



Standstill monitor safety module

Main functions

- For safety applications up to SIL 2 / PL d
- Residual voltage at motor-stop selectable on 10 position.
- Galvanic separation between control circuit and measure circuit
- 45 mm housing
- 2 NO safety contacts, 1 NC auxiliary contact
- 2 Semiconductor outputs:
 - 1 output for failure state signalling
 - 1 output for signalling outputs state
- Possibility to connect single-phase or three-phase motors to measuring circuits.
- Supply voltages: 24 ... 230 Vac/dc

Utilization categories

Alternate current: AC15 (50...60 Hz)

U_e (V) 230I_e (A) 3

Direct current: DC13 (6 operations/minute)

U_e (V) 24I_e (A) 4**Markings, quality marks and certificates:**

Approval UL: E131787

Approval GOST: POCC IT.AB24.B04512

Complying with the requirements requested by:

Low Voltage Directive 2006/95/EC,

Machinery Directive 2006/42/EC,

Electromagnetic Compatibility 2004/108/EC

Technical data**Housing**

Made of polyamide PA 6.6 self-extinguishing, class V0 (UL94)

Protection degree: IP40 (housing), IP20 (terminals)

Dimensions: see page 5/82, shape C

General data

SIL level (SIL CL): up to SIL 2 according to EN IEC 62061

Performance Level (PL): up to PL d according to EN ISO 13849-1

Safety category: up to cat.3 according to EN ISO 13849-1

Safety parameters: see page 7/34

Ambient temperature: -25°C...+55°C

Mechanical endurance: >10 millions of operations

Electrical endurance: >100.000 operations

Pollution degree: outside 3, inside 2

Rated impulse with stand voltage (U_{imp}): 4 kVRated insulation voltage (U_i): 250 V

Over-voltage category: II

Weight: < 0,3 kg

Power supplyRated operating voltage (U_n): 24 ... 230 Vac/dc; 50...60 Hz

Max residual ripple in DC: 10%

Supply voltage tolerance: ±15% of U_n

Rated power consumption AC: < 9 VA

Rated power consumption DC: < 2 W

Input circuit

Voltage between terminals L1-L2-L3: 0...690 Vac

Frequency: 0...3 KHz

Input impedance: > 1 MΩ

Stopped motor threshold voltage: from 20 mV to 500 mV adjustable on 10 positions

Started motor threshold voltage: double than the stopped motor threshold voltage

Input impedance Y1-Y2: < 20 Ω

START Y1-Y2 circuit current: < 70 mA

Input voltage RESET: 24 Vdc ± 20%

Input current RESET: 10 mA

Control circuitOperating time t_A: < 2 sReleasing time t_{R1}: < 20 ms

Releasing time in absence of power supply: max 3 s

Simultaneity time: 3 s

Test: Self-test when the power is supplied and after the RESET input is activated

Test duration: 2,5 s (During the test in the measuring circuits the voltage must be lower than the stopped motor threshold)

In conformity with standards:

IEC 60947-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN ISO 13849-1, EN 999, EN 1037, EN ISO 12100-1, EN ISO 12100-2, EN ISO 13850, IEC 529, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 62326-1, EN 60664-1, EN 60947-5-1, EN 62061, EN 13849-1, UL 508, CSA C22.2 n° 14-95

Output circuit

Output contacts:

2 NO safety contacts,

1 NC auxiliary contact

forced guided contacts

silver alloy, gold plated

230/240 Vac; 300 Vdc

Contacts type:

Contacts material:

Max switching voltage:

Max switching current per contact:

Conventional free air thermal current I_{th}:Max currents sum Σ I_{th}²:

Min. current:

Contacts resistance:

Contact protection fuse:

Semiconductor outputs:

6 A

6 A

36 A²

10 mA

≤ 100 mΩ

6 A, F type

PNP outputs galvanically separated,

protected from over voltage and short circuit

24 Vdc

50mA

24 Vdc ±20%

The number and the load capacity of output contacts can be increased by using expansion modules or contactors. See page 5/51 - 5/61.

