HAWKER® MODULAR CHARGERS

KEEP ON GOING!

EVEN WHEN PART OF THE TEAM IS MISSING...

LiFETech® Modular

SERVICE MANUAL

HAWKER®

Lifetech® Modular

The modular range is based on the modular concept made of universal power bricks allocated into different cabinet sizes in order to achieve the required output power.

For 1-phase the module is a 1kW power AC DC converter

TC1= 1-phase 230 Vac	
VDC	Ampere DC/ module
12	35A
24	35A
36/48	25/18A

The modules are installed into:
1 bay cabinet: stand alone 1kW charger

3 bay cabinet up to 3KW
6 bay cabinet up to 6kW (future development)

Stand alone 1kW charger

3 bay cabinet (for chargers up to 3kW)

6LA20650	12V 1kW module	
6LA20629	24V 1kW module	
6LA20635	36/48V 1kW module	

For 3-phase the module is a 3.5kW Power AC DC converter with the following outputs

TC3 = 3-phase 400 Vac	
VDC	Ampere DC/ Module
24/36/48	70/65/60A
72/80	40/36A

6LA20651	24/36/48V 3.5kW module	
6LA20656	72/80V 3.5kW module	

CHARGE PROFILE CODES

The following table describes the codes to be used in new charger part numbers to indicate the charging profile of the charger

Technology	Charging profile	Display on charger	SAP Code
PzS/PzB/PzM	Slow charge	LOWCHG	PROFILESLOW
PzS/PzM/PzQ	Heavy duty	HDUTY	22
PzS/PzB/PzM	Normal Duty (std flooded)	STDWL	21
PzS/PzM/PzQ	Airmix*	PNEU	4
GEL	Gel	GEL	2
XFC	XFC Blocs**	XFCBLC	5

***Not available on the 1-phase stand alone charger**
****Specific part number for XFC charger must be used**

PROFILE DESCRIPTION

HDUTY	Heavy Duty Profile (IONIC). Auto battery capacity matching with continuous current loops. Default CF 1.15, no need to set CF but available if required.
LOWCHARGE	Used to charge batteries >10h charging rate between 0.13 and 0.09
GEL	IUI profile, 0.17 to 0.22 C, Auto battery capacity by loops, final current 1%, CF = 1.06. Can manually set battery capacity if required.
AGM	IUI profile, 0.2 C, Auto battery capacity by loops final current 2.2%, finish time limitation. Can manually set battery capacity if required.
STDWL	Standard (Water Less®) profile. IUI profile 0.2 C, finish CF = 1.10 final current 5% C, Auto battery capacity matching with phase 1 loop. Can manually set battery capacity if required.
PNEU	Pneumatic / Airmix profile. Must have Air kit fitted to use this profile. IUI profile, 0.22 C, Auto battery capacity by loops, final current 5%, finish CF = 1.07, Can manually set battery capacity if required.
XFCBLC	For XFC Block product. Only visible after setting XFCBLC menu item to ON (all other profiles invisible). Do NOT use for XFC2V product, Profile IUI, 0.5 C, finish time limitation, with refresh

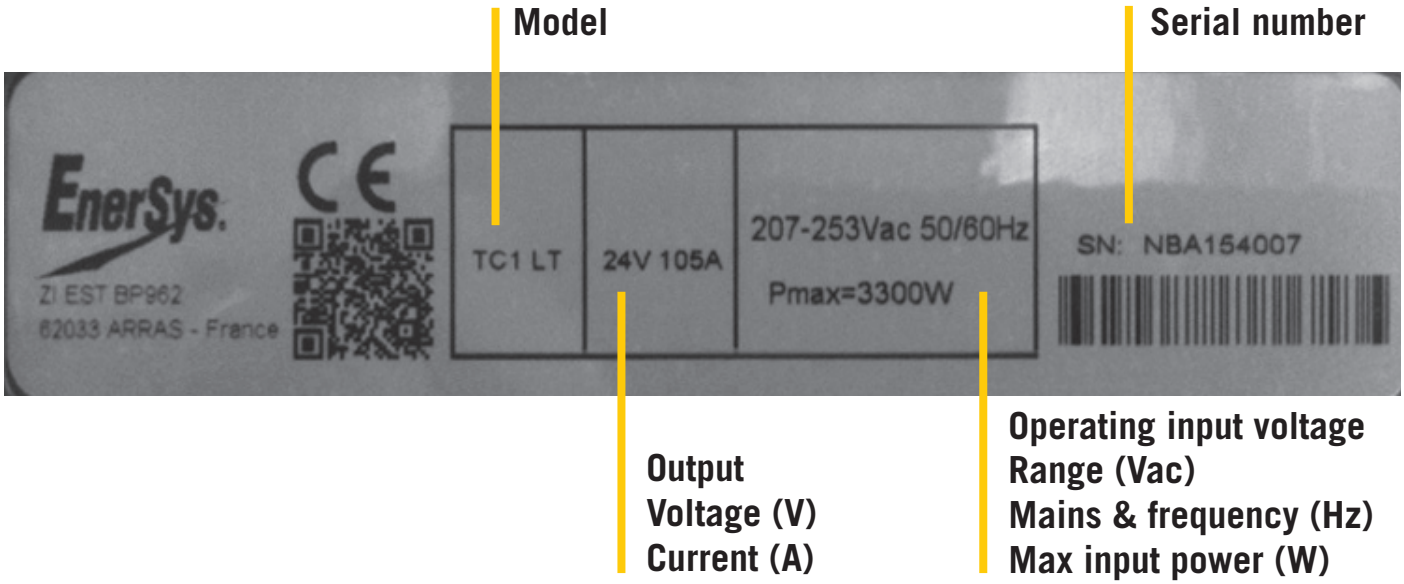
IMPORTANT SAFETY INSTRUCTIONS

1. This manual contains important safety and operating instructions. Before using the battery charger, read all instructions, cautions, and warnings on the battery charger, the battery, and the product using the battery.
2. This charger has been designed to only charge flooded, lead-acid batteries. Read and understand all setup and operating instructions before using the battery charger to prevent damage to the battery and to the charger.
3. Do not touch non-insulated parts of the output connector or the battery terminals to prevent electrical shock.
4. During charge, batteries produce hydrogen gas which can explode if ignited. Never smoke, use an open flame, or create sparks in the vicinity of the battery. Ventilate well when the battery is in an enclosed space.
5. Do not connect or disconnect the battery plug while the charger is on. Doing so will cause arcing and burning of the connector resulting in charger damage or battery explosion.
6. Lead-acid batteries contain sulfuric acid which causes burns. Do not get in eyes, on skin, or on clothing. In cases of contact with eyes, flush immediately with clean water for 15 minutes. Seek medical attention immediately.
7. Only factory qualified personnel can service this equipment. De-energize all AC and DC power connections before servicing the charger.
8. The charger is not for outdoor use.
9. Do not expose the charger to moisture. Operating conditions should be 0° to 45° C; 0 to 70% relative humidity.
10. Do not operate the charger if it has been dropped, received a sharp hit, or otherwise damaged in any way.
11. For continued protection and to reduce the risk of fire, install chargers on a floor of non-combustible material such as stone, brick, or grounded metal.

WARNING: The shipping pallet must be removed for proper and safe operation.

