

# Dold Safety Relay Standstill, Speed, and Gate Monitoring

**UH5947-04PS24**

The Dold speed and standstill monitor provides safe monitoring of motors and rotating equipment using encoders or proximity switches. The front displays user-selected parameters which can be easily and conveniently changed depending on the application.

## Features

- Adjustable operation mode
- Single or 2-channel safety gate monitoring
- Adjustable start-up delay
- Adjustable monitoring time
- LED status Indicator
- Forcibly guided contacts

## Safety Data – Values per EN ISO 13849-1

|                          |                                               |
|--------------------------|-----------------------------------------------|
| <b>Category</b>          | 4 according to EN ISO 13849-1                 |
| <b>Performance level</b> | PL <sub>e</sub> according to EN ISO 13849-1   |
| <b>MTTF<sub>d</sub></b>  | >93 years for LH5946<br>>222 years for UG6946 |
| <b>DC<sub>avg</sub></b>  | 99%                                           |

## Safety Data – Values per IEC/EN 62061 /IEC/EN 61508

|                                         |                                                                            |
|-----------------------------------------|----------------------------------------------------------------------------|
| <b>SIL CL</b>                           | 3 per IEC/EN 62061                                                         |
| <b>SIL</b>                              | 3 per IEC/EN 61508                                                         |
| <b>HFT (Hardware Failure Tolerance)</b> | 1                                                                          |
| <b>DC<sub>avg</sub></b>                 | 99%                                                                        |
| <b>PFH<sub>D</sub></b>                  | 4.10 x 10 <sup>-10</sup> for LH5946<br>4.20 x 10 <sup>-10</sup> for UG6946 |

## Standstill, Speed, and Gate Monitoring Relays Selection Chart

| Part Number                               | Price    | Marking Type                                       | Monitoring Circuit                              | Control Voltage | Connection                | Drawing                    |
|-------------------------------------------|----------|----------------------------------------------------|-------------------------------------------------|-----------------|---------------------------|----------------------------|
| <a href="#"><u>UH5947-04PS24</u></a>      | \$647.00 | Motor standstill, speed and safety gate monitoring | (2) PNP or NPN sensor inputs and/or (1) encoder | 24VDC           | Pluggable screw terminals | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>UH5947-04PS110</u></a>     | \$667.00 |                                                    |                                                 | 110-240 VAC/VDC |                           | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>UH5947-04-001PS24</u></a>  | \$647.00 |                                                    | NAMUR sensor inputs and/or (1) encoder          | 24VDC           |                           | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>UH5947-04-001PS110</u></a> | \$667.00 |                                                    |                                                 | 110-240 VAC/VDC |                           | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>UH5947-04PC24</u></a>      | \$686.00 |                                                    | (2) PNP or NPN sensor inputs and/or (1) encoder | 24VDC           | Push-in cage clamp        | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>UH5947-04PC110</u></a>     | \$725.00 |                                                    |                                                 | 110-240 VAC/VDC |                           | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>UH5947-04-001PC24</u></a>  | \$686.00 |                                                    | NAMUR sensor inputs and/or (1) encoder          | 24VDC           |                           | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>UH5947-04-001PC110</u></a> | \$725.00 |                                                    |                                                 | 110-240 VAC/VDC |                           | <a href="#"><u>PDF</u></a> |

Note: The -04 models are recommended for applications where motors are controlled directly from contactors.

The -40 models are recommended for applications involving VFDs or soft starters where OFF-state leakage is present and higher voltage settings are required.



