



Protective Gate Monitor/Emergency-Stop Relay

Basic unit according to IEC 204 - 1 and EN 954 - 1
 Cross monitoring, simultaneity check
 Single or dual channel control circuit through contacts or semiconductors
 For safety gate and E-Stop applications
 RESET switch monitoring (anti tie-down)
 Output configuration: 2 immediate 1 ON-delayed NO contacts

SNV 4063 KP	EN 60204-1	For Stop Category	0
SNV 4063 KP-A	EN 954-1	Safety Category	4/3

SNV 4063 KP SNV 4063 KP-A



For Example

- ▶ Protection of persons and machines
- ▶ Monitoring of interlocking installation with position switches with integrated locking.
- ▶ ON-delay unlocking of the solenoid integrated in the position switches

Function

SNV 4063 KP Upon application of the supply voltage at terminals A1/A2 and if the E-Stop circuit is closed, the preselected ON-delay time t_{A1} starts. After t_{A1} has elapsed the relays K3 and K4 are energized (terminals 37/38). The ON-delay time t_{A1} of the SNV 4063 KP can be adjusted from 0,15 through 3 s or 1,5 through 30 s according to the selected version. The device can be than activated by the RESET switch. Two operation modes are available:

- with RESET switch monitoring (evaluation of the falling edge of the signal)
- without RESET switch monitoring (evaluation of the rising edge of the signal).

Operation mode with RESET switch monitoring (manual START/anti tie-down). The RESET switch must be connected to terminal S 34 via S33. The device starts by closing the RESET switch. The relays K3 and K4 (terminals 37/38) go to their off position. With the falling edge of the signal (RESET switch released) the RESET controls the K1 and K2 internal relays that after the ON-delay time t_{A3} become self-locking. After this switch-on phase the two safety circuits at the output 13/14, 23/24 are closed. With the activation of the STOP command the current leads for the K1 and K2 relays are interrupted. The enabling current paths 13/14, 23/24 at the output are immediately opened (after their release time t_{R1}) and the internal relays K3 and K4 are energized after the preselected ON-delay time (t_{A1}) has elapsed. Three LEDs display the state of the K1/K2, K3/K4 internal relays and the power supply.

Operation mode without RESET switch monitoring (automatic START). For those applications with protective gates where an automatic RESET must be performed, it is necessary to connect terminals S33 with S35. The device will react at the rising edge of the input signal at S12 which is internally connected to S33. The relays K3 and K4 (terminals 37/38) go to their off position. With the rising edge of the signal at S12 the relay K1 is energized and the ON-delay time t_{A2} (for K1) is started. The input signal at S31/S22 which controls relay K2 has to be applied within the time $t_S < 0,5$ s (synchronization time). The two enabling current paths at the output (terminals 13/14, 23/24) are closed after the time t_{A2} has elapsed. With the activation of the STOP command the current leads for the K1 and K2 relays are interrupted. The enabling current paths 13/14, 23/24 at the output are immediately opened (after their release time t_{R1}) and the internal relays K3 and K4 are energized after the preselected ON-delay time (t_{A1}) has elapsed. With a two-channel connection of the E-Stop switch and cross monitoring wiring of the E-Stop circuit, it is possible to monitor the presence of a short circuit between the connected cables (cross monitoring) and ground faults. An internal electronic circuit protects the device from damages. After eliminating the fault the item will return into operation after about 3 s.

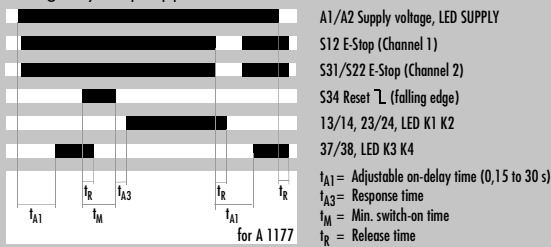
Simultaneity check
 The use of safety limit switches for single or dual channel circuit in the protective gate application depends from the required safety level. The SNV 4063 KP features a dual channel control and in addition a simultaneity check of the limit switches on request. Precondition for a simultaneity check $t_S \approx 0,5$ s is the position of the limit switches. The limit switches must be positioned so that channel 1 (terminals S11/S12) has to close before channel 2 (terminals S21/S22 or S11/S31) does. If channel 2 closes before channel 1 the simultaneity time $t_S = \infty$.

