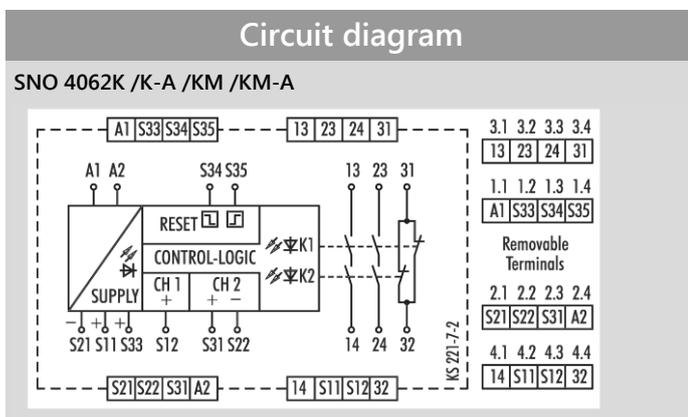


SNO 4062K

SNO 4062KM

Basic unit for emergency stop and guard door applications

- Basic unit as per DIN EN 60204-1 and EN ISO 13849-1 for single or twin channel emergency stop monitoring.
- PL e and category 4 as per EN ISO 13849-1
- SILCL 3 as per DIN EN 62061
- Stop category 0 as per DIN EN 60204-1
- Manual or automatic start
- With/without cross short detection
- Feedback circuit for external contactor monitoring
- 2 enable circuits, 1 signal circuit
- For processing signals from the output signal switching devices (OSSD) of a light curtain, according to DIN EN 61496-1
- For post-switching a switching mat according to DIN EN 1760-1 (SNO 4062KM)
- Input debouncing (SNO 4062KM)



Applications

- Monitoring of separating protective equipment
- Monitoring of rollup gates
- For processing signals from the output signal switching devices (OSSD) of a light curtain according to DIN EN 61496-1
- For connecting to a safety mat according to DIN EN 1760-1 (SNO 4062KM)

Function

SNO 4062K

The unit is a twin-channel safety switch unit that is self-monitoring at every ON-OFF cycle, for emergency stop devices as per DIN EN 60204-1, which is fitted with a positively guided relay.

Basic function: After application of the power supply to the terminals A1/A2 and closed safety inputs, actuation of the reset button (manual start) causes the enable circuits to be closed. The enable circuits are opened by opening/de-excitation of the safety inputs.

Operating modes / system functions

- Single or twin channel control with single channel control the two safety channels CH1 and CH2 are in parallel and with twin channel control they are switched separately.
- Without cross short detection both safety channels are switched to plus potential (S12 and S31 to S11).
- With cross short detection the safety channel CH1 is switched to plus potential (S11 to S12) and the safety channel CH2 against minus potential (S21 to S22).
- Manual start Using a button, with the safety inputs closed, the reset input S34 is opened (triggering with falling flank) or the reset input S35 is closed (triggering with rising flank).
- Automatic start the reset input S35 is combined with S33. The unit starts with the rising flank of the signal at the safety input S12.
- Start blocking when applying the power supply and closed safety inputs, the enable circuits are not closed. The start can only be achieved after actuation of the reset button. For the start blocking, as with the manual start operating mode, the reset inputs must be actuated using a button.
- Restart blocking after opening and closing the safety inputs, no restart takes place. The restart can only be achieved after actuation of the reset button. For the restart blocking, as with the manual start operating mode, the reset inputs must be actuated using a button.
- OSSD compatible Output switch elements (OSSD) of a light curtain or other light sensors with semi-conductor outputs can be processed. Test pulses $< t_{TP}$, do not influence the function of the unit. Test pulses $> t_{TP}$ the unit can interlock.

Function (Continued)

- Synchronous monitoring with twin-channel control, both safety channels are mutually monitored with synchronous time t_s . Safety channel CH1 must close before CH2 and the bridge S33/S35 must be switched. If CH2 closes before CH1 the synchronous time $t_s = \infty$, the synchronous monitoring is switched off.

SNO 4062KM

The function corresponds to that of the SNO 4062K without synchronous monitoring. The unit is suitable for attaching to short-circuit forming switching mats, switching bars or switching corners in 4-conductor technology (without monitoring resistance). The unit must be operated in a twin-channel manner with cross short detection. At a resistance $< 50 \Omega$ / channel and a short-circuit between the channels (S11/S12 and S21/S22), the enable circuits open and the LED SUPPLY flashes. Input debouncing prevents rapid switching one after the other of the enable circuits if the safety inputs are opened shorter than t_{ASP} . If the safety inputs are open longer than t_{ASP} , this leads to opening the enable circuits after t_R . Restarting is blocked for the period t_{SP} .

