

## Overview

The controller **MS120** can be used in **cooking, smoking, climatic, maturing cambers and in intensive cooling systems**. It can also be used to control **defrosting or freezing processes**. The controller is designed to be mounted in switching cabinets on a rail.



The controller MS120 will be used in connection with the aditec Touchscreen operator panel TP811/TP1011/TP1211 (s. corresponding data sheet).

The standard model of the controller has **4 PT100 temperature inputs** (three-wire circuits with automatic line compensation) and **2 transposable inputs between PT100 and power 0-20mA/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 model of the controller has **24 x 24V DC transistor outputs** for relay-control. The standard version of the controller has 2 analogue outputs (transposable between 0..20mA and 0..10V) and 12 digital inputs. 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 transistor outputs, 48 digital inputs, several analogue in- and outputs with additional modules** can be allocated as an option.

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**. Free assignment of the output relays. All relays can be assigned to the 48 processes, each with different timing. 48 processes are freely programmable.

The software programme „**VisuNet**“ by **aditec** is responsible for the **surveillance and logging of the temperature- and humidity curves and processes to ensure all-over quality control** (corresponding to EN ISO 9000 - 9004) of the treated products within the processing unit. 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).

## Features of the MS 120

(in connection with aditec Touchscreen operator panel)

- 1-99 programs, at 1-99 steps each, altogether max. 2000 steps selectable (number of programs and steps can be adjusted individually)
- Easy and systematic adjustment of configuration data
- 48 programmable process texts
- 24 freely programmable galvanically isolated transistor outputs (expandable up to 72 via additional modules MT16) can be combined with different logical links (timer, time and control behaviors)
- 4 x galvanically isolated analogue inputs (PT100), two- or three-wire. Three-wire with automatic line compensation
- 2 x galvanically isolated analogue inputs programmable as: PT100, all thermocouples (according to standard DIN EN 60584) like type K NiCr-Ni, voltage 0-10V or power 0(4)-20mA (expandable up to 14 analogue inputs via additional modules MAE24). PT10 0 at three-wire connection with automatic line compensation.

- 12 x galvanically isolated digital inputs usable also as counting inputs (expandable up to 48 inputs via additional modules MD12)
- 2 x galvanically isolated analogue outputs transposable between 0 (4) -20 mA and 0 (2) – 10V (expandable up to 6 analogue outputs via additional modules MAE24)
- Ethernet LAN for connection of aditec Touchscreen (TP811, TP1011 or TP1211) or PC
- Mini USB connection (USB Serial Port for firmware update)
- CAN-Bus connection for expansion modules
- Micro SD card 32 GB
- 3 x tricolour LEDs (red, yellow, green) for status display
- Robust stainless steel housing (1.4016)
- Networking for visualization in accordance with HACCP, **aditec-VisuNet** possible
- Programmable nominal value limits
- Program memory will be retained during a power cut
- Programs that were interrupted through a power cut are resumed at the point where they stopped when power is restored.
- All 9 circuits can be set to 2-pt behaviour, XP behaviour or PID
- Real-time clock
- Process runtimes at 00h : 01min up to 99h : 59min or continuous operation
- Preselecting time (starting time) adjustable via real-time clock
- Detection of sensor defects (break or short circuit)
- 24 value alarms (limit values)
- 20 logical links
- 10 timer

### Technical Daten

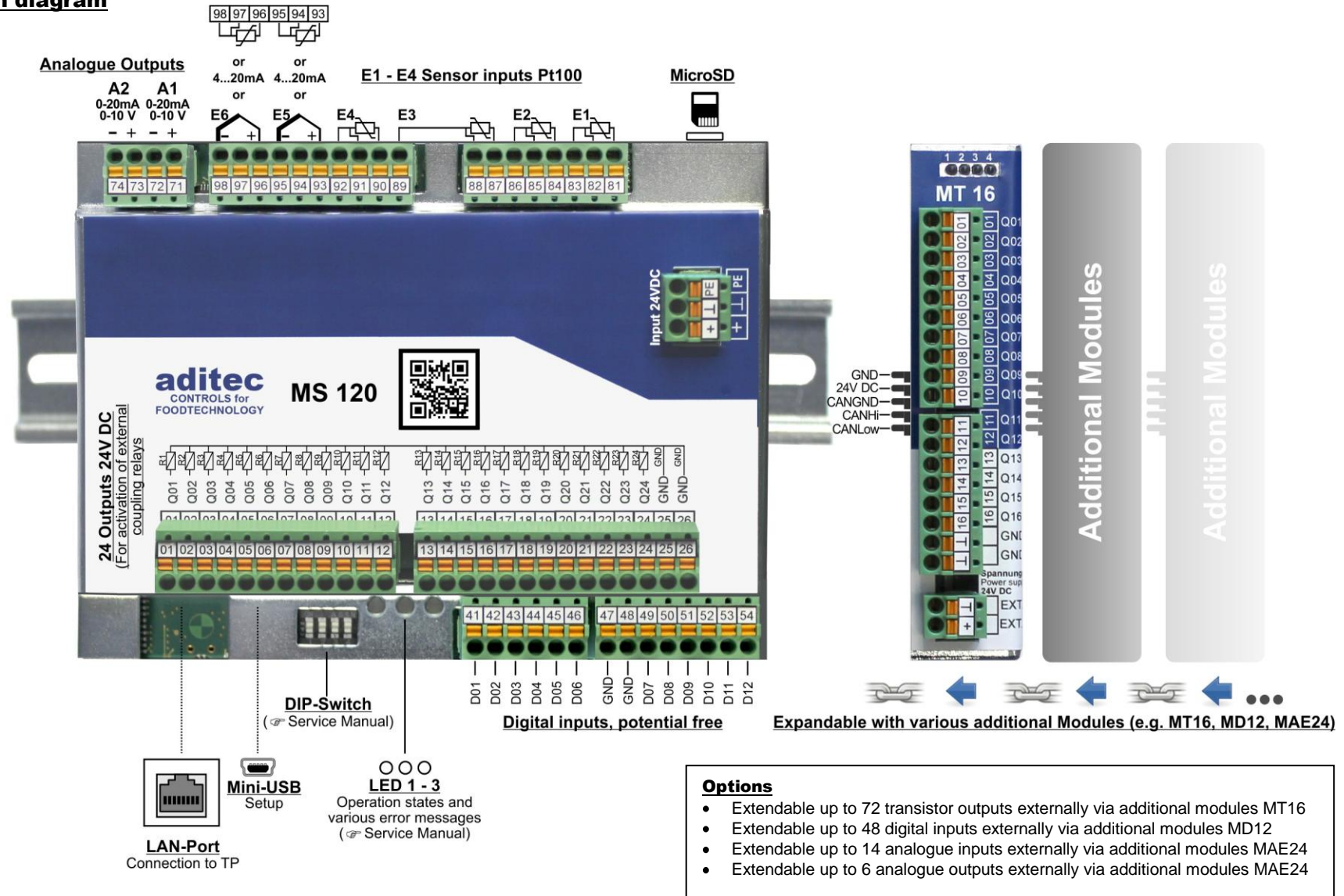
<b>General data</b>		
Dimensions	(HxBxD) 104mm x136mm x110mm (depth with terminals 111,4 mm)	
Material	Robust stainless steel housing (1.4016) ideal for use in the food industry	
Own weight	apr. 900 g	
Operating temperature	-20 to +65°C	
Storage temperature	-50 to +75°C	
Protection class	IP20 to EN 60529	
<b>Electrical data</b>		
Power supply Residual ripple	24VDC +25% -20% 5%	
Current consumption	min. 200 mA at 24VDC max. 500 mA at 23VDC	Please note the connection of additional modules
Power consumption	max. 12W	24 transistore outputs are controlled
Conductor cross section Braid with ferrule Single wire	min. 0,14qmm max. 1,5qmm min. 0,14qmm max. 1,5qmm	Insulating length 10mm
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	
Connention	Removable terminals in Push-in- technology (spring terminals)	

