

CELES MP 75-100



Induction Heating Inverter

- Power from 75 to 100kW
- Frequency from 1 kHz to 1 MHz

- **Flexible**

- **High Efficiency**

- Wide working frequency

- Maximum power over a large impedance range

- Solid state design

- Easy to operate and maintain

- High network $\cos\varphi$



Applications:

- Brazing
- Shrink fitting
- Crucible or cold crucible melting
- Laboratories and research centers
- Oxides or Glass melting
- Weld Annealing
- Welding
- Cap sealing
- Hardening and Tempering



Man-Machine Interface with touch screen

Since 1967, **Fives Celes** has designed and manufactured a large range of power inverters for induction heating.

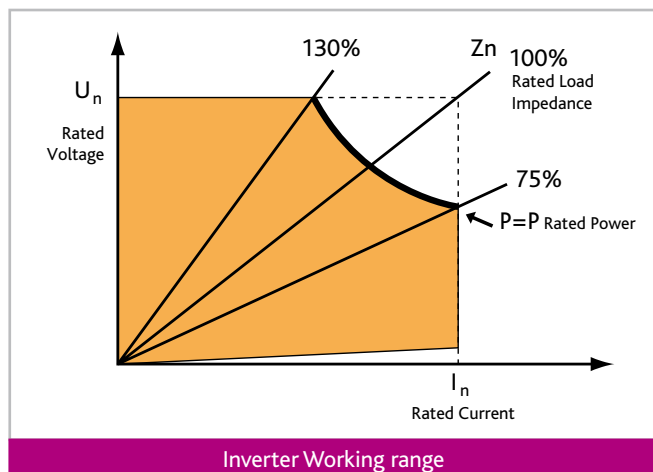
CELES MP 75-100 inverters have a parallel oscillating circuit. These solid state inverters are perfect for applications whose frequencies are between 1kHz and 400kHz with power between 75kW and 100kW. For the very high frequency applications the suitable inverter runs at frequencies between 400kHz to 1000kHz with a power limited to 50kW.

This range of inverter covers the needs of most medium-high power induction heating applications.

→ Working Flexibility

Large impedance range

The CELES MP 75-100 inverters deliver their full power over a very wide impedance range. Depending on the inverter's type, it can deliver full power from 75% to 133% of its rated impedance.



This flexibility allows the inverter to be used for a wide range of applications without having to make any adjustments or to cope with some changes of the heated parts characteristics.

Wide frequency range

The working frequency range of the inverters covers all frequencies between 25% and 100% of their rated frequency. The power source can therefore heat up a full range of products with the same inductor and without any changes in the capacitor matching station.

Its high versatility enabled CELES MP to become over years one of the preferred inverters of research laboratories, where by nature the oscillating circuits and the applications are explorative and incremental.

→ Power Supply Control

Wide range of control modes

The CELES MP can be remotely controlled by analog inputs and it has several internal control modes :

- Output power set point
- Oscillating circuit voltage set point (option)
- Output power as a function of the heated part translation speed
- Temperature set point with temperature measurement (option)

The response times of the power circuits allow impulse heating of a few tenth of a second with levels of power perfectly mastered.

Friendly Human-Machine Interface (HMI)

- 5.7" Touch screen
- Simultaneous display of power current, voltage, and frequency
- Set point display
- Detailed alarms display
- Programming and operation of recipes
- Adjustment of HMI according to the Operators' needs

Multiple Numerous Communication Interfaces

- Analog Inputs
- Analog Outputs (current, voltage, power, frequency)
- Digital Inputs Start / Stop,
- Digital Outputs for inverter and fault status (during operation, limitations...)
- Modbus and Ethernet links (option)



Cold crucible Melting with a CELES MP100 inverter

→ Excellent Operation & Maintenance Conditions

Protection against operation hazards such as:

- short circuits on the inductor
- inductor breakages
- current overloads, etc.

The high frequency CELES MP 75-100 includes a transformer, which guarantees the electrical insulation between the inductors and the inverters.

