Power System's Documentation

Documentation Set 356848.003

Available only from *www.eltek.com*

System
SPECIFIC
Documents

Documentation Chart & Precautions
Overview of user documentation and Safety Precautions
(This document)
356848.173

Quick Start Guide
For system's mechanical and electrical installation, as well as commissioning and maintenance, with check lists and forms
356848.103

User's Guide Compack Controller
With description of system connection to a LAN, configuration options via PowerSuite, Network Management System, etc.
350011.013

System
GENERIC
Documents

Generic Guidelines Environmental Protection
For *Eltek* cabinets installed outdoors or in exposed areas
2038879

Installation Guidelines Lightning & Surge Protection
For required surge protection devices (SPD) in *Eltek* power systems
2024623

ONLINE HELP
Files — *Available via Internet*

PowerSuite Online Help
Complete description of the *PowerSuite* program's interface, used for configuration of the DC power system.
(Help System for on-screen reading)

Functionality Online Help
Complete description of DC power systems' functionality.
(Help System for on-screen reading)

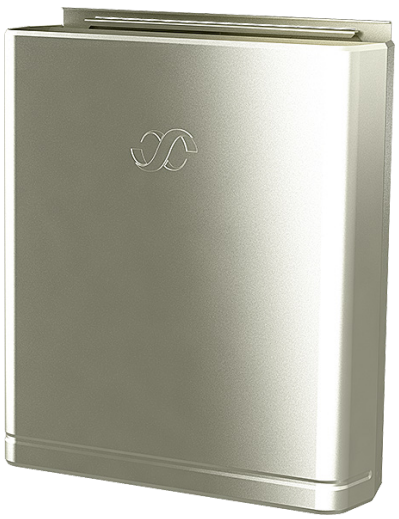
Contact your *Eltek* representative for log in data

Documentation Chart & Precautions

356848.173

Chameleon PS Systems

Compack-based Power Supply System, 48 VDC, 1300W, IP65, 2R
Low Power Outdoor Applications



Part MFGC0212.xxx

Power Supply System ~ Telecom & Industrial

ELTEK™

356800.183, 3v5 (-15)

SAFETY and ENVIRONMENTAL PRECAUTIONS

The **product warranty** becomes invalid if the following safety precautions are not followed during handling, installation, commissioning and general use/operation of *Eltek* power supply systems.

General Precautions


Device Hazard

CAUTION: Even though the product incorporates protection circuitry and other safeguards, it can be **damaged, perform poorly or have a reduced lifetime** if it is exposed to **incorrect treatment** during transport, installation or service. Always handle the equipment using proper lifting techniques, do not roll, climb or drill hole in the cabinets or enclosures. G1


Electric Shock

WARNING: Opening the equipment may cause terminal injury — even if the mains AC supply is disconnected. Hazardous voltages may be present inside, as large capacitors may still be charged. G2

Environmental Precautions


Ventilated Hot Surface

CAUTION: To avoid damage the equipment, **keep objects clear of system ventilation inlets, outlets and system fans**, if any, ensuring the **airflow** through the units is **not obstructed**, and that the fans rotate freely. Use caution with power modules, as they can reach **extreme temperatures** under load and normal operation. E1


Current Surge Protection

WARNING: The installer/user is responsible for ensuring that the power system is not damaged by current surges, over-voltages, etc. caused by external transients, lightning, electrostatic discharge, etc. To avoid damage and obtain the expected system reliability, it is mandatory to always install SPDs in Eltek's power supply systems. Follow the instructions given in "Guidelines for Lightning and Surge Protection", doc. 2024623. E2


Humidity & Dust Protection

WARNING: The electronics in the power supply system are designed for indoor, clean environment. When installed in outdoor enclosures — using heat sinks or closed loop heat management systems — it is important to maintain the equipment closed and tight during operation, to avoid external air entering the enclosure. Also, when using open loop heat management systems, it is important to replace the filters on a regular basis. Indoor installations in dusty or humid areas require appropriate air filtering of the room, or filtering of the air entering the power system. Follow the instructions given in "Generic Guidelines Environmental Protection.", doc. 2038879 E3

Precautions during Installation


Qualified Personnel

CAUTION: Read the user documentation carefully before installing and using the equipment, as installation and operation is to be performed as described in it. Always tighten screws and bolts with the **torque values recommended** in the documentation. For safety reasons, the **commissioning and configuration of the equipment is only to be performed** by *Eltek*'s personnel or by authorized and qualified persons. I1


EMC, NEC/CEC Regard

CAUTION: This product is tested and verified according to international safety, environmental and EMC standards. Any **non-*Eltek* equipment** installed into this product after delivery might influence the performance and **could infringe the original approvals**. The **installer is responsible** for ensuring that the environmental properties of this product/ system do not deteriorate during installation, and that it is performed in accordance with applying regulations.

Installations in USA and Canada must comply with NEC/CEC requirements. I2


Device Hazard

CAUTION: Before you start the electrical installation, you must **always disconnect** all external supply fuses, as well as internal battery and load fuses/ breakers, if any. I3


Electric Shock

WARNING: For safety reasons (high leakage current / high touch current) you must always connect the AC earth wire (PE) to the terminals, before you connect the AC input cable(s).

The batteries, if any, represent a major energy hazard. To avoid short-circuit of battery poles, you must always remove metallic objects — uninsulated tools, rings, watches, etc. — from the vicinity of the batteries. I4

356848.173, 1v0-2014-11, Published 2014-12-02

This product is CE marked and complies with all current requirements for relevant standards and directives.

Headquarters: **Eltek**
Visitor address: Gråterudveien 8, 3036 Drammen, Norway
Phone: +47 32 20 32 00 Fax: +47 32 20 32 10

ELTEK always on

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Quick Installation Guide

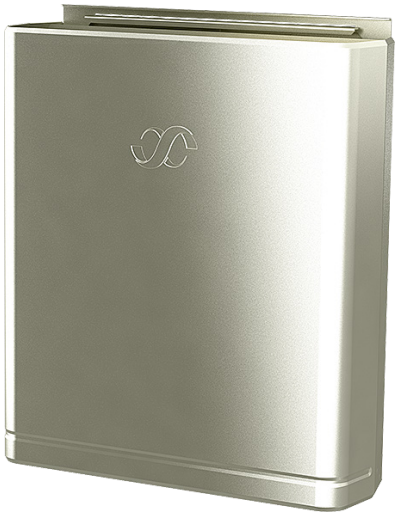
Installation, Commissioning and Maintenance

356848.103

Chameleon PS Systems

Compack-based Power Supply System, 48 VDC, 1300W, IP65, 2R

Low Power Applications



Part MFGC0212.xxx

Power Supply System ~ Telecom & Industrial

ELTEK

356800.183, 3v5 (-15)

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General Precautions


Device Hazard

G1

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Electric Shock

G2

WARNING: Opening the equipment may cause terminal injury — even if the mains AC supply is disconnected. Hazardous voltages may be present inside, as large capacitors may still be charged.

Environmental Precautions


Ventilated Hot Surface

E1

CAUTION: To avoid damage the equipment, **keep objects clear of system ventilation inlets, outlets and system fans**, if any, ensuring the **airflow** through the units is **not obstructed**, and that the fans rotate freely. Use caution with power modules, as they can reach **extreme temperatures** under load and normal operation.


Current Surge Protection

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Humidity & Dust Protection

E3

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Precautions during Installation


Qualified Personnel

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EMC, NEC/CEC Regard

I2

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Device Hazard

I3

CAUTION: Before you start the electrical installation, you must **always disconnect** all external supply fuses, as well as internal battery and load fuses/ breakers, if any.


Electric Shock

I4

WARNING: For safety reasons (high leakage current / high touch current) you must always connect the AC earth wire (PE) to the terminals, before you connect the AC input cable(s).

The batteries, if any, represent a major energy hazard. To avoid short-circuit of battery poles, you must always remove metallic objects — uninsulated tools, rings, watches, etc. — from the vicinity of the batteries.

356848.103, 1v0-2014-11

Warnings

WARNING:

– If used as PERMANENTLY CONNECTED, a readily accessible disconnect device shall be incorporated external to the equipment

– If used as PLUGGABLE EQUIPMENT, the socket-outlet shall be installed near the equipment and shall be easily accessible.

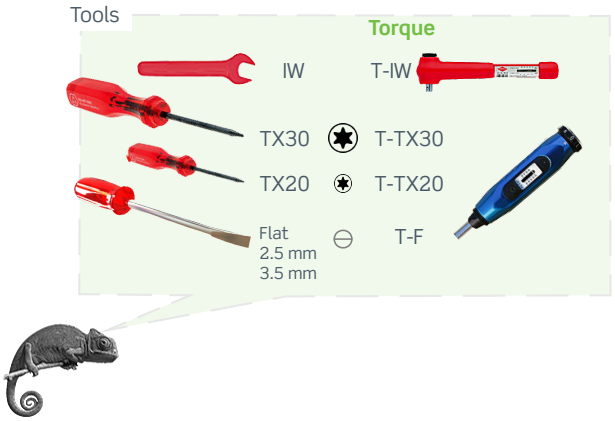
– Maximum operational ambient temperature of this equipment is 40°C or, if installed in a RESTRICTED ACCESS LOCATION, 55°C

NOTICE:

For technical **specifications and functionality description**, refer to following documents:

- MFGC0212.00X.DS3, Datasheet *Chameleon* 48V, 1300W, 7Ah Systems
- 350011.013, User Guide *Compack* controller
- For generic power system functionality, refer to *CWUI Online Help*

Tools & Torque Recommendations



Torque Recommendations

	Type & Size	Torque (Nm)
T1	M6 bolts & nuts (front cover, fastening brackets & battery unit, cable entry plate, PE stud)	5.0
T2	M4 screws (cable glands plate, guide rods, distribution cover)	1.5
T3	AC Mains, Load & Battery Term.	1.3
T4	I/O Term.	0.5
T5	Cable Glands	2.0

Note: General tolerance: ±10%

Recommended External AC Fuses

Recommended External AC Fuses
Chameleon 48V, 1300W-2R PS Systems
Rectifier: Chameleon 48/650 HE

AC Type		Fuse Type
230VAC 1 phase	20A C-char or 16A D-char	Th/Mag

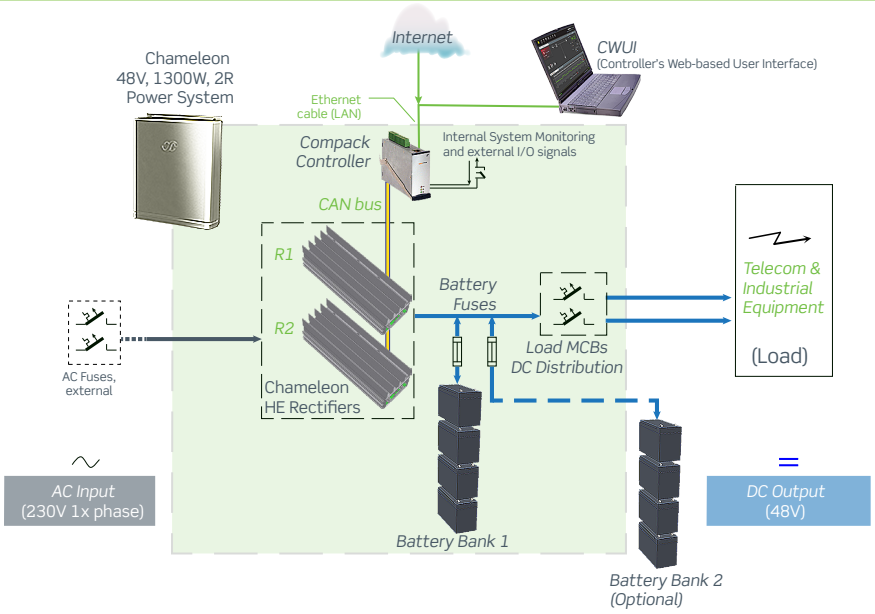
(Doc 2126770, 1v0)