With applications for tactile operating modes (rapid off/on cycles, e.g. with manual feeding) we recommend input debouncing for the SNO 4062KM.

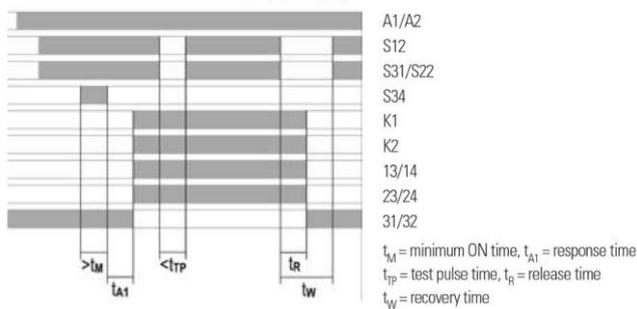
Also, please observe the information provided by your professional association!

Function diagram

SNO 4062K

Manual start (installation 3)

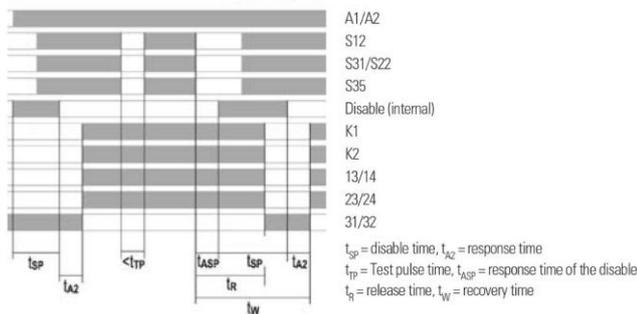
FD 221-4-1 W



SNO 4062KM

Automatic start (installations 2 and 4)

FD 221-4-2 W



Notes

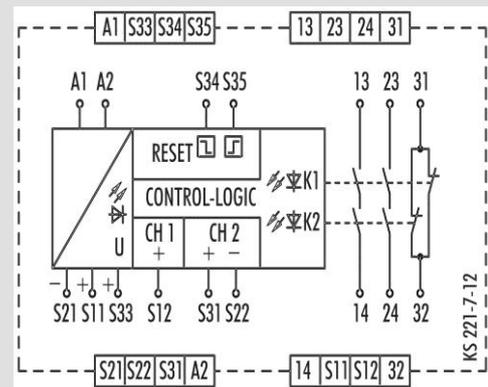
Proper use

The devices are safety switching devices. They must only be used as components of safety equipment on machines for the purpose of protecting people, material and machines.

- The safety category according to EN 954-1 depends on the external circuitry, the choice of control devices and their placement on the machine.
- The indicated times must be observed when the device is operated, otherwise the device could lock. Locking can be released by properly opening the safety inputs.
- SNE expansion devices or external contactors with positively driven contacts can be used to multiply the enabling current paths.
- The device and the contacts must be protected with max. 6 A utilization category gG or through circuit breakers with trigger characteristic B or C.
- The devices are equipped with overload protection (for short circuit). After the cause of the malfunction has been removed, the device is operational again after approx. 3 s.
- Control output S11 is exclusively for connecting control devices as defined in the operating instructions and not for connecting external field devices such as lamps, relays or contactors.
- The devices must be installed in a control cabinet with a protection degree of at least IP 54.

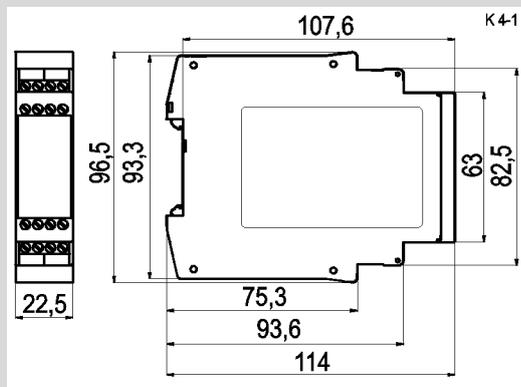
Please also note the information provided by your trade association.

