



Furnace Controller for Carburizing MCON Carbo

Special Features:

- Controls and regulates C-level, oven and oil bath temperature
- Various types of thermocouples, lambda-, O₂-probes and other gas sensors e.g. CO, CO₂
- Redundancy according to CQI9, i.e. C-level measurement using one or two probes
- Probe monitoring e.g. flushing, measuring internal resistance, etc.
- Integrated web server for remote access or maintenance
- C-level correction by foil tests
- Up to 3 PID-parameter settings for temperature- and C-level control
- Gas valve safety monitoring for custom temperatures
- Color-TFT-touch-screen display with additional keypad
- RS485 Modbus-interface usable as internal circuit for I / O-expansions
- Multi-user access with usernames, passwords and access levels
- Isolated analog inputs
- Current supply 115 or 220V 50/60Hz or 24V
- Optional: Profibus, DeviceNet and custom protocols

Principle of Operation:

MCON Carbo is a new and advanced controller for control and regulation of carburizing processes in heat treatment plants. The controller is able to control up to three independent control loops. Next to the C-level, the oven temperature and oil bath temperature can be regulated additionally.. As a graphic recorder, the new controller can record all loops characteristic values.

All commercial thermocouples, lambda- and oxygen probes as well as gas sensors, e.g. CO, CO₂, can be connected to the MCON Carbo. To ensure the required redundancy according to CQI9, the controller can detect, evaluate and process signals of two measuring probes. In addition, the new generation of controllers offers various checking mechanisms and monitoring capabilities.

The carburizing process, with its involved C-level and temperature set points can be controlled at the designated time domains by up to 99 programs with 24 segments and 16 control tracks. The control tracks can also activate digital outputs, once the program has reached the desired segment.

Advantages:

- **Direct wireless access to all new MESA equipment**
- **99 programs with 24 segments and 16 control track**
- **Custom alarms and soot limitation control**
- **Diagram display**
- **Ethernet and isolated RS485 / 422 Modbus interface**
- **Data transfer and firmware update via USB interface**
- **Up to 3 independent control loops**

Technical Data

Design:

ABS DIN ¼ housing for panel mounting

Degree of Protection:

IP54 according to IEC 60529

Dimensions:

96 x 96 x 111 mm (W x H x D)

Control Loops:

3 control loops (%C control, furnace temperature, oil quenching bath)
3 PID-parameter settings per control loop
PID or On/Off control

Control Output Types:

Heating/cooling, gas/air, valve control or analog output
Custom designed digital outputs for process control

Communication Interface:

Ethernet, non isolated RS485/422

Power Supply:

AC 85VAC...265VAC, 50-60Hz or
DC 10VDC...36VDC.

Power Consumption:

15VA

Display:

Color-TFT-touch-screen display, 320 x 240 pix
16bit, 3,5' with robust touch-screen

The user can define his own alarm thresholds which do not only control critical values but also activate therefor occupied outputs. Predefined alarms are triggered automatically if unexpected system conditions (reaching soot limit, probe errors, control errors, etc.) occur.

Our MCon Carbo is fully configured with 2 RS485 MODBUS (master and slave) and a TCP / IP Modbus slave interface. An integrated web server allows remote access to all new MESA devices.

User accounts with password protection improve the safety in usage by locking access levels, parameters and functions depending on user privileges.

Of course the controller is available with only one or two control loops.

C-Level Measuring Range:

0...2.0 %C

C-Level Measurements:

Sensors for measurement: O₂, lambda probes or CO and CO₂ analyzer

Use of one or two sensors

Fixed or measured CO and CO₂ values

Up to 5 correction points

Spline interpolation for both probes

Optional:

Isolated RS485/422, Profibus

Accessories

Standard bracket mechanism for mounting