356848.103, 1v0-2014-11

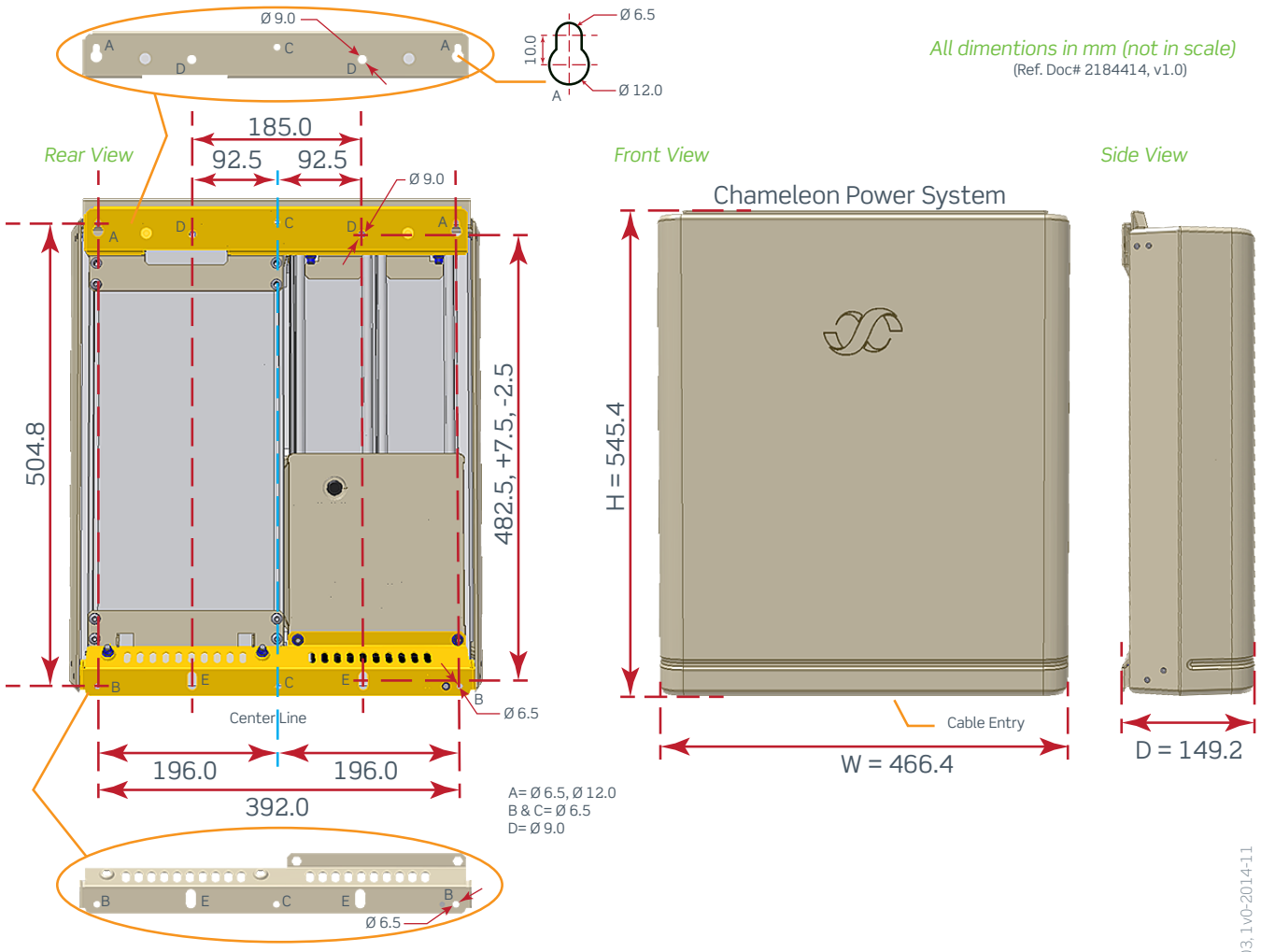
Introduction

Overview ~ Block Diagram

Chameleon Power Supply System



Chameleon System Dimensions



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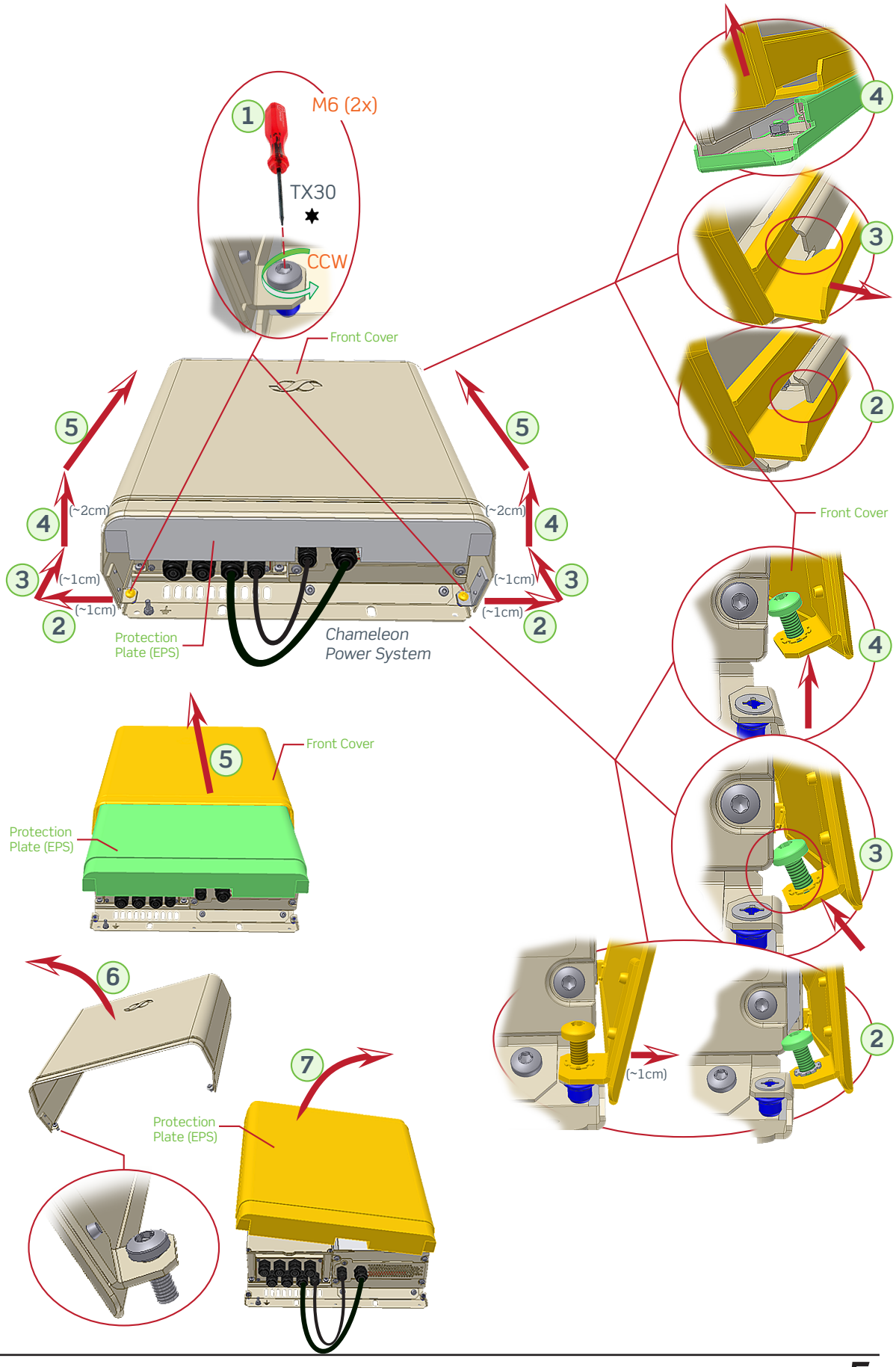
1. Remove the Front Cover and the Protection Plate (EPS)

Power is OFF!



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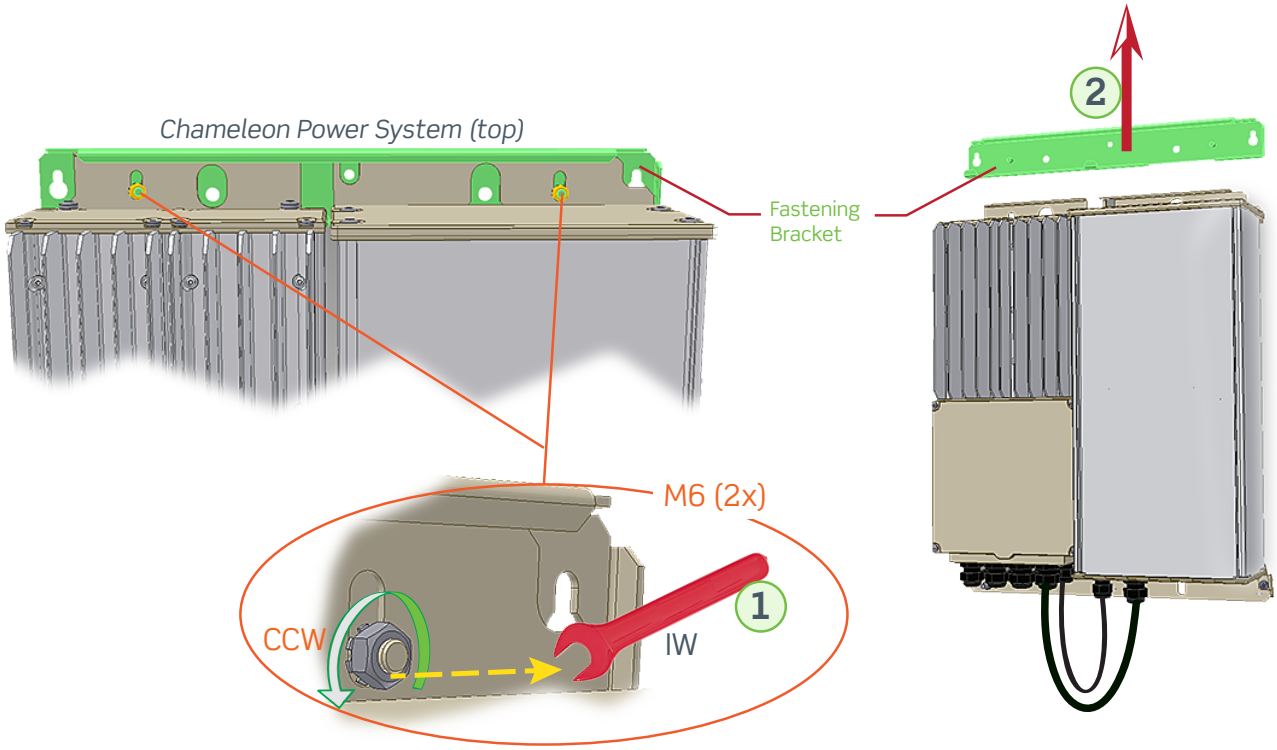
Mechanical Installation

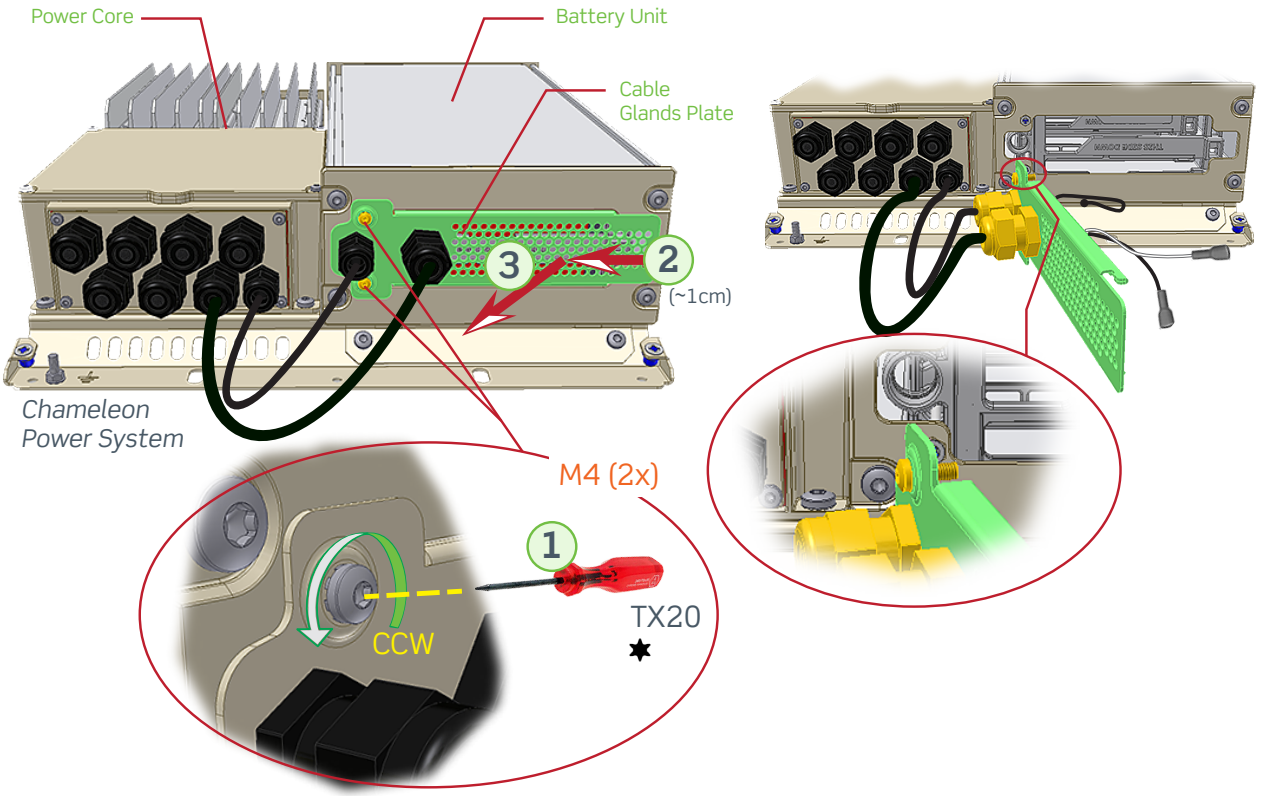
2. Unscrew the Upper Fastening Bracket



3. Remove the Battery Unit

Power is OFF!

