

# RLY3-MULT100

ReLy

**SAFETY RELAYS** 





# Ordering information

Туре	Part no.
RLY3-MULT100	1100692

Other models and accessories → www.sick.com/ReLy

Illustration may differ





#### Detailed technical data

#### Features

Applications	Evaluation unit
Compatible sensor types	Safety sensors with OSSDs Safety sensors with test input Safety sensors with potential-free outputs Safety pressure mats

#### Safety-related parameters

Safety integrity level	SIL 3 (IEC 61508)
Category	Category 4 (ISO 13849-1)
Performance level	PL e (ISO 13849-1)
$\mbox{PFH}_{\mbox{\scriptsize D}}$ (mean probability of a dangerous failure per hour)	1.5 × 10 <sup>-9</sup>
T <sub>M</sub> (mission time)	20 years (ISO 13849-1)
Stop category	0 (IEC 60204-1)

#### **Functions**

Sensor monitoring	Discrepancy monitoring Sequence monitoring Cross-circuit detection
Restart interlock	<b>√</b>
Reset	Automatic Manual
External device monitoring (EDM)	✓

#### Interfaces

Connection type	Front connector with spring terminals
Inputs	2 safety inputs 1 input for reset pushbutton or external device monitoring (EDM)
Outputs	3 enabling current paths (safe) 2 application diagnostic outputs (not safe) 2 test pulse outputs (not safe)
Display elements	LEDs