SNV 4063 KP-A Its function corresponds to the one of the SNV 4063 KP. The items with reference containing the letter -A have 4 removable terminals (see Dimension Diagram K 4 - 2). This feature allows a quick installing/removing operation. The terminal locations are coded and non-interchangeable.

Function Diagram

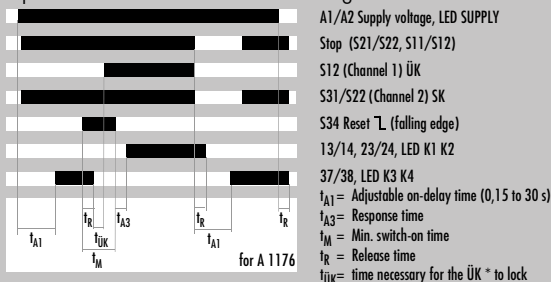
FD 0221-24/1 W1

SNV 4063 KP, SNV 4063 KP-A
 Emergency Stop Application



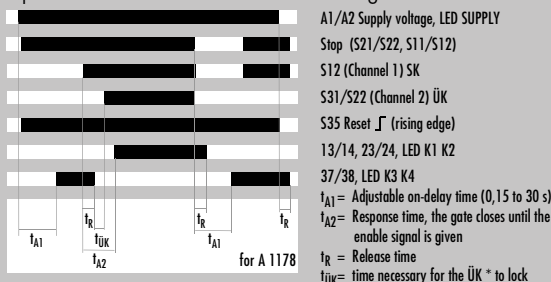
FD 0221-24/2 W1

Operation Mode With RESET Monitoring



FD 0221-24/3 W1

Operation Mode Without RESET Monitoring





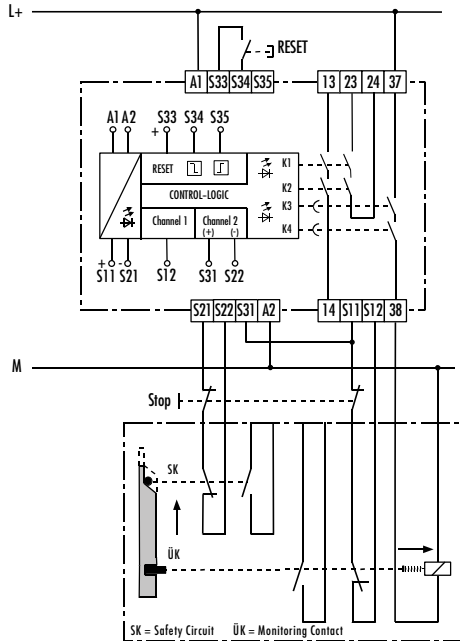
SNV 4063 KP-A

SNV 4063 KP

Application Example

A 1176

Protective Gate Interlocking with Position Switches, Manual Start and Integrated Locking with Cross Monitoring