Connection circuit diagramm

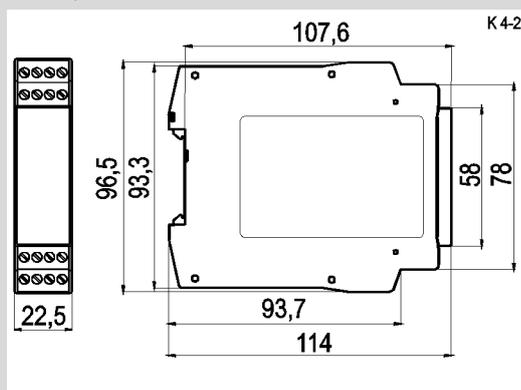


Dimension diagram

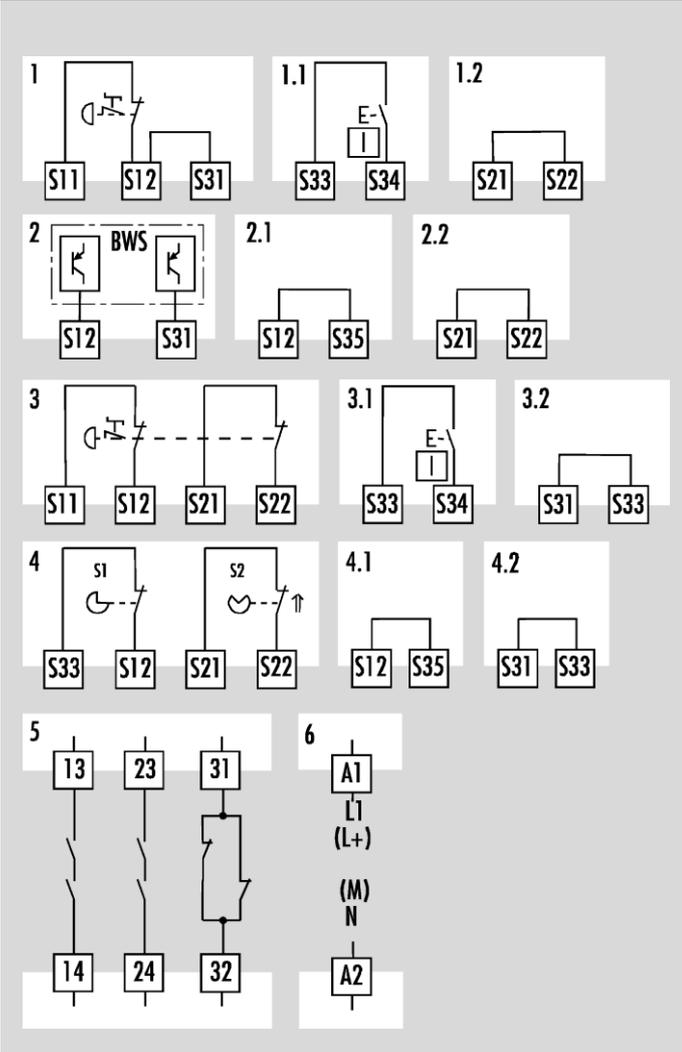
SNO 4062K / SNO 4062KM



SNO 4062K-A / SNO 4062KM-A



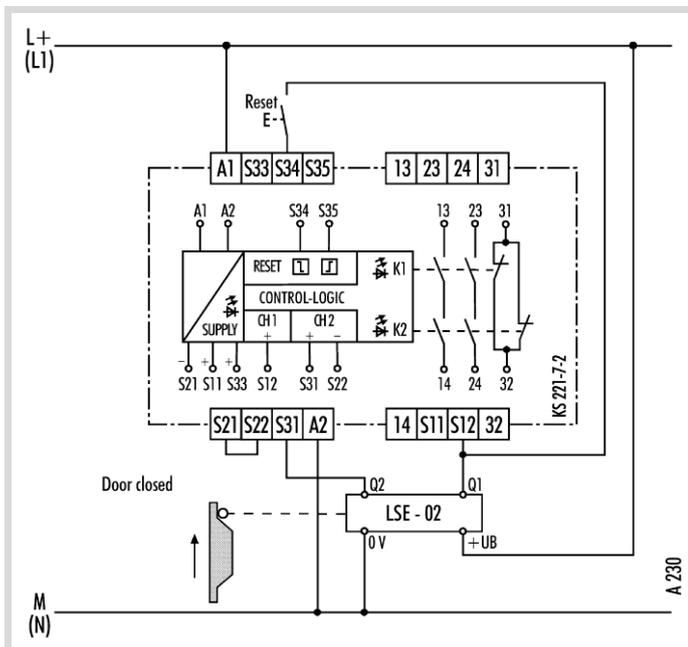
Installation



	Please consult the circuit diagram during installation.
1	Emergency stop single channel, manual start
1.1	RESET (with reset button monitoring S34)
1.2	Bridge
2	OSSD control two-channel, without cross monitoring,
2.1	Bridge, RESET with automatic start
2.2	Bridge, CH2 -
3	Emergency stop two-channel, with cross monitoring and manual start
