WeAssist
User Manual

WeAssist™

Contents

Introduction

WeAssist is a unique, innovative system solution that makes it easy to drive and stop a heavy hospital bed – even on inclines. It is smart and intuitive wheel technology for intelligent hospital bed maneuverability, taking care of the caregivers by improving their work environment.

WeAssist is a system solution based on decades of experience and expertise within the global healthcare industry and developed in a powerful alliance between LINAK and TENTE.

Together, we are breaking the laws of motion, redefining the future of mobility.

This 4th castor system with an intelligent algorithm and the Integral assist castor set the standard for assisted driving on hospital beds and fulfill market requirements for intuitive use and differentiation with:

- Improved ergonomics and working conditions for the porters and caregivers

- Easy integration and sustainable upgrade without redesign of the hospital bed

- Data-driven maintenance and automated service schedules adding to efficient workflows. Service when needed – based on actual usage data

- Customisation and connectivity from the bed to information systems like central nurse stations via LINAK Communication Interface/LCi™

- Remote access to service data and diagnostics enables troubleshooting via OneConnect™

WeAssist from LINAK and TENTE contributes to reduced sick leaves, easy maintenance, job satisfaction for healthcare staff and freed up healthcare staff to have more time for patient care.

System description and operation

Functionality

Integral assist is providing intuitive assistance without any input from the user other than moving the application.

When the castor is in directional lock, the bed is moving, and external hardware signal present, the Integral assist provides assistance.

- When the castor is moving, the logic inside the Integral assist will detect movement, wake up the system and be ready for assistance.

- When the castor is not in directional lock or external hardware signal is not present, the Integral assist will still communicate with the customised control box software and collect statistical data and behaviour.

- A customised LINAK control box software can control the Integral assist behaviour on the WeAssist System

  - Enable/disable Integral assist when the battery capacity gets below minimum threshold to reserve battery capacity for emergency movement.

  - Enable/disable Integral assist when actuators are moving (actuator movement has priority over assistance).

  - Customer-specific functions based on Integral assist information.

Intelligent algorithm

The Integral assist software has an intelligent algorithm detecting what the user is doing:

- When the user is pushing the application slowly/easily, the Integral assist is applying a slight assistance.
- When the user is pushing the application quickly/hard, the Integral assist is applying more assistance to help start the application quickly.
- When the user stops pushing the application, the Integral assist will decrease the assistance.
- When the user pulls the application to stop or let go of the bed, the Integral assist will brake to stop the application.
- When the user drives the application up an incline, the Integral assist will apply more assistance to give extra help to the user.
- When the user drives the application down an incline, the Integral assist will apply brake force to keep the application under control.

Definition of Integral assist and WeAssist

Integral assist is defined by the following:

- TENTE product name of Integral assist castor
- LINAK and TENTE logos will be on the product and on the label
- Integral assist is WeAssist compatible

WeAssist is defined by the following

- When Integral assist is used in integrated or parallel systems with LINAK and TENTE products.
- The minimum setup of WeAssist is 4 x TENTE castors, 1 x LINAK control box, 1 x LINAK battery – with this setup we are allowed to use the registered trademark WeAssist.
- WeAssist compatible can be used by LINAK for other products that can be part of a WeAssist solution/ system – like Under Bed Light.
- WeAssist compatible can be used by TENTE for other products that can be part of a WeAssist solution/ system.

Technical data

## Integral assist product information

Pre-condition to use Integral assist:

- Central locking system in place
- Short fitting, Ø32 mm
- Overall height: 183 mm (= Integral 150 mm)
- Tested use cases: hospital bed
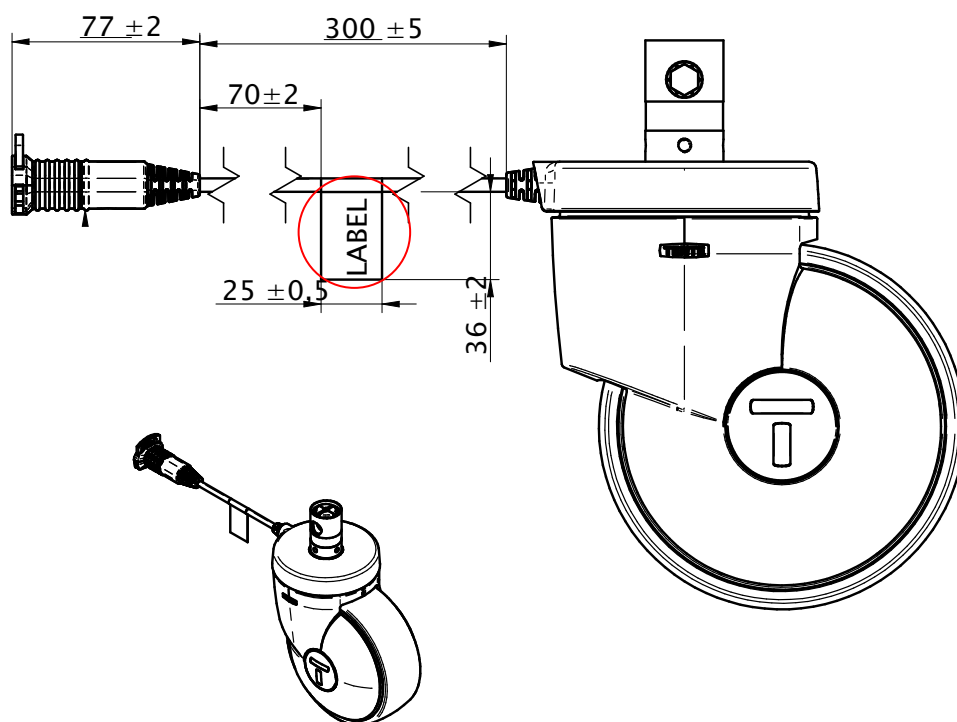
Article description - Integral assist castor:

Housing:	ED44
Wheel:	ETW
Diameter:	150 mm
Fitting:	short fitting R36-32 (standard), R36-34 (quick fitting with octagon, optional)
Cam:	S35 (standard), S30 (optional)
Spring:	standard spring
Set-screw:	4xM6
Colour:	RAL9002 (standard), special colours on request
Clip:	RAL 9002 with "T" logo (standard), special colours or logos on request
Cover:	TENTE and LINAK logos
Cable outlet:	270 ° (standard), 0°, 90°, 180 ° (optional)
IP-rating:	IPX6
Washability:	Washable - 250 wash cycles, static - according to IEC 60601-2-52, in line with AK-BWA
Electrical conductivity:	Integral assist is not electrically conductive. One of the other 3 castors needs to be electrically conductive

Cable outlet
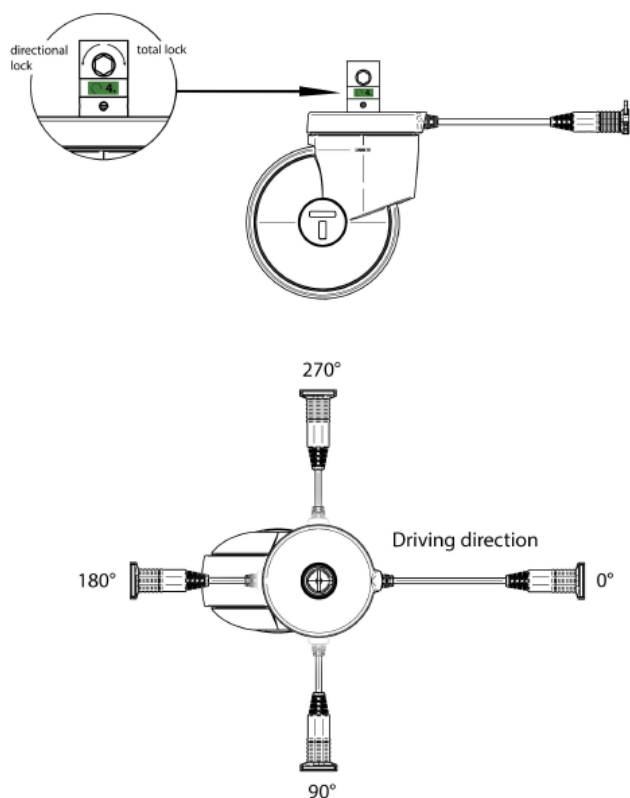
Label position

The placement of the label is shown on the drawing below. For customer requests regarding the label, please contact TENTE.