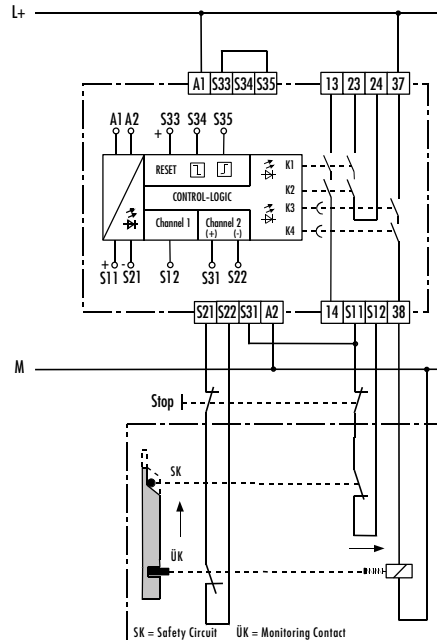


This protective gate interlocking shows the connections for a manual START with monitoring of the RESET switch. The position of the protective gate is monitored by channel 2 (S22) and the unlocking of the solenoid by channel 1 (S12). After the power supply has been applied and the protective gate is closed the relays K3 and K4 are energized after the preselected ON-delay time and enable the unlocking of the solenoid. The activation of the SNV 4063 KP is done by the RESET switch. The relays K3 and K4 switch back to their off position. With the falling edge of the RESET (anti tie-down) the K1 and K2 internal relays are energized and become self-locking. After this switch-on phase the two safety circuits at the output 13/14, 23/24 are closed. With the activation of the STOP command the current leads for the K1 and K2 relays are interrupted. The enabling current paths 13/14, 23/24 at the output are immediately opened and the internal relays K3 and K4 are energized after the preselected ON-delay time. The protective gate now can be opened.

Application Example

A 1178

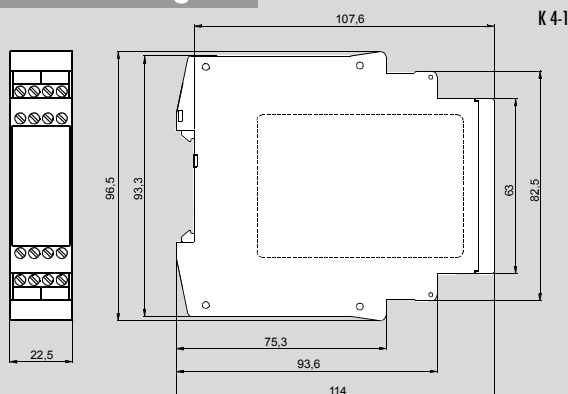
Protective Gate Interlocking with Position Switches, Automatic Start and Integrated Locking with Cross Monitoring



This protective gate interlocking shows the connections for an automatic START. The position of the protective gate is monitored by channel 1 (S12) and the unlocking of the solenoid by channel 2 (S22). After the power supply has been applied the relays K3 and K4 (37/38) are in their OFF-position and enable the locking of the solenoid. The E-Stop contacts are closed.

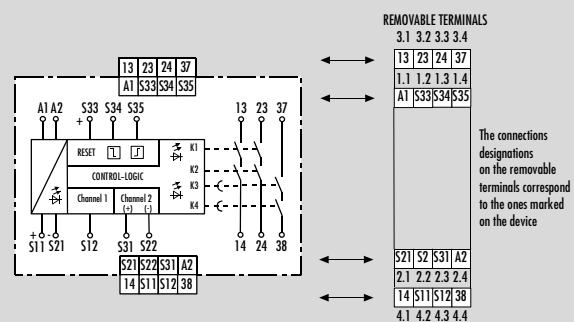
The relays K3 and K4 are energized after the preselected ON-delay time t_{A1} has elapsed. When the protective gate is closed the relays K3 and K4 switch back to their off position and the relays K1 and K2 are energized and become self-locking. After this switch-on phase the two safety circuits at the output 13/14, 23/24 are closed. With the activation of the STOP command the current leads for the K1 and K2 relays are interrupted. The enabling current paths 13/14, 23/24 at the output are immediately opened and the internal relays K3 and K4 are energized after the preselected ON-delay time. The protective gate now can be opened. Please note that the reaction time of the interlocking must be $< 0,5$ s so that channel 1 and channel 2 close within this time.