Ease of maintenance

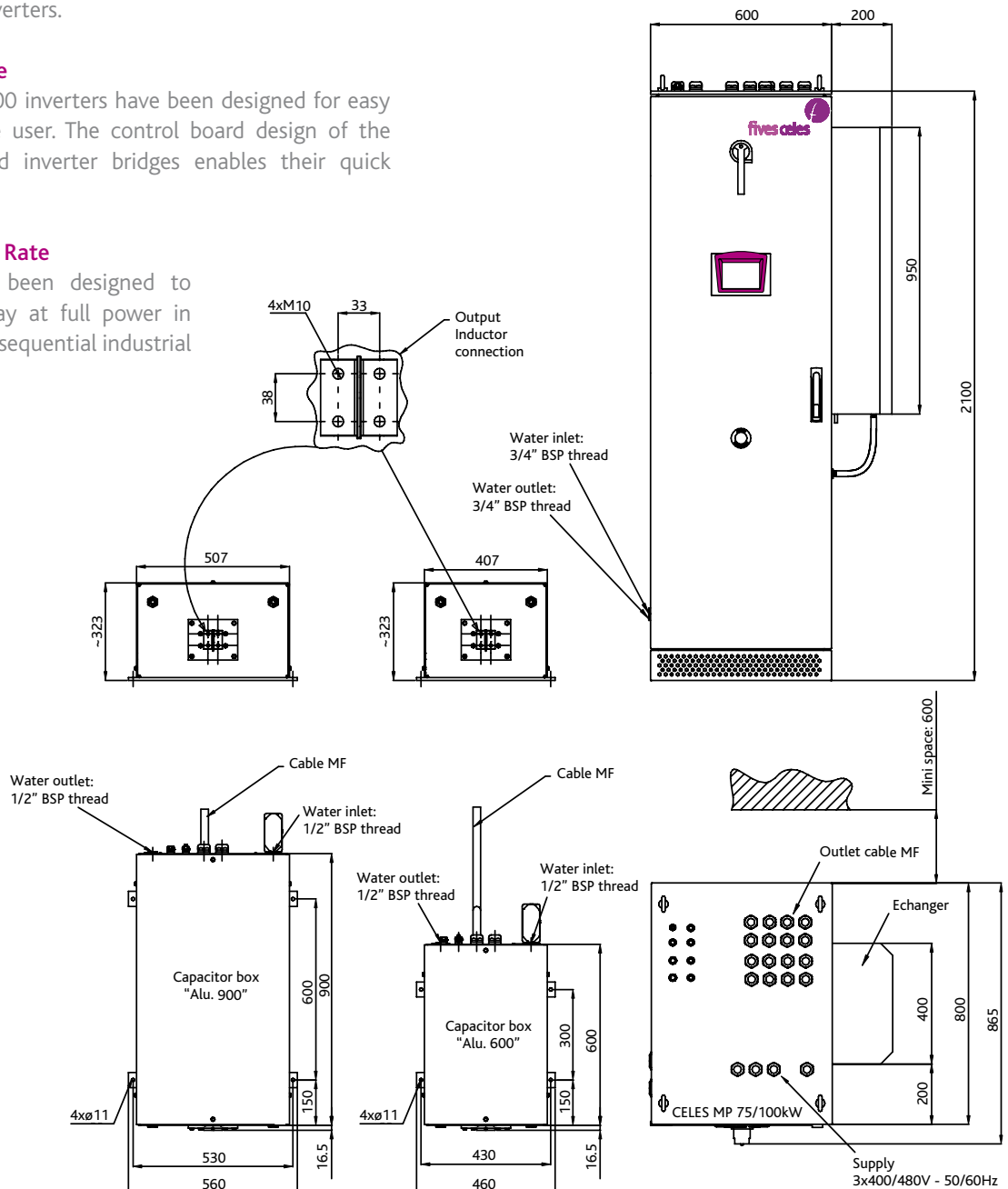
The CELES MP 75-100 inverters have been designed for easy maintenance by the user. The control board design of the chopper bridges and inverter bridges enables their quick replacement.

Intensive Operating Rate

The equipment has been designed to work 24 hours a day at full power in either continuous or sequential industrial conditions.

High Efficiency

Celes MP power supplies have an efficiency over 90%. Well compensated matching boxes and 3D designed inductors perfectly suitable to the application will complement the CELES MP 75-100 performances to delivery the optimum heating efficiency.





