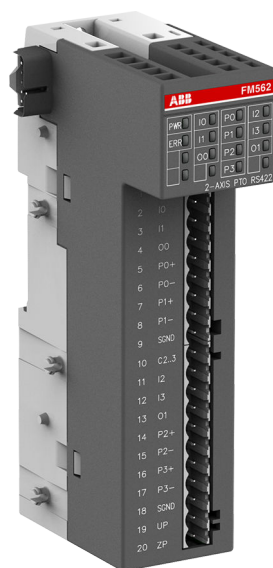


DATA SHEET

# FM562

## Function Modules



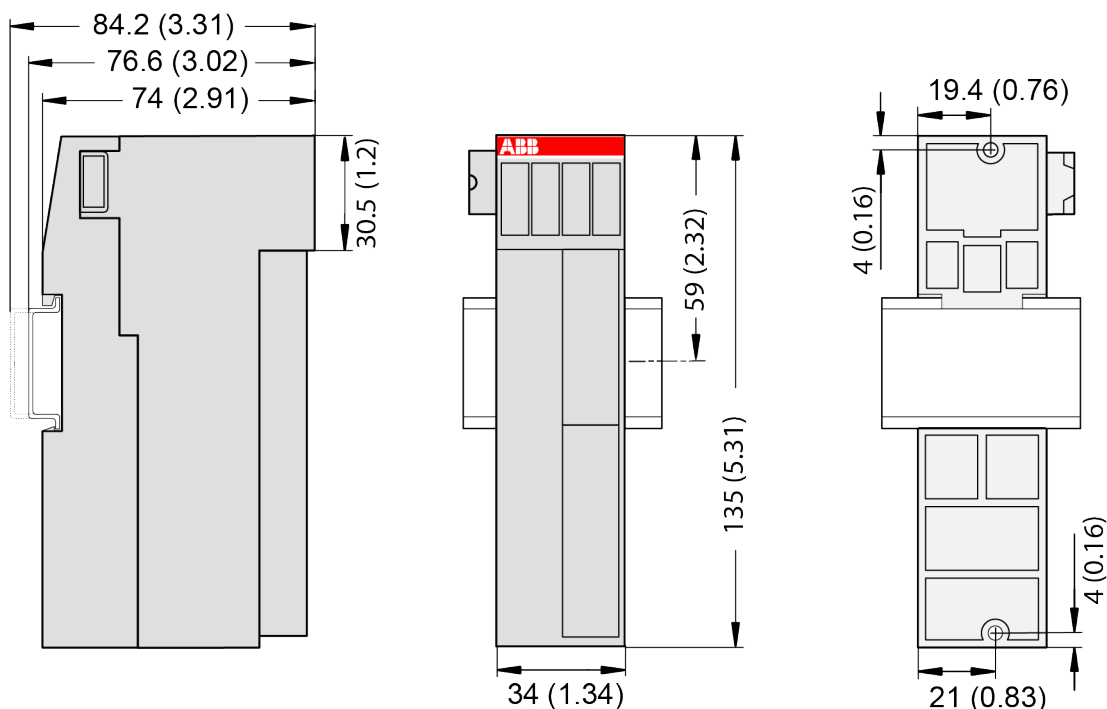
### 1 Ordering Data

Part no.	Description	Product Life Cycle Phase *)
1SAP 233 100 R0001	FM562, pulse-train output module, 2 axes, RS-422, 4 DI, 24 VDC	Active
1TNE 968 901 R3101	Terminal block TA563-9, 9 pins, screw front, cable side, 6 pieces per unit	Active
1TNE 968 901 R3102	Terminal block TA563-11, 11 pins, screw front, cable side, 6 pieces per unit	Active
1TNE 968 901 R3103	Terminal block TA564-9, 9 pins, screw front, cable front, 6 pieces per unit	Active
1TNE 968 901 R3104	Terminal block TA564-11, 11 pins, screw front, cable front, 6 pieces per unit	Active
1TNE 968 901 R3105	Terminal block TA565-9, 9 pins, spring front, cable front, 6 pieces per unit	Active
1TNE 968 901 R3106	Terminal block TA565-11, 11 pins, spring front, cable front, 6 pieces per unit	Active



\*) For planning and commissioning of new installations use modules in Active status only.

