

Description CPS-II 300 & 600W (eng.)		Doc.no. MA0150	Rev.no. 4
Designed by Håkan Lundh	Approved by Mats Melin	Page 1 of 19	Date 2000-12-14

CPS-II 300 & 600W
Compact Power Supply
19" or wall mounted
with or without batteries and options

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Drawings (dimension):	CPS-II 19" (4U) without battery module.....	3P 10811
	CPS-II 19" (4U) with battery module.....	3P 10810
	CPS-II 19" (14U) with battery module.....	3P 10809
	CPS-II wall without battery module	3P 10812
	CPS-II wall with battery module	3P 10808
(circuit diagram):	CPS-II with distribution 1-pol (+ground).....	3E 10455
	CPS-II with distribution 1-pol (-ground)	3E 10888
	CPS-II with distribution 2-pol	3E 10456

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Declaration of Conformity

according to the

Low Voltage Directive, 73/23/EEC, the EMC Directive, 89/336/EEC, including amendments by CE marking Directive, 93/68/EEC.

Type of equipment: Single phase switch mode AC/DC 300 and 600W compact power supply 12, 24, 48, 60 and 110V with distribution and deep battery discharge protection. Mounted in a metal 19" or wall cabinet together with or without battery and option CL30.

Type designation
/models: CPS-II 12/20
CPS-II 24/12(15), 24/20
CPS-II 48/6(7.5), 48/12(15)
CPS-II 60/10(12)
CPS-II 110/5(6.4)

Manufacturer: ELDACO AB, Box 990, 19129 Sollentuna, Sweden
tel. no: 08-623 95 00, fax 08-96 97 72

The following harmonised European standards or technical specifications have been applied:

LVD:

EN 60 950:1992,A1, A2: 1993; A3: 1995 Electrical safety - IT equipment

EMC:

EN 61000-3-2:1995 Harmonic current emissions
EN 50081-1:1992 Generic emission standard - Part 1: Residential, commercial and light industry
EN 50082-2:1995 Generic immunity standard - Part 2: Industrial environment

Additional information

LVD:

- The products complies with the European safety standard listed above.
- We have an internal production control system that ensures compliance between the manufactured products and the technical documentation.

EMC:

- The products complies with the harmonised European EMC standards listed above.
- As manufacturer, we declare under our sole responsibility that the equipment follows the provisions of directives stated above.

2000-01-01

Manufacturer

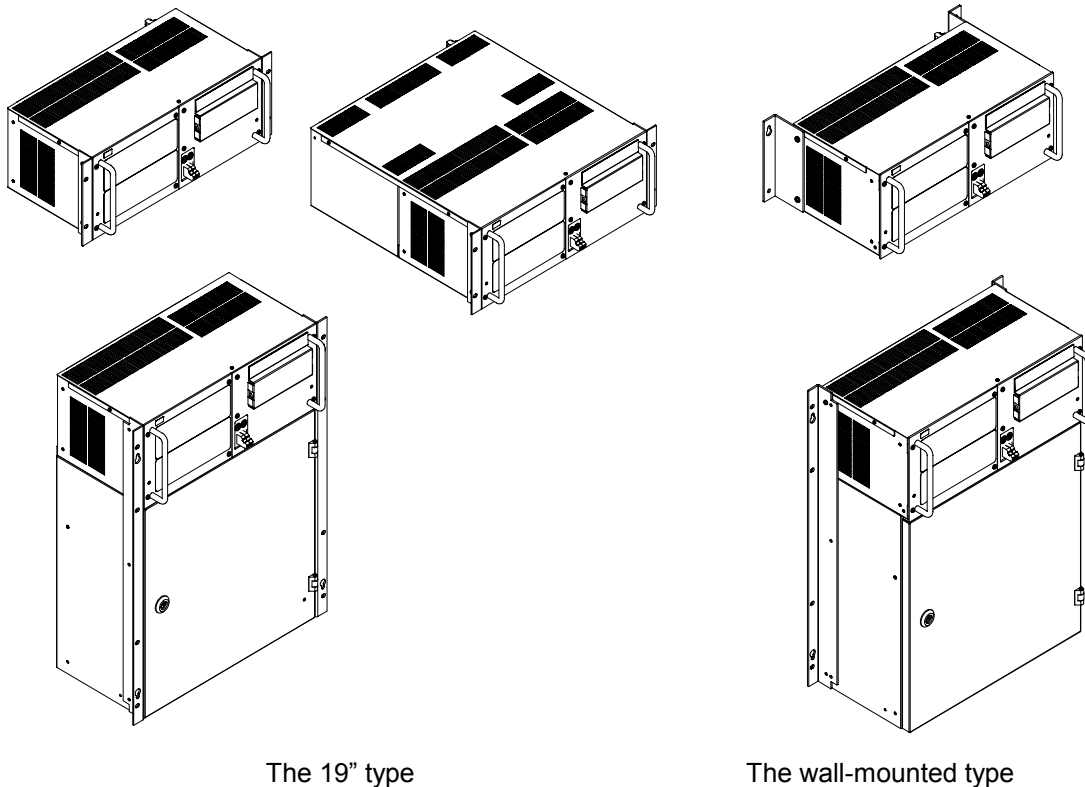


Gunnar Wallebom
Managing Director

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1. Introduction

The CPS-II 300 and 600W compact power supplies are a range of AC/DC switch mode rectifiers from 12 to 110V DC output with or without internal batteries and alarm option, in different versions as 19" and wall-mounted types. The use is mostly a complete DC supply with batteries and distribution or direct DC power supply. The output is maximum power limited with three voltage levels and a maximum current limit. The unit has a fan, temperature controlled and supervised by maximum temperature on cooler.



The 19" type

The wall-mounted type

Figure 1. The versions.

The CPS-II is equipped with "Power Factor Corrector" circuitry on the input to achieve a power factor close to 1. It's also equipped with fuses on both at mains input and DC distribution output.

The basic CPS-II front monitoring has the following functions: ON/OFF, Boost, V/A display, alarm LED and reset.

Deep discharge protection circuit to protect the battery against low cell voltage is standard.

Distribution outputs with one fuse in the negative leg or two fuses in the positive and negative branch. Zero voltage alarm is also included as a fuse alarm detector. Automatic battery circuit test with fixed time and voltage settings is standard.

Option:

▪ CL30

Alarm monitor includes alarms high/low voltage, adjustable automatic and manual battery circuit test and earth fault +/-.

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2. Installation

2.1 Inspection

The compact power supply must only be installed by experienced and qualified personnel, as dangerous voltages at both primary and secondary side may occur in the compact power supply. Make sure that no heat radiant units are mounted close to the compact power supply and that free circulation of cooling air is available.

Before connecting the compact power supply, carry out the following:

1. Check the outside and inside (wall-mounted type) of the compact power supply to make sure that there are no transportation damages.
2. Check that the line- and battery voltage (if external) corresponds to the type label of the compact power supply. CPS-II 19" (4U) with battery module need gussets when they are mounted in 19"-cabinets.

