

USING THE QUICK GUIDE

- Serves for safe handling with the KEB drive inverter.
- Provides information on handling, assembly and installation.
- Remains for later use at the drive inverter.
- Does **not** replace the electronically provided instructions for use.

This instruction manual is determined exclusively for electrical personnel. Electrical personnel for the purpose of this instruction manual must have the following qualifications:

Knowledge and understanding of the safety instructions.

- Skills for installation and assembly.
- Understanding of the function in the used machine.
- Detection of hazards and risks of the electrical drive technology.
- Knowledge of IEC 60364-5-54.
- Knowledge of national safety regulations.

SAFETY INSTRUCTIONS

⚠ DANGER Interventions by unauthorized persone!



Danger to life by electric shock and malfunction!

Modification or repair is only permitted by KEB authorized personnel..

NOTICE

Getting more documentation

Hazards and risks through ignorance.



- ▶ Open the KEB homepage at www.keb.de.
- ▶ By entering the material number in the search field, you will get the corresponding parts of the instructions for use.
- ▶ Read the instructions for use carefully!
- ▶ Observe the safety and warning instructions!
- ▶ If you have any questions, please contact service@keb.de!

TRANSPORT

The transport must be carried out by instructed persons, observing the following instructions.

⚠ CAUTION



Maximum design edges and high weight!

Contusions and bruises!

- ▶ Never stand under suspended loads.
- ▶ Wear safety shoes.
- ▶ Secure drive inverter accordingly when using lifting gear.

NOTICE

Behaviour in case of transport damage



- ▶ When receiving goods, check the device for transport damage such as deformations or loose parts.
- ▶ In case of damage, contact the carrier immediately.
- ▶ Do not operate the device in case of transport damage!

STORAGE

Do not store drive inverters

- in the environment of aggressive and/or conductive liquids or gases.
- at places with direct sunlight.
- outside the specified environmental conditions.

UNPACKING AND CHECKING

- Make sure that no components are bent and/or isolation distances are changed.
- The device must not be put into operation in case of mechanical defects. There is no compliance with applicable safety standards any more.



The electrolytic capacitors of the DC link must be reformed if the drive inverter was stored or out of operation for more than one year. See www.keb.de/nc/search with search term „electrolytic capacitors“.

INSTALLATION



Drive inverters contain electrostatic sensitive components.

- ▶ Avoid contact.
- ▶ Wear ESD-protective clothing.

- Do not allow moisture or mist to penetrate the unit. Mount the drive inverter according to the required degree of protection.
- Maximum surrounding temperature 70°C
- Maximum pressure for liquid-cooled drive inverters 2 bar (29 psi) at -30...+70°C.

NOTICE

Mounting

- ▶ Clamping against the housing cover is not permitted.
- ▶ Clamping on the M4 screw heads is not permissible for through-mount variants.

INSTALLATION / ELECTRICAL CONNECTION

⚠ DANGER Voltage at the terminals and in the device!



Danger to life by electric shock!

- ▶ Never work under voltage on the open device or touch exposed parts.
- ▶ For any work on the unit switch off the supply voltage and secure it against switching on.
- ▶ Wait until the drive has stopped in order that no regenerative energy can be generated.
- ▶ Wait until the DC link capacitors are discharged (5 minutes). Verify by measuring the DC voltage at the terminals.
- ▶ If personal protection is required, install suitable protective devices for drive inverters.
- ▶ Never bridge upstream protective devices (also not for test purposes).
- ▶ Connect the protective earth conductor properly to drive inverter and motor.
- ▶ Leakage current higher than 3,5 mA: The minimum cross-section of the protective earth conductor must comply with local safety regulations for protective earth conductors for equipment with high leakage current.
- ▶ Install all required covers and protective devices for operation.
- ▶ Residual current: This product can cause a DC current in the protective earth conductor. When a residual current device (RCD) or a residual current monitor (RCM) is used for the protection of direct or indirect contact, only a RCD or RCM of Type B is permitted for this product on the power supply side.



For a trouble-free and safe operation, please pay attention to the following instructions:

- ▶ Check for reliable fit of the device connections in order to minimize contact resistance and avoid sparking.
- ▶ Within systems or machines the person installing electrical wiring must ensure that an existing or new wired safe ELV circuits the EN requirement for safe insulation is still met!
- ▶ For drive inverters that are not isolated from the supply circuit (in accordance with [EN 61800-5-1](#)) all control lines must be included in other protective measures (e.g. double insulation or shielded, earthed and insulated).
- ▶ Installations with additional safety or protective measures in accordance with their requirements have to be checked. When using drive inverters, to be in accordance with the given applications notes or recommendation when using these.

COOLING AND COOLANT CONNECTION

NOTICE

Deformation of the heat sink by pressure peaks.

Maximum test pressure 4 bar.

- ▶ Maximum test pressure may not be exceeded briefly by pressure peaks!
- ▶ Observe Directive 2014/68/EU for pressure equipment!

Observe coolant flow rate!

- ▶ Fall below => no sufficient cooling.
- ▶ Exceeding => heat sink is washed out.

Coolant connection	
Coolant	Water-glycol (45:55)
Amount of coolant in the device	The amount of coolant is depending on the system length
Minimum coolant	0.125l
Maximum coolant	0.410l
Coolant inlet temperature	
• constant, minimum	30°C
• constant, maximum	65°C
Minimum volume flow	5l/min
Maximum volume flow	15l/min
Rated volume flow	10l/min
Max. operating pressure in the cooling system	2bar
Pressure drop	see instructions for use

Materials in the cooling circuit

Avoid contact corrosion and pitting

For the screw connections and also for the metallic articles in the cooling circuit which are in contact with the coolant (electrolyte) a material is to be selected, which forms a small voltage difference to the heat sink.

