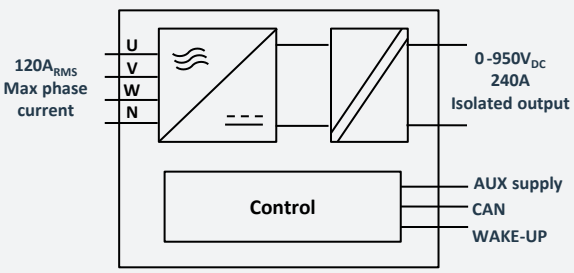
# ACHVI MP

Ultra-versatile reversible 3Ph + N inverter
Built-in input-output galvanic isolation
120$A_{RMS}$ / phase, max power 80kW@400$V_{AC}$
Perfect for grid and island configurations,
or High Power On-board Charger

## KEY FEATURES

- **Built-in magnetics, inductors and transformers included**
- **DC range 0-950$V_{DC}$, AC range 0-400$V_{AC}$**
- **Non-overlapping topology : $V_{DC} > \hat{V}_{ph\text{-}ph}$**
- **120$A_{RMS}$ max phase current**
- **Output power of 80kW at 400$V_{AC}$**
- **Perfect for high power On-Board Charger application (OBC)**
- **Seamless transition between grid-tied (CSI) and grid-forming (VSI) inverter and PFC rectifier**
- **On-the-fly adjustment of harmonics corrections**
- **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**
- **Connectors and Busbars options for electrical interface**




## TECHNICAL SPECIFICATION

| | |
|---|---|
| **Power** | |
| AC ports | 3 phases + neutral, 400$V_{AC}$ / 950$V_{DC}$ max |
| DC port | 0V to 950$V_{DC}$ |
| 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<br>Grid tied inverter<br>PFC rectifier<br>Active harmonics correction |
| Current capability | 120$A_{RMS}$ per phase |
| Current accuracy | <3% of full scale |
| Efficiency | >96% at full load |
| **Control** | |
| Auxiliary supply | 9$V_{DC}$ – 75$V_{DC}$<br><100µA disable mode current consumption |
| $\overline{\text{Enable}}$ function | ON/OFF signal. Tie to ground for start-up.<br>Internal pull up |
| Parallelization | Active current sharing |
| Switching synchronization | Internal, between paralleled converters<br>External, with a synchronization signal<br>CAN-settable phase shift |
| Safety discharge | <5sec 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 |

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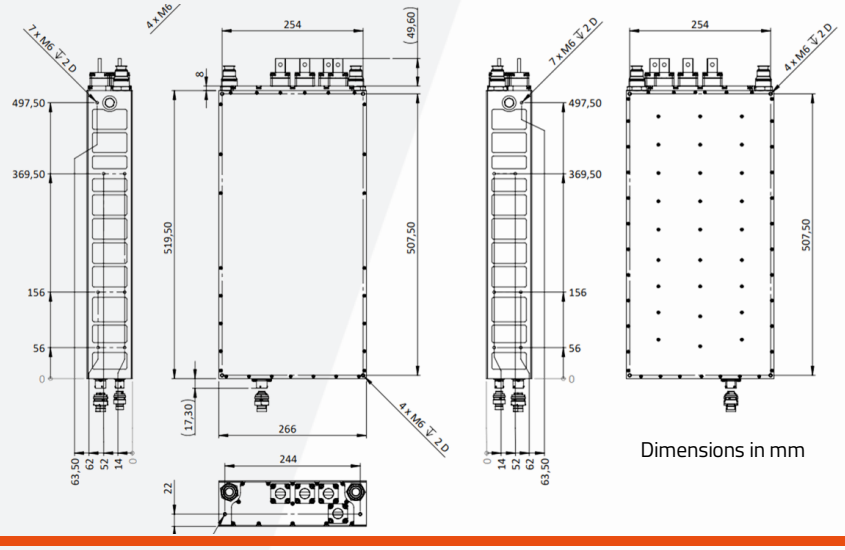
TECHNICAL SPECIFICATION