LINAK   TENTE

Integral assist and Integral CLS fittings

R36-32	R36-34
• "Standard" TENTE fitting • Ø32 mm • Cam hole at 34 mm • Stem height total 51 mm	• TENTE quick fitting • Ø32 mm • Cam hole at 34 mm • Stem height total 50 mm

WeAssist requirements

The WeAssist behaviour and functionality are based on some general assumptions that necessitate some limitations and requirements which are stated here:

- Floor surface: the surface must be hard, for instance linoleum, concrete or hardwood (no carpets)
- It is only made for indoor use
- The application weight must always be changed in total lock
- The empty bed weight must be identified and be customised in the control box application software. There is no weight calibration in WeAssist.

WeAssist rules that must be fulfilled

- The control box application has allowed assist
- No actuator movement
- The application is not connected to mains
- No FATAL ERROR in control box
- The bed mainly moves on flat surface

System and integration level

Any caregiver or porter deserves a bed with WeAssist. The solution is developed for integration into any market need for upgrade and integration into existing hospital beds or design into new hospital beds.

Integration level	System use
WeAssist System	Used for complete integration in new bed developments and is compatible with LINAK linear actuator systems featuring the communications protocol PCP2.0.

The use of a WeAssist system opens a world of customisable, value-adding options and gives access to digital services, and enhanced safety features like:

- Ensurance of battery capacity for emergencies
- Brake alarm
- Customisation of the control box software for Integral assist behaviour.
- Access to statistical data and service data report
- Remote access to service data via OneConnect™
- Prepared or access to usability data via LCi™ for instance for rental or service business concepts
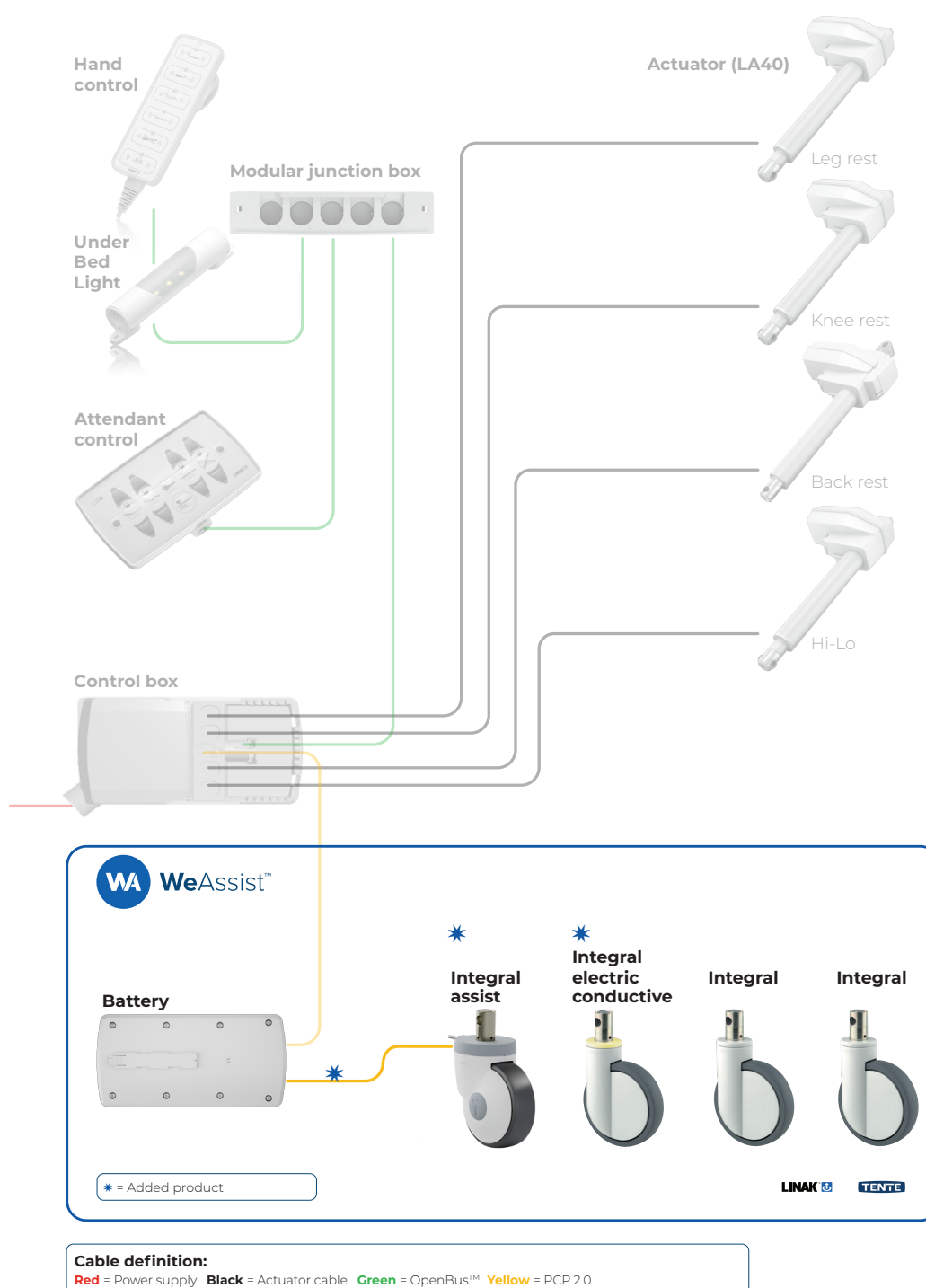
WeAssist system solution

