

## » OVERVIEW



Fig. MIC 990

Fig. MIC 980

## » FEATURES

- Brilliant 7" TFT colour screen with touch panel in resistive touch technology, suitable for industrial application
- Anodized aluminium frame and robust stainless steel case cover, ideally suited for the food industry.
- **MIC 980:**
  - Turntable control, rack oven
  - Entering bake and steam time
- **MIC 990:**
  - Adjustable number of decks (1-20 decks)
  - Overview of up to 5 decks, switchable to detail view of the selected deck.
  - Entering bake and steam time for each deck
- Weekday selection and start time for night start
- Detection of sensor defects (break or short circuit)
- Sensors: via 2- or 3-wire connection
- Digital lead compensation at 2-wire connection
- Automatic lead compensation at 3-wire connection
- Text display can be changed to a different language
- Most important texts are freely programmable
- Messages as scrolling text display
- Password-protected settings
- All in- and outputs are freely programmable
- Programmable nominal value limits
- All nominal values can be displayed during operation and transiently changed
- Circuits can be set to 2-Pt. behaviour, XP behaviour or PID
- Shutdown condition via time limit
- Adjustable baking time up to 99h : 59min (MIC 990: adjustable for each deck)
- Programming: Copying, inserting or deleting steps
- Actual value alarms (limit value) for temperature
- Change-over of the measuring unit from °C to °F
- Interfaces: LAN (RJ45) - for communication with a PC, USB Serial port - for firmware update.
- Programs that were interrupted through a power cut are resumed at the point where they stopped when power is restored.
- Freely programmable logic with AND/OR links and timers

The process controllers MIC 980 + MIC 990 with touch screen surface, 7" TFT-Display in resistive touch technology, several interfaces and a housing conforming to industrial standard are designed to be used in rotary ovens (MIC 980) and deck ovens (MIC 990).

**The controller MIC 990** offers an adjustable number of decks, adjustable steam and flap times for each deck, night-time preheating function with readiness display, different process monitoring features (burner, thermal fuse, exhaust flap) and system status messages. You can either control one or more sensors for all decks or individual decks with separate deck temperature setpoint.

**The controller MIC 980** offers adjustable steam and flap times, turntable control, night-time preheating function with readiness display, different process monitoring features (burner, thermal fuse, exhaust flap) and system status messages.

The standard models of the controllers have 4 Pt100 temperature inputs and 2 transposable inputs between Pt100 and power 4-20mA/voltage 0-10V. There are 16 relay outputs (12 closers, 4 changeover contacts) and 12 digital inputs available. The controllers 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. LAN is for communication with a PC and via the USB Serial port you can make a firmware update any time. 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 various interfaces enables you to transfer data between the MIC 980 / MIC 990 and a PC. Programming of the controller via a PC is easier because of the aditec service program. The visualization program aditec "VisuNet" offers the possibility of linking the controller to a super-ordinate program-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).

### aditec service program

#### 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 WIN7 / 8.0 / 8.1 / Server 2008 / Server 2012 / Server 2016.

### aditec-control / VisuNet

Use the remote maintenance- /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).

## » TECHNICAL DATA

General data		
Material front	Aluminium frame, naturally anodized	
Housing	Robust stainless steel housing (1.4016)	
Cooling	Passive (without fan)	
Dimensions	External dims. WxHxD (mm): 176 x 194 x 133	With built-in additional board ZR8: 194 x 176 x 160
	Mounting dims. (Cut-out): WxH (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	Front: IP65	
	Rear side: IP20	
Electrical data		
Power supply	85~260V AC	Optional 24V DC +/-20%
Residual tipple	5%	
Current consumption	105 mA	at 230V AC
Power consumption	24 VA	16 relays are controlled
Electrical safety	According to DIN EN 61010-1 Overvoltage category III	
Electromagnetic compatibility	According to 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. 1,5 mm <sup>2</sup> wire cross-section with 10 mm wire end sleeves
Display		
LCD size	7" (17,8 cm screen size)	
Resolution	480 x 800 WVGA	
Aspect ratio	9:16	
Technology	TFT	
Colours	16.7millions	
Backlight	LED	
Luminance	330 cd/m <sup>2</sup>	
Contrast ratio	400:1	
Touch	resistive	

