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## FAQ Applicative conversion from 3TK28 to 3SK1

SIRIUS Safety

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# 1 Introduction

SIRIUS 3SK1 safety relays are the key elements of a consistent, cost-effective safety chain. Whether you need EMERGENCY-STOP disconnection, protective door monitoring, light arrays, laser scanners or the protection of presses or punches – with SIRIUS safety relays 22.5 mm wide every safety application can be implemented to optimum effect in terms of engineering and price.

The following safety-oriented functions are available:

- Monitoring the safety functions of sensors
- Monitoring the sensor leads
- Monitoring correct functioning of safety relays
- Monitoring the actuators in the shutdown circuit
- Safety-oriented disconnection when dangers arise

SIRIUS 3SK1 safety relays satisfy the most stringent requirements of IEC 61508/IEC 62061 (SIL 3) and EN ISO 13849-1 (PL e).

SIRIUS 3SK1 safety relays stand out due to their flexibility for both parameterization and system designs with several evaluation units. Optimized solutions when selecting components are facilitated by a clearly structured component range:

- Standard basic units
- Advanced basic units
- Output expansions
- Input expansions
- Accessories

The 3SK1 Standard basic units are characterized by the following features:

- Compact design
- Simple operation
- Relay and semiconductor outputs
- Economical solution

However, the 3SK1 Advanced basic units also offer the following:

- Universal application opportunities thanks to multifunctionality
- Time-delayed outputs
- Expansion of inputs and outputs

In the case of Advanced basic units, the 3ZY1 device connector allows safety functions involving several sensors and actuators to be constructed very quickly.

The 3SK1 Standard and Advanced series are a high-quality replacement for the 3TK28 safety relays. In their narrower design, and equipped with greater functionality, they can replace every 3TK28 device. The standstill and speed monitors 3TK2810 remain and will not be replaced by 3SK.

For further assistance in replacing those devices please contact Technical Assistance.





The following chapters offer detailed assistance in converting your application with safety relays 3TK28 to the new series 3SK1.

**Note**



A fuse must be fitted as short-circuit protection in the supply line to the supply voltage and to the relay contacts of the 3SK1 devices. The design is shown in the corresponding technical data.

**Explanation to the shown DIP switch positions in the wiring diagrams of the 3SK1**

- Devices with 4 DIP switches:

 1   Autostart / Monitored Start	DIP switch 1,2, and 4 position right DIP switch 3 position left
 2   Cross fault detection OFF / ON	
 3   2 single ch. / 1 double ch. sensor	
 4   Start up Test yes / no	

- Device with one DIP switch:

 Autostart / Monitored Start	DIP switch position down
 Delayed Undelayed	DIP switch position up

## 2 Safety relays with relay outputs

### 2.1 3TK2801

#### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Bemerkung
3TK2801-0AC2	3SK1111-1AB30	--	24 V AC
3TK2801-0AG2	3SK1111-1AW20	3SK1121-1AB40 *	110V AC
3TK2801-0AL2	3SK1111-1AW20	3SK1121-1AB40 *	230 V AC
3TK2801-0DB4	3SK1111-1AB30	3SK1121-1AB40	24 V DC

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

#### Terminal marking

3TK2801	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
X1/X2	T1/IN1	T1/IN1	Channel 1
--	T2/IN2	T2/IN2	Channel 2
X5/X6	T4/INF/S	INS	Reset button
X5/X6	T4/INF/S	T2/INF	Feedback circuit
13/14	13/14	13/14	Output circuit (NO)
27/28	41/42	41/42	Signaling circuit (NC)

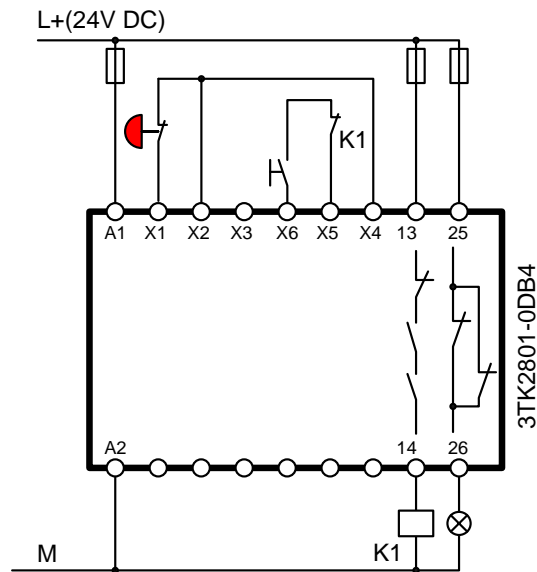


### 2.1.1 Emergency stop monitoring (1-ch.)

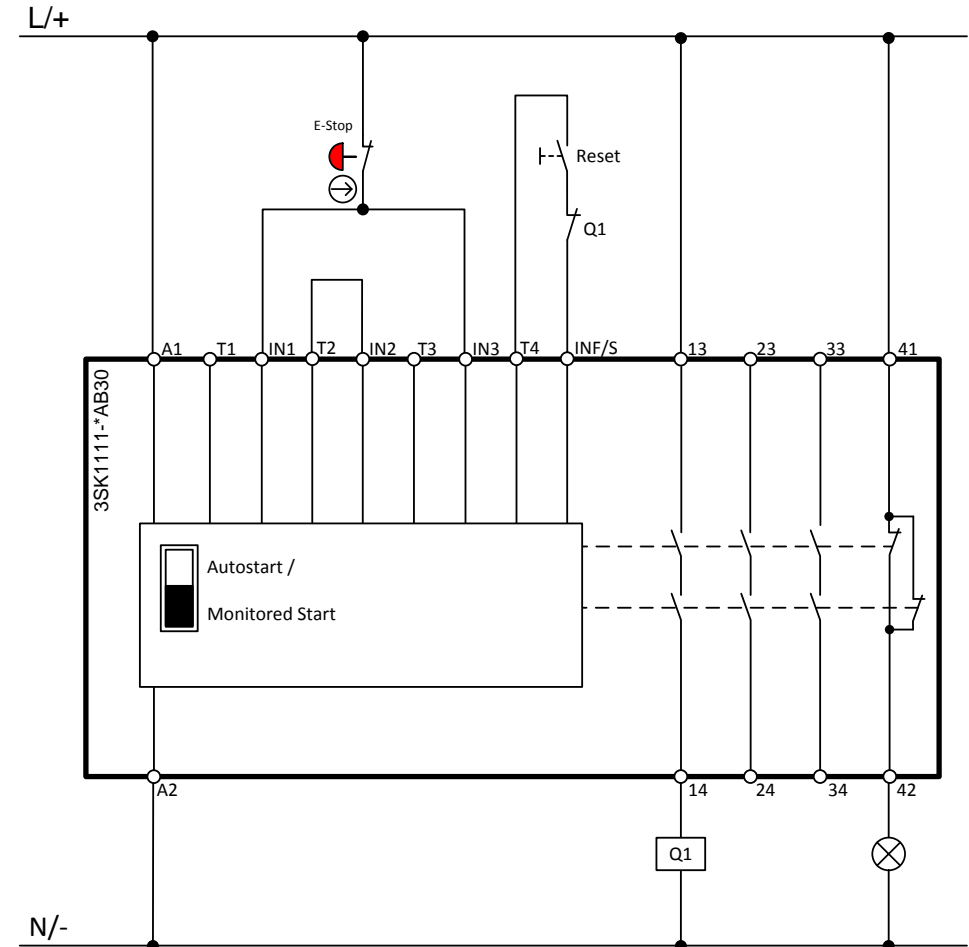
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>• monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (2x1-ch.)</li> <li>• (startup test deactivated)</li> </ul>

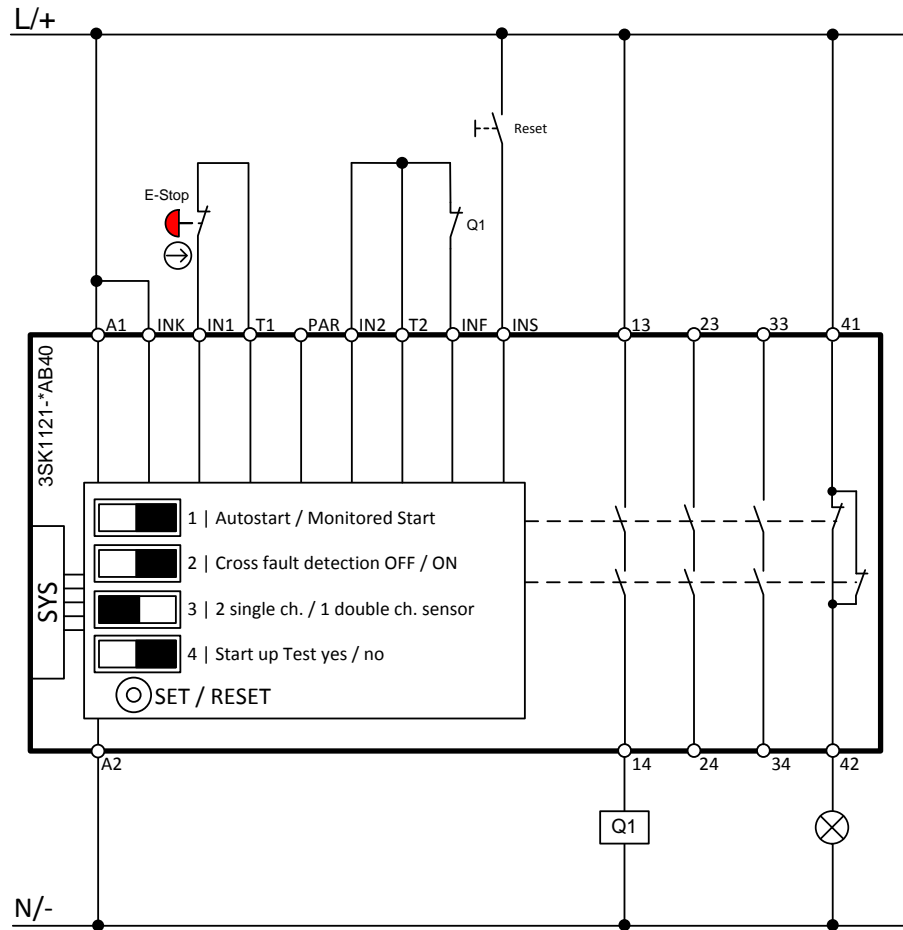
#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Standard



**Wiring diagram 3SK1 Advanced**



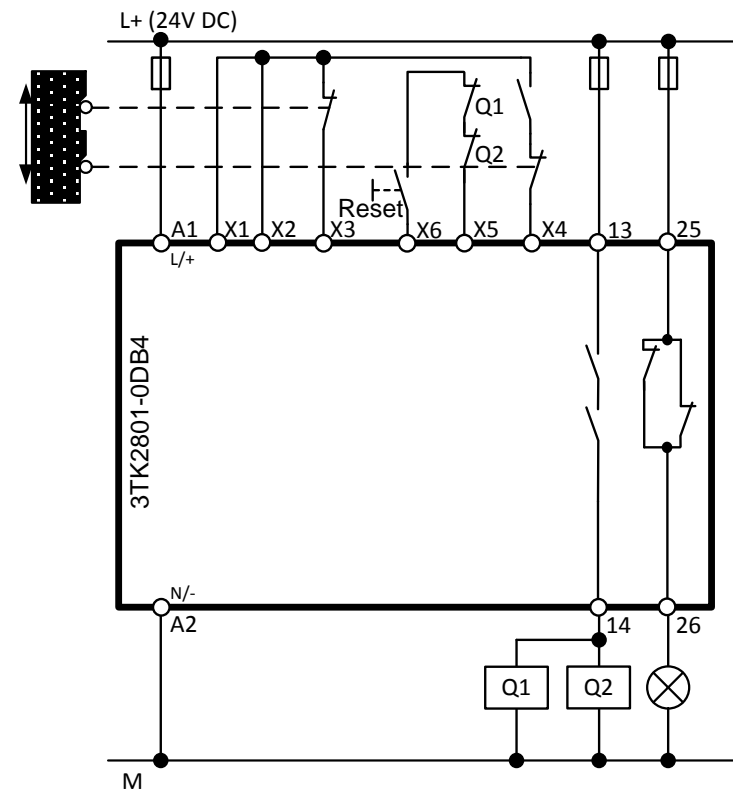
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### 2.1.2 Emergency stop monitoring (2-ch.)

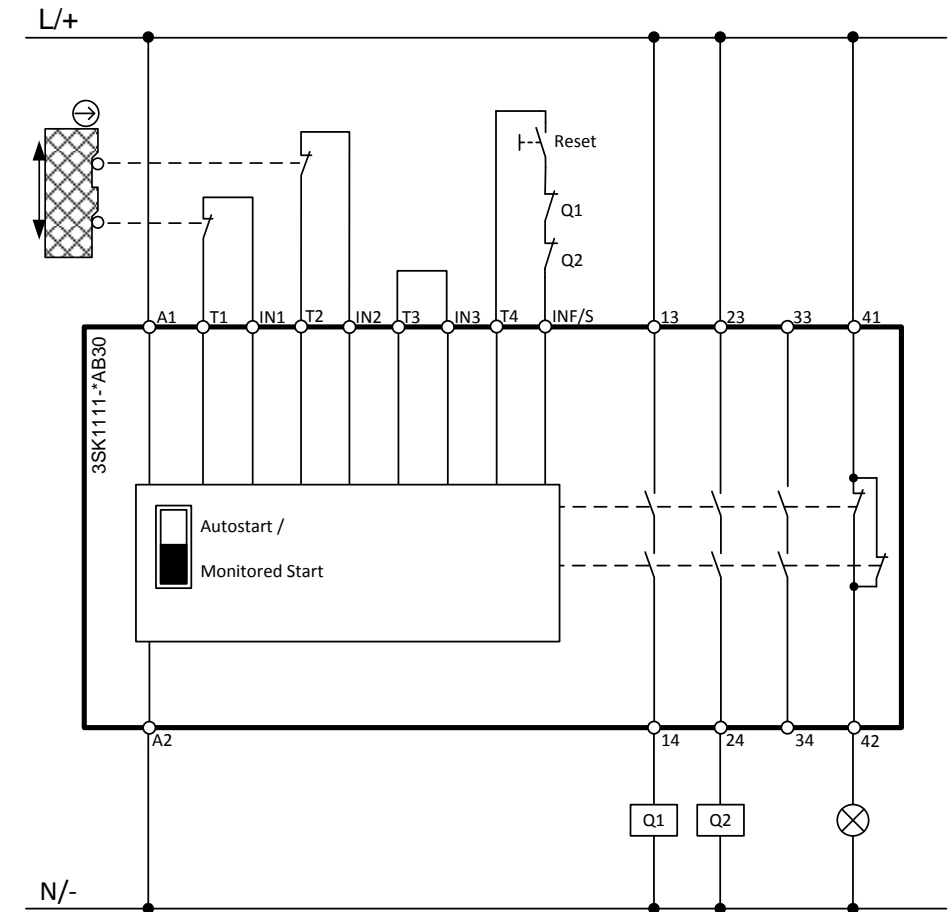
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 90%	<ul style="list-style-type: none"> <li>monitored start</li> <li>(cross-circuit detection activated)</li> <li>(2x1-ch.)</li> <li>(startup test deactivated)</li> </ul>

#### Wiring diagram 3TK28

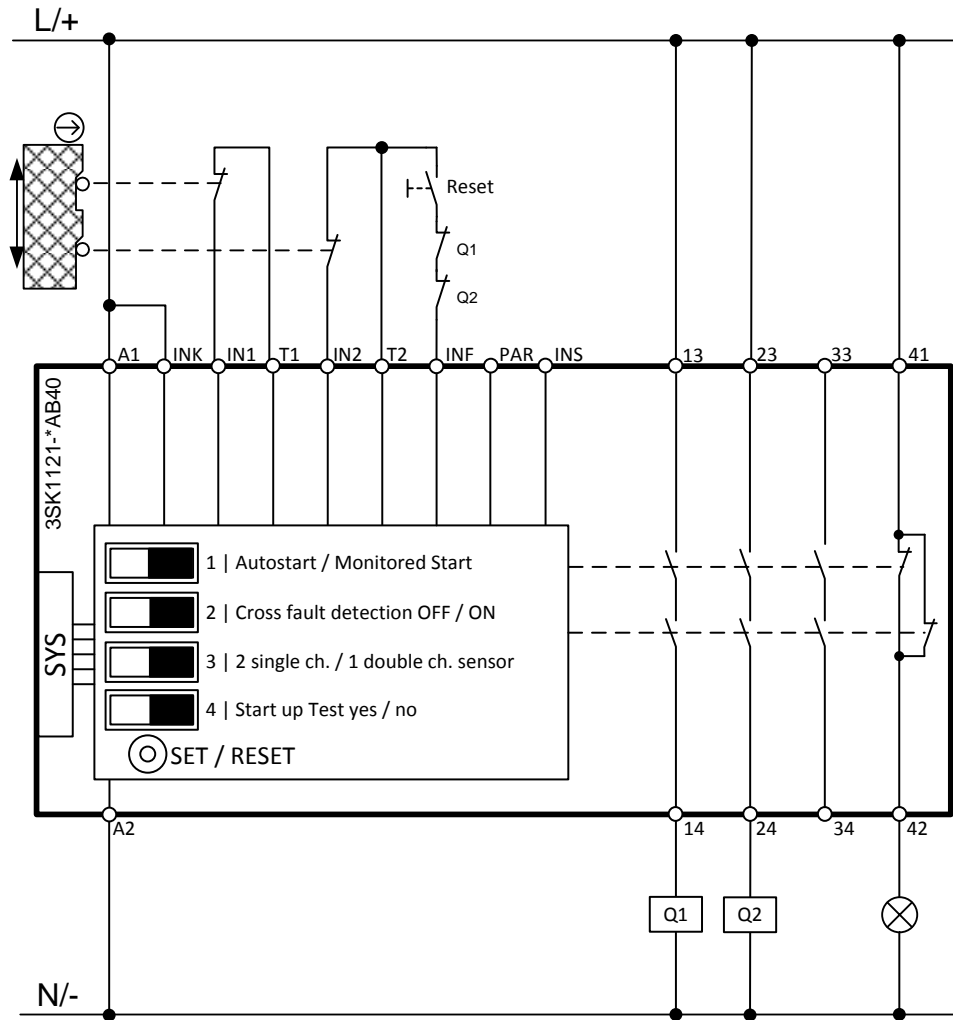


#### Wiring diagram 3SK1 Standard



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**Wiring diagram 3SK1 Advanced**



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## 2.2 3TK2802

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Configuration
3TK2802-0AC2	3SK1111-1AB30	--	24 V AC
3TK2802-0AG2	3SK1111-1AW20	3SK1121-1AB40 *	110V AC
3TK2802-0AL2	3SK1111-1AW20	3SK1121-1AB40 *	230 V AC
3TK2802-0DB4	3SK1111-1AB30	3SK1121-1AB40	24 V DC

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

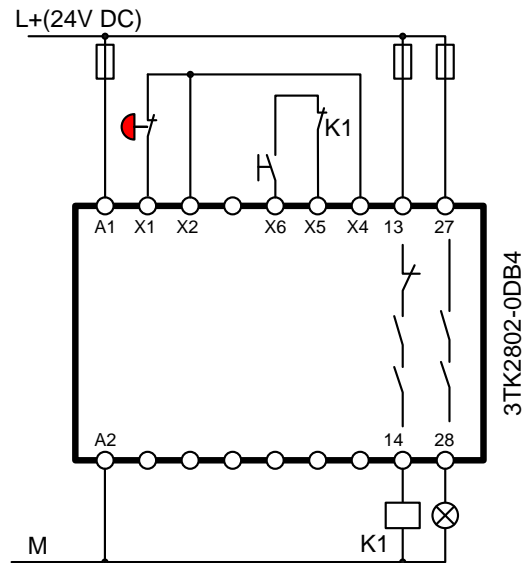
3TK2802	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
X1/X2	T1/IN1	T1/IN1	Channel 1
--	T2/IN2	T2/IN2	Channel 2
X5/X6	T4/INF/S	INS	Reset button
X5/X6	T4/INF/S	T2/INF	Feedback circuit
13/14	13/14	13/14	Output circuit (NO)
27/28	41/42	41/42	Signaling circuit (NC)