2.2 Terminals

The compact power supply is equipped with a mains input, DC-output and signal terminals, located as follows:

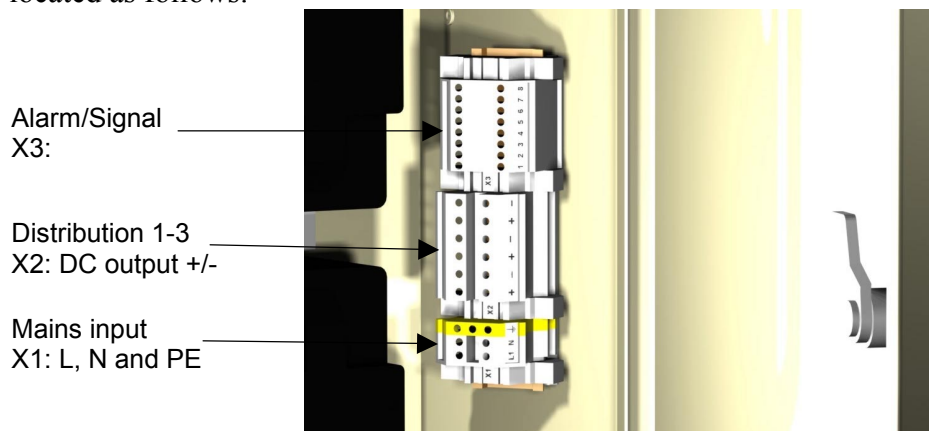


Figure 2. The wall-mounted inside the battery compartment.

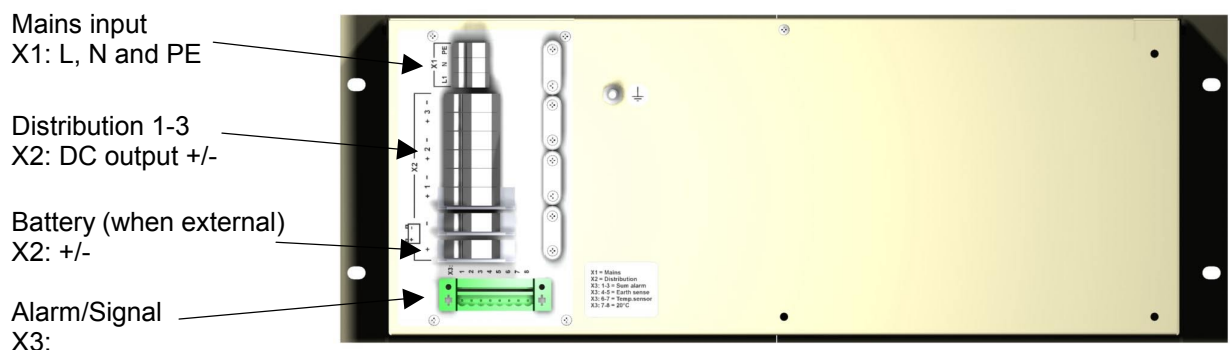


Figure 3. The 19" rear side with internal and external battery.

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2.3 Electrical installation

2.3.1 Mains:

Wall-mounted type: Connect the mains cable to the terminal X1: L, N, PE in the battery compartment.

19" unit: Connect the mains cable to the terminal X1: L, N, PE on the rear side.

Recommended mains fuse is 300W 6AT and 600W 10AT.

Important: Always connect the PE terminal for safety protection.

2.3.2 Load:

Check that the battery- F10 and load fuses F1-3 are in OFF position. Connect to the compact power supply output terminals X2: signed +/- Distr. 1-3. F1 is connected to distribution output 1, 2-2 and 3-3. Single pole output distribution has the earth connecting inside the rectifier + or -.

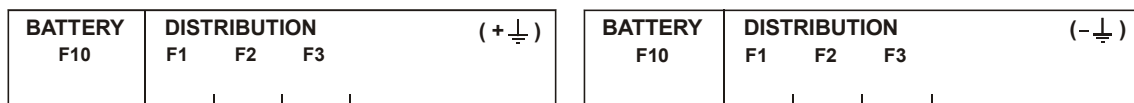



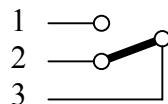
Figure 4. Distributionlabel.

2.3.3 External battery:

Check that the battery fuse F10 is in OFF position. Connect the battery to the compact power terminal X2: +/- 

2.3.4 Signals:

X3:1-3 Common alarm relay potential free output. All alarms also optional alarm board, are connected to this output.



Alarm position

X3:4-5 Earth sense connection. By shorting this input the earth fault +/- alarm on the optional alarm board CL30 is activated.

X3:6-8 Battery temperature sensor input. By connecting a 2k Ω PTC type KTY 81-210 to X3:6-7 input, the module floating voltage level will be battery temperature compensated. If not temperature compensation is wanted X3:7-8 should be shorted. When internal battery is used the temperature sensor is connected internally in the CPS-II and can not be disconnected.

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3. Commissioning

3.1 Preparation

Check all connections to the compact power supply. Check that the battery and load fuses are in OFF position.

3.2 Start

Apply mains power to the compact power supply, it will start directly. If not, press on/off button on the front to ON position if OFF LED is lit.

3.3 Floating charge

Check that the output voltage for floating charge, measured at the measurement output on the front terminals of the compact power supply with the battery temperature sensor removed or shorted X3:6-7 (automatic 20°C level), corresponds with the battery supplier recommendations. Adjust according to section 6.1 "Floating voltage adjustment" if needed.

3.4 Boost charge (If open external lead-acid cells are used)

Start boost charge by pressing boost button on the front panel CL20. Check the level for boost charge, measure at the output terminals and check that the level corresponds with the battery supplier recommendations. Adjust according to section 6.2 "Boost voltage adjustment". (If not possible to activate, check the boost inhibit input X7A:1-2 is shorted on the internal rectifier module behind the front panel inside the CPS-II.) Check also the time adjustment for manual and automatic boost on the front monitor. Return to floating charge.

3.5 Charging of battery

Switch "ON" the circuit breakers to the load and battery. The current increases towards power limit (if the battery is discharged) and the voltage level increases slowly towards the floating charge level. If the "Incorrect charging voltage" is activated an alarm is given until the voltage level is above -2% of adjusted floating charge level with temperature compensation.

When the battery has reached the adjusted floating charge level, the compact power supply leaves power limit and the current starts to decline when the voltage level is steady.

If the battery consist of open lead-acid cells, start button for boost charge on the front. The output power increases to the limit and the output voltage increases slowly toward the boost charge level.

Return to floating charge with front panel button or wait until the compact power supply returns to floating charge automatic after adjusted boost charge time.

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4. Functions

4.1 General

The compact power supply is build up with a **rectifier, front monitor, distribution, deep discharge protection** together with an internal or external **battery and optional alarm CL30**.

4.2 Rectifier

The rectifier converts the mains AC voltage to a DC-voltage. The AC-input has a high power factor = sine-wave current. The DC-output from the rectifier has two voltage levels **floating and boost level** adjustable from the front monitor. It's also equipped with a max power and a max current limit. The floating level can be battery temperature compensated by $-4\text{mV}/^\circ\text{C}$ and cell if a temperature sensor $2\text{k}\Omega$ PTC is connected. The compact power supply has internal protection circuitry for over voltage on the DC output with a shut down level at activated alarm. An automatic battery circuit test is also added as standard with fixed times and levels. In the optional alarm CL30 both automatic and manual battery circuit test are included and adjustable from the front monitor.

An voltage drop compensation is added to achieve correct voltage over the batteries at high load. All levels are preadjusted from factory and doesn't normally need to be adjusted. The compact power supply has also internal alarms connected both to the front indication and common alarm relay.