Configuration method	Hard wired DIP switch
	2 0

#### Electrical data

Veltage supply  Supply voltage V <sub>s</sub> Residual ripple  \$2.4 V CC (11.6.8 V 30 V)  Residual ripple  \$2.5 W (DC)  Safety inputs  Number Input voltage HIGH   24 V DC (11.7 V 30 V)   1.0 V DC (-3 V V 5 V DC (-3 V V 5 V)   1.0 V DC (-3 V V 5 V DC (-3 V V	Electrical data	
Residual ripple \$ 2.4 V \$ 2.5 W (DC) \$ 2.5 W	Voltage supply	PELV or SELV
Power consumption  Safety inputs    Input voltage HIGH   24 V DC (11 V 30 V)   0 V DC (-3 V 5 V)	Supply voltage V <sub>S</sub>	24 V DC (16.8 V 30 V)
Safety inputs   Number   Input voltage HIGH   Input voltage LOW   O V DC (-3 V 5 V)   O V DC (-3 V 5 V)   Input collar to the solutions   See type bushbutton or external device monitoring (EDM) input voltage HIGH   Input voltage LOW   Input voltage LOW   Input current   Input voltage LOW   Input voltage LOW   Input current   Input voltage LOW   Input voltage LOW   Input voltage HIGH   I	Residual ripple	≤ 2.4 V
Input voltage HIGH Input voltage LOW Input current Test pulse width Test pulse width Test pulse width Test pulse rate Activation time tolerance between the two start buttons Reset pushbutton or external device monitoring (EDM) input  Number Input voltage HIGH Input voltage HIGH Input voltage LOW Input current  Enabling current paths  Response time Number Type of output Contact material Switching voltage Switching current Total current Total current Total current Total current Total current Total current Type of output Reated impulse withstand voltage Ump Rated impulse withstand voltage Ump Type of output Voltage LOW Total category Reated impulse withstand voltage Ump Type of output Voltage LOW Total Current Type of output Reated impulse withstand voltage Ump Type of output Voltage HIGH Output voltage LOW Say V Say	Power consumption	≤ 2.5 W (DC)
Input voltage HIGH Input voltage LOW Activation time tolerance between the two start buttons Reset pushbutton or external device monitoring (EDM) Input Number Input voltage HIGH Input voltage HIGH Input voltage LOW Input voltage LOW Input current  Enabling current paths  Response time Number Type of output Contact material Switching voltage Switching current Total current Total current Total current Total current Reted impulse withstand voltage U <sub>Imp</sub> Reted impulse withstand voltage U <sub>Imp</sub> Input voltage LOW Output voltage LOB  Number Type of output Contact material Switching current Total cu	Safety inputs	
Input voltage LOW Input current Test pulse width Test pulse rate Activation time tolerance between the two start buttons  Reset pushbutton or external device monitoring (EDM) input  Number Input voltage HIGH Input voltage HIGH Input current  Enabling current paths  Response time Number Type of output Contact material Switching voltage Switching voltage Overvoltage category Rated impulse withstand voltage U <sub>imp</sub> Application diagnostic outputs Number Type of output Contact material Switching current Total current Total current Total current Number Type of output Contact material Switching current Total current Number Type of output Contact material Switching cycles Uil (EN 60664-1)  Application diagnostic outputs Number Type of output Output voltage HIGH Output voltage HIGH Output voltage LOW Output voltage LOW Output voltage LOW Output voltage LOW Switching current Output voltage LOW Output voltage LOW	Number	2
Input current Test pulse width Test pulse rate Activation time tolerance between the two start buttons  Reset pushbutton or external device monitoring (EDM) input  Number Input voltage HIGH Input voltage HIGH Input current Input voltage HIGH Input voltage HIGH Input current Input voltage HIGH Input voltage HIG	Input voltage HIGH	24 V DC (11 V 30 V)
Test pulse width Test pulse rate  Activation time tolerance between the two start buttons  Reset pushbutton or external device monitoring (EDM) input  Number Input voltage HiGH Input voltage LOW Input current  Enabling current paths  Response time Number Type of output Contact material Switching voltage Switching current Total current Total current Mechanical life Overvoltage category Rated impulse withstand voltage Uimp Rated impulse withstand voltage Uimp Type of output Output voltage HiGH Output voltage HiGH Output voltage HiGH Output voltage LOW Output voltage LOW Output voltage LOW Output voltage LOW Si 3 voltage Uimp Output voltage LOW Output voltage LOW Si 3 voltage Uimp Output voltage LOW Si 3 voltage LOW Si 3 voltage Uimp Output voltage LOW Si 3 voltage LOW Si 5 voltag	Input voltage LOW	0 V DC (-3 V 5 V)
Test pulse rate Activation time tolerance between the two start buttons  Reset pushbutton or external device monitoring (EDM) input  Number Input voltage HIGH Input voltage LOW Input current  Enabling current paths  Response time Number Type of output Contact material Switching voltage Switching voltage Unrent Total current Total curren	Input current	4 mA 6 mA