### 2.2.1 Emergency stop monitoring (1-ch.)

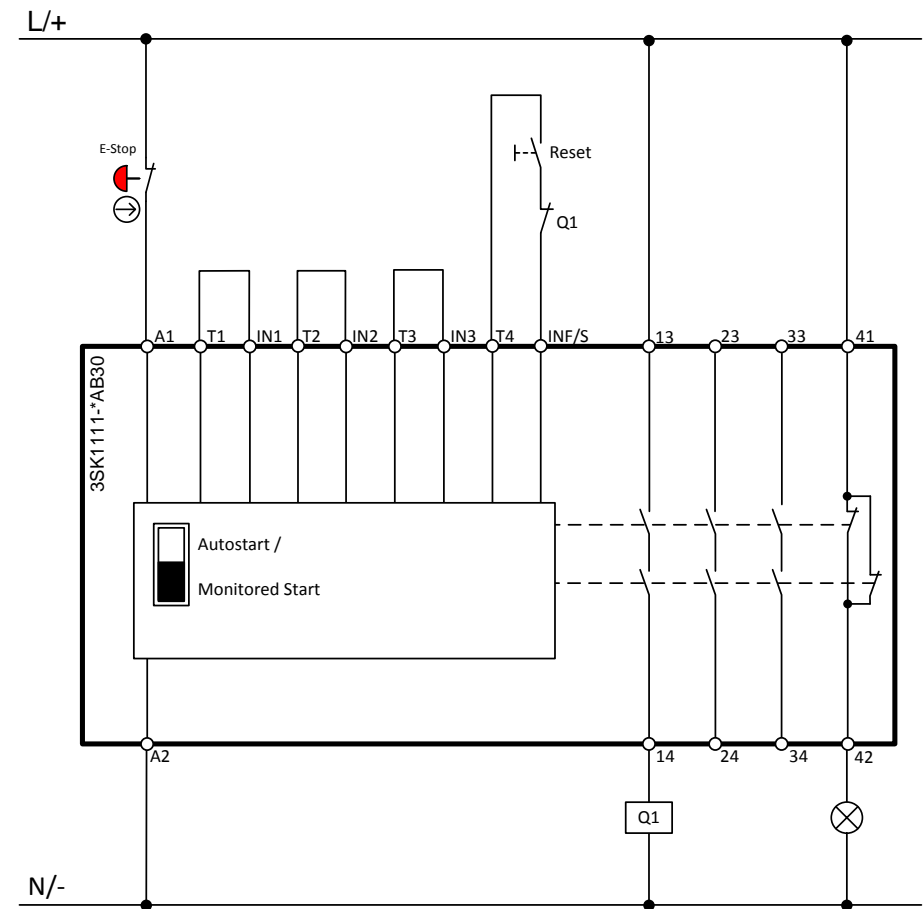
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>• monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (2x1-ch.)</li> <li>• (startup test deactivated)</li> </ul>

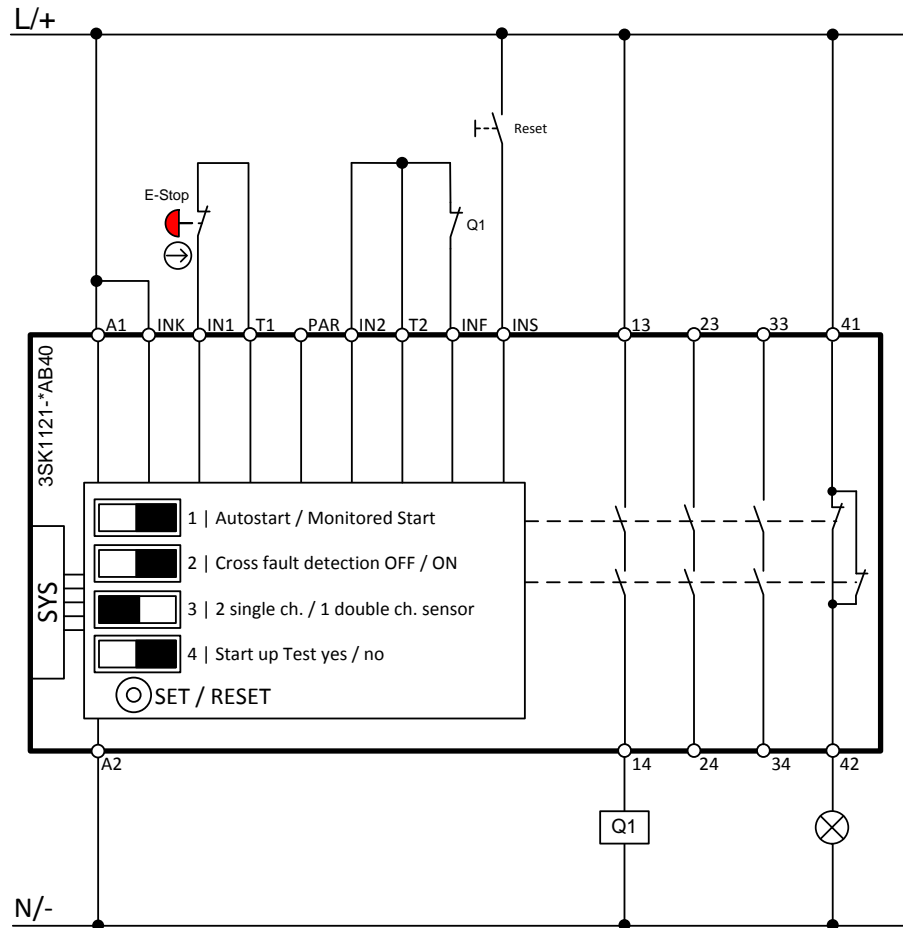
#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Standard



**Wiring diagram 3SK1 Advanced**



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## 2.3 3TK2803

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Configuration
3TK2803-0AC2	3SK1111-1AB30	--	24 V AC
3TK2803-0AG2	3SK1111-1AW20	3SK1121-1AB40 *	110V AC
3TK2803-0AL2	3SK1111-1AW20	3SK1121-1AB40 *	230 V AC
3TK2803-0BB4	3SK1111-1AB30	3SK1121-1AB40	24 V DC

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

3TK2803	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
X1/X2	T1/IN1	T1/IN1	Channel 1
--	T2/IN2	T2/IN2	Channel 2
X5/X6	T4/INF/S	INS	Reset button
X5/X6	T4/INF/S	T2/INF	Feedback circuit
13/14	13/14	13/14	Output circuit (NO)
23/24	23/24	23/24	Output circuit (NO)

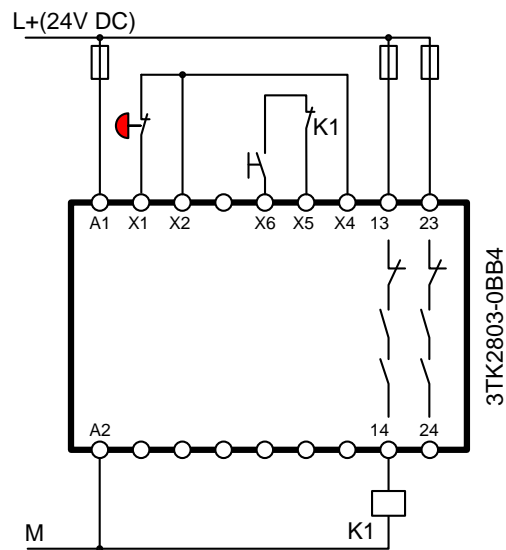


### 2.3.1 Emergency stop monitoring (1-ch.)

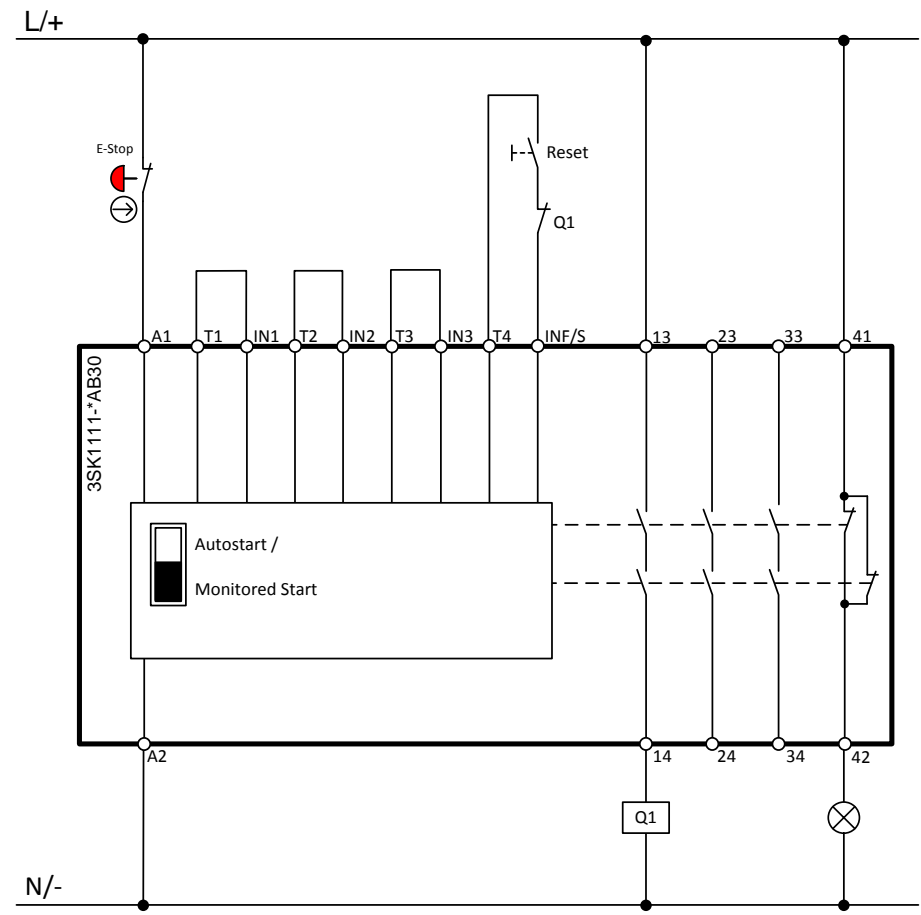
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>monitored start</li> <li>(cross-circuit detection activated)</li> <li>(2x1-ch.)</li> <li>(startup test deactivated)</li> </ul>

#### Wiring diagram 3TK28



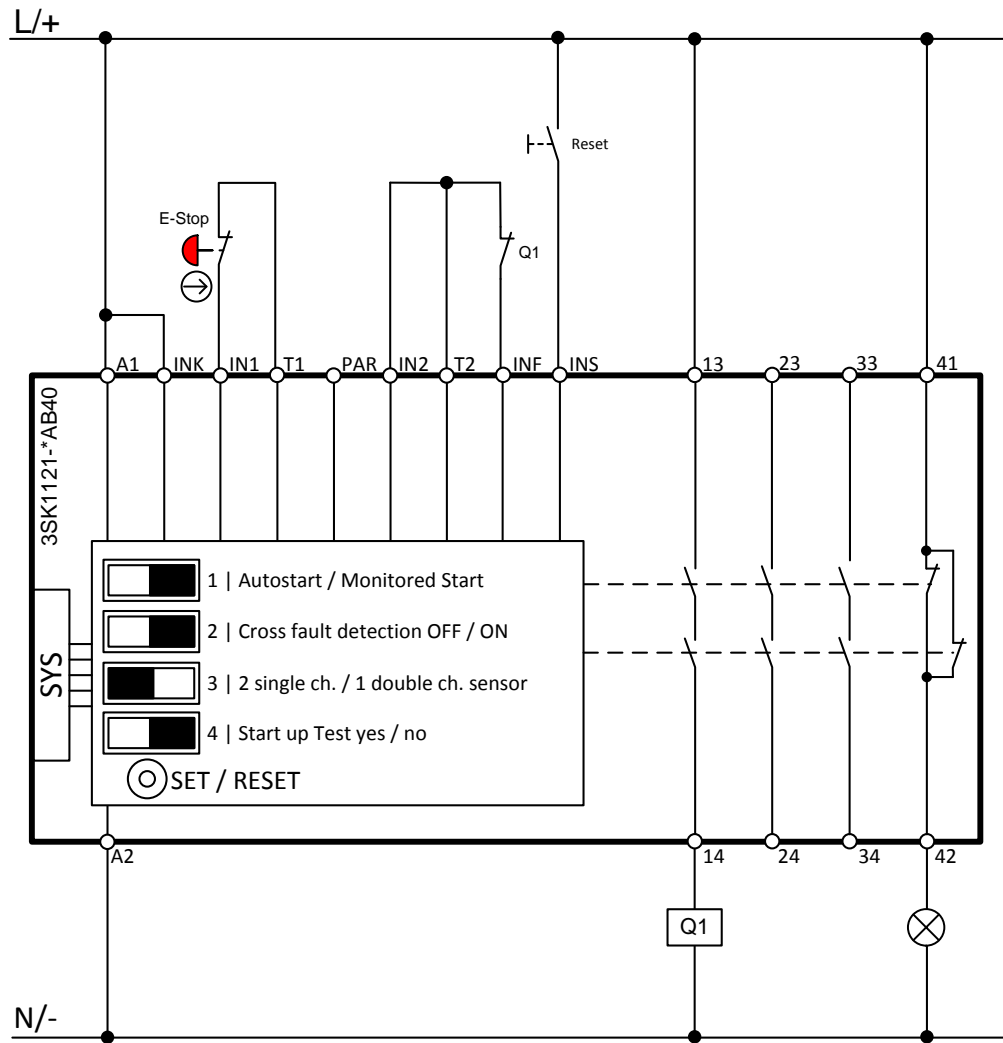
#### Wiring diagram 3SK1 Standard



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**Wiring diagram 3SK1 Advanced**

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## 2.4 3TK2804

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Configuration
3TK2804-0AC2	3SK1111-1AB30 + 3SK1211-1BB00	--	24 V AC
3TK2804-0AG2	3SK1111-1AW20 + 3SK1211-1BW20	3SK1121-1AB40* + 3SK1211-1BW20	110V AC
3TK2804-0AL2	3SK1111-1AW20 + 3SK1211-1BW20	3SK1121-1AB40* + 3SK1211-1BW20	230 V AC
3TK2804-0BB4	3SK1111-1AB30 + 3SK1211-1BB40	3SK1121-1AB40 + 3SK1211-1BB40	24 V DC

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

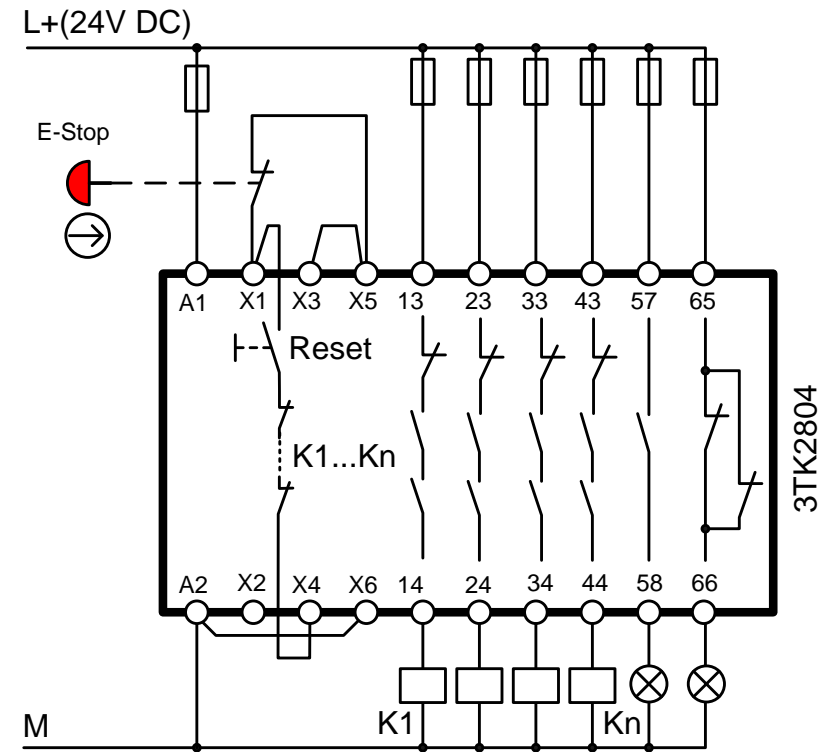
3TK2804	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
X1/X2	T1/IN1	T1/IN1	Channel 1
--	T2/IN2	T2/IN2	Channel 2
X5/X6	T4/INF/S	INS	Reset button
X5/X6	T4/INF/S	T2/INF	Feedback circuit
13/14	13/14	13/14	Output circuit (NO)
23/24	23/24	23/24	Output circuit (NO)
33/34	13/14	13/14	Output circuit (NO)
43/44	--	--	Output circuit (NO)
57/58	--	--	Signaling circuit (NO)
65/66	41/42	41/42	Signaling circuit (NC)

### 2.4.1 Emergency stop monitoring (1-ch.)

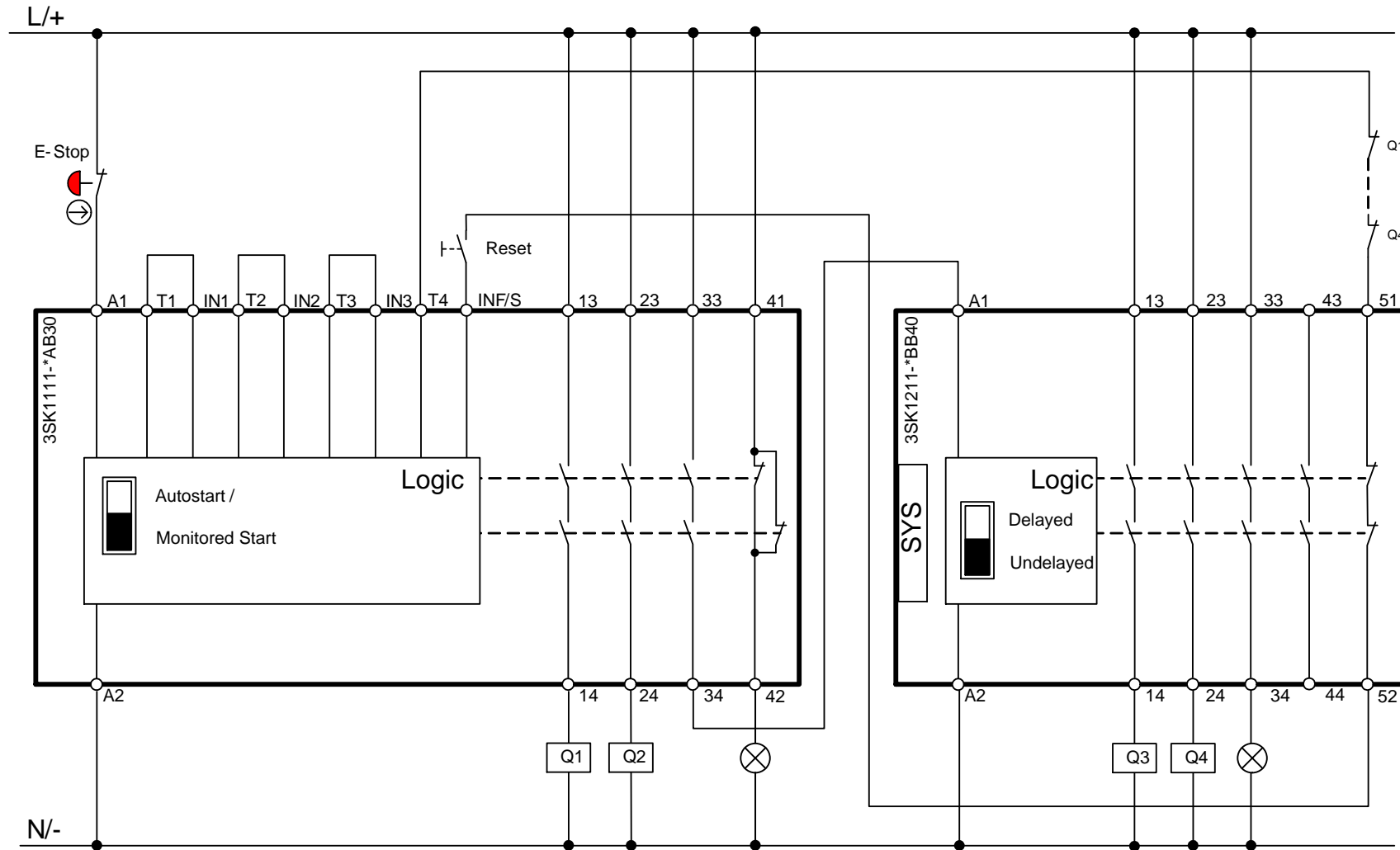
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>• monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (2x1-ch.)</li> <li>• (startup test deactivated)</li> </ul>

