

MASTER CONTROLLER V3+

Multifunction Heating Process Controller

NEW
GENERATION



Feature Highlights

- Programming and management of up to two independent heating stations, consisting of:
 - >> CEIA Power Cube Generator
 - >> CEIA SH/SLE series non-contact temperature sensor or external thermocouples
 - >> automatic solder dispenser
 - >> antioxidant gas diffuser
- High-definition graphic display
- Internal memory and removable SDC Card containing up to 100 work programs
- Multiple interface Capability including:
 - >> Industrial current/voltage I/O
 - >> Field Bus
 - >> RS-232
 - >> up to 22 input and 22 output
- Validation and Reporting of each heating cycle for Production Quality Control and Certification
- "STATUS" key for immediate reading of main Generator working parameters
- "QUICK ACCESS" key for fast programming of user defined parameters

MASTER CONTROLLER V3+ Multifunction Heating Process Controller

The Master Controller V3+ is a multifunction industrial control unit, designed for automatic management of programmable heating processes

For more than 30 years CEIA has been manufacturing Generators and Control units for induction heating processes characterized by very high efficiency and minimum operating costs. CEIA's unique technological solutions allow the manufacturing of power equipment with compact size, extremely high-energy efficiency and long-term reliability.

Thanks to the experience achieved in the field, and to the continuous R&D activities, CEIA is now proud to introduce the Master Controller V3+.

The Standard Controller version comes with a set of predefined programs. All operating parameters for each phase of the heating cycle can be programmed within a wide range of values.


This allows maximum flexibility in setting the heating and cooling times, the power supplied by the induction generators, the operating temperatures for the piece being worked on and the quantity and feed speed of the soldering wire.

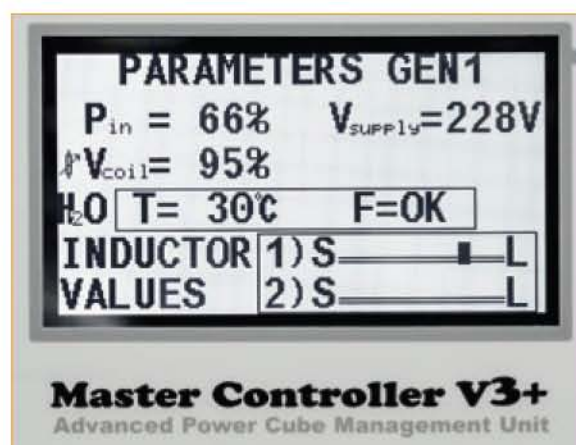
A wide range of digital and analog I/O signals, a fieldbus and an RS-232 serial interface allow connection to PLC, PC or external logic for remote loading and running of pre-set and user-defined heating programs.


The isolated inputs have programmable P/N logic, while the isolated outputs use a programmable auxiliary voltage of 12/24 V.

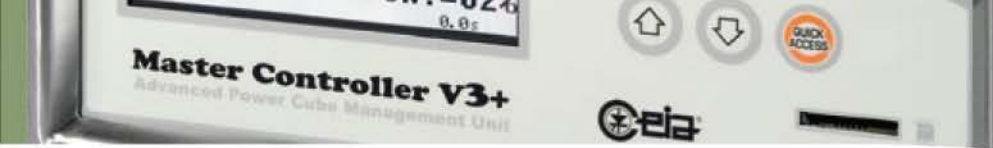
HIGH-DEFINITION GRAPHIC DISPLAY



 The main programming parameters of the two heating stations are shown on the display of the CEIA Master Controller. A bar-graph Indicator shows the correct matching of the inductor. Changes in operating conditions, such as load variations, are displayed in real time.



 A service menu, accessed by pressing the STATUS key, displays a summary of the internal generator operating parameters



Advanced Control and Interface Functions

Power Cube Generator (2)



Wire Feeder Dispensers (2)



Anti-Oxidizing Gas Diffuser (2)



Compact Pyrometers (2)