Activation time tolerance between the two start buttons  Reset pushbutton or external device monitoring (EDM) input  Number Input voitage HIGH 24 V DC (11 V 30 V) Input current Input voitage LOW Input current Input current Input voitage LOW Input current Input current Response time Number Type of output Contact material Switching voitage Switching current Input current Paths  Response time Number Type of output Contact material Switching voitage Switching current Total current Input voitage LOW Application diagnostic outputs  Number Type of output Contact material Switching current Total current Input voitage LOW Switching current Type of output Contact material Switching current Total current Input voitage LOW Switching current Total current Input voitage HIGH 24 V DC (11 V 30 V) Input voitage LOW Switching current Switching current Type of output Contacts, positively guided Input voitage LOW Switching current Switching cycles Input current Switching current Switching cycles Ill (EN 60664-1)	Test pulse width	≤ 1 ms
Reset pushbutton or external device monitoring (EDM) input  Number Input voltage HIGH Input voltage LOW Input current Input curr	Test pulse rate	≤ 10 Hz
Number 1 Input voltage HIGH 24 V DC (11 V 30 V) Input voltage LOW 0 V DC (-3 V 5 V) Input current 4 mA 6 mA  Enabling current paths  Response time Number 3 Type of output Contact material Silver alloy, gold flashed Switching voltage 10 V AC 230 V AC 10 V DC 230 V DC Switching current 10 mA 6 A  Total current 4 Mechanical life 1 x 10 <sup>7</sup> switching cycles Overvoltage category III (EN 60664-1)  Application diagnostic outputs  Number 2 Type of output Push-pull semiconductor output, short-circuit protected Output voltage HIGH Over Account of the configured sensor type, for details see operating instructions 3 N/O contacts, positively guided Silver alloy, gold flashed 10 V AC 230 V AC 10 V DC 230 V DC 10 mA 6 A 12 A 4 A 4 A 5 A 6 KV (EN 60664-1)  Application diagnostic outputs  Number 2 Type of output Push-pull semiconductor output, short-circuit protected Output voltage HIGH 2 V <sub>s</sub> - 3 V Output voltage LOW 53 V		≤3s
Input voltage HIGH Input voltage LOW Input voltage LOW Input current Input Contact material Input Contact material Input Contact material Input Contact material Input Contact Input Con		
Input voltage LOW Input current Input curre	Number	1
Enabling current paths  Response time Number Type of output Contact material Switching voltage Overvoltage category Rated impulse withstand voltage U <sub>imp</sub> Application diagnostic outputs  Response time Depends on the configured sensor type, for details see operating instructions  3  N/O contacts, positively guided Silver alloy, gold flashed 10 V AC 230 V AC 10 V DC 230 V DC 10 mA 6 A 12 A 12 A 12 A 15 Fixed impulse withstand voltage U <sub>imp</sub> Application diagnostic outputs  Number Type of output Output voltage HIGH Output voltage LOW  Sensor  Push-pull semiconductor output, short-circuit protected  ≥ V <sub>s</sub> - 3 V  ≤ 3 V	Input voltage HIGH	24 V DC (11 V 30 V)
Response time Number Type of output Contact material Switching voltage Total current Mechanical life Overvoltage category Rated impulse withstand voltage U <sub>imp</sub> Application diagnostic outputs  Response time Number Ny/O contacts, positively guided Silver alloy, gold flashed 10 V AC 230 V AC 10 V DC 230 V DC 10 mA 6 A 12 A 1 x 10 <sup>7</sup> switching cycles III (EN 60664-1) 6 kV (EN 60664-1)  Push-pull semiconductor output, short-circuit protected Output voltage LOW Output voltage LOW Suitching current 10 KV (EN 60664-1) 12 A 1 x 10 <sup>7</sup> switching cycles 12 CV (EN 60664-1) 13 CV (EN 60664-1) 14 CV (EN 60664-1) 15 CV (EN 60664-1) 16 CV (EN 60664-1) 17 CV (EN 60664-1) 18 CV (EN 60664-1) 19 CV (EN 60664-1) 20 CV (EN 60664-1) 3 CV (EN 60664-1) 4 CV (EN 60664-1) 5 CV (EN 60664-1) 5 CV (EN 60664-1) 6 CV (EN 60664-1) 7 CV (EN 60664-1) 7 CV (EN 60664-1) 8 CV (EN 60664-1) 9 CV (EN 60664-1)	Input voltage LOW	0 V DC (-3 V 5 V)
Depends on the configured sensor type, for details see operating instructions  3  N/O contacts, positively guided  Silver alloy, gold flashed  Switching voltage Switching current Total current Mechanical life Overvoltage category Rated impulse withstand voltage U <sub>imp</sub> Application diagnostic outputs  Depends on the configured sensor type, for details see operating instructions  N/O contacts, positively guided  Silver alloy, gold flashed  10 ∨ AC 230 ∨ AC 10 ∨ DC 230 ∨ DC  10 mA 6 A  12 A  1x 10 <sup>7</sup> switching cycles  Ill (EN 60664-1)  6 kV (EN 60664-1)  Application diagnostic outputs  Number Type of output Output voltage HIGH Output voltage HIGH Output voltage LOW  Silver alloy, gold flashed  10 ∨ AC 230 ∨ AC 10 ∨ DC 230 ∨ DC  10 mA 6 A  12 A  1x 10 <sup>7</sup> switching cycles  Ill (EN 60664-1)  6 kV (EN 60664-1)  Silver alloy, gold flashed  10 ∨ AC 230 ∨ AC 10 ∨ DC 230 ∨ DC  12 A  12 Y (EN 60664-1)  6 kV (EN 60664-1)  Application diagnostic outputs  Number  Vush-pull semiconductor output, short-circuit protected  Output voltage HIGH Output voltage LOW  ≤ 3 V	Input current	4 mA 6 mA
Type of output Contact material Silver alloy, gold flashed 10 V AC 230 V AC 10 V DC 230 V DC  Switching current Total current Mechanical life Overvoltage category Rated impulse withstand voltage U <sub>imp</sub> Application diagnostic outputs  Number Type of output Output voltage HIGH Output voltage LOW  VO contacts, positively guided Silver alloy, gold flashed 10 V AC 230 V AC 10 V DC 230 V DC 10 V AC 230 V DC 11 V AC 230 V AC 10 V DC 230 V DC 12 A 12 A 12 A 12 A 12 A 12 (EN 60664-1) 6 kV (EN 60664-1)  Application diagnostic outputs  Output voltage HIGH Output voltage LOW ≤ 3 V	Enabling current paths	