TECHNICAL INFORMATION

The nameplate, located on the outside of the charger, should be used to check this application before installation.



PART NUMBER

UK or standard European input plug can be selected by using different part numbers.

	Type	Model	Mains	HAWKER p/n	
				Non UK	UK
1-phase	TC1 LTM 12V 1kW	SA	1 x 230V	128PM1MLT1B12	128PM1MLT1B12UK
	TC1 LTM 24V 1kW	SA		128PM1MLT1B24	128PM1MLT1B24UK
	TC1 LTM 24V 2kW	3B		128PM3MLT2B24	128PM3MLT2B24UK
	TC1 LTM 24V 3kW	3B		128PM3MLT3B24	128PM3MLT3B24UK
	TC1 LTM 36/48V 1kW	SA		128PM1MLT1B48	128PM1MLT1B48UK
	TC1 LTM 36/48V 2kW	3B		128PM3MLT2B48	128PM3MLT2B48UK
	TC1 LTM 36/48V 3kW	3B		128PM3MLT3B48	128PM3MLT3B48UK
	TC1 LTM 12V 1kW XFC	SA		128XM1MLT1B12	128XM1MLT1B12UK
	TC1 LTM 24V 1kW XFC	SA		128XM1MLT1B24	128XM1MLT1B24UK
	TC1 LTM 24V 2kW XFC	3B		128XM3MLT2B24	128XM3MLT2B24UK
	TC1 LTM 24V 3kW XFC	3B		128XM3MLT3B24	128XM3MLT3B24UK
	TC1 LTM 36/48V 1kW XFC	SA		128XM1MLT1B48	128XM1MLT1B48UK
	TC1 LTM 36/48V 2kW XFC	3B		128XM3MLT2B48	128XM3MLT2B48UK
	TC1 LTM 36/48V 3kW XFC	3B		128XM3MLT3B48	128XM3MLT3B48UK

INSTALLATION

WARNING: The shipping pallet must be removed for proper and safe operation.

Location

For maximum trouble-free service, choose a location which is free of excess moisture, dust, and corrosive fumes. Also, avoid locations where temperatures are high or where liquids will drip on the charger. Do not obstruct the ventilating openings or the space under the charger.

Mounting wall cabinet chargers

The charger must be mounted on a wall or stand in a vertical position. The lower part of the charger must be at least 60 cm from the ground and/or the charger below and the upper part 90 cm from the ceiling. The minimum distance between two chargers must be 30 cm. The charger will be installed with the bracket supplied. See the Wall Mounting Dimensions section at the end of this manual for proper bolt pattern.

NOTE

Ambient temperature at all levels cannot exceed 45°C.

Electrical connections

To prevent failure of the charger, be sure it is connected to the correct line voltage.

Connecting Input Power

WARNING: Make sure the power to the charger is OFF and the battery is disconnected before connecting the input power to the terminals of the charger.

Connect the input power to the appropriate terminals, including ground. Follow your local electrical or National Electric Code in making these connections.

AC connection

The user must provide suitable branch circui-protection and a disconnect method from the AC power supply to the charger to allow for safe servicing.

Plug polarity

The charging cable is connected to the DC output of the charger with the positive lead marked RED. The output polarity of the charger must be strictly observed when connecting to the battery (read warning above). Improper connection will open the DC fuse.

Grounding the charger

DANGER: Failure to ground the charger could lead to fatal electric shock. Follow national electric code for ground wire sizing.

DESCRIPTION OF OPERATION

General

EnerSys Lifetech Modular chargers can easily be set to charge flooded and sealed lead-acid batteries (including XFC blocs) within the appropriate range of the cell and ampere-hour rating.

Beginning the charge

When a battery is connected to the charger, the control board senses voltage and after a 15 second delay, the charger starts.

Charging

Charging current is determined by the battery voltage and interaction of the charger. As the battery charges, the LCD display will output various charge parameters including the percentage of battery capacity.

AC power fail

If the AC power fails with a battery connected to the charger during a charge cycle, the charger will reset and start a new charge cycle when power is restored. All charger settings as well as the time and date are preserved.

Series charging

In series charging, the voltages of both batteries add up and must match charger's nameplate rating. The charger's ampere-hour rating must be equal to each of the batteries' ampere-hour rating. Charge cycle will not start unless both batteries are connected.

GLOSSARY

Charging profile

The charging profile defines the rate of current charge over time. The charger adapts to the battery's age and level of discharge.

Controlling the overcharge coefficient, whatever the battery's discharge level, reduces the amount of electricity consumed.

Equalization charging

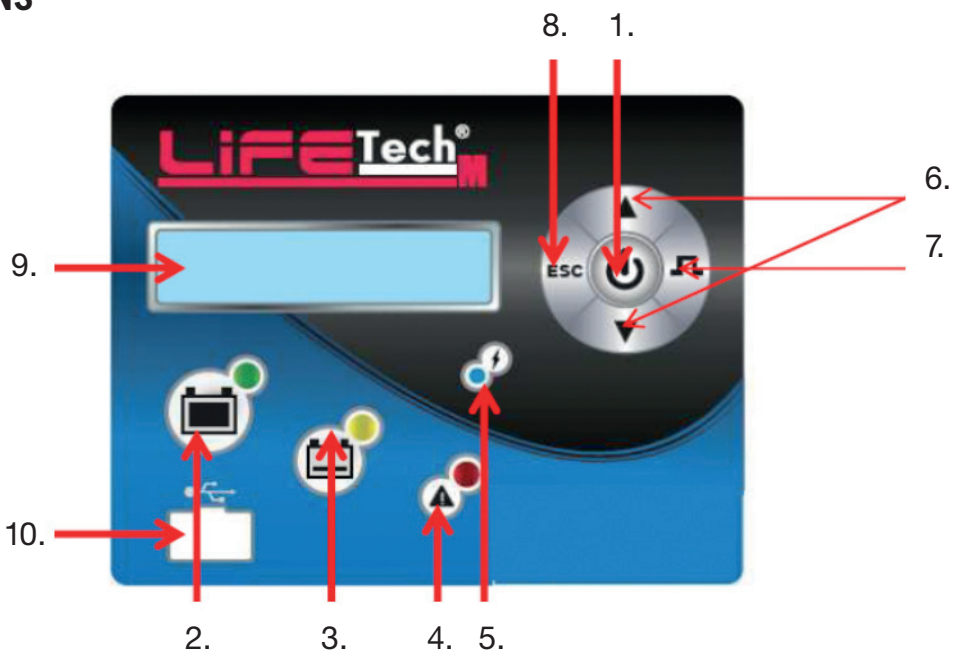
Equalization charging, performed after normal charging, balances the electrolyte densities in the battery's cells.

Refresh charging

Refresh or maintenance charging enables the battery to be maintained at maximum charge all the time that it is connected to the charger.

OPERATING INSTRUCTIONS

Control panel



	Function	Function
1.	Start Stop charge	Select active menu
2.	Battery available	–
3.	Battery in charge	–
4.	Fault	–
5.	AC supply ON (light)	AC supply OFF
6.	Navigation buttons	Return to top of list (press for 2 sec)
7.	Start an equalization	Access a sub menu
8.	Access a sub menu	Close windows
9.	Shows details (refer to LCD display par.)	–
10.	Download memories	Upload firmware

MENU ACCESS

When the charger is idle, press and hold <ESC>, the main menu is then displayed. The main menu is automatically exited after 60 seconds of inactivity or can be exited voluntarily by pressing the <ESC> button.

