

# Process controller MIC900

» for universal cooking and smoking chambers, air conditioned smoke and maturing chambers

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CONTROLS for  
FOODTECHNOLOGY

## » OVERVIEW



MIC900 (7" Display)

The process controller **MIC900** with touch screen surface of 7" TFT-Display in resistive touch technology, several interfaces, a housing conforming to industrial standard is designed to be used in **universal cooking and smoking chambers, as well as climatic smoke and maturing chambers.**

The standard model of the controller has **4 Pt100 temperature inputs and 2 transposable inputs between Pt100 and power 4-20mA/voltage 0-10V or thermocouples** (according to standard DIN EN 60584).

**Pt100 can be connected as two-wire circuit or as three-wire circuit. In three-wire connection a lead compensation is not necessary because it takes place automatically. At 2-wire connection a digital lead compensation can be done.** The standard version of the controller has **16 relay outputs (12 closers, 4 changeover contacts) and 12 digital inputs.** The controller can be expanded with 2 analogue inputs or 2 analogue outputs (transposable between 0..20mA and 0..10V). For communication there are the following serial interfaces: **LAN/Ethernet and USB Serial Port. Via the USB Serial port you can make a firmware update any time.**

Up to 72 relays, up to 48 digital inputs, several analogue in- and outputs can be allocated as an option via additional modules. To be ideally suited to the required task, each control loop can be pre-programmed to be a **two-point controller, a XP-controller or PID.**

The **serial interface enables you to transfer data between the controller MIC900 and a PC.** Programming of the controller via a PC is easier because of the **aditec service programme.** The visualization programme **aditec "VisuNet"** offers the possibility of linking the controller to a super-ordinate programme-surveillance and of logging temperature and humidity trend, processes etc. It thereby ensures a comprehensive quality control of the products treated in the units in accordance with **HACCP and IFS (ISO 9000).** Use the remote maintenance system/telecontrol system **aditec-control to not only run and monitor the VisuNet programme but to make changes to the system** from anywhere you happen to be (Internet).

### **aditec Serviceprogramm– free of charge for our customers!**

An easy to use, menu-guided service programme for the basic configuration, which means freely programmable relays, processes, programme steps, as well as user programmes with user-defined labelling of programmes under WIN WIN7 / 8.0 / 8.1 / 10 /Server 2008 / Server 2012.

## » FEATURES

- Brilliant 7" TFT-colour display with touch screen surface in resistive touch technology , suitable for industrial application
- Anodized aluminum frame, robust stainless steel case over, ideally suited for the food industry
- Number of programs and steps individually adjusted, max.1980 steps total, but max.99 programs and 99 steps selectable
- Easy operation
- Text display can be switched to a different language
- Most important texts are freely programmable
- Messages as scrolling text display
- Configuration is protected by codes
- 48 programmable process texts
- in- and outputs are freely programmable
- programmable nominal value limits
- all nominal values can be displayed during operation and transiently changed
- option of either relative humidity control or impulse humidifying (interval steaming)
- each control loop can be pre-programmed to be a two-point controller, a XP-controller or PID
- Delta-T-cooking
- F-value-cooking (FC 70-10), FC 121-10 or individually
- Options for shut down (at end of a step) are: Time limit, exceeding the core temperature value or the humidity value (drying), FC-value or cooling (falling below the core temperature value)
- Step time up to 99h : 59min or continuous operation
- Copying, inserting or deleting steps
- Step repetition
- Entering a batch number
- Autom. increasing the batch number (+1) at progr. start
- User rights for administrators
- Actual value alarms (limit value) for temperature and humidity
- Change-over of the measurement unit °C - °F
- Interfaces: LAN (RJ45), for PC connection, USB Serial Port. Via the USB Serial port you can make a firmware update any time.
- Programme that were interrupted through a power cut are resumed at the point where they stopped when power restored
- Freely programmable logic with AND/OR linked and timer
- Ramp control for temperature and pressure curves

### » additional features for climate control:

- Individual nominal value entry for heating and cooling (min./max. temperatures, humidity)
- Gentle motor start-up
- Control of ventilation motor (also infinitely variable) is dependent on temperature and/or humidity (intelligent air-circulation control)
- Automatic shut-down of the cooling function (cooling aggregate) through user-defined upper limit of actual and/or nominal values
- Regulation with outside air / Enthalpy