Below overview shows how WeAssist is connected to a linear actuator system. Please have a look at the
Integral assist - Easy Installation

Connecting the system
- Make sure that all components are properly installed
- Disconnect all components from the battery
- Make sure that the Integral assist is in total lock state when it is being installed
- Connect the Integral assist to the battery
- Connect/reconnect other system components to the battery

System overview for new bed development

Cable definition:
Red = Power supply   **Black** = Actuator cable   **Green** = OpenBus™   **Yellow** = PCP 2.0

System products and features

WeAssist™ *For integration in LINAK systems with PCP 2.0*	LINAK · TENTE
Products	
Battery	LINAK
Control box	LINAK
System software	LINAK
TENTE Integral assist castor	TENTE
TENTE castor	TENTE
TENTE castor electric conductive	TENTE
PCP cables	LINAK
Linear actuators	LINAK
Hand control for actuators	LINAK
Features	
Battery charging and status	✓
Ensure battery capacity for emergencies	✓
Energy recuperation	✓
Integral assist software updates	✓
Integral assist features	
Directional lock detection	Internal detection available for system use
Total lock detection	Internal detection available for system use
Free lock detection	Internal detection available for system use
Intuitive assist	Default behaviour – can be customised
Incline detection	Internal detection available for system use
Bed movement detection	Internal detection available for system use
Options	
Battery stacking	✓
Customised control box software for Integral assist	✓
Software feature brake alarm	✓
Under Bed Light based on assist status	✓
LINAK Digital services – options	
Communication interface LCi™	✓
OneConnect™	✓
Preventive maintenance – time for service	✓
Remote access to service data	✓
Automated time for service	✓

Integral assist features and functionality

Start kick

When the user pushes to start the bed, a 'start kick' will be added to normal flat assist for a short period of time to help the user set the bed in motion.

Brake

When the user stops pushing the bed, no assist will be applied, and the bed will roll to a stop.

If the user pulls the bed to active stop, WeAssist detects the negative user input and helps brake the bed. The harder the user pulls, the harder WeAssist helps to brake.

Incline assist

When moving the bed up an incline, additional assist will be added (based on the incline degree).

When moving the bed down an incline, brake assist will be added (based on the incline degree).

'Let go'

When you are moving the bed and the staff let go of the hospital bed while it is still moving to rush on to the next task. There is a need to control the bed in the 'let go' situations. In general, there is a concern that a motorised bed will continue to move when it should not. However, 'let go' use cases or risk scenarios of a bed with WeAssist must always be compared to standard bed without assist by the OEM.

Calibration

The Integral assist system is calibrated in two ways: automatically by the system and initially by performing factory calibration.

- Factory calibration: is required after initial mounting on bed or reprogrammed
- Auto-calibration: continuous automatic calibration performed by the Integral assist, no user involvement needed.

Factory calibration

Factory calibration is required once after the Integral assist castor is installed or reprogrammed.

Calibrating via hand control

(keypress defined by bed manufacturer)

- Place the bed on a flat, 0-degree surface with the castor in directional lock and in the correct driving position.
- Switch the lock to total lock.
- Press the calibration key on the hand control and do not move the bed for 3 seconds.
- A short double beep confirms that the initial calibration is complete.

Calibrating via brake pedal

- Place the bed on a flat, 0-degree surface with the castor in directional lock and in the correct driving position.
- Switch to total lock and back to neutral three times within 10 seconds.
- When total lock is engaged the third time, a short double beep confirms that the initial calibration is complete.

