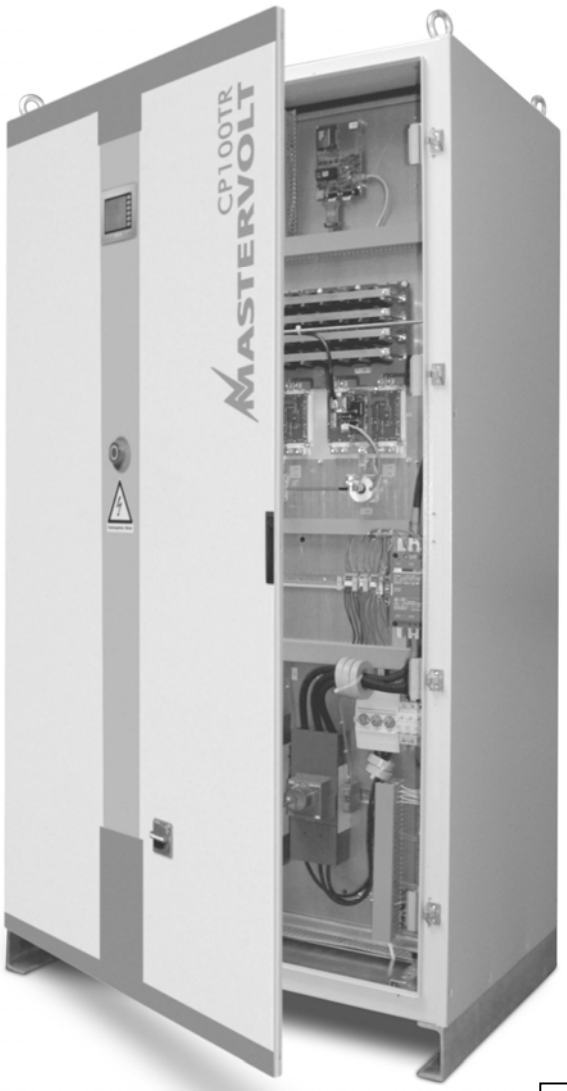
MASTERVOLT

INSTALLATION MANUAL

CP 100TR

CENTRAL POWER GRID CONNECTED SOLAR INVERTER



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v 1.1 June 2009

INSIDE VIEW CP100 INVERTER

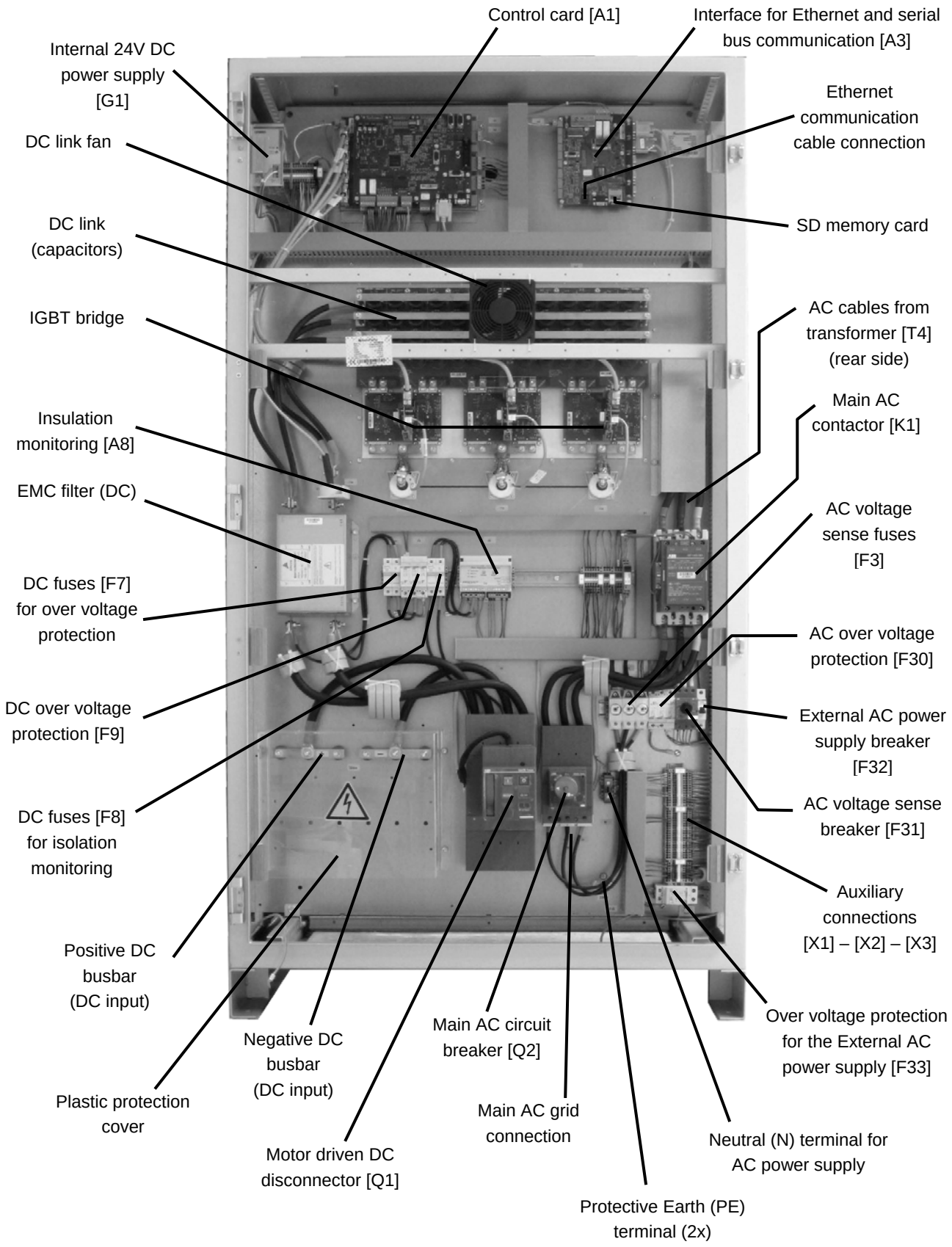

Figure 1: Inside view of the CP100 inverter

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1 GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

Congratulations for choosing the Mastervolt CP inverter, The CP inverter is a grid connected solar inverter, used for the feed back into a three phase utility grid of power generated by photovoltaic modules. The CP inverter is not suitable for stand-alone use (i.e. use without public grid).

1.2 USE OF THIS MANUAL

This manual contains important safety and operating instructions for the safe and effective operation, maintenance and possible correction of minor malfunctions of the CP inverter. This manual is valid for the following model:

Part number	Model
131400100	CP100TR

This model is further mentioned as “CP inverter” or “inverter”.

Every person who works with the CP inverter must be completely familiar with the contents of this manual, and must carefully follow the instructions contained herein.
Store the manual in a user accessible place.
This English manual has 24 pages.

1.3 VALIDITY OF THIS MANUAL

All the specifications, provisions and instructions contained in this manual apply solely to the Mastervolt-delivered standard versions of the CP inverter.

1.4 GUARANTEE SPECIFICATIONS

The correct functioning of the CP inverter is subject to guarantee. The period and conditions of this guarantee are laid down in the general conditions of delivery as registered with the Chamber of Commerce and Industries in Amsterdam number 33279951 and are available on request.
The standard guarantee period is two years, on the condition that all instructions and warnings given in this manual are taken into account during installation and operation. Among other things, this means that all instructions and warnings given in this manual are taken into account during installation, that commissioning is carried out by a Mastervolt authorized service agent, that installation and maintenance are executed according to the stated instructions and correct working sequence and that no changes or repairs have been performed on the CP inverter other than by Mastervolt or its authorized representatives.
The standard guarantee is limited to the costs of repair and/or replacement of the product by Mastervolt only. Costs for installation labour or shipping of the defective parts are not covered by the standard guarantee.
The standard guarantee can be extended by means of a Service Insurance & Loss Pricing Contract (SILC). Please contact Mastervolt for details.

1.5 LIABILITY

Mastervolt accepts no liability for:
- consequential damage due to use of the CP inverter;
- possible errors in the manuals and the results thereof.
- loss of revenues due to possible defects

1.6 IDENTIFICATION LABELS

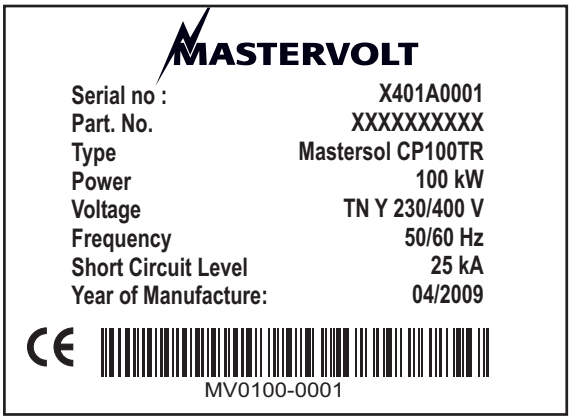

Figure 2

The identification label is placed at the inner side of the cabinet door. Important technical information required for service, maintenance & secondary delivery of parts can be derived from the identification labels (figure 2).