Main menu

All menus are accessed from main menu; a detailed description of each menu is included in the next sections of this manual. The menus that require a password are not displayed until the correct password has been entered.

The menus provide access to the following functions:

- View last 200 charging cycles (memorizations menu).
- View of faults, alarms, etc. (status menu).
  USB functions (USB menu).
- Setting of date, language and others (parameters menu).
- Management of password (password menu)

MEMO

Memorizations display screen

The charger can display the details of the last 200 charge cycles.The display shows here that charges have been stored in memory (title line). Memo 1 is the latest charge memorized. After memorizing the two-hundredth charge, the oldest record is deleted and replaced by the next oldest.

Displaying a charge cycle

Proceed as follows:

1. Select a record (Memo x) using the ▲ /▼ buttons.
2. Display the first history screen by pressing Enter.
3. Display the second history screen by pressing ▼.
4. Return to the main menu by pressing Esc.

The charge history is displayed; use the ▲ /▼ to scroll through the parameters.

Memorization data

Memo	Information	Memo	Information
Profile	Selected profile	U end	Battery voltage at end of charge (Vpc)
Capacity	Rated battery capacity (AH)	I end	Current at end of charge
U batt	Rated battery voltage (V)	Chg time	Time of the charge cycle (minutes)
Temp	Battery temperature at start of charge (F)	AH	Amp-hours returned during charge cycle
% init	State of charge at start of charge (%)	SoC	Start of charge date and Time
U start	Battery voltage at start of charge (Vpc)	DBa	Battery disconnect date and time

STATUS

This menu displays the status of the charger's internal counters (number of normal and partial charges, faults by type, etc.).

STATUS SCREEN

Status	Information
Charge	Total number of charges. Corresponds to the total of normally terminated charges and charges terminated with or by faults.
	Number of charges normally terminated.
	Number of charges terminated abnormally.
TH	Number of charger temperature faults.
DF1 etc.	Number of faults recorded by the charger (see Fault codes).

USB

This menu provides access to the USB function. The charger can store charging data in a USB memory and update software.

Record memo

This function enables the storage of charge memorizations and the status data. The file, in CSV format (useable with Memoreport or Excel), will be stored in the USB stick under the name: MDDDHHMM.CSV with

M: for Memorization
DDD: Day of the year
HH: Hour of file creation
MM: Minute of file creation

Update software

Update chargers internal software. The software is provided by EnerSys.

PARAMETERS

Date/time

Sets date and time of the charger. The clock has a battery backup which will preserve the time when power to the charger is off.

Daylight savings

Enable or disable automatic clock adjustment for daylight savings time. When enabled, seasonal time change is adjusted automatically. The charger must be powered up at the time of the change for it to take effect.

Language

Selects the language displayed in the menus.

Region

Select the format for date, metric (EU) or imperial (US) units for temperature, length, and cable gauge.

Display

Set screen saver function.

Contrast

Modifies the display contrast level (20 to 39).

Screen saver

Enable or disable the screen saver function.

Delay

Set the time the screen stays illuminated. The delay time is ad justable in minutes up to 1hour and 59 minutes.

PASSWORD

This is where the password is entered to gain access to service level menus by authorized EnerSys service personal. The default password is 0099.

Access

On the main menu, select password and then press <ENTER>. Use the four ESC, EQ, ▼ and ▲ pads to select the numbers corresponding to your password. Then select configuration.

CONFIGURATION

This menu allows for configuration of the charger. Password is required to view this menu.

Required setup – the following parameters must be set including date and time:

Parameters \ daylight savings	EUROPE
Parameters \ display \ screen saver	ON
Parameters \ display \ time	00H15
Parameters \ serial number	PER ORDER
Configuration \ charge \ charge delay \ type	OFF
Configuration \ charge \ charge delay \ value hour/delay	00H00
Configuration \ battery \ cap manu auto	AUTO
Configuration \ equalization \ time	06H00
Configuration \ equalization \ delay	00H00
Configuration \ equalization \ frequency	NEVER
Configuration \ equalization \ refresh on/off	OFF

(default factory ship configurations)

CHARGE

Profile

Function to select right charging profile for the application: LOWCHARGE, HDUTY, STDWL, GEL, VRLA, XFC BLOC, PNEU
AUTO START
ON: Charger will start when the battery is connected
OFF: Need to press the start button to start the charging process

Charge delay

Type - sets OFF, Delay, or Time of day.
Value hour delay - sets the amount or time of day for the delay (00:00 to 24:00).

Delay

Start of charge is delayed for the amount of time stored in value (0 to 24 hours).

Time of day: charge will not start until the time of day stored in value (24 hour format).

Daily charge
On/Off – Sets daily charge on or off.
Daily Chg Start – Sets daily charge start time.
Daily Chg End – Sets daily charge end time.

Floating

On/Off- Sets float mode on or off.
Current – Sets float current.
Voltage – Sets float voltage.

This feature can be turned ON or OFF depending on the application. A float charge at the end of standard charge is intended to compensate for consumption by the truck electronics that are left on when truck is not used (typically AGV). The parameter Voltage is in mVpc (millivolts per cell) determines the maximum float voltage. The parameter Current defines the current output during float, the current will automatically decrease to keep the battery voltage at the maximum defined by the Voltage parameter.

Battery rest

Set battery rest time in hours.

Conditional charge

Set conditional charge %. The charger will only commence the charge if the battery has reached the limit of depth of discharge (DoD) of more than x%. For example if the user wants to charge the battery only if it is discharged more than 30%, the parameter 30 has to be entered in the conditional charge. The 0 value disables the function.

Refresh On/Off

Sets refresh mode on or off.

Imax

Sets charger maximum output current.

BATTERY

Cap Manu/Auto

When in Ionic mode, the charger can estimate the capacity of the connected battery automatically “Auto” or the charger will use the capacity entered manually “Manu” in the Capacity menu.

Capacity

Battery AH capacity used by the charger (must be set to “Manu” for Ionic profile) to determine start and finish rates.

Battery temperature

This parameter adjusts the regulation voltages on the charging profile (values between –15°C / 5°F and 65°C / 149°F).

Cell size

Sets number of battery cells. 6, 12, 18, 24, 36 and 40 cells (according to the charger).

CABLE

Length

Select the length of DC cables from the charger to the battery terminals in 1m to 15m.

Section

Sets the DC cable gauge: from 6 to 70 mm^2.

EQUALIZATION

Current

This defines the equalization or desulphation current for a manual start. Manual equalization is disabled during opportunity cycles.

Time

Sets the equalization time from 1 to 48 hrs.

Delayed start (delay)

Sets the delay between the normal charge and the equalization charge from 0 hr to 23 hrs.

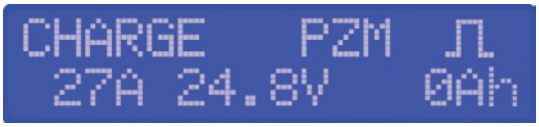
Frequency

Selects one or several periods for carrying out the equalization charge. The user can select one or several days per week.