**Wiring diagram 3TK28**

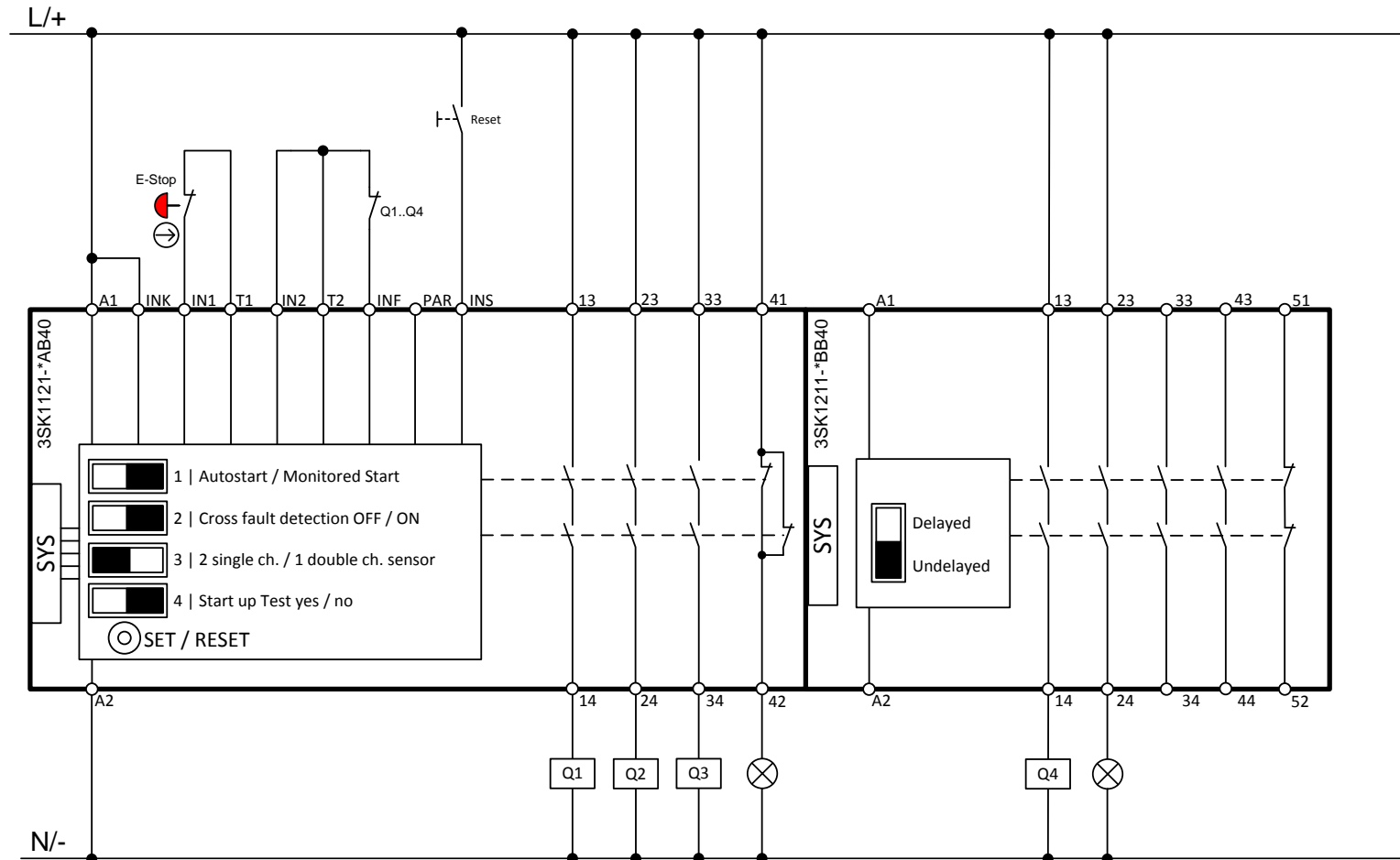


**Wiring diagram 3SK1 Standard**



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**Wiring diagram 3SK1 Advanced**



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**Note**

In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 2.5 3TK2805

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Configuration
3TK2805-0AC2	3SK1111-1AB30 + 3SK1211-1BB00	--	24 V AC
3TK2805-0AG2	3SK1111-1AW20 + 3SK1211-1BW20	3SK1121-1AB40* + 3SK1211-1BW20	110V AC
3TK2805-0AL2	3SK1111-1AW20 + 3SK1211-1BW20	3SK1121-1AB40* + 3SK1211-1BW20	230 V AC
3TK2805-0BB4	3SK1111-1AB30 + 3SK1211-1BB40	3SK1121-1AB40 + 3SK1211-1BB40	24 V DC

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

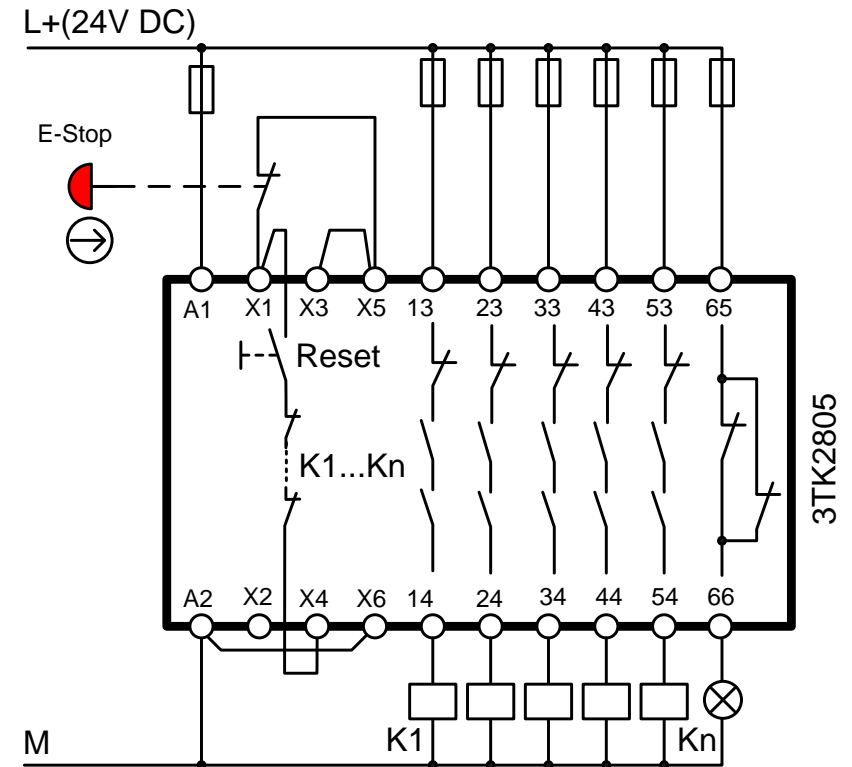
3TK2805	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
X3/X5	T1/IN1	T1/IN1	Channel 1
X6/-	T2/IN2	T2/IN2	Channel 2
X1/X4	T4/INF/S	INS	Reset button
X1/X4	T4/INF/S	T2/INF	Feedback circuit
13/14	13/14	13/14	Output circuit (NO)
23/24	23/24	23/24	Output circuit (NO)
33/34	33/34	33/34	Output circuit (NO)
43/44	--	--	Output circuit (NO)
53/54	--	--	Output circuit (NO)
65/66	41/42	41/42	Signaling circuit (NC)

### 2.5.1 Emergency stop monitoring (1-ch.)

#### Description of safety function and configuration

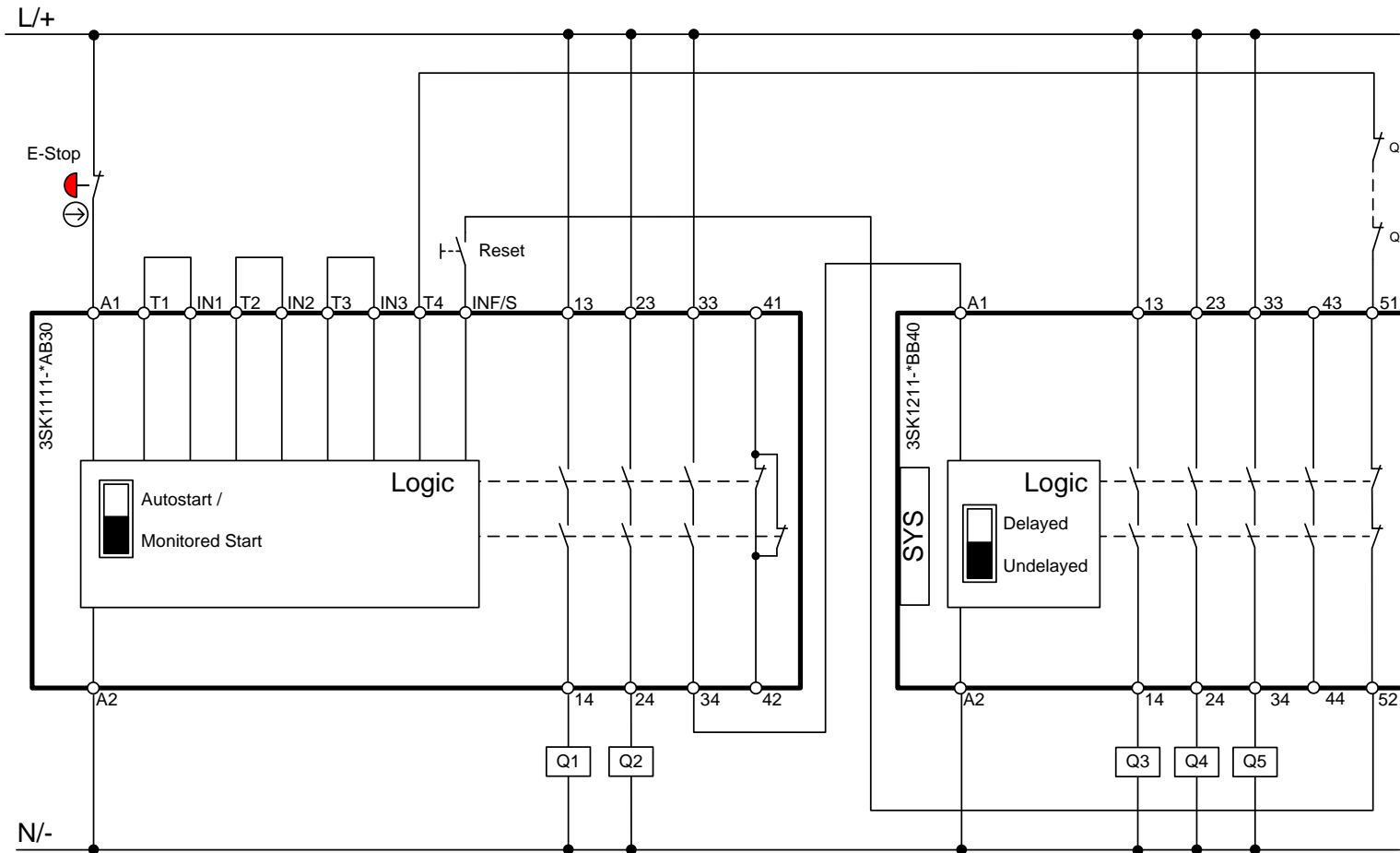
Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>• monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (2x1-ch.)</li> <li>• (startup test deactivated)</li> </ul>

**Wiring diagram 3TK28**



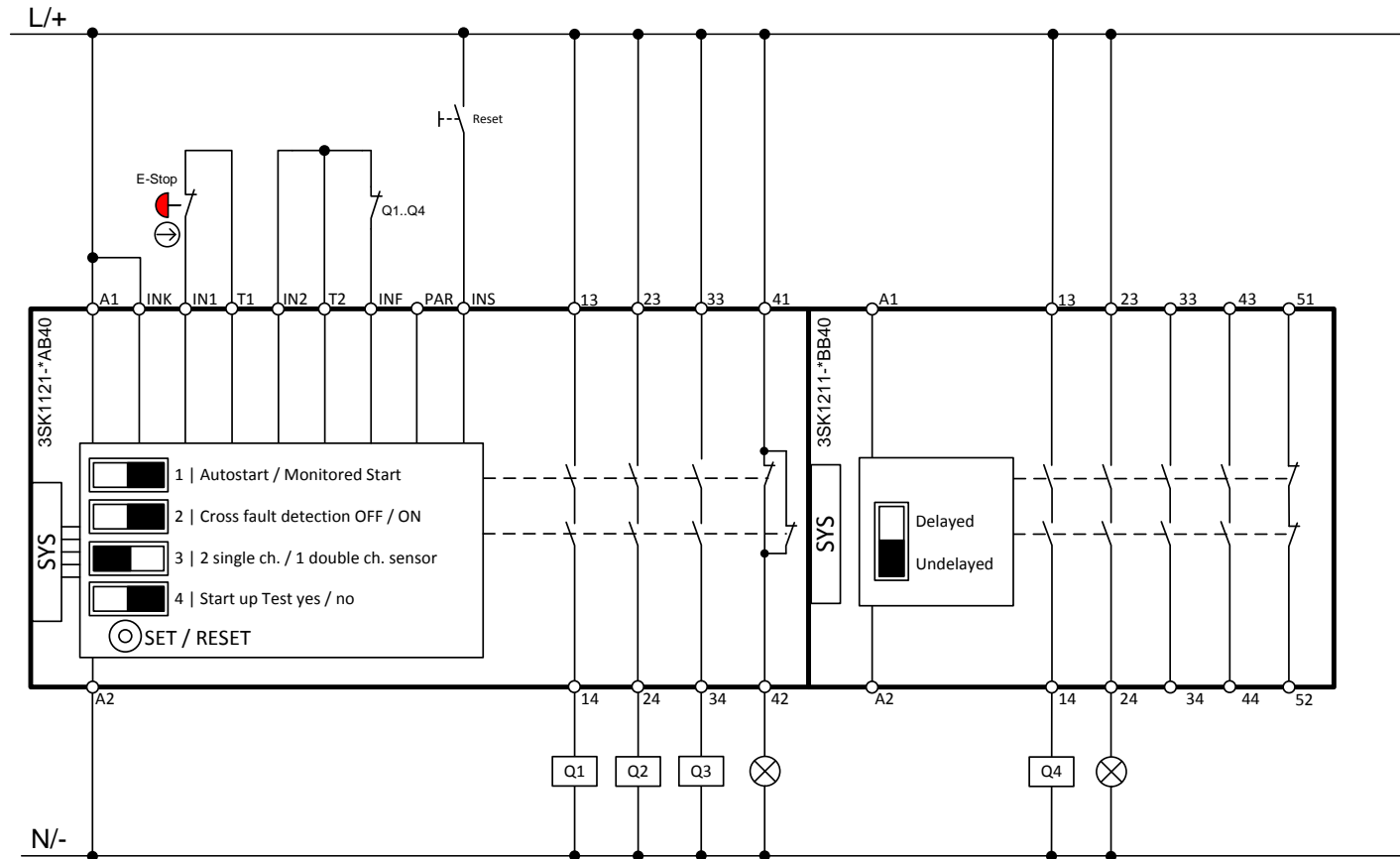


**Wiring diagram 3SK1 Standard**



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**Wiring diagram 3SK1 Advanced**



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**Note**

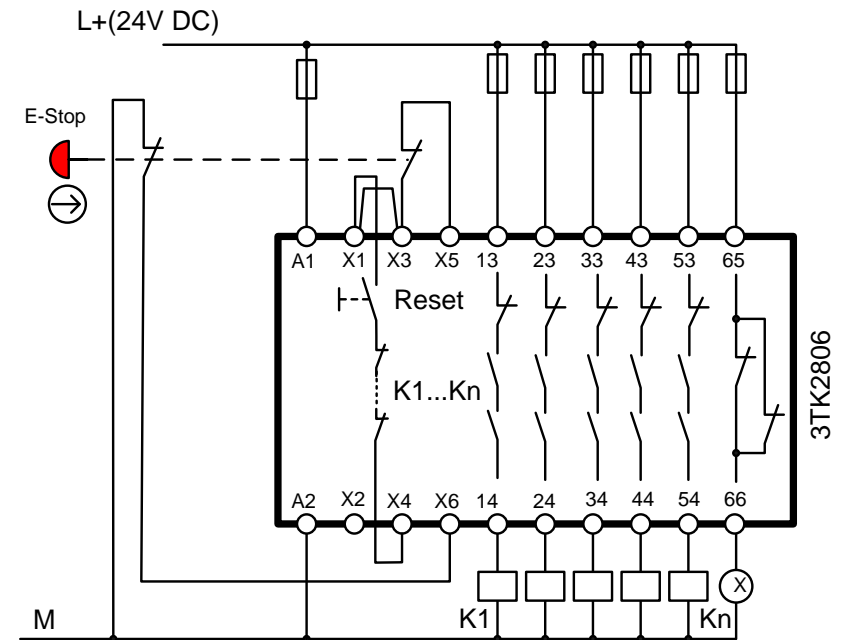
In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 2.5.2 Emergency stop monitoring (2-ch.)

