

Chloride® FP50R

Product Brochure





Chloride® FP50R Industrial Rectifier - Charger

The Chloride® FP50R range of industrial rectifiers and chargers has been designed to provide a simple, fast and cost effective solution for DC power requirements. Its 100% industrialised design based on configurable sub-assemblies reduces costs and manufacturing time to meet even the most urgent requirements.

Overview of the range

The Chloride® FP50R range is available over a wide range of input voltages in single phase from 220 to 240Vac and three phase from 3x208Vac to 3x480Vac. It can supply from 10A to 250A at 24Vdc, 48Vdc, 110Vdc and 125/127Vdc.

The Chloride® FP50R rectifier-charger can be used as a battery charger or rectifier. It is equipped with a microprocessor control system that provides output voltage regulation of less than 1% and allows it to meet a variety of application requirements.

In order to guarantee the availability of the load backed up by the Chloride® FP50R rectifier-charger, it can easily operate in a dual parallel configuration. Its electronic control system has been designed to communicate easily with other Chloride® FP50R electronics via a simple CAN bus link.

The Chloride® FP50R range, with its fully industrialised options, has been specifically developed for the secondary transmission and power distribution markets, as well as for the process industries.



Power Transmission and Distribution

Motorised circuit breakers, control rooms, SCADA, automatic controllers



Energy Production

Safety systems, SCADA, automatic controllers



Process Industries

Control systems, SCADA, automatic controllers

Benefits

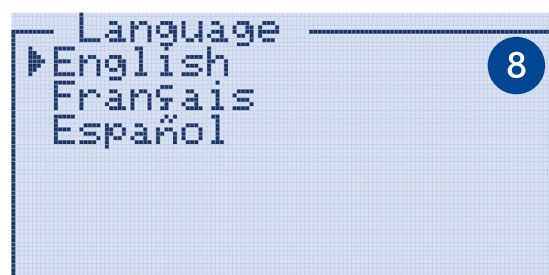
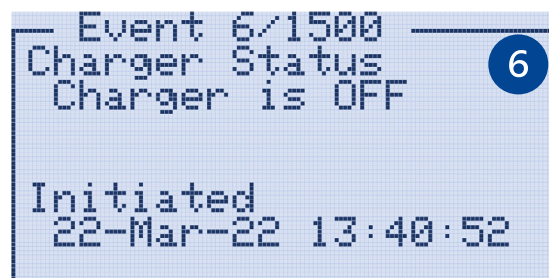
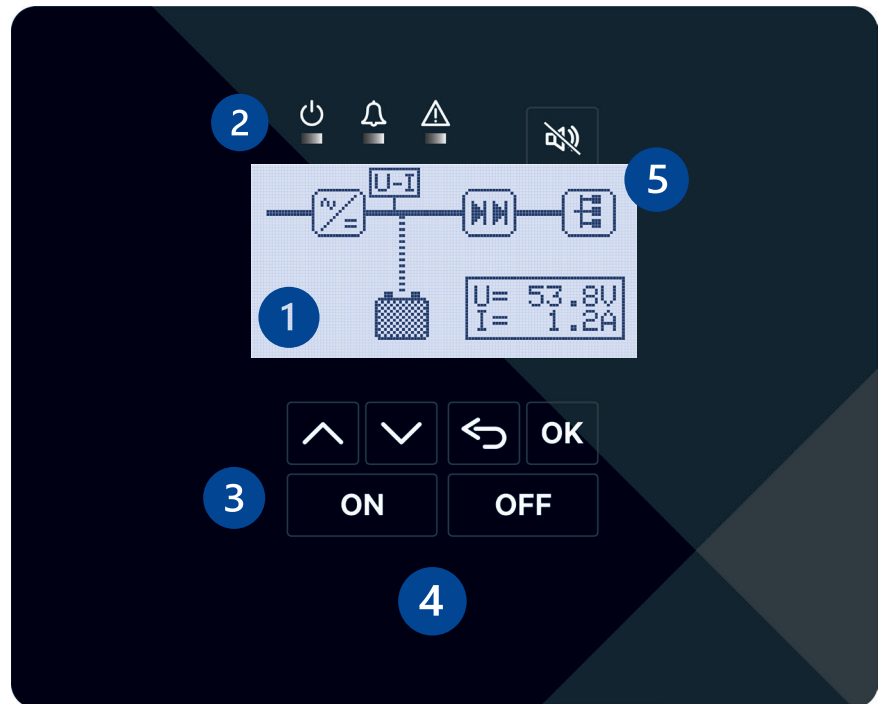
- **More reliable** : thanks to the proven thyristor technology that Chloride® has mastered for over 70 years.
- **More robust** : with a natural cooling design throughout the range. No risk of fan-related failures.
- **Less maintenance** : due to the use of long-life components.
- **Easier to use** : with its human-machine interface featuring a large, high-contrast display. The display shows the rectifier diagram and indicates any faults, which are also indicated by summary LEDs.
- **Faster availability** : thanks to its design in 100% industrialised configurable sub-assemblies. The Chloride® FP50R charger-rectifier can be available in only 6 to 8 weeks.