CAUTION!
Never remove the identification label(s).

2 SAFETY GUIDELINES AND WARNINGS

2.1 WARNINGS AND SYMBOLS

Safety instructions and warnings are marked in this manual by the following pictograms:

ATTENTION
An attention describes a procedure, circumstance, etc which deserves extra attention.

CAUTION
A caution refers to special information, commands and prohibitions in order to to protect the inverter or other equipment against damage and/or destruction.

WARNING
A warning draws attention to special warnings, instructions or procedures which, if not strictly observed, may result in damage or destruction of equipment, severe personal injury or loss of life.

2.2 USE FOR INTENDED PURPOSE

The CP inverter is constructed as per the applicable safety-technical guidelines. Use the CP inverter only in installations that meet the following qualifications:

- in permanent installations;
- in accordance with locally applicable regulations and standards
- the electrical installation must be carried out correctly and must be in a good condition.
- according to the specifications as stated in the user's manual.

WARNING
Never use the CP inverter in situations where there is danger of gas or dust explosion or potentially flammable products!

Use of the CP inverter other than as mentioned under § 2.2 is not considered to be consistent with the intended purpose. Mastervolt is not liable for any damage resulting from the above.

2.3 ORGANISATIONAL MEASURES

The installer must always:

- have access to this manual;
- be familiar with the contents of this manual. This applies particularly to Chapter 2, Safety Guidelines & Warning.

2.4 INSTALLATION, MAINTENANCE AND REPAIR

WARNING
As lethal voltages and currents are present in the CP inverter, allow installation, maintenance and repair of the CP inverter and changes in your electrical system to be carried out by qualified and trained electricians only. The successful and safe operation of the inverter is dependent on proper installation, handling, installation and operation. Unauthorized personnel must not have access to the inverter.

Connections and safety features must be executed according to the locally applicable regulations.

Changes on the CP inverter may be carried out only after the written permission of Mastervolt. If such are required, use only original spare parts.

WARNING
After switching off the inverter or pushing the emergency button, the DC link remains charged. High lethal voltages (up to 900 VDC) may exist inside the cabinet! Before opening the cabinet, the DC-link must be discharged. You have to wait at least 30 minutes before the DC link is discharged. After opening the cabinet, check the voltage of the DC link with a suitable voltage meter before you start working on the inverter. The DC voltage of the DC link must be less than 10 Volt DC

WARNING
Never work alone on the inverter. When working on the CP inverter someone should be near you to come to your aid.

CAUTION!
The inverter must not operate in an unsafe condition. Make sure that you made all necessary checks before running the system.

Make sure that all cable connections are tightened with the correct torque.

3 HOW IT WORKS

The CP100 inverter converts the energy from a photovoltaic array (PV array) and feeds this energy back to a three phase electric grid.
See figure 3. The PV array is connected on the left side, From here the DC power passes the optional DC fuses, DC disconnector Q1, EMC filter and DC-link.
From the DC-link DC power is converted to AC power at the three phase IGBT power bridge. After the IGBT power bridge the DC input is galvanically isolated from the AC power by means of the insulation transformer T4. From this transformer, the AC power passes the EMC filter and the AC circuit breaker and contactors. Islanding protection according to national standards is implemented in the control software on on the control card [A1]. Opening the circuit breaker Q2 in front of the cabinet will automatically open the DC-disconnector Q1.

The auxiliary AC power supply can be sourced internally from the main terminals (with bridges on terminal 1) or externally by removing the bridges connecting an external 230VAC source.

Refer to the operation manual for more details about the operation of the CP100 inverter

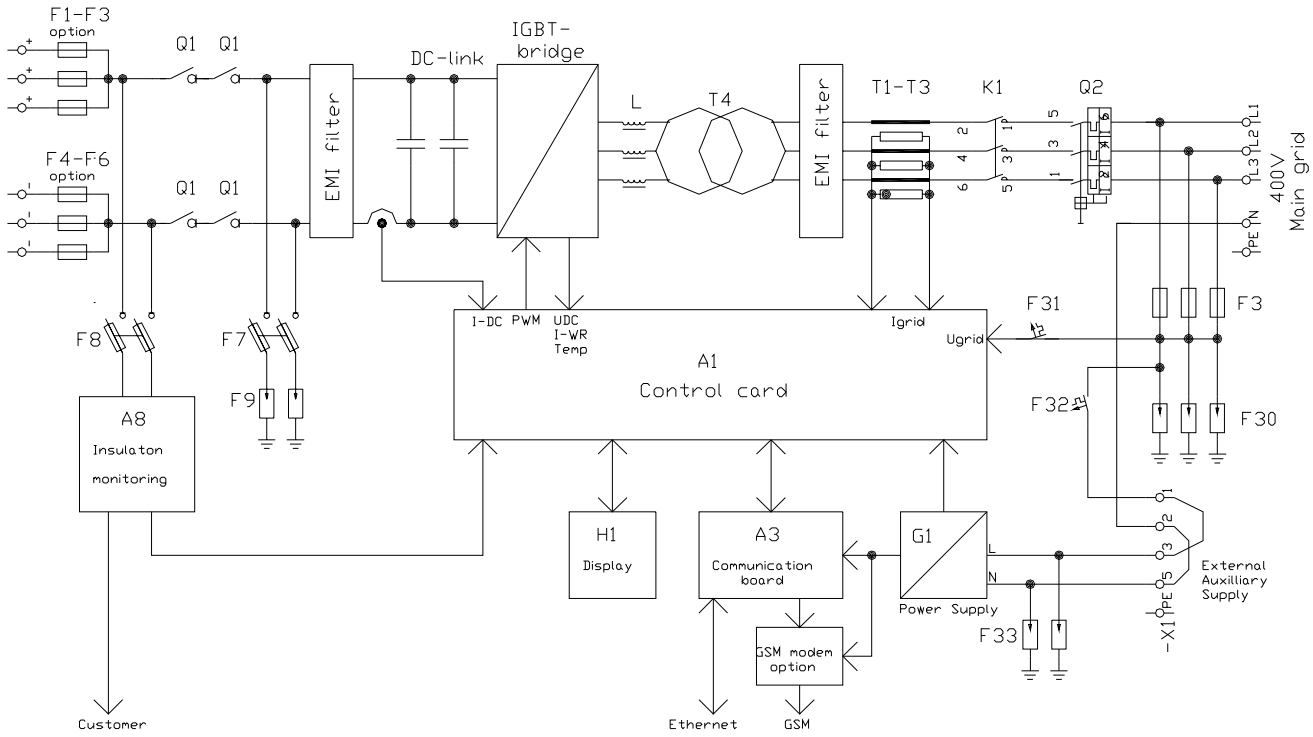

Figure 3: principle schematics of the CP100 inverter

4 BEFORE YOU START

4.1 TRANSPORT AND STORAGE

WARNING
The CP-inverter, is heavy (see specifications for details)
When lifting the CP100 inverter avoid any risk of personal injuries, do not stand under the CP100 inverter..

Ensure adequate and secure mounting during transportation of the CP100 inverter. Make sure that the roads to the installation site are constructed in such way that the CP-inverter will not get damaged during transportation. Always use suitable handling equipment for transportation. During transportation, the door must remain closed.

4.1.1 Use of a forklift

The forklift must always load the cabinet along the long sides. See figure 4

Figure 4: Use of a forklift

4.1.2 Use of hoisting eyes

See figure 5. On top of the cabinet are four hoist eyes. These hoist eyes are the only points which may be used for lifting of the cabinet. All hoist eyes must be loaded evenly. The angle between the top of the cabinet and the hoisting sling or chain must be 60° at least.

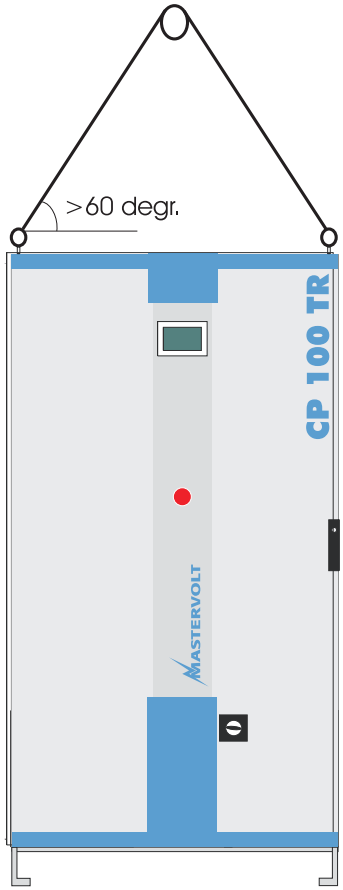

Figure 5: Use of a hoisting eyes

4.1.3 Storage

The CP100 inverter must be stored in its original packaging. The storage location must be dry to prevent humidity entering the cabinet on the long term.

