CHLORIDE® CP70RC

Compact Industrial Rectifier / Battery Charger
200 to 1300 A (3-ph input)

CHLORIDE® CP RANGE

Customized to user specification

Full portfolio of industrial options

BENEFITS

Space savings: more compact design means more square meters available for critical equipment, that is especially important offshore

Design savings: reduced inrush current eliminates the need to include costly upstream protection

Technical and budgetary optimization. Battery can represent a significant part of UPS budget in greenfield or brownfield projects. That's why Chloride® CP70RC is designed with a wide output DC voltage range to optimize:

- Number of battery cells
- Battery capacity and therefore the price, as per the required autonomy

Smart access to system data:

- User interface with large, colour touchscreen
- Colour-coded interface for a quick understanding of the system status
- Embedded event logger (up to 2000 events) and capability to export recorded events via memory stick

Chloride® CP70RC is a range of industrial rectifiers / battery chargers that supplies high DC power in a more compact footprint. It combines the highly reliable thyristor-based topology with the proven digital control technology to offer the best performance under any electrical and environmental conditions.

Range Overview

Combined with an industrial stand-by battery, Chloride® CP70RC rectifier-charger protects DC critical industrial equipment and processes from the damaging effects of power interruptions and losses. It features a microprocessor control that offers exceptional output stability and allows adaptability to various application requirements.

Chloride® CP70RC range of rectifiers-chargers is available from 200 A to 1300 A with three-phase input and offers several output voltages from 24 Vdc to 240 Vdc.

Chloride® CP70RC is also available with 400 Vdc output. This configuration can be combined with a Chloride® CP70i inverter to design specific and more compact double conversion AC UPS systems (up to 500 kVA).

To further improve load availability and process reliability Chloride® CP70RC is able to operate in dual or trial parallel configuration, with single or dual batteries, and can include a DC bus-tie.

Applications

- Offshore upstream oil and gas installations
- Power transmission substations
- Conventional and renewable power generation plants

Example of Chloride® CP70RC-110V-800A-12P

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Key Features

- Continuous operation at full load at 40 °C ambient to meet industrial-level reliability requirements
- Resistance to vertical and horizontal acceleration up to 0.5 g using robust mechanical design
- Designed for 20+ years of continuous operation with appropriate maintenance plan
- Isolation transformer included
- Full compatibility with lead-acid and nickel-cadmium batteries, sealed or vented

Technical Data

INPUT	
AC voltage	3 x 400V (380, 415)(1)
Voltage tolerance	+/- 10 %
Neutral configuration	Any configuration, with or without neutral
Frequency	50 Hz (60 Hz)
Frequency tolerance	+/- 5 %
Frequency range (temporary)	45 Hz à 65 Hz (with 50Hz nominal)
Total harmonic current distortion (THDi)	< 34 % (6-pulse version) < 10 % (12-pulse version)(2)
Inrush current	<10 x In (for 6-pulse and 12-pulse) <5 x In (for 12-pulse + harmonic filter option)

OUTPUT					
Nominal DC voltage	24 V	48 V	110-127 V	220-240 V	400 V
Output DC voltage range	17-40 V	36-75 V	88-160 V	176-300 V	296-550 V
Voltage stability (in stabilized floating mode, input within tolerance)					
• Unitary system • Parallel systems	+/- 1 %(3) +/-1 % to +/-2 %(3)				
Voltage ripple	≤ 1 % RMS, in float, battery disconnected				
Current limitation	I nominal				

BATTERY	
Type	Lead acid or nickel cadmium, vented or recombination
Autonomy	From few minutes to several hours, on request
Battery current limitation (typical, float & boost modes)	0.1 C (lead-acid battery) 0.2 C (nickel-cadmium battery)

GENERAL DATA	
Operating temperature	0 to 40 °C(1)
Storage temperature	-20 to +70 °C
Relative humidity	< 95 % non condensing
Operating altitude	1000 m max. without derating
Cooling	Forced cooling with N+1 redundant fans
Efficiency	81 % to 97 % (according to rating)
External protection	IP 20(1) according to IEC 60529
Noise (at 1m in front of the unit)	60 – 72 dB according to rating
Cabinet color	Grey RAL 7032(1)
Dimensions	Varying according to ratings & options