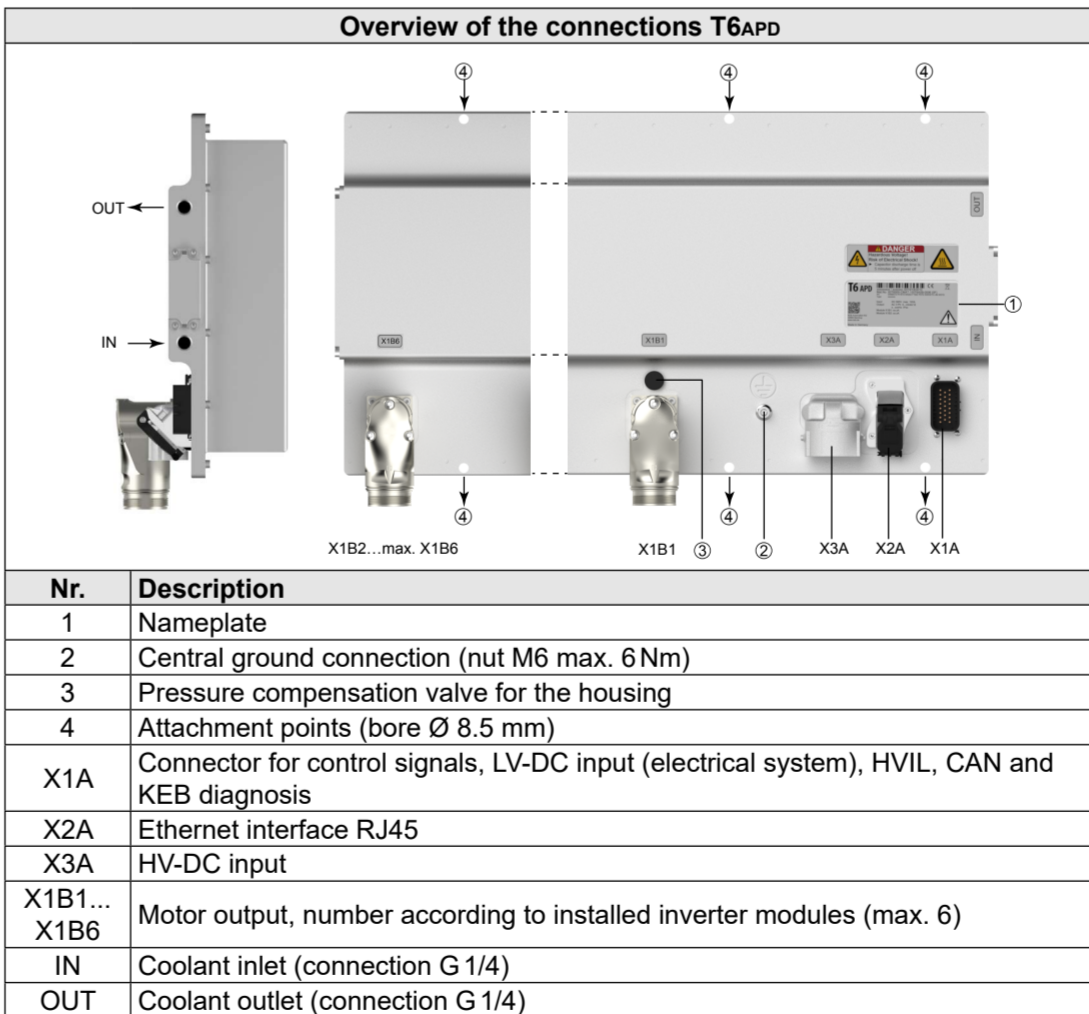
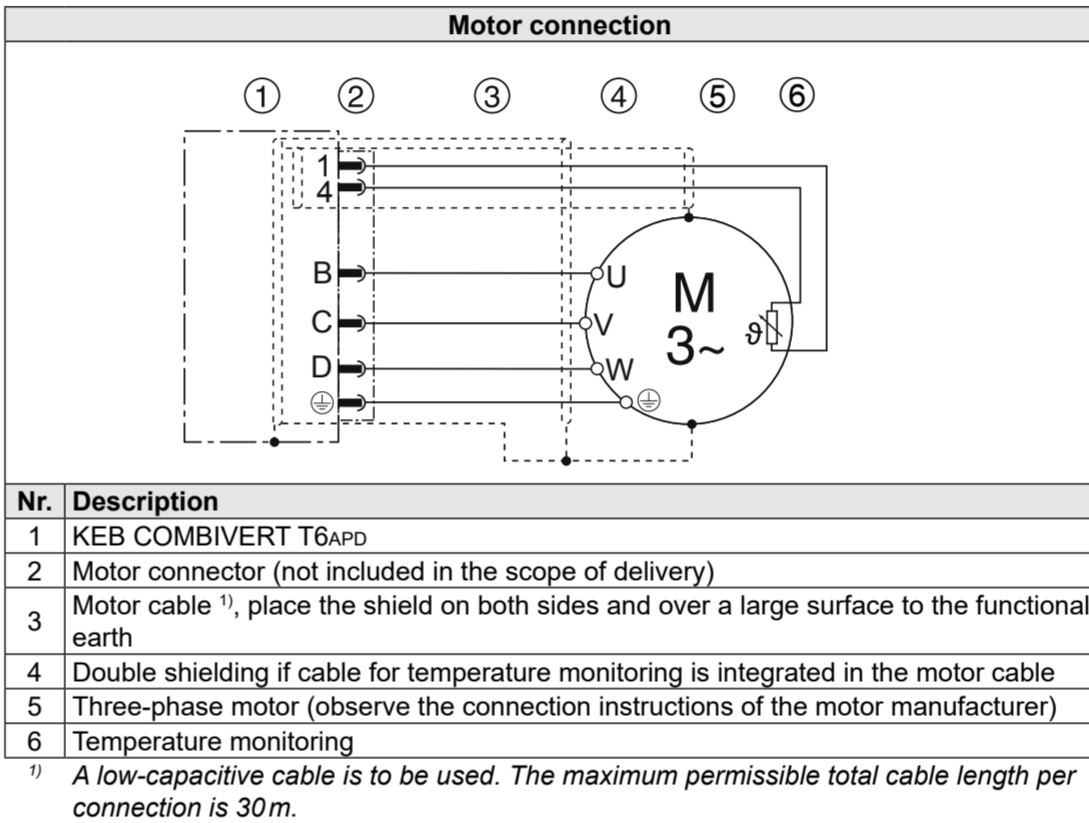
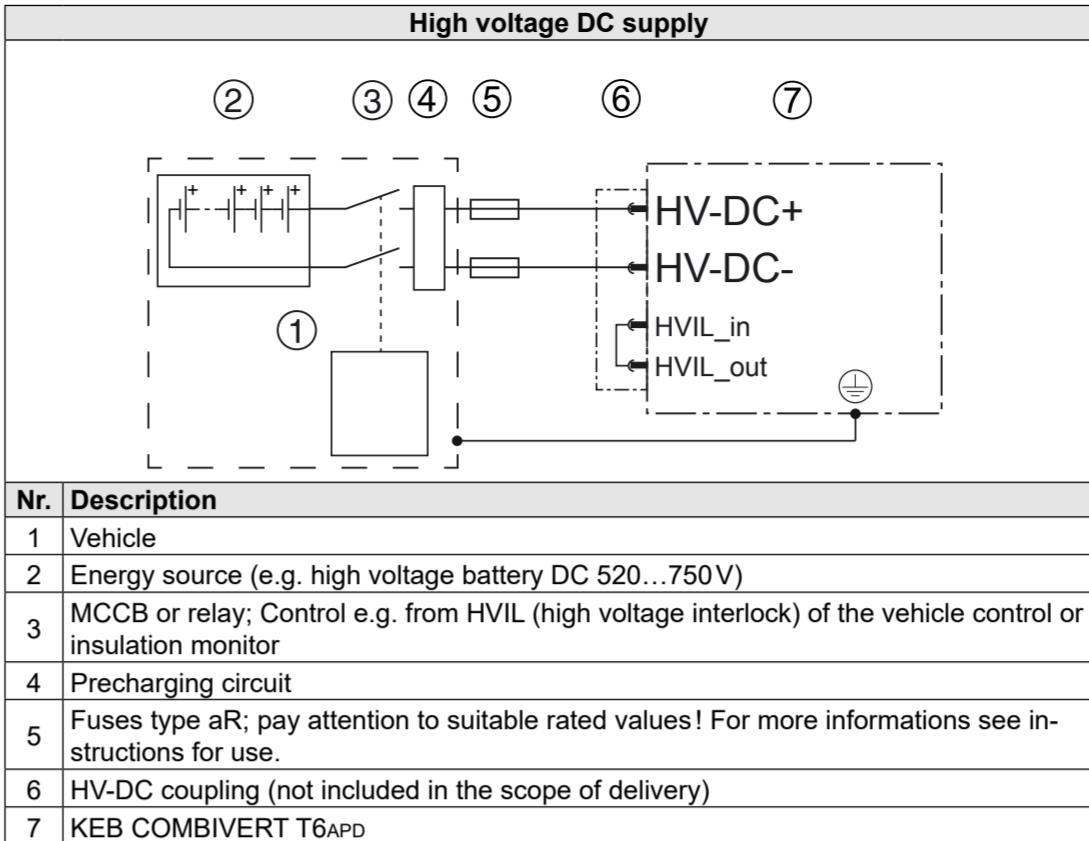
An aluminum fitting or ZnNi coated steel fitting is recommended. Other materials must be checked before use. The specific case of application must be checked by the customer in tuning of the complete cooling circuit and must be classified according to the used materials. With hoses and seals take care that halogen-free materials are used.