The rectifier module is cooled by a temperature linear controlled fan. Starting at $50\text{-}55^\circ\text{C}$ on the cooler and increases speed up to maximum at $70\text{-}75^\circ\text{C}$. At 85°C on the cooler the rectifier decreases the output power and an rectifier alarm is given. At normal room temperature, up 50% load, the natural convection is enough and the fan is normally not running, to achieve a long life time.

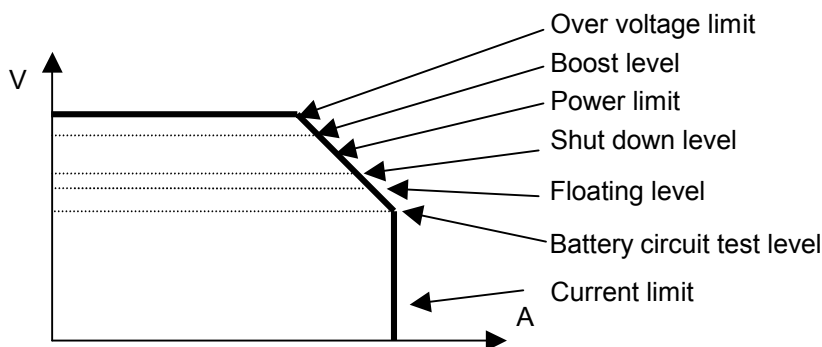



Figure 5. DC output characteristics.

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4.3 Front monitor.

Indications, functions, buttons and alarms on the front monitor

- **On/Off control and indication**
The rectifier can be “On” in operation or “Off” in stand by mode
- **Operation indication**
Three different indications are possible:

LED off	=	Rectifier stopped.
LED on	=	Rectifier operation.
LED flashing	=	Output higher then adjusted or boost/battery test mode activated.
- **V/A meter**
Volt- Ampere meter and information display.
- **Reset**
Resets the not active alarms and if pressed > 2s LED and display test.
- **Float or Boost voltage button**
Boost blocked normally with sealed lead acid batteries.
- **Float and boost voltage level adjustment**
Adjustment from the front monitor by buttons.
- **Measurement output for the battery voltage**
Short circuit proof.
- **Test load input**
An external test load can be connected to test the capacity of the battery. If the option CL30 is used the manual test can be used to monitor the final voltage of the battery and the total test time.
- **Alarm indication:** 
The compact power supply has as standard internal alarms with a 5-10s time delay. All alarms are connected to the common alarm relay output:
 - **Battery temperature sensor fault**
If the sensor is shorted or disconnected, default level 20°C is activated.
 - **Battery thermal runaway (>40°C)**
The battery thermal runaway alarm is using the battery sensor to check the battery temperature. If the temperature reaches 40°C, the compact power supply output is controlled down to the battery circuit test level and stays there until the battery temperature decreases down to 35°C.
 - **Battery circuit test.**
Once every 24 hours the rectifier is controlled down to the battery circuit test level for 10s, if the battery voltage decreases below a alarm level the test is directly terminated and an alarm is given. Separate adjustable alarm on CL30 both automatic and manually.
 - **Low or absent mains**
 - **Rectifier output fuse failure**
 - **Distribution fuse failure**
 - **Rectifier module fault**
Not voltage, current or power limit reached
 - **High module temperature >85°C**
 - **Over-voltage DC (charger protection)**
- **Incorrect battery voltage separate standard alarm.**
The actual output voltage is compared with the reference voltage and if the output changes more than 2% up or down from the floating, the alarm is activated. The alarm is inhibited in boost and battery test mode. The alarm is also inhibited when the operation LED is flashing. In this case it could be that the compact power supply has been charging batteries in boost mode and the compact power supply has returned to floating but the voltage is kept high by the battery.

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4.4 Distribution

Distribution circuit breakers on the front panel, max three single or three 2-pole circuit breakers. Distribution circuit breakers are supervised by zero voltage alarm. Indication is given on the front monitor by LED \lrcorner .

4.5 Deep discharge protection

Deep discharge protection is a separate circuit with it's own supply to ensure safe operation. If the battery voltage is extremely low 1.65V/cell, the battery is disconnected by a relay with max 30A breaking switching capability as standard. Optional 80A. Indication is given on the front monitor CL20. Reconnection of the battery at 1.85V/cell.

4.6 Battery

The battery is placed inside the cabinet in a separate place. It is short circuit protected by double isolated cables and a battery 2-pole fuse mounted on the front panel. The battery can be exchanged under operation. CPS-II can also be delivered made for an external battery.

4.7 Option alarm CL30 monitor

All alarms are connected to the common alarm relay:

- High voltage alarm with adjustable alarm level, time delay and hysteresis.
- Low voltage alarm with adjustable alarm level, time delay and hysteresis.
- Battery circuit test with separate adjustable, at the front panel, alarm levels and times for both manual and automatic battery circuit test. Viewing of latest manual (and automatic >60) test time and breaking level for capacity test.
- Earth fault + and – with adjustable alarm level, time delay and hysteresis. Viewing of actual earth fault resistance.

5. Maintenance

5.1 The compact power supply

The float voltage level is recommended to be adjusted every two years to keep the correct charging voltage to the battery.

The fan has a long life time at high temperatures, so at normal conditions it doesn't need to be exchanged under the rectifier life time. At extreme conditions, full load and 40°C continuous operation, the fan needs to be exchanged every 3-4 years. Please contact our service dept. for detail information.

5.2 The battery

The battery capacity is recommended to be analysed every two years or according to battery manufacture recommendation. Capacity test is not made at delivery as standard. See battery manufacture specification for type data.

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6. Adjustment

6.1 Float voltage adjustment

Normal floating charge voltage level.

Adjustment:

- Ensure normal load (not current or power limit).
- Remove or short circuit the temperature sensor at: X3:6-7 → alarm is given and 20°C float voltage level. Not needed if jumper X3:7-8 is connected.
- Measure with voltmeter accuracy better than 0.1% at the V-meter output on the front.
- Adjust the float level on the front board. See section 7.2.4 "Adjusting levels for ...".
Restore the compact power supply.

6.2 Boost voltage adjustment

Boost charge voltage level is not temperature compensated. If sealed lead acid battery are used, boost charge is inhibited = input X7A:1-2 is open on the internal rectifier module behind the front panel.

Adjustment:

- Activate boost level and ensure normal load (not current or power limit).
- Measure with voltmeter accuracy better than 0.1% at the compact power supply DC V-meter terminals on the front.
- Adjust the boost level on the front board. See section 7.2.4 "Adjusting levels for ...".
Restore the compact power supply.

6.3 Battery circuit test level adjustment

This voltage level is used to be able to test the battery by reducing the compact power supply output to a low level and meanwhile check if the battery voltage is higher than the battery circuit test alarm level. Not temperature compensated. The test time, test and alarm level can be adjusted with the CL30 optional alarm monitor.

If no CL30 is connected the automatic battery test is set to 1day interval, alarm level 1.96V/cell, test time to 10s and the test level 1.8V/cell, manual test is not possible.

Adjustment:

- Decrease the alarm level lower than test level. See section 8.2.2 "Manual battery circuit ..".
- Activate manual battery test level and ensure normal load (not current or power limit).
Adjustment see section 7.2.4 "Adjusting levels for ...".
- Restore the alarm level and check the test time. See section 8.2.2 "Manual battery test".