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## » TECHNICAL DATA

General data		
Material front	Aluminium frame, naturally anodized	
Housing	Robust stainless steel housing (1.4016)	
Cooling	passive (without fan)	
Dimensions	External dimension: HxBxD (mm):194 x 176 x 133	with built-in additional board ZR8: 194 x 176 x 160
	Mounting dimens. (cutout): HxB (mm): 137 x 137	
Own weight	2000 g	
Operating temperature	-20 to +65°C	
Storage temperature	-30 to +75°C	
Air humidity	35% - 80% (non-condensing)	
Atmosphere	Non-aggressive gases	
Protection class	IP65 front	
	IP 20 rear side	
Electrical data		
Power supply	85–260V AC / 50 – 60 Hz	optional 18-36V DC
Residual tipple	5%	
Current consumption	105 mA	at 230 VAC
Power consumption	24 VA	16 relays are controlled
Electrical safety	DIN EN 61010-1 Overvoltage category III	
Electromagnetic compatibility	DIN EN 61326-1 emitted interference, interference immunity	class A for industrial use, for industrial requirements
Battery lifetime (for real-time clock)	8-10 years	
Connection for relay outputs and power supply	Removable lift terminals with screws	wire min. 0,5 – max. 2,5 mm <sup>2</sup>
Connection for dig./analogue inputs	removable terminals in Push-in-technology (spring terminals)	min. 0,14 mm <sup>2</sup> – max. 2,5 mm <sup>2</sup> wire cross-section with 10 mm wire end sleeves
Display		
LCD size	7" (17,8 cm screen size)	
Resolution	800 x 480 WVGA	
Aspect ratio	16:9	
Technology	TFT	
Colours	16.7 millions	
Backlight	LED	
Luminance	330 cd/m <sup>2</sup>	
Contrast ratio	400:1	
Touch	resistive	

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6 x analogue inputs				
Sensor	Type	Measuring range	Accuracy	Ambient temperature effect
E1-E4	Pt100	-100... 500°C (-148... 932°F)	≤0,1%	≤100ppm/°C
	TFG80H	0...100 % relative humidity	≤0,6%	≤100ppm/°C
	P1000A	Potentiometer:1000Ω	≤0,12%	≤100ppm/°C
E5-E6	Typ K: NiCr-Ni	-200...1372°C (-328...2501°F)	≤0,4%	≤100ppm/°C
	Typ T: Cu-CuNi	-200... 400°C (-328... 752°F)	≤0,5%	≤100ppm/°C
	Typ B: Pt30Rh-Pt6Rh	250...1820°C ( 482...3308°F)	≤0,4%	≤100ppm/°C
	Typ E: NiCr-CuNi	-200...1000°C (-328...1832°F)	≤0,4%	≤100ppm/°C
	Typ J: Fe-CuNi	-210...1200°C (-346...2192°F)	≤0,4%	≤100ppm/°C
	Typ N: NiCrSi-NiSi	-200...1300°C (-328...2372°F)	≤0,4%	≤100ppm/°C
	Typ R: Pt13Rh-Pt	-50...1768°C ( -58...3214°F)	≤0,4%	≤100ppm/°C
	Typ S: Pt10Rh-Pt	-50...1768°C ( -58...3214°F)	≤0,4%	≤100ppm/°C
	0(4)...20mA	0..20 mA with R <sub>in</sub> = 200Ω	≤0,33%	≤100ppm/°C
	0(2)...10V	0-10V with R <sub>in</sub> = 100kΩ	≤0,13%	≤100ppm/°C
	0...1V	0-1V with R <sub>in</sub> = 100kΩ	≤0,1%	≤100ppm/°C
	Sensor HC2	Depending on sensor type	≤0,1%	≤100ppm/°C

**Optional:** Max. 8 additional analogue inputs via additional modules MAE 24 (4 inputs per module) → **a total of 14 analogue inputs**

2 x analogue outputs (optional)		Output areas
A1 and A2	0(2)-10V with R <sub>Last</sub> ≥ 1000 Ω or 0(4)-20mA with R <sub>Last</sub> ≤ 500 Ω	<b>Optional:</b> 2 additional analogue outputs via additional board ZA2 and max. 4 additional analogue outputs via additional modules MAE24 (2 outputs per module) → <b>a total of 6 outputs</b>

12 x Digital inputs		
D1..D12	potential free, D1..D10 usable as counting input to 1 kHz, pulse duration min. 0.5 ms, pause duration min. 0.5 ms	<b>Optional:</b> 36 additional digital inputs via additional modules MD12 (12 inputs per module) → <b>a total of 48 digital inputs</b>

16 x Relay outputs		
R1..R16	Potential free contacts switching capacity (250V AC, 4A), 4 change-over contacts and 12 closers	<b>Optional:</b> 8 additional relay outputs via additional board ZR8 and max. 48 additional relay outputs via additional module MR6 (6 outputs per module) → <b>a total of 72 outputs</b>