## » TECHNICAL DATA

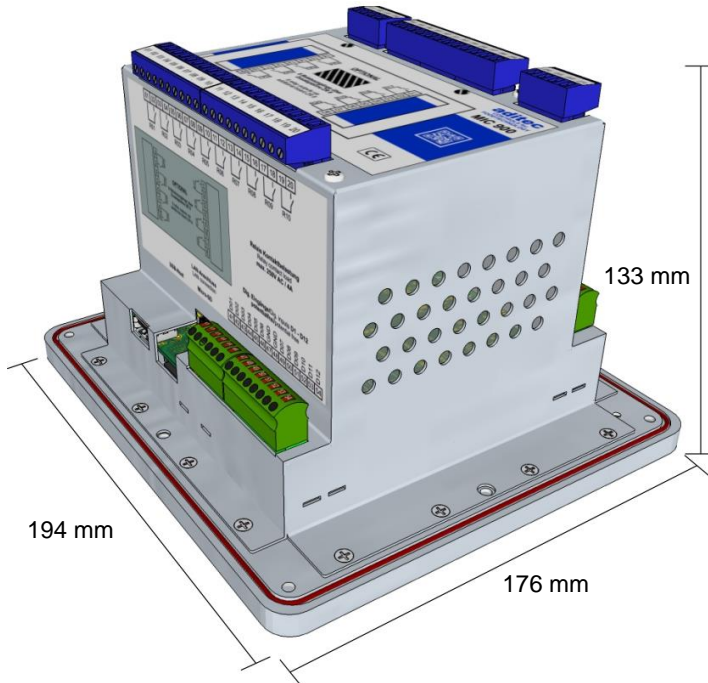
6x analogue inputs (plus 2x optional)						
Sensor		Type	Measuring range	Accuracy	Ambient temperature effect	Extendable with 2 analogue inputs via additional board ZE2 and/or extendable to 16 inputs via additional modules MAE 24
E1-E4	E5-E6 (E7-E8 optional)	Pt100	-100... 500°C (-148... 932°F)	≤0,1%	≤100ppm/°C	
⊖		0(4)...20mA	0..20 mA with R <sub>in</sub> = 200Ω	≤0,33%	≤100ppm/°C	
		0(2)...10V 0...1V	0-10V with R <sub>in</sub> = 100kΩ 0-1V with R <sub>in</sub> = 100kΩ	≤0,13% ≤0,1%	≤100ppm/°C	
2x analogue outputs (optional)						
A1 and A2		Output areas: 0(2)-10V with R <sub>Last</sub> ≥ 1000 Ω or 0(4)-20mA with R <sub>Last</sub> ≤ 500 Ω			Extendable up to 6 outputs via additional module MAE 24 or additional board ZA2	
12x digital inputs						
D1...D12		Potential free. Usable as counting inputs to 1 kHz. Pulse duration min. 0.5 ms, pause duration min. 0.5 ms.			Extendable to 48 digital inputs via additional modules MD 12.	
16x Relay outputs						
R1...R16		Potential free contacts. Switching capacity (250V AC, 4A). 4 change-over contacts and 12 closers			Extendable with 8 relay outputs via additional board ZR8 and/or extendable up to 72 outputs via additional modules MR 6.	
Serial interfaces						
USB		1x USB Host				
		1x Mini USB Serial Port				
Ethernet/LAN		1x 100Mbit Ethernet/LAN (RJ 45)				
CAN		1x Can Bus (system bus)			For communication with additional boards	
Speicher		1x MicroSD Card Slot,			For MicroSD cards up to 32GB	
Galvanic isolation						
Power input 85~264V AC		4 kV AC/1Min				
Power input 18-36V DC		2,5 kV/1Min				
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		---				