4.2 INSTALLATION ENVIRONMENT

Obey the following stipulations during installation:

- The CP100 inverter is designed for indoor use only, according to protection class IP20.
- As the CP100 inverter can produce a certain noise level, it not designed to be installed in the immediate vicinity of living areas
- The CP100 inverter must be mounted vertically on a flat and solid floor. The foundation of the floor must be suitable to carry the weight of the inverter (see specifications).
- The cabling must enter the cabinet from the bottom side. During construction of the floor, keep in mind that cable conducts should installed at the desired positions.
- See figure 6. Keep at least 20 cm space at the top side of the cabinet. The cabinet doesn't need any clearance at the backside or sidewalls.

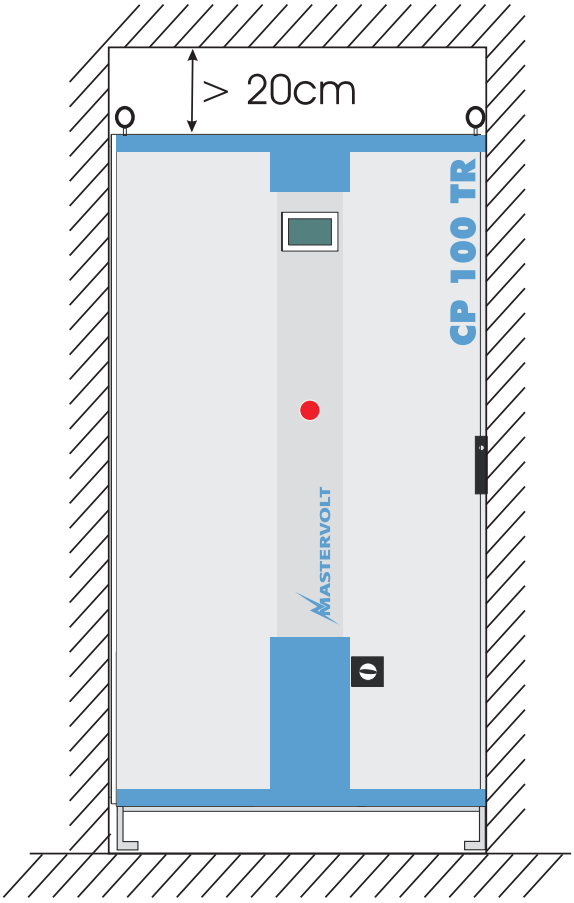

Figure 6

- See figure 7. With the door opened, there must be at least 50 cm space between the door and the wall facing the front side of the cabinet. This space is necessary in case of emergency evacuation.

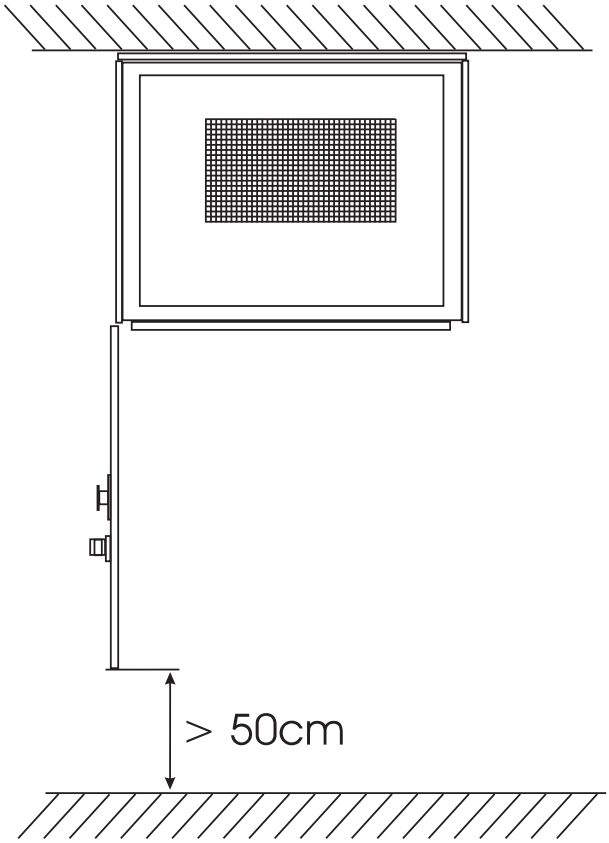

Figure 7

- Do not install the CP100 inverter in dusty environments. Do not install the CP100 inverter in an area with a salty atmosphere. The climate conditions must be in accordance with EN60721-3-3 rule indoor sites and EN60721-3-4 for outdoor sites. Chemical active classification is 4C1 (outdoor) and 3C1L (indoor) Mechanical active classification is 4S2 (outdoor) and 3S2 (indoor).
- Relative humidity: 10% up to 95%.
- Ambient temperature: 0 ... 50°C.

- The CP100 inverter can produce up to 5kW power dissipation. Make sure that the hot air that is developed during operation will be discharged by forced ventilation when installing the CP100 inverter in a closed section. The airflow (forced cooling) is from the bottom of the cabinet to the top. To avoid circulation of hot air, measures must be taken to separate the incoming airflow from the outgoing airflow (see figure 8). Maximum volume: 1500m³/hour.

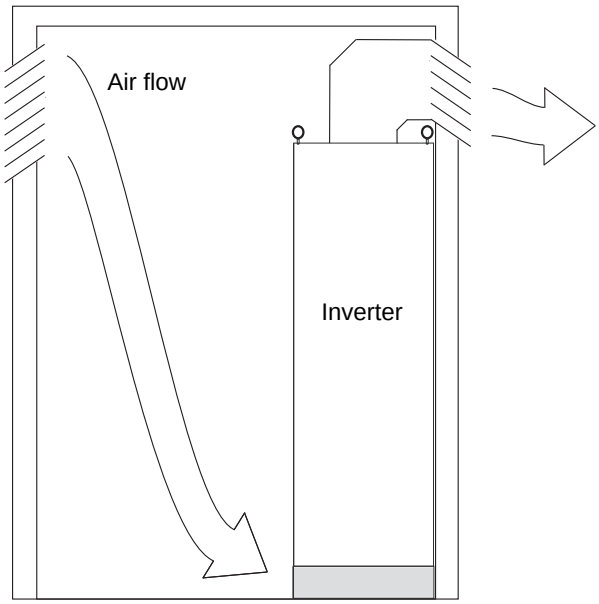

Figure 8: The incoming airflow must be separated from the outgoing airflow

4.3 UNPACKING

The delivery of the CP100 inverter consists of:

- The CP100 inverter
- A key for opening and closing of the cabinet
- An operation manual
- This installation manual.
- A Communication manual
- An Appendix manual
- An installation checklist (this checklist must be filled in and signed before commissioning by Mastervolt; see section 5.10)

After unpacking, check the contents for possible damage. Do not use the product if is damaged. If in doubt, contact your supplier.

As one electrical installation differs from the other, the CP100 inverter may be equipped with several options, such as multiple DC Inputs, monitoring options, a connection for an irradiation sensor / temperature sensor, a heating module, additional circuit breakers, terminal blocks, mains switches, DC-switches etcetera.

4.4 LOCAL REGULATIONS

WARNING
Never connect the CP100 inverter to the AC grid if the electrical installation is not in accordance with the local applicable regulations and standards.

The CP100 inverter is equipped with an anti-islanding device that ensures the switch off in case of grid failure. However, European countries maintain different regulations with regard to anti-islanding devices and the feedback of AC power in general.
Depending on local applicable regulations the installation of additional protection devices and/or approval by the electric utility company may be compulsory.

Acquaint yourself with the local regulations on the above mentioned issues.

5 INSTALLATION

5.1 WARNING FOR SPECIAL DANGERS

WARNING
During installation, commissioning, de-commissioning, service and maintenance of the CP100 inverter, the following warnings for special danger are applicable at all times:

- Obey the Safety Guidelines & Measures as described in chapter 2 of this manual.
- Do not work on the CP100 inverter and/or the electrical installation if it is still connected to the solar panels and/or AC-grid.
- Very high DC voltages up to 900V are present. All selected cables must be rated for the applicable current and voltage ratings. External components at the DC side (such as fuses, circuit breakers and connectors) must be rated to be used in 900VDC applications. Not complying with this regulation may lead to arcing in case of a fault or inappropriate use
- Short circuiting, miswiring or reverse polarity may lead to damage to the CP100 inverter, the cabling and/or the terminal connections. Check each DC input for correct polarity before placing DC fuses or closing circuit breakers.
- Never work alone on the inverter. When working on the CP inverter someone should be near your to come to your aid
- Use of additional DC switches (one for each input) is recommended in order to switch off the DC voltages in case of any malfunction, such as short circuit. Such switches can be ordered separately. These switches can be installed both externally or (preferable) internally. When installed externally, these switches must be placed in the vicinity of the CP inverter. Refer to standard VDE 0100 part 7-712 and VDI 6012 regulations for additional information.