## 2 Dimensions



The dimensions are in mm and in brackets in inch.

## 3 Technical Data

The System Data of AC500-eCo apply [Chapter 4 “System Data AC500-eCo” on page 5](#)

Only additional details are therefore documented below.

Parameter	Value
Digital inputs	4 inputs (2 per axis) 24 VDC, can be used as source inputs or as sink inputs
Input channels 0 and 2	Input signal used for axis enable and limit switch
Input channels 1 and 3	Stop, configurable
Input data length	32 bytes
Pulse outputs	Pulse specification <ul style="list-style-type: none"> <li>• 2 outputs for each axis, configurable</li> <li>• Type: RS-422 differential signal</li> <li>• Mode: CW &amp; CCW or Pulse &amp; Direction</li> <li>• Frequency: 10 Hz to 250 kHz</li> <li>• Pulse number: -2147483648 to 2147483647 (32 bits)</li> <li>• Motion profiles generator</li> </ul>
Output data length	32 bytes
LED displays	For power supply, errors and signal states

Parameter	Value
Internal power supply	Via I/O bus
External power supply	Via the terminals ZP and UP (process voltage 24 VDC)

Process supply voltage UP	Value
Connections	Terminal 19 for UP (+24 VDC) and terminal 20 for ZP (0 V)
Rated value	24 VDC
Current consumption via UP terminal	42 mA
Max. ripple	5 %
Inrush current from UP (at power up)	0.067 A <sup>2</sup> s
Protection against reversed voltage	Yes
Rated protection fuse for UP	Not necessary
Current consumption from 24 VDC power supply at the L+/UP and M/ZP terminals of the CPU/bus module	Ca. 5 mA
Galvanic isolation	Yes, between input groups and the output group and the rest of the module
Isolated groups	5 groups (2 groups for 4 input channels, 1 group for 4 pulse train output channels, 1 group for process supply voltage, 1 group for the rest of the module)
Surge-voltage (max.)	35 VDC for 0.5 s
Max. power dissipation within the module	1.2 W
Weight	Ca. 125 g
Mounting position	Horizontal or vertical
Cooling	The natural convection cooling must not be hindered by cable ducts or other parts in the switch-gear cabinet.

#### No effects of multiple overloads

No effects of multiple overloads on isolated multi-channel modules occur, as every channel is protected individually by an external fuse.

### 3.1 Technical Data of the Digital Inputs

Parameter	Value
Number of channels per module	4
Distribution of the channels into axes	1 group of 2 channels for each axis
Axis 1	Inputs I0...I1
Axis 2	Inputs I2...I3
Connections of the channels I0 to I1	Terminals 2 to 3
Connections of the channels I1 to I3	Terminals 11 to 12
Reference potential for the channels I0 to I1	Terminal 1 (Signal name C0..1)

Parameter	Value	
Reference potential for the channels I2 to I3	Terminal 10 (Signal name C2..3)	
Electrical isolation	Yes, per axis	
Indication of the input signals	1 yellow LED per channel; the LED is ON when the input signal is high (signal 1)	
Input type according to EN 61131-2	Type 1 source	Type 1 sink
Input signal range	-24 VDC	+24 VDC
Signal 0	-5 V...+3 V	-3 V...+5 V
Undefined signal	-15 V...+ 5 V	+5 V...+15 V
Signal 1	-30 V...-15 V	+15 V...+30 V
Ripple with signal 0	-5 V...+3 V	-3 V...+5 V
Ripple with signal 1	-30 V...-15 V	+15 V...+30 V
Input current per channel		
Input voltage +24 V	Typ. 5 mA	
Input voltage +5 V	Typ. 1 mA	
Input voltage +15 V	> 2.5 mA	
Input voltage +30 V	< 8 mA	
Max. permissible leakage current (at 2-wire proximity switches)	1 mA	
Input delay (0->1 or 1->0)	Typ. 0.1 to 32 ms (configurable via software), default: 0.1 ms	
Max. cable length		
Shielded	500 m	
Unshielded	300 m	