# Process controller MIC 900 Bakery

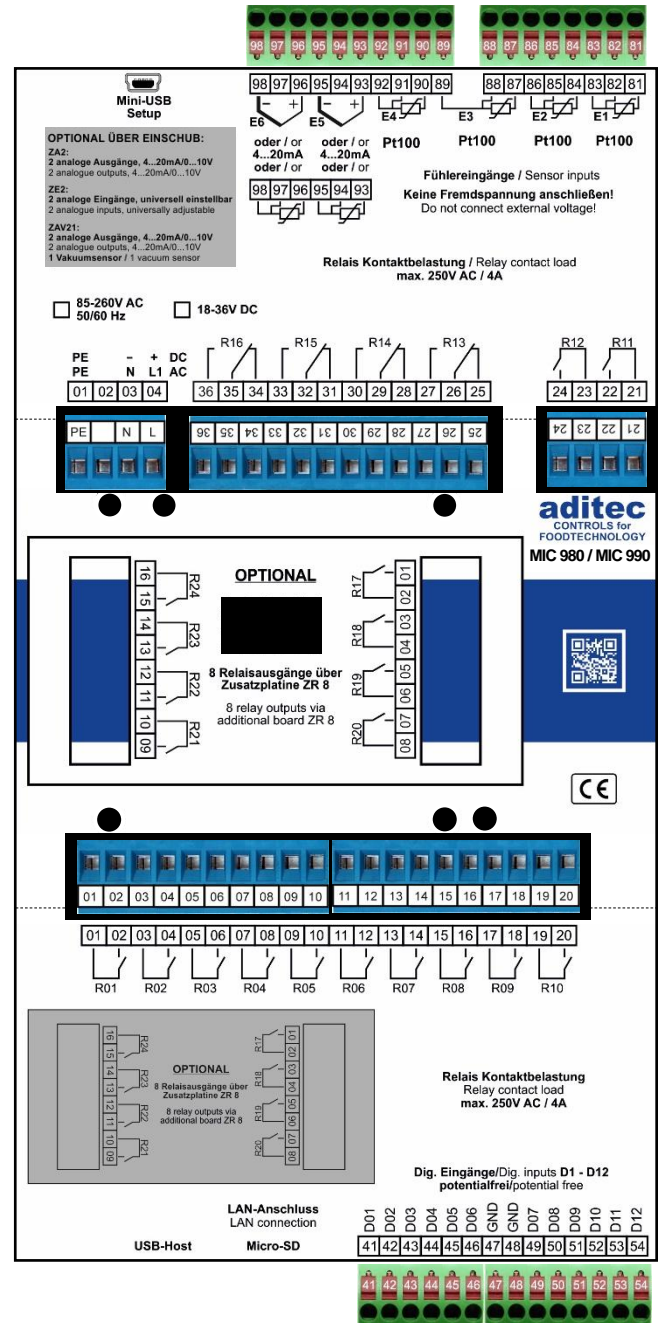
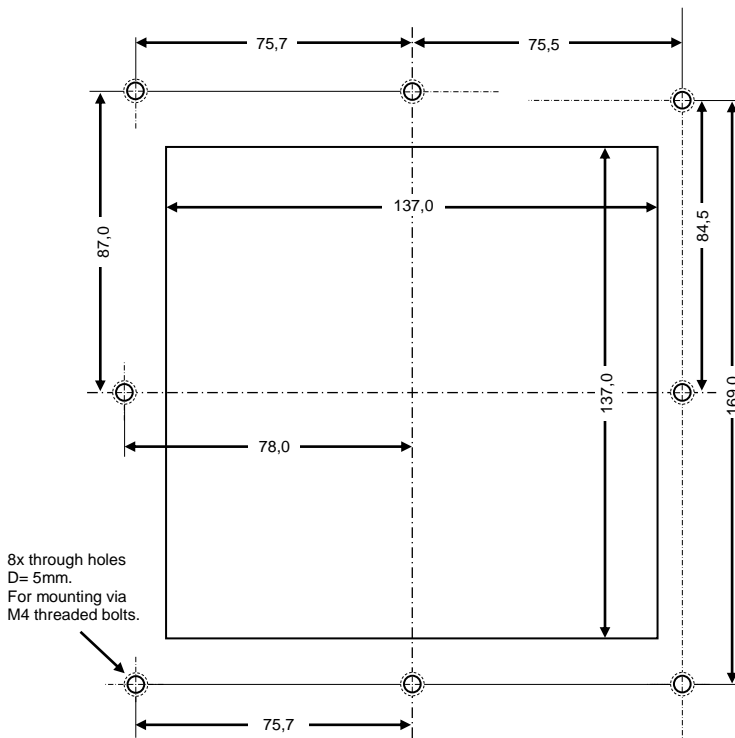
» for use in rotary ovens (MIC 980)  
and deck ovens (MIC 990)