5.2 THINGS YOU NEED FOR INSTALLATION

Make sure you have all the parts you need to install the CP100 inverter:

- CP100 inverter (included)
- Bolts and dowels to fix the CP100 inverter cabinet to the ground. Use mounting materials that are suitable for the application
- Wiring, fuses, circuit breakers, terminal blocks, mains switches, DC-switches, cable lugs and wire end sleeves.

WARNING
Always use isolated tools which are suitable for the applied voltages

Required tools:

- Tools to fix CP100 inverter cabinet to the floor;
- Socket wrench 13mm for connecting the DC-input wiring to the DC busbar (only in case of standard DC connection, see section 5.5) and connection of the grounding (PE);
- Pozidriv screw driver No. 2 for connecting the DC-input wiring to the DC circuit breakers (Only if the CP-inverter is equipped with such circuit breakers, see section 5.5);
- Hex wrench 6mm for connecting the AC-wiring to the main AC circuit breaker Q2;
- Flat blade screwdriver 4.0 x 1.0 mm for connecting the neutral conductor at the main AC connection (not necessary if the self supply is connected externally at X1 connection; see section 5.7);
- Flat blade screwdriver 3.5 x 0.6mm for connecting the wiring to spring cage terminals X1 and X2 (see section 5.4);
- Tools to install the wiring, such as wire cutter / stripper and crimping tools for all applied cable lugs and wire end sleeves.

A complete set of spanners, pliers and wrenches may be helpful during the installation of the CP inverter

5.3 OPENING THE CABINET

WARNING
After pushing the emergency button, high AC voltages may still be present inside the cabinets as the control electronics may be connected to AC grid by means of the auxiliary AC power supply.

WARNING
After switching off the inverter or pushing the emergency button, the DC link remains charged. High lethal voltages (up to 900 VDC) may exist inside the cabinet! Before opening the cabinet, the DC-link must be discharged. You have to wait at least 30 minutes before the DC link is discharged. After opening the cabinet, check the voltage of the DC link with a suitable voltage meter before you start working on the inverter. The DC voltage of the DC link must be less than 10 Volt DC.

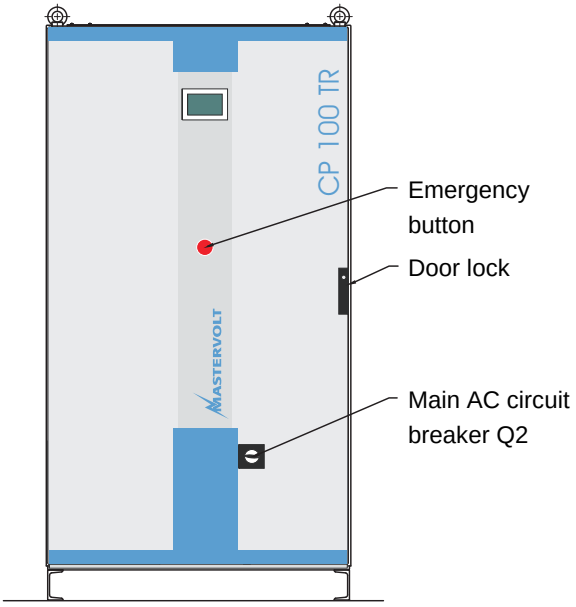

Figure 9

See figure 9. For opening of the cabinet execute the steps below:

- Press the Emergency button
- Move the Main AC circuit breaker Q2 to the “OFF” or “0” position
- Use the supplied key to release the door lock

5.4 USE OF THE SPRING-CAGE TERMINALS

Use a 0.75 mm² - 2 .5 mm² wire cross section for connection of the spring-cage terminals. Strip the cable insulation 10mm.
Use an insulated 3.5mm flat blade screwdriver to open the spring-cage clamp. See figure 10.

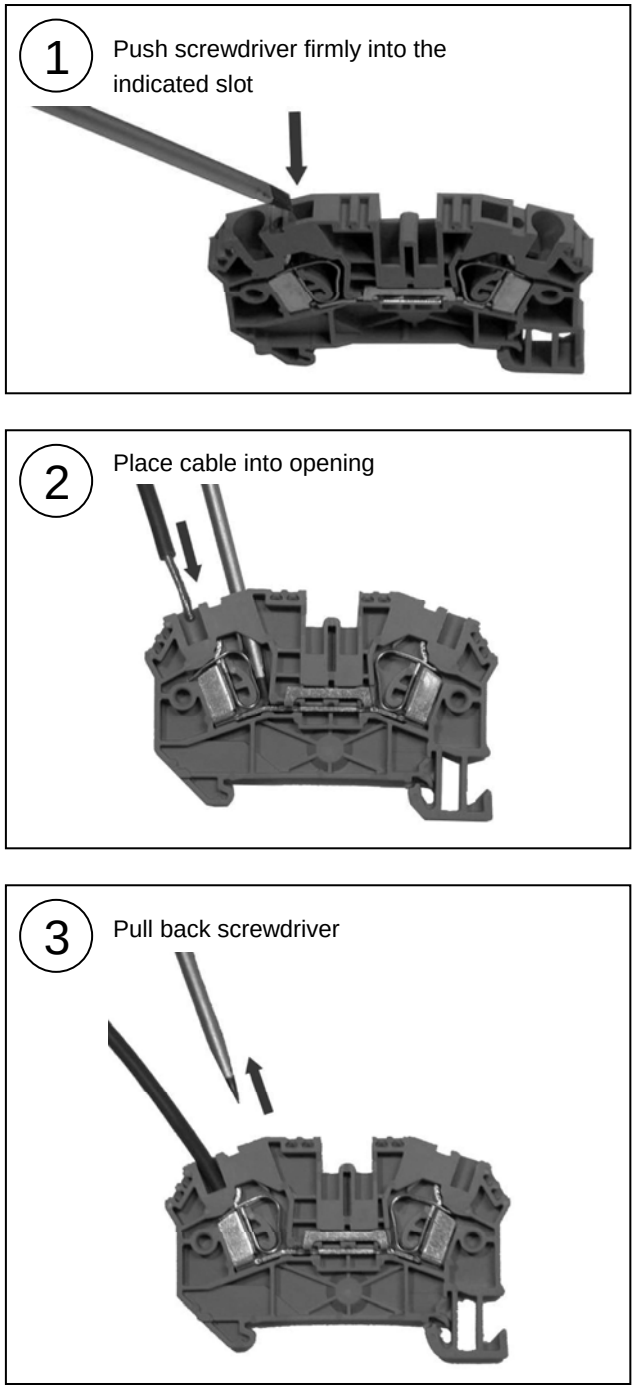

Figure 10: Use of the spring-cage terminals

5.5 PV ARRAY CONNECTIONS

5.5.1 General

WARNING
During operation of the inverter, the plastic protection cover must always remain in place See figure 1. This plastic protection cover may only be removed for installation of the DC cables.

Recommended wiring colours:

Wire color:	Meaning:	Must be fixed to:
Red	Positive	Positive DC busbar
Black or blue	Negative	Negative DC busbar

Table 1: Recommended wiring colours

Depending on the delivered model of the CP inverter, PV array connection can be performed in either two ways:

- **Standard connection**. See section 5.5.2. In this case the PV array must be connected to the copper bus bars in the left corner of the cabinet. See figure 1. With most applications only one cable is connected for each DC cable. The DC cables must be provided with M8 cable lugs. When two or three PV arrays are connected to the bus bar, all PV strings must be of identical length. In such case each PV array must be protected by fuses.
- **Connection to DC circuit breakers**. See section 5.5.3. The CP-inverter can be equipped with up to five DC breakers which are situated at the lower left hand side of the cabinet. See figure 11. The polarity is marked just below the circuit breakers. The DC cables must be provided with cord end terminals. Maximum cross section: 70mm². All PV arrays must be of identical length.