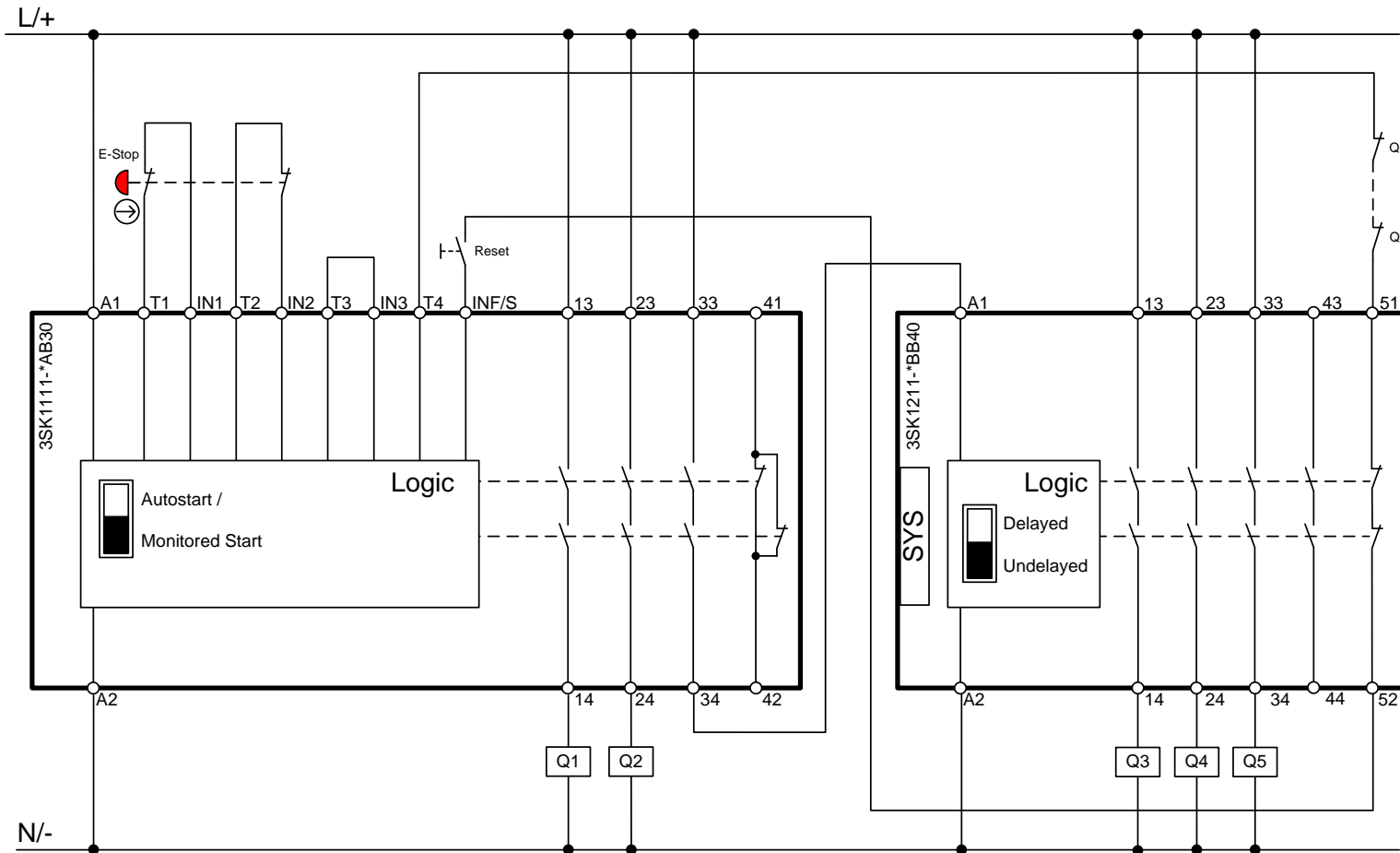
### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>• monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (2x1-ch.)</li> <li>• (startup test deactivated)</li> </ul>

### Wiring diagram 3TK28

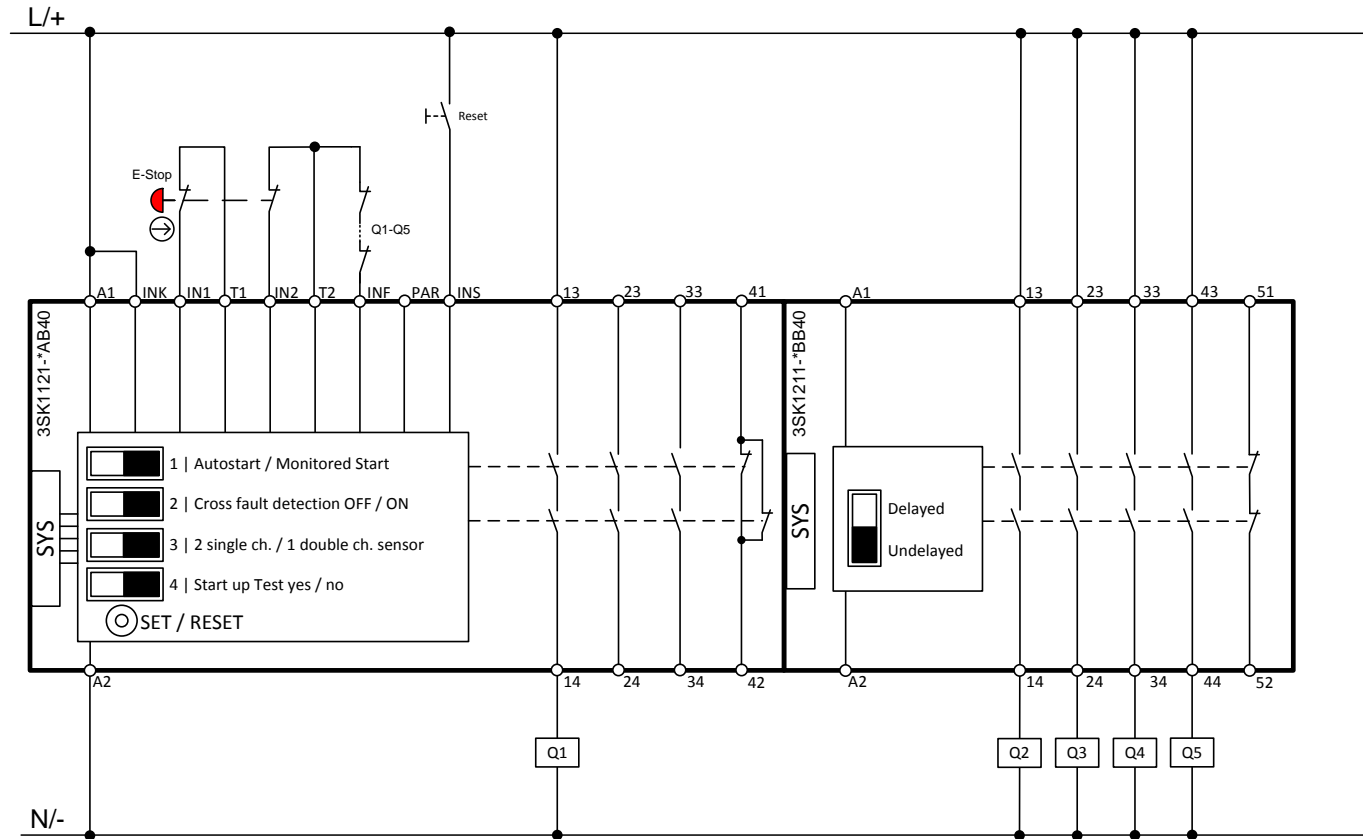


**Wiring diagram 3SK1 Standard**



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**Wiring diagram 3SK1 Advanced**



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**Note**

In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 2.6 3TK2806

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Configuration
3TK2806-0AC2	3SK1111-1AB30 + 3SK1211-1BB00	--	24 V AC
3TK2806-0AG2	3SK1111-1AW20 + 3SK1211-1BW20	3SK1121-1AB40* + 3SK1211-1BW20	110V AC
3TK2806-0AL2	3SK1111-1AW20 + 3SK1211-1BW20	3SK1121-1AB40* + 3SK1211-1BW20	230 V AC
3TK2806-0BB4	3SK1111-1AB30 + 3SK1211-1BB40	3SK1121-1AB40 + 3SK1211-1BB40	24 V DC

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

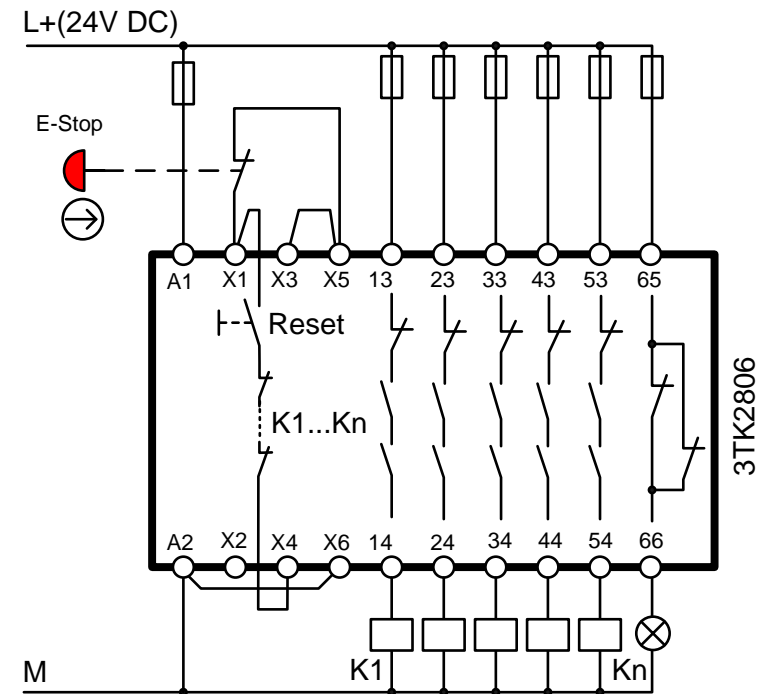
3TK2806	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
X3/X5	T1/IN1	T1/IN1	Channel 1
X6/-	T2/IN2	T2/IN2	Channel 2
X1/X4	T4/INF/S	INS	Reset button
X1/X4	T4/INF/S	T2/INF	Feedback circuit
13/14	13/14	13/14	Output circuit (NO)
23/24	23/24	23/24	Output circuit (NO)
33/34	33/34	33/34	Output circuit (NO)
43/44	--	--	Output circuit (NO)
53/54	--	--	Output circuit (NO)
65/66	41/42	41/42	Signaling circuit (NC)

### 2.6.1 Emergency stop monitoring (1-ch.)

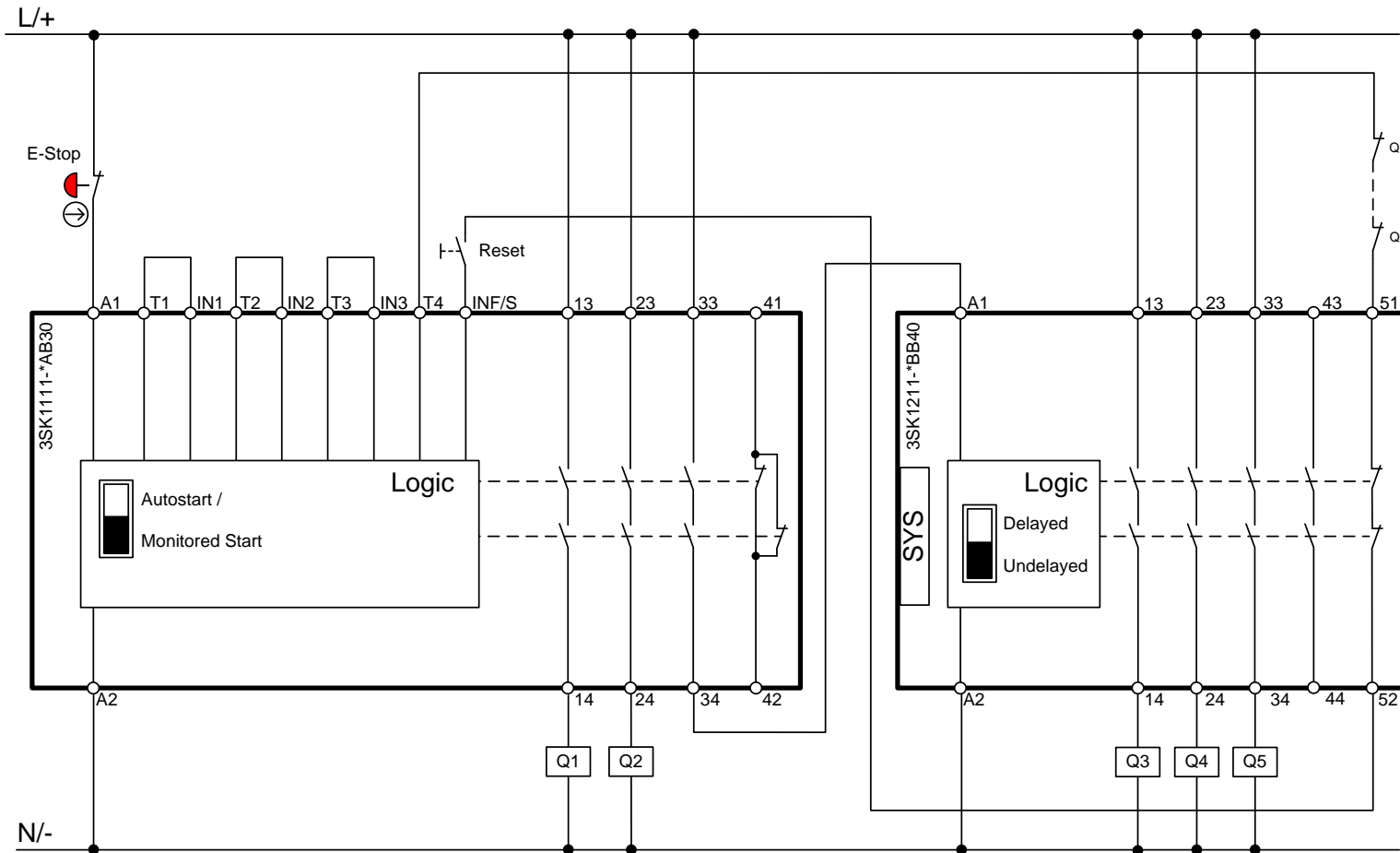
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>• manual start (monitored start)</li> <li>• (cross-circuit detection activated)</li> <li>• (2x1-ch.)</li> <li>• (startup test deactivated)</li> </ul>

#### Wiring diagram 3TK28



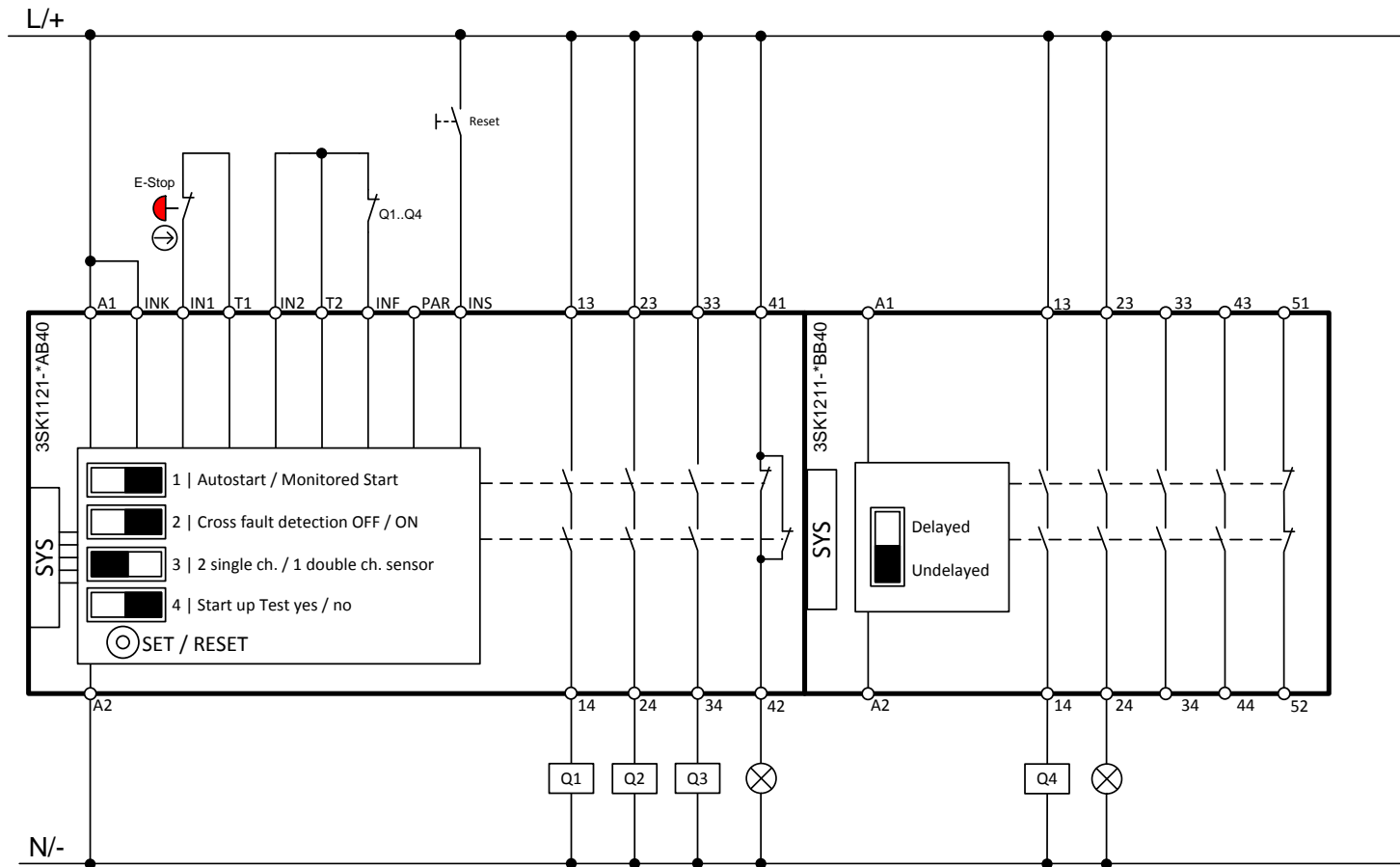
**Wiring diagram 3SK1 Standard**



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**Wiring diagram 3SK1 Advanced**



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**Note**

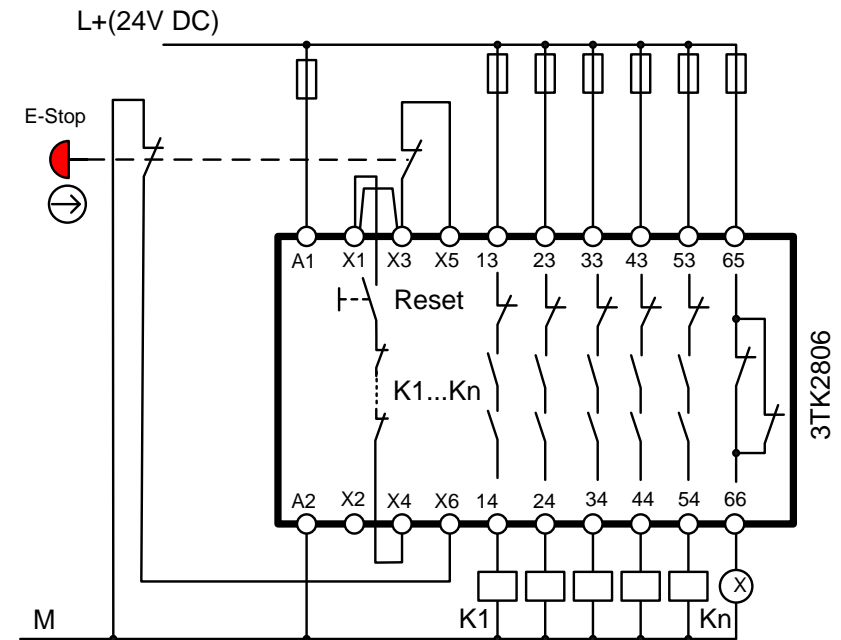
In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 2.6.2 Emergency stop monitoring (2-ch.)