Type of output  Contact material  Switching voltage  Switching current  Switching current  Total current  Mechanical life  Overvoltage category  Rated impulse withstand voltage $U_{imp}$ Number  Type of output  N/O contacts, positively guided  Silver alloy, gold flashed  10 V AC 230 V AC  10 V DC 230 V DC  10 mA 6 A  12 A  12 A  Mechanical life  1 x $10^7$ switching cycles  Ill (EN 60664-1)  6 kV (EN 60664-1)  Application diagnostic outputs  Number  2  Push-pull semiconductor output, short-circuit protected  Output voltage HIGH  Output voltage LOW  Silver alloy, gold flashed  10 V AC 230 V AC  10 V DC 230 V DC  10 mA 6 A  12 A  6 kV (EN 60664-1)  Switching cycles  Ill (EN 60664-1)  Switching cycles	Response time	Depends on the configured sensor type, for details see operating instructions
Contact material Silver alloy, gold flashed  10 V AC 230 V AC 10 V DC 230 V DC  Switching current 10 mA 6 A  12 A  Mechanical life Overvoltage category Rated impulse withstand voltage U <sub>imp</sub> Rated impulse withstand voltage U <sub>imp</sub> Application diagnostic outputs  Number  Type of output Output voltage HIGH Output voltage LOW  Output voltage LOW  Silver alloy, gold flashed  10 V AC 230 V AC 10 V DC 230 V DC  110 mA 6 A  1 x 10 <sup>7</sup> switching cycles  III (EN 60664-1) 6 kV (EN 60664-1)  2 Push-pull semiconductor output, short-circuit protected  2 V <sub>s</sub> - 3 V  Output voltage LOW  Silver alloy, gold flashed  10 V AC 230 V AC 10 V DC	Number	3
Switching voltage $10 \ V \ AC \ \ 230 \ V \ AC \\ 10 \ V \ DC \ \ 230 \ V \ DC$ $Switching \ current$ $10 \ mA \ \ 6 \ A$ $12 \ A$ $Mechanical \ life$ $Overvoltage \ category$ $Rated \ impulse \ withstand \ voltage \ U_{imp}$ $Rated \ impulse \ withstand \ voltage \ U_{imp}$ $Application \ diagnostic \ outputs$ $Number$ $Type \ of \ output$ $Output \ voltage \ HIGH$ $Output \ voltage \ LOW$ $2 \ Push-pull \ semiconductor \ output, \ short-circuit \ protected$ $\geq V_s - 3 \ V$ $\leq 3 \ V$	Type of output	N/O contacts, positively guided
Switching current 10 MA 6 A  Total current 12 A  Mechanical life 1x $10^7$ switching cycles  Overvoltage category III (EN 60664-1)  Rated impulse withstand voltage $U_{imp}$ 6 kV (EN 60664-1)  Application diagnostic outputs  Number 2  Type of output Push-pull semiconductor output, short-circuit protected  Output voltage HIGH $\geq V_s - 3$ V  Output voltage LOW $\leq 3$ V	Contact material	Silver alloy, gold flashed
Total current  Mechanical life  Overvoltage category  Rated impulse withstand voltage $U_{imp}$ Application diagnostic outputs  Number  Type of output  Output voltage HIGH  Output voltage LOW  12 A $1 \times 10^7$ switching cycles  III (EN 60664-1) $6 \text{ kV (EN 60664-1)}$ Push-pull semiconductor output, short-circuit protected $2 \times 10^7$ switching cycles  III (EN 60664-1)  Push-pull semiconductor output, short-circuit protected $2 \times 10^7$ switching cycles	Switching voltage	
Mechanical life Overvoltage category Overvoltage category Rated impulse withstand voltage $U_{imp}$ 6 kV (EN 60664-1)  Application diagnostic outputs  Number Type of output Output voltage HIGH Output voltage LOW $\leq 3$ V $1 \times 10^7 \text{ switching cycles}$ $6 \text{ kV (EN 60664-1)}$ $2 \text{ Push-pull semiconductor output, short-circuit protected}$ $\geq V_s - 3 \text{ V}$	Switching current	10 mA 6 A
Overvoltage category Rated impulse withstand voltage U <sub>imp</sub> Application diagnostic outputs  Number 2  Type of output Output voltage HIGH Output voltage LOW  Output voltage LOW  III (EN 60664-1)  6 kV (EN 60664-1)  9 kV (EN 60664-1)  9 kV (EN 60664-1)  9 kV (EN 60664-1)  9 contact output, short-circuit protected  9 v <sub>s</sub> - 3 v  9 contact output, short-circuit protected	Total current	12 A
Rated impulse withstand voltage $U_{imp}$ 6 kV (EN 60664-1)  Application diagnostic outputs  Number 2  Type of output  Output voltage HIGH $\geq V_s - 3$ V  Output voltage LOW $\leq 3$ V	Mechanical life	1 x 10 <sup>7</sup> switching cycles
Application diagnostic outputs  Number 2  Type of output  Output voltage HIGH  Output voltage LOW $\leq 3 \text{ V}$	Overvoltage category	III (EN 60664-1)
Number 2 Type of output Push-pull semiconductor output, short-circuit protected Output voltage HIGH Output voltage LOW $\leq 3 \text{ V}$	Rated impulse with stand voltage $U_{\mathrm{imp}}$	6 kV (EN 60664-1)
Type of output Push-pull semiconductor output, short-circuit protected Output voltage HIGH $\geq$ V <sub>s</sub> $-$ 3 V $\leq$ 3 V	Application diagnostic outputs	
Output voltage HIGH $\geq V_s - 3 V$ Output voltage LOW $\leq 3 V$	Number	2
Output voltage LOW ≤ 3 V	Type of output	Push-pull semiconductor output, short-circuit protected
	Output voltage HIGH	≥ V <sub>s</sub> - 3 V
1 (AIDA) 445 A	Output voltage LOW	≤ 3 V
Input current (NPN) ≤ 15 mA	Input current (NPN)	≤ 15 mA
Output current (PNP) ≤ 120 mA	Output current (PNP)	≤ 120 mA
Test pulse outputs	Test pulse outputs	