A liability for occurring damages by wrongly used materials and from this resulting corrosion cannot be taken over!

MOUNTING

Required material	Anzugsdrehmoment
Screw <i>DIN EN ISO 4762</i> - M8 - Stainless steel A4 80	22Nm ± 1.1 Nm

WIRING



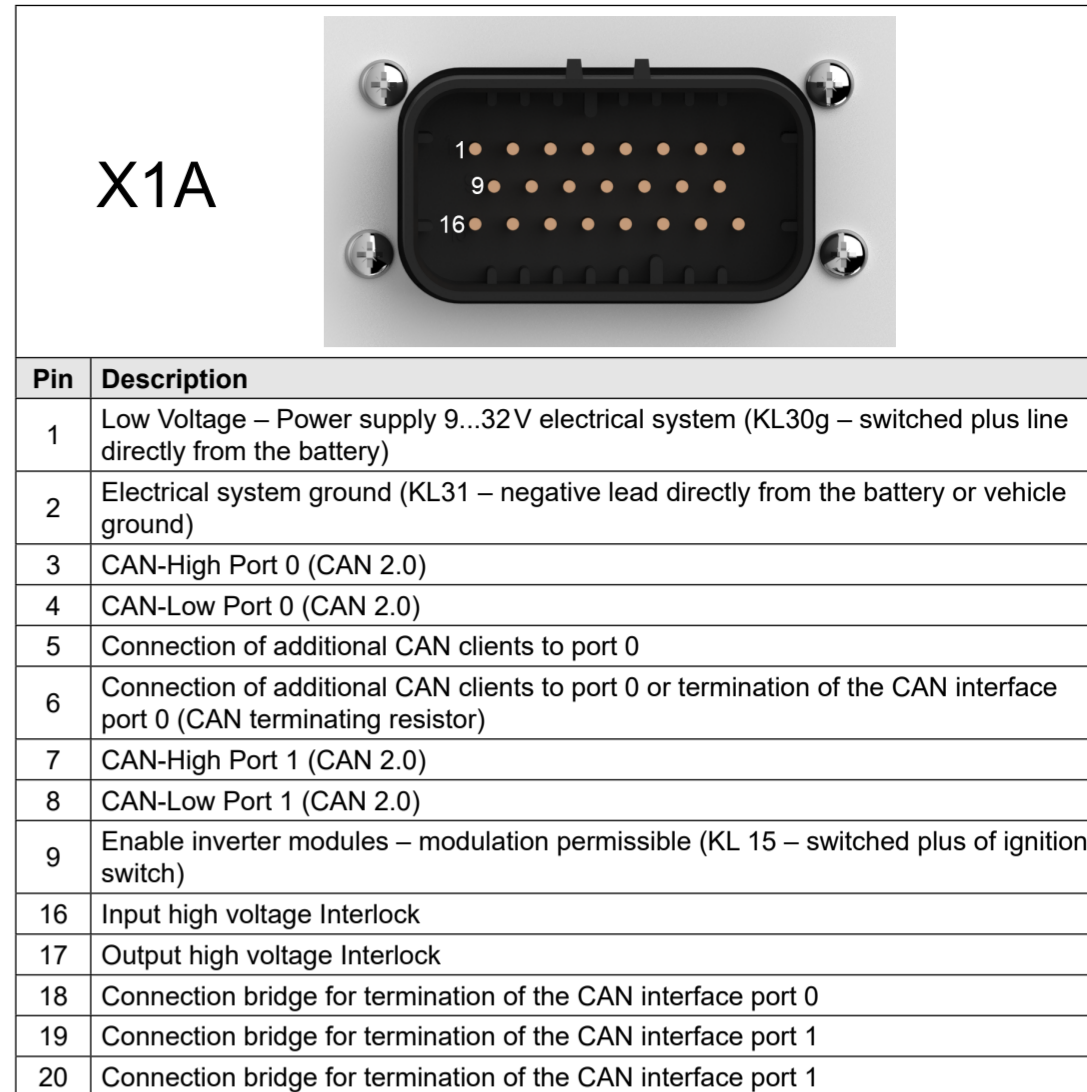
The specified degree of protection for the connectors always refers to the mated and locked condition.

NOTICE

Bus interface X2A

- Is not part of the acceptance tests E1 or CE and is not tested.
- May not be connected during operation, is only designed as service interface.
- Must be locked with spreading rivet!

CONTROL



All unlisted connections are service interfaces.

START-UP AND OPERATION

⚠ WARNING

Function of the drive inverter determines the machine manufacturer!



Hazards caused by unintentional behavior of the drive!

- ▶ The documentation of the machine manufacturer is required for the start-up and operation of the product.
- ▶ Check especially during initial start-up or replacement of the drive inverter if parameterization is compatible to application.
- ▶ The drive converter must not be started until it is determined that the installation complies with the machine directive; EN 60204-1 must be observed.



⚠ WARNING

Triggering of overcurrent protection devices

Risk of fire or electric shock!

- ▶ Triggering of an overcurrent protection device will be a hint for an overload or short circuit. Triggering a RCD may be caused by a leakage current.
- ▶ In order to reduce the risk of fire or electric shock, live parts and other components of the controller should be checked and replaced in case of damage.
- ▶ If the contacts of an overload relay are burned, the complete relay must be replaced.

MAINTENANCE

⚠ DANGER

Unauthorized exchange, repair and modifications!



Unpredictable malfunctions!

- ▶ The function of the drive inverter is dependent on its parameterization. Never replace without knowledge of the application.
- ▶ Modification or repair is permitted only by KEB Automation KG authorized personnel.
- ▶ Only use original manufacturer parts.

The following maintenance work has to be carried out when required, but at least once a year by authorized and trained personnel.

- ▶ Make a visual test of the cooling circuit for leaks and corrosion at liquid-cooled drive inverters.
- ▶ In case of malfunction, unusual noises or smells inform a person in charge!
- ▶ In case of failure, please contact the machine manufacturer. Only the vehicle manufacturer knows the parameterisation of the used drive inverter and can provide an appropriate replacement or induce the maintenance.

