

# CELES MP 25-50



## Induction Heating

- Power from 25 to 50kW
- Frequency from 1 kHz to 1 MHz

- **Flexible**
- **Compact**
- **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
- Bonding
- Shrink fitting
- Crucible or cold crucible melting
- Laboratories and research centers
- Weld Annealing
- Cable varnish burning
- 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.

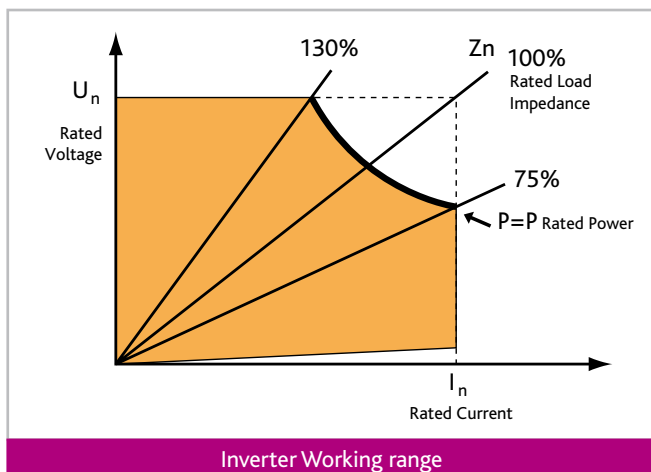
CELES MP 25-50 inverters have a parallel oscillating circuit. These solid state inverters are perfect for applications whose frequencies are between 1kHz and 400kHz with power between 25kW and 50kW. For the very high frequency applications the suitable inverter runs at frequencies between 400kHz to 1000kHz with a power limited to 12kW or 25kW.

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

## → Working Flexibility

### Large impedance range

The CELES MP 25-50 inverters delivers 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)



Easy replacement of the chopper and inverter bridges

## → 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 25-50 includes a transformer, which guarantees the electrical insulation between the inductors and the inverters.

### Ease of maintenance

The CELES MP 25-50 inverters have been designed for easy maintenance by the user. The front panel rotates to provide easy access to inverter and components. The control board design of the chopper bridges and inverter bridges enables their quick replacement.

### Intensive Operating Rate

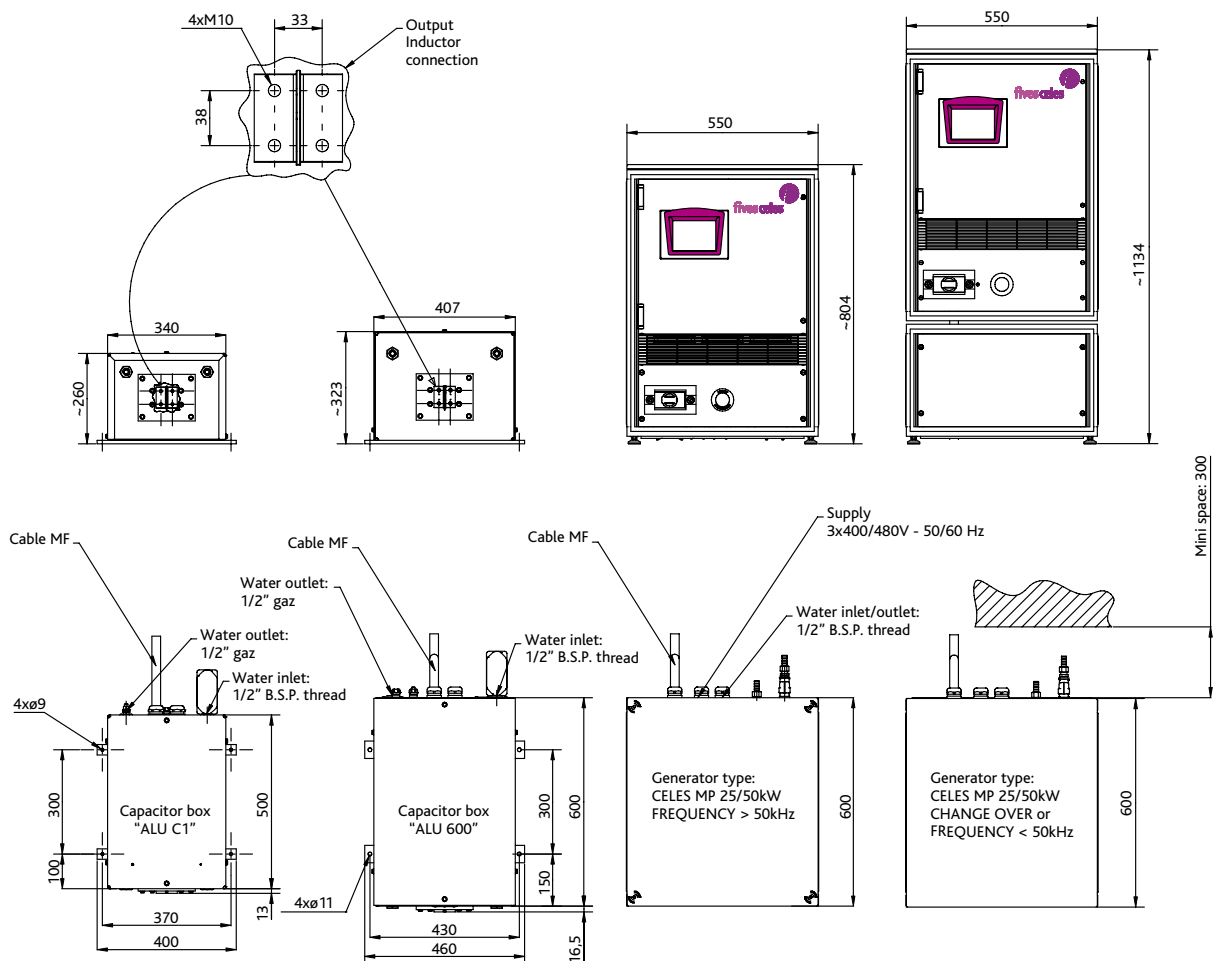
Fives Celes equipment has been designed to work 24 hours a day at full power in either continuous or sequential industrial conditions.