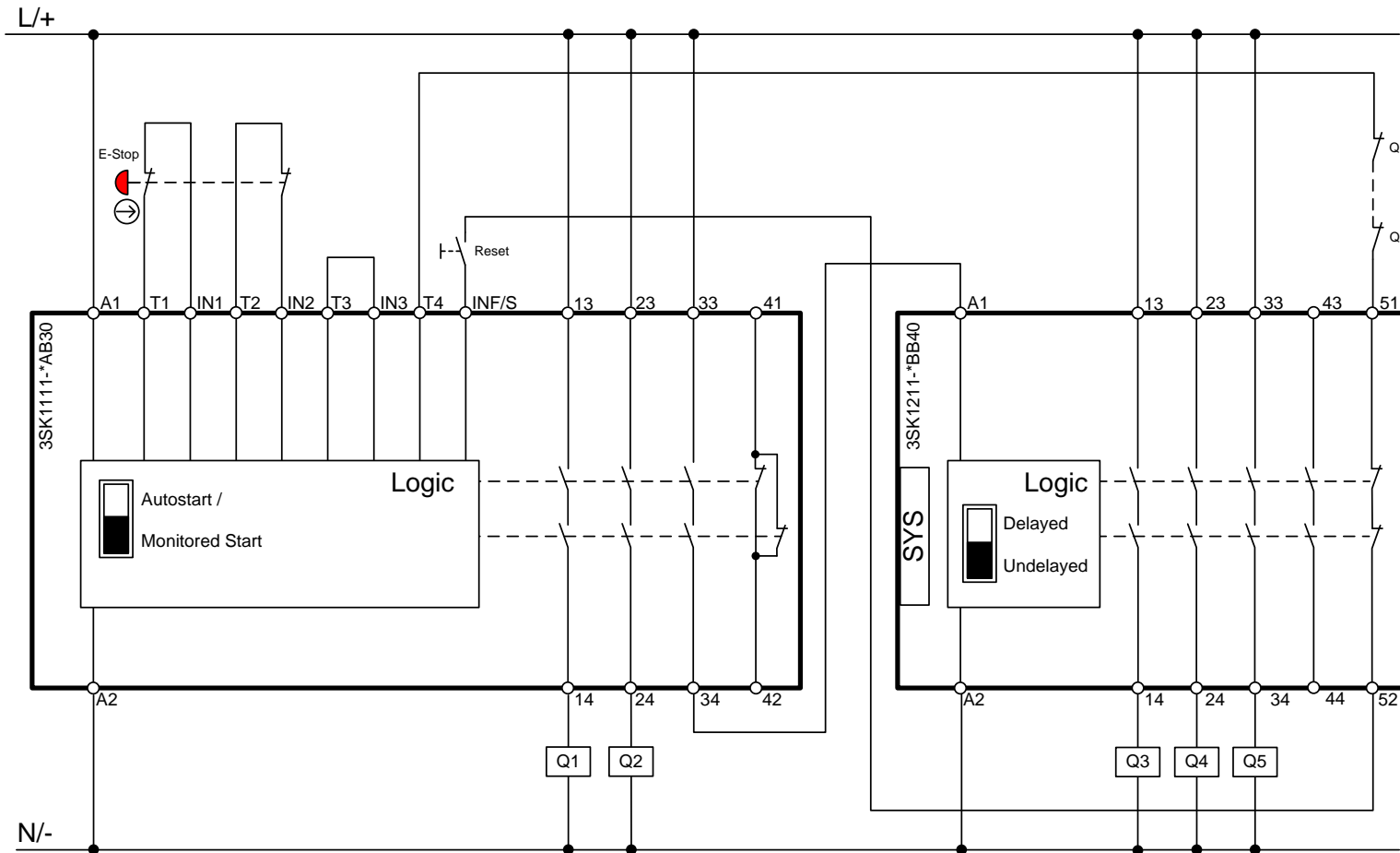
### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>• Manueller Start (monitored start)</li> <li>• (cross-circuit detection activated)</li> <li>• (2x1-ch.)</li> <li>• (startup test deactivated)</li> </ul>

### Wiring diagram 3TK28

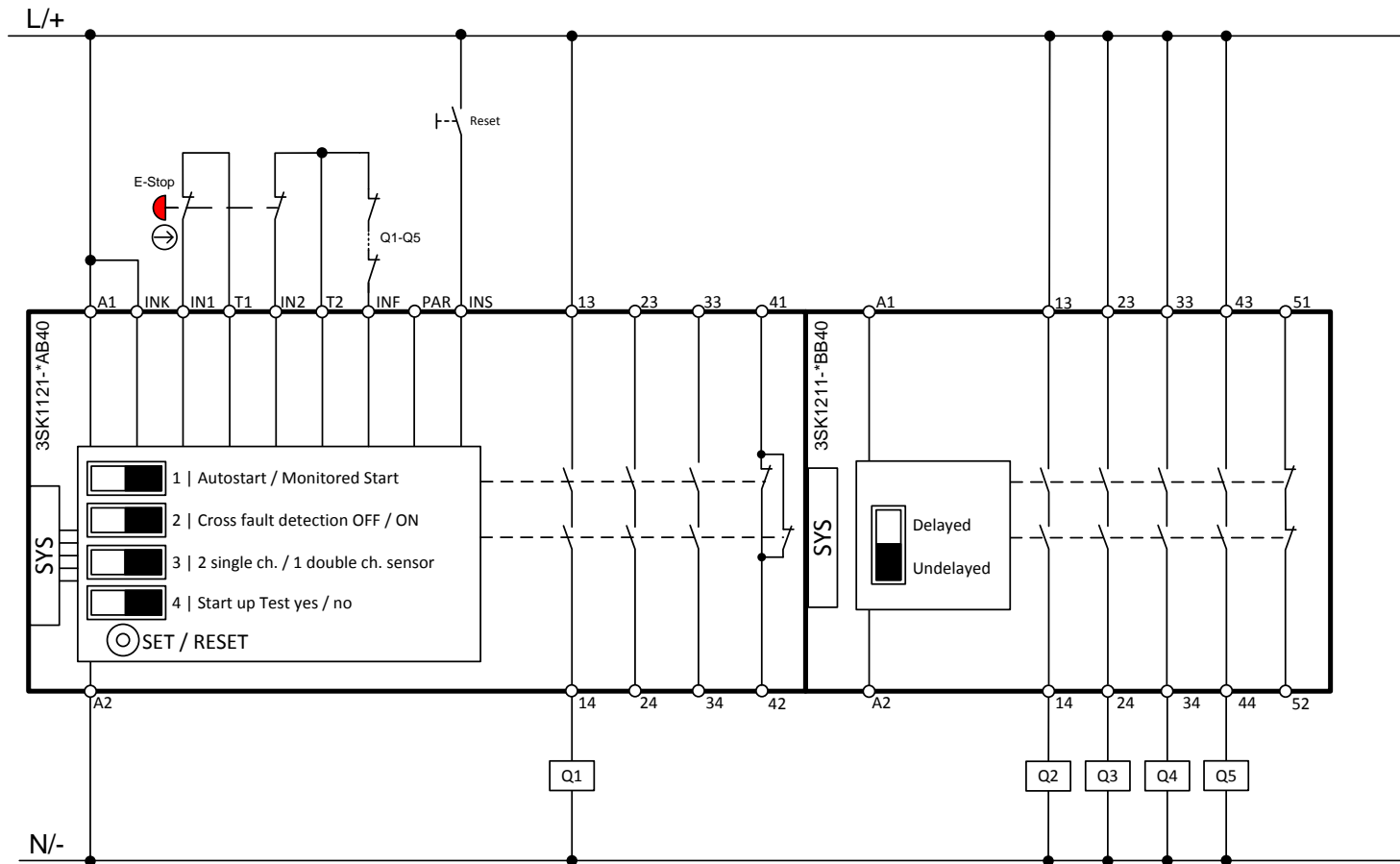


**Wiring diagram 3SK1 Standard**



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**Wiring diagram 3SK1 Advanced**



**Note** In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

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## 2.7 3TK2807

### Corresponding order numbers

3TK28	3SK1 Advanced	Configuration
3TK2807-0AC2	--	24 V AC
3TK2807-0AG2	3SK1121-1CB42* + 3SK1211-1BW20	110V AC
3TK2807-0AL2	3SK1121-1CB42* + 3SK1211-1BW20	230 V AC
3TK2807-0BB4	3SK1121-1CB42 + 3SK1211-1BB40	24 V DC

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

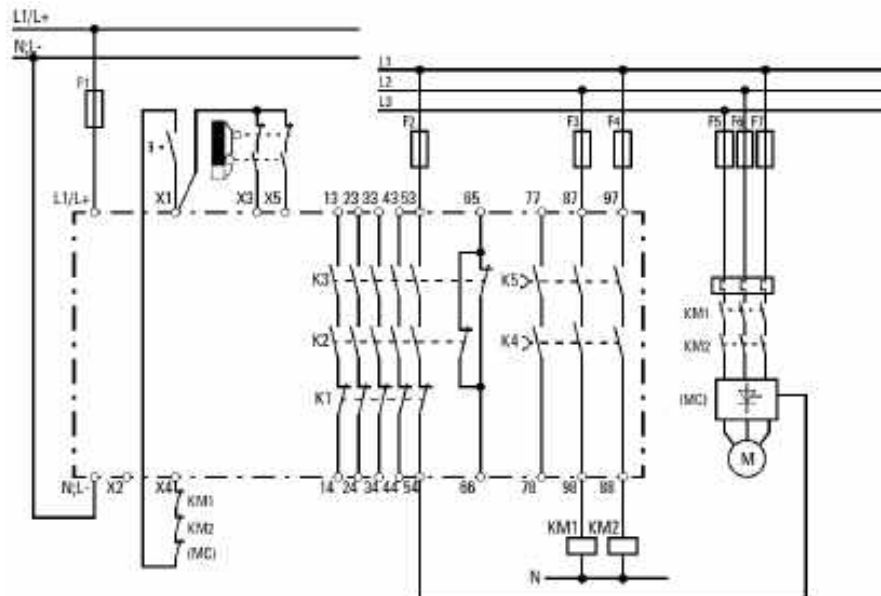
3TK2807	3SK1 Advanced	Terminal description
A1	A1	Power supply +
A2	A2	Power supply -
X1/X3	T1/IN1	Channel 1
X1/X5	T2/IN2	Channel 2
X1/X4	INS	Reset button
X1/X4	T2/INF	Feedback circuit
13/14	13/14	Output circuit (NO)
23/24	23/24	Output circuit (NO)
33/34	--	Output circuit (NO)
43/44	--	Output circuit (NO)
53/54	--	Output circuit (NO)
65/66	--	Signaling circuit (NC)
77/78	37/38	Output circuit (NO, delayed)
87/88	47/48	Output circuit (NO, delayed)
97/98	--	Output circuit (NO, delayed)

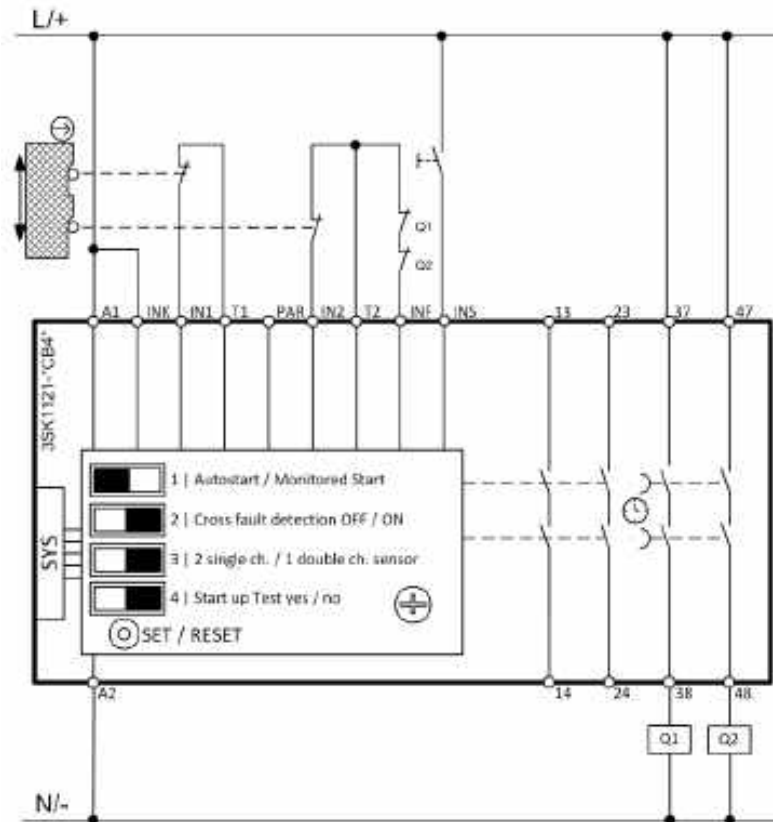
## 2.7.1 Protective door monitoring (2-ch.)

### Description of safety function and configuration

Safety function	Configuration
Protective door monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 und 1 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>• automatic start</li> <li>• (cross-circuit detection activated)</li> <li>• (1x2-ch.)</li> <li>• (startup test deactivated)</li> </ul>

### Wiring diagram 3TK28



**Wiring diagram 3SK1 Advanced****Note**

The shown solution does not include output expansions which will be used if the outputs on the 3SK1 basic unit do not suffice. In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 2.8 3TK2907

The expansion moduls 3TK29 are always have to be used with a basic device 3TK28. Per enabling contact at the basic modul an expansion modul can be connected.

### Corresponding order numbers

3TK29	3SK1 Standard	3SK1 Advanced	Comments
3TK2907-0AC2	3SK1111-1AB30 + 3SK1211-1BB00 + 3SK1211-1BB00		24 V AC
3TK2907-0AG2	3SK1111-1AW20 + 3SK1211-1BW20 + 3SK1211-1BW20	3SK1121-1AB40 + 3SK1211-1BB40 + 3SK1211-1BB40 *	110 V AC
3TK2907-0AL2	3SK1111-1AW20 + 3SK1211-1BW20 + 3SK1211-1BW20	3SK1121-1AB40 + 3SK1211-1BB40 + 3SK1211-1BB40 *	230 V AC
3TK2907-0BB4	3SK1111-1AB30 + 3SK1211-1BB40 + 3SK1211-1BB40	3SK1121-1AB40 + 3SK1211-1BB40 + 3SK1211-1BB40	24 V DC

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

3TK2907	3SK1 Ausgangserweiterung	Terminal description
A1	A1	Power supply +
A2	A2	Power supply -
X7/X8	51/52	Signaling circuit (NC)
73/74	13/14	Output circuit (NO)
83/84	23/24	Output circuit (NO)
93/94	33/34	Output circuit (NO)
103/104	43/44	Output circuit (NO)
113/114	13/14	Output circuit (NO)
123/124	23/24	Output circuit (NO)
133/134	33/34	Output circuit (NO)

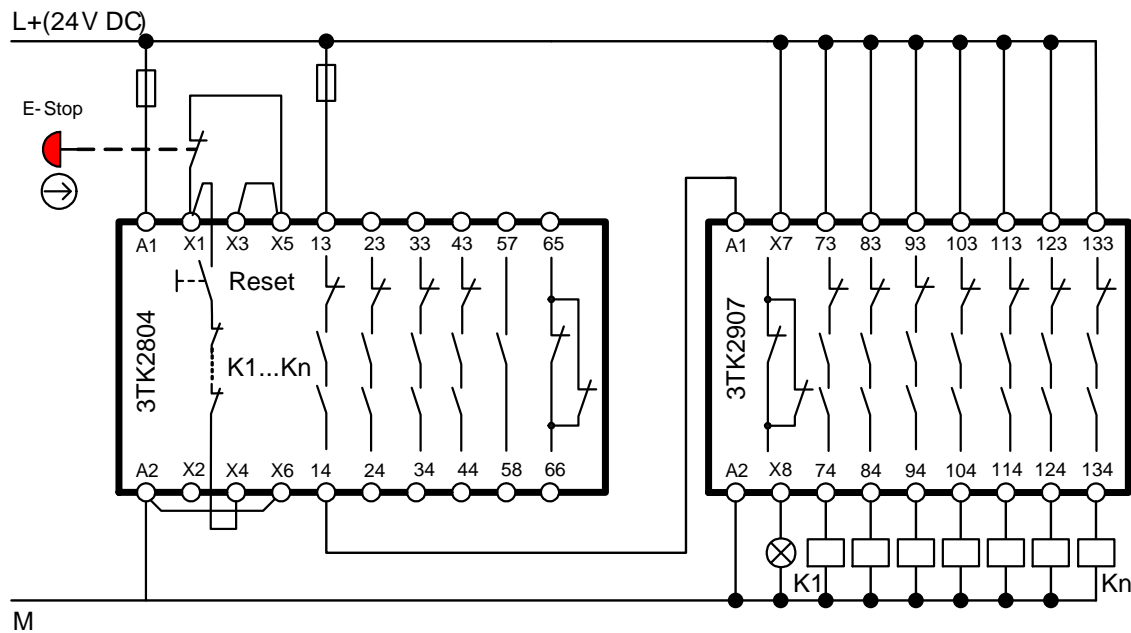


### 2.8.1 Emergency stop monitoring (1 ch.)

#### Description of safety function and configuration

Safety function	Configuration
Emergency stop SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>• Monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (2x1-ch.)</li> <li>• (startup test deactivated)</li> </ul>

