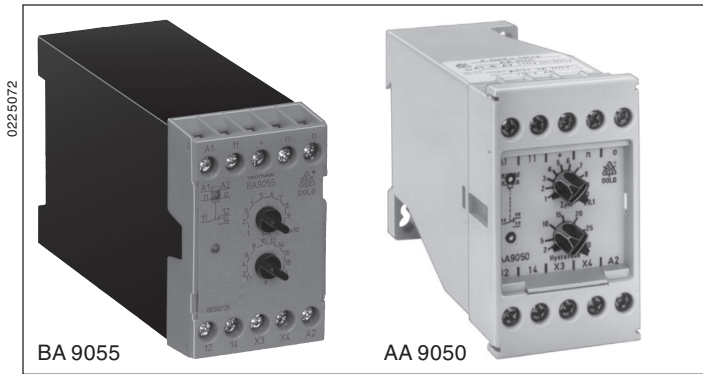
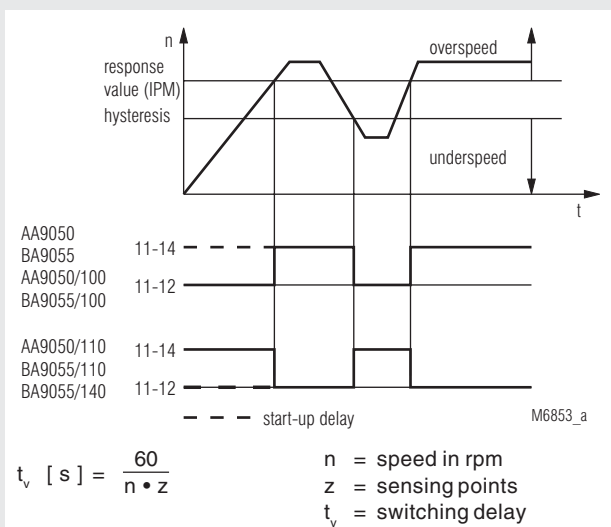


## Speed monitor BA 9055, AA 9050 varimeter

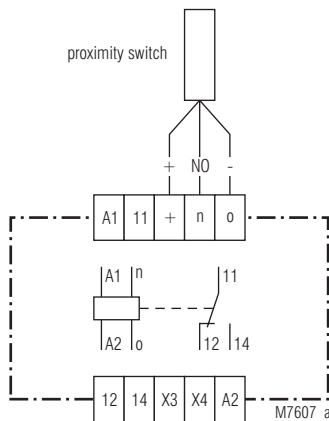


- According to IEC 255, EN 60255, VDE 0435 part 303
- Detection of
  - underspeed
  - overspeed
  - standstill
- Adjustable response value
- BA 9055 with adjustable start-up delay
- AA 9050 with adjustable hysteresis
- Width 45 mm

### Function diagram



### Circuit diagram



BA 9055.11, AA 9050.11

### Approvals and marking



\* see variants

### Application

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 energised on an underspeed monitor or deenergised 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 energised. 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 energised. 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.

### 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<br>0,1 ... 1 lpm    50 ... 500 lpm<br>0,5 ... 5 lpm    100 ... 1 000 lpm<br>1 ... 10 lpm    500 ... 5 000 lpm<br>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                  |

## Technical data

**Influence of auxiliary supply:**  $< \pm 0,5 \%$  at 0,9 ... 1,1  $U_N$

### Start up delay

BA 9055: 1 ... 20 s  
AA 9050: 10 s (up to 60 min. available)

## Auxiliary circuit

**Auxiliary voltage  $U_H$ :** AC 24, 42, 110, 127, 230, 240 V  
DC 24 V

### Voltage range of $U_H$ :

AC: 0,8 ... 1,1  $U_H$   
DC: 0,9 ... 1,2  $U_H$

**Nominal consumption:**  $< 4$  VA

**Nominal frequency of  $U_H$ :** 50 / 60 Hz

## Output circuit

**Contacts:** 1 changeover contact  
**Thermal current  $I_{th}$ :** 6 A  
**Switching capacity**  
to AC 15: 5 A / AC 230 V IEC/EN 60 947-5-1  
**Permissible switching frequency:** 6 000 switching cycles / h  
**Short circuit strength**  
**max. fuse rating:** 4 A gL IEC/EN 60 947-5-1  
**Mechanical life:**  $> 30 \times 10^6$  switching cycles

## General data

**Operating mode:** Continuous operation  
**Temperature range:** - 20 ... + 60°C  
**Clearance and creepage distances**  
overvoltage category /  
contamination level: 4 kV / 2 IEC 60 664-1

