



## Multifunctional Display Module MOD 21

Display module for simultaneous operation of two encoders, absolute or incremental in any combination  
8 control inputs and 16 control outputs, 40 cam switches

### SSI-Interfaces

For operation of absolute single- or multiturn- encoders with resolution up to 30 bit with serial SSI-Interface.

### Incremental-Inputs

For operation of incremental encoders with 3 or 6 output channels, RS422 line driver or push-pull outputs.  
Optically insulated with optocoupler.

### Display-Scaling

Scale factor, adjustment values and counting direction are separately programmable for both encoders.

### Programmable Control-Inputs

8 optically insulated control-inputs are programmable for various functions, e.g. storing of display data or enable of counter.

### Programmable Control-Outputs

16 optically insulated control-outputs, which can be programmed separately by 40 cam switches as a comparator, cam switch or pulse switch. The cycle time is only 500  $\mu$ s.

### Analogue-Output

1 optically insulated programmable analogue-output, which can be used as voltage or current output. High precision D/A-converter with 16 bit resolution. For data source of the analogue output position or velocity of one encoder can be selected.

### Serial Interfaces

- RS232C One display module can be connected to a PC for programming and reading data.
- RS422/485 Up to 31 display modules can be connected to a PC.
- CANBUS Up to 32 display modules can be connected with CANBUS.

## Type explanation

**MOD 21**

<b>MOD 21-</b>	<b>1</b>	<b>2</b>
Analogue output		X
Serial interface	X	X
Programmable control inputs	X	X
Programmable control outputs	X	X
Display scaling	X	X
Incremental input	X	X
SSI interface	X	X

## Technical data

### Technical Data

Supply voltage	+10 ... 35 VDC
Power consumption	< 150 mA (ohne Last / without load)
Cycle time	500 µs
Display range	-9999999 ... 99999999
Display	rote 7-Segment-LED-Anzeige 8-stellig mit 14 mm Ziffernhöhe <i>8-digit 7-segment red LED display, 14 mm high</i>
Data memory	EEPROM
Operating temperature	0 ... +50°C
Connections	Klemmleiste / <i>Terminal block</i> max. 1,5 mm <sup>2</sup> Sub-D-Stecker / <i>Sub-D connector</i>
Weight	< 0,7 kg
Protection class	Frontplatte / <i>front</i> : IP 50 mit Schutzgehäuse / <i>with protective cover</i> : IP 54 Rückseite / <i>rear</i> : IP 20

### Incremental input

Circuit	Optokoppler
Input level 5 VDC	High +2,8 ... +5 VDC Low 0 ... +0,8 VDC
Input level 24 VDC	High +10 ... 35 VDC Low 0 ... +5 VDC
Input resistance	3 kOhm, $U_{in} = 24\text{ V}$ 350 Ohm, $U_{in} = 5\text{ V}$
Input frequency	max. 150 kHz
Pulse width signal M	min. 2 µs

### SSI interface

Clock frequency	125 kHz, 139 kHz
Clock output	RS422
Clock input	Optokoppler RS485

### Control inputs

Circuit	Optokoppler
Input level Low	0 ... +5 VDC
Input level High	+10 ... 35 VDC
Input resistance	1,8 kOhm, $U_{in} = 24\text{ V}$

### Control outputs

Circuit	Optokoppler mit NFET-Treiber
Supply voltage	max. +35 VDC
Output voltage	min. $V_{cc} - 2\text{ V}$ , $I_{out} = 50\text{ mA}$
Output current	max. 500 mA, kurzschlussfest / <i>short-circuit proof</i>

### Analogue Voltage-Output

oltage range	-10 ... +10 VDC
Resolution	305 µV = 16 Bit
Temperature stability	max. 20 ppm / °C
Output current	max. 12 mA, kurzschlussfest / <i>short-circuit proof</i>

### Analogue Current-Output

Current range	-20 ... +20 mA
Resolution	610 nA = 16 Bit
Temperature stability	max. 20 ppm / °C
Burden	max. 550 Ohm

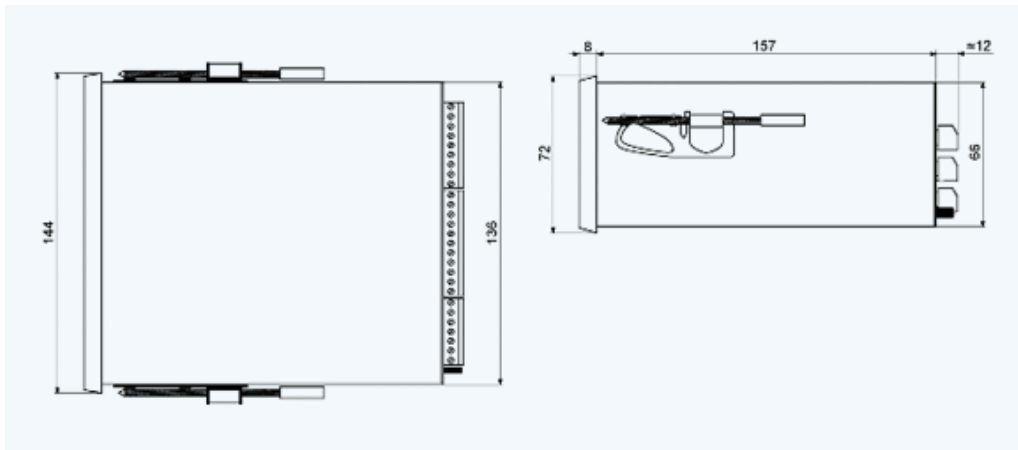
### Serial interfaces

RS232C	Baudrate 9600 .. 57600 Bit/s
RS422/485	Baudrate 9600 .. 57600 Bit/s

### CANBUS

Protocol	AP-Link
PDOs	1 Eingang, 1 Ausgang, 64 Bit breit 1 Input, 1 Output, 64 Bit length
Baud rate	20 kBit/s .. 1 MBit/s

### Outline drawing



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