Field Bus Interface

FIELD BUS
...
READY



Thermal Profile Control



Web Server & Data Logger



MASTER CONTROLLER V3+

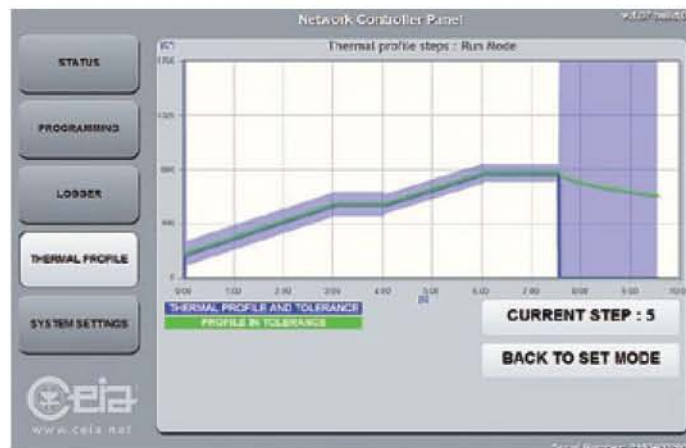
Multifunction Heating Process Controller



✓ Thermal Profile Management and Monitoring

- Up to 20 Programmable Temperature and Time Segments per Process
- Up to 100 different storable processes
- Maximum Power Output Programmable for Each Individual Segment
- Temperature Tolerance Window Programmable for Each Individual Segment
- Out-of Tolerance and End-of-Cycle Outputs for Each Process

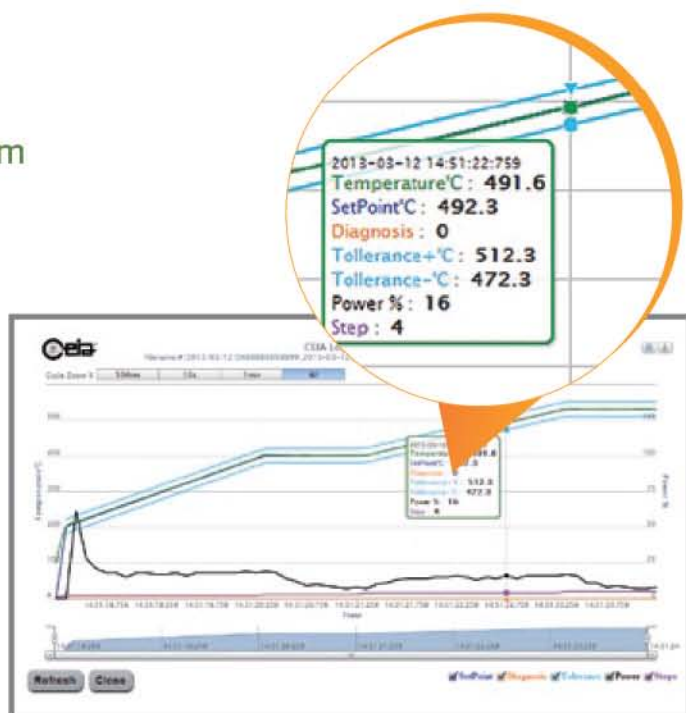
Thanks to the Thermal Profile Monitoring software, coupled with the new CEIA SH15/SLE Optical Pyrometers, the user is now able to set specific temperature profiles, monitor and certify the heating process of each production item.



✓ Real-time Thermal Profile screen, combined with Web server and Data Log option

✓ Integrated Web server and Data Log System

- Integrated Webserver with 2-port 100base-T Ethernet switch
- No client software required, only a web browser
- Zero configuration network for simple setup
- Built-in Rich Internet Application [RIA] for Status Monitoring, Remote Programming, Logging and Thermal Profile Management
- Internal storage capacity for more than 100.000.000 data samples



✓ Data Logger screen

The Master Controller V3+ is equipped with integrated Data Log and Web Server system. It is possible to perform automatic data storage, for a proper process quality control, monitoring heating temperatures, output power, frequency, voltage and inductor current.

An Ethernet TCP/IP port allows access to the internal web server of the Master Controller for remote programming settings and interface with SCADA / DCS systems.

✓ Wire Feeder Control

- Control up to two independent Wire Feeders, one for each heating station

- Control parameters:

- >> Quantity and speed of wire feeding
- >> Quantity and speed of wire rewind
- >> Activation time of alloy feeding
- >> Wire feeding motor torque
- >> Wire presence sensor