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7. Front monitor adjustment

7.1 Symbols on the front monitor

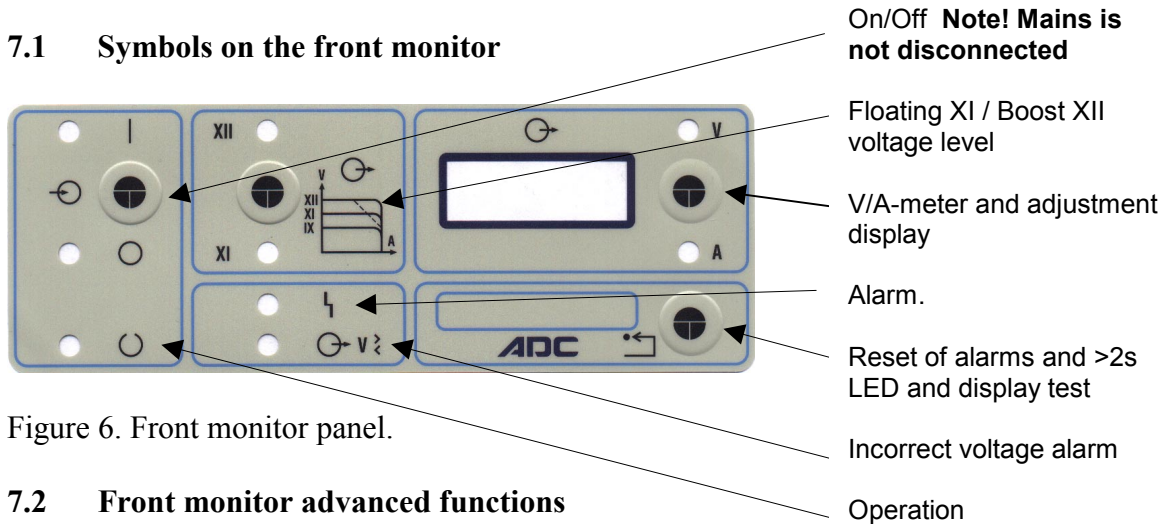


Figure 6. Front monitor panel.

7.2 Front monitor advanced functions

7.2.1 Common information.

Use with only front monitor board the buttons 'V/A' and 'Reset' behave like 'up' and 'down' arrows.

Reset button switches back to standard display.

7.2.2 Automatic boost charge times

- Press buttons on/off and floating/boost for a time of >3s (until 'boost' is displayed).

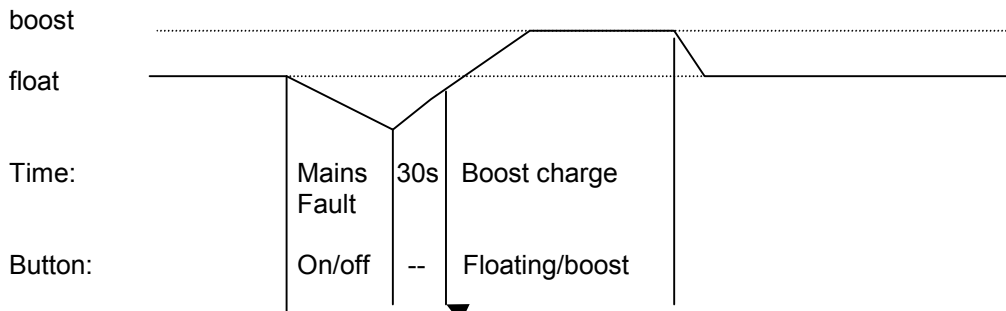


Figure 7. Automatic boost time schedule.

If power or current limit is present at end of 30s fixed time delay, the boost starts.

7.2.3 Manual boost charge time

- Press button floating/boost for a time of more than 3s.

7.2.4 Adjusting levels for floating, boost and battery circuit test voltage (only with CL30).

- Switch module to the charging mode you want to change.

- Press button on/off and the arrow-keys. For a short time the difference to nominal 0 in digits + or - is displayed, max ± 512 steps and then the adjusted voltage is displayed.

7.2.5 Displaying remaining time of boost charge

- Press buttons floating/boost and V/A

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8. CL30 Alarm monitor (option)

8.1 Symbols on the alarm monitor

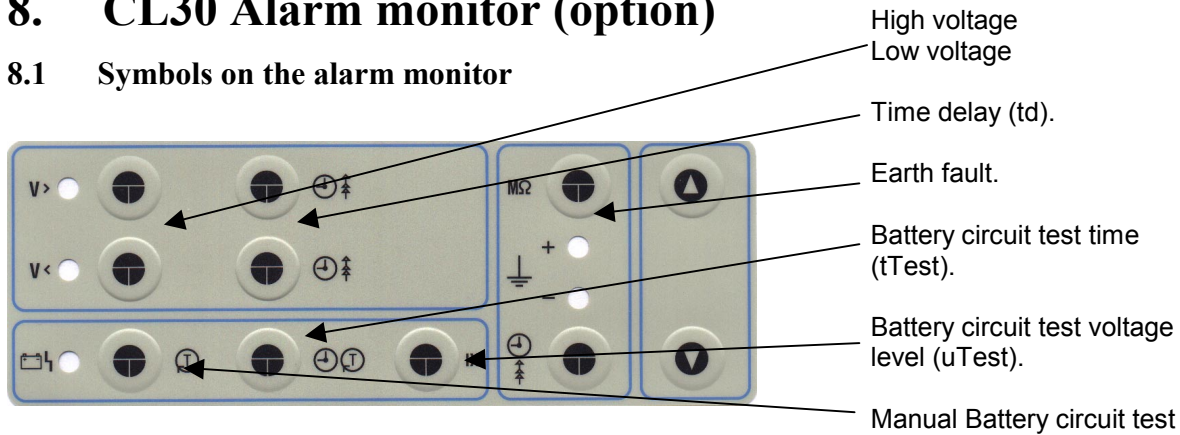


Figure 8. Alarm board panel.

8.2 Alarm monitor advanced functions

8.2.1 Common information: High, low and earth fault alarm

- Press a pushbutton: Numerical information on 5 digit display. Change of value by arrow.
- Press buttons for value and td at the same: Display hysteresis of each limit. Change of value by arrow.

8.2.2 Manual battery circuit test

- Press, tTest displays/changes time of manual battery circuit test.
- Press, uTest displays/changes alarm voltage level of manual circuit test.
- Press, Manual Battery circuit test starts directly a manual circuit test.
- Press, Manual Battery circuit test again stops the test.

8.2.3 Automatic battery circuit test

- Press buttons tTest and uTest for a time of >3s, until 'Auto' is displayed.
- Press, tTest displays/changes time of automatic battery circuit test.
- Press, uTest displays/changes alarm voltage level.
- Press, Manuel Battery circuit test displays/changes interval of automatic battery circuit test, shown as:xxday/xxmon/xx yr/xx h/xxMin. If interval-time is=0, no automatic battery circuit test is started!
- Press, V/A shows time left until next automatic battery circuit test ('-.-' if it is just changed).
- Press, Reset button switches back to standard display.

8.2.4 Displaying time and voltage of last/current battery circuit test

- Press button Battery circuit Test for a time of >3s. With the arrow-keys, you can display the time and voltage of the last/running battery circuit test. These values are updated in manual battery circuit test or if the automatic battery circuit test time is >60s.