<b>Analogue inputs 6 x</b>	<b>Measuring ranges</b>	
E1 – E4: PT100 E5 – E6: <ul style="list-style-type: none"> <li>○ Typ K: NiCr-Ni</li> <li>○ Typ J: Fe-CuNi</li> <li>○ Typ T: Cu-CuNi</li> <li>○ Typ B: Pt30Rh-Pt6Rh</li> <li>○ Typ E: NiCr-CuNi</li> <li>○ Typ N: NiCrSi-NiSi</li> <li>○ Typ R: Pt13Rh-Pt</li> <li>○ Typ S: Pt10Rh-Pt</li> <li>○ PT100</li> <li>○ 0(4)</li> <li>○ 4V</li> <li>○ Sensor HC2</li> <li>○ P1000A</li> </ul>	100..500 °C (-190..930 °F)  -200..1372 °C (-410..3120 °F) -210..1200 °C (-440..2730 °F) -200.. 400 °C (-410.. 930 °F) 250..1820 °C ( 600..4120 °F) -200..1000 °C (-410..2280 °F) -200..1300 °C (-410..2960 °F) -50..1768 °C (-80..4010 °F) -50..1768 °C (-80..4010 °F) -100..500 °C (-190..930 °F) 0..20 mA, 0-10V with R <sub>Last</sub> =500 Ω 0-4V => high resistance Measurement range depending on sensor type Ptentiometer: 100 Ω	Extendable to 14 inputs via additional module MAE24
<b>Analogue outputs 2x</b>	<b>Output areas</b>	
A1	0(2)-10V with R <sub>Last</sub> ≥ 1000 Ω oder 0(4)-20mA with R <sub>Last</sub> ≤ 500 Ω	extendable to 6 outputs via additional module MAE24
A2	0(2)-10V with R <sub>Last</sub> ≥ 1000 Ω oder 0(4)-20mA with R <sub>Last</sub> ≤ 500 Ω	
<b>Digital inputs 12x</b>		
D1..D12	potential free, usable as counting input to 1 kHz, pulse duration min. 0.5 ms, pause duration min. 0.5 ms	Extendable to 48 inputs via additional module MD12
<b>Digitale transistor outputs 24x</b>		
Q01..Q24	24 VDC, max. 50 mA each output	Extendable to 72 outputs via additional module MT16
<b>Serial interfaces 3x</b>		
1	LAN	
1	USB	
1	Can Bus (Systembus)	
<b>Memory 1x</b>		
1	µSD card slot: µSD card to 32GB	
<b>Galvanic isolation</b>		
Mains input 24VDC	2,5 kV	
Transistor outputs	3,75 kV	
Sensor inputs (analogue inputs)	2 kV	
Digital inputs	3,75 kV	
Analogue outputs	4 kV	
Serial interfaces		
- LAN	1,5 kV	
- USB	----	
- CAN	1 kV	

### Options

- Extendable up to 72 transistor outputs externally via additional modules MT16 (16 outputs per each MT16 module)
- Extendable up to 48 digital inputs externally via additional modules MD12 (12 inputs per each MD12 module)
- Extendable up to 14 analogue inputs externally via additional modules MAE24 (4 inputs per each MAE24 module)
- Extendable up to 6 analogue outputs externally via additional modules MAE24 (2 outputs per each module MAE24)

**Connection diagram**



**Block diagram**