Remove the Cable Glands Plate



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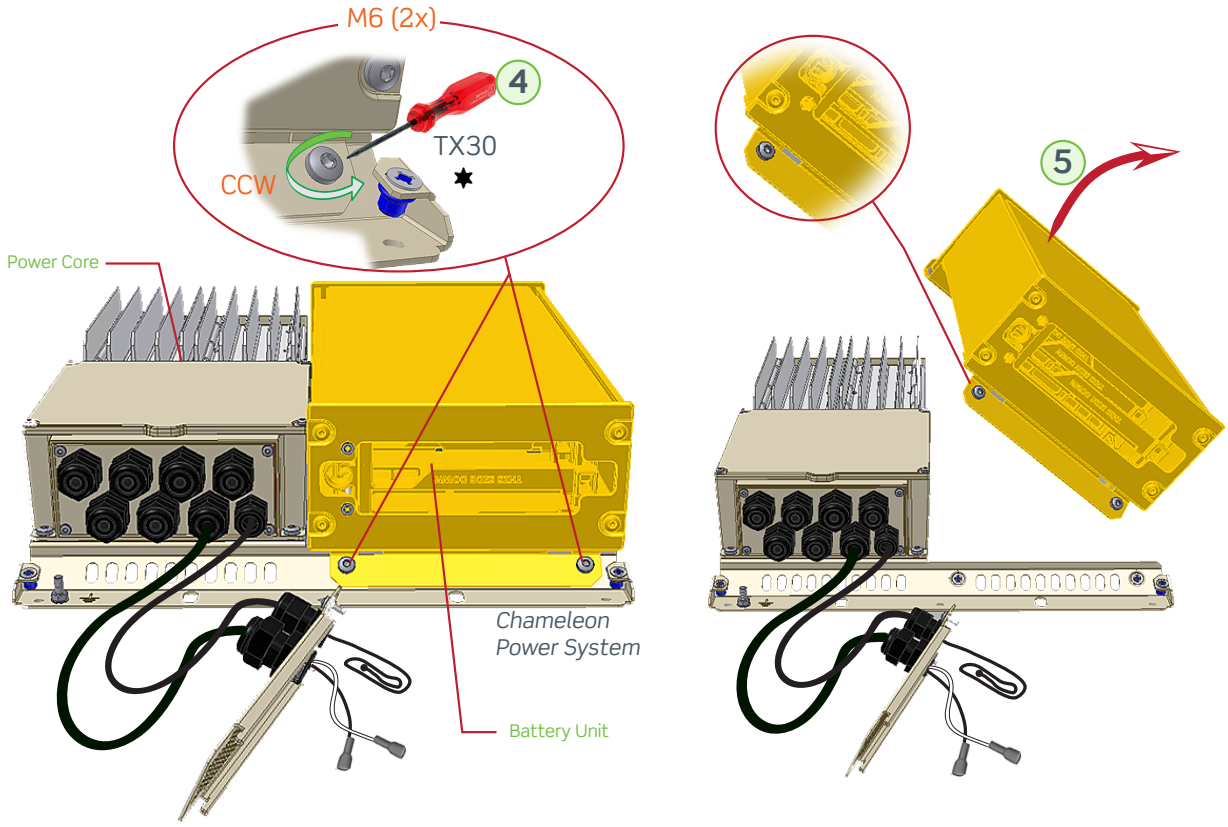
Remove the Battery Unit



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Mechanical Installation

4. Fasten the Upper Fastening Bracket to a Surface or Pole

NOTICE:
Use **suitable screws** or bolts (not included) to fasten the Chameleon unit to the wall or support surface (wall plugs, expansion bolts or molly bolts), or **suitable brackects**, if the unit is to be pole mounted


Suitable Screws or Bolts

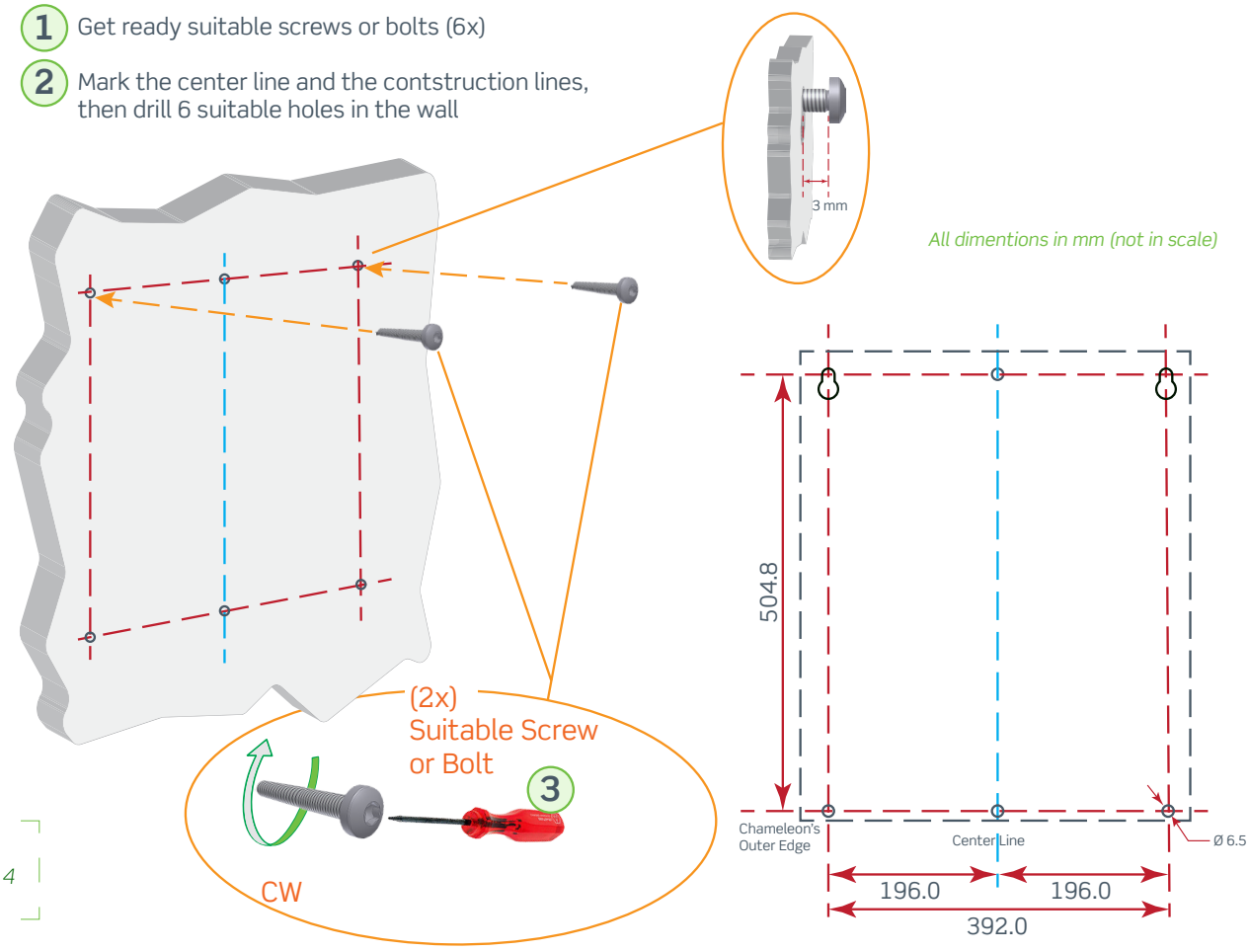

Suitable Pole Mount Brackets

CAUTION:
The wall or support surface or pole must be **capable of supporting** the equipment.
13.0 Kg, ±10%, Chameleon Unit without batteries
23.8 Kg, ±10%, Chameleon Unit with four PowerSafe SBS8 batteries
24.6 Kg, ±10%, Chameleon Unit with four DataSafe HX35 batteries

WARNING:
Never mount the Chameleon Unit in the vicinity of heaters or **above heat sources**

Option 1: Surface Mounting ~ Prepare the Surface

1. Get ready suitable screws or bolts (6x)
2. Mark the center line and the contstruction lines, then drill 6 suitable holes in the wall



page 4

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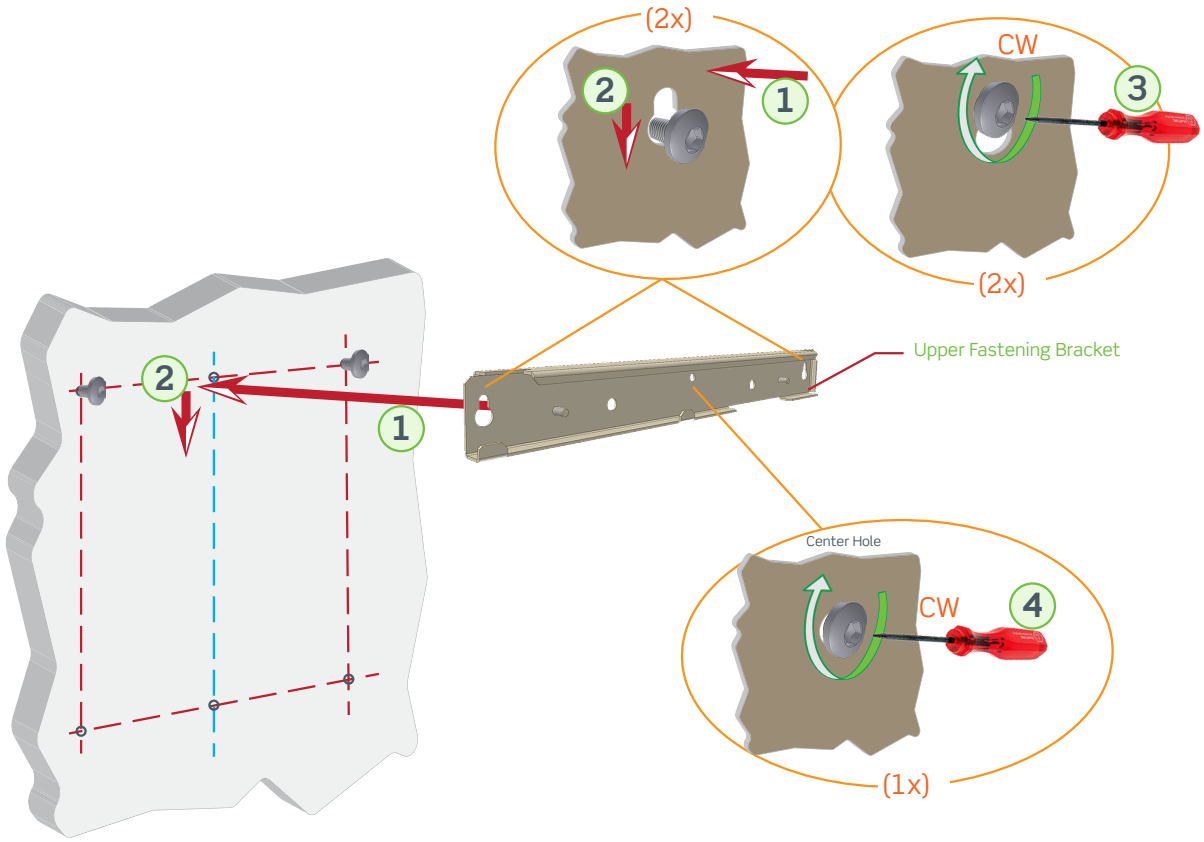
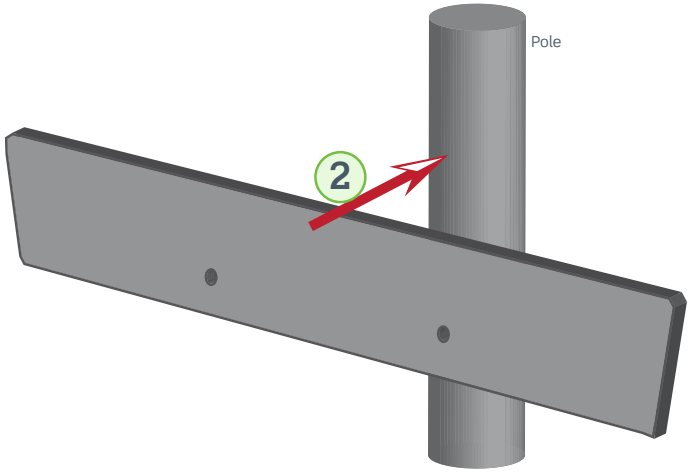
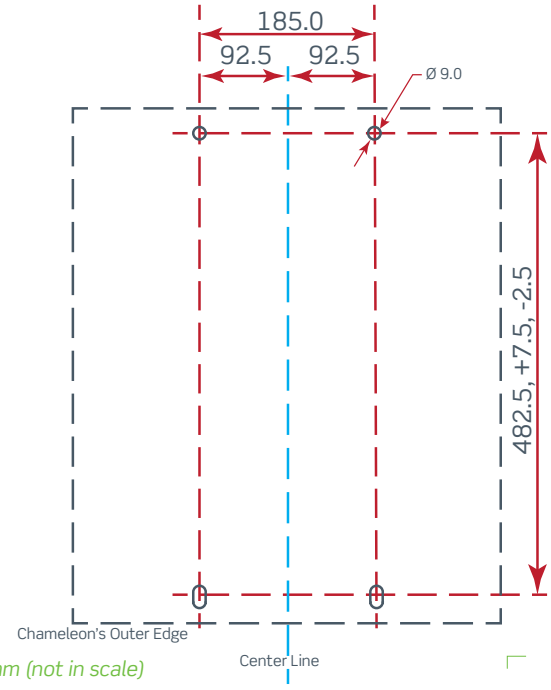
Option 1: Surface Mounting ~ Fasten the Upper Fastening Bracket