DISPOSAL

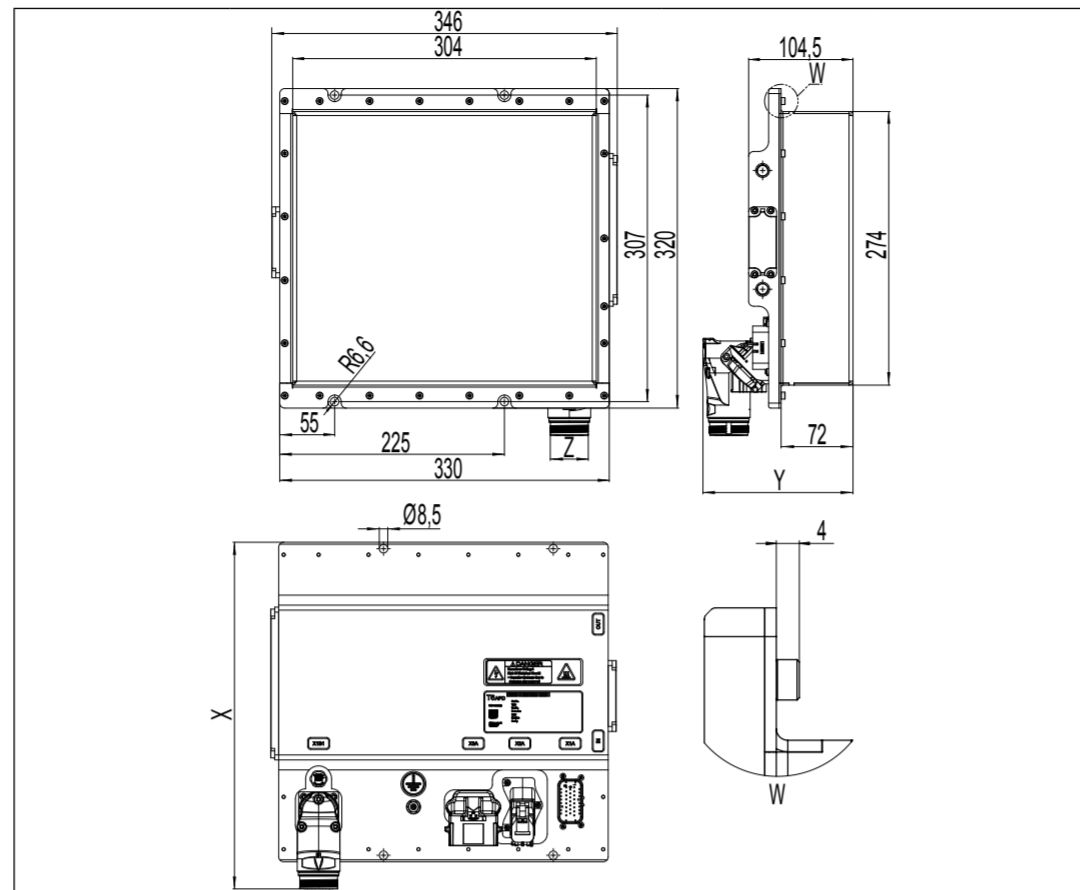
- ▶ For professional disposal, follow the instructions in the instructions for use.

CERTIFICATION

Depending on the order, T6 devices can be certified in different ways. The valid certification is indicated by the corresponding logo and/or number on the nameplate. Further information can be found in the „Installation“ instructions for use.

