

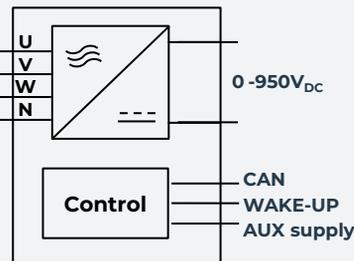
# ACHV MP



Ultra-versatile bidirectional 3Ph+N inverter  
 120A<sub>RMS</sub> / phase  
 Max power 80kW @400V<sub>AC</sub>  
 Perfect for grid and island configurations,  
 or High Power On-board Charger

## KEY FEATURES

- > Built-in capacitors & inductors
- > Non-isolated topology, to be used with LF transformers or BrightLoop's DCHVI MP for grid connection
- > DC range 0-950V<sub>DC</sub>, AC range 0-400V<sub>AC</sub>
- > Non-overlapping topology:  $V_{DC} > \hat{V}_{ph-ph}$
- > 120A<sub>RMS</sub> max apparent current
- > Output power of 80kW at 400V<sub>AC</sub>
- > Buck-boost configuration possible for wide DC voltage range
- > Seamless transition between grid-following and grid-forming inverter and PFC rectifier
- > Active harmonic filter capable
- > PLL synchronization on external grid
- > Flexible controls allow inverter operation as independent single-phase, balanced three-phase, or unbalanced with neutral connection
- > AC compliant load sharing algorithm for easy parallelization
- > Cutting-edge power density
- > Weight: < 25kg



## TECHNICAL SPECIFICATION

| Power                       |                                                                                 |
|-----------------------------|---------------------------------------------------------------------------------|
| AC ports                    | 3 phases + neutral, 400V <sub>AC</sub> / 950V <sub>DC</sub> max                 |
| DC port                     | 0V <sub>DC</sub> to 950V <sub>DC</sub>                                          |
| AC Frequency range          | 0-1000Hz                                                                        |
| Power factor                | > 0.95 @ 50Hz                                                                   |
| Harmonic distortion         | <1% @ 50Hz                                                                      |
| Phase unbalance             | 0-100% with neutral connection                                                  |
| Control modes               | Grid forming inverter                                                           |
|                             | Grid tied inverter                                                              |
|                             | PFC rectifier                                                                   |
|                             | Active harmonics correction                                                     |
| Current capability          | 120A <sub>RMS</sub> per phase                                                   |
| Current accuracy            | <3% of full scale                                                               |
| Efficiency                  | >96% at full load                                                               |
| Control                     |                                                                                 |
| Auxiliary supply            | 9V <sub>DC</sub> - 75V <sub>DC</sub><br><100µA disable mode current consumption |
| Enable function             | ON/OFF signal. Tie to ground for start-up.<br>Internal pull up                  |
| Parallelization             | Active current sharing                                                          |
| Switching synchronization   | Internal, between paralleled converters                                         |
|                             | External, with a synchronization signal<br>CAN-settable phase shift             |
| Safety discharge            | <5 sec to reach 60V                                                             |
| Environment                 |                                                                                 |
| Environmental protection    | IP67                                                                            |
| Altitude                    | Up to 4000m                                                                     |
| Max cooling temperature     | 65°C outlet                                                                     |
| Operating temperature range | From -40°C to 70°C ambient                                                      |
| Storage temperature range   | From -40°C to 100°C                                                             |

### BrightLoop Converters

221 Boulevard Davout  
 75020 Paris – France  
 Tel +33 1 83 62 63 59

[www.brightloop.fr](http://www.brightloop.fr)