Option 2: Pole Mounting ~ Prepare the Brackets

1 Get ready suitable screws or bolts (4x) for the selected pole brackets



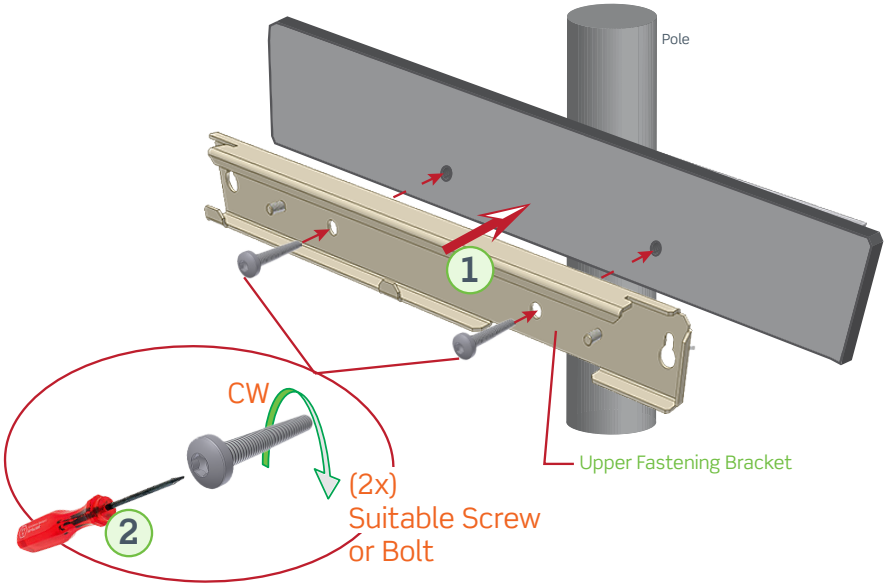


All dimentions in mm (not in scale)

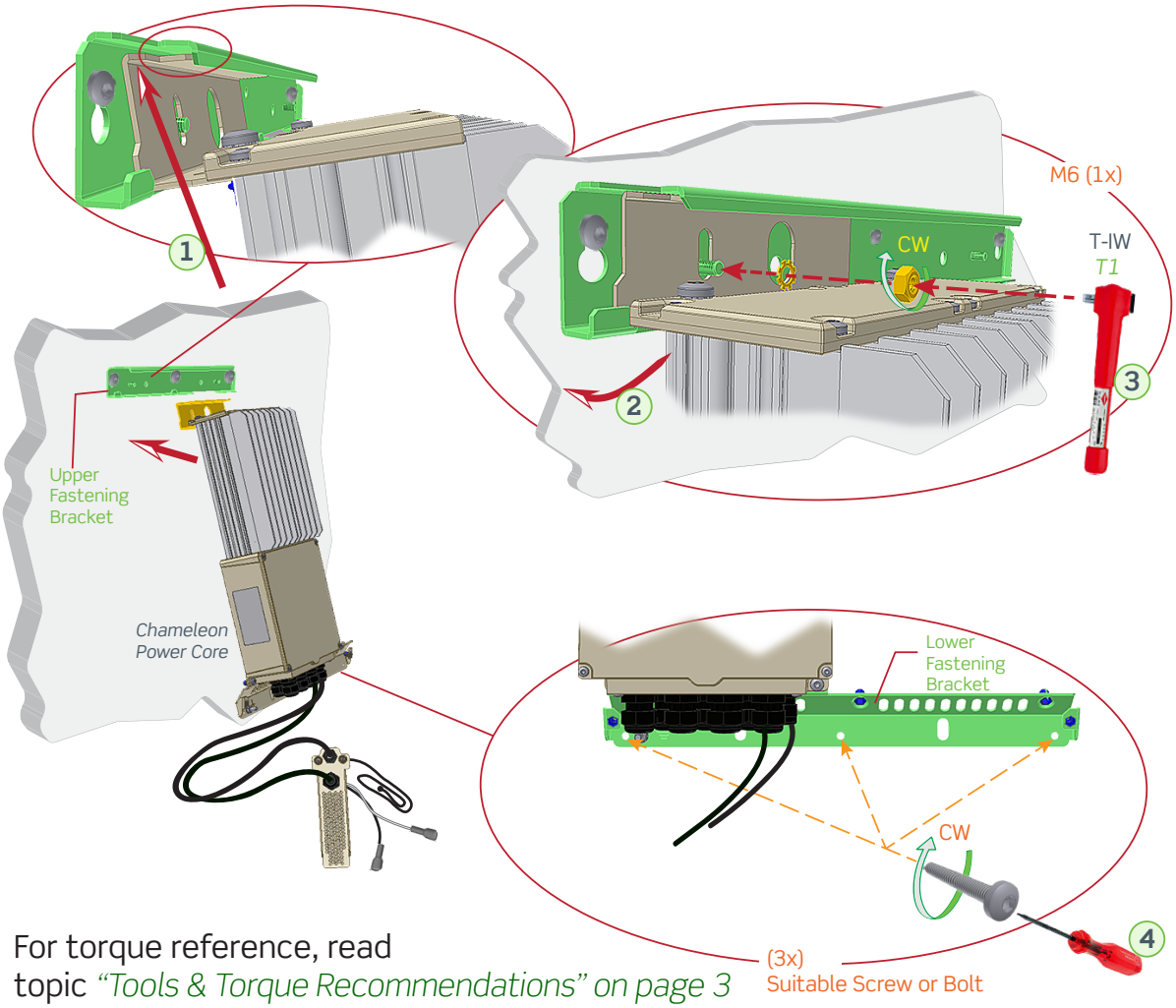
••• page 4

Notice:
This is an example of a pole bracket, and it is not shipped with the systems

Option 2: Pole Mounting ~ Fasten the Upper Fastening Bracket



5. Hang the Chameleon Power Core on the Bracket



For torque reference, read topic *"Tools & Torque Recommendations" on page 3*

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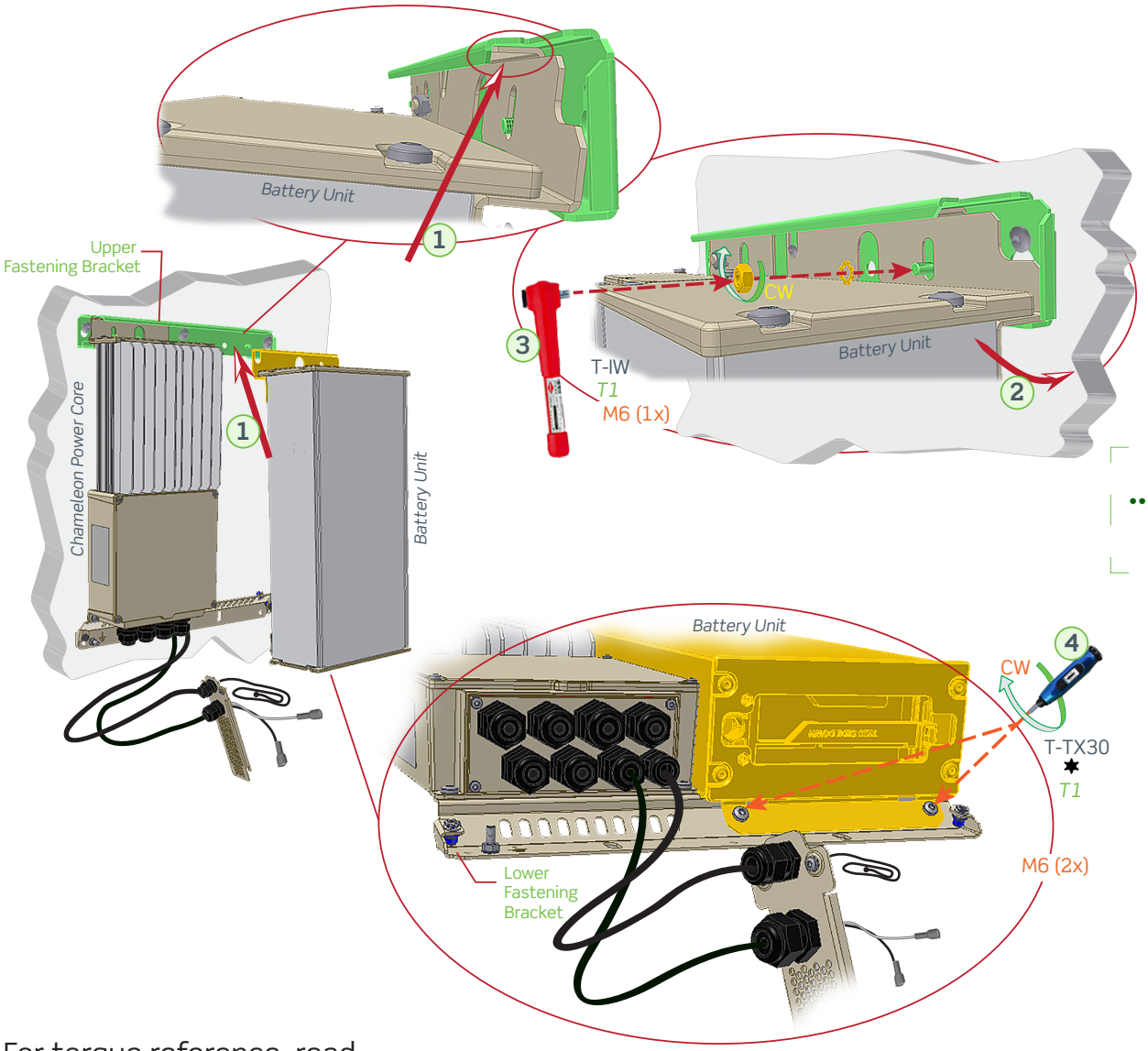
6. Hang the Battery Unit with Batteries on the Bracket

Power is OFF!