3.1	RESET (with reset button monitoring S34)
3.2	Bridge, CH2 +
4	Safety gate applications two-channel, with cross monitoring, synchrocheck (S1 must be operated before S2)
4.1	RESET with automatic start
4.2	Bridge, CH2 +
5	2 enabling current paths 1 signaling contact
6	Supply voltage

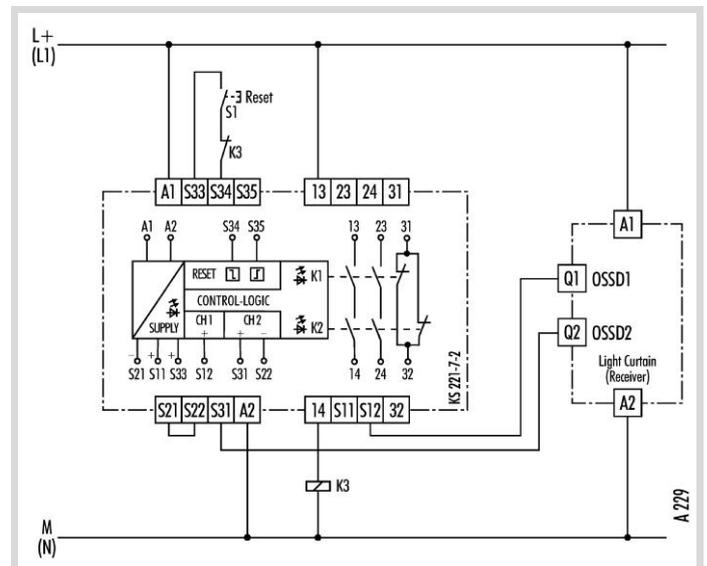
Application example

SNO 4062K – Two-channel sliding safety gate monitoring with manual start
Position switch LSE-02 from the company Moeller is used.



Application example

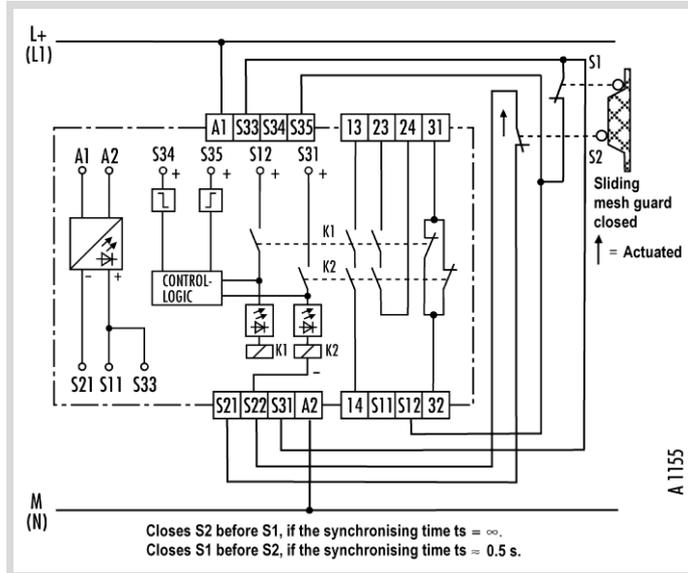
SNO 4062KM
Two-channel light curtain monitoring with manual start.