Code structure**CS AM-01VE01-TC00**

Setting range of the stopped motor voltage

01 20 ... 500 mV, range 53 mVSimultaneity time t_c**00** infinite**60** 60 s

Kind of connection

V screw terminals**M** connector with screw terminals**X** connector with spring terminals**Data type approved by UL**Rated operating voltage (U_n): 24 ... 230 Vac/dc

50...60 Hz

Rated power consumption AC: < 9 VA

Rated power consumption DC: < 2 W

Motor input: up to 600 V

Output relay: C300 pilot duty

Notes:

- Suitable for use in environment with pollution degree 2

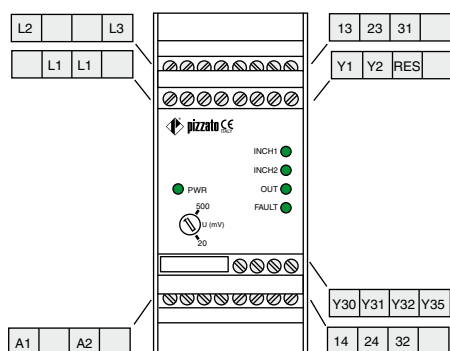
- Use 60° or 75 °C copper (Cu) conductor and wire size No. 30-12 AWG.

- Terminal tightening torque of 5-7 Lb In.

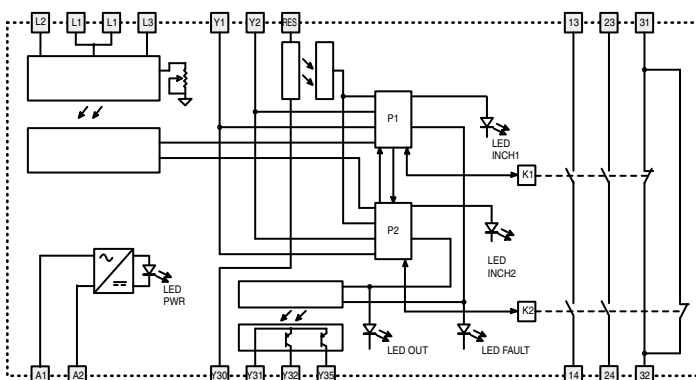


Safety module CS AM-0

Terminals layout

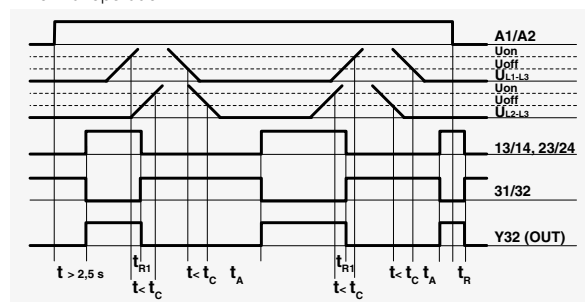


Internal wiring diagram

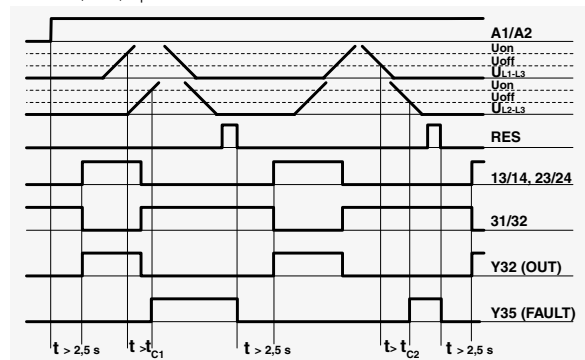


Operation diagrams

Normal operation



Reset (RES) operation



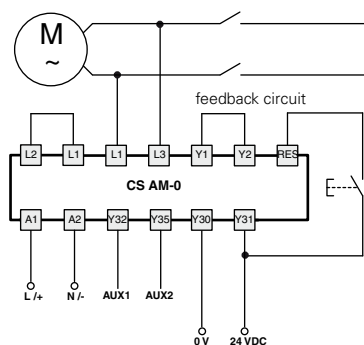
Legend:

t_C : Simultaneity time
 t_A : Operating time

t_{R1} : Releasing time
 t_R : Releasing time in absence of power supply

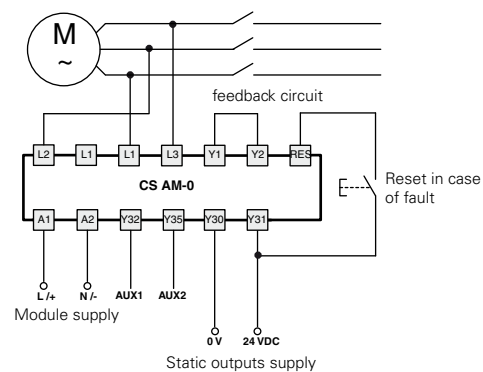
Inputs configuration

Single-phase



In case of star/delta starting, connect the module to the ends of a single winding.

Three-phase



The diagram does not show the exact position of clamps in the product