CHARGING THE BATTERY

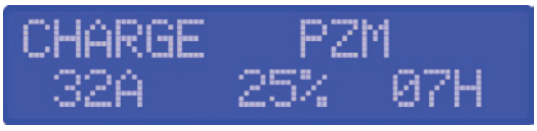
Initiating charging

The display in idle will show the WAIT message. Connect the battery. If default setting (autostart ON) then the charge will start automatically else press the start stop button. The display will show 3 different screens alternating:



Line 1: charge mode / charging profile /
equal. symbol (if selected) or no blocking fault
Line 2: charging current/ total voltage / Ah+

Line 1: charge mode / charging profile /
equal .symbol (if selected) or no blocking fault
Line 2: charging current / voltage / cell / charging time



Line 1: charge mode / charging profile /
equal. symbol (if selected) or no blocking fault
Line 2: charging current / % state of charge /
estimated remaining time

COMPLETION OF CHARGING

1. The LCD screen will give you the message of availability (AVAIL)

The battery is charged and ready to use.

2. STOP the charge and disconnect the battery.

To stop the charge press the Stop/Start button. Never disconnect the battery during charge without stopping the charging process. This could lead to dangerous sparks or to charger damage.

3. Completion of charging without equalization

The green 'charging complete' light is illuminated and the message AVAIL is displayed. The display shows, in alternation:

- The charging time taken.
- The number of Ah recharged
- Non blocking faults if present

4. Completion of charging with equalization

Manual equalization only concerns vented lead/ acid batteries. It will be initiated manually or automatically through the menu. All other technologies will have an automatic preset equalization time.

A programmed equalization will start automatically after the end of the charge. The launch of the equalization and its duration can be adjusted throug the menu. The display indicates the date or remaining time to start the equlization:

Equalization mode auto
Days of the week (the symbol below indicates when the equailzation is programed (e.g. Saturday and Sunday)

To start manually an equalisation charge at the end of the charge (AVAIL display), press the equalization button.

To force manual equalization when the charger is switched off, keep pressed the equalization button (right button) and contemporary click the On/Off (only charging profiles for flooded).

During equalization the following message is displayed:

During equalization
Line 1. mode equal. / current/total voltage/remaining time

5. Completion of charging with float

If the Float function has been selected, the screen will show the message floating:

During floating
Line 1. current / voltage per cell

LCD FAULT MESSAGES

Fault	Function	Function
No display and Blue LED off	No mains supply.	Check the power supply and the input fuse(s).
DF CURRENT	Charger fault	–
DF1*	Charger fault	Check the power supply voltage.
DF2*	Charger fault.	Check that the battery is correctly connected (that the cables are not reversed) and check the output fuse
DF3*	Unsuitable battery.	Battery voltage too high or too low. Connect the correct battery to the charger
DF4	The battery has been.discharged more than 80% of its capacity.	Charging continues
DF5	Battery requires inspection.	Check the charging cables (cross-section too small), the terminals (oxidization, not tight) and the battery (defective cells).
DF7	Pneumatic mixing air circuit fault (the red light flashes).	Check the air circuit (pump, tubing).
TH*	Thermal fault resulting in interruption of charging.	Check that the fan(s) is (are) working correctly and/or that the ambient temperature is not too high or whether there is poor natural ventilation to the charger.
MOD TH	Alternating with charge parameters - one or more module in thermal fault - the charge process continues - the faulty module(s) is (are) displayed + red led flashing	Check that the fan(s) is (are) working correctly and/or that the ambient temperature is not too high or whether there is poor natural ventilation to the charger. If all modules are in thermal fault then a TH* fault will follow.
MOD DFC	Alternating with charge parameters - one or more module in DF1 fault - the charge process continues - the faulty module(s) is (are) displayed + red led flashing.	Check power supply. If all modules in DF1 fault a DF1* error will follow (blocking fault)
DEF ID	Blocking fault - one or more module are not compatible with the charger configuration (for example 24V charger with one 48V module). This can happen if the user replaces one module with another one with a different voltage setting.	Use correct module.

*** A blocking fault preventing charging from continuing.**
Refer to the Technical Characteristics sheet joined to the charger.

MAINTENANCE & SERVICE

CAUTION:
There are dagerous voltages within the battery charger cabinet. Only qualified personnel should service this battery charger.

The charger requires a minimum of maintenance. Connections and terminals should be kept clean and tight. The unit (especially the module heatsink and fan) should be periodically cleaned with low pressure air to prevent any excessive dirt build up on components. Care should be taken not to bump or move any adjustments during cleaning. Make sure that both the AC lines and the battery are disconnected before cleaning. The frequency of this type of maintenance depends on the environment in which this unit is installed.

TESTING OF COMPONENTS SINGLE PHASE

Only qualified personnel should service this battery charger.

IMPORTANT: Disconnect battery and turn AC power OFF before servicing.

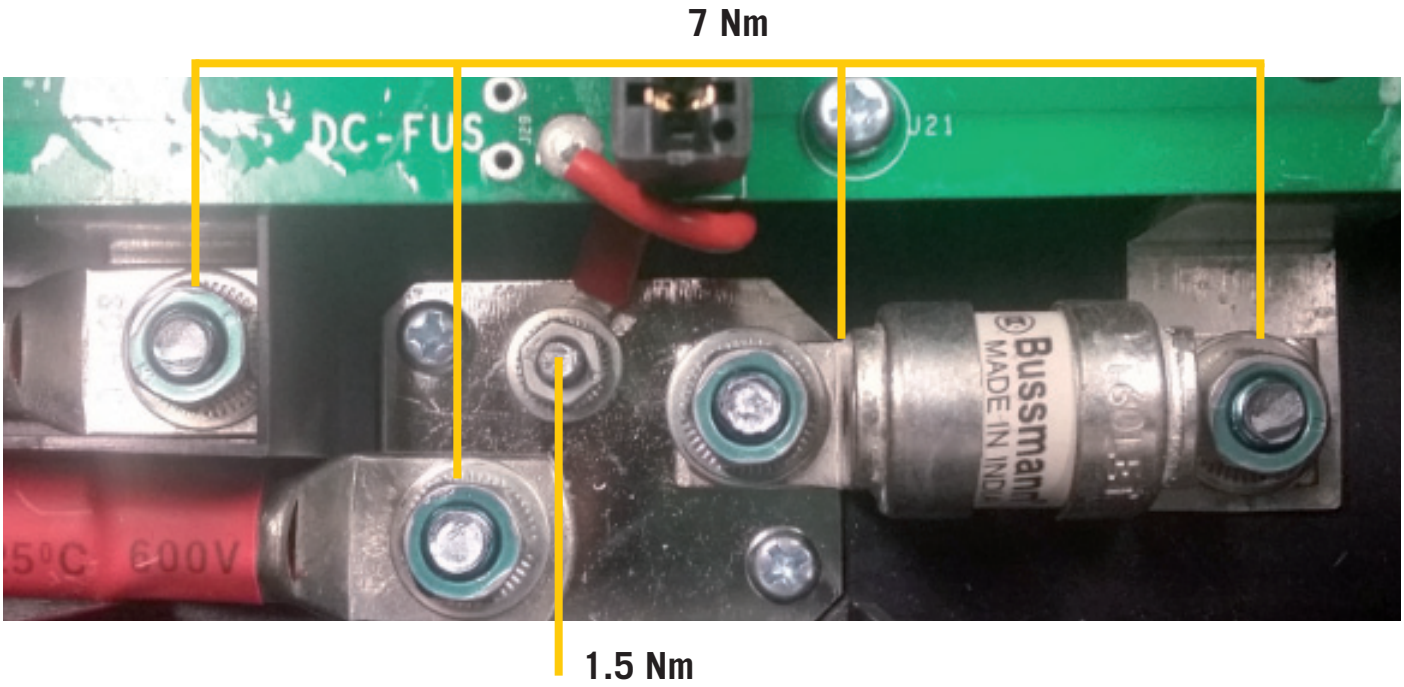
1. DC Output fuse

Disconnect the AC power and the battery before opening the door. Check of output fuse is carried out with the multimeter in Ω position.

