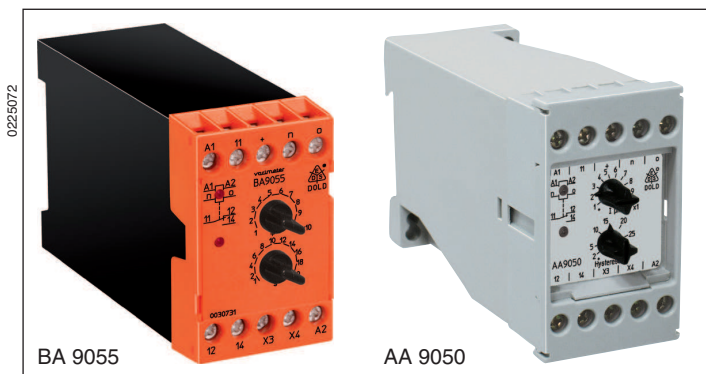


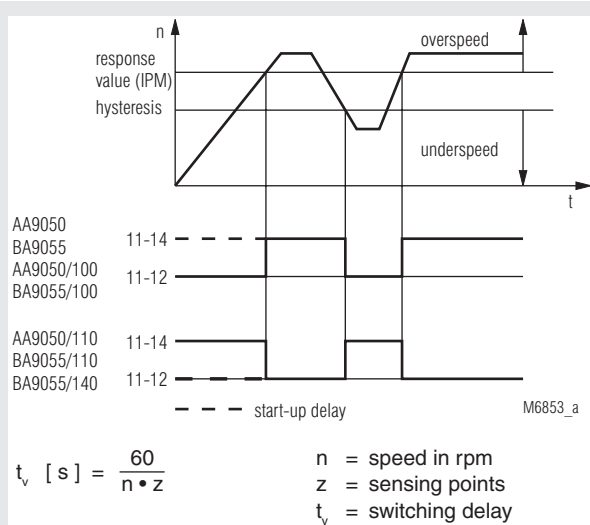
## VARIMETER Speed Monitor BA 9055, AA 9050

Replacements:  
MK 9055N, MH 9055



- According to IEC/EN 60 255-1
- Detection of
  - underspeed
  - overspeed
  - standstill
- Adjustable response value
- BA 9055 with adjustable start-up delay
- AA 9050 with adjustable hysteresis
- Width 45 mm

### Function Diagram



### Approvals and Markings



\* see variants

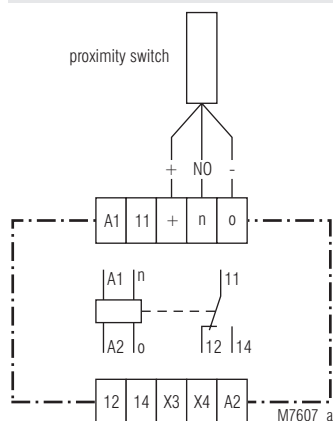
### Applications

Speed monitors are used in case where it is necessary not to exceed certain speed limits in order to protect people plants and products against damage. The Speed monitors are used on escalators, conveyors, transfer lines, elevators as well as plants where several drives with a certain speed have to work together.

### Function

The measuring principle is to compare frequencies. With a proximity sensor the speed is converted to a speed proportional frequency. This frequency is compared to an internal adjustable frequency reference. If the measured frequency is higher then the reference the output relay is energized on an underspeed monitor or de-energized on an overspeed monitor. The output relay deenergises on an underspeed monitor if the speed goes under the setted hysteresis value. On the overspeed monitor the relay is energized. The reaction time is rather short, as the unit has no intergrating function. To calculate refer to formula in Function Diagram. The power supply for the proximity sensor is built into the unit. **The input is designed for pnp sensors.** The speed monitor has an integrated start-up delay. The unit is delivered with a bridge between terminals X3-X4. The start-up delay is activated when the power supply is connected to A1-A2. For the start- up time the output relay is energized. If no start-up delay is required, the bridge must be removed. The start-up delay can be activated also by external contacts connected to X3-X4. The start-up delay normally is not required with overspeed monitoring. An LED indicates the connected power supply. A second LED indicates the state of the output relay.