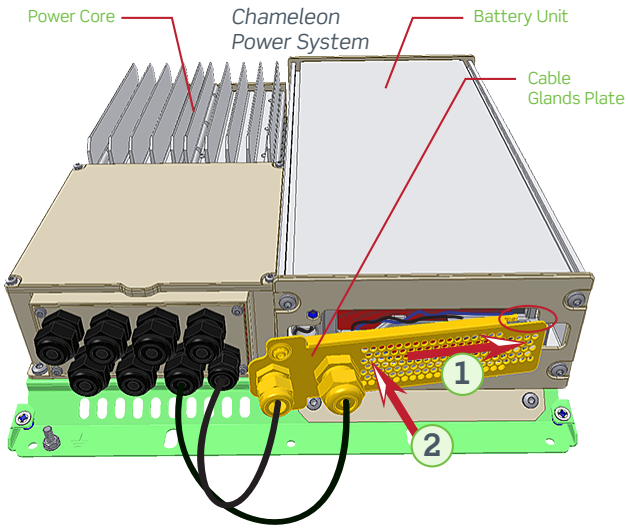
••• *Batteries page 21*

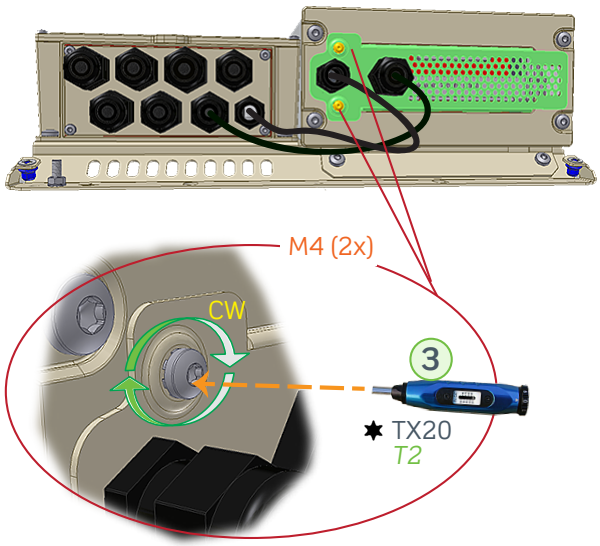
For torque reference, read topic *"Tools & Torque Recommendations" on page 3*

356848.103.1v0-2014-11

Mechanical Installation

7. Mount the Battery Unit's Cable Glands Plate





WARNING:

Do NOT plug the battery cables inside the Battery Unit!
To be done under the Electrical Installation

356848.103.1v0-2014-11

Check Lists Pullout

Pull out the pages with the gray outer band,
and use them as check lists

COMMISSIONING PROCEDURE

System Data

Chameleon System

Supplier's Order No.:	*Chameleon Power Supply System*, type:		Article No.:	
Site, name:		Longitude (±DD.ddd):	Altitude (±DD.ddd):	Elevation (m AMSL):
Serial No.:	Software, version No.:		Rectifiers, type & number of:	
AC Input Voltage, measured:	Battery Type, if applicable:	Battery Capacity:	Commissioning carried out by, name:	

I Pre-Start Check

Power is OFF!

CHECK FOLLOWING:	OK
1. Chameleon system installation is completed; All cabling is securely terminated with correct polarity	☐
2. Site specific parameters and settings are known	☐
3. All external load MCBs/ fuses are switched OFF	☐
4. All external AC mains MCBs/ fuses are switched OFF; AC supply is OFF	☐
5. AC input cable(s) and AC earth wire (PE) are terminated	☐
6. All internal MCBs — Load1, Load2, Batt1 and Batt2 — are switched OFF	☐

Device Hazard

II Start-up, No-Load & Load Adjustments

Power is ON!

CARRY OUT FOLLOWING:	OK
1. Unplug Load1 & Load2 cables from the terminals (plug-in terminals)	☐
2. Switch ON the system (external AC MCBs/fuses ON)	☐
3. AC input voltage is correct; Measure at the AC terminals and verify	☐
4. The *Compack* controller is working, green LED lamp is ON; Verify	☐
5. Connect the *Compack* controller to a PC Use a standard Ethernet cable Access controller via web browser (static IP address <192.168.10.20>, refer to guide 350011.013)	☐
6. DC output voltage; Switch ON internal MCBs Load1 and Load2 Measure at load terminals and verify correct output voltage (-43V to 58V, ±1V)	☐
7. Alarm relay test; Verify all alarm relays are working correctly	☐
8. System Setup is in accordance with configuration Via PC, enter site spec. info, longitude, latitude, etc.	☐
9. Adjust DC output voltage to equal measured battery voltage, Measure battery voltage at Battery1 and Battery2 terminals, and **check correct polarity**! Via PC (controller's configuration webpages), adjust output voltage ($V_{OUT} \approx V_{BAT-MEAS}$)	☐
10. Switch ON both battery MCBs	☐
11. Adjust again DC output voltage to equal nominal battery or load voltage via PC	☐
12. Switch OFF both load MCBs, plug in again Load1 & Load2 cables to the terminals	☐
13. Switch ON all internal and external load MCBs/ fuses, Verify no alarms are displayed If required, adjust DC Output voltage	☐

III

Device Hazard

Approval

Responsible of commissioning, sign.:	Date:	Approved by customer, sign.:

www.eltek.com
Headquarters:
Eltek
Gråterudv. 8, PB 2340 Strømsø, 3003 Drammen, Norway
Phone: +47 32 20 32 00 Fax: +47 32 20 32 10

MAINTENANCE PROCEDURE

System Data

Chameleon System

Chameleon Power Supply System, type:			Article No.:	
Site, name:		Longitude (±DD.ddd):	Altitude (±DD.ddd):	Elevation (m AMSL):
Serial No.:	Software, version No.:		Rectifiers, type & number of:	
AC Input Voltage, measured:	Battery Type:	Battery Capacity:	Maintenance carried out by, name:	

WARNING: Maintenance work on live equipment is only to be performed by authorized and qualified persons using calibrated instruments of measurement and insulated tools. Hazardous voltages inside may cause terminal injury.

System Inspection

Power is ON!

CARRY OUT FOLLOWING:	OK
1. Site specific parameters and settings are known. User manuals and site specific connection & arrangement drawings are available	☐
2. The battery bank has been fully charged in advance At least for 12 hours since start-up or mains failure. Enables correct measurements & calibration	☐
3. The equipment is free from damage, dust or dirt; verify Carefully vacuum clean or remove any accumulation of dust, corrosion or dirt	☐
4. All cabling, etc. are securely terminated and supported Correct any loose connections, excessive cable temperature, defective insulation, etc.	☐
5. The system controller is ON, no alarm present; verify — Green LED lamp is ON Otherwise, correct possible abnormalities and put the PS system in normal mode of operation	☐
6. Connect the *Compack* controller to a PC — Use a standard Ethernet cable Access controller via web browser (static IP address <192.168.10.20>, refer to guide 350011.013)	☐
7. Rectifiers' load current sharing; verify — Via PC (controller's configuration webpages) Check the rectifiers output the same amount of current (±1A)	☐
8. Display the stored log of Alarm Messages — Via PC	☐

System Adjustment

Power is ON!

CARRY OUT FOLLOWING:	OK
1. DC Output Voltage Calibration; ensure correct display readings If measured DC output voltage at the load terminals deviates more than ±1% from the display reading, calibrate the output voltage from the PC	☐
2. Load & Battery Current Calibration; verify correct display readings Measure with a clip-on ammeter the battery current & every load circuit current. Calculate the total load & battery current. If the calculated total values deviate more than ±2% from the display readings, calibrate the current from the PC (calibration value>50% of system's max. capacity)	☐
3. DC Output Voltage Adjustment; measure and adjust Measure and, if required, adjust the output voltage to the nominal voltage recommended by the battery manufacturer. (Voltage measurements to be done at the output terminals, with little load current)	☐
4. Alarm Relay Test; verify all alarm relays are working correctly From the PC use the Relay Test function; verify activation of external equipment	☐
5. Battery bank control; measure and verify battery specifications Follow the recommendations of the actual battery manufacturer	☐

Approval

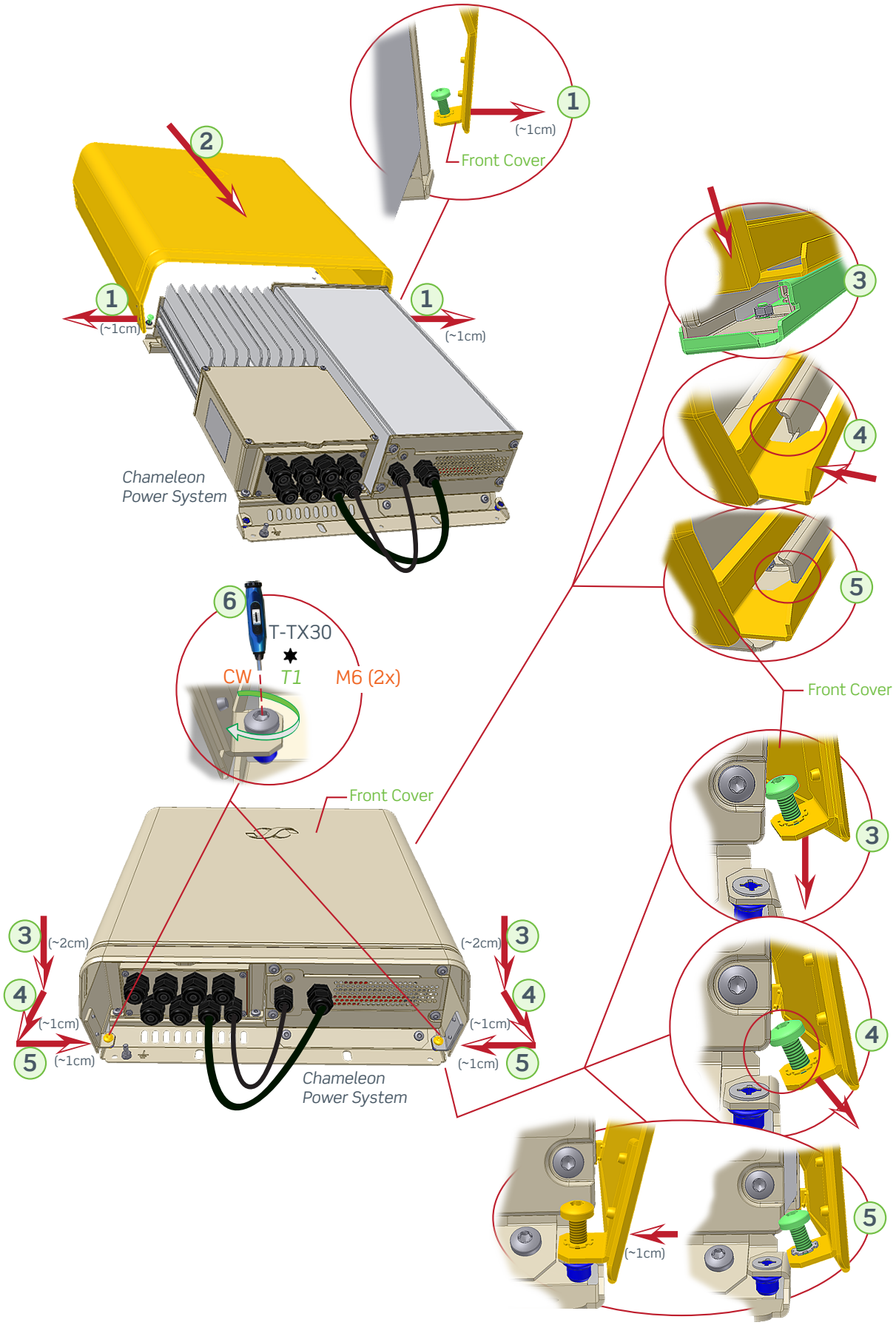
Responsible of maintenance control, sign.:	Date:	Approved by customer, sign.:

www.eltek.com
Headquarters:
Eltek
Gråterudv. 8, PB 2340 Strømsø, 3003 Drammen, Norway
Phone: +47 32 20 32 00 Fax: +47 32 20 32 10