Dimension Diagram



Connection Diagram

KS 0221-24 W1



Approvals



Order Example

SNV 4063 KP 3 s 24 V DC
SNV 4063 KP 30 s 24 V DC

Type | End-Range | Rated Voltage



TECHNICAL DATA

FUNCTION According to EN 60204 - 1
Function Display
Function Diagram

POWER SUPPLY DATA

Rated Voltage U_N V DC
Rated Consumption at U_N (DC) W
Residual Ripple V_{ss}
Operating Voltage Range

SNV 4063 KP

SNV 4063 KP-A

Emergency-Stop Relay
3 LEDs, green
FD 0221 -23 -x W1

24
1,8
2,4
0,85 to 1,1 x U_N

CONTROL CIRCUIT only for supplying the control inputs

Isolation between A1 -A2 and S11, S21
Line Resistance between S11 and S31, S34, S35 or
S21 and S22 (at U_N) Ω
Rated Output Voltage V DC
Rated Current mA
Rated Short-Circuit Current I_K max. mA
Fuse
Response Time s
Recovery Time s

nein
 ≤ 85
22
60
2200
PTC - Resistance
2
3

Control Inputs S12, S22, S31, S34, S35:

Rated Current/Peack Current S12, S22/S31 mA/mA
Rated Current/Peack Current S34, S35 mA/mA
Response Time t_{A1} s

25/100
40/50
2 Setting Ranges Infinitely Variable
1. Setting Range 0,15 to 3
2. Setting Range 1,5 to 30

Response Time t_{A2} S33, S35 ms
Response Time t_{A3} ms
Release Time t_{R1} K1, K2, K3, K4 ms

700
30
40

Average of the Error $\% \pm 10$ ms
Dispersion $\% / \% \Delta U_N$
Influence of Supply Voltage $\leq 0,2$

See Diagram 4 Page i.11
 $\leq \pm 0,5$
 $\leq 0,2$

Influence of Ambient Temperature $\% / K$
Synchronization Time t_S ms
Minimum Switch ON Time t_M (S33 -S34/S33 -S35) ms
Recovery Time t_W ms

$\leq 0,025$
< 500
 $\geq 200 / \geq 750$
 ≥ 500

OUTPUT CIRCUIT

Contact Equipment
Contact Type
Contact Material
Switching Voltage U_n V AC/DC
Maximum Rated Current I_n per Contact A
Maximum Total Current for all Contacts A
Application Category According to EN 60947 -5 -1:1991

2 N.O. Safety Contact,
Stop-/Safety Category 0/4
1 N.O. Safety Contact
On-Delayed
Stop-/Safety Category 0/3

Short-Circuit Protection, Max. Fuse Element Class gG A
Permissible Switching Frequency Switching Cycle/h
Mechanical Lifetime Switching Cycle

Forced Contact
Ag-Alloy; Gold-Plated
230/230
6
12
AC-15: U_e 230 V AC, I_e 4 A (3600 Sch/h)
DC-13: U_e 24 V DC, I_e 5 A (360 Sch/h)
DC-13: U_e 24 V DC, I_e 3 A (3600 Sch/h)
6
3600
 5×10^6

GENERAL DATA

Creepage and Clearance Distances Between Circuits
According to DIN VDE 0110-1:04.97: Rated Withstand Voltage kV
Over-Voltage Category III
Contamination Level 3 Outside, 2 Inside
Design Voltage V AC
Test Voltage U_{eff} 50 Hz acc. to DIN VDE 0110-1, Table A.1 kV
Protection Class Housing/Terminals acc. to DIN VDE 0470 Sec. 1:11.92
Radiated Noise
Noise Immunity

4
III
3 Outside, 2 Inside
300
2,21
IP 40/IP 20
EN 50081-1:03.93, -2:03.94
EN 50082-2:1995

Ambient Temperature, Working Range $^{\circ}C$
Dimension Diagram: SNV 4063 KP/SNV 4063 KP-A
Connection Diagram
Weight kg
Approvals

- 25 to + 55
K 4-1/K 4-2
KS 0221 -23 W1
0,2
BG, CSA, UL

GENERAL TECHNICAL SPECIFICATIONS

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