# Dold Safety Relay

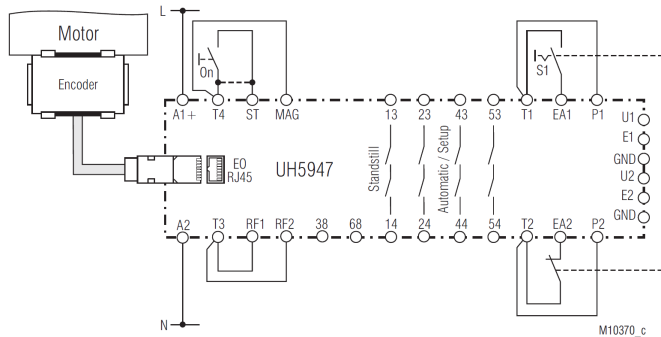
## Standstill, Speed, and Gate Monitoring

| Standstill, Speed, and Gate Monitoring Relays Specifications |                                                                                                    |                  |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------|
| General Specifications                                       |                                                                                                    |                  |
| Storage Temperature                                          | -20 to 70°C [-4 to 158°F]                                                                          |                  |
| Operating Temperature                                        | -20 to 60°C [-4 to 140°F]                                                                          |                  |
| Altitude                                                     | < 2,000m [6562ft]                                                                                  |                  |
| Vibration Resistance                                         | Amplitude: 0.35 mm<br>Frequency: 10 to 55 Hz (IEC/EN 60068-2-6)                                    |                  |
| Degree of Protection                                         | IP20                                                                                               |                  |
| Housing                                                      | Thermoplastic with VO behavior; DIN rail mount                                                     |                  |
| Weight                                                       | 420g [0.93 lb]                                                                                     |                  |
| Agency Approvals and Standards                               | cULus file E107778, CE, TUV                                                                        |                  |
| Wire Connections                                             | Pluggable screw terminal: 1x AWG 28 - 12<br>Push in cage clamp terminals: 1x AWG 24 - 12           |                  |
| Input Specifications                                         |                                                                                                    |                  |
|                                                              | UH5947-04xx110                                                                                     | UH5947-04xx24    |
| Nominal Voltage                                              | 110 to 240 VAC/VDC                                                                                 | 24VDC            |
| Voltage Range                                                | 88 to 288 VAC/DC                                                                                   | 21.6 to 26.4 VDC |
| Nominal Consumption                                          | <6.5 W                                                                                             | <5 W             |
| Frequency Range                                              | 50 to 60 Hz (+/- 5 Hz)                                                                             | N/A              |
| Minimum Off Time                                             | 600ms                                                                                              | 150ms            |
| Output Specifications                                        |                                                                                                    |                  |
| Electrical Contact Life                                      | To AC15 at 5A, 230V: 2x10 <sup>6</sup> switching cycles IEC/EN 60947-5-1                           |                  |
| Mechanical Life                                              | ≥ 50 x 10 <sup>6</sup> Switching Cycles                                                            |                  |
| Contact Type                                                 | 4 NO positively driven and 2 semiconductor-monitoring outputs<br>(NO contacts are safety contacts) |                  |
| Thermal Current (I <sub>th</sub> )                           | 5A (max)                                                                                           |                  |
| Short Circuit Strength                                       | 4A gG/gL (IEC/EN 60947-5-1)                                                                        |                  |
| Switching Capacity IEC/ EN 60 947-5-1                        | AC 15: NO contacts: 3A/230V<br>DC13: NO contacts: 1A/24VDC<br>DC13: 4A/24V @0.1 Hz                 |                  |
| Semiconductor Monitoring                                     | 2 piece; 20mA DC 24V, plus switching                                                               |                  |

# Dold Safety Relay

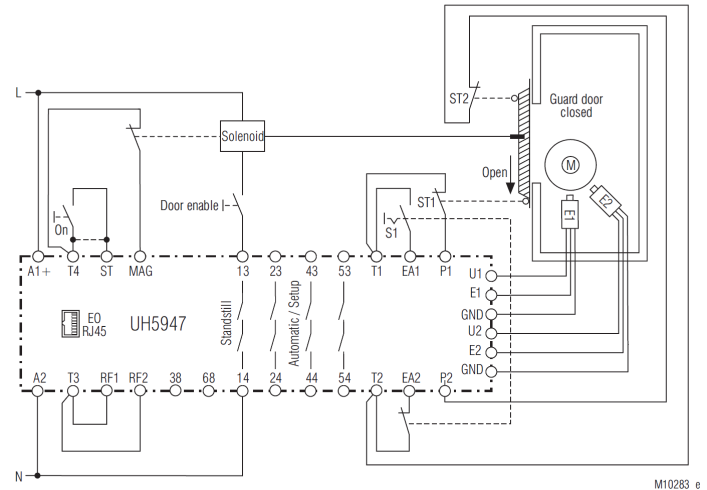
## Standstill, Speed, and Gate Monitoring