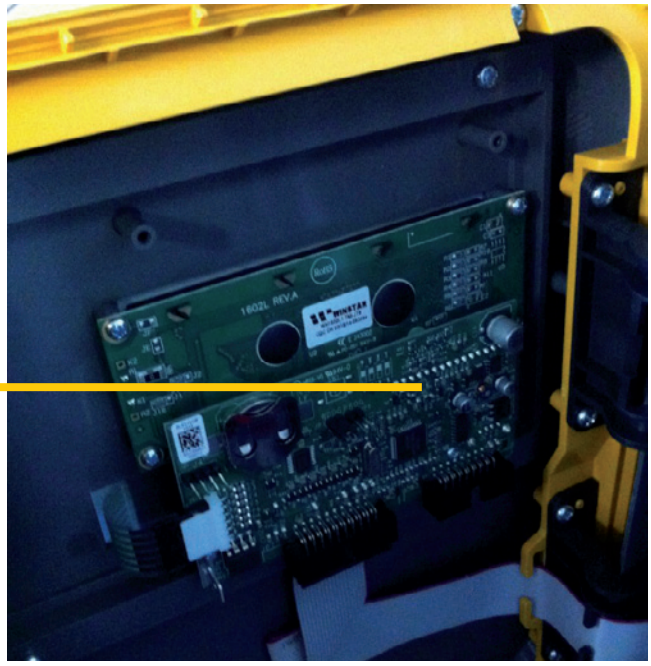
0 Ω = fuse Ok
Infinity = replace the fuse

Part number : 6LA10465= DC fuse

DC output fuse & DC cables - Torque M6 to 7Nm and M4 to 1.5Nm



2. Display board and door



Display and control board

CAUTION: Use an anti-static wrist strap when removing and replacing circuit board assemblies.

Part	Part No.	Description
Door kit	3542968	Door kit 1x1kW LT
Door kit	3543015	Door kit 3x1kW LT

If a fault on the display, control board or external door occurred replace the full door with kit.

REMOVAL

Please follow these steps to remove a display board.

1. Touch your finger to a ground to remove any static charge.
2. Unplug all connectors from the display board. Some connectors maybe secured by screws.
3. Unscrew the hinges on the side.
4. Remove the door.

REPLACEMENT

1. Align the door kit to the in proper position.
2. Reallocate screws in on the side hinge (torque to 1 Nm).
3. Reconnect the ribbon cable(s).

ENSURE TO PROGRAM THE CHARGER CORRECTLY FOR THE APPLICATION.
THE CHARGER SERIAL NUMBER HAS TO BE SET UP IN THE MENU.

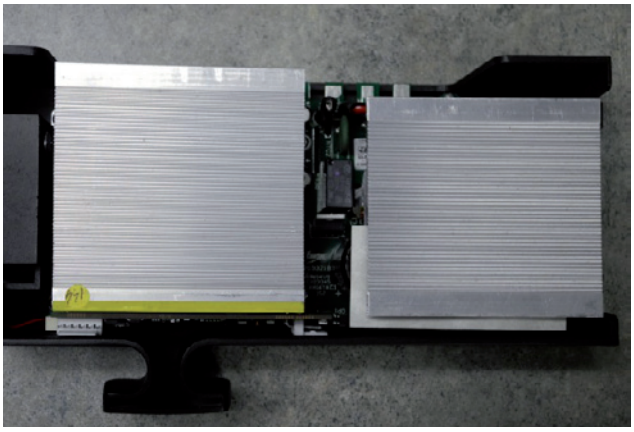
3. Module test and replacement

Operation	LED
Initialization sequence	Rolling green/red alternatively for 6 seconds
Module in stand-by	Short green pulses
Module in operation	Green fixed
Fault	Red ON or flashing – refer to charger display

6LA20650	12V 1kW module	
6LA20629	24V 1kW module	
6LA20635	36/48V 1kW module	

1. Unplug AC plug and DC from battery.
2. Wait till blue light on the screen is off.
3. Touch your finger to a ground to remove any static charge.
4. Remove top and bottom screw.
5. Pull the module out from its guide.
6. Place the new in.
7. Screw the top and bottom screw back.