Induction cap sealing with a CELES MP75 inverter

Available options

- Mains isolating transformer with low leakage inductance
- Remote control box
- Control Pedal
- Tropicalization of the equipment
- Reinforced protection class
- Internal over-pressure
- Stainless steel enclosure
- Fives Celes cooling and refrigerating unit
- Reversing switch for a second workstation
- Temperature measurement and control
- Ethernet or modbus network

Technical characteristics

| INVERTER TYPE | | | | | | | | | | | | | | |
|---------------|---------|------|-------|-------|--------|--------|--------|-------|--------|--------|---------|---------|---------|--|
| MP | 50/1000 | 75/5 | 75/10 | 75/50 | 75/100 | 75/200 | 75/400 | 100/5 | 100/10 | 100/50 | 100/100 | 100/200 | 100/400 | |

| LOAD | | | 50/1000 | 75/5 | 75/10 | 75/50 | 75/100 | 75/200 | 75/400 | 100/5 | 100/10 | 100/50 | 100/100 | 100/200 | 100/400 |
|----------------------|-----|------|---------|------|-------|-------|--------|--------|--------|-------|--------|--------|---------|---------|---------|
| Rated output power | kW | 50 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 100 | 100 | 100 | 100 | 100 | 100 |
| Minimal output power | kW | 1.6 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 |
| Maximal HF frequency | kHz | 1000 | 5 | 10 | 50 | 100 | 200 | 400 | 400 | 5 | 10 | 50 | 100 | 200 | 400 |
| Minimal HF frequency | kHz | 250 | 1 | 2 | 10 | 30 | 50 | 100 | 100 | 1 | 2 | 10 | 30 | 50 | 100 |
| Rated load impedance | ohm | 3.2 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |
| Rated output voltage | V | 433 | 433 | 433 | 433 | 433 | 433 | 433 | 433 | 433 | 433 | 433 | 433 | 433 | 433 |

| MATCHING CIRCUIT | | | 50/1000 | 75/5 | 75/10 | 75/50 | 75/100 | 75/200 | 75/400 | 100/5 | 100/10 | 100/50 | 100/100 | 100/200 | 100/400 |
|--|---|-----|---------------------|------|-------|-------|--------|--------|--------|---------------------|--------|--------|---------|---------|---------|
| Transformer ratio | | 1/1 | without transformer | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | without transformer | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 |
| HF cable number (generator/capacitors bank connection) | | 16 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 16 | 16 | 16 | 16 | 16 |
| Standard HF cables length | m | 3 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |

| SUPPLY | | | 50/1000 | 75/5 | 75/10 | 75/50 | 75/100 | 75/200 | 75/400 | 100/5 | 100/10 | 100/50 | 100/100 | 100/200 | 100/400 |
|------------------------------|--------|--|---------|------|-------|-------|--------|--------|--------|-------|--------|--------|---------|---------|---------|
| Voltage, Frequency and Phase | V - Hz | 400 / 480 V - +/- 10% - 50/60 Hz - 3 Phases with low impedance network | | | | | | | | | | | | | |
| Connected power | kVA | 73 | 109 | 109 | 109 | 109 | 109 | 109 | 109 | 145 | 145 | 145 | 145 | 145 | 145 |

| GENERATOR ENCLOSURE | | |
|---------------------|------------------|-------------|
| Type | Protection class | Weight (kg) |
| Cubicle | IP55 | 400 kg |

| COOLING (Excluding inductor and matching station) | | | | | | | | |
|---|--------------------------------|------------------------|-----------------------------|-----------------------------|---------------------------------------|---|----------|---|
| Type | Minimum water flow rate (l/mm) | Maximum inlet pressure | Minimal pressure difference | Water inlet Temperature °C* | Resistivity (ohm cm ² /cm) | Water Quality | Water PH | Pipe connection |
| Water | 36 | 7.5 | 3.5 | 18* to 35 | 2000 to 10 000 | Optically clear without sediment. Concentration less than 5 mgr/l | 7 to 8.5 | Internal pipe diameter 10 mm minimum, 1" BSP thread |

*The minimal water temperature has to be assessed according to the site conditions.

Our permanent development efforts may lead us to modify this technical data without notice.