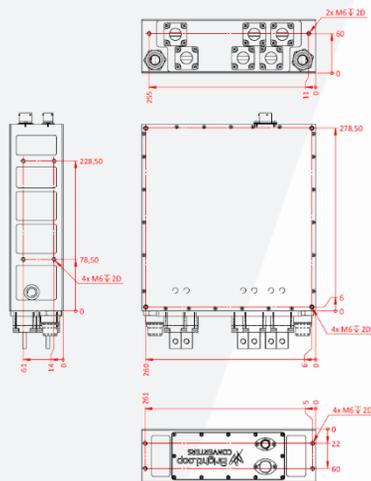
# ACHV MP

TECHNICAL SPECIFICATION

| <b>Dielectric withstand</b> |                                                         |
|-----------------------------|---------------------------------------------------------|
| HV - case                   | Basic insulation, tested at 2500V <sub>DC</sub>         |
| HVAC - HVDC                 | Basic insulation, tested at 2500V <sub>DC</sub>         |
| HV - LV                     | Reinforced insulation, tested at 5000V <sub>DC</sub>    |
| LV - case                   | Functional insulation, tested at 500V <sub>DC</sub>     |
| <b>CAN Interface</b>        |                                                         |
| Bus speed                   | 125Kbps to 1Mbps (set by CAN)                           |
| Controls                    | Current limit                                           |
|                             | Voltage setpoint                                        |
|                             | Frequency setpoint                                      |
|                             | Mode of operation                                       |
|                             | Power ON/OFF                                            |
| Monitoring                  | Discharge request                                       |
|                             | Status                                                  |
|                             | Voltages, currents, frequency                           |
|                             | Internal auxiliary power supplies voltage               |
| Identification              | Internal temperatures                                   |
|                             | Internal protections                                    |
|                             | Software & Hardware revision                            |
| Software Update             | CAN Bootloader                                          |
| <b>Liquid cooling</b>       |                                                         |
| Pressure loss               | <200mBar                                                |
| Maximum operating pressure* | 3 barg                                                  |
| Maximum testing pressure    | 6 barg                                                  |
| Hydraulic connector         | NORMAQUICK PS3 VDA (Mounted on NORMAQUICK PS3 NW 16-xx) |
| <b>Mechanical</b>           |                                                         |
| Dimensions                  | < 280 x 266 x 80mm + connectors                         |
| Weight                      | < 11kg                                                  |
| Interface                   | M8 fixations on each sides                              |
| Housing                     | Aluminum with conductive anti-corrosion treatment       |
| Power connectors options    | Amphenol PL500 & PL300 with HVIL                        |
|                             | Amphenol PL082 & PL084 with HVIL                        |
|                             | Bus bar connection                                      |
| Signal connector            | 22 pins for control                                     |
|                             | 13 pins for paralleling and switching synchronization   |
|                             | 8STA family (SOURIAU)                                   |

\*: for higher pressure application, please contact us

## OUTLINE DRAWING



Dimensions in mm

### BrightLoop Converters

221 Boulevard Davout  
75020 Paris – France  
Tel +33 1 83 62 63 59

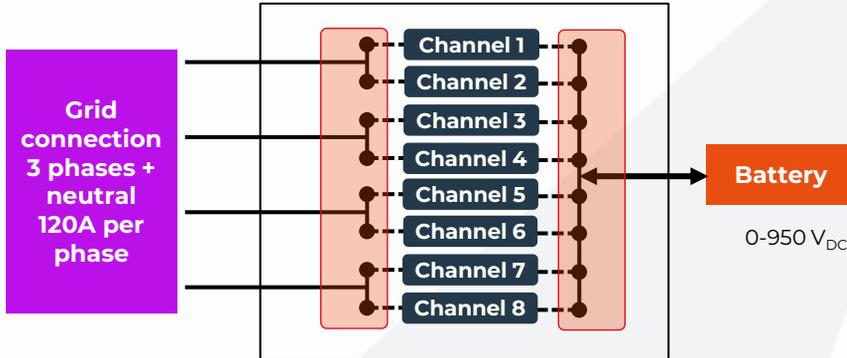
[www.brightloop.fr](http://www.brightloop.fr)

 **BrightLoop**  
A member of the ABB Group

# Ordering code logic

Port examples  
Individually CAN Settable

Port examples  
Individually CAN Settable



**ACHV MP - 480A** 60A per channel

--- Bidirectional PowerPaths  
 Ports configuration stage

## Part number example :



|                                      |                                                |
|--------------------------------------|------------------------------------------------|
| <b>1 - Product family</b>            | <b>2 - Voltage</b>                             |
| AC HV-HV isolated ACDC conv. inv.    | HV 400V <sub>AC</sub> / 950V <sub>DC</sub> max |
| <b>3 - Galvanic isolation</b>        |                                                |
| ∅ Isolated                           |                                                |
| <b>4 - Package size</b>              | <b>5 - Product line</b>                        |
| M Medium                             | P Performance                                  |
| <b>6 - Number of ports on side A</b> | <b>7 - Number of ports on side B</b>           |
| S Single                             | S Single                                       |
| D Dual                               | D Dual                                         |
| T Triple                             | T Triple                                       |
| Q Quadruple                          | Q Quadruple                                    |
| P Penta                              | P Penta                                        |
| Sx Six                               | Sx Six                                         |
| H Hepta (seven)                      | H Hepta (seven)                                |
| O Octo (eight)                       | O Octo (eight)                                 |
| <b>8 - Cooling</b>                   |                                                |
| LC Liquid cooling                    |                                                |

V26.02

## BrightLoop Converters

221 Boulevard Davout  
 75020 Paris - France  
 Tel +33 1 83 62 63 59

[www.brightloop.fr](http://www.brightloop.fr)