Process controller MIC 3000

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

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CONTROLS for FOODTECHNOLOGY

» OVERVIEW

The process controller **MIC3000** 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 **24 relay outputs (16 closers, 8 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 and several analogue in- and outputs with additional modules** can be allocated **as an option.**

MIC3000 (7" Display)

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 MIC3000 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), USB Serial Port for PC connection. 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

» 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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Tel.: +49(0)7136 - 96 122-0 ■ Fax: +49(0)7136 - 96 122-20 ■ Web: www.aditec.net

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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 (incl. terminals)	External dimension: WxHxD (mm) 194x327x102	With built-in additional board ZR8: 194 x 327 x 132
	Mounting dims. (cut-out): WxH (mm) 137 x 282	
Own weight	3100 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	130 mA	at 230V AC
Power consumption	30 VA	24 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^2
Connection for dig./analogue inputs	removable terminals in Push-in-technology (spring terminals)	Min. 0,14 mm^2 – max. 1,5 mm^2 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^2	
Contrast ratio	400:1	
Touch	resistive	

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

2x analogue outputs (optional)	Output areas	
A1 and A2	0(2)-10V with $R_{Last} \geq 1000\ \Omega$ or 0(4)-20mA with $R_{Last} \leq 500\ \Omega$	**Optional:** 2 additional analogue outputs via additional board ZA2 and max. 4 additional analogue outputs via additional modules MAE24 (2 outputs per module) → **a total of 6 outputs**
12x 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	**Optional:** Max. 36 additional digital inputs via additional modules MD12 (12 inputs per module) → **a total of 48 digital inputs**
24 x relay outputs		
R1...R24	Potential free contacts switching capacity (250V AC, 4A), 8 change-over contacts and 16 closers	**Optional:** 16 additional relay outputs via 2 additional boards ZR8 (8 outputs per board) and max. 32 additional relay outputs via additional module MR6 (6 outputs per module) → **a total of 72 outputs**
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 kV AC/1min	Power input 18-36V DC -> 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 - USB Host - USB MiniUSB SerialPort	1,5 kV --- ---	