Serial interfaces		
USB	1x USB Host	
	1x MiniUSB Serial Port	
Ethernet/LAN	1x 100Mbit Ethernet/LAN (RJ 45)	
CAN	1 x Can Bus (system bus)	communication with additional boards
Memory	1x MicroSD Card Slot, MicroSD card to 32GB	

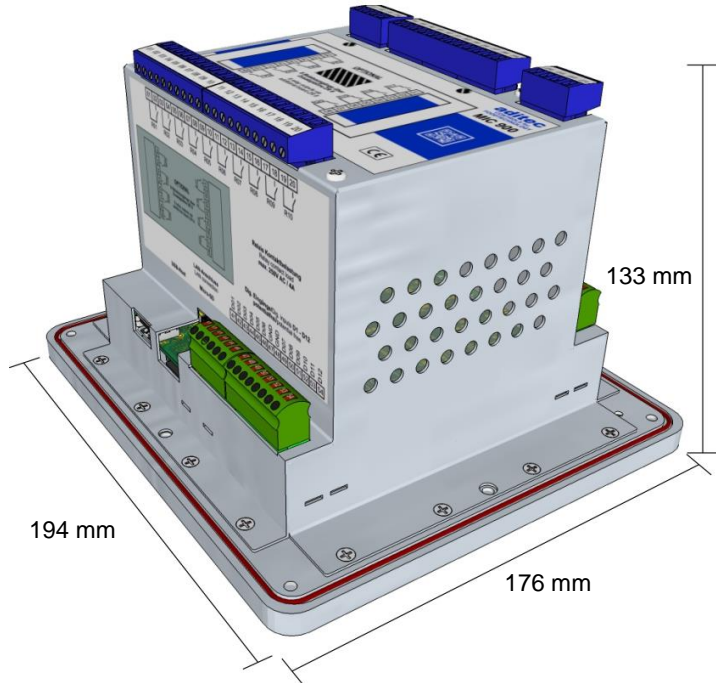
Galvanic isolation		
Mains input 85~264VAC/120~370VDC	4 kVAC/1min	Power input 18-36VDC -> 2,5kV Test 1 min. and 1mA max.
Sensor inputs (analogue inputs)	2 kV	
Digital inputs	3,75 kV	
Analogue outputs	4 kV	
Relay outputs	4 kV	
Serial interfaces		
- LAN	1,5 kV	
- USB Host	---	
- USB MiniUSB	---	
- SerialPort	---	