Unique Features

Intuitive human-machine interface (HMI)

The Chloride® FP50R rectifier range has an optimised and comprehensive human-machine interface to make day-to-day operation as easy as possible.

- 1:** Its large, high contrast 75mm by 45mm display shows the system diagram and measurement parameters.
- 2:** The diagram icons can display any faults which are also indicated by information LEDs for greater visibility when required.
- 3:** The Chloride FP50R display has large ergonomic keys for easy navigation through the various menus.
- 4:** The rectifier can be easily switched off and on from the front panel buttons.
- 5:** Key information about the status of the rectifier is displayed directly on the screen.
- 6:** The rectifier's built-in history can record up to 1500 events. It can also be exported to a USB memory stick to facilitate exchanges with Chloride's teams during corrective or preventive maintenance.
- 7:** The Chloride FP50R rectifier parameters can be exported and imported using a USB stick to facilitate on-site parameterisation of the product. To limit access to the USB port, it is located inside the rectifier.
- 8:** To accommodate most users, the Chloride FP50R rectifier is available in 3 languages (English, French and Spanish) as standard.

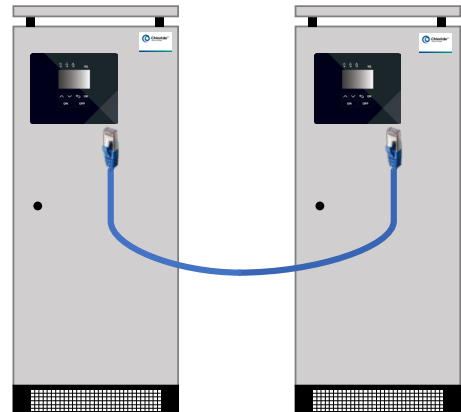


Communication

To meet the growing need for product monitoring, the Chloride FP50R range of rectifiers has been designed to incorporate multiple communication elements.

In a dual charger single battery configuration, the two units of Chloride FP50R are connected via a network cable so that the electronics communicate with each other without the need for an additional interface to synchronise their operation.

With this architecture, the rectifiers can share the load. Each rectifier knows the status of the other and can adapt its operation accordingly.



Serial fault reports

- 1. General fault
- 2. No power supply
- 3. Battery operation
- 4. End of discharge

Optional fault reports

- 1. Boost mode
- 2. DC overvoltage
- 3. DC undervoltage
- 4. Earth fault on the output



In addition to the dry contacts, the Chloride® FP50R rectifiers can also have optional network communication with TCP/IP or RS485 connectivity. The RS485 protocol can be chosen for both architectures. The IEC 61850 protocol, which is standard in power transmission and distribution applications, is available in TCP/IP mode.

Footprint

The Chloride® FP50R range of rectifiers has been developed with 100% natural cooling to ensure reliability. It has also been designed to optimise its footprint. Three cabinet sizes, always 600mm deep, are available to optimise the footprint in all configurations:

Single configuration

- 1400mm x 600mm cabinet for all ratings up to 100A without option.
- 1800mm x 600mm x 600 mm cabinet for all ratings up to 100A with options.
- 1800mm x 800mm x 600mm cabinet for all ratings 160A and 250A with options.