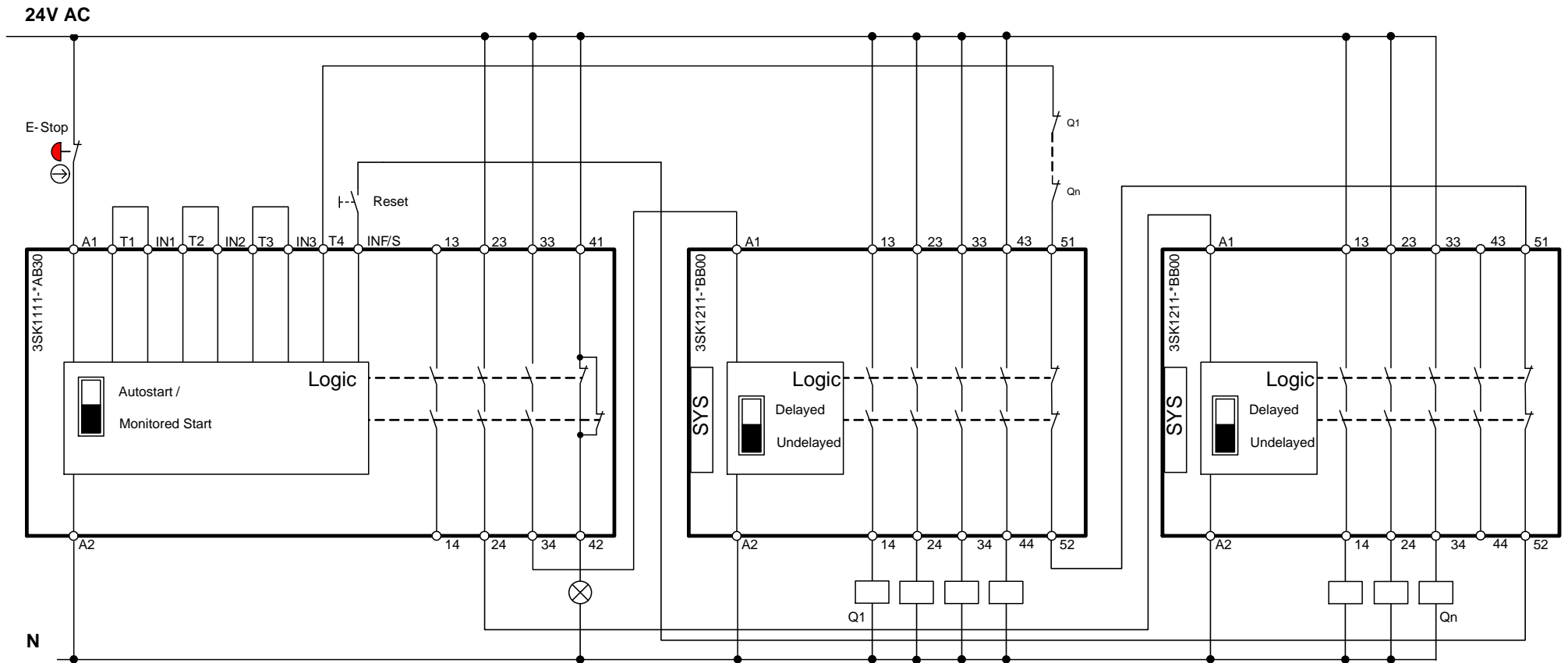
#### Wiring diagram 3TK28



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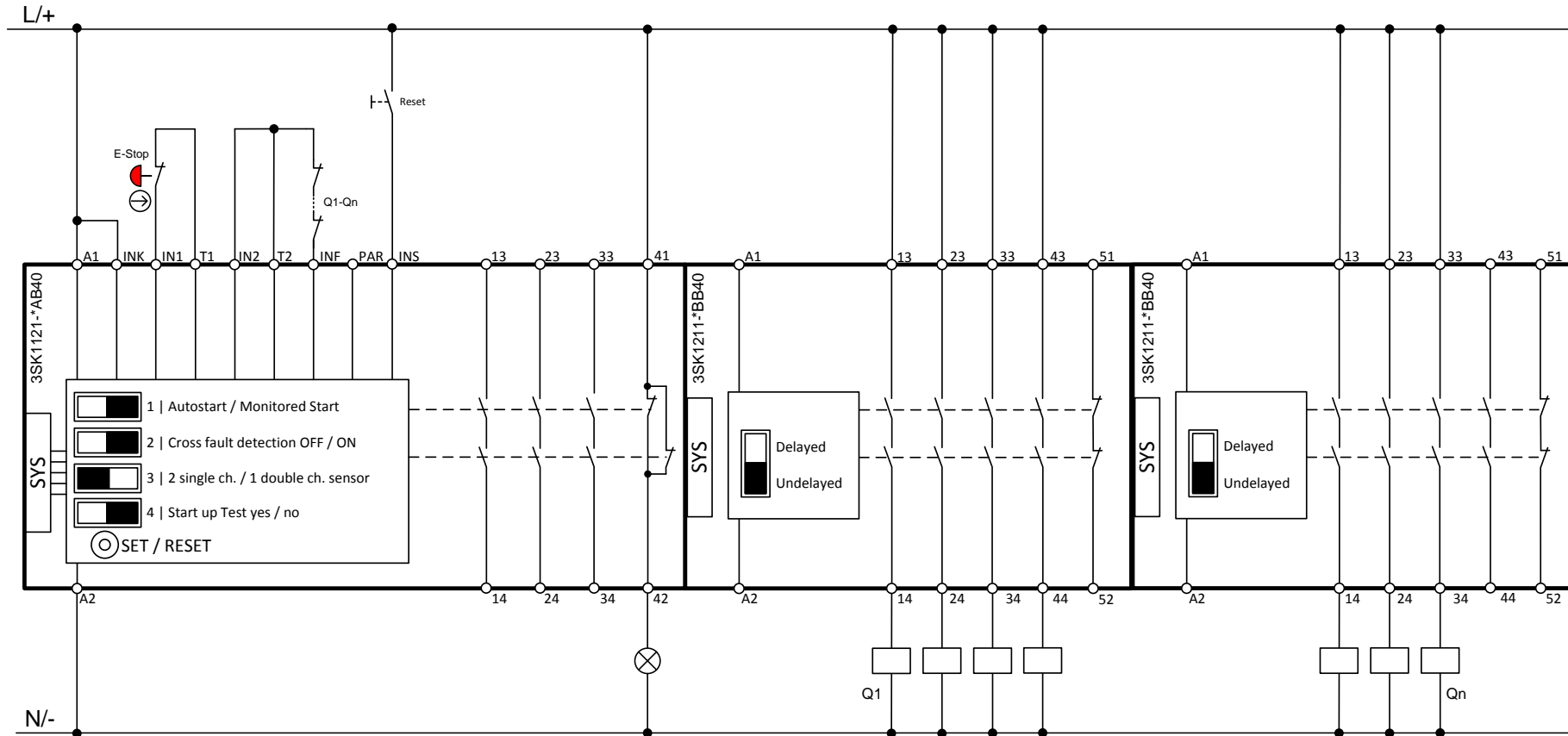
**Wiring diagram 3SK1 Standard**

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**Wiring diagram 3SK1 Advanced**

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**Note**

In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 2.9 3TK2820

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Comments
3TK2820-1AJ20	3SK1111-1AW20	3SK1121-1AB40 *	Screw-type
3TK2820-1AL20	3SK1111-1AW20	3SK1121-1AB40 *	Screw-type
3TK2820-1CB30	3SK1111-1AB30	3SK1121-1AB40	Screw-type
3TK2820-2AJ20	3SK1111-2AW20	3SK1121-2AB40 *	Push-In
3TK2820-2AL20	3SK1111-2AW20	3SK1121-2AB40 *	Push-In
3TK2820-2CB30	3SK1111-2AB30	3SK1121-1AB40	Push-In

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

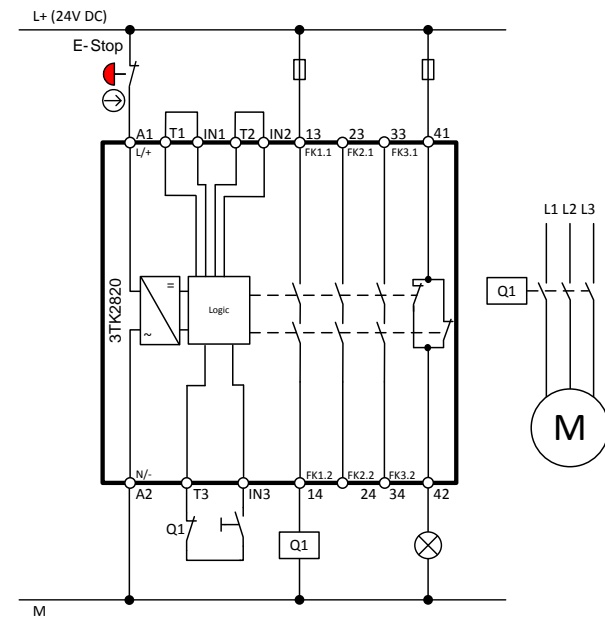
3TK2820	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
T1/IN1	T1/IN1	T1/IN1	Channel 1
T2/IN2	T2/IN2	T2/IN2	Channel 2
--	T3/IN3	DIP switch	Channel 2 for use of OSSDs
T/3IN3	T4/INF/S	INS	Reset button
T/3IN3	T4/INF/S	T2/INF	Feedback circuit
--	--	INK	Cascading input
--	--	PAR	Configuration input for NO/NC evaluation
13/14	13/14	13/14	Output circuit (NO)
23/24	23/24	23/24	Output circuit (NO)
33/34	33/34	33/34	Output circuit (NO)
41/42	41/42	41/42	Signaling circuit (NC)

### 2.9.1 Emergency stop monitoring (1 ch.)

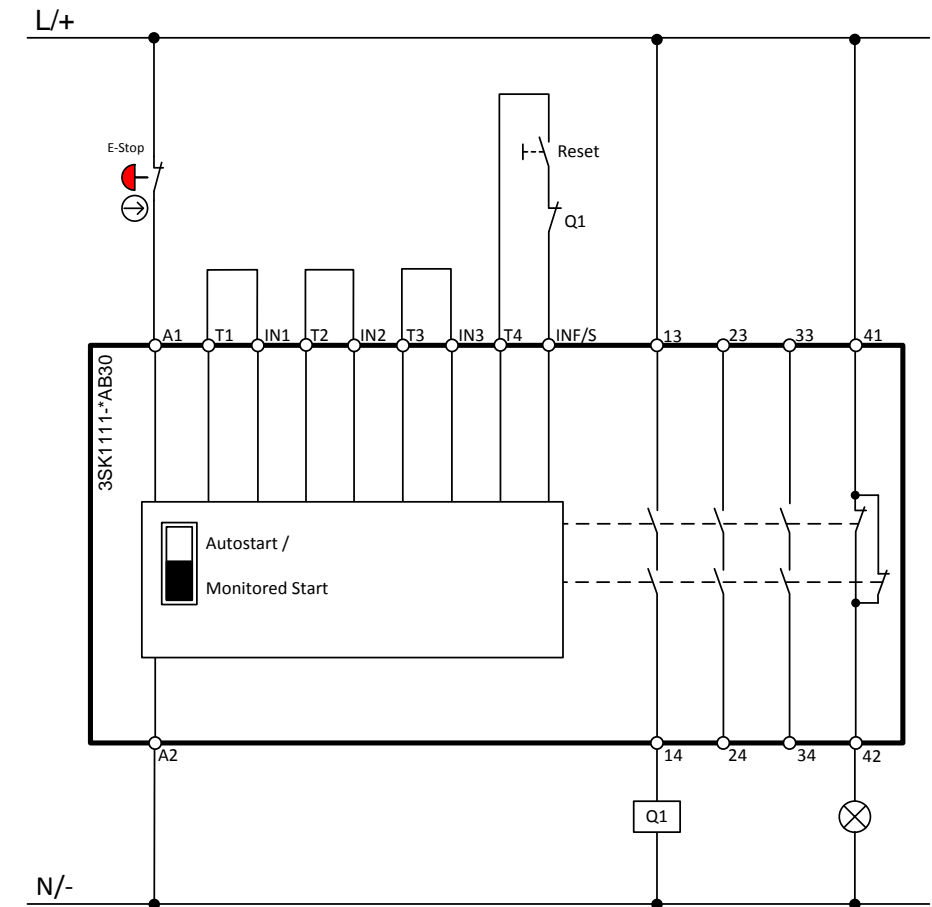
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>• monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (1 double channel)</li> <li>• (startup test deactivated)</li> </ul>

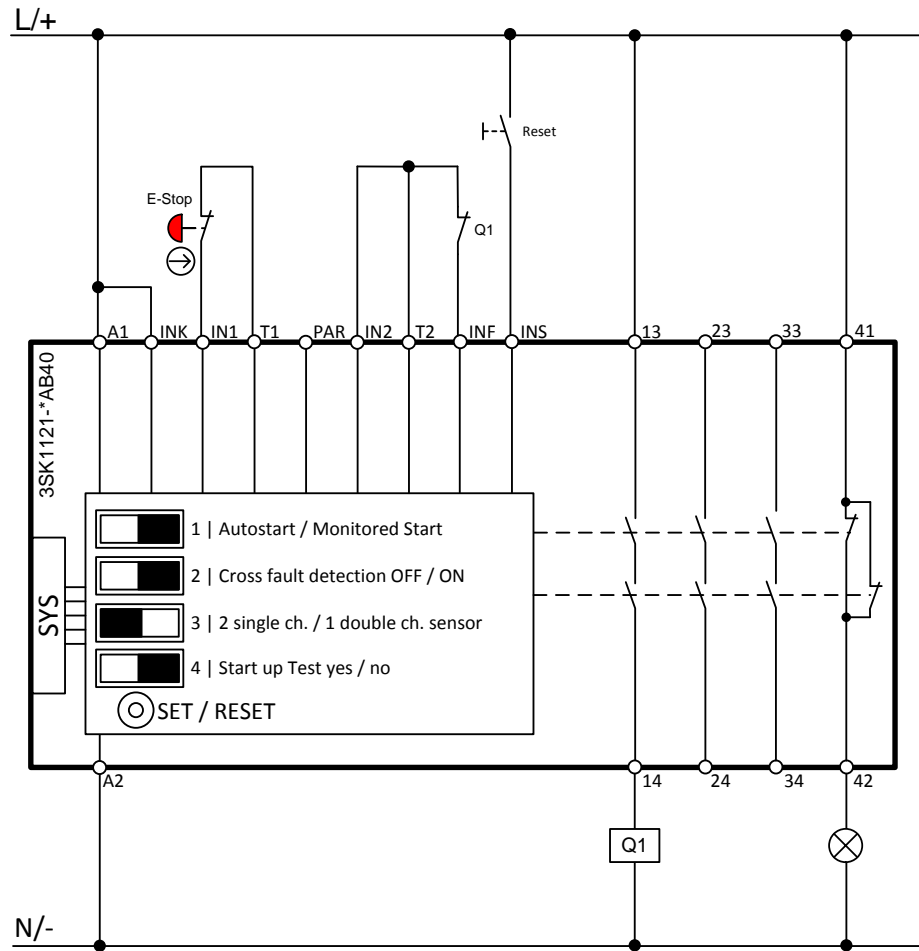
#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Standard



**Wiring diagram 3SK1 Advanced**



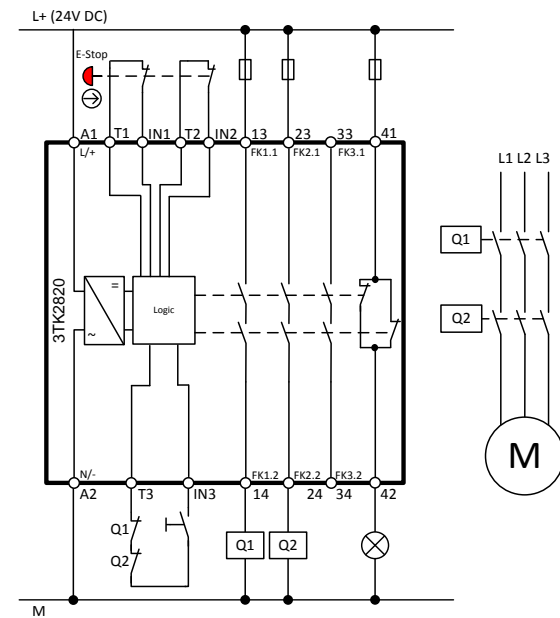
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## 2.9.2 Emergency stop monitoring (2 ch.)

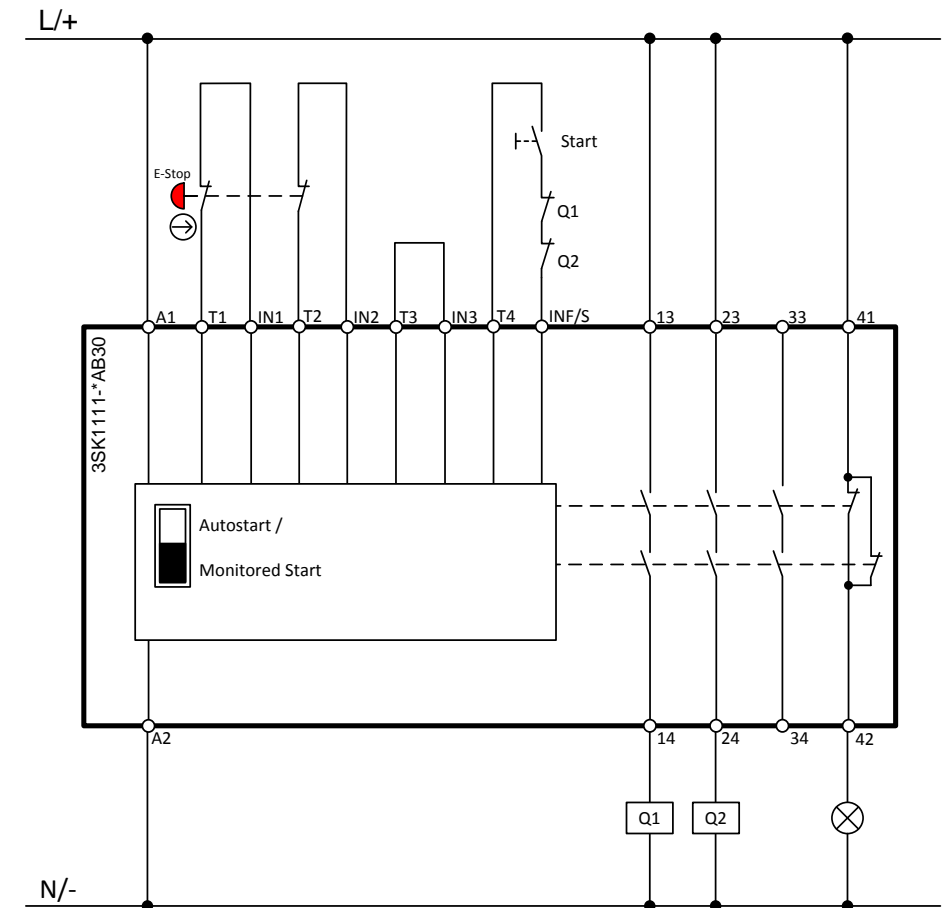
### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>• monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (2 single channels)</li> <li>• (startup test deactivated)</li> </ul>

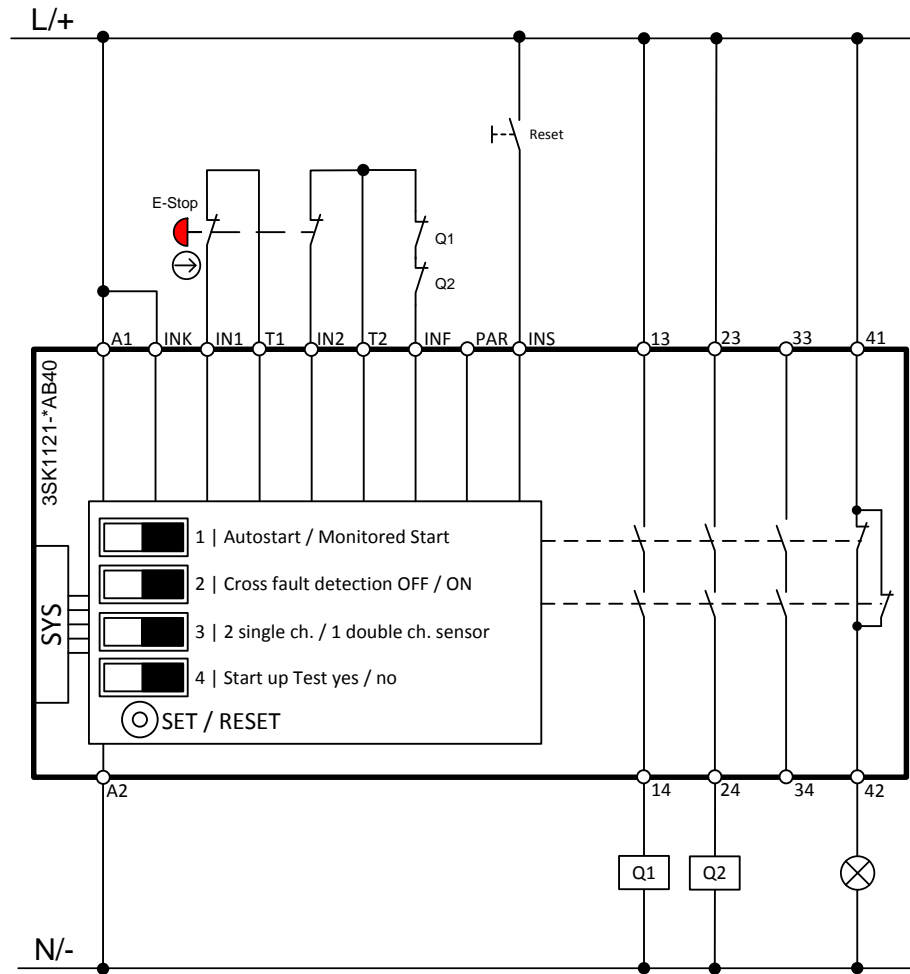
### Wiring diagram 3TK28



### Wiring diagram 3SK1 Standard



**Wiring diagram 3SK1 Advanced**



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## 2.10 3TK2821

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Comments
3TK2821-1CB30	3SK1111-1AB30	3SK1121-1AB40	Screw-type
3TK2821-2CB30	3SK1111-2AB30	3SK1121-2AB40	Push-In

### Terminal marking

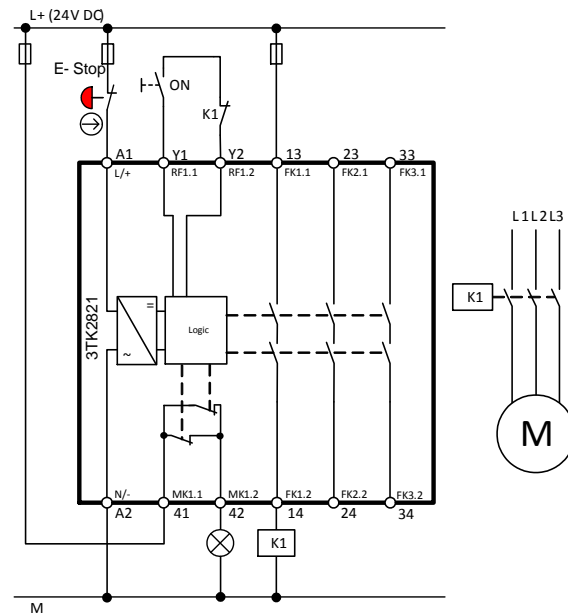
3TK2821	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
--	T1/IN1	T1/IN1	Channel 1
--	T2/IN2	T2/IN2	Channel 2
--	T3/IN3	DIP switch	Channel 2 for use of OSSDs
Y1/Y2	T4/INF/S	INS	Reset button
Y1/Y2	T4/INF/S	T2/INF	Feedback circuit
--	--	INK	Cascading input
--	--	PAR	Configuration input for NO/NC evaluation
13/14	13/14	13/14	Output circuit (NO)
23/24	23/24	23/24	Output circuit (NO)
33/34	33/34	33/34	Output circuit (NO)
41/42	41/42	41/42	Signaling circuit (NC)