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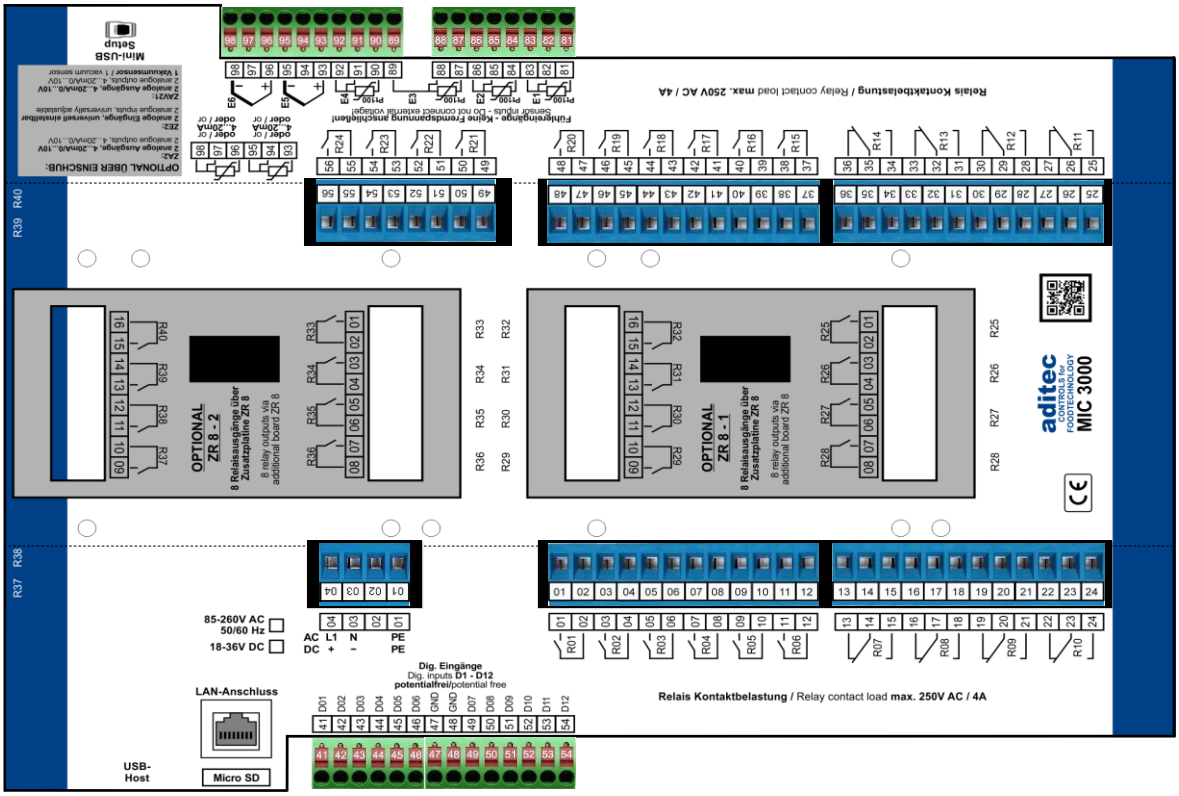
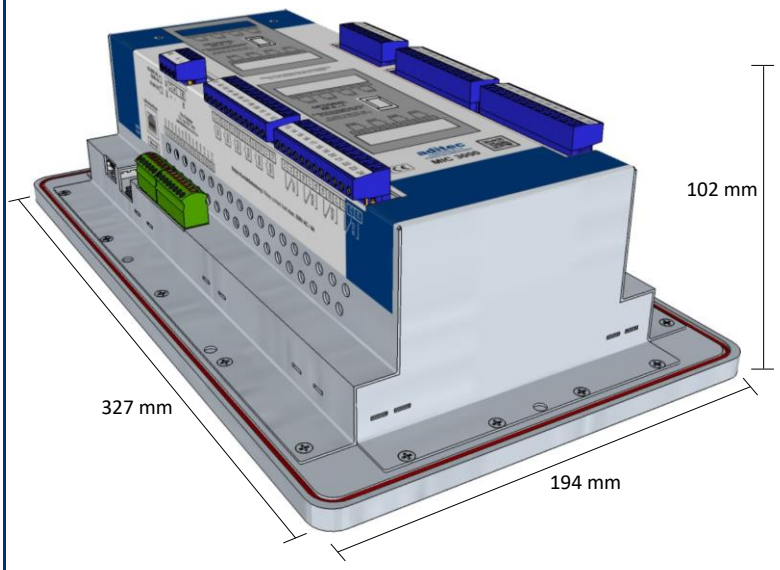
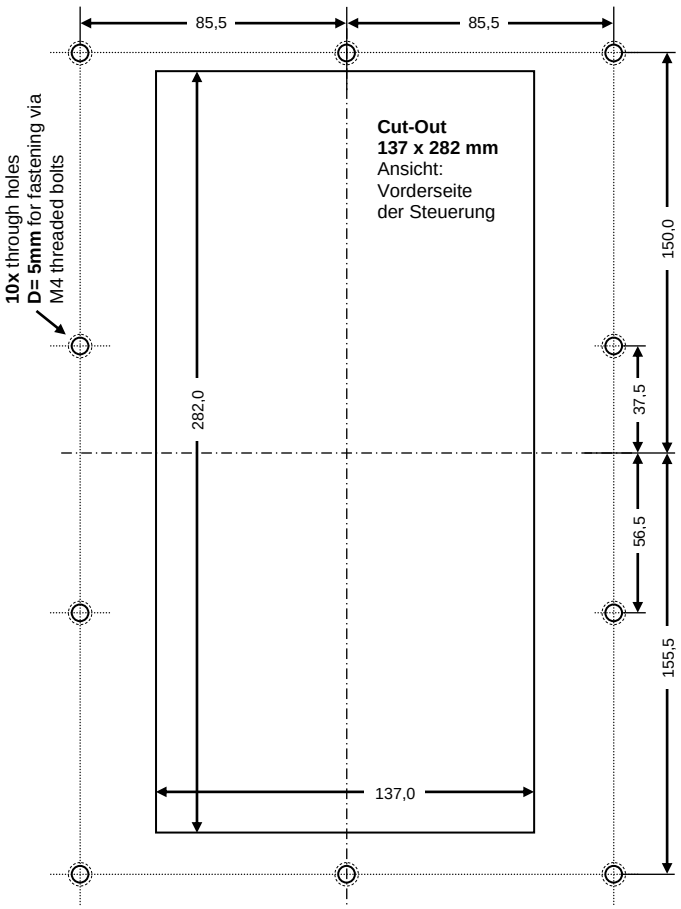
» CONNECTION DIAGRAM