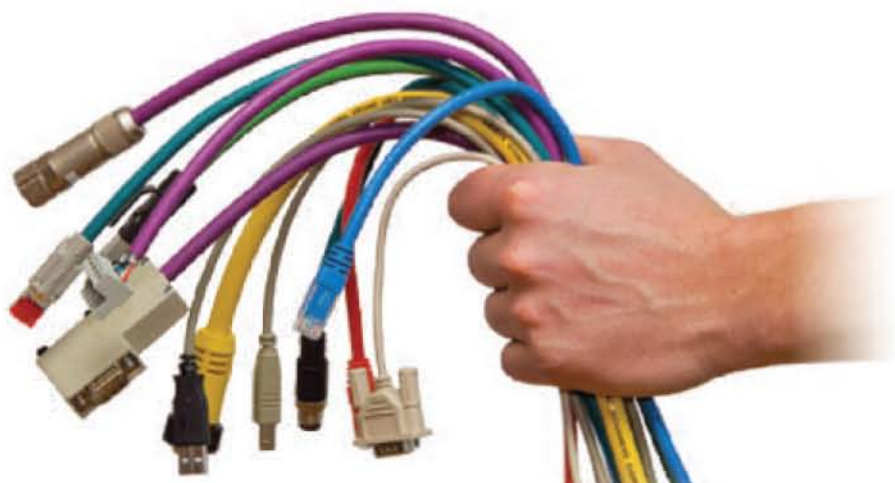
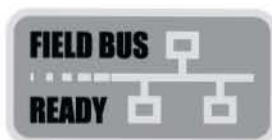
MASTER CONTROLLER V3+ **Multifunction Heating Process Controller**

Field Bus Management

- Management and control of the heating process via Field Bus protocol:
 - >> Profinet
 - >> EtherCAT
 - >> EtherNet / IP
 - >> Others upon request [DeviceNet, Profibus, CANopen, CC-Link, componet, ControlNet, Modbus-RTU or TCP, SERCOS III]

- Main Master Controller functions managed:
 - >> Start / Stop cycle
 - >> Abort / Reset cycle
 - >> Set Point Power
 - >> Temperature measured in real time
 - >> Set Point Temperature
 - >> Power output in real time
 - >> Thermal profile step in progress
 - >> Generator diagnosis

- Field Bus and Network compliance certification available upon request



Model Configuration

BASE UNIT		Code	
MASTER CONTROLLER V3+		MASTER-C-V3+	
OPTIONS		Code	
WIRE FEEDER CONTROL	Management of two independent wire feeders [one for each soldering point]	V3+/WF	
THERMAL PROFILE CONTROL	Thermal profile working mode	V3+/TP	
ETHERNET BOARD INTERFACE	Web Server & Data Logger	V3+/IXC	
ETHERCAT FIELD BUS INTERFACE		V3+/FB -ETHERCAT	
PROFINET FIELD BUS INTERFACE		V3+/FB-PROFINET	
ETHERNET/IP FIELD BUS INTERFACE		V3+/FB-ETHERNET/IP	
ACCESSORIES		Code	
	PROGRAM CARD	SDC Card to save / load up to 100 work programs	55265
	CONTROLLER TO OPTICAL PYROMETER CONNECTION CABLE	1,5 m length	49438
		4 m length	49439
	WIRE FEEDERS	0.3 to 0.65 mm silver wire feeder	PW3-WF/0.5
		0.7 to 1.1 mm silver wire feeder	PW3-WF/1
		0.8 to 1.2 mm tin wire feeder	PW3-WF/ST1
		1.3 to 1.7 mm tin wire feeder	PW3-WF/S1,5
	GAS DIFFUSERS	Anti-Oxidizing gas diffusion system	S6100
		Cooling and Anti-oxidizing gas diffusion system	S6101
	ACTIVATING PEDAL	1,5 m	3457
		4 m	46059
	RS-232 CABLES	RS-232 cable [M-F] for the connection between the Controller and the Generator [1 m length]	19623
		RS-232 cable [M-F] for the connection between the Controller and the Generator [3 m length]	23243
		RS232 cable [F-F] for the connection between the Controller and a Computer [3 m length]	50086



SH/SLE

Compact Optical Pyrometers

SH/SLE Compact Optical Pyrometers

Compact Pyrometers for Measurement of metallic surfaces
between 80°C and 2200°C

SH/SLE series

- >> SH15/SLE Single-color Series
80°C to 2000°C
- >> SH2C/SLE Dual-color Series
600°C to 2200°C

Features

- Emissivity adjustable from 0.1 to 1 [SH15/SLE series]
- Temperature measurement independent from metal emissivity [SH2C/SLE series]
- High Accuracy
- High-Speed
- Very Compact design
- Available with different focus distance and aiming spot size
- LED aiming light
- Supplied with Calibration Report traceable to Certified International Standards
- AISI 304 Stainless Steel Construction

CEIA offers a wide range of infrared optical sensors, equipped with low-intensity LED aiming, which covers an operating temperature range from 80°C to 2200°C.

