μP Automatic Burner Control MPA 41xx

Automatic burner control for one-stage and modulating gas burners

Description
Microprocessor-controlled automatic gas burner control for intermittent and continuous operation of one-stage atmospheric burners or one-stage or modulating fanned burners. The program sequence and times can be customised by setting software parameters.

Versions
- MPA 4111 without display
- MPA 4112 with integrated display
- MPA 4122 with metal housing and integrated display

Application
For one-stage or modulating gas burners with or without ignition gas. In particular for industrial thermoprocessing equipment to EN 746-2.

Approvals
EC type testing certificate as per:
- EC-Gas Appliances Regulation
- EC-Pressure Equipment Directive

FM Approved to FM 761
UL Recognized Component per UL 372, UL 1998 and CSA C22.2.
GOST / Rostechnadzor
Suitable for applications up to SIL3.
Meets the requirement according to IEC 61508 (2nd Ed. 2011)
Certified by TÜV Süd

• Automatic gas burner control for one-stage burners with pilot burner or direct ignition
• Continuous operation
• Configurable program sequence
• Version with or without display
• Two independent flame detectors:
  - Ionisation input
  - Gate input
• Additional functions by extension modules
• Profibus
• Accessories
  - Flame detector
  - Ignition transformers
  - Parameterisation and service box

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MPA 41xx automatic gas burners are suitable for all types of one-stage or modulating gas burners with and without ignition gas.

The flame is monitored either by means of an ionisation input, gate input or both inputs for burners with two flame detector positions.

- For atmospheric burners and fan burners
- Suitable for continuous operation
- MPA 4112/4122 configuration without laptop/PC via display
- Ionisation and gate inputs as flame detectors
- Extension module for Profibus communication

**Wiring scheme**

The wires which are used for the connection must be approved for ambient temperatures of minimum 75 °C (167 °F).

**Example for connection**

**Atmospheric burner with ignition gas output**

Atmospheric burner with ignition gas output. After the heat request and an adjustable delay, the ignition is switched on and V1 and Vz are opened. After the flame has been detected, the main gas flow V2 is opened.

**Fan burner, direct ignition:**

Fan burner, direct ignition of the main gas flame. After the heat request, the fan is switched on, and the air pressure is checked by the pressure switch. After the pre-aeration time has lapsed, the ignition is switched on, and the two valves V1 and V2 are opened together.
The program sequence and times can be modified on the mounted display (MPA 4112/MPA 4122) to match each application.
A laptop or PC is not required for the modification.
The automatic burners are protected by passwords against unauthorised access.

Display modes
Operation display
- Display of the current operating state
- Display of the program state
- Display of bus address

Info display
- Display of flame quality
- Display of resettable counters for start-up, operating hours and operating cycles

Error display
Display of the error memory
- Automatic activation of error messages
- Additional information about faults
- Query of the last ten faults

Accessories
Flame detector
FLW 10 IR
IR flame detector for connection to ionisation input. Suitable for intermittent operation.

FLW 20 UV
UV flame detector for connection to ionisation input. Suitable for intermittent operation.

UV 41 (HE)/UV 42
UV flame detector for high mechanical load; metallic version. Suitable for intermittent operation.

With shutter module suitable for continuous operation

FLW 41 I
Flame safeguard module for ionisation flame monitoring. The FLW 41I is connected to the second flame guard input of the MPA 41xx.
When equipped with an extension module, for example EM 2/4, suitable for continuous operation.

Parameter display
- Password-protected functional levels for service and OEM parameter settings
- Setting of important parameters such as:
  Pre-purge time
  Safety time for startup phase
  Post-purge time
  Behaviour after flame lift-off
  Operating modes of V1 and V2
  Continuous or intermittent operation

Communication
MPA 41 extension module EM2/4
Additional circuit board and connector set for Profibus DP and Modbus communication.

MPA 41 extension module EM2/6
Additional circuit board for Profibus DP and Modbus communication.
PWM output for open loop control of DC fans, voltage-/current output also program state related relay outputs.

Parameter setting and service
MPA 41 parameterisation and service box
Universal support for checking devices in the field; for producing small and medium series.

MPA Vision Box
In addition to MPA41 parameterisation and service box for setting parameters via a PC/laptop.
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MPA 41xx

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**Technical Data**

- **Rated voltage**: 115 VAC -15 % ... +10 %
  (depending on the model)
- **Frequency**: 50 Hz...60 Hz
- **Power consumption**: max. 10 VA
- **Fuse**: max. 6.3 A slow-blow or 10 A fast-blow
- **Ready signal**: max. 1 A
- **Fault signal**: max. 1 A
- **Gas valves**: max. 2 A
- **Fan**: max. 1 A
- **Ignition**: max. 1 A
- **Flame detector supply**: 230 VAC / 10 mA
- **Flame detector ionisation**: ionisation
- **Ionisation current / operation**: 10-20 µA
- **Shutdown sensitivity**: 1.2 µA
- **Short-circuit current limit**: approx. 280 µA
- **Unlocking due to fault**: Pushbuttons and remote unlocking
- **Type of protection**: MPA4111 / IP 42
  MPA4112 / IP 54
  MPA 4122 / IP 65
- **Ambient temperature**: -40 °C - +70 °C
  -20 °C - +60 °C (UL approval)

**Ordering data**

- MPA 4111/230 VAC Order No. 259 058
- MPA 4111/115 VAC Order No. 259 062
- MPA 4112/230 VAC Order No. 259 066
- MPA 4112/115 VAC Order No. 259 070
- MPA 4122/230 VAC Order No. 260 347
- MPA 4122/115 VAC Order No. 260 355
- MPA 4111 Order No. 259 361

**Extension module**

- EM2/4 MPA 411x on request
- EM2/4 MPA 412x on request
- Profibus DP,
  Modbus, Shutter
- EM2/6 MPA 411x on request
- EM2/6 MPA 412x on request
- Profibus DP,
  Modbus, Shutter,
  PWM, analog In/Out

**Flame detector**

- FLW 10 IR Order No. 255 216
- FLW 20 UV Order No. 250 733
- FLW 41 I Order No. 258 396
- UV 41 Order No. 256 692
- UV 41 HE Order No. 260 575
- UV 42 Order No. 258 385
- UV 4x-EM 1/1 (Shutter) Order No. 259 361

Subject to technical modification in the interest of technical progress.

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