### 2.10.1 Emergency stop monitoring (1 ch.)

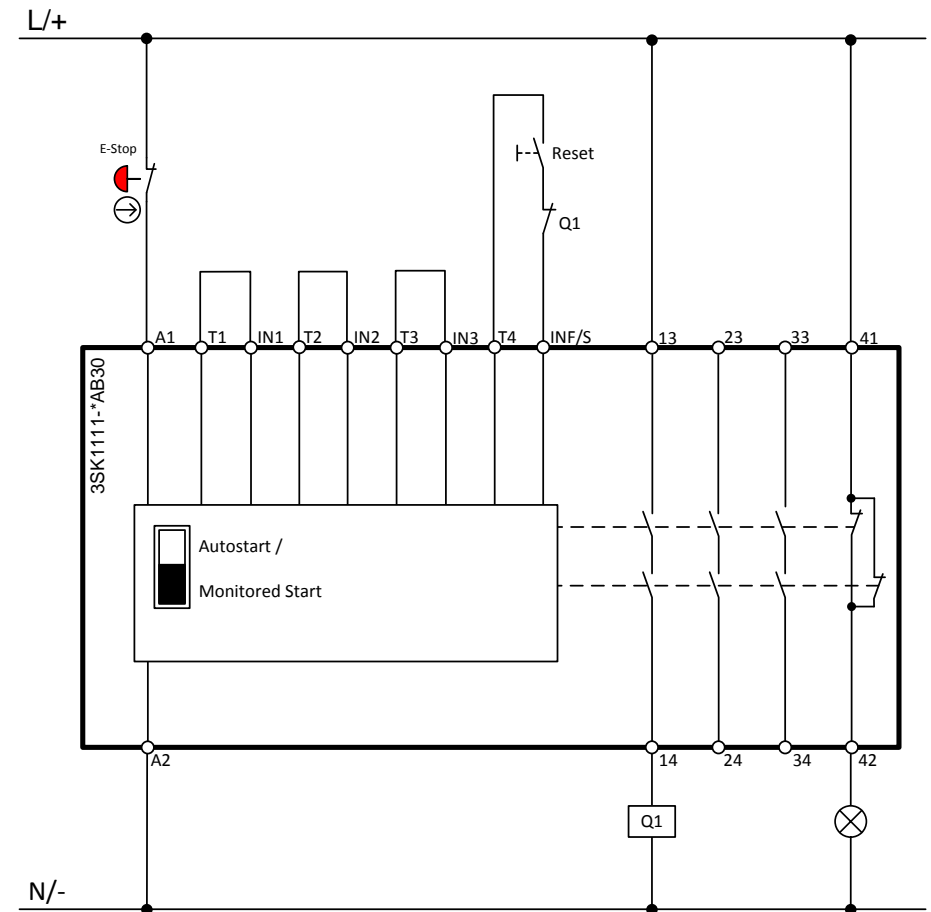
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>• monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (1 double channel)</li> <li>• (startup test deactivated)</li> </ul>

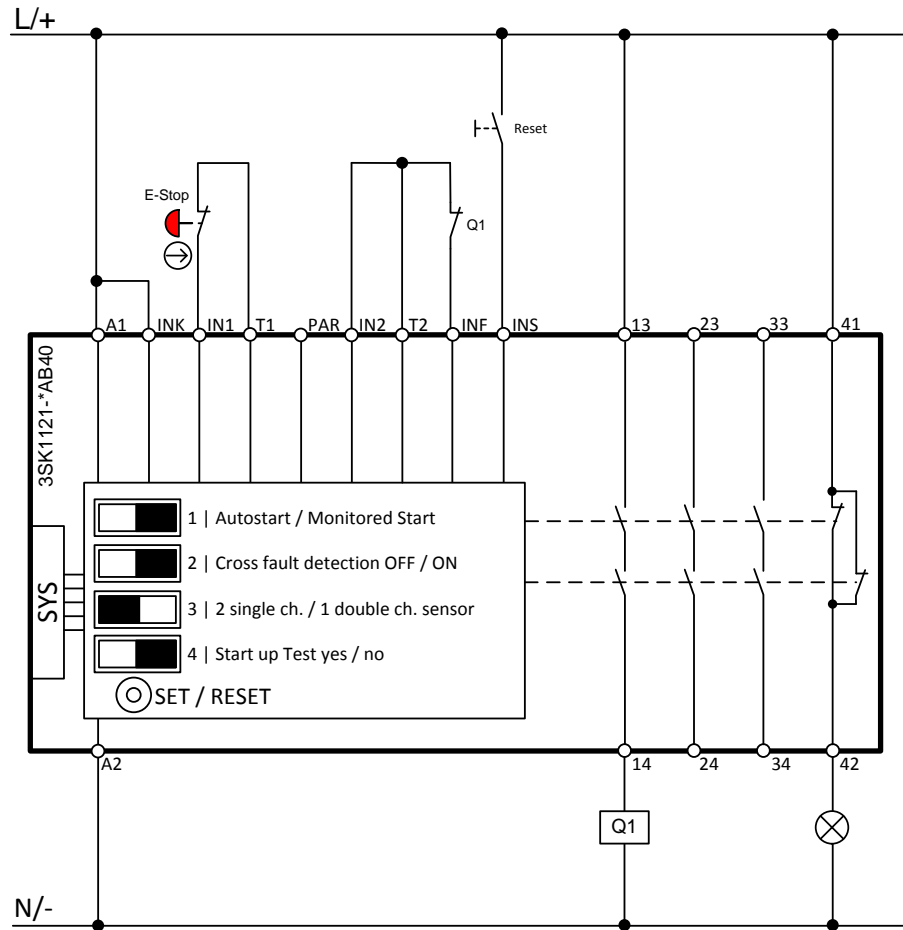
#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Standard



**Wiring diagram 3SK1 Advanced**



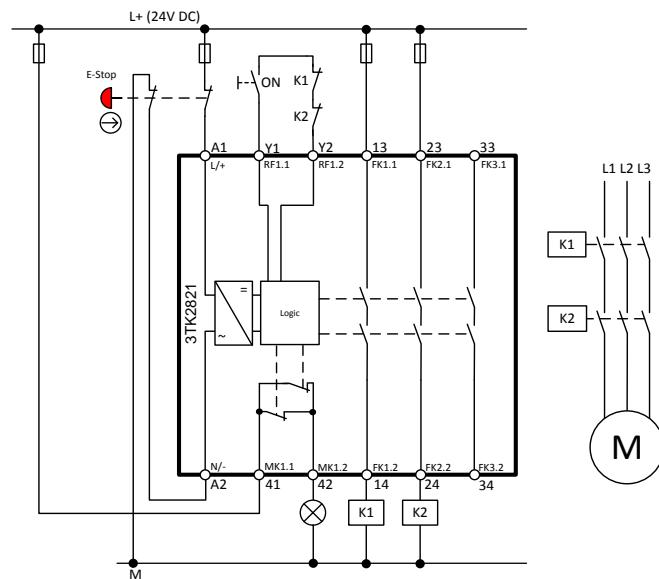
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### 2.10.2 Emergency stop monitoring (2 ch.)

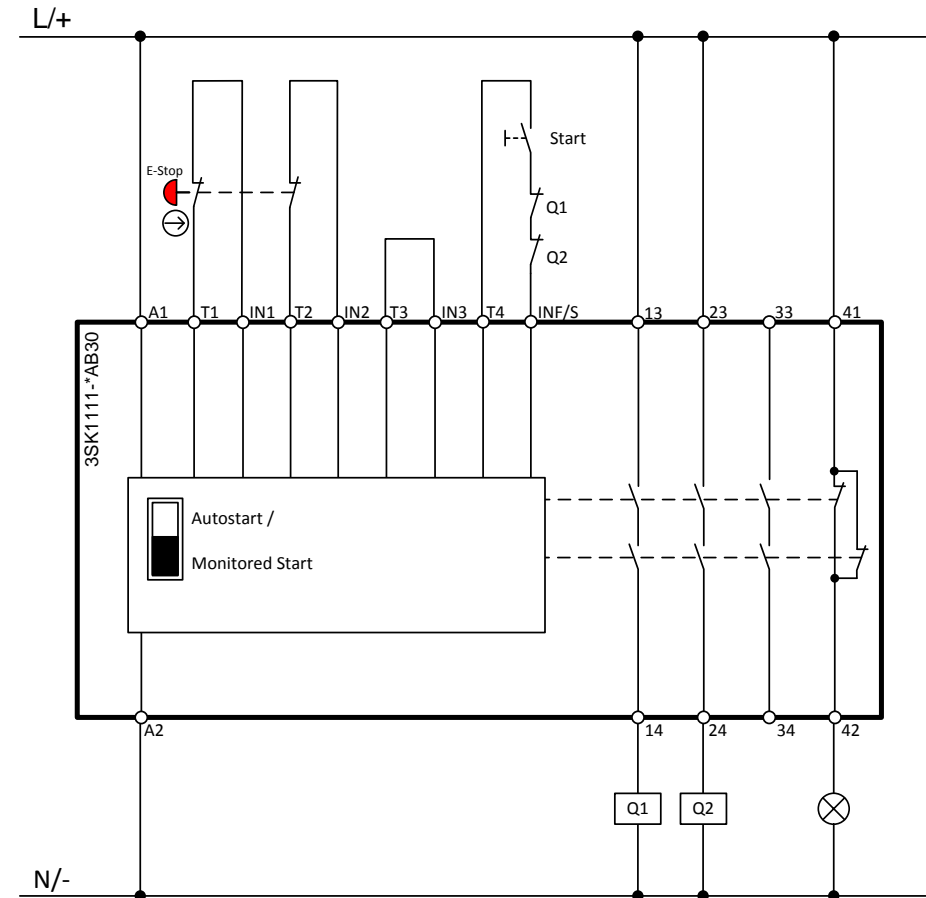
#### Erläuterung der Sicherheitsfunktionen und Parameter

Safety function 3TK28 (3SK1)	Configuration 3SK1 (Advanced)
Emergency stop monitoring SIL 1 (SIL 3) PL c (PL e) Stopp-category 0 (EN 60204-1) DC = 0% (99%)	<ul style="list-style-type: none"> <li>monitored start</li> <li>(cross-circuit detection activated)</li> <li>(2x1-channel)</li> <li>(startup test deactivated)</li> </ul>

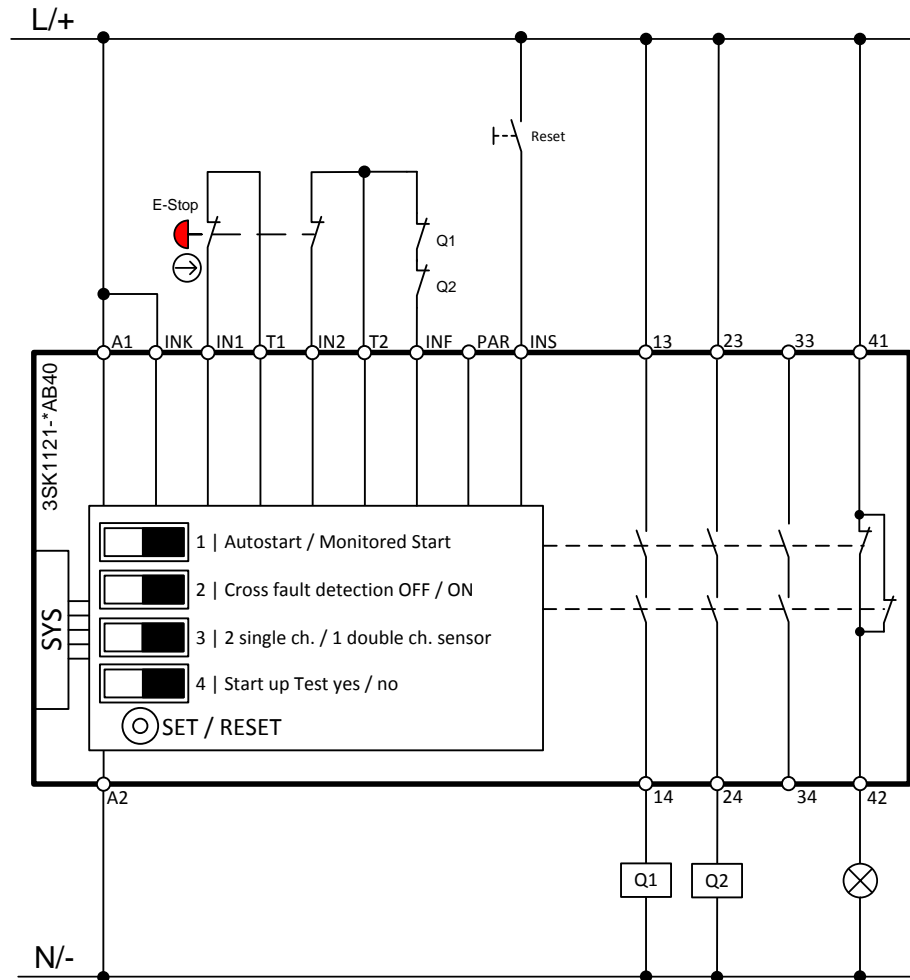
#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Standard



**Wiring diagram 3SK1 Advanced**



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## 2.11 3TK2822

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Comments
3TK2822-1CB30	3SK1111-1AB30	3SK1121-1AB40	Screw-type
3TK2822-2CB30	3SK1111-2AB30	3SK1121-2AB40	Push-In

### Terminal marking

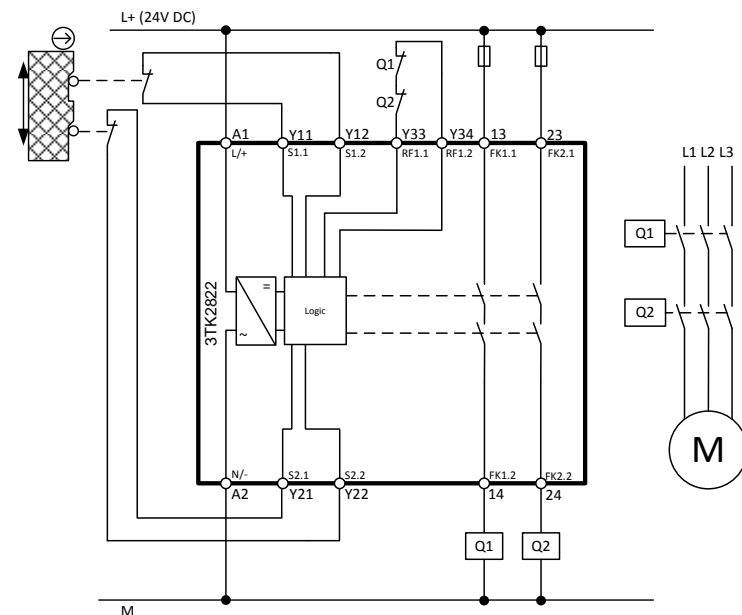
3TK2822	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
Y11/Y12	T1/IN1	T1/IN1	Channel 1
Y21/Y22	T2/IN2	T2/IN2	Channel 2
--	T3/IN3	DIP switch	Channel 2 for use of OSSDs
Y33/Y34	T4/INF/S	INS	Reset button
Y33/Y34	T4/INF/S	T2/INF	Feedback circuit
--	--	INK	Cascading input
--	--	PAR	Configuration input for NO/NC evaluation
13/14	13/14	13/14	Output circuit (NO)
23/24	23/24	23/24	Output circuit (NO)
--	33/34	33/34	Output circuit (NO)
--	41/42	41/42	Signaling circuit (NC)

### 2.11.1 Protective door monitoring (2-ch.)

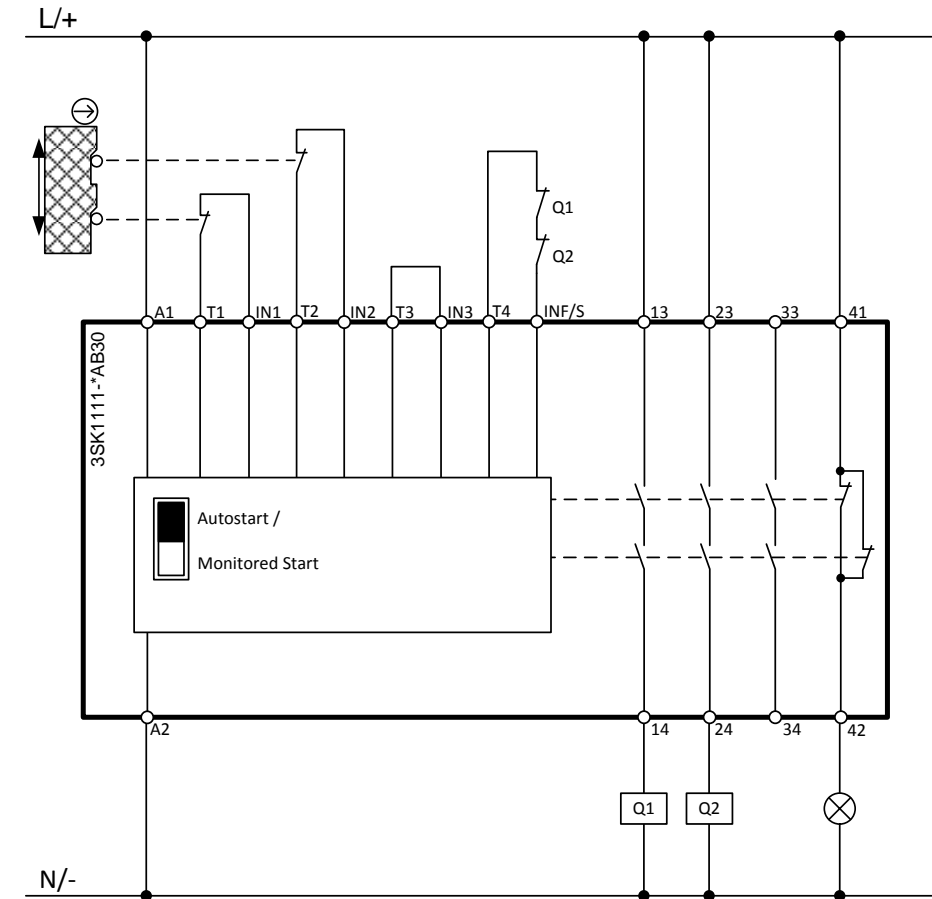
#### Description of safety function and configuration

Safety function	Configuration
Protective door monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>• automatic start</li> <li>• (cross-circuit detection activated)</li> <li>• (2x1-channel)</li> <li>• (startup test deactivated)</li> <li>•</li> </ul>

