

## Control system Nitromat - K<sub>N</sub>



### Function:

The **Nitromat-KN** 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 NH3-N2-EndogasCO2 ,by mass flow controls enable an exact control of gas-nitriding processes. A controlled N2- 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.

### Special features:

- Menu-guided operation, plain text
- Foil keyboard
- Exact control
- Connections of one thermocouples Type "S" or "K" by choice
- Program memory with 99 set point programs 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 flow meter controller for NH3 , N2 , CO2 or endogas
- 2 ammonia flowmeter controllers for small or great quantity are chooseable (there by high precision)
- Limit of control variable at ammonia quantity are separate possible
- Possibility for initial gas
- Set point programmer for process temperature is indicated
- Option:
  - Serial interfaces(RS422/RS485)

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## Technical Data:

### Construction:

Type of protection of the front is IP 43

### Dimensions:

144 x 144 x 300 mm (l x w x h)

### Auxiliary voltage:

230 Vac ± 10 % 50/60 Hz

### Power consumption:

About 15 VA

### Analog (in following combinations):

- H<sub>2</sub> analyzer
- Thermocouple type K or S
- Terminal temperature (Pt 100)
- H<sub>2</sub>
- actual value
- NH<sub>3</sub>
- actual value
- Endogas or CO<sub>2</sub>
- actual value
- External set value: analog or through serial Interface

### Digital:

- IN 0: program release with set point program in progress; otherwise, controller locked
- IN 1: program continuation in succession
- IN 2: input disable

### Measuring range:

0,2...50 KN

### Analog output:

- KN- Value
- N<sub>2</sub>
- actual value
- NH<sub>3</sub>- control output
- Temperature controller output

### Switching outputs:

- 3 control tracks freely available
- Signal actual values in tolerance range
- Signal program active
- Signal Alarm indication
- Signal switching for ammonia flowmeter controller
- Signal CO<sub>2</sub>-bonus (at Nitrocarburizing)
- Signal gas release

### All outputs "open collector" 24 V / 100 mA

(You need switching outputs with relay contact, please notice our data sheet Auxiliary unit REL 45..)

### Serial interface (option):

- RS 232
- RS 422 / RS 485

### Display:

Graphical LCD display with 160 x 128 pixels

### Operation:

Five keys (soft keys) with user guidance (menu guidance);  
respective function of the keys indicated on display

### Set point:

- 4 preset points for C level
- 99 set point programs for KN- temperature profiles, internally storable and recallable;  
(program travel time per program: up to 100 h)
- 23 segments / program

### Climate:

Storage: -10...+60 °C  
Operation: 0...+42 °C  
5...95 % relative humidity, non-condensing