### 3.2 Technical Data of the Pulse Outputs

Parameter	Value
Number of channels	2 per axis, 4 per module
Output type	RS-422
Output mode	Clockwise and counter-clockwise or pulse and direction
Output frequency	10 Hz to 250 kHz
Frequency accuracy	
From 10 Hz to 500 Hz	± 2 %
From 501 Hz to 250 kHz	± 1 %
Differential output voltage (at terminal block)	2.8 V at 140 Ω differential load 2.56 V at 100 Ω differential load
Output voltage of positive output (P0+, P1+) referenced to SGND if used for single ended application	Max. 3.3 V without any load Typ. 2.5 V at 100 Ω load

Parameter		Value
Max. short circuit current		40 mA
Max. cable length		
	Shielded	300 m (at max. frequency, criterion: V ≥ 2 V, tested with 100 Ω termination)
	Unshielded	30 m

## 4 System Data AC500-eCo

### 4.1 Environmental Conditions

Table 1: Process and Supply Voltages

Parameter		Value
24 VDC		
	Voltage	24 V (-15 %, +20 %)
	Protection against reverse polarity	Yes
100 VAC		
	Voltage	100 V (-15 %, +10 %)
	Frequency	50/60 Hz (-6 %, +4 %)
230 VAC		
	Voltage	230 V (-15 %, +10 %)
	Frequency	50/60 Hz (-6 %, +4 %)
100...240 VAC wide range supply		
	Voltage	100 V...240 V (-15 %, +10 %)
	Frequency	50/60 Hz (-6 %, +4 %)
Allowed interruptions of power supply, according to EN 61131-2		
	DC supply	Interruption < 10 ms, time between 2 interruptions > 1 s, PS2
	AC supply	Interruption < 0.5 periods, time between 2 interruptions > 1 s



#### NOTICE!

Exceeding the maximum power supply voltage (> 30 VDC) for process or supply voltages could lead to unrecoverable damage of the system. The system could be destroyed.

Parameter		Value
Temperature		
	Operating	0 °C...+60 °C (horizontal mounting of modules) 0 °C...+40 °C (vertical mounting of modules and output load reduced to 50 % per group)
	Storage	-40 °C...+70 °C

Parameter	Value
Transport	-40 °C...+70 °C
Humidity	Max. 95 %, without condensation
Air pressure	
Operating	> 800 hPa / < 2000 m
Storage	> 660 hPa / < 3500 m

## 4.2 Creepage Distances and Clearances

The creepage distances and clearances meet the requirements of the overvoltage category II, pollution degree 2.

## 4.3 Insulation Test Voltages, Routine Test

According to EN 61131-2

Parameter	Value	
200 V...240 V circuits against other circuitry	2500 V	1.2/50 µs
100 V...127 V circuits against other circuitry	1500 V	1.2/50 µs
100 V...240 V circuits against other circuitry	2500 V	1.2/50 µs
24 V circuits (supply, 24 V inputs/outputs, analogue inputs/outputs), if they are electrically isolated against other circuitry	500 V	1.2/50 µs
COM interfaces, electrically isolated	500 V	1.2/50 µs
COM interfaces, electrically not isolated	Not applicable	Not applicable
FBP interface	500 V	1.2/50 µs
Ethernet	500 V	1.2/50 µs
ARCNET	500 V	1.2/50 µs
200 V... 240 V circuits against other circuitry	1350 V	AC 2 s
100 V circuits against other circuitry	820 V	AC 2 s
100 V...240 V circuits against other circuitry	1350 V	AC 2 s
24 V circuits (supply, 24 V inputs/outputs, analogue inputs/outputs), if they are electrically isolated against other circuitry	350 V	AC 2 s
COM interfaces, electrically isolated	350 V	AC 2 s

Parameter	Value	
COM interfaces, electrically not isolated	Not applicable	Not applicable
FBP interface	350 V	AC 2 s
Ethernet	350 V	AC 2 s
ARCNET	350 V	AC 2 s

#### 4.4 Power Supply Units

For the supply of the modules, power supply units according to PELV specifications must be used.