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9. Trouble shooting

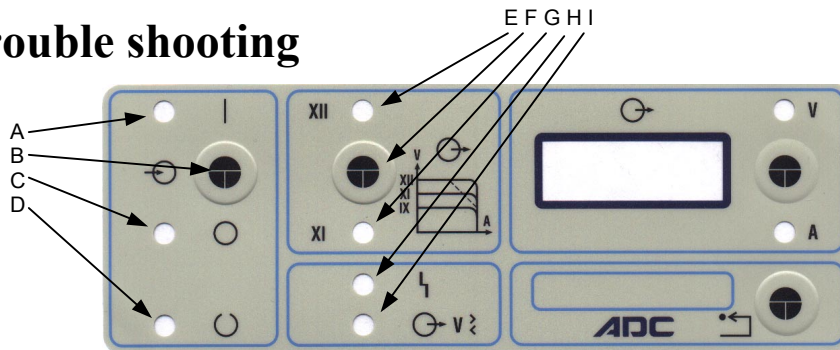


Figure 9. Front monitor CL20 panel.

Failure indication on front monitor	Cause of failure	Measure /action
All LEDs are "OFF" and common relay fallen.	The mains power supply is missing or below 180VAC and the battery is discharged.	Check if the mains power supply is available to the CPS-II. Check input mains fuse F1 on rectifier module inside the CPS-II behind the front monitor panel.
If LED A, E or G and H are "ON" and common relay fallen.	The mains power supply is missing or below 180VAC.	Fuse in 300W CPS-II =4AT Fuse in 600W CPS-II =6.25AT
If LED A, D, E or G and H are "ON" and common relay fallen.	1. Battery temperature sensor fault. The battery temperature is <-20°C or >+70°C or sensor missing or shorted	If the battery temperature is normal, the sensor can be shorted or disconnected. Check the sensor at the input X3:6, 7. Check that if no sensor is connected the X3:7, 8 should be short-circuited. The red alarm LED "ON" at the inside on the rectifier module. Check the switch S1:1 position inside on the rectifier module, UP if battery compensation is used.
	2. Battery circuit test alarm with no alarm monitor CL30 present.	Check the battery fuse in the distribution panel. Measure the voltage directly on the battery and compare with the measurement output on the panel. The red alarm LED "OFF" at the inside on the rectifier module. Change the battery.
	3. Rectifier module output fuse F2 open.	Check the DC-output fuse F2 and the red alarm LED "ON" on the inside on the rectifier module.
	4. DC-output distribution fuse open	Check the DC-output distribution fuses. The red alarm LED "OFF" on the inside on the rectifier module.
	5. DC-output overvoltage alarm	Check the DC-output voltage, check the adjustment steps in the actual voltage mode and change to 0 step. If alarm resets, adjust the voltage again. The red alarm LED "ON" at the inside on the rectifier module. Switch the CPS "OFF" with pushbutton B and "ON" again. If the fault comes back, please contact the service dept.
	6. Rectifier module fault or high temperature on rectifier module.	Check above 1-5 first, then contact the service dept. The red alarm LED "ON" at the inside on the rectifier module.
If LED A, D and H are "ON" and common relay fallen. LED, E and G flashing.	Battery thermal runaway(>40°C) The compact power supply is running at a low output voltage	Check the battery temperature. If the battery temperature is >38-40°C, hysteresis down to 35°C, this alarm, if activated by S1:2 UP, is controlling the compact power supply to battery circuit test level. Check it by shorting temperature sensor input X3:6,7 =20°C voltage level. Check if all cells in the battery are ok. If not, change the battery.
If LED A, D, G and I are "ON" and common relay fallen).	Incorrect battery voltage alarm. The compact power supply is delivering power to the DC output close to the floating level.	Check the voltage level. Check the output load, if more then power limit 300 or 600W. If the mains has not been available for a while the batteries can take a lot of the total power to recharge. If this happens often the alarm can be inhibited by switch S1:3 position DOWN on the rectifier module inside the CPS-II behind the front panel.

Service department at ELDACO AB:

Tel: +46(0)8 623 95 00, Fax: +46(0)8 96 97 72, Email: power@eldaco.se

Description CPS-II 300 & 600W (eng.)		Doc.no. MA0150	Rev.no. 4
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10. Technical data

10.1 Input

Voltage range	230V AC $\pm 15\%$
Frequency	47-63Hz, 1-phase
Current	Max 2A (300W) and 4A (600W) at 195V AC
Efficiency	300W: $>82\%$ at 230V AC and max power on the output 600W: $>88\%$ at 230V AC and max power on the output
Power factor	>0.98 at 230V AC and max power on the output
Protection	Fuse 4AT (300W) and 6.25AT (600W) 5 \times 20mm, reachable from the outside of the internal module
Soft start	30s slow start
Inrush current limit	Max 10 \times mains fuse (40 and 62.5A)
Cable entry AC terminal	4mm ²

10.2 Output

Constant voltage compact power supply with power and current limit:

DC voltage nom. (V)	12	24	24	48	48	60	110
Output power max.(W)	300	320	600	320	650	650	620
DC current nom. (A)	20	12	20	6	12	9.5	5
DC current max. (A)	20	15	20	7.5	15	12	6.4
Lead cells	6	12	12	24	24	30	53, 54, 55

Voltage adjustment	Three independent different levels: Floating: 2.0-2.35V/cell Boost: 2.3-2.5V/cell Battery circuit test range: 1.8-1.9V/cell
Current adjustable limit	90% of DC current max - DC current max +2 %
Static voltage regulation	$<0.5\%$ adjustable with voltage drop compensation
Power regulation 2.5 – 1.8V/cell (not 12V 300W, 24V 600W)	+1 \rightarrow -4% (from floating 2.23V/cell)
Current regulation 1.8V/cell \rightarrow short $\pm 1\%$	
Short circuit proof	Yes
Reversed battery protection	Circuit breaker 25A ≤ 60 VDC and fuse 10A 110VDC rec.
Dynamic response	Load step 10-90-10 % without battery $\pm 8\%$ recovery 5-10ms
Ripple	0.05% RMS of Unom
Noise	$\pm 1\%$ peek to peek of adjusted voltage (BWL: 30MHz)
Psofometric voltage	1mV for 12V and 24V 2mV for 48V and 60V
Output voltage drop compensation	-1.5% - +4% at min - max load

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DC over voltage protection	Protection level: 2.4-2.6V/cell time delay: 1-2s shut down level: 0-94% of over voltage protection limit
Battery temperature compensation	-3.3 to -4.2 mV/ °C /cell
Temp. comp. range	-20°C to + 70°C
Temp. comp. alarm levels	lower than -20°C and higher than +70°C
Thermal runaway	38-42°C, hysteresis 3-6°C
Temperature sensor	KTY 81-210 (2kΩ PTC at 25°C)
Hold up time	10ms
Alarm relays	DC: 150V, 2A, max 60W, AC: 250V, 2A, 62,5VA
Cable entry signal	2.5 mm ²
Cable entry DC output	10 mm ²
CL20 front monitor	Digital voltage and ampere meter LCD 4 digit ±2% of nominal DC output

Boost charge	Mains fault delay	Start delay	Time range
Manual	---	---	0s-16h 39min
Automatic	0s-16h 39min	30s fixed	0s-16h 39min