Application example

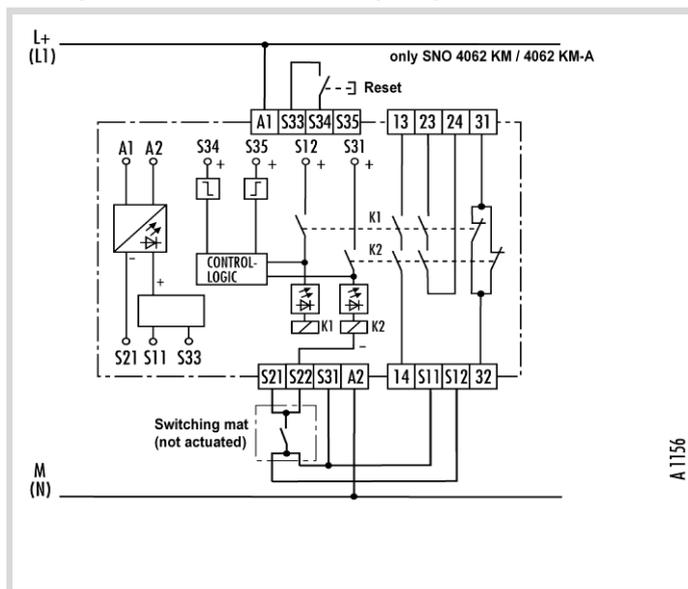
Two-channel sliding safety gate application (with cross monitoring) with manual start

Channel 1 (S12) and channel 2 (S22) monitor the position of the sliding safety gate. The automatic start through terminal S35 activates the SNO 4062KM / SNO 4062KM. If the sliding safety gate opens, K1 and K2 switch back into the OFF position (enabling current paths 13/14, 23/24 are opened). If the safety gate is closed again, the automatic start at terminal S35 activates the device again.



Two-channel safety mat application (with cross monitoring) with manual start and reset button monitoring

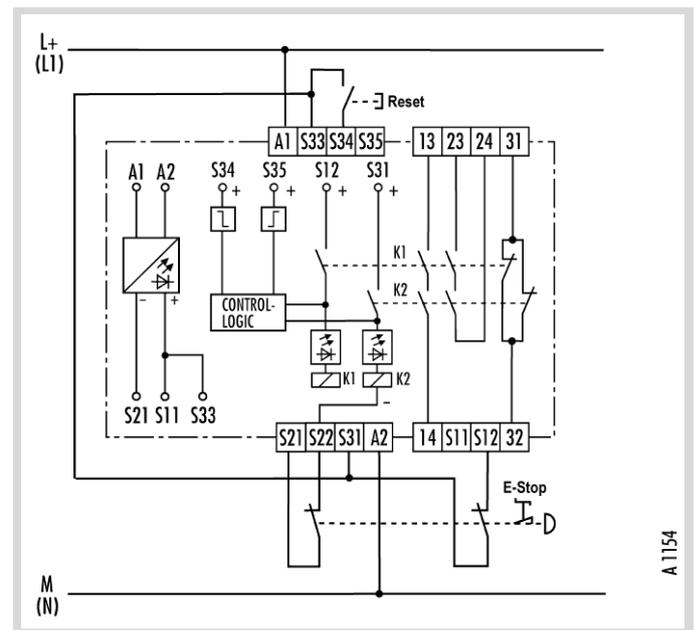
The safety mat connected to terminals S21, S22 and S11, S12 is monitored by means of cross monitoring. If the safety mat is not actuated (no one is stepping on it), the SNO 4062KM can be activated with the reset button. The enabling current paths 13/14, 23/24 close and the signaling current path 31/32 opens. If a person steps onto the safety mat, a short circuit is generated causing the immediate release of the K1 and K2 relays. The enabling current paths open and the signaling current path closes.



Application example

Two-channel emergency stop application (with cross monitoring) with manual start and reset button monitoring

The two-channel emergency stop application switches off the device even if one of the two contacts of emergency stop button does not open. If an error occurs (for example when the emergency stop contact connected to terminal S12 does not open), the second (redundant) contact S22 will activate safety circuit. The enabling current paths 13/14 and 23/24 open. In case of a short circuit in the lines leading to the emergency stop button, the voltage applied to S11, S21 is short-circuited (cross monitoring). The relays K1, K2 switch back into the OFF position and the electronic fuse is triggered. If a line short circuit occurs in the reset button after the relay has been activated, this will be recognized by the cyclical self test when reactivating the device. This will inhibit the enabling current paths from closing again.