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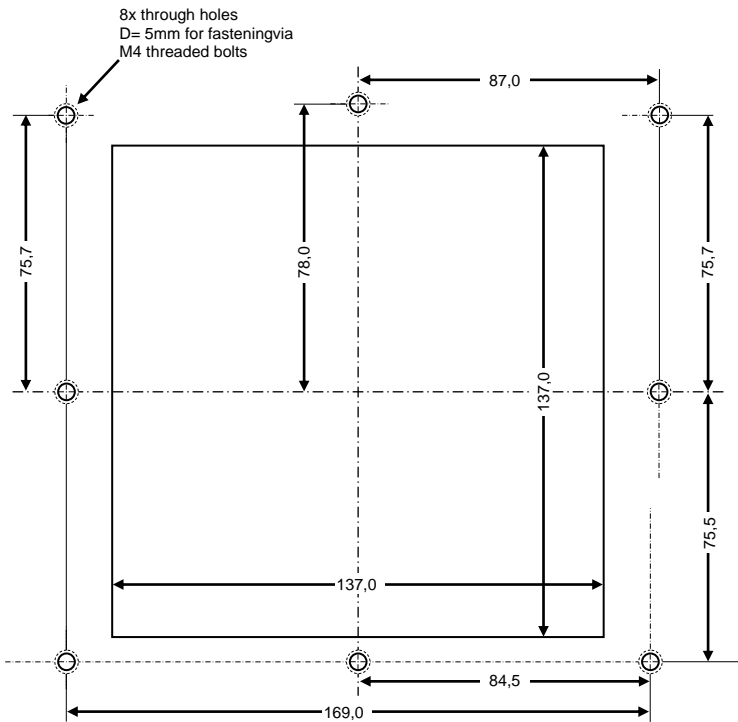
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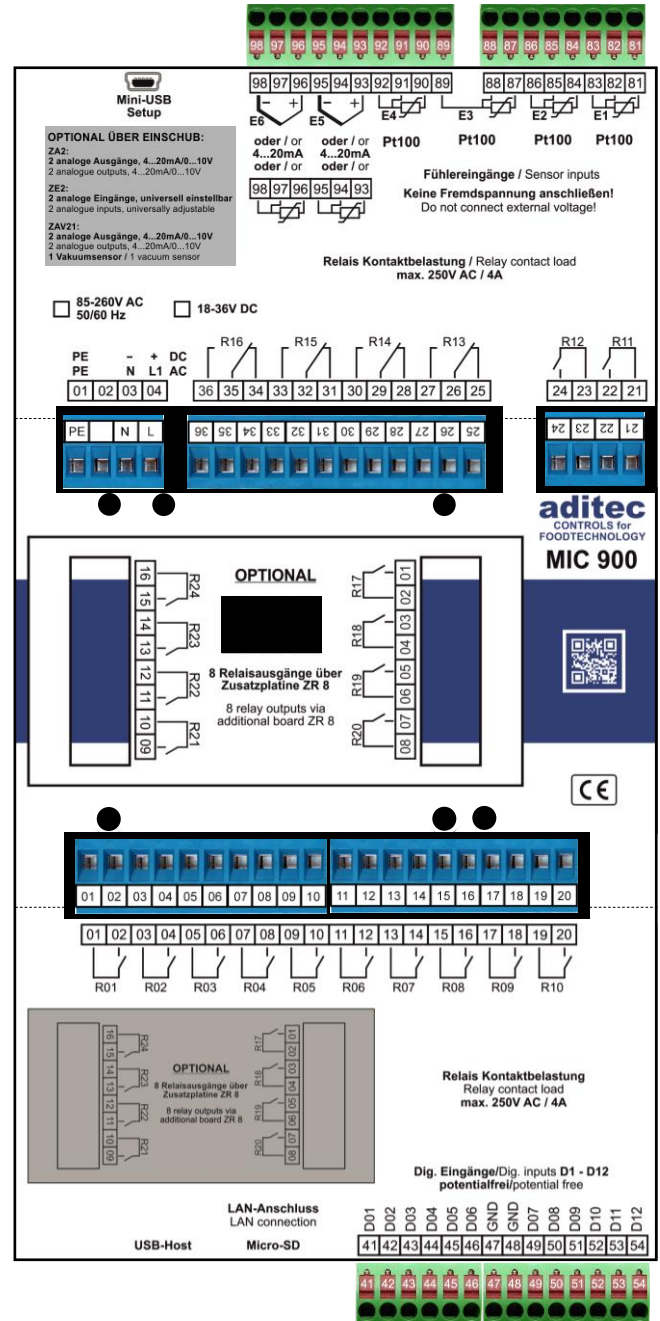
## » DIMENSIONS (with terminals)



## » CUT-OUT



## » CONNECTION DIAGRAM



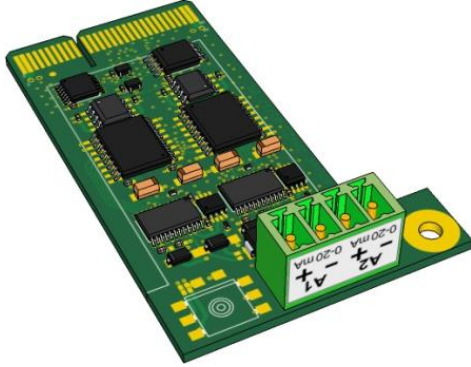
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## » ADDITIONAL BOARDS / OPTIONS SUITABLE FOR SUBSEQUENT INSTALLATIONS

- ▶ **ZA2:**  
ADDITIONAL BOARD  
2 ANALOGUE OUTPUTS  
4...20mA/0...10V



- ▶ **ZAV21:**  
ADDITIONAL BOARD  
2 ANALOGUE OUTPUTS  
+ 1 Vacuum sensor  
freely adjustable

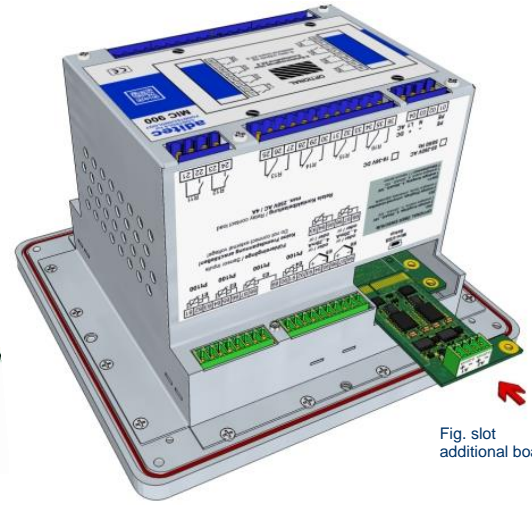


Fig. slot  
additional board

- ▶ **ZR8:**  
ADDITIONAL BOARD  
8 RELAY OUTPUTS