CL30 alarm monitor

Alarms	Alarm level	Time range	Hysteresis	Tolerance
High and low voltage	0-1.5×Unom	0s-16h 39min	0-1.5×Unom	
Earth fault +/-	0kΩ-1.0MΩ	0s-16h 39min	0kΩ-1.0MΩ	+/- 30kΩ

Alarms	Alarm level	Test time range	Automatic interval time
Battery circuit test manual	0-1.5×Unom	0s-16h 39min	--
Battery circuit test automatic	0-1.5×Unom	0s-16h 39min	yy-mm-dd-hh-mm

Alarm levels tol. ±2% of Unom

CL40 relay board
5 alarm relays max data:
DC: 300V, 8A, max 100W voltage dependent
AC: 300V, 8A, max 2000W

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10.3 Weight

	Weight approx.(kg)
CPS-II 19" (4U) without battery module	12
CPS-II 19" (4U) with battery module	17
CPS-II 19" (14U) with battery module	25
CPS-II wall without battery module	12
CPS-II wall with battery module	25

10.4 General

MTBF	60.000h
Enclosing	IP20
Audible noise	max 40dB(A) at 1m, with fan in operation max 55dB(A) at 1m.

10.5 Environmental

Operation temperature	0°C to +40°
Storage temperature	-40°C to + 85°C
Altitude	max 1000m above sea level. For higher altitudes reduce output power by -10%/1000m
Humidity	0 % to 95 % Rh non condense

10.6 Fan data

Operation life time	min 25000h at +40°C ambient.
Type	Innovative BP802524H 24V 0.13A or equivalent.
Part no:	737069

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11. Default settings

Cell is equal to lead acid battery cell.

Potentiometer settings:

Unom	Cells	Floating 2.23V/cell	Boost 2.4V/cell	Bat. circ. Test. 1.8V/cell	Current limit	Output drop comp. -0.2%	DC-over- volt.limit 2.54V/cell	Shutdown 2.3V/cell
12V	6	13.4V	14.4V	10.8V	20.4A	25mV	15.2V	13.8V
24V	12	26.8V	28.8V	21.6V	20.4A	50mV	30.5V	27.6V
48V	24	53.5V	57.6V	43.2V	15.3A	100mV	61V	55.2V
60V	30	66.9V	72V	54V	12.2A	135mV	76.2V	69V
110V	54	120.4V	129.6V	97.2V	6.5A	240mV	137.2V	124.2V

Settings on front monitor CL20:

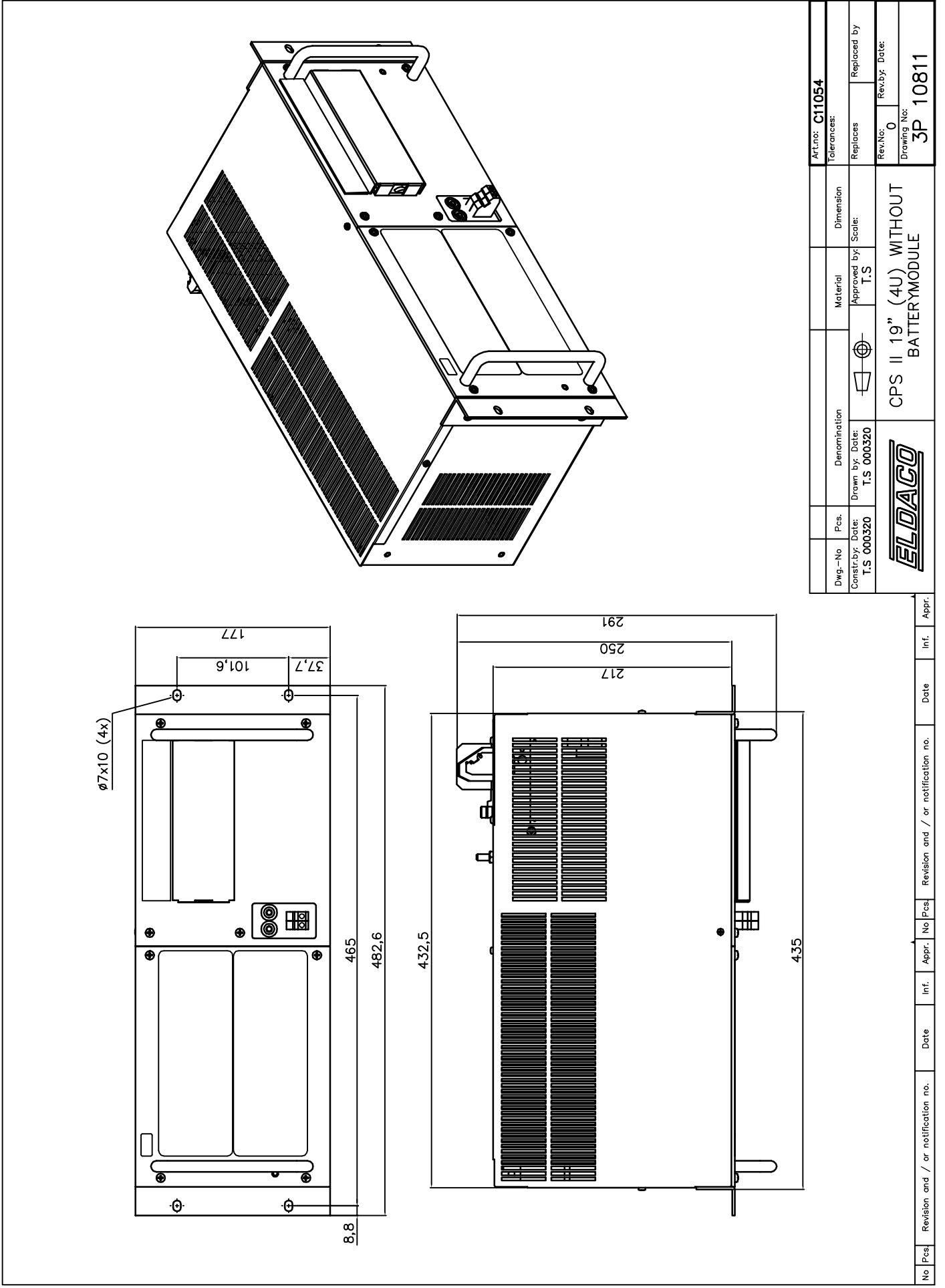
Manuel boost charging time	5h
Automatic boost mainsfail delay time	10s
Automatic boost charging time	5h

Settings on alarm monitor CL30:

Unom	Cells	Low voltage alarm	High voltage alarm	Delay	Hysteresis
12V	6	11.4 V	14.0 V	10s	0.1V
24V	12	22.8 V	28.0 V	10s	0.1V
48V	24	45.6 V	55.9 V	10s	0.2V
60V	30	57.0 V	69.9 V	10s	0.3V
110V	54	102.6 V	125.8 V	10s	0.5V