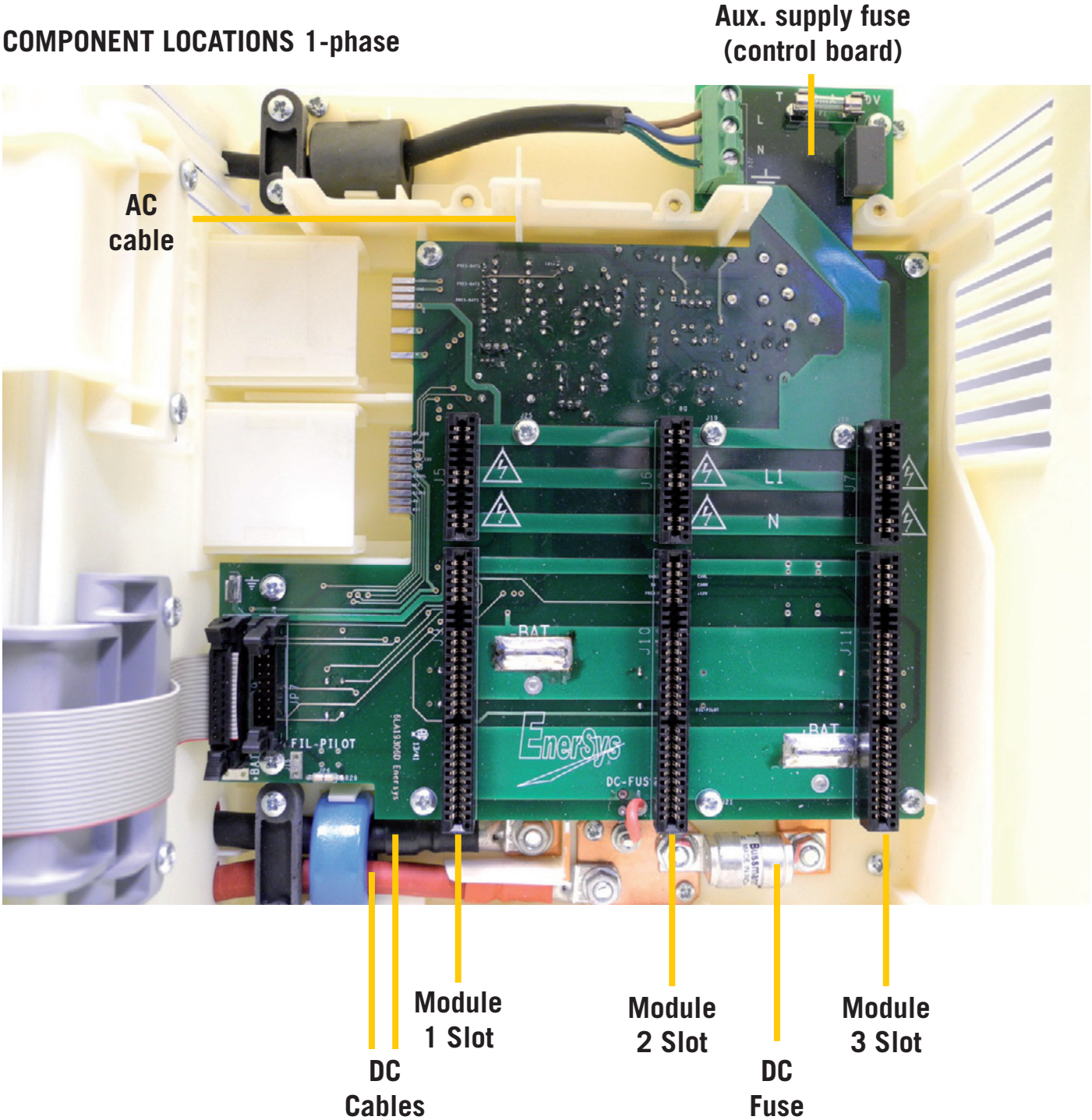
Module bottom and fan



Module heatsinks

Every module has a unique serial number to be used for eventual claims

COMPONENT LOCATIONS 1-phase



TESTING OF COMPONENTS 3-phase

Only qualified personnel should service this battery charger.

IMPORTANT: Disconnect battery and turn AC power OFF before servicing.

1. AC input cabinet fuse

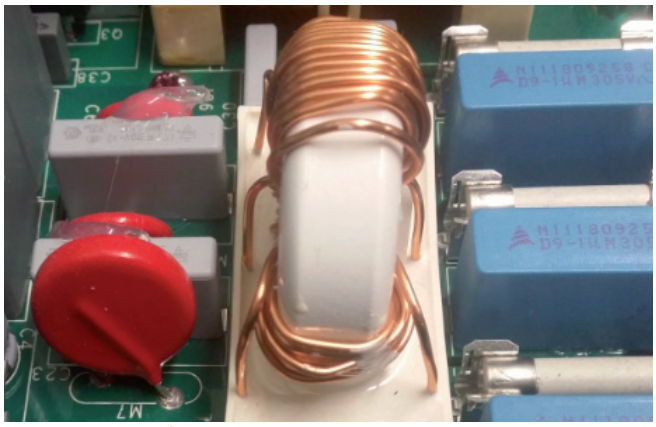
1. Disconnect both mains and battery from the charger.
2. Remove the top cover of the charger.
3. Replace the faulty fuses.
4. Replace the top cover.
5. Test the charger.

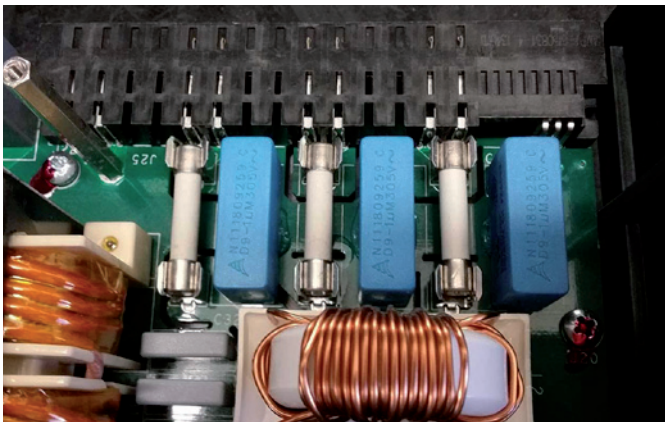
2 and 4-bay cabinets = 30A time delayed fuses (10x38) 6-bay cabinet = 40A time delayed fuses (14x51)	Refer to Spare Part hub for part numbers

2. AC input module fuse

DC fuse Bussmann FWH-010A6F	3553651

1. Disconnect both mains and battery from the charger.
2. Open the charger door.
3. Unscrew and extract the faulty module.
4. Remove the top lid of the module.
5. Test the voltage across the M7 MOV with a multimeter (diode position).
6. Replace the faulty fuses located as in picture.
7. Replace the top lid.
8. Replace the module.
9. Test the charger.





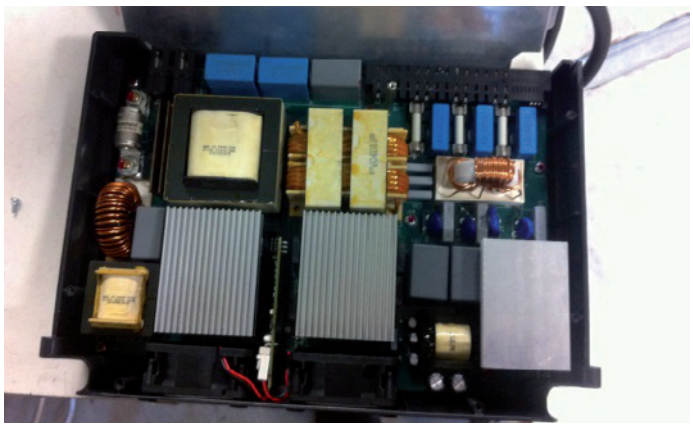
~0.7V => replace the faulty fuse(s)
0.0 to 0.55V => replace the module

3. DC Fuse

DC fuse Bussmann#125LET (24/36/48V module)	3553635
DC fuse Bussmann#80LET (72/80V module)	3553643

Every module has its own output fuse. If one module fails due to a burned fuse (refer to internal LEDs meaning above):

1. Open the front door of the charger.
2. Unscrew the faulty module and extract it.
3. Remove the metal cover on the side.
4. Replace the DC output fuse – torque to 7Nm.
5. Replace the metal cover and screw it back.
6. Replace the module in the charger.
7. Test the charger.

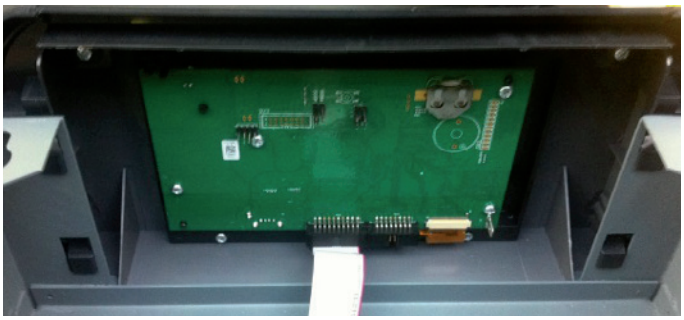


4. Display board and door

Kit display	2/4 bay IQ	3553579
Kit display	6 bay IQ	3554201

1. Remove the top lid of the charger by unscrewing the two main top screws and slide of.

2. Disconnect the ribbon cable.



3. Remove bottom screws of the display panel.
4. Remove the front panel.
5. Reconnect the new panel by screwing back all the screws and reconnecting the ribbon cable.