### 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 25-50 performances to delivery the optimum heating efficiency.

**Power supply frequency:** 50/60 Hz +/- 10%

## → Dimensions (mm)





Example of gear heating

### Available options

- Mains isolating transformer with low leakage inductance
- Remote control box
- Control Pedal
- Generator serving table
- Tropicalization of the equipment
- Reinforced protection class
- Internal over-pressure
- Stainless steel enclosure
- Hand held transformer
- Fives Celes cooling and refrigerating unit
- Reversing switch for a second workstation
- Water cooled cables between the matching station and the inductor
- Voltage increasing matching box
- Temperature measurement and control
- Ethernet or modbus network

### Technical characteristics

INVERTER TYPE															
MP	12/1000	25/5	25/10	25/50	25/100	25/200	25/400	25/1000	50/5	50/10	50/50	50/100	50/200	50/400	

LOAD			12	25	25	25	25	25	25	25	50	50	50	50	50	
Rated output power	kW		12	25	25	25	25	25	25	25	50	50	50	50	50	
Minimal output power	kW		0,4	0,8	0,8	0,8	0,8	0,8	0,8	0,8	1,6	1,6	1,6	1,6	1,6	
Maximal HF frequency	kHz		1000	5	10	50	100	200	400	1000	5	10	50	100	200	400
Minimal HF frequency	kHz		250	1	2	10	30	50	100	250	1	2	10	30	50	100
Rated load impedance	ohm		12,8	6,4	6,4	6,4	6,4	6,4	6,4	6,4	3,2	3,2	3,2	3,2	3,2	3,2
Rated output voltage	V		433	433	433	433	433	433	433	433	433	433	433	433	433	433

MATCHING CIRCUIT															
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	
HF Capacitors type	µF	0,11		2,4	0,66	0,33	0,21	0,11			2,4	0,66	0,33	0,21	
Mini/max quantity		1 à 8								1 à 16					
HF cable number (generator/capacitors bank connection)		4	4	4	4	4	4	4	8	8	8	8	8	8	8
Standard HF cables length	m	3	6	6	6	6	6	6	3	6	6	6	6	6	6

SUPPLY																
Voltage, Frequency and Phase	V - Hz	400 / 480 V - +/- 10% - 50/60 Hz - 3 Phases with low impedance network														
Connected power	kVA	20	40	40	40	40	40	40	40	40	80	80	80	80	80	80

GENERATOR ENCLOSURE		
Type	Protection class	Weight (kg)
Compact Cubicle	IP41	130 kg (150kg <50kHz or change over)

COOLING (Including standard matching station)								
Type	Minimum water flow rate (l/mm)	Maximum inlet pressure	Minimal pressure difference	Water inlet Temperature °C*	Resistivity (ohm cm <sup>2</sup> /cm)	Water Quality	Water PH	Pipe connection
Water	18	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, 1/2" 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