Check Lists Pullout

Pull out the pages with the gray outer band,
and use them as check lists

8. Mount the Front Cover



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Electrical Installation

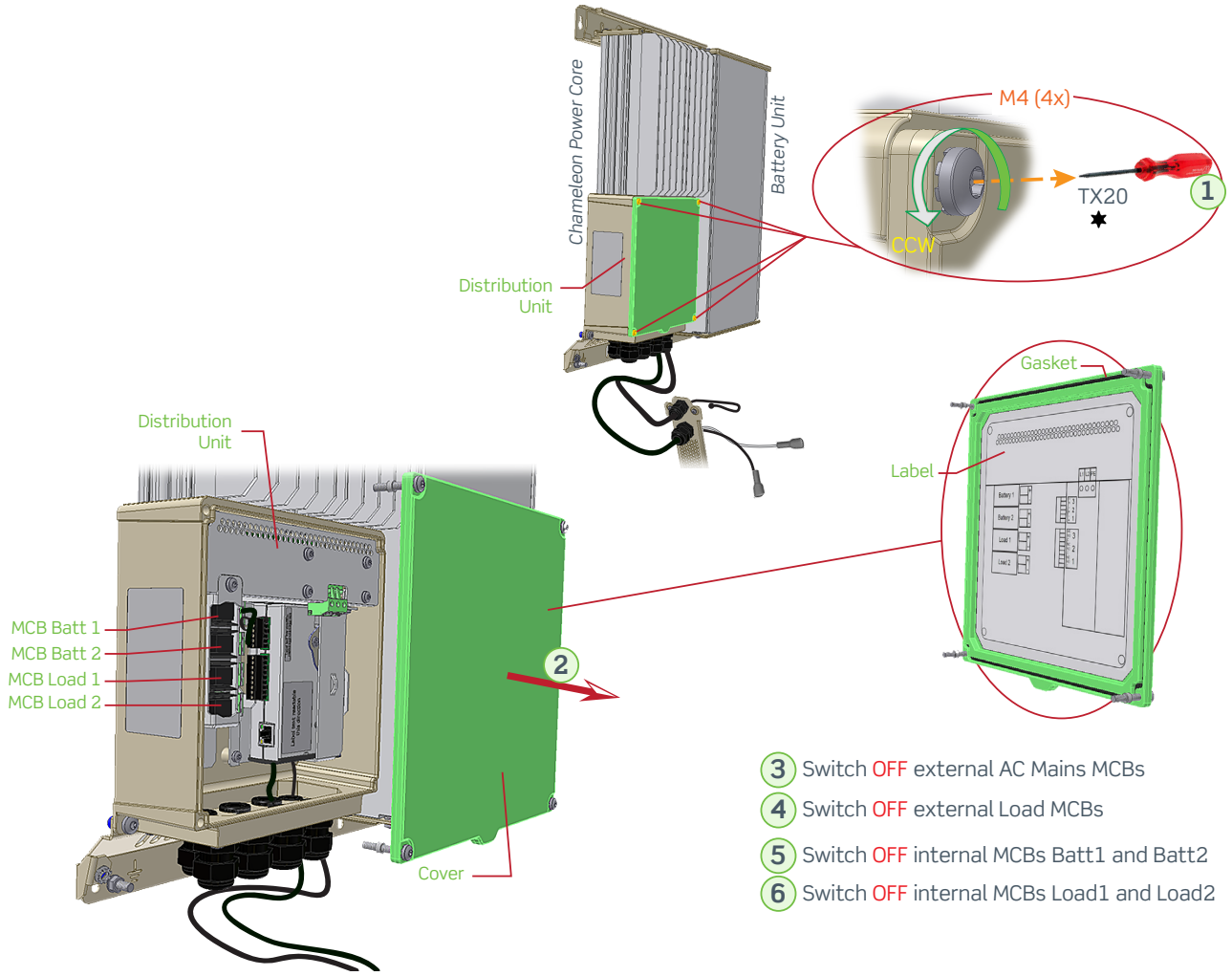
1. Remove the Front Cover

••• Steps 1-6 page 5

2. Access the Terminals and Power OFF

Power is OFF!

Remove the Distribution Unit's Cover and Power OFF



3. Switch OFF external AC Mains MCBs
4. Switch OFF external Load MCBs
5. Switch OFF internal MCBs Batt1 and Batt2
6. Switch OFF internal MCBs Load1 and Load2

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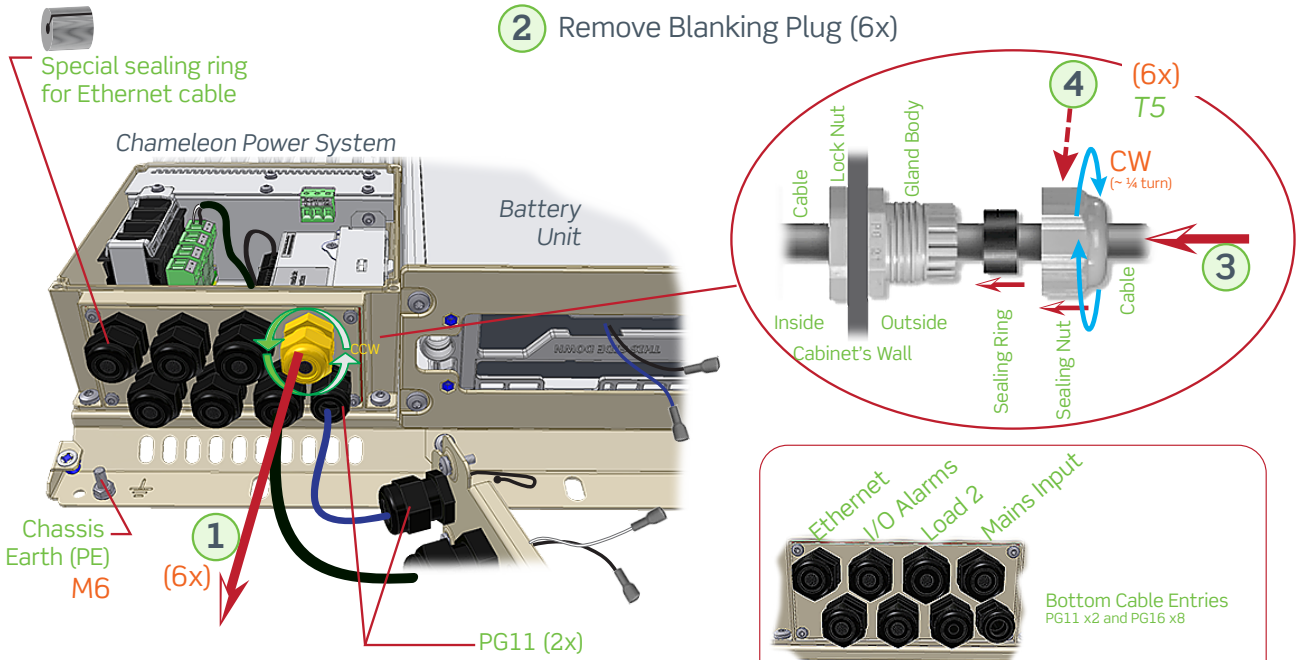
Remove the Cable Glands Plate

••• page 6

3. Location of Terminals & Cable Management

Power is OFF!

Cable Management



Cable Gland	Cable Ext. Diam.	Application
PG11 (2x)	NA	Temp. Sense
M25 (1x)	6-8.5mm Ø	Ethernet
P16 (7x)	10-14mm Ø	Load, Battery, Mains, I/O Alarms

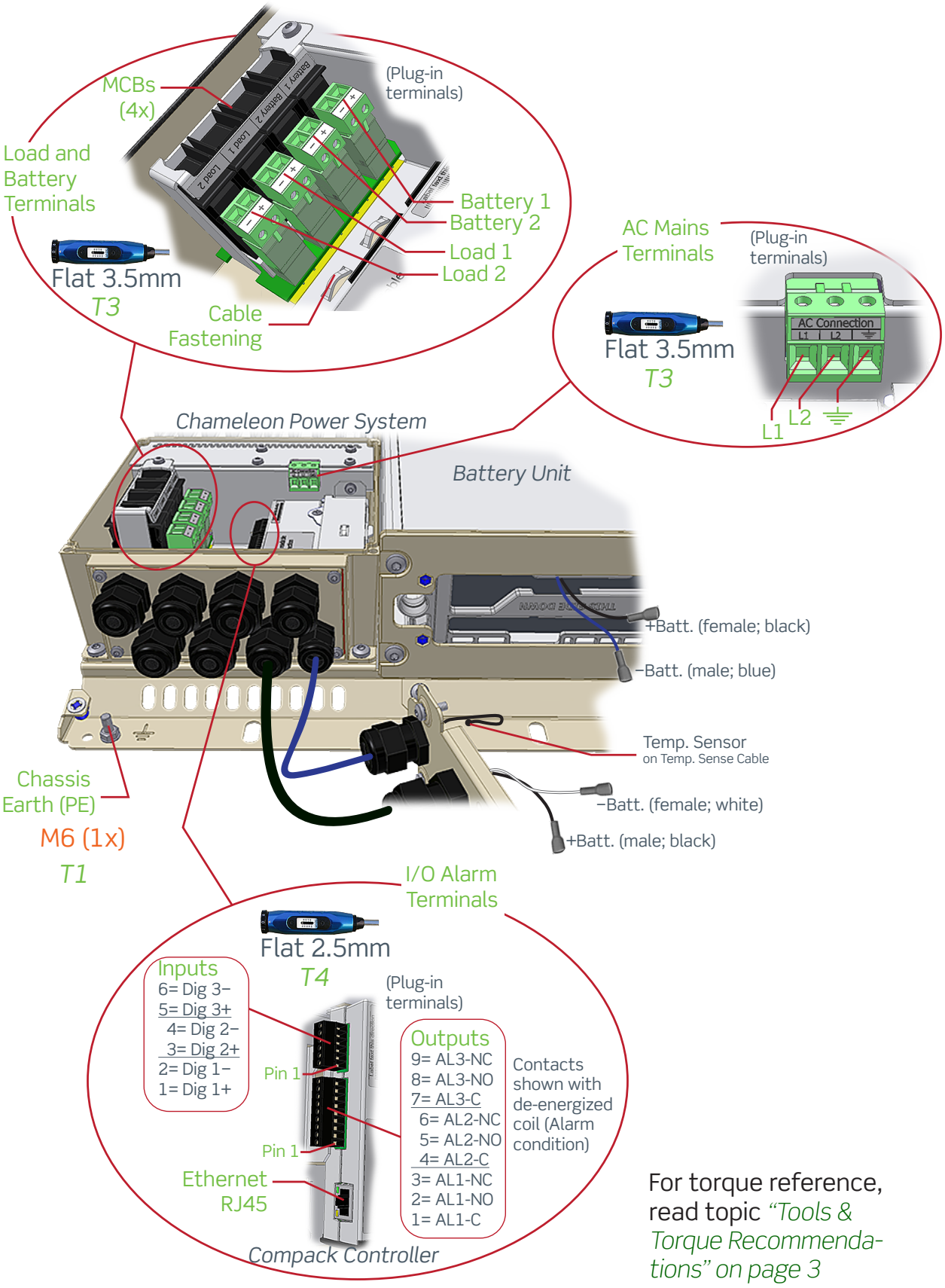
Notice that lock nuts are only used on the Battery Unit's cable glands plate, the other cable glands are screwed on the cable entry plate.

For torque reference, read topic *"Tools & Torque Recommendations" on page 3*

356848.103.1v0-2014-11

Electrical Installation

Location of Terminals



For torque reference, read topic *"Tools & Torque Recommendations" on page 3*

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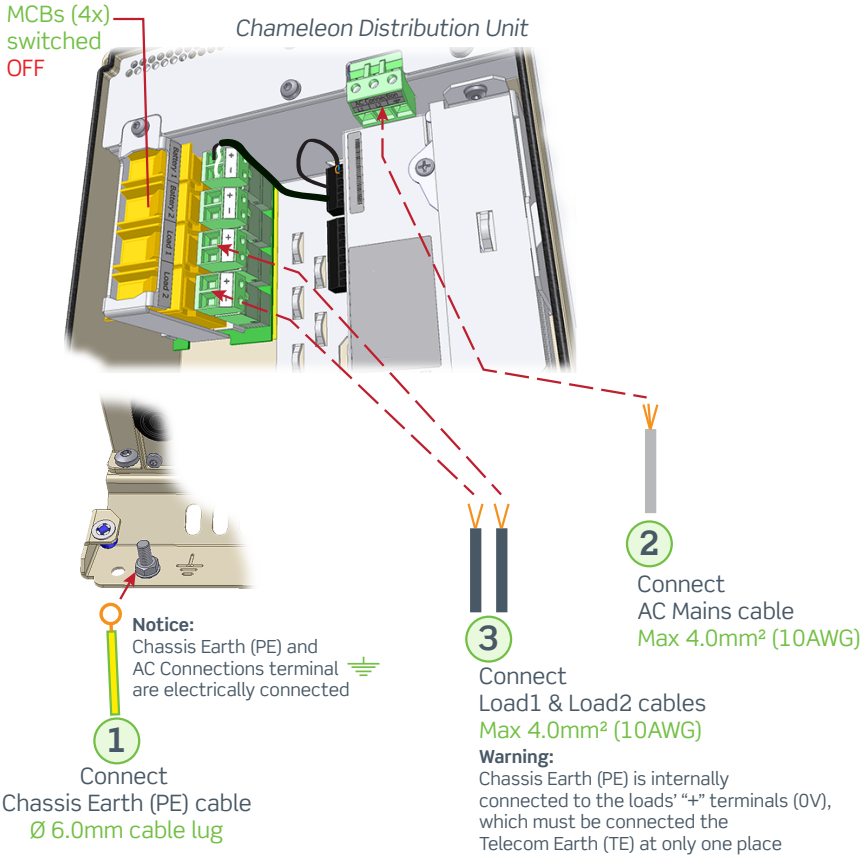
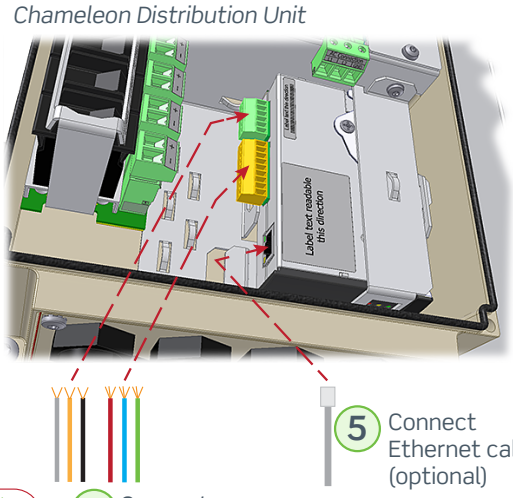
4. Electrical Connections

Power is OFF!

