Chloride CP-70RC

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

The Chloride CP-70RC 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.

The Chloride CP range is designed to meet the stringent electrical and mechanical requirements in industrial environments. Each Chloride CP system is based on interchangeable sub-assemblies to allow full customization in compliance with client's technical specification and with project documentation requirements.

Applications

The Chloride CP-70RC range suits all applications requiring long battery back-up and where space constraint is a key decision-making factor:

- Offshore upstream oil and gas,
- Power transmission and distribution,
- Conventional and renewable power generation.

Benefits

- **Space savings:** more compact design means more square meters available for critical equipment, that is especially important offshore.
- **Intuitive human-machine interface:**
  - Large graphical touch screen for intuitive actions,
  - Colour-coded interface for a quick status reading,
  - Embedded event-logger (up to 2000 events) and capability to export recorded events via USB flash drive for a full analysis of operating situations.
- **Design savings:** reduced inrush current eliminates the need to include costly upstream protection.
- **Time savings during maintenance:** the internal layout allows direct access to most system components from the front.

System overview

Combined with an industrial stand-by battery the Chloride CP-70RC rectifier / battery 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 CP-70RC range of rectifiers / battery chargers is available from 200A to 1300A with three-phase input and offers several output voltages from 24Vdc to 240Vdc.

Chloride CP-70RC is also available with 400Vdc output. This configuration can be combined with a Chloride CP-70i inverter to design specific and more compact double conversion AC UPS systems (up to 500kVA).

To further improve load availability and process reliability Chloride CP-70RC is able to operate in dual or trial parallel configuration with single or dual batteries and can include a DC bus-tie.

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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 0.5g 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)[3]
Voltage tolerance	+/- 10%
Neutral configuration	Any configuration, with or without neutral
Frequency	50Hz (60Hz)
Frequency tolerance	+/- 5%
Frequency range (temporary)	45Hz to 65Hz (with 50Hz nominal)
Total harmonic current distorsion (THDi)	<34% (6-pulse version) <10% (12-pulse version)[4]
Inrush current	<10 x In (for 6-pulse and 12-pulse) <5 x In (for 12-pulse + harmonic filter option)
DC Output	
Nominal DC voltage	24 / 48 / 110-127 / 220-240 / 400 V
Voltage stability:	In stabilized floating mode, input within tolerance:
Unitary system	+/- 1% in float mode
Parallel systems	+/-1% to +/-2%[5]
Voltage ripple	1% RMS, in float, battery connected
Current limitation	I nominal
Charging characteristic	IU according to DIN 41773
Battery	
Type	Lead-acid or nickel-cadmium, vented or recombination
Autonomy	as per customer's requirement
Battery current limitation (typical, float & boost modes)	0.1C (lead-acid battery) 0.2C (nickel-cadmium battery)
Battery current limitation (typical, initial charge mode)	0.05C (lead-acid battery) 0.1C (nickel-cadmium battery)
General Data	
Operating temperature	0 to 40°C[3]
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[3] according to IEC 60529
Noise (at 1m in front of the unit)	60 – 72 dB according to rating
Frame colour	Grey RAL 7032[3]
Dimensions	Varying according to ratings & options

[3] other available on request
[4] option for THDi ≈5% available on 12-pulse version
[5] depending on DC output voltage and system configuration

Ratings - Output current (A) vs voltage (VDC)

24Vdc	48Vdc	110-127Vdc	220-240Vdc	400Vdc
200 [1]	200 [1]	200 [1]	200 [1]	200 [1]
250 [1]	250 [1]	250 [1]	250 [1]	250 [1]
320 [1]	320 [1]	320 [1]	320 [1]	320 [1]
400	400	400	400	400
500	500	500	500	500
-	-	-	-	550 [1]
600 [1]	600 [1]	600 [1]	600 [1]	600
640 [2]	640 [2]	640 [2]	640 [2]	630 [2]
800 [2]	800 [2]	800 [2]	800 [2]	800 [2]
1000 [2]	1000 [2]	1000 [2]	1000 [2]	1000 [2]
-	-	-	-	1100 [2]
1200 [2]	1200 [2]	1200 [2]	1200 [2]	1200 [2]
-	-	-	1300 [2]	-