ENSURE TO PROGRAM THE CHARGER CORRECTLY FOR THE APPLICATION.
THE CHARGER SERIAL NUMBER HAS TO BE SET UP IN THE MENU.

5. Module test and replacement

Operation	LED
Initialization sequence	Rolling yellow/green/red alternatively for 6 seconds
AC power OFF or charger idle mode ON or module in fault	Yellow OFF
In all the following cases, yellow LED on	
Module in stand-by	Short green pulses
Module in operation	Green fixed
Fault	Red or flashing – refer to charger display

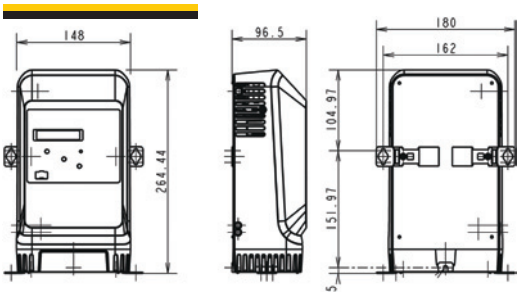
6LA20651	24/36/48V 3.5kW module	
6LA20656	72/80V 3.5kW module	

1. Unplug AC plug and DC from battery.
2. Wail till blue light on the screen off.
3. Touch your finger to a ground to remove any static charge.
4. Open the charger door.
5. Unscrew the module.
6. Pull the module out from its guide.
7. Place the new one in (ensure to use an appropriate module).
8. Screw the top and bottom screw back.

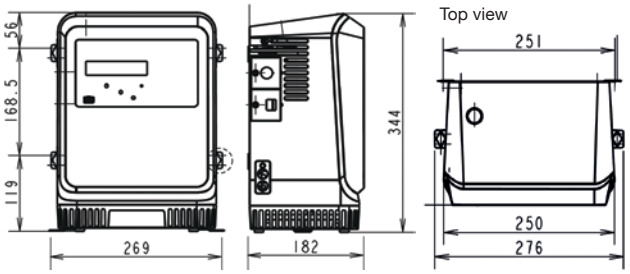
TECHNICAL SPECIFICATION - SINGLE PHASE

Specifications	Units	Stand Alone 1kW **			2kW		3kW	
Battery voltage		12V	24V	36/48V	24V	36/48V	24V	36/38V
Nominal input voltage	Vac	230V +/- 10% / 1ph						
Frequency	Hz	50/60						
Max current draw @ 230Vac	Aac	2.4	4.8	5.1	9.6	10.2	14.4	15.3
AC input cable section	mm²	3 x 1.0			3 x 1.5			
AC input cable length	m	1.5						
Max output current @ 230Vac	Adc	36	36	25/18	72	50/36	108	75/54
Battery cables section	mm²	6			25			
Battery cables length	m	3						
IP protection		IP21						
Operating temperature	°C	0°C to +45°C						
Power factor		0.99						
Idle mode	W	≤10						
Display		2 line LCD						
Weight	kg	2.4			6.7		7.7	
Dimensions (HxWxD)	mm	264 x 148 x 96.5 (no brackets)			344 x 250 x 182 (no brackets)			
Weight with airmix	kg	** Not avalable on stand alone 1kW			10.0		11.0	
Dimensions (HxWxD) with airmix	mm	** Not avalable on stand alone 1kW			435 x 286 x 185 (no brackets)			
Cabinet		1 bay stand alone			3 bay (2 modules)		3 bay (3 modules)	