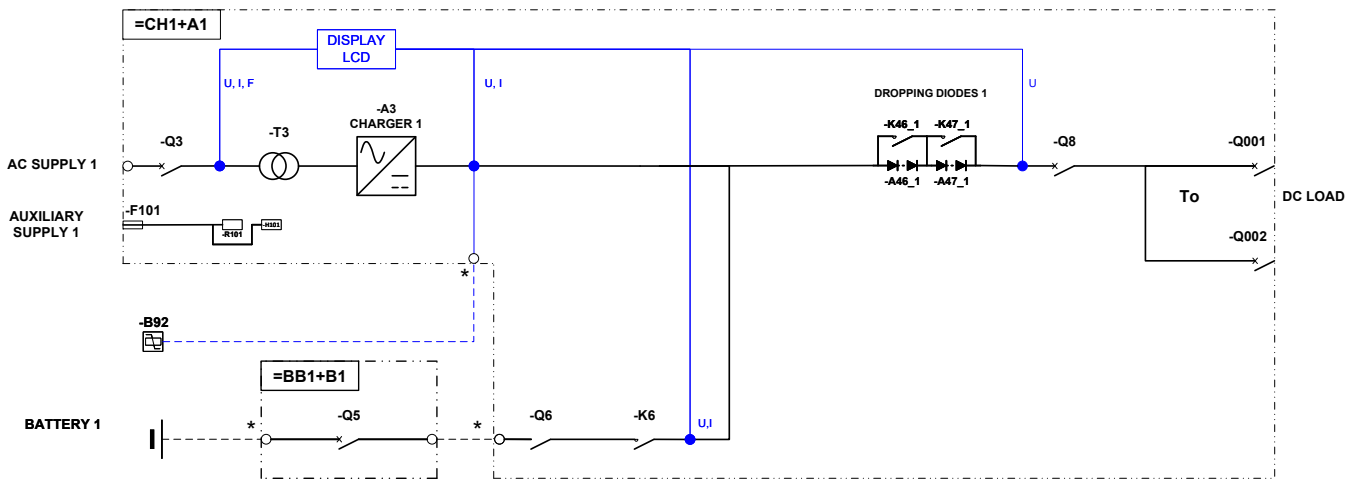
Dual configuration (1 cabinet)

- 1800mm x 800mm x 600mm cabinet for all 25A, 40A and 60A ratings at 24V and 48V and 25A at 110V.