### Circuit Diagram



BA 9055.11, AA 9050.11

### Connection Terminals

Terminal designation	Signal description
A1	L / +
A2	N / -
+, o	Current supply proximity sensors
n	Measuring input
X3, X4	Programming terminals
11, 12, 14	Speed indicator relay (two-way contact)

## Technical Data

### Input Circuit

<b>Input:</b>	for proximity sensors, built in power supply DC 24 V, max. 40 mA
<b>Setting range:</b>	0.05 ... 0.5 lpm    10 ... 100 lpm 0.1 ... 1 lpm    50 ... 500 lpm 0.5 ... 5 lpm    100 ... 1 000 lpm 1 ... 10 lpm    500 ... 5 000 lpm 5 ... 50 lpm    1000 ... 10 000 lpm lpm = Impuls per minute
<b>Min. pulse length:</b>	1 ms
<b>Max. frequency:</b>	30 000 lpm
<b>Setting:</b>	infinite on relative scale
<b>Setting accuracy:</b>	≤ ± 3 %
<b>Response value:</b>	0.1 ... 1 of end of scale value
<b>Hysteresis:</b>	
BA 9055:	2 % of response value
AA 9050:	2 ... 30 % of response value
<b>Accuracy:</b>	≤ ± 1 %
<b>Temperature influence:</b>	≤ ± 0.1 % /°C
<b>Influence of auxiliary supply:</b>	< ± 0.5 % at 0.9 ... 1.1 U <sub>N</sub>
<b>Start up delay</b>	
BA 9055:	1 ... 20 s
AA 9050:	10 s (up to 60 min. available)

### Auxiliary Circuit

<b>Auxiliary voltage U<sub>H</sub>:</b>	AC 24, 42, 110, 127, 230, 240 V DC 24 V
<b>Voltage range of U<sub>H</sub>:</b>	
AC:	0.8 ... 1.1 U <sub>H</sub>
DC:	0.9 ... 1.2 U <sub>H</sub>
<b>Nominal consumption:</b>	< 4 VA
<b>Nominal frequency of U<sub>H</sub>:</b>	50 / 60 Hz

### Output Circuit

<b>Contacts:</b>	1 changeover contact
<b>Thermal current I<sub>th</sub>:</b>	6 A
<b>Switching capacity</b> to AC 15:	5 A / AC 230 V    IEC/EN 60 947-5-1
<b>Permissible switching frequency:</b>	6 000 switching cycles / h
<b>Short circuit strength</b> <b>max. fuse rating:</b>	4 A gL    IEC/EN 60 947-5-1
<b>Mechanical life:</b>	> 30 x 10 <sup>6</sup> switching cycles

### General Data

<b>Operating mode:</b>	Continuous operation
<b>Temperature range:</b>	- 20 ... + 60°C
<b>Clearance and creepage distances</b> rated impulse voltage / pollution degree:	4 kV / 2    IEC 60 664-1
<b>EMC</b>	
Electrostatic discharge:	8 kV (air)    IEC/EN 61 000-4-2
HF-irradiation:	
80 MHz ... 1 GHz:	10 V/m    IEC/EN 61 000-4-3
1 GHz ... 2,5 GHz:	3 V/m    IEC/EN 61 000-4-3
2,5 GHz ... 2,7 GHz:	3 V/m    IEC/EN 61 000-4-3
Fast transients:	2 kV    IEC/EN 61 000-4-4
Surge voltages between	
wires for power supply:	2 kV    IEC/EN 61 000-4-5
between wire and ground:	4 kV    IEC/EN 61 000-4-5
HF-irradiation:	10 V    IEC/EN 61 000-4-6
Interference suppression:	Limit value class B    EN 55 011
<b>Degree of protection</b>	
Housing:	IP 40    IEC/EN 60 529
Terminals:	IP 20    IEC/EN 60 529
<b>Housing:</b>	Thermoplastic with V0 behaviour according to UL subject 94
<b>Vibration resistance:</b>	Amplitude 0.35 mm, frequency 10...55Hz, IEC/EN 60 068-2-6
<b>Climate resistance:</b>	20 / 060 / 04    IEC/EN 60 068-1
<b>Terminal designation:</b>	EN 50 005

## Technical Data

<b>Wire connection:</b>	2 x 2.5 mm <sup>2</sup> solid or 2 x 1,5 mm <sup>2</sup> stranded wire with sleeve DIN 46 228-1/-2/-3/-4
<b>Wire fixing:</b>	Flat terminals with self-lifting clamping piece    IEC/EN 60 999-1
<b>Screw mounting</b>	
AA 9050:	35 x 50 mm and 35 x 60 mm
<b>Mounting:</b>	DIN rail    IEC/EN 60 715
<b>Weight:</b>	
BA 9055:	410 g
AA 9050:	400 g

