CE

ESTERS ELEKTRONIK

Operating Instructions 11588e **Issue 13.07.2018**

F/I-Transducer ATM 1613
F/I-Transducer/ Standstill Detection/ Frequency Relais ATM 1615

1. General Data

F/I-Transducers ATM 1613/ATM 1615 are used for measurement of values, which are detected by means of frequencies.

The transducer ATM 1613/1615 operates on multiple period evaluation. This measurement calculates the frequency on reverse of period time detection. The quantity of periods depends on the adjusted measurement time and the input frequency. If the period time is lower than the adjusted measurement time, the frequency average of all periods within the mesurement time is calculated. If the period time is longer than the measurement time, the frequency is calculated from the latest period.

The calculated frequency is scaled to programmable indication value and transduced via 12-Bit-D/A-converter with LBS-PWM (resolution better 14 bits). The measurement time is 5 ms.Therefore the ATM 1613/1615 is suitable for actual value detection of quick speed regulations (1-quadrant operation) also.

A low-pass filter of Tau = 0,128 s or 1 s is adjustable in case of uneven drive rotation.

The ATM 1615 operates equal to ATM 1613, but with additional limit switch output, which may be programmed as follows:

a) Standstill detection

For definition of standstill a time of 0,01…300 s may be programmed. If no impulses arrive within this time the limit switch is activated.

b) Frequency relais

For max.- or min.-detection a frequency within the programmed frequency range is adjusted. At crossing the value up or down the relais will be switched. A hysteresis of 0,2 % or 2 % is available to be selected.

2. Technical Data

	ATM 1613	ATM 1615
Measurement range	0,001 Hz - 99,9 kHz	0,001 Hz - 99,9 kHz
Analog output	0 (4) - 20 mA 0 (2) - 10 V DC	0 (4) - 20 mA 0 (2) - 10 V DC
Binäry output	-	1 limit value Relais, two-way contact 250 V, 1 A, 50 W
Frequency relais		0,001…99,9 kHz
Standstill detection		0,01…300,0 s
Hysteresys		0,2 % and 2 %

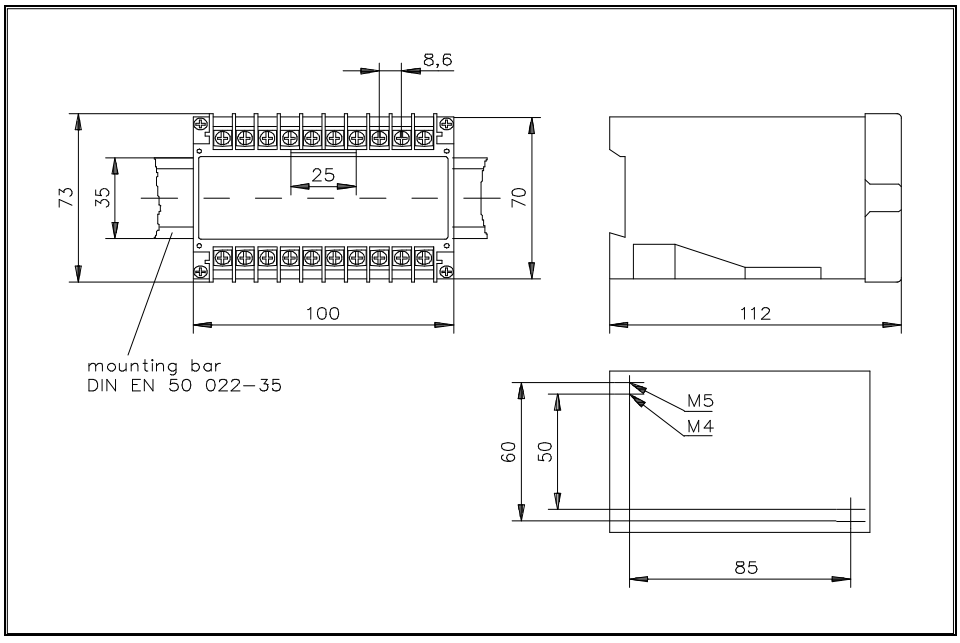
	ATM 1613	ATM 1615
Input sensivity	50 mV - 80 V_{eff} 47 kΩ, AC-coupled max. 20 kHz 3 V - 80 V_{eff} 100 kΩ AC-coupled max. 99,9 kHz	50 mV - 80 V_{eff} 47 kΩ, AC-coupled max. 20 kHz 3 V - 80 V_{eff} 100 kΩ AC-coupled max. 99,9 kHz
Built-in power source	15/8 V, 60 mA	15/8 V, 60 mA
Ambient temperature	0 - 60 °C	0- 60 °C
Temperature drift	30 ppm/°C	30 ppm/°C
Power supply	115 or 230 V, ± 10% 47 - 63 Hz, ca. 6VA internal jumper	115 or 230 V, ± 10% 47 - 63 Hz, ca. 6VA internal jumper
Fuse	internal	internal

Elektromagnetic compatibility acc. to IEC 801-4.