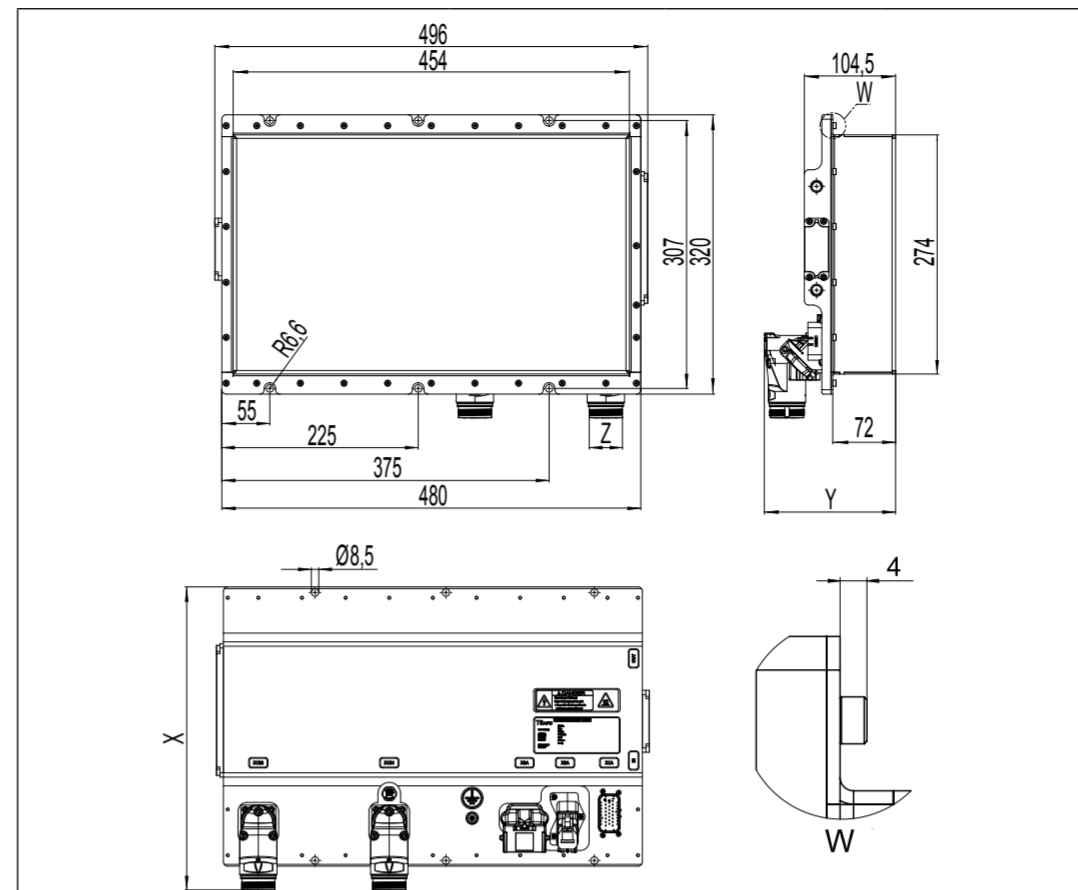
HOUSING DIMENSIONS

SYSTEM LENGTH A



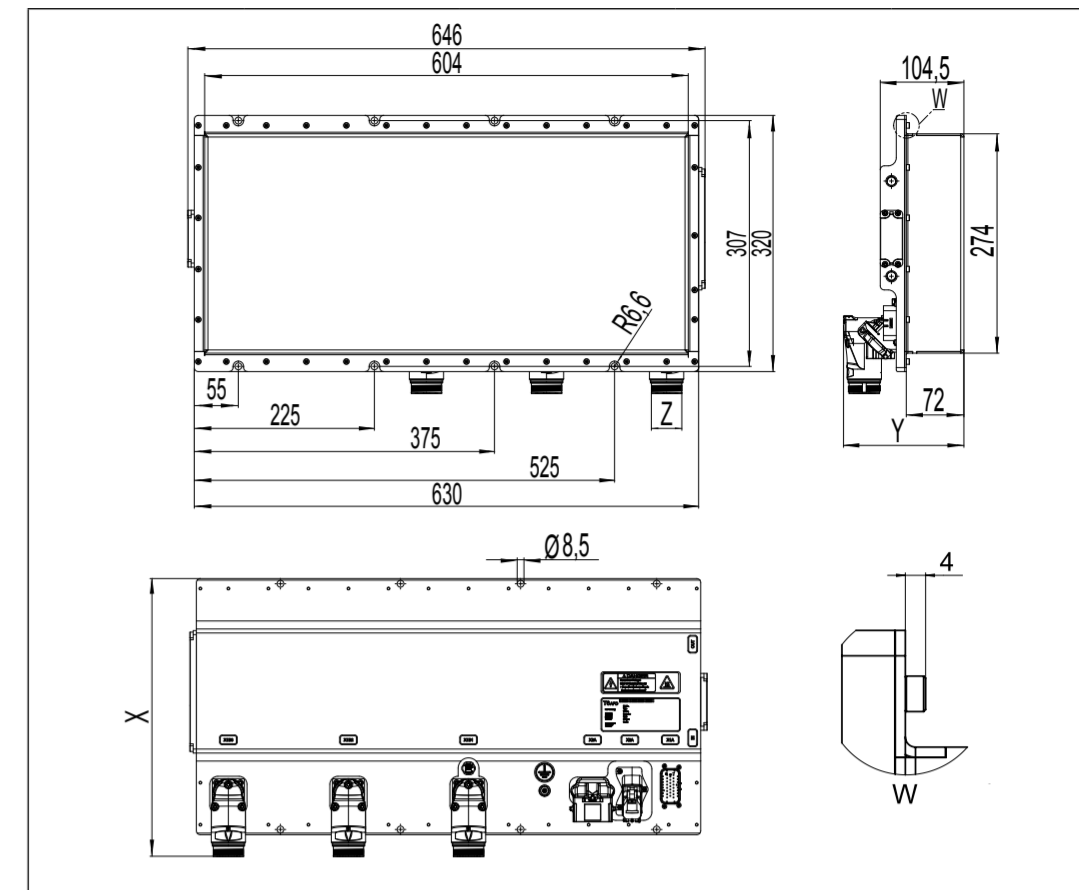
Modul	Dimensions in mm			Weight in kg
A/B	X: 310	Y: 125	Z: M40x1,5	9,5
C	X: 348	Y: 151	Z: M23x1,5	