The SH/SLE sensors allow high quality management of the heating process according to the set temperature values. The reduced overall dimensions allow an easy integration of the pyrometer in automatic production systems. Up to two optical sensors for temperature measurement can be connected to the generator.



✓ SH/SLE Pyrometers Selection

MODEL	TEMPERATURE RANGE
SH15/SLE-550-D1	80... 700°C
SH15/SLE-550-D2	120... 900°C
SH15/SLE-550-D3	200... 1600°C
SH15/SLE-550-D4	500... 2000°C
SH2C/SLE	300... 2200°C



CEIA SH/SLE Pyrometer mounted on S3M
micrometric optical sensor base 

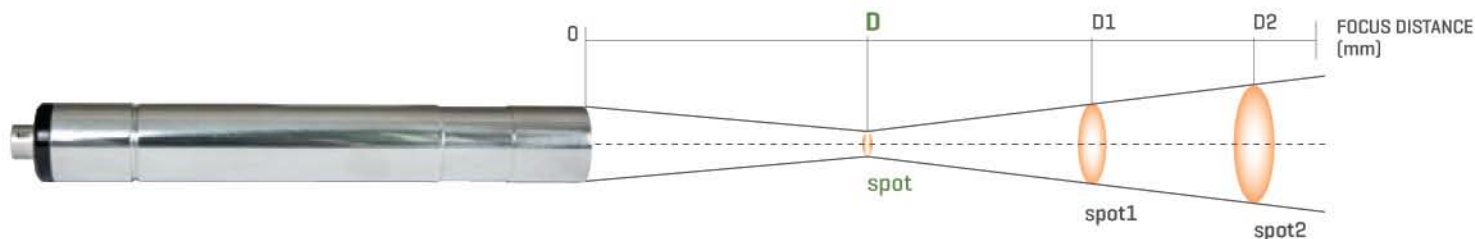
✓ Specifications

SH15/SLE		SH2C/SLE	
		Single-color mode	Dual-color mode
TEMPERATURE RANGE	80... 2000°C	300... 2200°C	600... 2200°C
TEMPERATURE RESOLUTION	0.1 °C (up to 999.9 °C) 1 °C (above 1000 °C)	0.1 °C (up to 999.9 °C) 1 °C (above 1000 °C)	0.1 °C (up to 999.9 °C) 1 °C (above 1000 °C)
EMISSION RANGE	0.1-1.0	0.1-1.0	N/A
READING SPOT DIAMETER	see table	see table	see table
FOCUS DISTANCE	see table	see table	see table
RESPONSE TIME	100 µs Time Constant		
UNCERTAINTY	± 0,3% of reading in °C. All Pyrometers are supplied with calibration report traceable to certified International Standards		
MEASUREMENT SPOT AIMING	High Definition, 620 nm wavelength led beam		
INTERNAL DIGITAL CONTROLS	Offset and Range Calibration Parameters		
	Environmental Temperature Measurement and Correction		
	Automatic Gain Range Selection		
POWER SUPPLY	+/-15 V - +10/-5 mA, directly supplied by CEIA Controllers		
CONNECTION CABLE	Diameter 4.8 mm x Length 5 ... 1.5 ... 4 m		
HOUSING	AISI 304 Stainless Steel		
WEIGHT	100 g		
HOUSING PROTECTION CLASS	IP65		
OPERATING TEMPERATURE	0 °C to + 65 °C		
STORAGE TEMPERATURE	- 25 °C to + 70 °C		
CONFORMITY	Complies with international standards currently applicable for Electrical Safety and Electromagnetic Compatibility (EMC)		