Ratings

THREE-PHASE INPUT: OUTPUT CURRENT (A) vs OUTPUT VOLTAGE (Vdc)				
24 Vdc	48 Vdc	110 - 127 Vdc	220 - 240 Vdc	400 Vdc
200(4)	200(4)	200(4)	200(4)	200(4)
250(4)	250(4)	250(4)	250(4)	250(4)
320(4)	320(4)	320(4)	320(4)	320(4)
400	400	400	400	400
500	500	500	500	500
-	-	-	-	550(4)
600(4)	600(4)	600(4)	600(4)	600(4)
640(5)	640(5)	640(5)	640(5)	640(5)
800(5)	800(5)	800(5)	800(5)	800(5)
1000(5)	1000(5)	1000(5)	1000(5)	1000(5)
-	-	-	-	1100(5)
1200(5)	1200(5)	1200(5)	1200(5)	1200(5)
-	-	-	1300(5)	-

Standards

STANDARDS	
IEC60146-1-1:2009	Semiconductor converters - Specification of basic requirements
IEC62040-1:2008 +AMD1:2013	Uninterruptible power systems (UPS) - Part 1-2: General and safety requirements for UPS in restricted access locations
IEC62040-2:2006	Uninterruptible power systems (UPS) – Part 2: Electromagnetic compatibility (EMC) requirements
IEC61439-1:2011	Low voltage switchgear and controlgear assemblies - Part 1: General rules
IEC60529:1989 +AMD1:1999	Degrees of protection provided by enclosures (IP Code)
IEC60076-11:2004	Power transformers – Part 11: Dry type transformers

CONFORMITY	
Low voltage directive	2006/95/EC and 2014/35/EU
EMC directive	2004/108/EC and 2014/30/EU
CE Mark	

(1) Other value on request
(2) Option for THDi ≈5% available on 12-pulse version
(3) May vary depending on DC output voltage and system configuration
(4) 6-pulse version only
(5) 12-pulse version only

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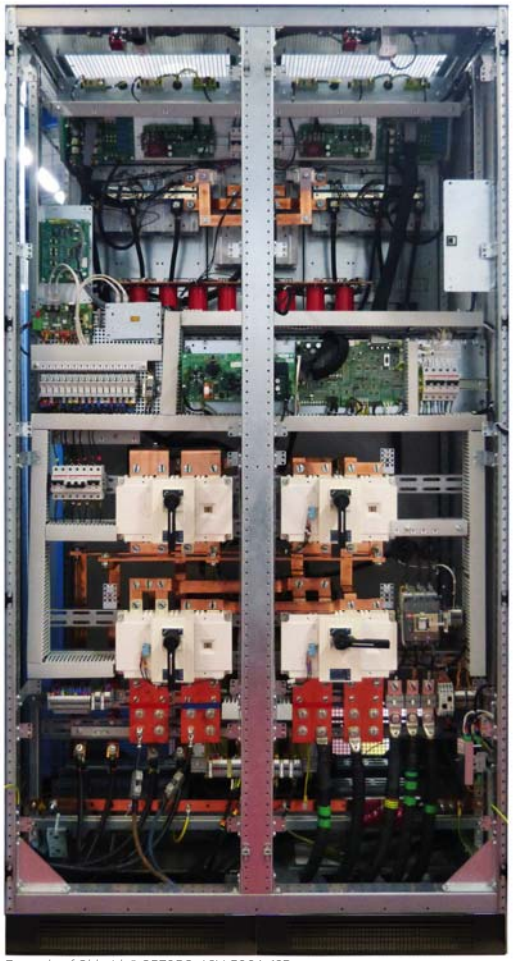
OPTIONS

Consult us for any other requirements, subject to feasibility

Rectifier	• 12-pulse rectifier • Harmonic filter on 12P for THDi ≈5 % (+/- 1pt) • Voltage ripple filter (psophometric for 48 Vdc output only) • Blocking diode • Other input voltage (from 3x190 to 3x690 Vac) • Surge and Lightning protections
Battery	• Battery circuit protection box • Battery reversed polarity detection • Battery low-voltage disconnection contactor (LVD) • DC earth fault detection • Battery room temperature sensor • Battery monitoring system (Chloride® BMS) • Battery cabinet / rack
System	• Operation in ambient temperature up to 55°C • Parallel configurations (dual, trial) • Hot stand-by configuration • Input/output isolators • Dropping diodes / DC/DC serial regulator (in external cabinet) • Isolated DC/DC converter (in external cabinet) • DC Distribution (in external cabinet) • Earth fault detection or monitoring • Internal cabinet lighting • Anti-condensation heater • Cabinet temperature monitor
Mechanical	• External ingress protection up to IP42 • Top cable entry (via external cabinet) • Specified color of panels • Special feet height (200mm or 300mm) • Special keylock • Non-magnetic gland plate (brass or aluminum) • Lifting eyes • 2 mm side panels thickness • Specified cabinet identification (tag, nameplate) • Anti-seismic design

