

# Furnace Controller for Nitriding MCON Nitro



## Special Features:

- Menu-guided operation
- Color-TFT-touch-screen display, 320 x 240 pix
- Exact control
- Connections of one thermocouples type B,C,E,J,K,L,M,N,R,S,T by choice
- Program memory with 99 set point programs with 24 segments and 16 control track for Kn- and process temperature (time synchronous)
- Program tracks, free eligible
- Continuous control of ammonia, PID control
- Transfer output, Kn
- All inputs and outputs 4...20 mA (unless thermocouple)
- Directly adaptation of flowmeter controller for NH<sub>3</sub>, N<sub>2</sub>, CO<sub>2</sub> or Endogas
- 2 ammonia flowmeter controllers for small or great quantity are choose able (thereby high precision)
- Limit of control variable at ammonia quantity are separate possible
- Possibility for initial gas
- Set point programmer for process temperature is indicated

## Principle of Operation:

**MCON Nitro** measures H<sub>2</sub> level in furnace and calculate characteristic nitriding number Kn. Depending on the difference between measured Kn and desired Kn (setpoint), NH<sub>3</sub> flow is increased or decreased which directly affects dissolution of ammonia and thus H<sub>2</sub> level into furnace and Kn. In addition, device also controls the temperature in the furnace with heating or heating/cooling outputs. N<sub>2</sub> and Endogas flows are set points which are used to drive mass flow controllers while NH<sub>3</sub> flow is controlled with PID control algorithm in which process value is Kn and manipulation value is scaled to NH<sub>3</sub> flow.

The **MCON Nitro** is a measuring and control system for exact furnace atmosphere-control in nitriding- or nitrocarburizing processes. The 99 program controls of process-temperature and KN -values, with free eligible program time tracks and analogous outputs for NH<sub>3</sub>- N<sub>2</sub>- Endogas CO<sub>2</sub>, by mass flow controls enable a exact control of gas-nitriding processes. A controlled N<sub>2</sub>- thinning of the Nitriding atmosphere is possible. By use of the initial gas, it is possible to reduce the complete treatment time.

In connection with the program time tracks and a program selection in addition, a pre-oxidation of the components is possible.

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 (probe errors, control errors, etc.) occur.

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.

MCON Nitro controller is available with only one or two control loops.

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## 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:

2 control loops (Kn control, furnace temperature)  
3 PID-parameter settings per control loop  
PID or On/Off control

### Control Output Types:

Heating/cooling, gas/CO or (CO<sub>2</sub>, Endogas),  
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

### Power Consumption:

15VA

### Display:

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

### Kn-Level Measuring Range:

0...99.99 Kn

### Kn-Level Measurements:

Sensor for measurement H<sub>2</sub>

### Optional:

Isolated RS485/422, Profibus

### Accessories

Standard bracket mount bars

## Advantages:

Direct wireless access to all new MESA equipment  
99 programs with 24 segments and 16 control track  
Custom alarms and soot limitation control  
Custom alarms  
Diagram display  
Isolated RS485 / 422 Modbus, Profibus-DP,  
Ethernet interface  
Data transfer and firmware update via USB Interface  
Up to 2 independent control loops

### Article number

700-0350

### Device name

MCon Nitro

### Optional accessories

700-1100

Profibus DP V1 MCon

700-1101

Modbus RTU protocol MCon

700-1102

MESA Legacy protocol MCon