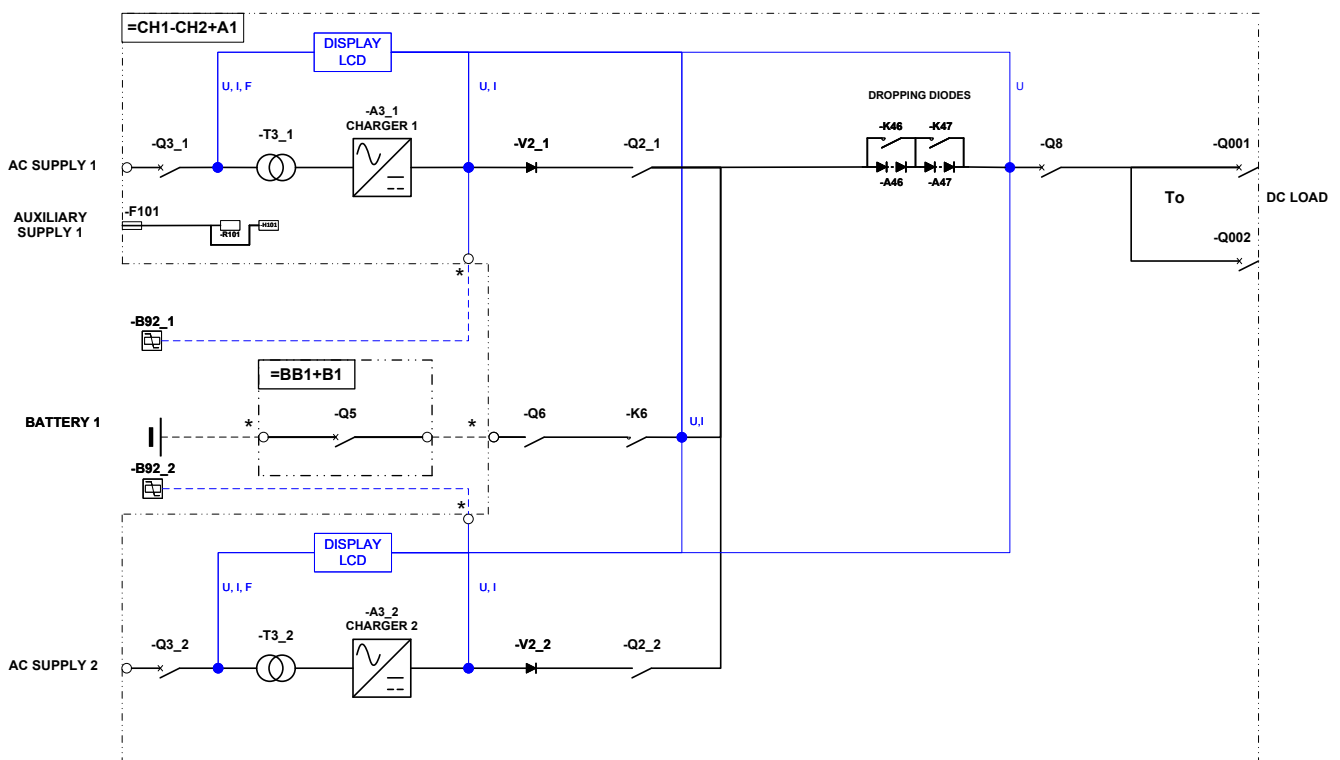
Technical Specifications

Range	1-Phase					3-Phase					
	10 Adc	25 Adc	40 Adc	60 Adc	100 Adc	25 Adc	40 Adc	60 Adc	100 Adc	160 Adc	250 Adc
Input											
Rated voltage	230VAC (220, 240)					400VAC (380, 415) / 208VAC					
Input voltage tolerance						± 10%					
Frequency						47Hz / 63Hz					
Frequency tolerance						± 5%					
Inrush current	< 15 In					< 10 In					
Output											
Rated voltage DC	24V (17V-34V), 48V (34V-68V), 110-125V (88V-179V)										
Voltage stability (in stabilised floating mode, input within tolerances)						Single system: ± 1% (1) Dual system: ± 1% to ± 2% (1)					
Voltage ripple rate	≤ 5 % at 100 % load										
(1) May vary depending on DC output voltage and system configuration											
Battery											
Type	Lead-Acid or Nickel-Cadmium, VLA or VRLA										
Autonomy	From a few minutes to several hours, on request										
	Lead-Acid					NiCd					
24V - Number of battery cells	12					18 - 20					
48V - Number of battery cells	24					36 - 44					
110V - Number of battery cells	54					82 - 92					
125V - Number of battery cells	60					91 - 105					
General Data											
Operating temperature	0 to 40°C (2)										
Storage temperature range	-20 to 70°C (excluding battery)										
Relative humidity	< 95% non-condensing at 20°C										
Altitude	1000m (2) (without downgrading the system)										
Rectifier technology	SCR, 2-pulses thyristors										
Cooling	Natural convection										
External protection class	IP21 to IEC 60529 (other protection classes available: IP41 / IP42)										