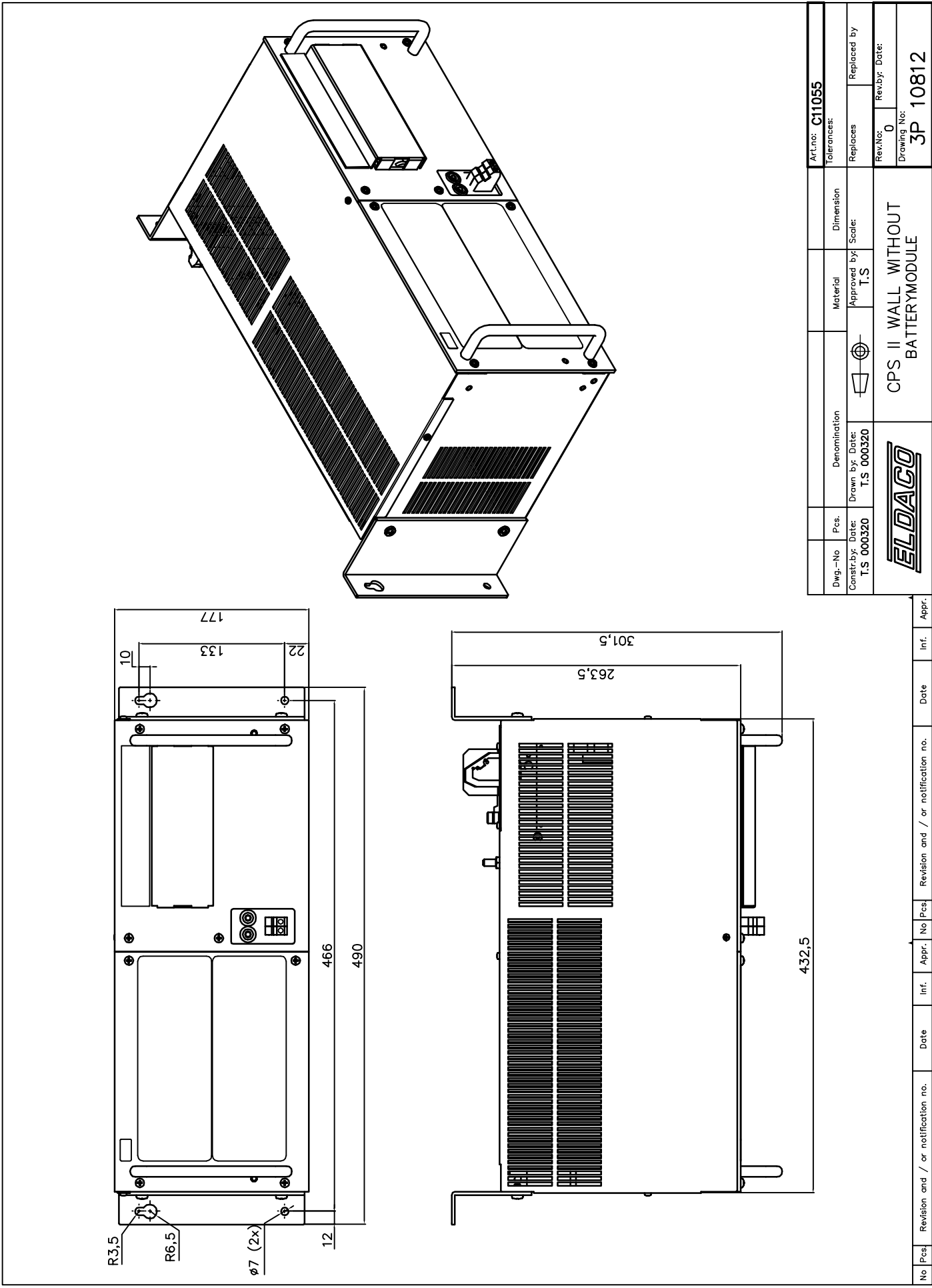
Unom	Bat. circ. alarm level manual and automatic 1.96V/cell	Bat. circ. control level manual and automatic 1.8V/cell	Manual Test time	Automatic Test time	Automatic interval time
12V	11.8 V	10.8 V	1 hour	10s	1day
24V	23.5 V	21.6 V	1 hour	10s	1day
48V	47.0 V	43.2 V	1 hour	10s	1day
60V	58.8 V	54.0 V	1 hour	10s	1day
110V	105.8 V	97.2 V	1 hour	10s	1day


Alarms	Unom	Alarm level	Time range	Hysteresis
Earth fault +/-	12-110V	500k Ω	10s	10k Ω



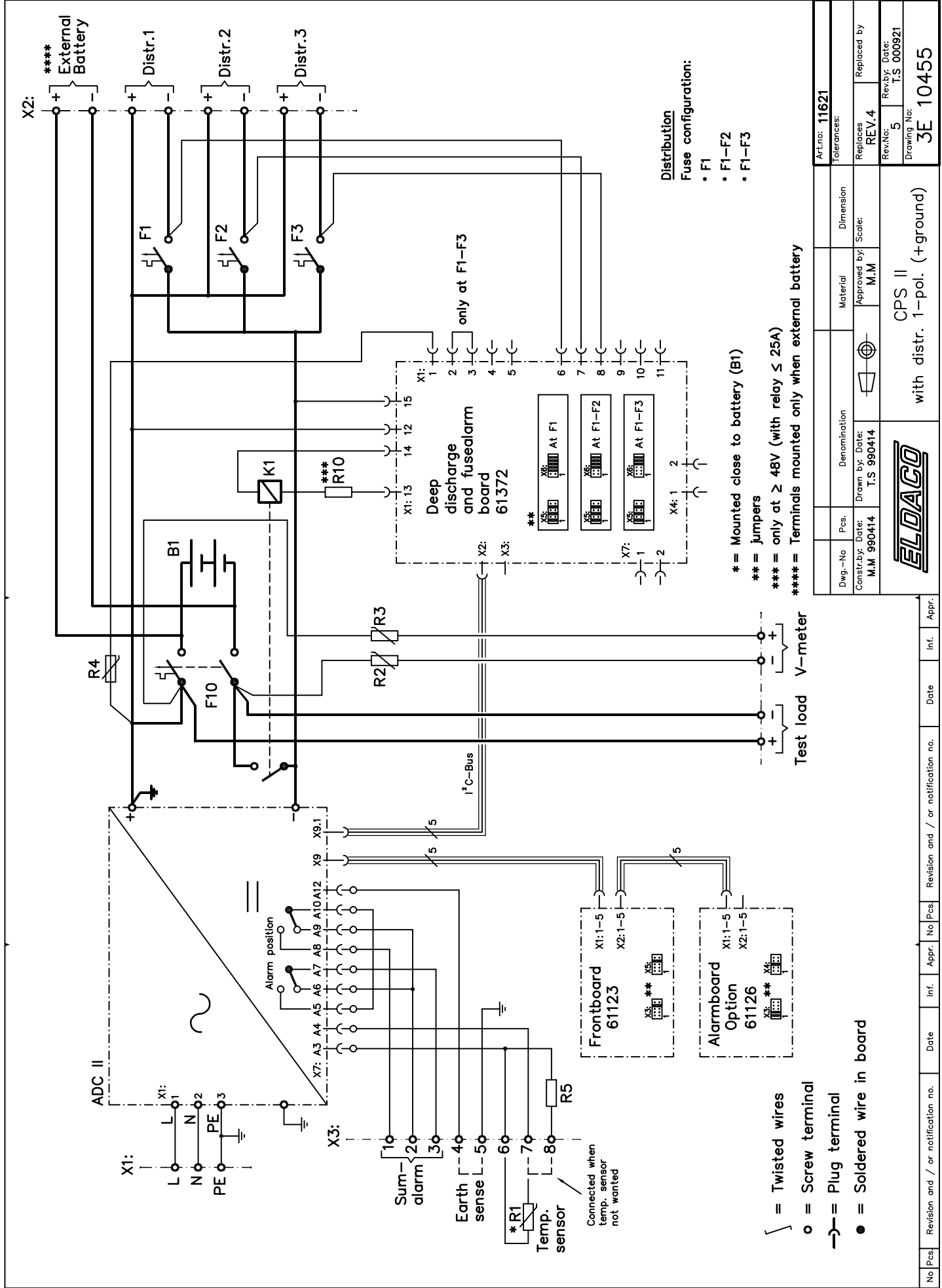
Dwg.-No T.S 000320	Pcs. Date: T.S 000320	Denomination Drawn by: Date: T.S 000320	Material Approved by: Scale: T.S	Dimension Replaces	Art.no: C11054 Tolerances:
CPS II 19" (4U) WITHOUT BATTERYMODULE			Rev.No: 0	Replaced by	Replaced by
Date:			Rev.No: 0	Rev.No: 0	Rev.No: 0
Date:			Drawing No:		3P 10811