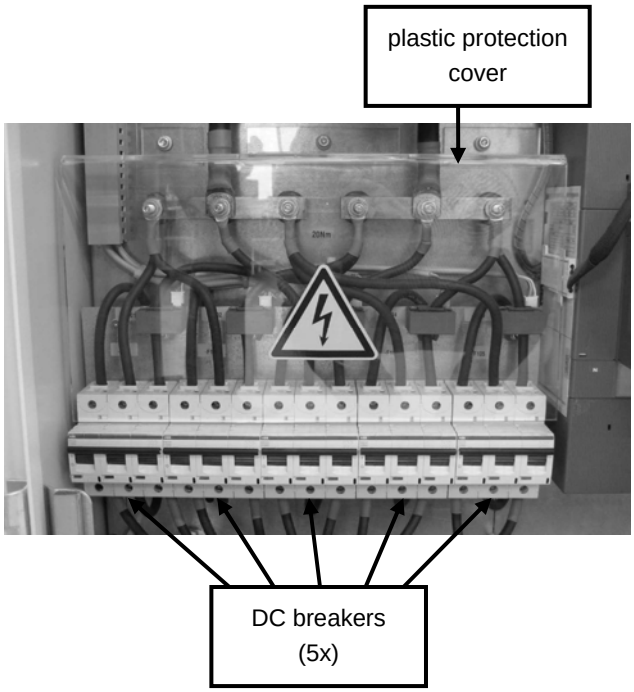

Figure 11: Connection to DC circuit breakers

5.5.2 Standard connection

See figure 12. To connect the DC wiring, follow in detail all steps of the installation instructions in order of succession as described below.

1 Remove the plastic protection cover which is in front of the DC-bus bars.

2 Remove the sliding plate in the lower part of the cabinet.

3 Feed the wiring from below the cabinet through the cable inlet area of the cabinet to the DC-bus bars. See table 1 for recommended wiring colours (refer to local rules)

4 Use M8 cable lugs terminals on the ends of the wires. These lugs should be crimped with a proper crimping tool. Fix the cable lugs to the correct bus bar. Do not change the existing wiring!

5 Tighten connections securely; torque setting 20 Nm / 175 In-Lbs.

6 Fix the DC wiring on the retention rail with cable clamps (not included). The material of the cable clamps must be Aluminum.

7 Remount the plastic protection cover in front of the DC-bus bars.

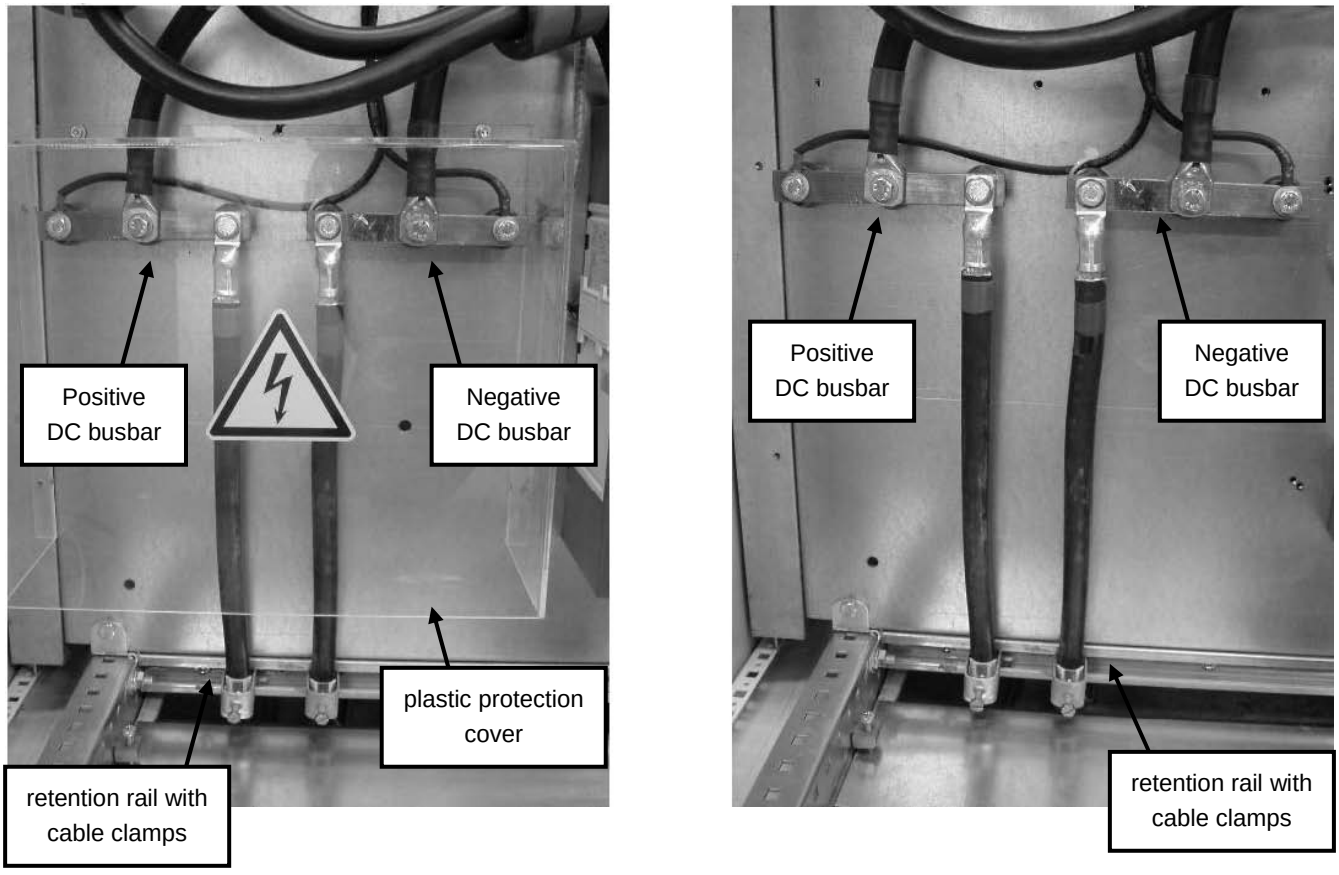

Figure 12: Standard connection of the DC wiring to the DC-bus bars

5.5.3 Connection to DC circuit breakers

See figure 13. To connect the DC cables, follow in detail all steps of the installation instructions in order of succession as described below.

1 Remove the plastic protection cover which is in front of the DC circuit breakers (see figure 11).

2 Remove the sliding plate in the lower part of the cabinet.

3 Feed the cables from below the cabinet through the cable inlet area of the cabinet to the DC-circuit breakers See table 1 for recommended wiring colours (refer to local rules)

4 Use cable end sleeves on the ends of the wires. These cable end sleeves should be crimped with a proper crimping tool. Fix the cable end sleeves to the correct DC breaker (see figure 13). Do not change the existing wiring!

5 Tighten connections securely; torque setting 3-4 Nm / 25-35 In-Lbs.

6 Fix the DC cables on the retention rail with cable clamps (not included). The material of the cable clamps must be Aluminium.

7 Remount both plastic protection covers in front of the DC-connections.

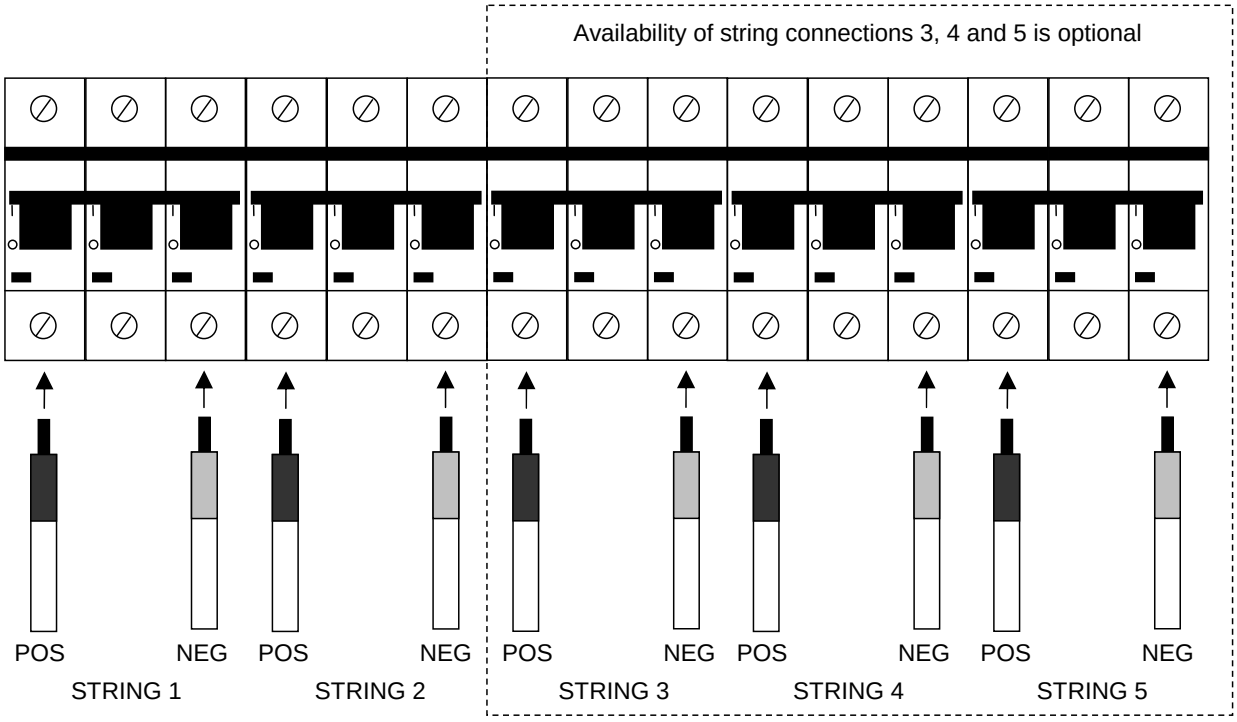

Figure 13: Connection of the DC wiring to the DC circuit breakers

5.6 MAIN AC GRID AND PROTECTIVE EARTH CONNECTION

5.6.1 General

WARNING

The inverter is provided with EMC filters with increased leakage currents to earth. It is important to guarantee a good, safe connection to earth. Protective Earth connection of the CP100 inverter must be performed as a TN S or TN-C system (IEC60364-3). The earth cable cross section must be at least half the cross section of the main AC cables.