ⓘ **Information**

Factory calibration must be done on a flat, 0-degree surface. If manual calibration is performed on an uneven surface, the calibration will be incorrect and lead to wrong assist. However, over time the automatic calibration system will adapt and readjust to flat surface.

Automatic calibration

Integral assist continuously calculates calibration values, whenever the WeAssist system is awake, regardless of whether the Integral assist is in neutral, directional lock, or rotating or not.

The system adjusts if calibration is slightly off due to uneven surfaces or weight changes. Alternatively, a factory calibration reset can be done.

WeAssist software and features

WeAssist features

Brake alarm

The WeAssist system with full integration of LINAK actuator system solutions bring you added safety and customisation with a smart brake alarm. The software for the brake alarm can be customised, for instance on the basis of locking status and movement of the Integral assist.

- The alarm is activated when wheels are not locked, and the bed is connected to mains
- If the bed is not connected to mains, the functionality will be ignored
- This alarm helps to avoid breaking the wall plug and increase safety

Ensure battery capacity for emergencies

The WeAssist system with full integration of LINAK actuator system solutions bring added safety and customisation with a smart safe-operation battery feature. The software for the safe-operation battery feature can be customised, for example adjustment of the battery percentage.

The feature is activated when the battery level falls below the limit. This limit is by default 20%, ensuring that there is always enough battery capacity to do actuator movement. This feature helps to prevent battery depletion and ensures continued safe operation.The feature will evaluate the battery capacity each time before an assist, and it will not cut off an ongoing assist session.

Integral assist error messages

Error Code	Short description	Long description	Troubleshooting guide
0101	Hardware error	0101 : Operational disturbance or hardware error	Disconnect, wait, reconnect / replace castor
0102	Wrong software	0102 : Wrong Software or programming error	Disconnect, wait, reconnect / reprogram / replace castor
0103	Wrong software	0103 : Wrong Software or programming error	Disconnect, wait, reconnect / reprogram / replace castor
0104	Hardware error	0104 : Operational disturbance or hardware error	Disconnect, wait, reconnect / replace castor
0105	Hardware error	0105 : Operational disturbance or hardware error	Disconnect, wait, reconnect / replace castor
0106	Hardware error	0106 : Operational disturbance or hardware error	Disconnect, wait, reconnect / replace castor
0107	Hardware error	0107 : Operational disturbance or hardware error	Disconnect, wait, reconnect / replace castor
0108	Hardware error	0108 : Operational disturbance or hardware error	Disconnect, wait, reconnect / replace castor
0201	Hardware error	0201 : Operational disturbance or hardware error	Disconnect, wait, reconnect / replace castor
0202	Hardware error	0202 : Operational disturbance or hardware error	Disconnect, wait, reconnect / replace castor
0301	Communication error	0301 : Internal Communication error	Disconnect, wait, reconnect / replace castor
0302	Operational disturbance or error	0302 : Operational disturbance or hardware error	Disconnect, wait, reconnect / replace castor
0303	Operational disturbance or error	0303 : Operational disturbance or hardware error	Disconnect, wait, reconnect / replace castor
0401	Hardware error	0401 : Operational disturbance or hardware error	Disconnect, wait, reconnect / replace castor
0501	Communication error	0501 : Internal communication error or hardware error	Disconnect, wait, reconnect / replace castor
0502	Communication error	0502 : Internal communication error or hardware error	Disconnect, wait, reconnect / replace castor
0503	Communication error	0503 : Internal communication error or hardware error	Disconnect, wait, reconnect / replace castor
0504	Communication error	0504 : Internal communication error or hardware error	Disconnect, wait, reconnect / replace castor
0505	Communication error	0505 : Internal communication error or hardware error	Disconnect, wait, reconnect / replace castor
0506	Communication error	0506 : Internal communication error or hardware error	Disconnect, wait, reconnect / replace castor
0507	Communication error	0507 : Internal communication error or hardware error	Disconnect, wait, reconnect / replace castor
0601	Critical error	0601 : Operational disturbance or critical hardware error	Disconnect, wait, reconnect / replace castor

