VARIMETER
Speed Monitor
BA 9055, AA 9050

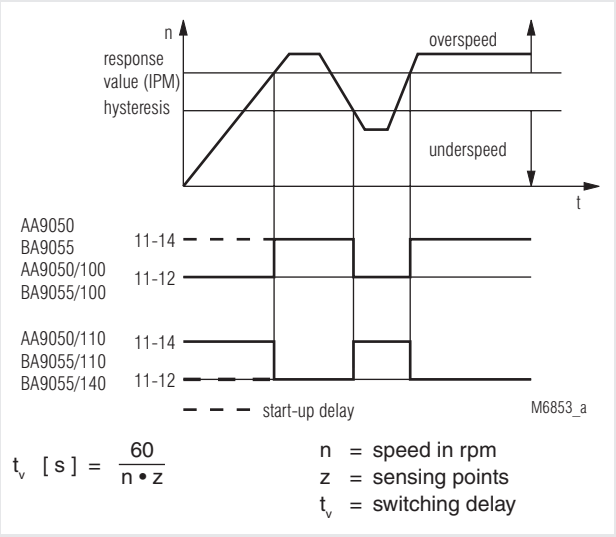
0225072


BA 9055


AA 9050

- 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

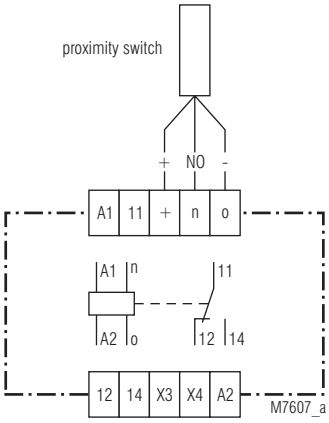
Function Diagram



$$t_v\ [s] = \frac{60}{n \bullet z}$$

n = speed in rpm
z = sensing points
t_v = switching delay

Circuit Diagram



BA 9055.11, AA 9050.11

Approvals and Markings

Canada / USA

* 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 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.

Technical Data

Input Circuit

Input:	for proximity sensors, built in power supply DC 24 V, max. 40 mA
Setting range:	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
Min. pulse length:	1 ms
Max. frequency:	30 000 lpm
Setting:	infinite on relative scale
Setting accuracy:	≤ ± 3 %
Response value:	0.1 ... 1 of end of scale value
Hysteresis:	
BA 9055:	2 % of response value
AA 9050:	2 ... 30 % of response value
Accuracy:	≤ ± 1 %
Temperature influence:	≤ ± 0.1 % /°C

Technical Data

Influence of auxiliary supply: < ± 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 contac
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 x 10^6 switching cycles

General Data

Operating mode: Continuous operation
Temperature range: - 20 ... + 60°C
Clearance and creepage distances
rated impulse voltage / pollution degree: 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 wiht V0 behaviour according to UL subject 94
Vibration resistance: Amplitude 0.35 mm, frequency 10...55Hz, IEC/EN 60 068-2-6
Climate resistance: 20 / 060 / 04 IEC/EN 60 068-1
Terminal designation: EN 50 005
Wire connection: 2 x 2.5 mm² solid or
2 x 1,5 mm² 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 Types

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
- Output: 1 changeover contact
- Nominal voltage U_N: AC 230 V
- Setting range: 10 ... 100 lpm
- Start up delay: 10 s
- Width: 45 mm

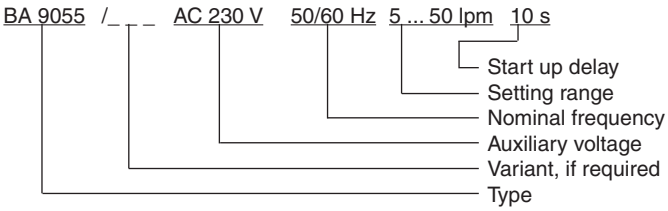
Classification to DIN EN 50155 for BA 9055

Vibration and shock resistance: Category 1, Class B IEC/EN 61 373
Protective coating of the PCB: 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
BA 9055/61: with UL-approval
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

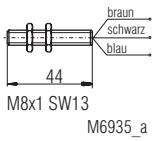
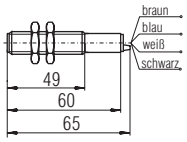
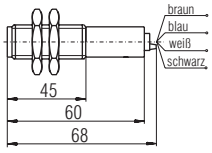
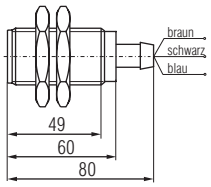
Ordering example for variants



Accessories

K 70-34: Cover for AA 9050
Article number: 0011790

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!