ATTENTION

Make sure that the three phases L1, L2 and L3 are connected in the correct sequence to a clockwise rotary field.

5.6.2 Step by step installation

To connect the AC wiring, follow in detail all steps of the installation instructions in order of succession as described below.

1 See Figure 14. Move the lower insulating terminal cover of Main AC circuit breaker Q2.

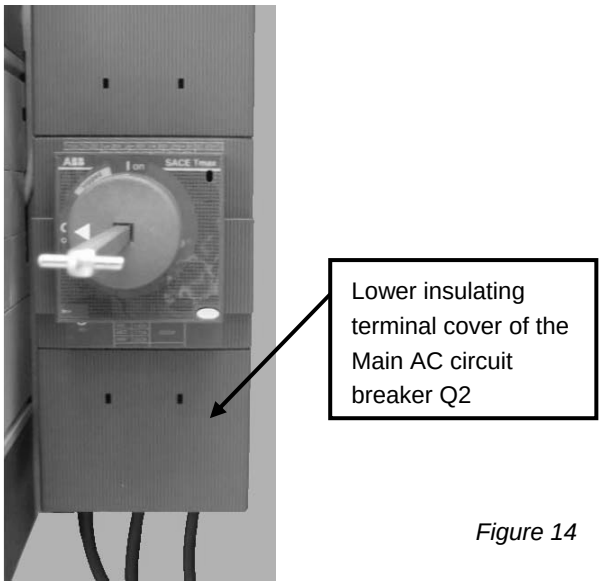

Figure 14

2 Remove the sliding plate at the bottom of the cabinet.

3 Route the cable from below the cabinet through the cable inlet area of the cabinet to the circuit breaker.

4 See Figure 15. Connect the three phases from the AC power cables to the Main AC circuit breaker Q2. Make sure that the three phases L1, L2 and L3 are connected in the correct sequence to a clockwise rotary field. Do not forget to reconnect the AC voltage sense wires under the main cables.

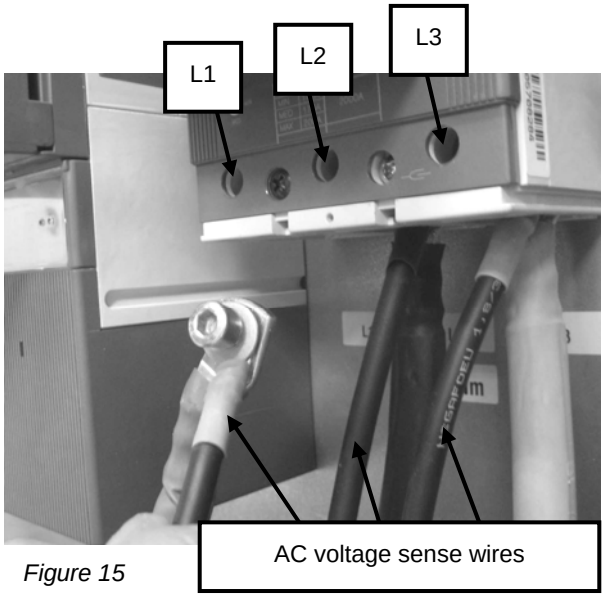

Figure 15

5 Connect the Protective Earth (PE) to the terminal(s) as indicated in figure 16.

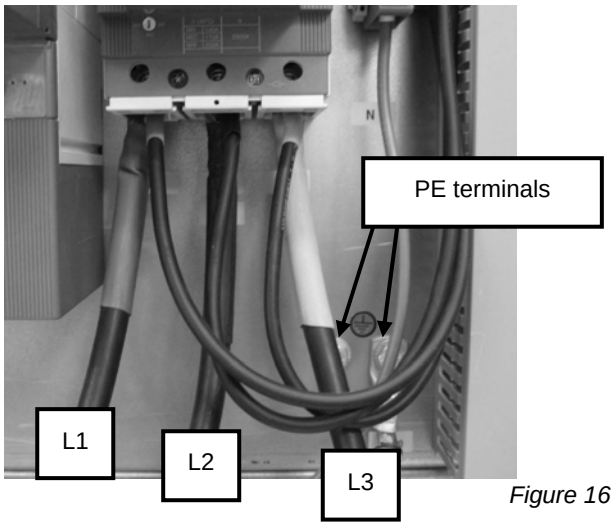

Figure 16

6 Tighten all connections securely; torque setting 8 Nm / 70 In-Lbs.

7 Fix the AC cables to the retention rail with cable clamps. The material of the cable clamps must be Aluminium.

8 Fix the lower insulating terminal cover on the circuit breaker (Figure 14)

5.7 AC POWER SUPPLY CONNECTION

The CP inverter is equipped with a 24V power supply to energize the internal control electronics. This power supply (input: 230VAC / 240W) must be connected to a single phase AC source. This can either be done over the main AC grid connection (see section 5.7.1) or externally (see section 5.7.2).
See also figure 3 for the block diagram of the CP100 inverter.

5.7.1 AC power supply: main AC grid connection

See figure 17. Take the following steps if the AC power supply is done over the main AC connection:

1 Connect the neutral wire (N) to the Neutral (N) terminal for AC power supply.

2 The bypass connection wires between X1.1 - X1.3 and X1.2 – X1.5 must remain in place.

5.7.2 AC power supply: external

Take the following steps to connect the AC power supply externally:

ATTENTION
See section 5.4 for use of the spring-cage terminals.

1 Remove the two bypass wires between terminals X1.1 – X1.3 and X1.2 – X1.5.

2 Connect the AC wiring of the external power supply as specified in table 2.

Wire color:	Meaning:	Terminal:
Brown or Black	Phase	X1.3
Blue	Neutral	X1.5

Table 2: Connection of the external power supply

ATTENTION
The external power supply must be protected by a 16 Amps circuit breaker (B-characteristic).