Internal protection	Protection against unintentional direct contact according to IEC 62477-1										
Cable entry	Bottom										
Cabinet colours	Grey RAL 7035 / Grey RAL 7032										
Dimensions	Varies according to size and options										
(2) Other values on request											
Monitoring											
Local, on the front panel	Graphic display with navigation buttons (75mm x 45mm)										
List of relay alarms	Standards: general alarm, mains failure, battery charging, end of discharge Options: ground fault, boost mode, overvoltage, undervoltage										
Alarm relays, contact characteristics	Changeover contact, switching capacity in accordance with DIN VDE 0660/IEC 60947: 1 A (24 V (DC13)), 0.2 A (110 V, DC13), 0.1 A (220 V, DC13) 3 A (24 V, AC15), 3 A (120 V, AC15), 3 A (230 V, AC15)										
Remote control (optional)	RS485, TCP-IP, IEC 61850, SNMP, PROFIBUS										
Standards											
IEC 61000-6-2 : 2016	Electromagnetic compatibility (EMC) - Part 6-2: General requirements - Emission for industrial environments										
IEC 61000-6-4 : 2018	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission for industrial environments										
IEC 61000-6-5 : 2015	Electromagnetic compatibility (EMC) - Part 6-5: Generic standards - Emission for equipment used in power plant and substation environments										
IEC 62477-1 : 2022	Safety requirements for electronic power conversion systems and equipment - Part 1: General										
IEC 60146-1-1 : 2009	Semiconductor converters - General requirements and mains switched converters - Part 1-1: Specification of basic requirements										
IEC 60529 : 2013	Degrees of protection provided by the enclosures (IP Code)										