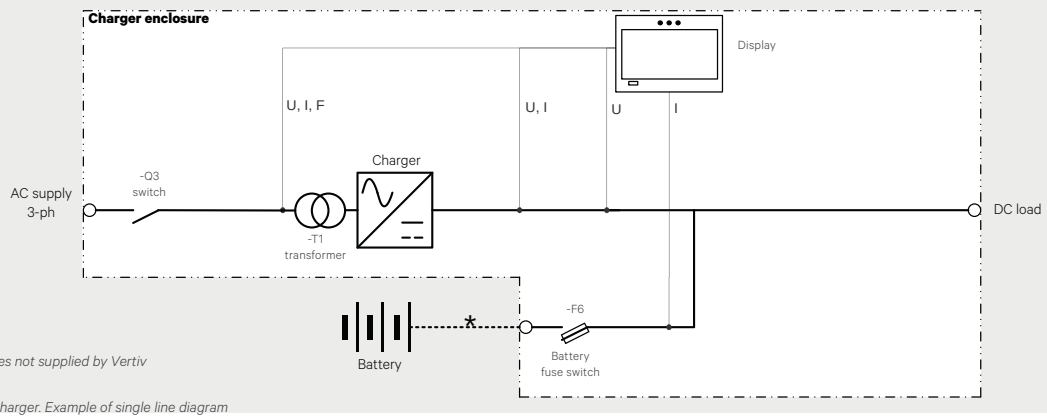
Communication	• Front panel analogue meters (72x72, class 1.5 or class 1)
	• Transducers 4-20mA
	• Additional volt-free contacts
	• Modbus RTU (RS232 or RS485)
	• Modbus / TCP
	• Profibus
	• IEC61850 protocol
	• PPVis2 monitoring software
	• Mimic panel:
	  ◦ Passive mimic of the system
	  ◦ Active mimic with integrated LEDs
	• Lamp indicator on front panel (22 mm diameter)

Internal layout example



Example of Chloride® CP70RC-48V-500A-12P

The above illustration shows an example of finished system. As each system is customized to specification, the internal layout might be different for different units.



Chloride CP70RC Rectifier- Battery Charger. Example of single line diagram

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Intuitive human-machine interface (HMI)

The front panel of the system includes a large, colour touchscreen with intuitive graphical interface that simplifies system setup, operation, and troubleshooting.

Chloride CP70RC - human-machine interface (HMI)

System Set-up

- Selection of the language
- Set-up of the date and time
- Adjustment of the brightness
- Configuration of the main screen: the user can choose between displaying the block diagram only or the block diagram with the input and/or output measurements
- Configuration of the Modbus (optional)
- Adjustment of system parameters in a password protected area (e.g. battery voltage level, number of cells)

System Operation

- View of the single line diagram with color-coded blocks and power flow
- Check the position of the system main isolators (open/close status)
- Access to blocks information and measurements via a simple touch
- Change of the battery charging mode (float, boost, initial charge)
- Launch of a battery test

System troubleshooting

- Color-coding of each block for immediate identification of possible alarm
- Memorization of some critical fault messages with a mandatory fault acknowledgement
- Checking of all the triggered status, warning and fault messages with detailed description via a simple touch
- Event logger that records up to 2000 events with date and time stamp
- Export of all the recorded events using USB flash drive. The extracted HTML file allows root cause analysis.

With complete service portfolio and extensive field service network, we ensure system lifelong reliability.

- Project services and commissioning
- Maintenance services and plans
- Performance improvement and upgrades

At Vertiv Industrial Systems, we design, manufacture and service custom-made Uninterruptible Power Systems to protect your mission-critical industrial applications.

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Chloride-CP70RC-DS-FR-gl-rev3-0717