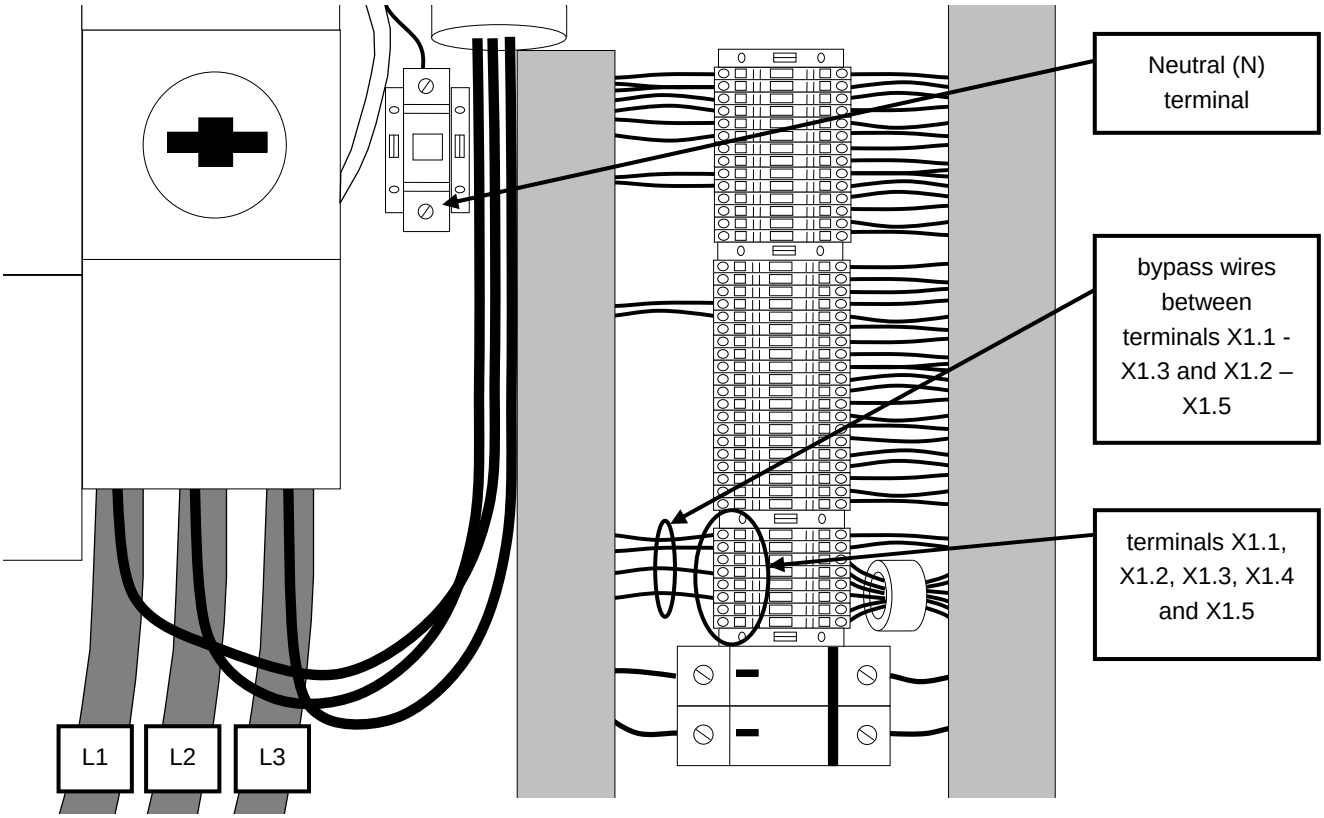

Figure 17: AC power supply connection

5.8 AUXILIARY TERMINALS

The inverter is provided with three banks of spring-cage terminals for auxiliary connections: X1, X2 and X3. See figure 1.

ATTENTION
See section 5.4 for use of the spring-cage terminals.

5.8.1 X1: External power supply

See section 5.7.2.

5.8.2 X2: Alarm and control contacts

These contacts can be used for generating an acoustic warning or applying a warning lamp etc. Maximum switching current for all contacts: 5 Amps. See figure 18 for wiring details.

Alarm contacts
If a fault is detected inside the inverter, the alarm contact is activated. The contact between X2.1 and X2.2 is normally closed, while the contact between X2.1 and X2.3 is normally open.

Emergency stop input
An optional external emergency switch can be connected to terminals X2.4 and X2.5. When this connection is open the Motor driven DC disconnector Q1 will be opened. To connect an external emergency switch, remove the bypass connection wire and then replace it by the emergency switch or a potential free alarm switch with normally closed contacts.

Emergency feedback
The contact between X2.6 and X2.7 is normally closed. If the emergency switch is activated, the contact between X2.6 and X2.7 will open.

Insulation monitor feedback
Terminals X2.18, X2.19 and X2.20 are change over contacts which are controlled by the insulation monitor. When no failure is detected, contacts X2.18 and X2.19 are normally closed while contacts X2.18 and X2.20 are normally opened. If a failure is detected, the state of the contacts will change.

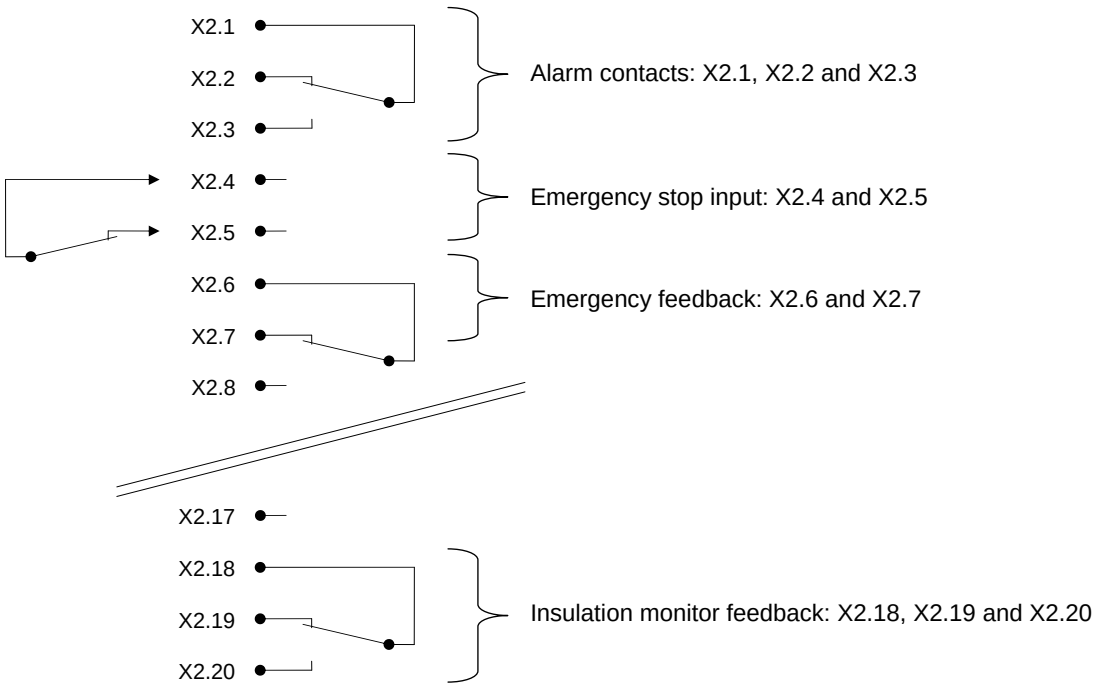

Figure 18: Wiring of the alarm and control contacts X2.

5.9 COMMUNICATION CABLES

The inverter is provided with a communication interface for Ethernet and serial bus communication. See figure 19. The communication cables must be passed through the upper cable duct and then following the cabinet structure on the right hand side as indicated in figure 19. Fix the cable with tie-wraps to the cabinet structure.

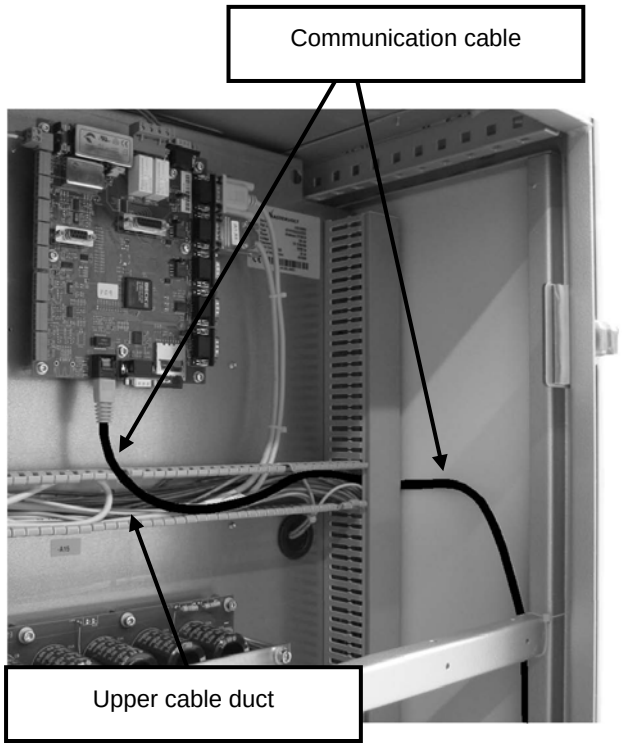

Figure 19: routing of the communication cable

For configuration, remote monitoring and remote operation of the CP inverter, the communication cable must be connected to an Ethernet network which gives access to the Internet. Refer to the Communication manual for details.

5.10 FINAL STEPS

After connecting all wiring (PV arrays, AC grid, auxiliary and communication), follow the steps as described below:

1 Reinstall the sliding plate in the lower part of the cabinet with glued sealings.

CAUTION!
All cable entries and sliding plates must be completely sealed to prevent the entry of small animals.

2 Check the installation following installation checklist. This checklist can be found in the document holder inside the cabinet (see figure 20). This checklist must be returned to Mastervolt after it was filled in completely and signed by an authorized person. After returning this checklist Mastervolt will contact the customer or installer of the CP inverter to schedule an appointment for commissioning of the CP inverter.