Error Code (continued)	Short description	Long description	Troubleshooting guide
0602	Critical error	0602 : Operational disturbance or critical hardware error	Disconnect, wait, reconnect / replace castor
0603	Critical error	0603 : Operational disturbance or critical hardware error	Disconnect, wait, reconnect / replace castor
0604	Critical error	0604 : Operational disturbance or critical hardware error	Disconnect, wait, reconnect / replace castor
0605	Critical error	0605 : Operational disturbance or critical hardware error	Disconnect, wait, reconnect / replace castor
0606	Critical error	0606 : Operational disturbance or critical hardware error	Disconnect, wait, reconnect / replace castor
0607	Critical error	0607 : Operational disturbance or critical hardware error	Disconnect, wait, reconnect / replace castor
0608	Critical error	0608 : Operational disturbance or critical hardware error	Disconnect, wait, reconnect / replace castor

Integral assist usage

Storage temperature:	-10 °C to +45 °C
Operation temperature:	+5 °C to +40 °C
Compatibility:	LINAK control boxes with Power Communication Port (PCP 2.0)
	LINAK recommended control boxes: CO61 MK2 with Bluetooth® Low Energy, CO71 MK2 with Bluetooth® Low Energy
	LINAK batteries: BA22
	TENTE castor: Integral assist, Integral and Integral conductive
Atmospheric pressure:	700 to 1060 hPa
Relative humidity:	20% - 80% - non-condensing
Meters above sea level:	Max. 3000 meters
Flammability class:	V0

Standards, directives and regulations:

Standard, directive, regulation	Certification body	Passed
DIN EN 12531:1999-05	TENTE (Report 14734 E)	Q1/2025
Similar to IEC 60601-2-52:2009 + Cor.:2010+A1:2015, clause 201.9.4.2.4.3-Movement over a threshold	TENTE (Report 14734 E)	Q1/2025
Similar to IEC 60601-2-52:2009 + Cor.:2010+A1:2015, clause 201.11.6.6.101-machine-washable medical bed (250 instead of 50 cycles)	TENTE	Q1/2025
IEC 60529:1989 + A1:1999 + A2:2013 (IPX6 test)	UL International	edc Q4/2025
IEC 60601-1:2005 + A1:2012 + A2:2020	UL International	edc Q4/2025
IEC 60601-1-6:2010 + A1:2013 + A2:2020	UL International	edc Q4/2025
IEC 60601-1-2:2014 + A1:2020	SIQ	Q2/2025
ANSI/AAMI ES60601-1:2006 + A1:2012 + A2:2021	UL International	edc Q4/2025
CAN/CSA-C22.2 NO.60601-1:2005 + A1:2012 + A2:2022	UL International	edc Q4/2025
Directive 2011/65/EU (RoHS)	TENTE	Q1/2025
Regulation (EC) No 1907/2006 (REACH)	TENTE	Q1/2025
EC Declaration for partly completed machinery acc. Annex VII, Part B of the Machinery Directive 2006/42/EC	TENTE	08/2025
Installation instruction Integral assist	TENTE	07/2025
Technical documentation Integral assist	TENTE	04/2025

|	
Total application weight:	Total weight = empty bed + safe working load (SWL)
	Total weight = max. 450 kg (3x150 kg)
Max. speed:	12 km/h
Max. assist speed:	Adjustable (3.0 - 6.0 km/h) – Default 5.0 km/h

Max. current:	10 Amps up to 25 °C
Supply voltge:	28 V DC
Incline:	Up to 6°
IP-rating:	IPX6
Washability:	Washable - 250 wash cycles, static - according to IEC 60601-2-52, in line with AK-BWA

Max. current: 10 Amps up to 25 °C
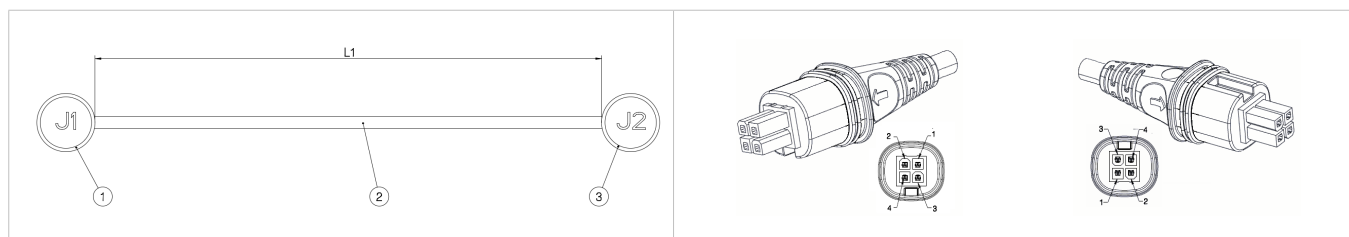
Supply voltge: 28 V DC