**EMC**  
Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2  
HF-irradiation: 10 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  
Interference suppression: Limit value class B EN 55 011

**Degree of protection:** Housing: IP 40 IEC/EN 60 529  
Terminals: IP 20 IEC/EN 60 529

**Housing:** Thermoplastic with V0 behaviour  
according to UL subject 94

**Vibration resistance:** Amplitude 0,35 mm,  
frequency 10...55Hz, IEC/EN 60 068-2-6  
20 / 060 / 04 IEC/EN 60 068-1

**Climate resistance:** EN 50 005

**Terminal designation:** EN 50 005  
**Wire connection:** 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

**Wire fixing:** Flat terminals with self-lifting  
clamping piece IEC/EN 60 999-1

**Screw mounting**  
AA 9050: 35 x 50 mm and  
35 x 60 mm

**Mounting:** DIN rail IEC/EN 60 715

**Weight:**  
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  $U_N$ : AC 230 V  
• Setting range: 10 ... 100 lpm  
• Width: 45 mm

AA 9050 AC 230 V 50/60 Hz 10 ... 100 lpm 10 s

Article number: 0022920 stock item  
• Output: 1 changeover contact  
• Nominal voltage  $U_N$ : AC 230 V  
• Setting range: 10 ... 100 lpm  
• Start up delay: 10 s  
• Width: 45 mm

## Variants

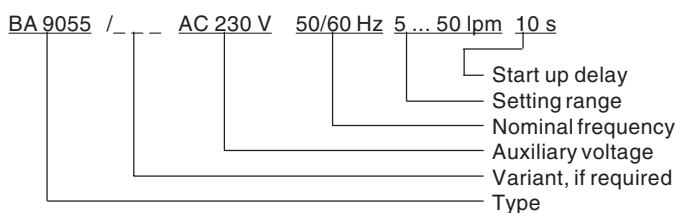
BA 9055, AA 9050: Standstill and underspeed monitoring with start up  
delay, closed circuit operation  
overspeed monitoring with start up delay, open  
circuit operation  
with UL-approval

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

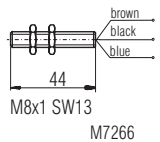
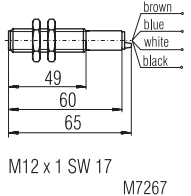
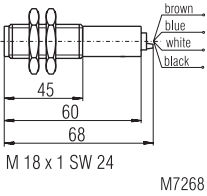
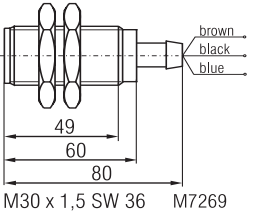
## Ordering example for variants



## Accessories

K 70-34: Cover for AA 9050

## Proximity sensors

| Type                       | NA 5001.01.10 pnp<br>NA 5001.01.20 npn  | NA 5002.01.34<br>pnp/npn  | NA 5005.01.34<br>pnp/npn   | NA 5010.01.10 pnp<br>NA 5010.01.20 npn  |
|----------------------------|---|---|--|---|
| Dimensions                 |  |  |  |  |
| Enclosure                  | metal   | metal   | metal  | metal   |
| Sensing 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<br>.20 npn NO  | .34<br>pnp NO + npn NO  | .34<br>pnp NO + npn NO   | .10 pnp NO<br>.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<br>AA 9050 / BA 9055 |
|---------------|----------|----------------------------------|
| NA 5001.01.10 | brown +  | +                                |
|               | blue -   | 0                                |
|               | black NO | n                                |
| NA 5002.01.34 | brown +  | +                                |
|               | white +  | +                                |
| NA 5005.01.34 | blue -   | 0                                |
|               | black NO | n                                |
| NA 5010.01.10 | brown +  | +                                |
|               | blue -   | 0                                |
|               | black NO | n                                |

Connection table BA 9055 / \_\_ 5

| Type          | wire     | Terminal on<br>BA 9055/ __ 5 |
|---------------|----------|------------------------------|
| NA 5001.01.20 | brown +  | +                            |
|               | blue -   | 0                            |
|               | black NO | n                            |
| NA 5002.01.34 | brown +  | +                            |
|               | white NO | n                            |
| NA 5005.01.34 | blue -   | 0                            |
|               | black -  | 0                            |
| NA 5010.01.20 | brown +  | +                            |
|               | blue -   | 0                            |
|               | black NO | n                            |