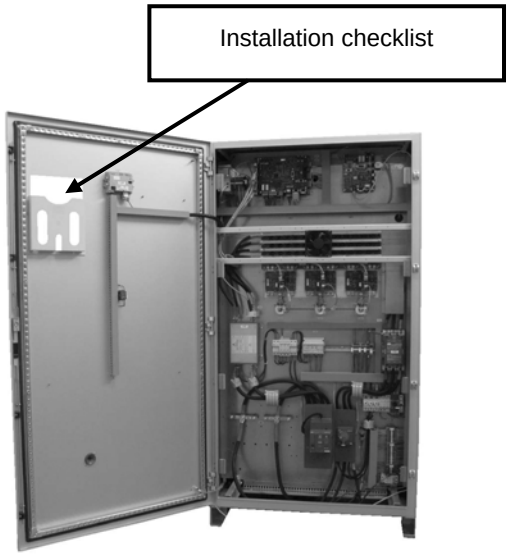

Figure 20 Location of the document holder

CAUTION!
Commissioning of the CP inverter may only be performed by a Mastervolt authorized service agent.

3 Close the door of the cabinet. While closing, be aware that the shaft of the Main AC circuit breaker Q2 snaps into its rotary knob on front of the cabinet's door. Secure the lock by turning its key. Make sure that unauthorized persons can not get access to the CP-inverter.

CAUTION!
Do not attempt to switch on the CP inverter before commissioning has been performed by a Mastervolt authorized service agent..

4 Refer to the operation manual for commissioning of CP-inverter.

6 SPECIFICATIONS

GENERAL SPECIFICATIONS	
Model:	**CP100TR**
Article number:	131400100
Operating temperature	0ºC to 50ºC ambient (no power derating)
Relative humidity	maximum 95% non-condensing
Protection degree	IP20
Safety class	Class I
Galvanic isolation	yes, transformer
Dimensions (HxWxD)	1900x1000x850 mm
Weight	< 1050 kg
Standard product warranty	2 years, extended Service Insurance & Losses Contract (SILC) as option.
Cooling system	Active air cooling

PV ARRAY INPUT (DC)	
Model:	**CP100TR**
Recommended PV power	115 kWp
Nominal input power	104 kW
Maximum input power	115 kW
Start of power conversion	530 W
Operating voltage range	450 - 900 V
MPP voltage range at nom. Power	450 - 820 V
Maximum voltage	900V
Number of inputs	1/5 opt.
maximum current	250A
MPP tracker	1
MPP efficiency	> 99,9%
DC connection	Tubular cable lugs for M8 bolts (Standard connection) or cable end sleeves, max 70mm² (Connection to DC circuit breakers)

GRID OUTPUT (AC)	
Model:	**CP100TR**
Voltage	400 V, 3phase
Earthing system (IEC60364-3)	TN
Nominal output power	100 kW
Maximum output power	110 kW
Nominal current	160 A
Frequency	45 - 65 Hz, country dependent
Power Factor	> 0,99 at full power
Harmonic distortion (THD)	< 3% at full power
Standby power	< 30 W
European efficiency (excl / incl aux supply)	96,5% / 96,3%
Maximum efficiency	97.1%
Partial efficiency	
5%	89,5%
10%	93.9%
20%	96.2%
30%	96.9%
50%	97.1%
100%	96,7%
AC connection	Tubular cable lugs for M8 bolts

MONITORING	
User Interface	Intergrated touchscreen display
Datalogger	365 days
External communication	Ethernet

SAFETY FEATURES	
Island protection	According to national grid requirement
Temperature protection	Thermal switch-off at internal over temperature
Safety devices DC side	Motor driven disconnector, Isolation resistance monitoring, overvoltage detection
Safety devices AC side	Surge protection, over- undervoltage protection, overcurrent protection

REGULATIONS AND DIRECTIVES	
CE conformity	yes
Type approval	TÜV
EMC directive	89/336/EWG + 93/31/EWG
Emissions	EN61000-6-4
Grid quality requirements	VDEW compliant
Immunity	EN61000-6-2
LV directive	73/23/EWG
Electrical safety	EN50178
National grid interface req.	VDEW compliant

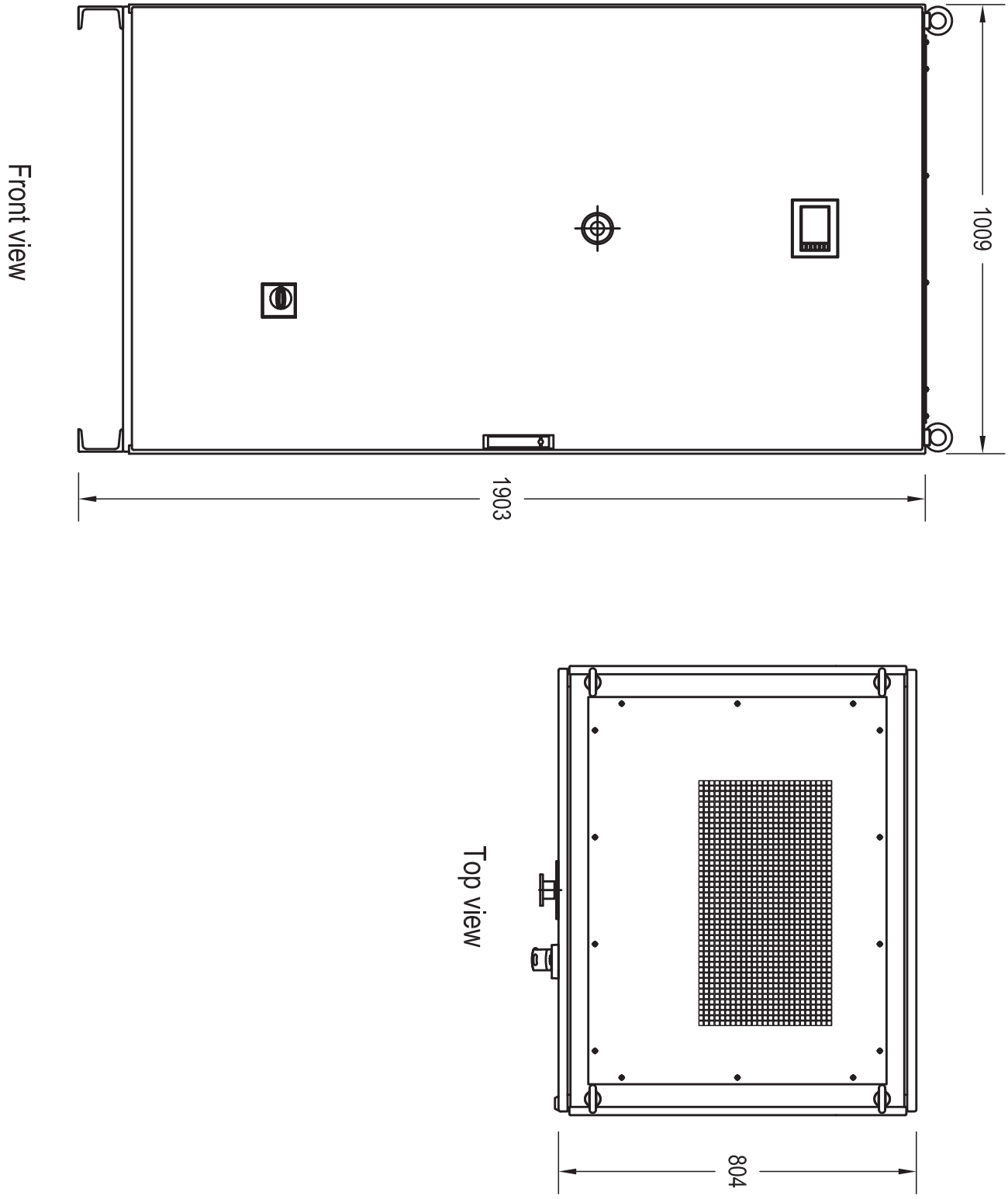

Figure 21: Outline drawings of the CP100TR inverter. All dimensions are in mm
See www.mastervolt.com for free download of AutoCAD drawings.

7 ORDERING INFORMATION

Part number	Description
131490100 #	Rundsteuerempfänger option
131490200 #	Heating module, necessary at environmental temperatures below 5…10°C during winter time
131490300 #	Irradiation and temperature sensor option
--- #	Commissioning CP100TR. Note: commissioning of the CP inverter by a Mastervolt authorized service agent is part of the guarantee terms and is therefore obligatory.
131490400 #*	DC circuit breaker incl. current measurement (see section 5.5);
131450080	Stringmaster CP 8, String Box for 8 strings / 20 Amps
131450120	Stringmaster CP 12, String Box for 12 strings / 20 Amps
131450160	Stringmaster CP 16, String Box for 16 strings / 20 Amps

These parts must be integrated in the cabinet of the CP inverter and should therefore be ordered together with the CP inverter.

* This part number must be ordered for each additional DC circuit breakers input, minimum quantity per CP100 inverter: 2, maximum: 5

See section 4.3 for an overview of parts that are standard included with the delivery of the CP100 inverter
Mastervolt offers a wide range of products for both grid connected and independent autonomous electrical installations.
See our website www.mastervolt.com for an extensive overview of all our products

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