» DIMENSIONS (with terminals)



» CUT-OUT



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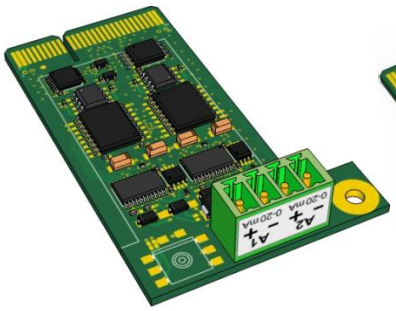
» ADDITIONAL BOARDS / OPTIONS SUITABLE FOR SUBSEQUENT INSTALLATIONS

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



▶ **ZAV21:**
ADDITIONAL BOARD
2 ANALOGUE OUTPUTS,
1 VAKUUM SENSOR

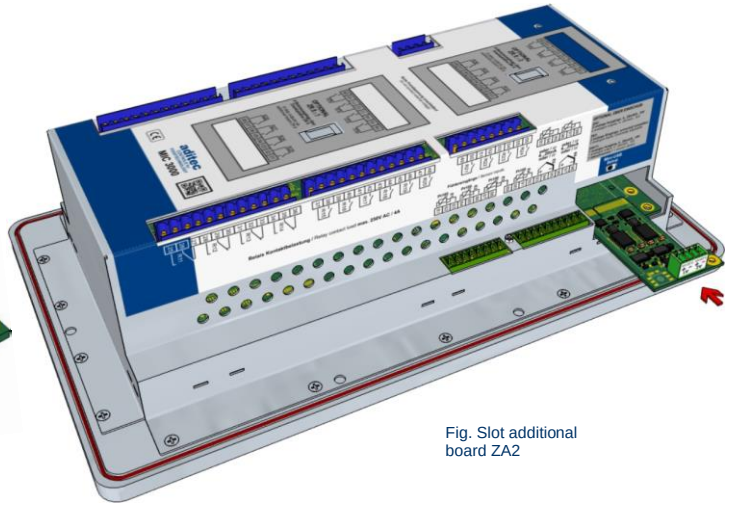
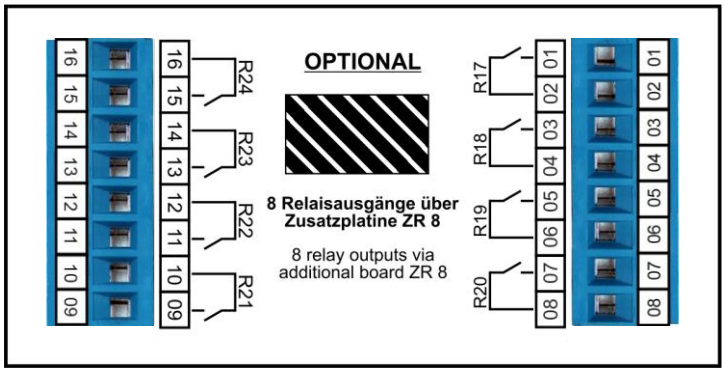


Fig. Slot additional board ZA2

▶ **2x ZR8:**
ADDITIONAL BOARD
8 RELAY OUTPUTS (16 total)



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