### Applications



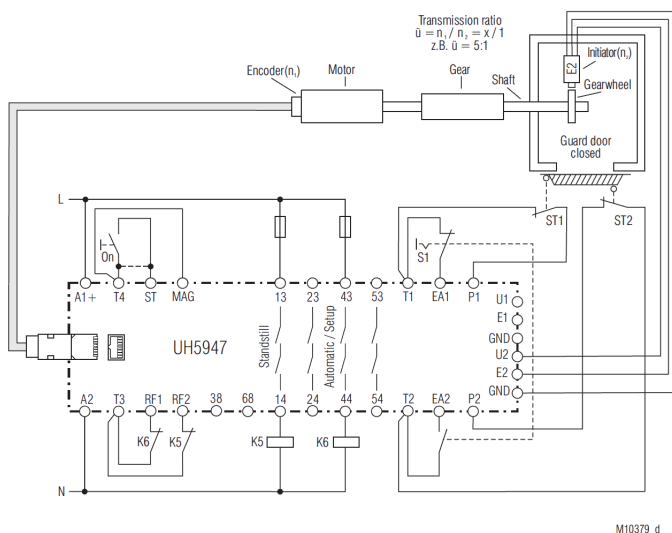
#### Rotational speed and standstill monitoring with suitable encoder, automatic mode

- For manual start: ON/OFF pushbutton to T4/ST
- For automatic start: jumper to T4/ST
- Suited up to SIL3, Performance Level e, Cat. 4 (requirement for Cat. 4 is, that during longer periods of standstill, a forced dynamization ( $t < 24h$ ) has to be carried out).



#### Two-channel rotational speed and standstill monitoring by means of two NPN or PNP proximity sensors, automatic mode

- Safety gate monitoring active
- For manual start: ON/OFF pushbutton to T4/ST
- For automatic start: jumper to T4/ST
- Suited up to SIL3, Performance Level e Cat. 4 (Requirement for Cat. 4 is, that during longer periods of standstill a forced dynamization ( $t < 24h$ ) has to be carried out).
- NOTE: For NAMUR Sensor there is no GND connection



#### Rotational speed and standstill monitoring by means of encoder and one NPN or PNP proximity sensor, setup mode

- Gear ratio set
- Safety gate monitoring active
- For manual start: ON/OFF pushbutton to T4/ST
- For automatic start: jumper to T4/ST
- Suited up to SIL3, Performance Level e, Cat. 4 (Requirement for Cat. 4 is, that during longer periods of standstill a forced dynamization ( $t < 24h$ ) has to be carried out).

| Terminal Designation                | Signal Description                                             |
|-------------------------------------|----------------------------------------------------------------|
| A1 (+)                              | + / L                                                          |
| A2                                  | - / N                                                          |
| U1, U2                              | + supply for proximity sensors or NAMUR sensors                |
| GND                                 | - supply for proximity sensors                                 |
| E1, E2                              | Input for pulse signal from proximity sensors or NAMUR sensors |
| 13, 14, 23, 24, 43, 44, 53, 54      | Forcibly guided NO contacts for release circuit                |
| 38, 68                              | Semiconductor monitoring output                                |
| T1, T2, T3, T4                      | Control output                                                 |
| ST, MAG, RF1, RF2, P1, P2, EA1, EA2 | Control input                                                  |