#### 4.5 Electromagnetic Compatibility

Electromagnetic Compatibility		
Device suitable for:		
	Industrial applications	Yes
	Domestic applications	No
<b>Immunity against electrostatic discharge (ESD):</b>		According to IEC 61000-4-2, zone B, criterion B
	Electrostatic voltage in case of air discharge	8 kV
	Electrostatic voltage in case of contact discharge	4 kV, in a closed switch-gear cabinet 6 kV <sup>1)</sup>
	ESD with communication connectors	In order to prevent operating malfunctions, it is recommended, that the operating personnel discharge themselves prior to touching communication connectors or perform other suitable measures to reduce effects of electrostatic discharges.
<b>Immunity against the influence of radiated (CW radiated):</b>		According to IEC 61000-4-3, zone B, criterion A
	Test field strength	10 V/m
<b>Immunity against transient interference voltages (burst):</b>		According to IEC 61000-4-4, zone B, criterion B
	Supply voltage units (DC)	2 kV
	Supply voltage units (AC)	2 kV
	Digital inputs/outputs (24 VDC)	1 kV
	Digital inputs/outputs (120 VAC...2400 VAC)	2 kV
	Analog inputs/outputs	1 kV
	CS31 system bus	1 kV
	Serial RS-485 interfaces (COM)	1 kV
	Serial RS-232 interfaces (COM, not for PM55x and PM56x)	1 kV
	ARCNET	1 kV
	FBP	1 kV
	Ethernet	1 kV

<b>Electromagnetic Compatibility</b>		
	I/O supply, DC-out	1 kV
<b>Immunity against the influence of line-conducted interferences (CW conducted):</b>		According to IEC 61000-4-6, zone B, criterion A
	Test voltage	3 V zone B, 10 V is also met.
	High energy surges	According to IEC 61000-4-5, zone B, criterion B
	Power supply AC	2 kV CM / 1 kV DM <sup>2)</sup>
	Power supply DC	1 kV CM / 0.5 kV DM <sup>2)</sup>
	DC I/O supply, add. DC-supply-out	0.5 kV CM / 0.5 kV DM <sup>2)</sup>
	Buses, shielded	1 kV CM <sup>2)</sup>
	AC I/O unshielded	2 kV CM / 1 kV DM <sup>2)</sup>
	I/O analog, I/O DC unshielded	1 kV CM / 0.5 kV DM <sup>2)</sup>
	Radiation (radio disturbance)	According to IEC 55011, group 1, class A

<sup>1)</sup> High requirement for shipping classes are achieved with additional specific measures (see specific documentation).

<sup>2)</sup> CM = Common Mode, DM = Differential Mode

## 4.6 Mechanical Data

<b>Parameter</b>	<b>Value</b>
Mounting	Horizontal
Degree of protection	IP 20 (if all terminal screws are tightened)
Housing	Classification V-2 according to UL 94
Vibration resistance acc. to EN 61131-2	all three axes (DIN rail mounting) 5 Hz...8.4 Hz, continuous 3.5 mm 8.4 Hz...150 Hz, continuous 1 g
Shock test	All three axes 15 g, 11 ms, half-sinusoidal
Mounting of the modules:	
DIN rail according to DIN EN 50022	35 mm, depth 7.5 mm or 15 mm
Mounting with screws	Screws with a diameter of 4 mm
Fastening torque	1.2 Nm

## 4.7 Approvals and certifications

Information on approvals and certificates can be found in the corresponding chapter of the *Main catalog, PLC Automation*.

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