Cables

WeAssist is working with LINAK standard PCP cables

**1019W7001-00185-B**, straight to angled, 4-poled Mini-Fit to Mini-Fit connector, std. length (185, 200, 500, 1000, 1300, 2000 mm)
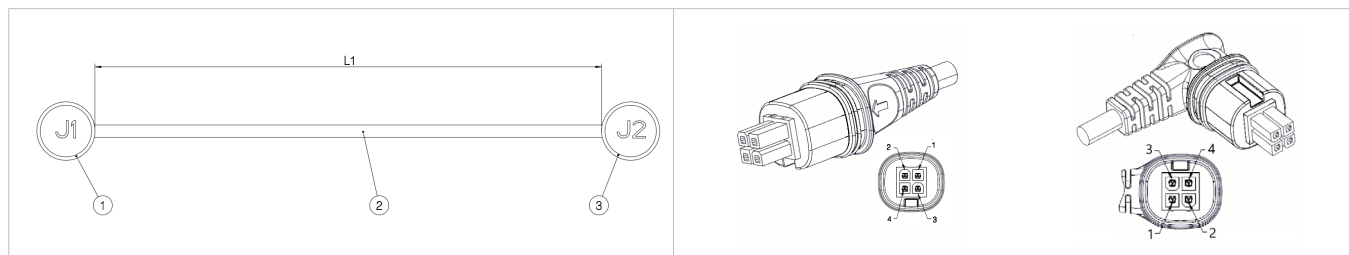
CAB90169-0500, straight to straight, 4-poled Mini-Fit to Mini-Fit connector, std. length (500, 1000, 1500, 2000, 2500 mm)

CAB90230, straight to straight, 4-poled Mini-Fit to Mini-Fit connector, coiled cable, length: (L1:50, L2:600, L3:1400 mm)
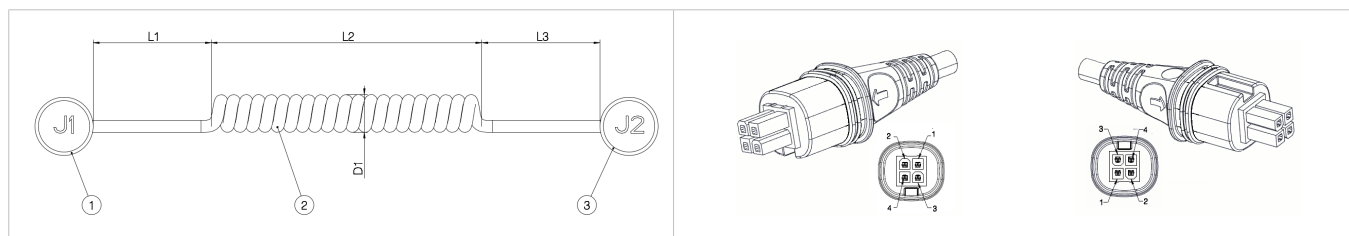
CAB90228, straight to straight, 4-poled Mini-Fit to Mini-Fit connector, coiled cable, length: (L1:700, L2:400, L3:1250 mm)
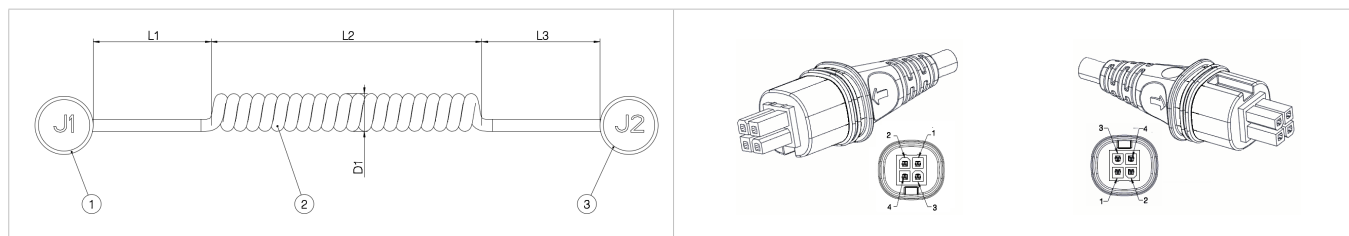
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