SH/SLE

Compact Optical Pyrometers

✓ Model Configuration and Optics Data



MODEL	Close-up lens	D distance [mm]	Spot diameter [mm]	D1 distance 1 [mm]	Spot 1 diameter [mm]	D2 distance 2 [mm]	Spot 2 diameter [mm]
SH15/SLE-550-D1 80... 700°C	Included	550	12.5	1000	36	2000	86
	CL240/SH15	240	4.5	500	24	1000	63
	CL120/SH15	120	2.5	250	19	500	52
	CL60/SH15	60	0.5	150	18.5	300	51
SH15/SLE-550-D2 120... 900°C	Included	550	4.5	1000	21	2000	57
	CL240/SH15	240	1.5	500	18	1000	51
	CL120/SH15	120	1	250	17	500	46
	CL60/SH15	60	< 0.4	150	19	300	50
SH15/SLE-550-D3 200... 1600°C	Included	550	2	1000	16.5	2000	47
	CL240/SH15	240	0.6	500	16	1000	47
	CL120/SH15	120	< 0.4	250	15	500	44
SH15/SLE-550-D4 500... 2000°C	Included	550	2	1000	16.5	2000	47
	CL240/SH15	240	0.6	500	16	1000	47
	CL120/SH15	120	< 0.4	250	15	500	44
SH2C/SLE 300... 2200°C	Included	550	12.5	1000	36	2000	86
	CL240/SH15	240	4.5	500	24	1000	63
	CL120/SH15	120	2.5	250	19	500	52








TYPICAL APPLICATIONS

SH15/SLE model

- ANNEALING
- BONDING
- BRAZING
- CAP SEALING
- CURING
- FORGING
- HARDENING
- HOT FORMING
- LOCALIZED HEATING
- MELTING
- METAL GLASS SEALING
- NORMALIZING
- PREHEATING
- SINTERING
- SHRINK FITTING
- TEMPERING
- TIN SOLDERING

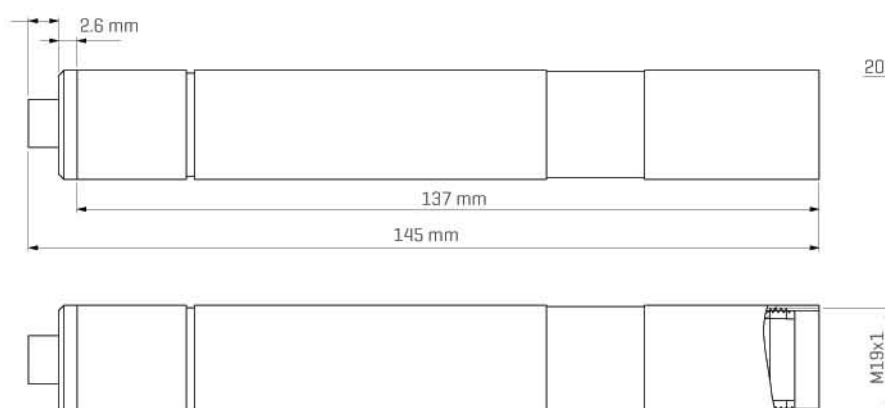
SH2C/SLE model

- HARDENING, FORGING, BRAZING, SOLDERING
- NOBLE METALS MELTING AND PURIFYING
- WIRE/ROD MILL
- SILICON PROCESSING
- GLASS INDUSTRY - GOB TEMPERATURE MEASUREMENT
- CEMENT INDUSTRY - CLINKER TEMPERATURE IN ROTARY KILNS

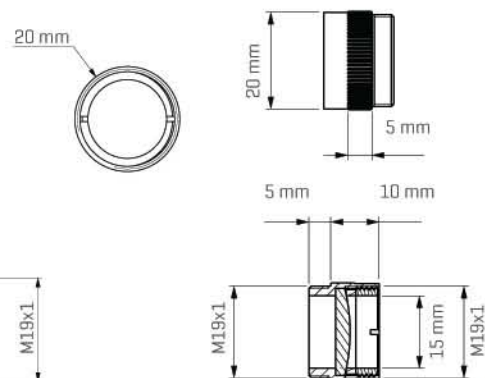
ACCESSORIES	Description	Focus distance	Code
	CLOSE-UP LENS SH15-FOCUS	240 mm	CL240/SH15
		120 mm	CL120/SH15
		60 mm	CL60/SH15
	COOLING JACKET UNIT WITH INTEGRATED AIR PURGE		SLE-PURGE-COOL
	90° VIEW MIRROR SYSTEM		SLE-90D-BD
	AIR PURGE UNIT		SLE-PURGE
	CONNECTION CABLE	Length: 1.5 m	49438
		Length: 4 m	49439
	ES3M MICROMETRIC OPTICAL SENSOR BASE		23497
	SH23 OPTICAL SENSOR BASE		21871