SYSTEM LENGTH B



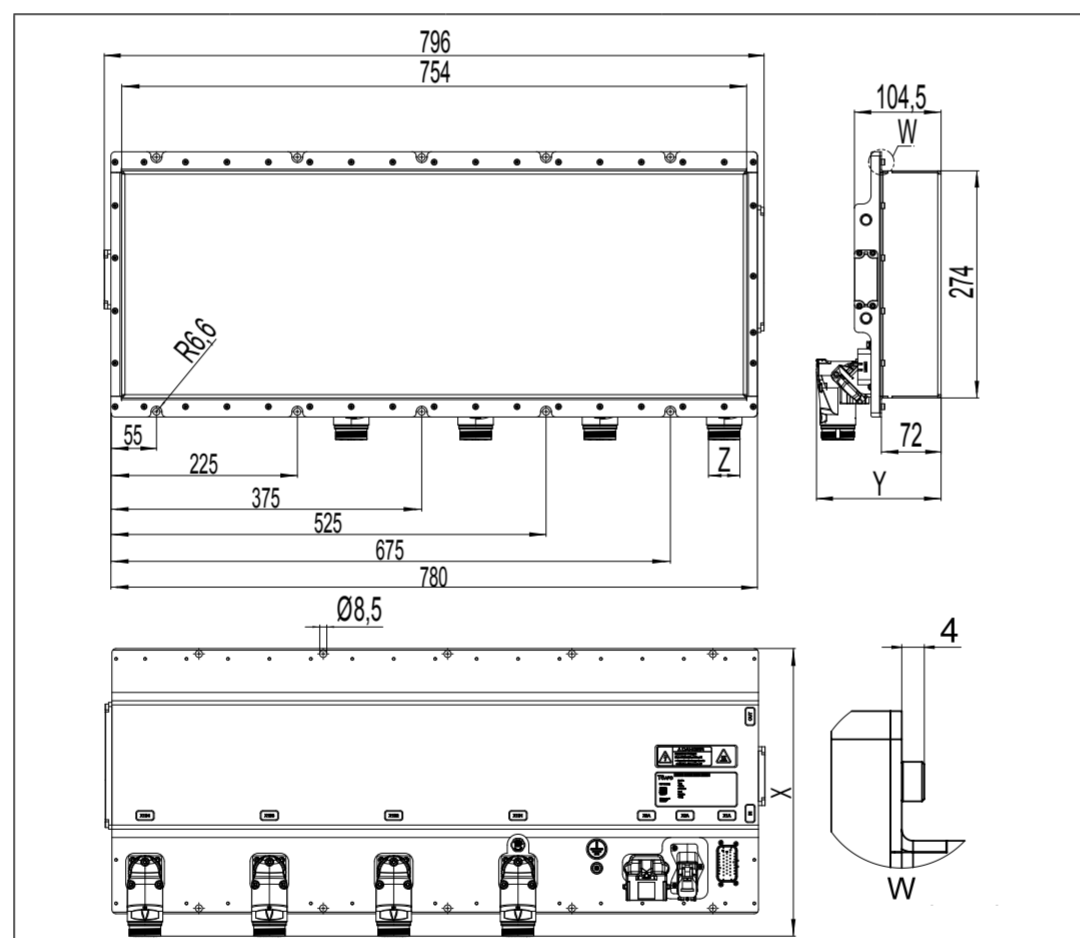
Modul	Dimensions in mm			Weight in kg
A/B	X: 310	Y: 125	Z: M40x1,5	15
C	X: 348	Y: 151	Z: M23x1,5	

SYSTEM LENGTH C



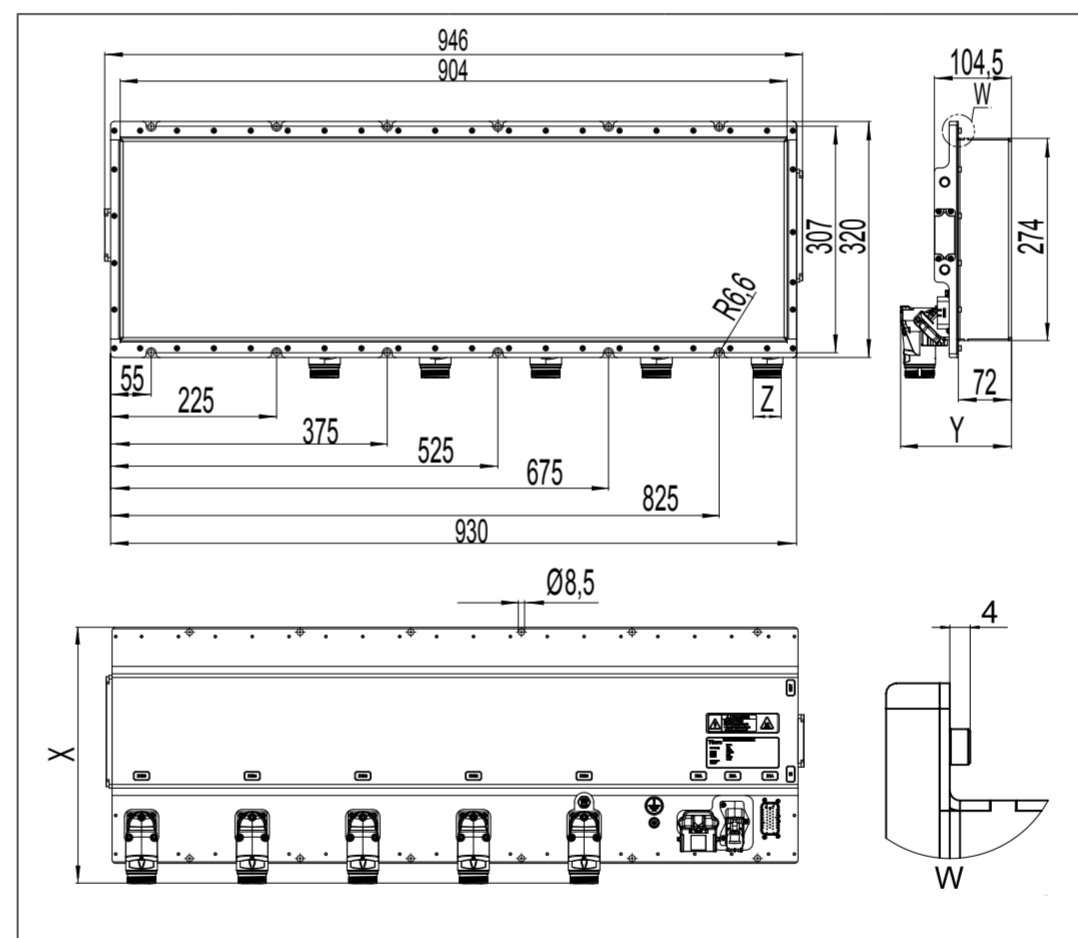
Modul	Dimensions in mm			Weight in kg
A/B	X: 310	Y: 125	Z: M40x1,5	20
C	X: 348	Y: 151	Z: M23x1,5	