## » DIMENSIONS (with terminals)

## » CONNECTION DIAGRAMM



## » CUT-OUT





## » ADDITIONAL BOARDS / OPTIONS suitable for subsequent installations

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

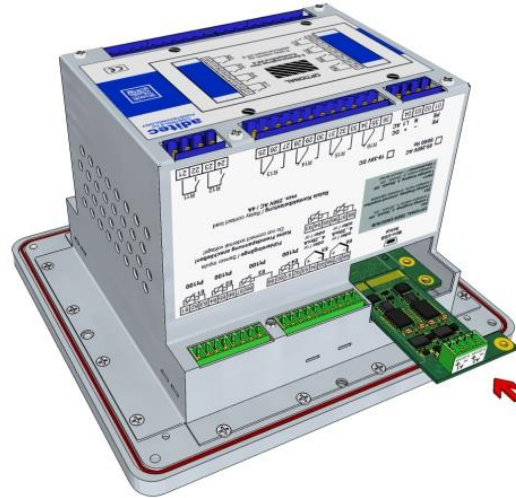
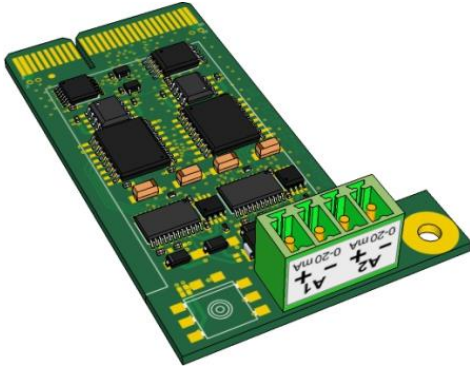


Fig. recess for additional board ZA2

- ▶ **ZE2:** (available on request)  
ADDITIONAL BOARD  
2 ANALOGUE INPUTS,  
freely adjustable

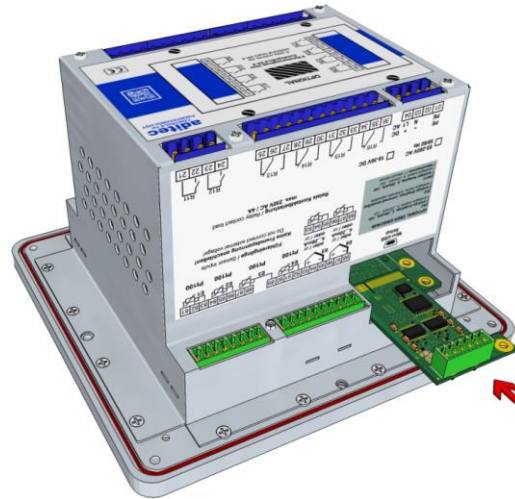
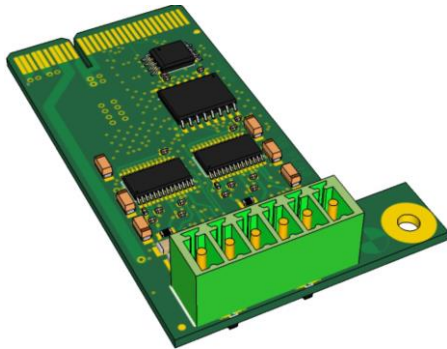


Fig. recess for additional board ZE2

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



### ▶ Relay allocation