Connection of AC Mains, Load, I/O Alarm and Ethernet Cables

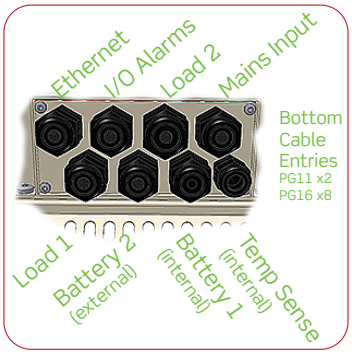




WARNING:

For outdoor applications where the product may be subject to transient overvoltages exceeding those for Overvoltage Category II, **an AC Overvoltage Protection Device (OVP)** complying with IEC 61643-series **must be installed** on the AC supply. This device will reduce the overvoltages to levels corresponding to Overvoltage Category II

Current Surge Protection



U1

CAUTION:

The rectifier incorporates a Mains fuse in each line. Double Pole / Neutral Fusing

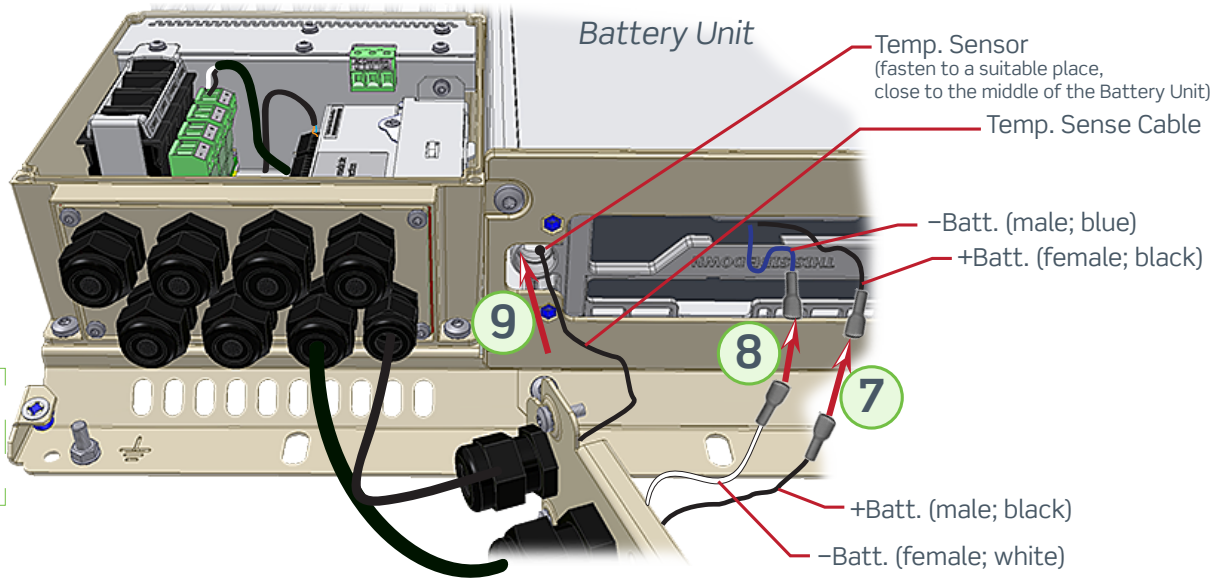
N

Electrical Installation

Connection of Battery Cables

WARNING:
Careful! Use correct polarity!

Chameleon Distribution Unit



••• *Batteries page 21*

CAUTION:
Suitable for connection to IT networks

U2a

For installations in USA and Canada only!
The installation has to comply with the NEC/ CEC requirements

A1

5. Mount the Battery Unit's Cable Glands Plate

••• *page 12*

6. Mount the Front Cover

Power is OFF!

••• *page 13*

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Refer to the steps in the pull-out form “Commissioning Procedure”

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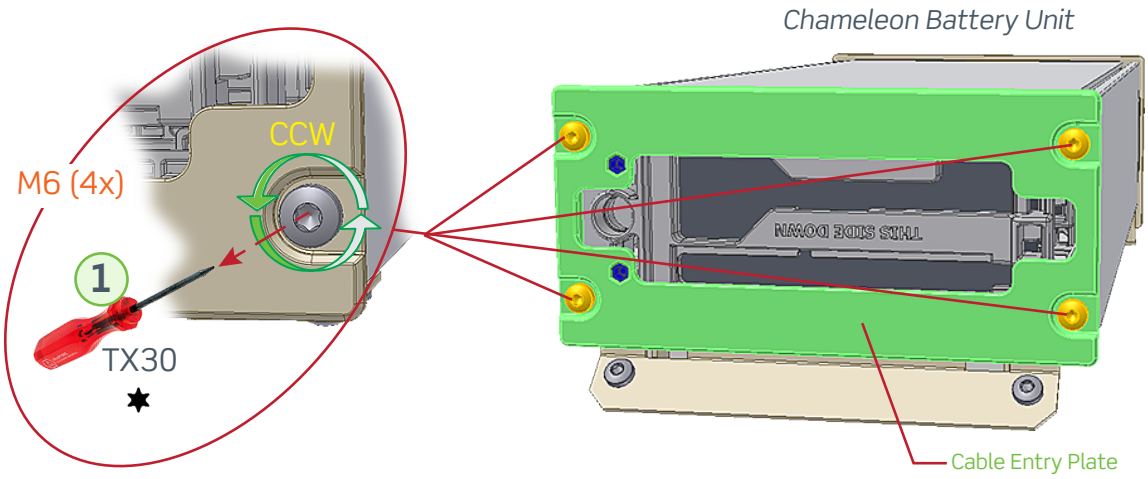
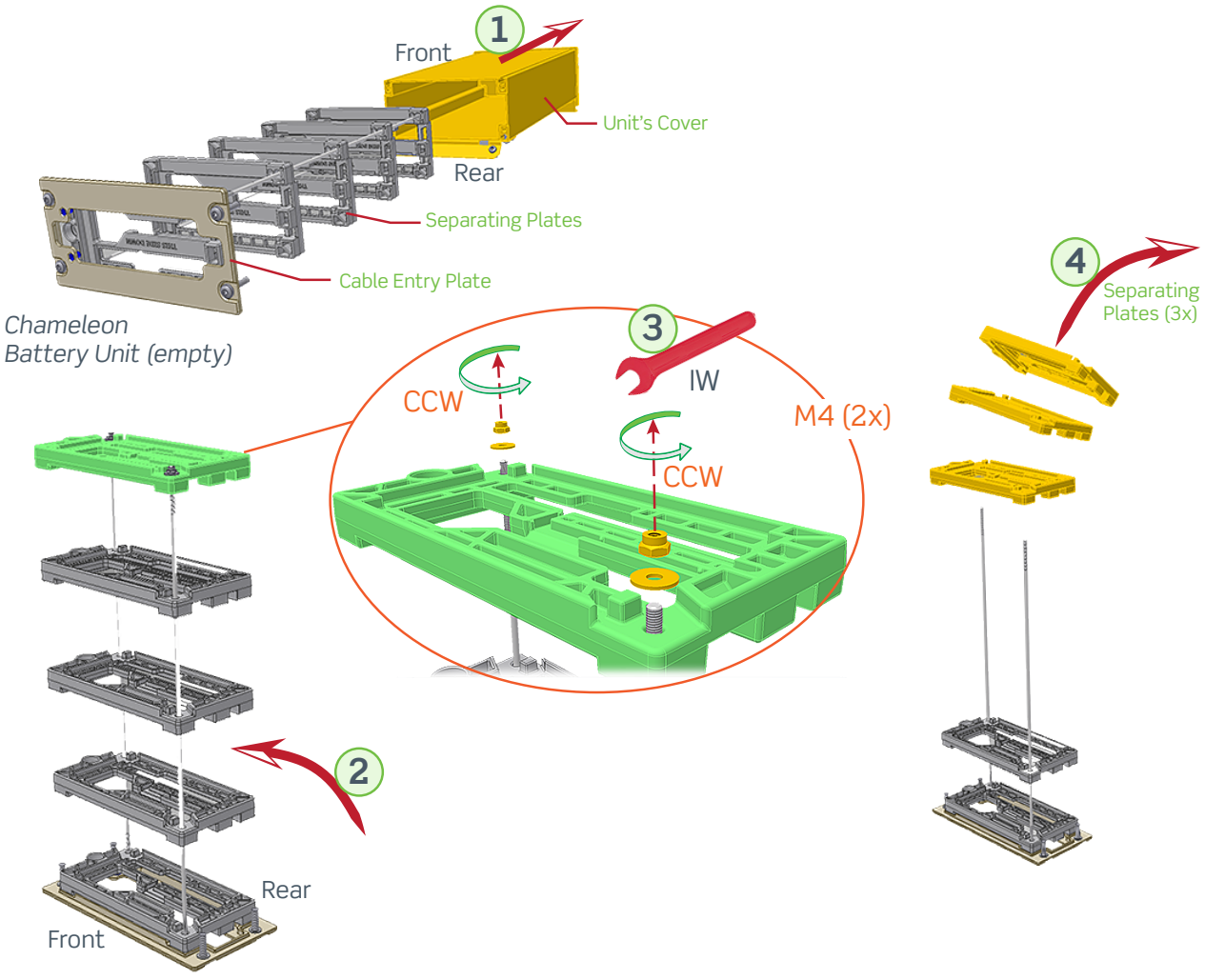
Appendix ~ Installing Battery Blocks

1. Unscrew the Battery Unit's Cable Entry Plate



2. Prepare the Assembly

Pull out the Cover, Uncrew the Guide Rods and Remove Separating Plates



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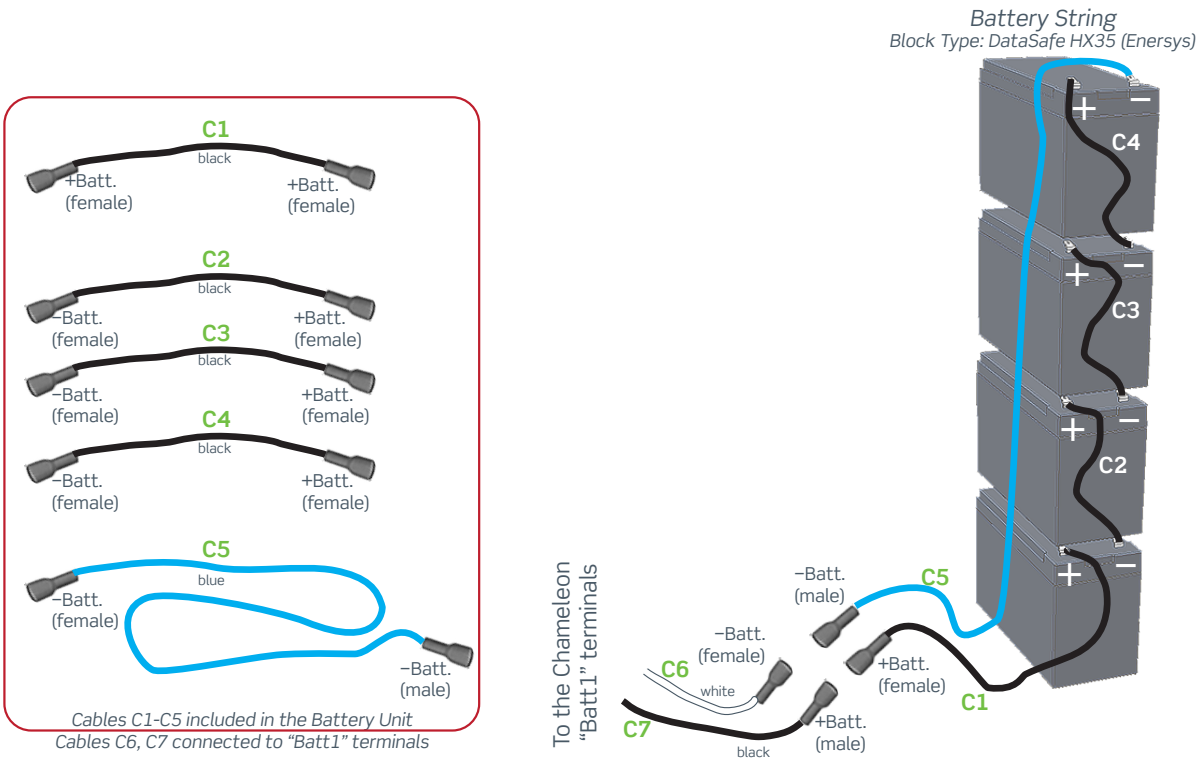
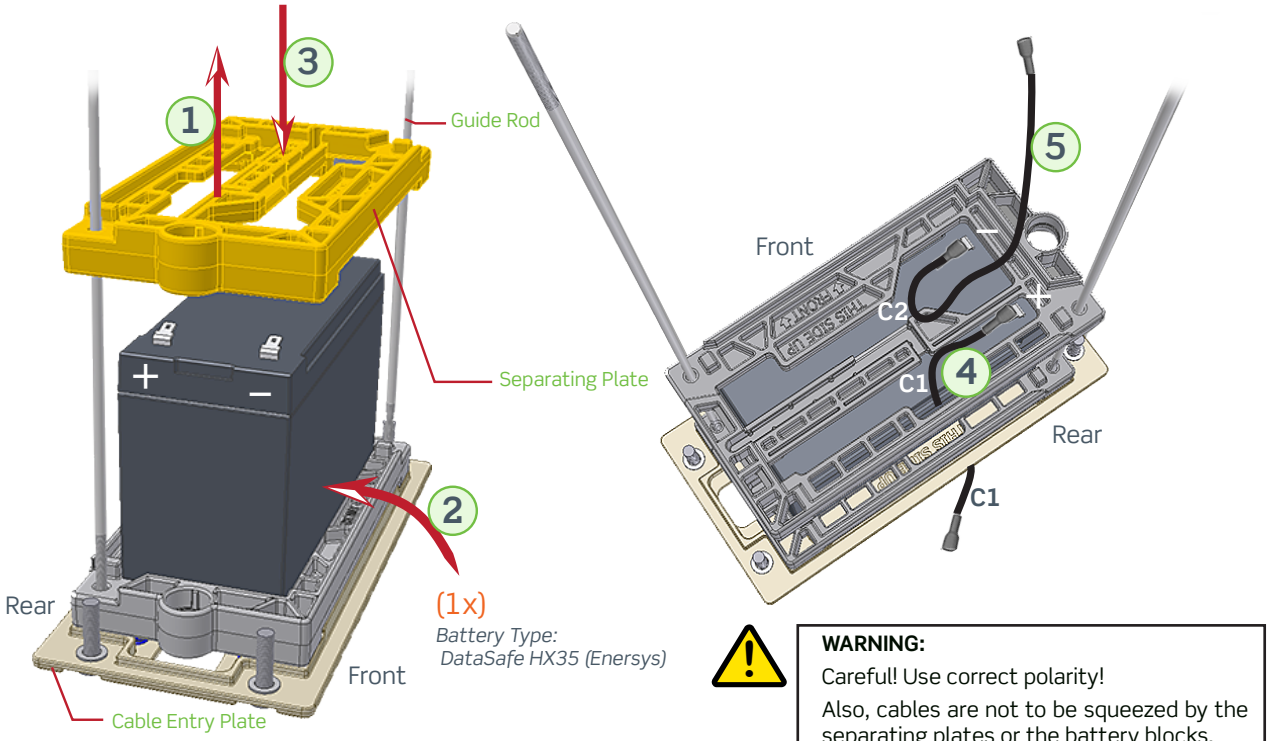
3. Mount and Interconnect the Battery Blocks