Single line electrical diagram - Single Charger Configuration



Single line electrical diagram - Dual Charger Configuration

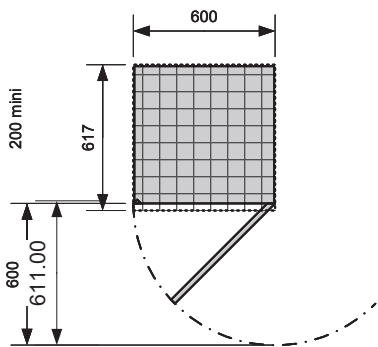


General Arrangement

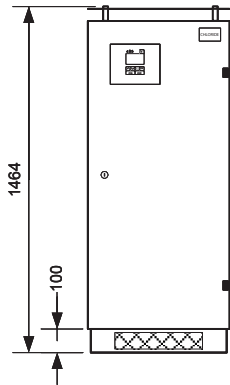
Single Charger Configuration

Cabinet 14.06.06

Top view

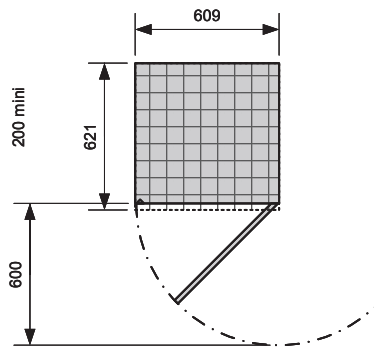


Front view

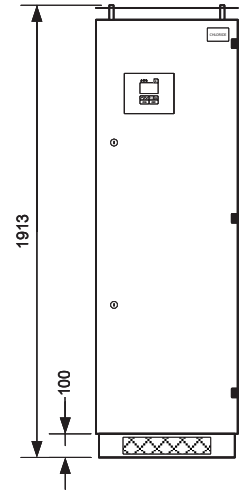


Cabinet 18.06.06

Top view



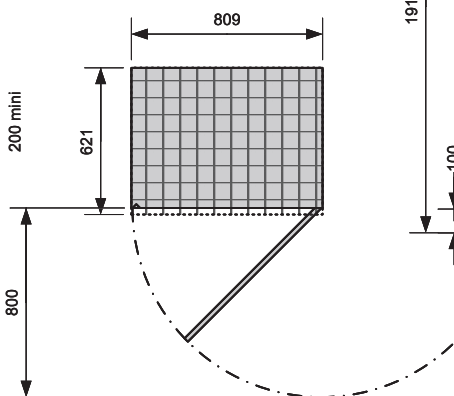
Front view



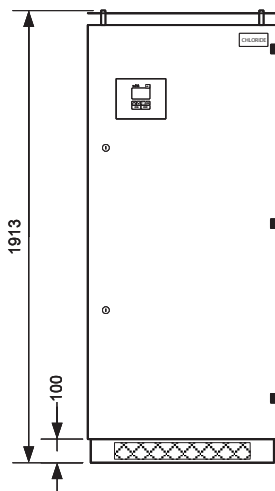
Dual Charger Configuration

Cabinet 18.08.06

Top view

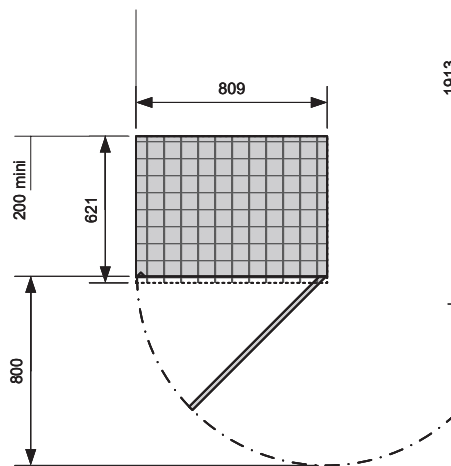


Front view

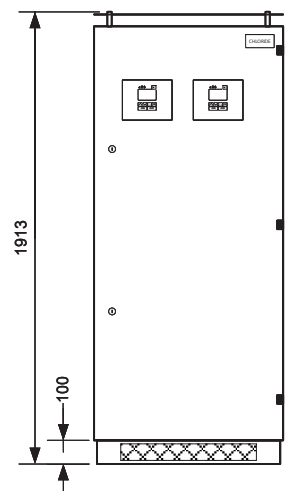


Cabinet 18.08.06

Top view



Front view



Options

AC input (Mains)

Standard	Options
U, F input measurement	I AC input measurement
Mains protection circuit breaker (Q3)	ON / OFF contact (Q3)

DC output (Load)

Standard	Options
DC output protection - Circuit breaker (Q8)	ON / OFF contact (Q8)
	Drop diodes (A46)
	Distribution - Max 16 breakers (Q001 to Q016)
	Distribution - ON / OFF contact (Q001 to Q016)

DC output (Battery)

Standard	Options
DC output protection - Circuit breaker + ON / OFF contact (Q8)	Battery protection box (external) - Circuit breaker + position contact (Q5)
	External battery current measurement
	Reverse polarity protection (V6)
	End of discharge contactor (K6)
	Battery temperature sensor (B92)
	Battery presence test
	Battery capability test
	Battery room fan failure (Floating imposed)

Other options available

Blocking diode (V2)
CPI Insulation Monitor (K100)
Internal lighting (H101)
Space heater + thermostat (R101)
Space heater + thermostat (R101) + Hygostat (B102)
TELECOM filtering 0.1%
MODBUS TCP/IP communication
MODBUS RTU communication
PROFIBUS communication
SNMP communication
IEC 61850 communication
4 additional alarm reporting (Earth fault, Boost mode, overvoltage, undervoltage)
Customer connection to terminals
Language settings on the screen: French / English / Spanish
Packaging SEI 2B / SEI 4B / SEI 4C