No	Pcs	Revision and / or notification no.	Date	Inf.	Appr.



Dwg.-No Constr. by: Date: T.S 000320		Pcs. Date: T.S 000320		Denomination Drawn by: Date: T.S 000320		Material Approved by: Scale: T.S		Dimension Replaces Rev.No: 0 Replaced by		Art.No: C11055 Tolerances:	
						CPS II WALL WITHOUT BATTERYMODULE					
						Drawing No: 3P 10812					

No	Pcs.	Revision and / or notification no.	Date	Appr.	No	Pcs.	Revision and / or notification no.	Date	Appr.
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Distribution Fuse configuration:

- F1
- F1-F2
- F1-F3

**** = Mounted close to battery (B1)**
**** = Jumpers**
***** = only at ≥ 48V (with relay ≤ 25A)**
****** = Terminals mounted only when external battery**

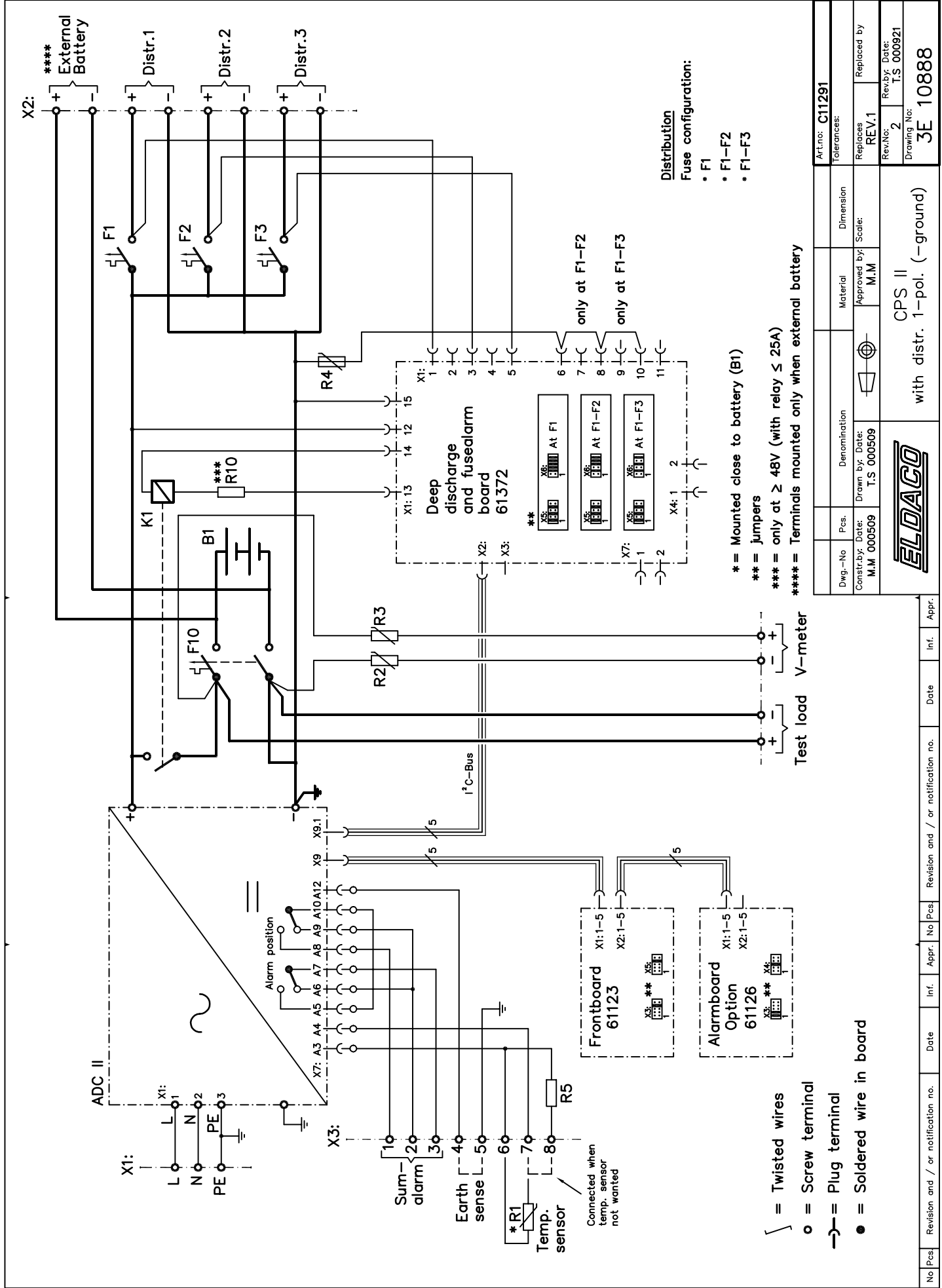
} = Twisted wires
 ○ = Screw terminal
 → = Plug terminal
 ● = Soldered wire in board

Dwg.-No	Pos.	Denomination	Material	Dimension	Art.no: 11621
Constr.by: M.M. 990414	Date: T.S. 990414	Drawn by: T.S. 990414	Approved by: M.M.	Scale:	Tolerances:
			Replaces: REV.4	Replaced by:	
			Rev.No: 5	Rev.by: Date:	
			Drawing No: 3E 10455		



CPS II
with distr. 1-pol. (+ground)

No	Pos.	Revision and / or notification no.	Date	Inf.	Appr.



Distribution Fuse configuration:

- F1
- F1-F2
- F1-F3

** = Mounted close to battery (B1)
 *** = jumpers
 **** = only at ≥ 48V (with relay ≤ 25A)
 ***** = Terminals mounted only when external battery

} = Twisted wires
 ○ = Screw terminal
 → = Plug terminal
 ● = Soldered wire in board

Dwg.-No	Pos.	Denomination	Material	Dimension	Art.no: C11291
Constr.by: M.M. 000509	Date: T.S. 000509	Drawn by: T.S. 000509	Approved by: M.M.	Scale:	Tolerances:
Replaces: REV.1			Replaced by:		
Rev.No: 2			Rev.by: Date:		
Drawing No: 3E 10888			CPS II with distr. 1-pol. (-ground)		



No	Pos	Revision and / or notification no.	Date	Inf.	Appr.