Interconnection Diagram ~ Batterty String



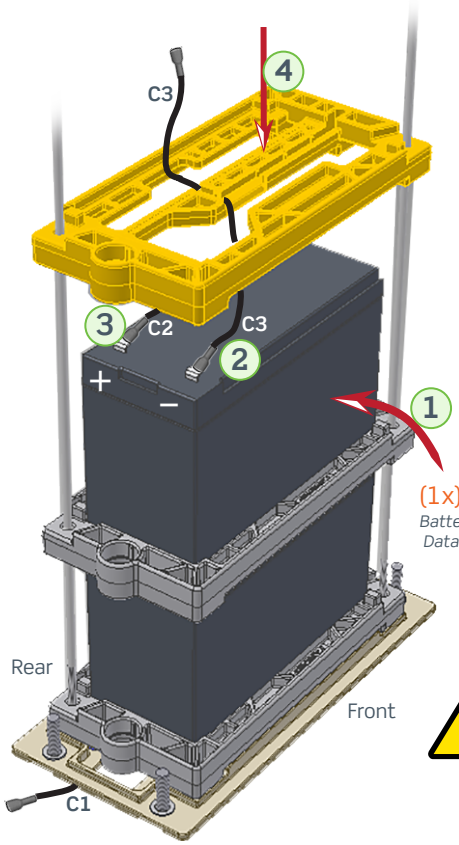
Install and Connect Battery Block 1



WARNING:
Careful! Use correct polarity!
Also, cables are not to be squeezed by the separating plates or the battery blocks.

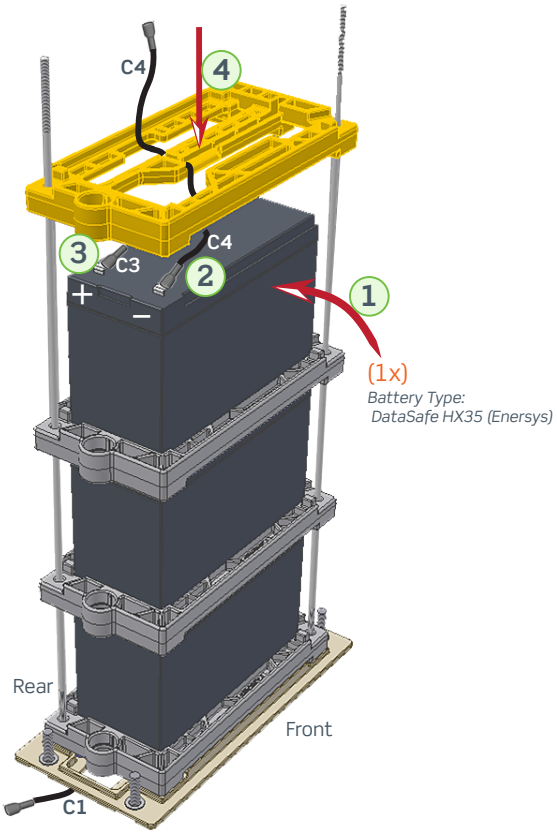
Appendix ~ Installing Battery Blocks

Install and Connect Battery Block 2



WARNING:
Careful! Use correct polarity!
Also, cables are not to be squeezed by the separating plates or the battery blocks.

Install and Connect Battery Block 3



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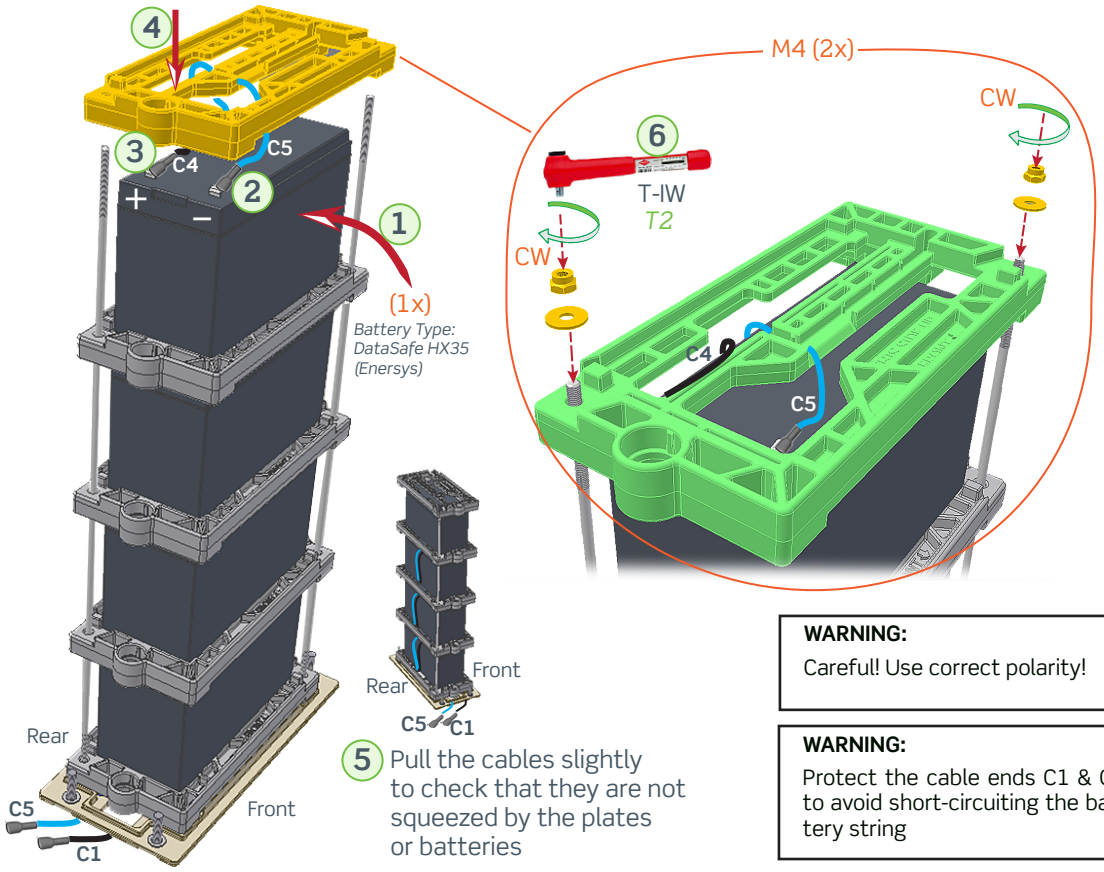
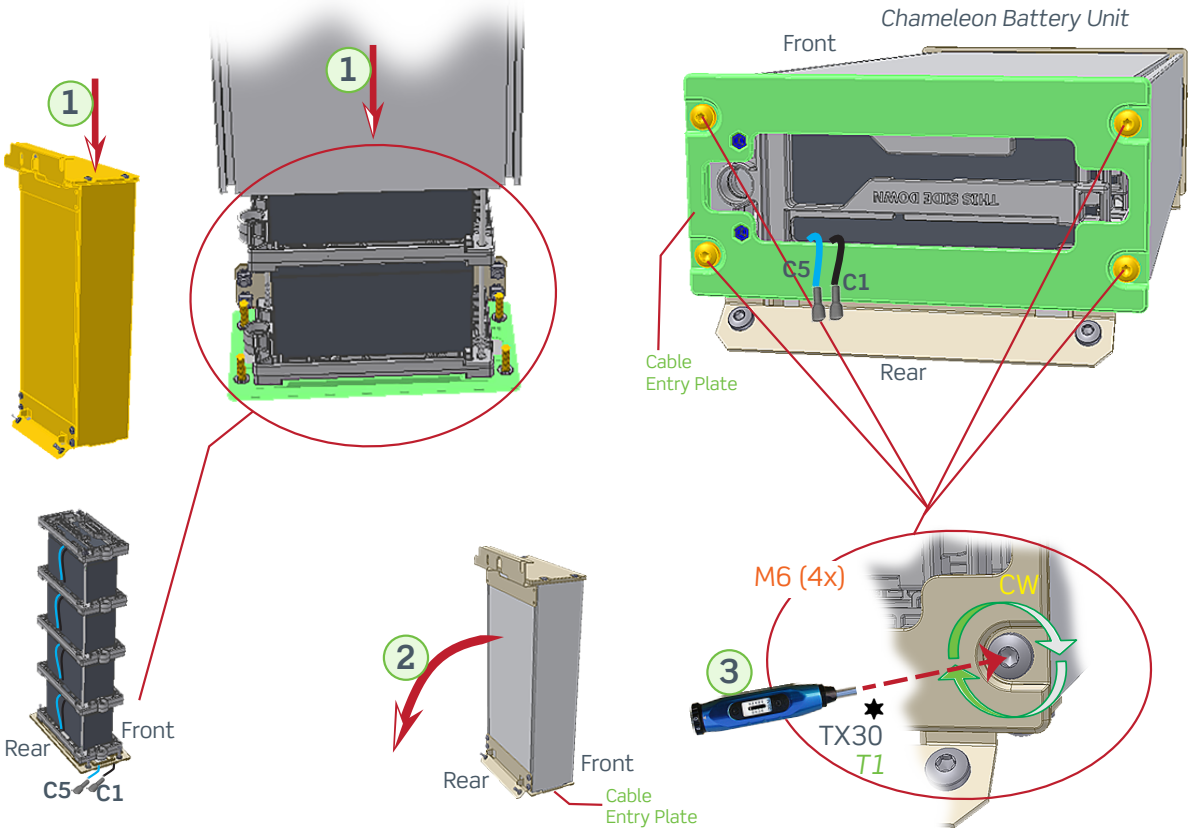
Install and Connect Battery Block 4



WARNING:
Careful! Use correct polarity!

WARNING:
Protect the cable ends C1 & C5 to avoid short-circuiting the battery string

4. Reassemble the Battery Unit



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This product is CE marked and complies with all current requirements for relevant standards and directives.

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www.eltek.com

Headquarters: **Eltek**
Visitor address: Gråterudveien 8, 3036 Drammen, Norway
Phone: +47 32 20 32 00 Fax: +47 32 20 32 10