Housing

Plastic housing optionally for mounting on DIN 46277 rails. Protection to IP 50, DIN 40050. Terminals with self-lifting contact plates for 2 x 2,5 mm^2 wire or 2 x 1,5 mm^2 stranded wire for terminals protected to IP 10.

Dimensional Drawing



Connection

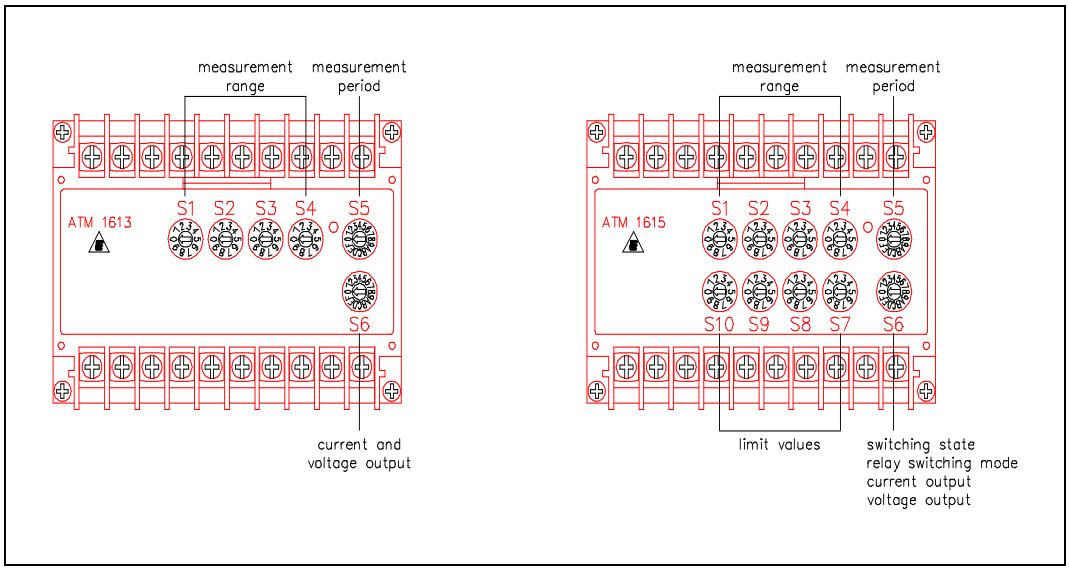
Power supply and sensors are connected to the corresponding terminals according to the connection diagram. Troublefree operation is guaranteed provided

- the device is duly grounded
- the screen of the sensor cable is duly connected
- the actual power supply does not deviate more than ± 10 % from the nominal value
- the power frequency is 47…63 Hz

Power Supply	Fuse (internal)
230 V AC ± 10 %	100 mA-T
115 V AC ± 10 %	200 mA-T
24 V AC ± 10 %	400 mA-T
18 - 30 V DC	400 mA-T

Options

N2	Power supply 24 V AC ± 10 %
N3	Power supply 18 - 30 V DC galvanically separated, power consumtion approx. 120 mA
KA	Protective cover for terminal strip (touch protection)
T1	Frequency output fe instead of serial interface
S65	Accuracy 0,5



2.1 Programming

2.2 Limit value adjustment (ATM 1615)

The limit value is adjusted by switches S10 - S7 within the programmed measurement range (S1 - S5).
(S6 acc. to table, page 4)

Example: Meas. range 0 - 4000 Hz (S1 - S5)
Limit value 2500 Hz
S10 = 2, S9 = 5, S8 = 0, S7 = 0
S6 = 1

2.3 External Sensor Supply

The supply for the sensors 8/15 V is programmed through a jumper.

2.4 Basic Configuration

Caution: This is the basic configuration ex works:

Measurement range:	2000 Hz
Limit value:	1000 Hz
Current output:	0 20 mA
Relais output:	S6 = 0 (Normally closed contact, 0,2 % hysteresys)
Sensor supply:	15 V

2.5 Measuring Time Adjustment ATM 1613/1615

At switch „S5“ (marked I, II und III) the measurement periods are adjustable. The lowest frequency is 0,001 Hz.

Multiple functions of multiplicator (S5)

I	II	III	full scale value adjustable within...
0	5	A	0,001 ... 9,999 Hz
1	6	B	0,01 ... 99,99 Hz
2	7	C	0,1 ... 999,9 Hz
3	8	D	1 ... 9999 Hz
4	9	E	10 ... 99990 Hz

I. Measurement period 5 ms
II. Measurement period 8 ms followed by filter (Tau=128 ms)
III. Measurement period 50 ms followed by low-pass filter (Tau=1s)

2.6 Transducer Output ATM 1613

Output current or output voltage are adjusted by switch S6.