| | |
|---|---|
| **Dielectric withstand** | |
| HV - case | Basic insulation, tested at 2500 $V_{DC}$ |
| HVAC - HVDC | Basic insulation, tested at 2500 $V_{DC}$ |
| HV - LV | Reinforced insulation, tested at 5000 $V_{DC}$ |
| LV - case | Functionnal insulation, tested at 500 $V_{DC}$ |
| **CAN Interface** | |
| Bus speed | 125Kbps to1Mbps (set by CAN) |
| Controls | Current limit |
| | Voltage setpoint |
| | Frequency setpoint |
| | Mode of operation |
| | Power ON/OFF |
| | Discharge request |
| Monitoring | Status |
| | Voltages, currents, frequency |
| | Internal auxiliary power supplies voltage |
| | Internal temperatures |
| | Internal protections |
| Identification | Software & Hardware revision |
| Software Update | CAN Bootloader |
| **Liquid cooling** | |
| Pressure loss | <200mBar TBC |
| Operating pressure | 1.3barmax recommended |
| Hydraulic connector | NORMAQUICK PS3 VDA (Mounted on NORMAQUICK PS3 NW 16-xx) |
| **Mechanical** | |
| Dimensions | < 520 x 266 x 80mm + connectors |
| Weight | < 25kg |
| Interface | M8 fixations on each sides |
| Housing | Aluminum with conductive anti-corrosion treatment |
| Power connectors options | Amphenol PL300 with HVIL<br>Amphenol PL082 with HVIL<br>Busbars |
| Signal connector | 22 pins for control<br>13 pins for paralleling and switching synchronization<br>8STA family (SOURIAU) |

## OUTLINE DRAWING




Dimensions in mm

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# Ordering code logic

Port examples
Individually CAN Settable

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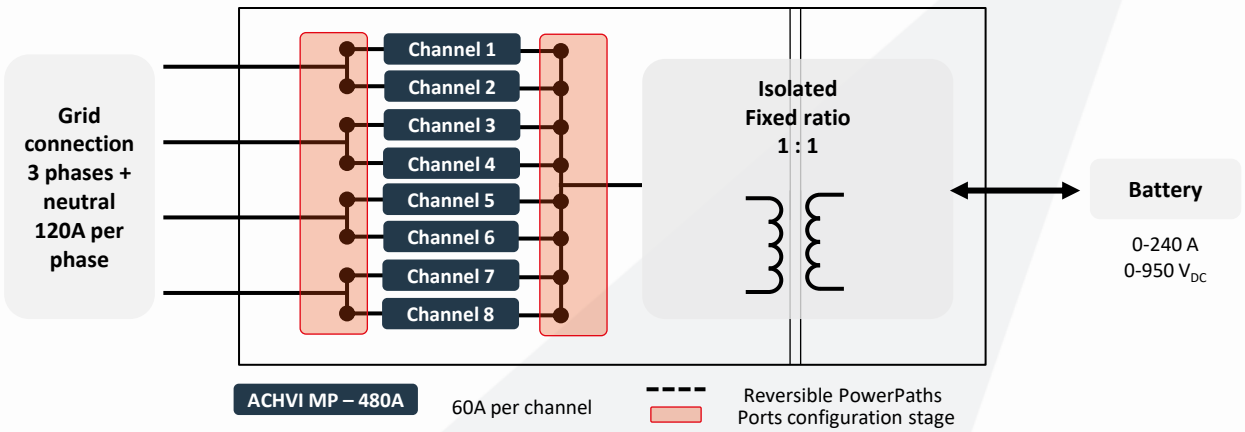
Individually CAN Settable




**Part number example :**

| AC | HV | I | M | P | S | Ø | S | LC |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

| **1 - Product family** | | **2 - Voltage** | |
|---|---|---|---|
| AC | HV-HV isolated ACDC conv. inv. | **HV** | 950$V_{DC}$ max |
| **3 - Isolated** | | | |
| I | Galvanically isolated | | |
| **4 - Package size** | | **5 - Product line** | |
| M | Medium | P | Performance |
| **6 - Number of ports on side A** | | **7 - Number of ports on side B** | |
| S | Single | Ø | None |
| D | Dual | S | Single |
| T | Triple | D | Dual |
| Q | Quadruple | T | Triple |
| P | Penta | Q | Quadruple |
| H | Six | P | Penta |
| O | Octo (eight) | H | Six |
| **8 - Number of ports on side C** | | **9 - Cooling option** | |
| S | Single | LC | Liquid cooling |

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