1 bay stand alone



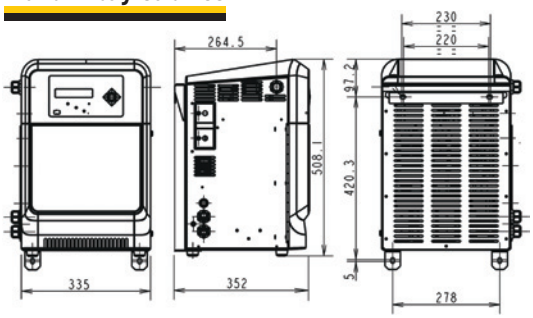
3 bay cabinet



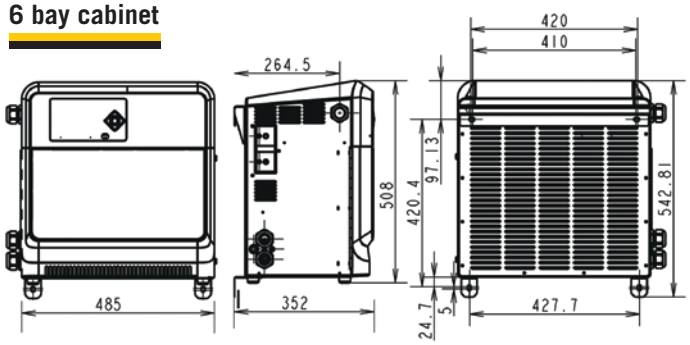
TECHNICAL SPECIFICATION - THREE PHASE

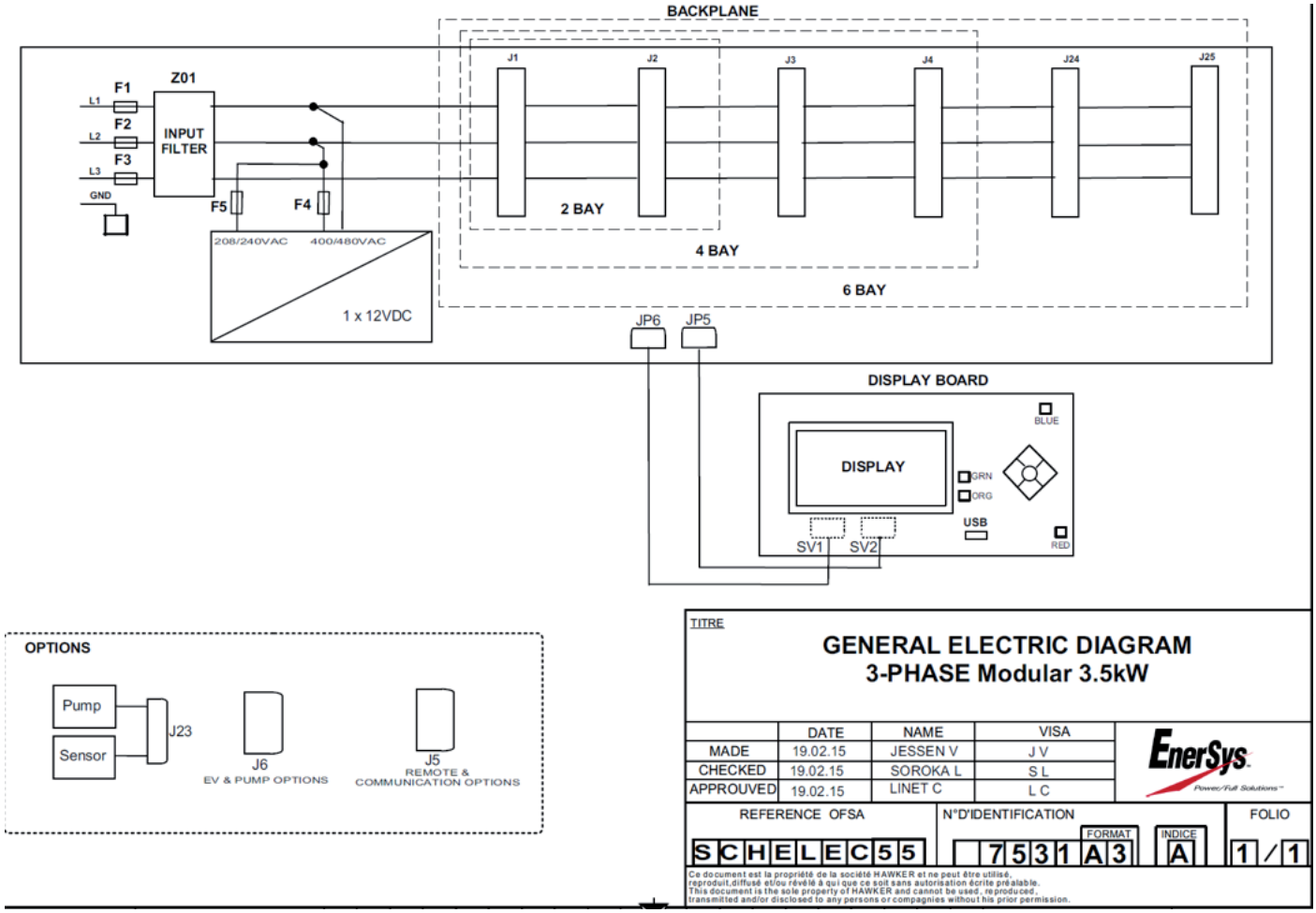
Specifications	Units	3.5kW		7kW		10.5kW		14kW		17.5kW		21kW	
Battery voltage		24/36/48V	72/80V	24/36/48V	72/80V	24/36/48V	72/80V	24/36/48V	72/80V	24/36/48V	72/80V	24/36/48V	72/80V
Nominal input voltage	Vac	400V +/- 10% / 3ph											
Frequency	Hz	50/60											
Max current draw @ 400Vac	Aac	5.6	5.6	11.2	11.2	16.8	16.8	22.4	22.4	28.0	28.0	29.8	33.6
AC input cable section	mm²	4 x 2.5				4 x 4.0				4 x 6.0			
AC input cable length	m	2											
Max output current @ 400Vac	Adc	70/65/60	40/36	140/130/120	80/72	210/195/180	120/108	280/260/240	160/144	320/320/300	200/180	320/320/320	240/216
Battery cables section	mm²	35				70				95			
Battery cables length	m	3											
IP protection		IP21											
Operating temperature	°C	0°C to +45°C											
Power factor		0.95											
Idle mode	W	≤10											
Display		2 line LCD											
Weight	kg	26.0		29.5		33.5		37.0		44.5		48.0	
Dimensions (HxWxD)	mm	508 x 335 x 352								508 x 485 x 352			
Weight with airmix	kg	28.0		31.5		35.5		39.0		46.5		50.0	
Dimensions (HxWxD) with airmix	mm	508 x 335 x 352								508 x 485 x 352			
Cabinet		2 bay (1 module)		2 bay (2 modules)		4 bay (3 modules)		4 bay (4 modules)		6 bay (5 modules)		6 bay (6 modules)	

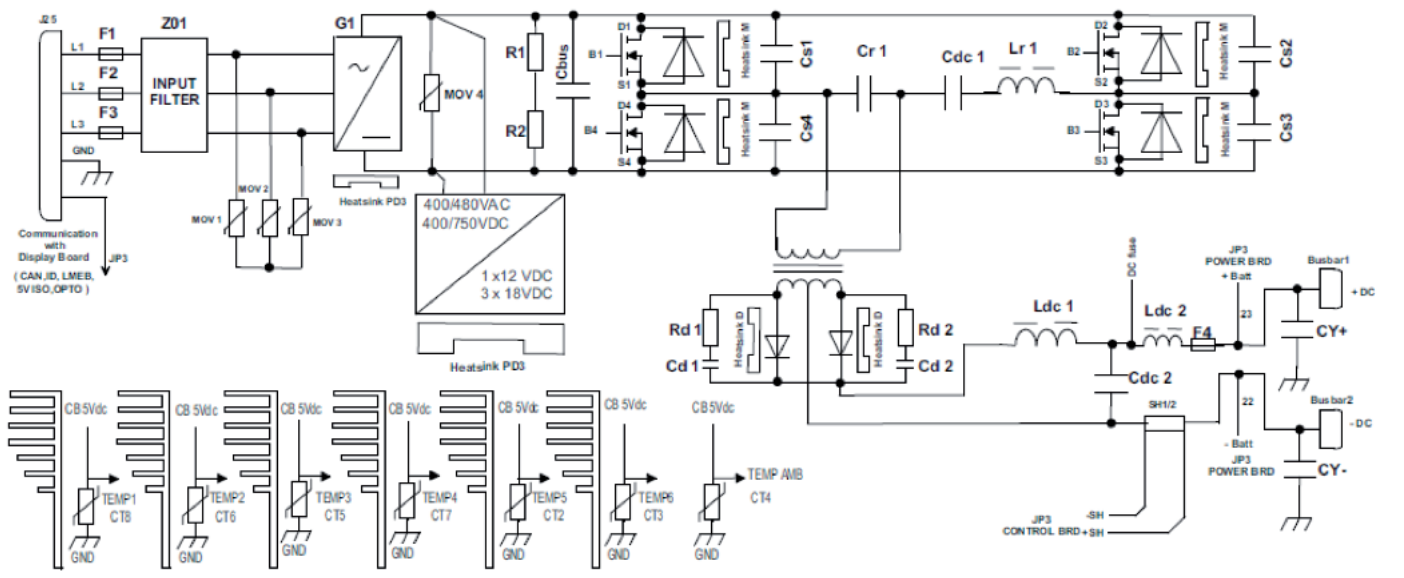
2 and 4 bay cabinet

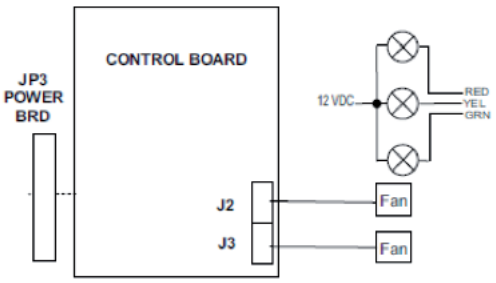


6 bay cabinet









TITRE
GENERAL ELECTRIC DIAGRAM
3-PHASE Power Module 3.5kW 400/480V
DATE
NAME
VISA
MADE
19.02.15
JESSEN.V
J V
CHECKED
19.02.15
SOROKA L.
S L
APPROUVED
19.02.15
LINET C.
L C
REFERENCE OFSA
SCHELEC54
N°D'IDENTIFICATION
7530
FORMAT
A3
INDICE
A
FOLIO
1/1

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