S6		
0	0...20 mA	0...10 V
1	4...20 mA	2...10 V

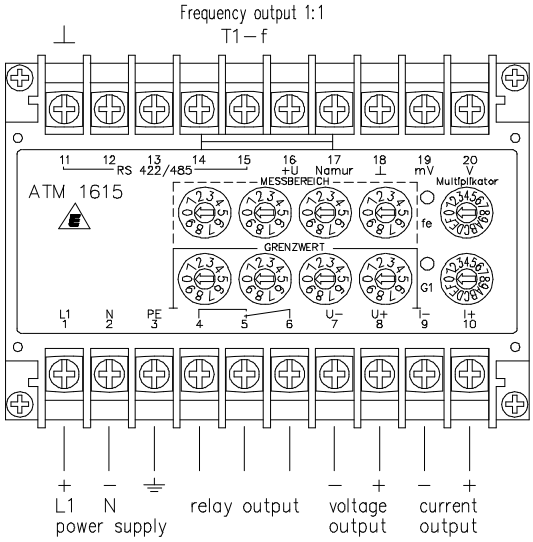
2.7 Transducer Output ATM 1615 and Programming of Limit Value and Standstill Control

Switch S6 determines the combined operation modes of ATM 1615:

S6					
0	0...20mA	0...10V	Normally-closed contact	Limit value	0.2% hysteresys
1	4...20mA	2...10V	Normally-closed contact	Limit value	0.2% hysteresys
2	0...20mA	0...10V	Normally-open contact	Limit value	0.2% hysteresys
3	4...20mA	2...10V	Normally-open contact	Limit value	0.2% hysteresys
4	0...20mA	0...10V	Normally-closed contact	Limit value	2% hysteresys
5	4...20mA	2...10V	Normally-closed contact	Limit value	2% hysteresys
6	0...20mA	0...10V	Normally-open contact	Limit value	2% hysteresys
7	4...20mA	2...10V	Normally-open contact	Limit value	2% hysteresys

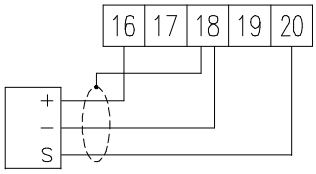
8	0...20mA	0...10V	Normally-closed contact	Standstill control 0,01...99,99 s	0.2% hysteresys
9	4...20mA	2...10V	Normally-closed contact	Standstill control 0,01...99,99 s	0.2% hysteresys
A	0...20mA	0...10V	Normally-open contact	Standstill control 0,01...99,99 s	0.2% hysteresys
B	4...20mA	2...10V	Normally-open contact	Standstill control 0,01...99,99 s	0.2% hysteresys
C	0...20mA	0...10V	Normally-closed contact	Standstill control 0,1...300,0 s	0.2% hysteresys
D	4...20mA	2...10V	Normally-closed contact	Standstill control 0,1...300,0 s	0.2% hysteresys
E	0...20mA	0...10V	Normally-closed contact	Standstill control 0,1...300,0 s	0.2% hysteresys
F	4...20mA	2...10V	Normally-open contact	Standstill control 0,1...300,0 s	0.2% hysteresys

3. Connection Diagram ATM 1613 / ATM 1615

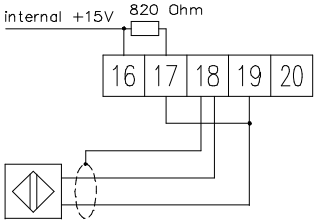


no galvanic separation
from measuring input
8V level square

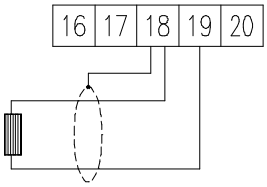
I Sensor and amplifier



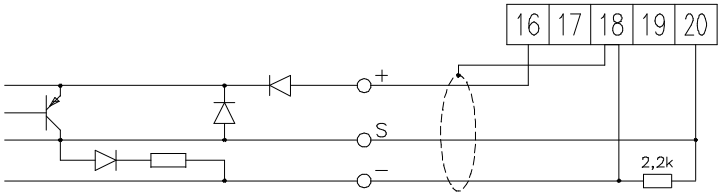
II Magnetic field sensor
High frequency sensor
Namur sensor (2–wires)



III Electromagnetic sensor

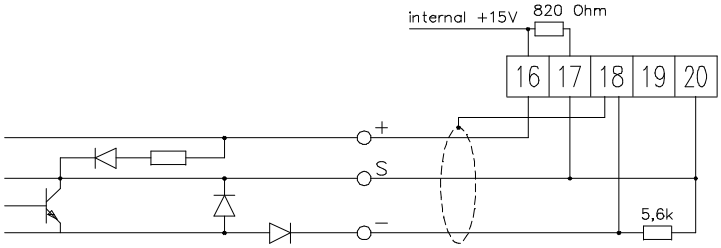


IV Proximity switch PNP positive switching, 3 wires



V Proximity switch NPN negative switching, 3 wires

scanning segment
gap pol ≥ ø proximity sensor
pulse duty factor 1:1



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