioning to ultrasonic welding and optical machines. The Schunk Group has more than 9,500 employees in 29 countries and achieved sales of €1.28 billion in 2018.

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