 $<sup>^{1)}</sup>$  For details see operating instructions.

Number	2
Type of output	PNP semiconductors, short-circuit protected
Output voltage	≥ V <sub>s</sub> - 3 V
Test pulse width	Depends on the configured sensor type <sup>1)</sup>
Test pulse interval	Depends on the configured sensor type, for details see operating instructions

 $<sup>^{1)}</sup>$  For details see operating instructions.

#### Mechanical data

Dimensions (W x H x D)	18 mm x 124.6 mm x 85.5 mm
Weight	160 g

#### Ambient data

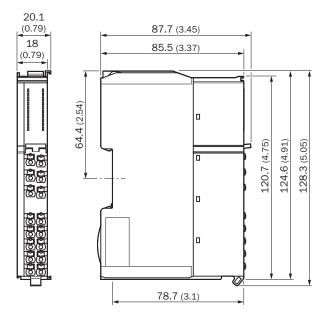
Enclosure rating	IP20 (IEC 60529)
Ambient operating temperature	-25 °C +55 °C
Storage temperature	-25 °C +70 °C
Air humidity	≤ 95 %, Non-condensing
Interference emission	According to IEC 61000-6-4
Interference resistance	According to IEC 61326-3-1 According to IEC 61000-6-2 According to IEC 60947-5-1

# Classifications

ECLASS 5.0	27371990
ECLASS 5.1.4	27371990
ECLASS 6.0	27371819
ECLASS 6.2	27371819
ECLASS 7.0	27371819
ECLASS 8.0	27371819
ECLASS 8.1	27371819
ECLASS 9.0	27371819
ECLASS 10.0	27371819
ECLASS 11.0	27371819
ECLASS 12.0	27371819
ETIM 5.0	EC001449
ETIM 6.0	EC001449
ETIM 7.0	EC001449
ETIM 8.0	EC001449
UNSPSC 16.0901	41113704

### Dimensional drawing (Dimensions in mm (inch))

EMSS3, LOOP1, MULT1, OSSD3



# SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

# **WORLDWIDE PRESENCE:**

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