[1] 6-pulse version only
[2] 12-pulse version only

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Options

Rectifier	12-pulse rectifier Harmonic filter (THDi ≈5%) Ripple voltage filter (psophometric for 48Vdc only) Blocking diode Other input voltage (3x190 to 3x690VAC) Surge and lightning protections
Battery	Battery circuit protection box Battery cabinet Low-voltage disconnection contactor Battery room temperature sensor Battery monitoring system (Chloride BMS)
System	Dual or trial configurations Hot stand-by configuration Input / output isolators DC/DC serial regulator (external enclosure) Isolated DC/DC converter (external enclosure) DC distribution (external enclosure) Earth fault alarm or monitoring Internal lighting Anti-condensation heater Temperature monitor Special cabinet identification (tag)
Mechanical	Up to IP42 external Top cable entry (via external enclosure) Other frame colour Anti-seismic design
Communication	Front-panel analogue meters (size 72x72 class 1.5) Transducers Additional volt-free contacts Remote monitoring via Modbus/RTU Remote monitoring via other protocol PPVis2 monitoring software Passive or active mimic panel Special lamp indicator on front panel (22mm diameter)

Non-exhaustive list of options. Consult us for any other requirements.

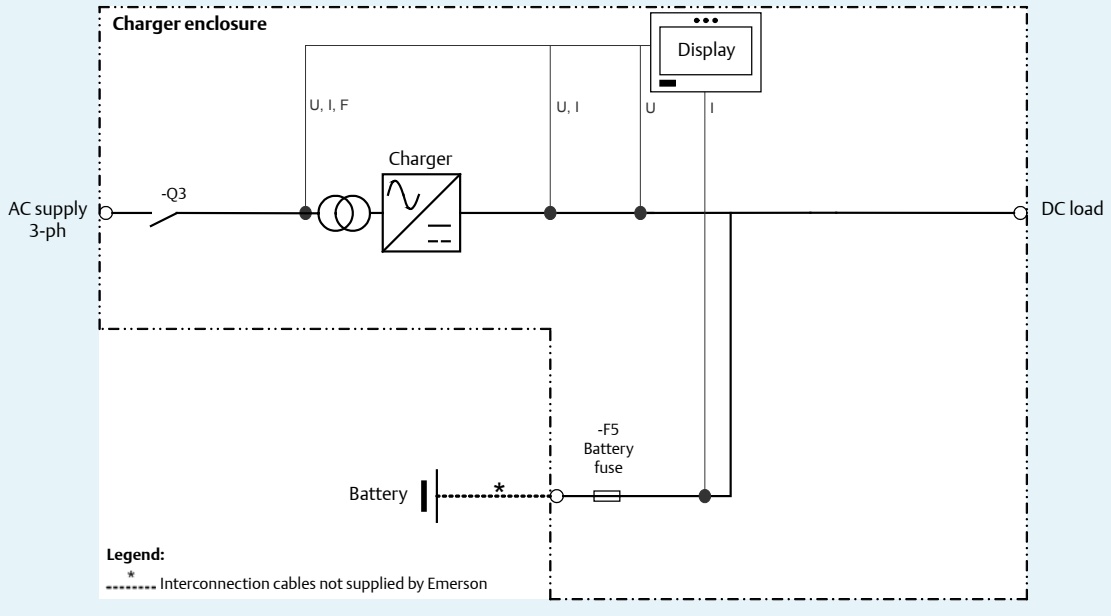
Standards

- 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

European Directives

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

Chloride CP-70RC rectifier / battery charger single line diagram



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An intuitive human-machine interface (HMI)

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

Chloride CP-70RC - Local 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 colour-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

- Colour-coding of each block for immediate identification of possible alarm
- Memorisation 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
- List of up to 2000 events on the event log page 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

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