Overview of devices / Part numbers

Type	Rated voltage	Terminals	Part no.
SNO 4062K	AC/DC 24 V 50-60 Hz	screw terminals, fixed	R1.188.0699.2
SNO 4062K-A	AC/DC 24 V 50-60 Hz	screw terminals, pluggable	R1.188.0709.2
SNO 4062KM	AC/DC 24 V 50-60 Hz	screw terminals, fixed	R1.188.0719.2
SNO 4062KM-A	AC/DC 24 V 50-60 Hz	screw terminals, pluggable	R1.188.0729.2



Technical data

Power supply circuit	SNO 4062K	SNO 4062KM
Nominal voltage U_N	AC/DC 24 V	
Rated power DC	2.0 W	2.1 W
Rated power AC	2.4 W / 4.4 VA	2.5 W / 4.6 VA
Ripple	2.4 V _{pp}	
Nominal frequency	50 ... 60 Hz	
Operating voltage range	0.85 ... 1.1 x U_N	
Fusing for control circuit supply	short-circuit resistant (PTC resistance)	short-circuit resistant (electronic fuse)
Control circuit		
Nominal output voltage S11, S33 against S21	DC 22 V	
Output current / peak current	100 mA / 2000 mA	100 mA / 300 mA
Input voltage range		
High	DC 17.4 V to DC 26.4 V	
Low	DC -3.0 V to DC +5.0 V	
Nominal current / peak current S12, S31/S22	40 mA / 100 mA	
Nominal current / peak current S34, S35	5 mA / 50 mA	
Permissible test pulse time t_{TP} / test frequency	$\leq 1000 \mu\text{s}$ and $\leq 10 \text{ s}^{-1}$	
Response time t_{A1} S34	20 ms to 40 ms	
Response time t_{A2} S35	200 ms to 500 ms	20 ms to 80 ms
Minimum switch-on duration t_M S34, S35	$> 50 \text{ ms}$	
Blocking time t_{SP}	---	70 ms to 130 ms
Block response time t_{ASP}	---	$> 7 \text{ ms}$
Reavailability time t_W	$\geq 40 \text{ ms}$	$\geq 150 \text{ ms}$
Fallback time t_R K1, K2	$< 25 \text{ ms}$	
Synchronous monitoring time t_S	approx. 200 ms	--
Maximum resistance for short-circuit forming switching mats inclusive connection lines	---	$\leq 50 \Omega$
Line resistance	$\leq 70 \Omega$	
Output circuit		
Enable circuits		
Contact allocation	2 NO, positively guided; B300; R300	
Nominal switching voltage U_n	AC 240 V / DC 300 V	
Max. continuous current I_n per circuit	240 V AC / 6 A; 24 V DC / 5 A	
Max. total current of all circuits	12 A	
Use category as per DIN EN 60947-5-1	AC-15: U_e 230 V, I_e 4 A (360 h ⁻¹) DC-13: U_e 24 V, I_e 4 A (360 h ⁻¹) AC-15: U_e 230 V, I_e 3 A (3600 h ⁻¹) DC-13: U_e 24 V, I_e 2.5 A (3600 h ⁻¹)	
Fused short-circuit current as per DIN EN 60947-5-1	1000 A	
Mechanical service life	10×10^6 cycles	
Signal circuits		
Contact allocation	1 NC, parallel, positively guided	
Nominal switching voltage U_n	AC 240 V / DC 300 V	
Max. continuous current I_n per circuit	6 A	
Use category as per DIN EN 60947-5-1	AC-15: U_e 230 V, I_e 4 A (360 h ⁻¹) DC-13: U_e 24 V, I_e 4 A (360 h ⁻¹) AC-15: U_e 230 V, I_e 3 A (3600 h ⁻¹) DC-13: U_e 24 V, I_e 2.5 A (3600 h ⁻¹)	
Mechanical service life	10×10^6 cycles	
General data		
Air and creepage distances between the current circuits	as per DIN EN 60664-1	
Rated surge voltage	4 kV	
Contamination level of the unit: internal/external	2/3	
Rated voltage	AC 300 V	
Protection rating as per DIN EN 60529: housing/terminals	IP 40 / IP 20	
Ambient/bearing temperature	-25 ... +55 °C / -25 ... +75 °C	
Weight	0.21 kg	
Terminal and connection data		
Single core or fine wire	1 x 0.14 mm ² to 2.5 mm ² 2 x 0.14 mm ² to 0.75 mm ²	
Stripped length	max. 8 mm	
Fine wire with core ferule as per DIN 46228	1 x 0.25 mm ² to 2.5 mm ² 2 x 0.25 mm ² to 0.5 mm ²	
Maximum tightening torque	0.5 to 0.6 Nm	
For UL and CSA Approvals		
Connection cross-sections	AWG 26 - 14 use copper conductors only; 60 °C / 75 °C (140 °F / 167 °F)	
Maximum tightening torque	5 – 7 in-lbs (0,56 – 0,79 Nm)	