FP50R Charger Definition

FP50R Charger Definition															
Infos	Charger	Single	<input type="checkbox"/>	Dual	<input type="checkbox"/>	Nominal current	<input type="checkbox"/>	Peak current	<input type="checkbox"/>						
	Battery	Single	<input type="checkbox"/>	Dual	<input type="checkbox"/>	Cabinet	<input type="checkbox"/>	Rack	<input type="checkbox"/>	VRLA	<input checked="" type="checkbox"/>	Other	<input type="checkbox"/>	Autonomy	<input type="checkbox"/>
	Capacity	24 Ah	<input type="checkbox"/>	40 Ah	<input type="checkbox"/>	60 Ah	<input type="checkbox"/>	100 Ah	<input type="checkbox"/>	130 Ah	<input type="checkbox"/>	150Ah	<input type="checkbox"/>	180 Ah	<input type="checkbox"/>
		195 Ah	<input type="checkbox"/>	260 Ah	<input type="checkbox"/>	300 Ah	<input type="checkbox"/>	360 Ah	<input type="checkbox"/>	390 Ah	<input type="checkbox"/>	450 Ah	<input type="checkbox"/>	540 Ah	<input type="checkbox"/>
	AC Voltage	230 Vac 1Ph	<input type="checkbox"/>	400 Vac 3Ph	<input type="checkbox"/>	IP 21	<input checked="" type="checkbox"/>	IP 41	<input type="checkbox"/>	IP 42	<input type="checkbox"/>				
	DC Voltage	24 Vdc	<input type="checkbox"/>	48 Vdc	<input type="checkbox"/>	110 Vdc	<input type="checkbox"/>	120 Vdc	<input checked="" type="checkbox"/>						
	DC Power	10 A	<input type="checkbox"/>	25 A	<input type="checkbox"/>	40 A	<input type="checkbox"/>	60 A	<input type="checkbox"/>	100 A	<input type="checkbox"/>	160 A	<input type="checkbox"/>	250 A	<input type="checkbox"/>
	Standard default contacts		Alarm	<input checked="" type="checkbox"/>	Main fault	<input checked="" type="checkbox"/>	Battery Operation			<input checked="" type="checkbox"/>	End of Autonomy		<input checked="" type="checkbox"/>		
Input	U Measure, F Entry					<input checked="" type="checkbox"/>	Comments								
	Input Current value, I					<input type="checkbox"/>									
	Mains protection Mcb (Q3)					<input checked="" type="checkbox"/>									
	Mains protection Mcb + positions contacts (Q3)					<input type="checkbox"/>									
Battery	Reverse battery polarity protection					<input type="checkbox"/>									
	Battery temperature sensor					<input checked="" type="checkbox"/>									
	Local ventilation fault (Floating imposed)					<input type="checkbox"/>									
	Battery presence Test		<input type="checkbox"/>	Battery Capacity Test			<input type="checkbox"/>								
	Battery Self for 0.1 %					<input type="checkbox"/>									
	End of autonomy switch (K6)					<input type="checkbox"/>									
	External battery protection cabinet					<input type="checkbox"/>									
	Battery protection + contact positions (Q5 / Q6)					<input type="checkbox"/>									
Output	Voltage range : %		Dropping diodes (A46)			<input type="checkbox"/>									
	Oupptut Mcb Protection (Q8)					<input type="checkbox"/>									
	Output Mcb protection + contact positions (Q8)					<input type="checkbox"/>									
	Distribution, 16 Mcbs max (Q001 à Q016)					<input type="checkbox"/>									
Options	Distribution 16 Mcbs max + contacts positions (Q001 à Q016)					<input type="checkbox"/>									
	Coupling Diodes (V2)					<input type="checkbox"/>									
	Earth Fault (K100)					<input type="checkbox"/>									
	Internal Light (A101)					<input type="checkbox"/>									
	Anti-condensation Heater (R + thermostat) (R101)					<input type="checkbox"/>									
	Terminals					<input type="checkbox"/>									
	Telecom filtering (output voltage +/-0.1%)					<input type="checkbox"/>									
	Communication		RJ45	<input type="checkbox"/>	RS485	<input type="checkbox"/>									
	4 default contacts (Earth Fault, Boost, High voltage, low voltage)					<input type="checkbox"/>									
	English		<input type="checkbox"/>	French			<input type="checkbox"/>								
Packaging : SEI 2B		<input type="checkbox"/>	SEI 4B	<input type="checkbox"/>	SEI 4C	<input type="checkbox"/>									

The FP50R charger configurator allows you to guide you and define precisely the best configuration for your installation.

How to read the table :

This table is read line by line, you must tick only one box per line.

The pre-lined boxes (X) indicate the basic configuration of an FP50R charger (cannot be modified).

The options are additional.

If you know your requirements, the green boxes and “DC Current” are the essential information to fill in for your costing.

If you don't know your operating current (DC voltage) and your battery capacity, you will have to fill in the “Use”, “Peak” and “Autonomy” boxes.

CHLORIDE's technical support will then be able to calculate your battery requirements and have them validated.

“Comments”: Allows you to specify your configuration and validate the selection made.

Notes

Blank lined area for notes, consisting of 13 horizontal grey bars.



Chloride™
Power to Protect

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