SYSTEM LENGTH D



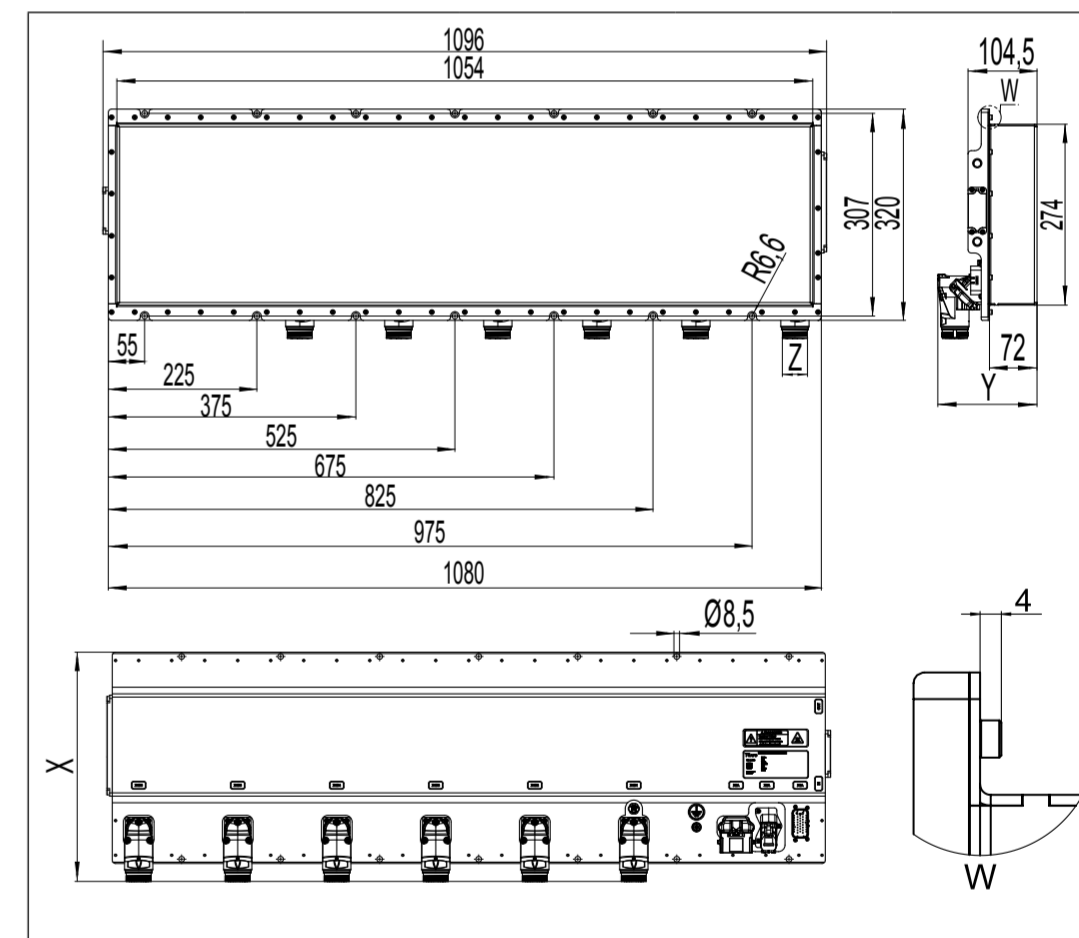
Modul	Dimensions in mm			Weight in kg
A/B	X: 310	Y: 125	Z: M40x1,5	25
C	X: 348	Y: 151	Z: M23x1,5	

SYSTEM LENGTH E



Modul	Dimensions in mm			Weight in kg
A/B	X: 310	Y: 125	Z: M40x1,5	30
C	X: 348	Y: 151	Z: M23x1,5	

SYSTEM LENGTH F



Modul	Dimensions in mm			Weight in kg
A/B	X: 310	Y: 125	Z: M40x1,5	35,5
C	X: 348	Y: 151	Z: M23x1,5	



COMBIVERT T6

QUICK START GUIDE

Translation of the original manual
T6 Serie System A-F
Document 20177420 ENG 04

Icon	Language	URL
	Други налични езици.	www.keb.de/nc/search
	其他语言可用。	
	Jiné jazyky k dispozici.	
	Andre sprog til rådighed.	
	Weiteren Sprachen verfügbar.	
	Other languages available.	
	Muud keeled on saadaval.	
	Otros idiomas disponibles.	
	Muut kielet saatavilla.	
	Autres langues disponibles.	
	Άλλες διαθέσιμες γλώσσες.	
	Teangacha eile ar fáil.	
	Altre lingue disponibili.	
	他の言語も利用できます。	
	다른 언어도 사용할 수 있습니다.	

Icon	Language	URL
	Ostali dostupni jezici.	www.keb.de/nc/search
	Más elérhető nyelvek.	
	Citas pieejamās valodas.	
	Kitos kalbos.	
	Lingwi oħra disponibbli.	
	Andere talen beschikbaar.	
	Inne dostępne języki.	
	Outros idiomas disponíveis.	
	Alte limbi disponibile.	
	Доступны другие языки.	
	Andra språk finns tillgängliga.	
	Iné jazyky sú k dispozícii.	
	Drugi jeziki so na voljo.	
	Mevcut diğer diller.	