DIMENSIONS

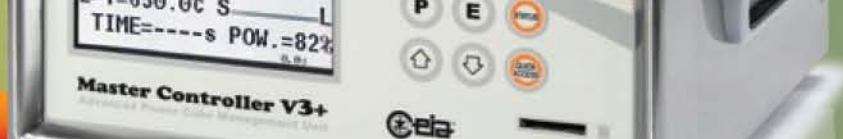
Pyrometer



Additional lens



MASTER CONTROLLER V3+



Technical Data

HEATING SYSTEM SET-UP	Alternating between the two heads (if connected to a single Power Cube generator)
	Simultaneously on two heads (if connected to two Power Cube generators)
MANAGEMENT AND CONTROL	Capable of driving Power Cube generators in continuous operation
	Activation of cycle: via external contact, RS-232 or Fieldbus interface
	Control and Time Programming of 2 antioxidant gas diffusers, 2 heating heads and 2 wire dispensers
	Available Settings: heating power; heating temperature (resolution 0,1°C); wire quantity and speed; antioxidant gas supply times; maximum solder force; wire feeder; piston advance delay
	Control of the temperature of the article being processed: via optical temperature sensors, thermocouple or external sensors
	SH15/SLE sample rate: 0.5 milliseconds
FUNCTIONING MODES	SH15/SLE time constant: 0.1 milliseconds
	Manual
	TIMER A: fully time-programmable cycle phases with controlled-temperature holding time
	TIMER B: fully time-programmable cycle phases with programmable heating time and optional temperature control
	TIMER C: fully time-programmable cycle phases, heating programmable with two times and two power levels
	SYNCHRONISED: as TIMER A with holding time synchronised by an external event
	FULL AUTO: as TIMER A, with management of the automatic solder wire feeder
	FULL AUTO 2 WIRES: as Full auto, with the possibility of applying two independent solder wire feeders at the same soldering point (available only with -TS option)
CONTROL INPUTS	2 inputs for the connection of CEIA optical temperature sensors
	2 insulated digital inputs for connecting the cycle activation pedals
OUTPUTS FOR ACTIVATION OF EXTERNAL SLAVE DEVICES	2 insulated digital inputs for halting the operating cycle
	4 0-10V (or 0-20 mA, or 4-20mA) inputs (2 used for power control and 2 for temperature control)
	2 insulated inputs (RS232) for connection to external programmable units
	2 serial outputs for connecting and managing two independent Power Cube generators
	2 outputs for activation of antioxidant gas diffusers
	2 outputs for "Generator ON" signals
	2 outputs for "Temperature reached" signals
	2 outputs for activation of rapid cooling gas diffusers
	2 outputs for "End of cycle" signals
	2 insulated inputs (RS232) for connection to external programmable units
SELF-DIAGNOSIS	Check of temperature and on the cooling water presence
	Correct inductor dimensioning check
	Internal malfunction
	Working cycle malfunction
	Reading/writing malfunction of internal memory cells
	Inductor short circuit
	Reading/writing malfunction of Program Card memory cells
	Power Cube missed connection
INTERNAL MEMORY	Generators parameter screenshot
	Supply voltage too low
REMOVABLE DATA FLASH CARD	Supply voltage too high
	Soldering wire presence
POWER SUPPLY AND POWER	Phase missing (if connected to 90, 180, 360 and 720 Power Cube Generators)
	Programming access control through a password
OPERATING CONDITIONS	100 sets of working parameters
	100 different storable thermal processes made of up to 20 segments per process (TP versions)
CONTAINER	100 sets of working parameters storable on each card
	100 different storable thermal processes made of up to 20 segments per process (TP versions)
SAFETY FEATURES	Power supply voltage: 195-255 Vac, 1~ 50/60 Hz
	Maximum absorbed power: 60 W
CONTAINER	Operating temperature: + 5 to + 55 °C
	Storage temperature: - 25 to + 70 °C / Relative humidity: 0-95% (without condensation)
SAFETY FEATURES	Stainless steel construction
	Dimensions (WxDxH): 275 mm x 265 mm x 140 mm / Weight: 6 kg
SAFETY FEATURES	Insulation from the mains voltage
	Low operating voltage; no risk for the operator
SAFETY FEATURES	Complies with international standards currently applicable for Electrical Safety (EN 60204-1) and Electromagnetic Compatibility (EN 61000-6-2, EN 61000-6-4)