### Dimensions

#### Width x height x depth

BA 9055:	45 x 74 x 124 mm
AA 9050:	45 x 77 x 127 mm

### Standard Type

BA 9055 AC 230 V 50/60 Hz 10 ... 100 lpm 1 ... 20 s	
Article number:	0030731
• Output:	1 changeover contact
• Nominal voltage U <sub>N</sub> :	AC 230 V
• Setting range:	10 ... 100 lpm
• Width:	45 mm

### Classification to DIN EN 50155 for BA 9055

<b>Vibration and shock resistance:</b>	Category 1, Class B    IEC/EN 61 373
<b>Protective coating of the PCB:</b>	No

### Variants

BA 9055, AA 9050:	Standstill and underspeed monitoring with start up delay, closed circuit operation overspeed monitoring with start up delay, open circuit operation with UL-approval
BA 9055/61: BA 9055/100, AA 9050/100:	Standstill and underspeed monitoring without start up delay, closed circuit operation overspeed monitoring without start up delay, open circuit operation
BA 9055/110, AA 9050/110:	Standstill and underspeed monitoring without start up delay, open circuit operation overspeed monitoring without start up delay, closed circuit operation
BA 9055/140:	Standstill and underspeed monitoring with start up delay, open circuit operation overspeed monitoring with start up delay, closed circuit operation

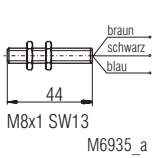
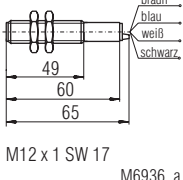
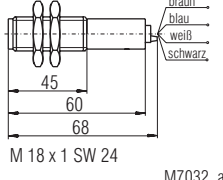
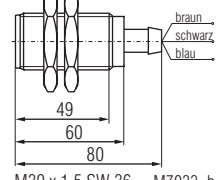
### Ordering example for variants

BA 9055 /	AC 230 V	50/60 Hz	5 ... 50 lpm	10 s
				Start up delay
				Setting range
				Nominal frequency
				Auxiliary voltage
				Variant, if required
				Type

### Accessories

K 70-34:	Cover for AA 9050 Article number: 0011790
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**Initiators (proximity sensors), induktive**

Type	NA 5001.01.10 pnp NA 5001.01.20 npn	NA 5002.01.34 pnp/npn	NA 5005.01.34 pnp/npn	NA 5010.01.10 pnp NA 5010.01.20 npn
Dimensions	 M8x1 SW13 M6935_a	 M12 x 1 SW 17 M6936_a	 M 18 x 1 SW 24 M7032_a	 M30 x 1,5 SW 36 M7033_b
Enclosure	Metal	Metal	Metal	Metal
Switching distance $S_n$	1 mm	2 mm	5 mm	10 mm
Switching frequency	5 000 Hz	1 000 Hz	300 Hz	200 Hz
Hysteresis	2 ... 10 %			
Repeat accuracy	5 %			
Voltage range	10 ... 30 V			
Residual ripple	< 10 %			
Continuous current	≤ 200 mA	≤ 100 mA	≤ 100 mA	≤ 400 mA
Output	.10 pnp NO .20 npn NO	.34 pnp NO + npn NO	.34 pnp NO + npn NO	.10 pnp NO .20 npn NO
Indication of output state	LED			
Ambient temperature	- 25 ... 70°C			
Temperature influence	10 %			
Degree of protection	IP 67			
Connection wire	2 m			
Fixing torque	4 Nm	15 Nm	40 Nm	100 Nm
Weight	45 g	70 g	120 g	270 g

**Connection Table BA 9055, AA 9050**

Type	Wire	Terminal on AA 9050 / BA 9055
NA 5001.01.10	brown +	+
	blue -	0
	black NO	n
NA 5002.01.34 NA 5005.01.34	brown +	+
	white +	+
	blue -	0
	black NO	n
NA 5010.01.10	brown +	+
	blue -	0
	black NO	n

**Connection Table BA 9055 / \_\_\_5**

Type	Wire	Terminal on BA 9055
NA 5001.01.10	brown +	+
	blue -	0
	black NO	n
NA 5002.01.34 NA 5005.01.34	brown +	+
	white NO	n
	blue -	0
	black -	0
NA 5010.01.10	brown +	+
	blue -	0
	black NO	n

**Initiatoren NA 5002.01.34 and NA 5005.01.34 only usable for units without initiator-detection!**