#### Wiring diagram 3TK28

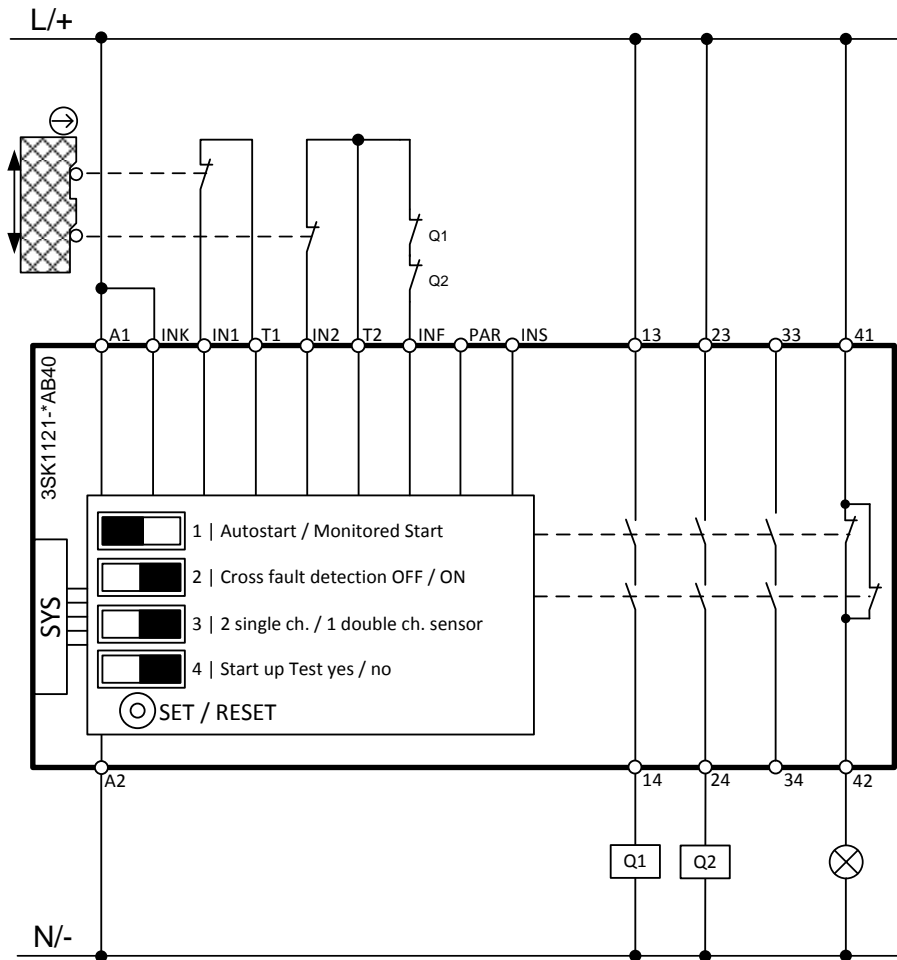


#### Wiring diagram 3SK1 Standard



#### Wiring diagram 3SK1 Advanced

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## 2.12 3TK2823

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Comments
3TK2823-1CB30	3SK1111-1AB30	3SK1121-1AB40	Screw-type
3TK2823-2CB30	3SK1111-2AB30	3SK1121-2AB40	Push-In

### Terminal marking

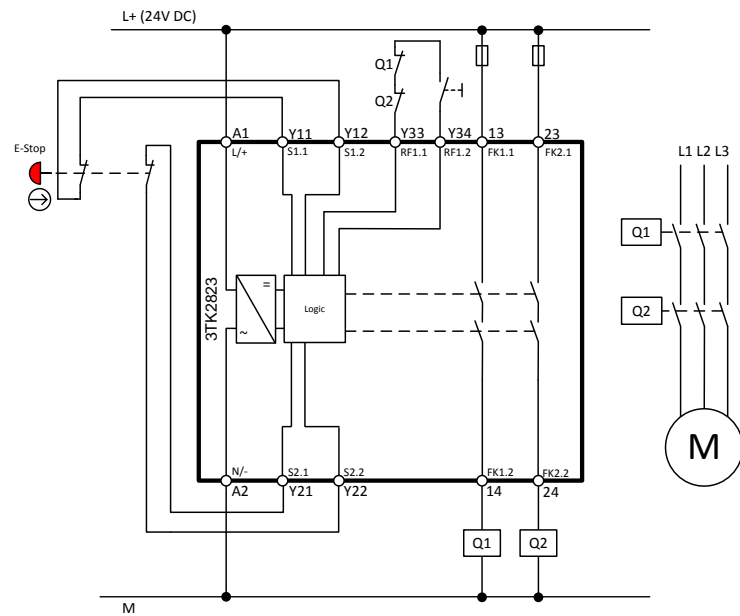
3TK2823	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
Y11/Y12	T1/IN1	T1/IN1	Channel 1
Y21/Y22	T2/IN2	T2/IN2	Channel 2
--	T3/IN3	DIP switch	Channel 2 for use of OSSDs
Y33/Y34	T4/INF/S	INS	Reset button
Y33/Y34	T4/INF/S	T2/INF	Feedback circuit
--	--	INK	Cascading input
--	--	PAR	Configuration input for NO/NC evaluation
13/14	13/14	13/14	Output circuit (NO)
23/24	23/24	23/24	Output circuit (NO)
--	33/34	33/34	Output circuit (NO)
--	41/42	41/42	Signaling circuit (NC)

### 2.12.1 Emergency stop monitoring (2 ch.)

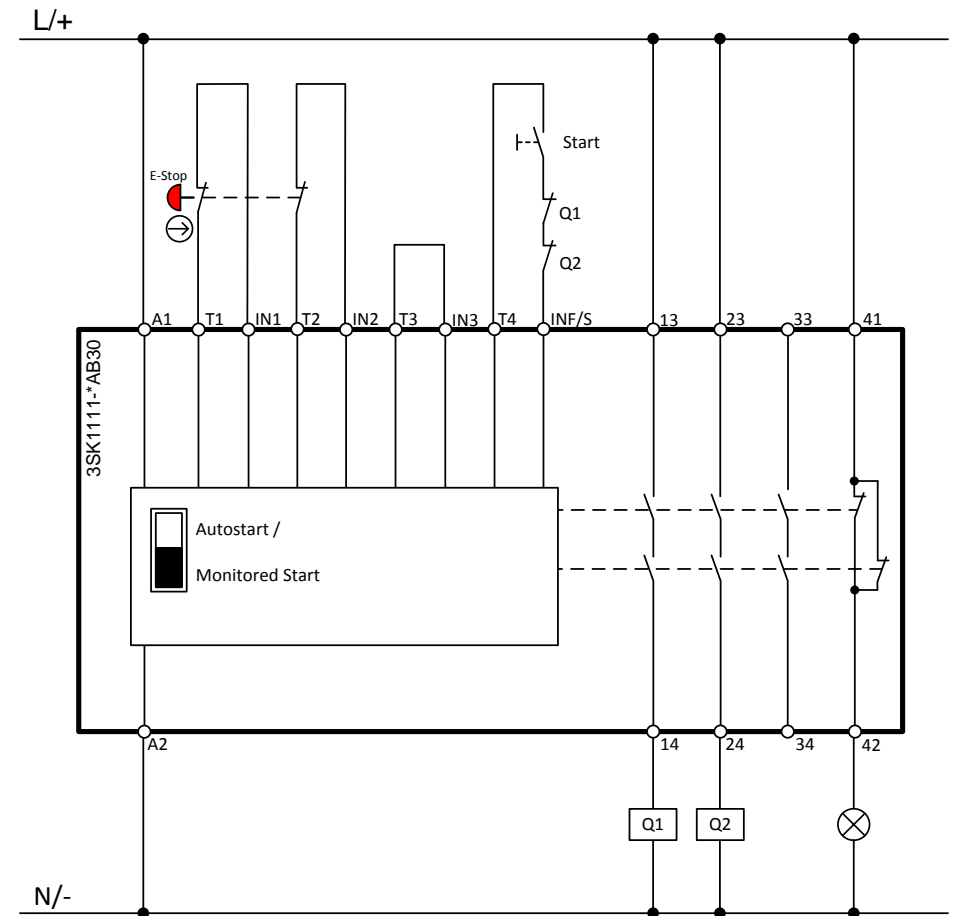
#### Description of safety function and configuration

Safety function	Parameter 3SK1 (Advanced)
Emergency stop monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>• monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (1x2-channel)</li> <li>• (startup test deactivated)</li> </ul>

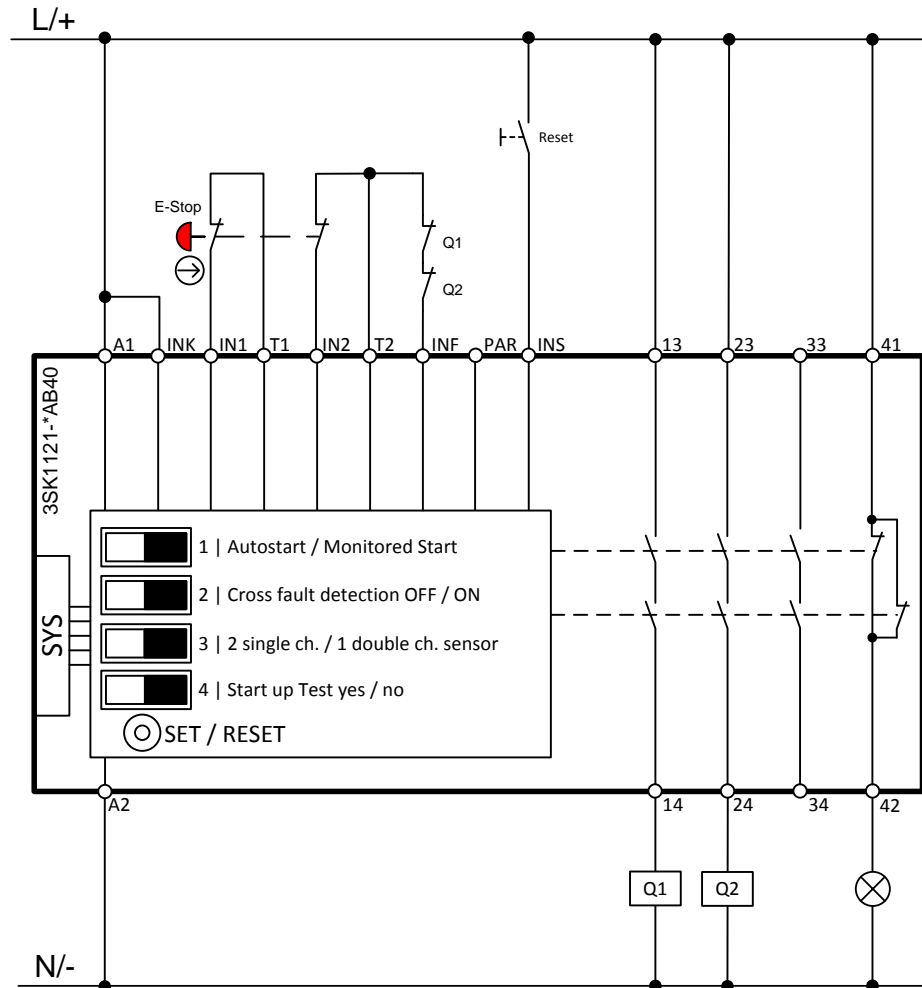
#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Standard



**Wiring diagram 3SK1 Advanced**



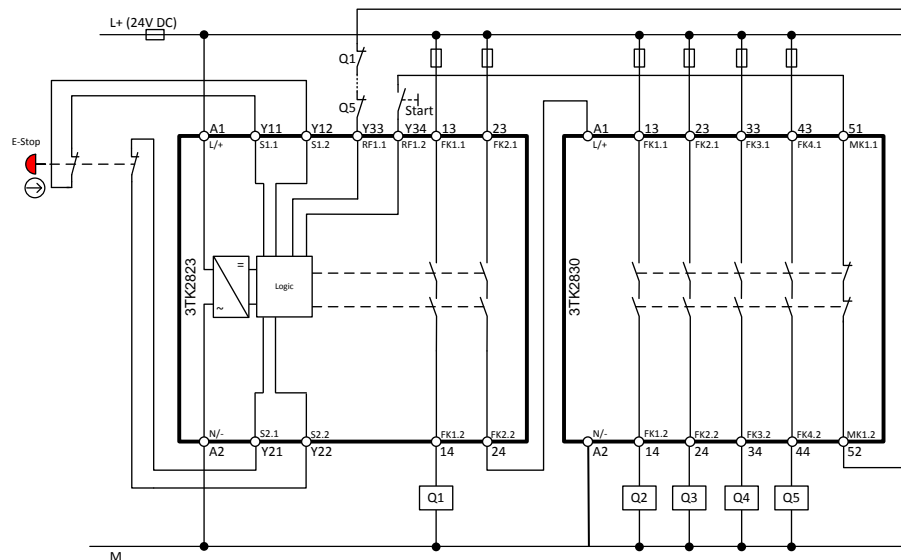
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### 2.12.2 Emergency stop monitoring with contact expansion

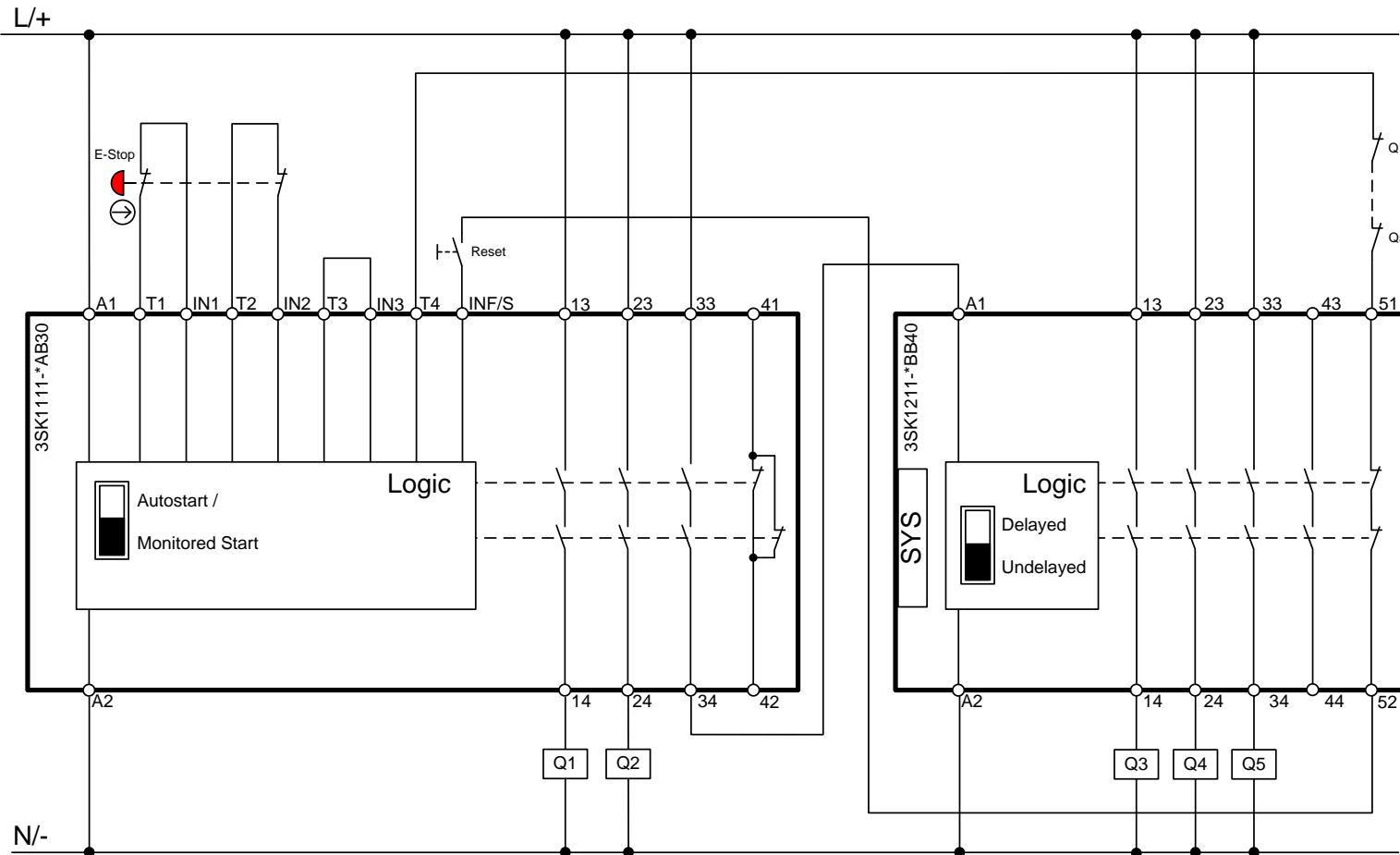
#### Example: 3TK2823 + 3TK2830

Safety function	Configuration
Emergency stop monitoring with contact expansion SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>2 single channels</li> <li>startup test deactivated</li> </ul>

#### Wiring diagram 3TK28

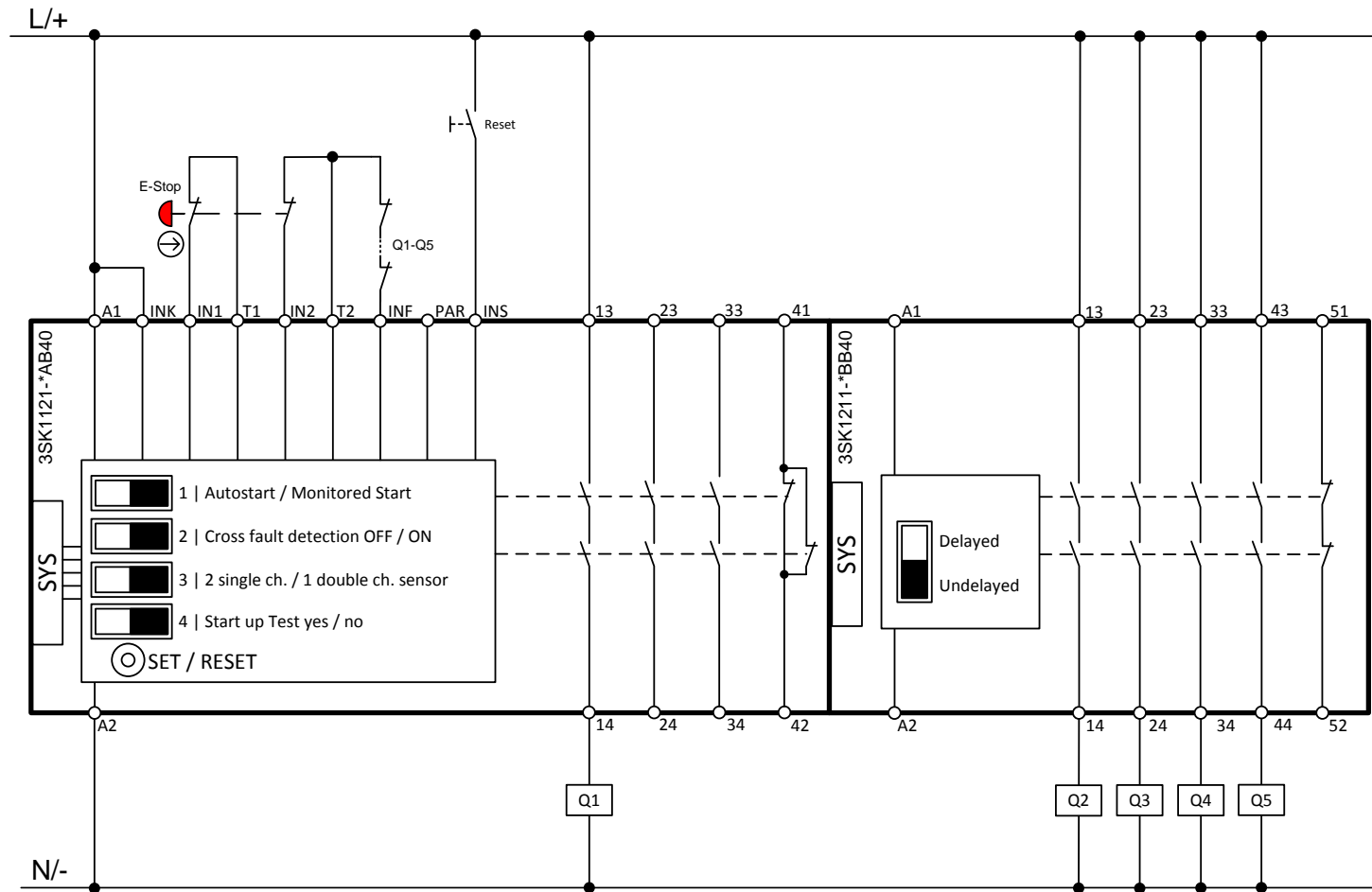


**Wiring diagram 3SK1 Standard**



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**Wiring diagram 3SK1 Advanced**



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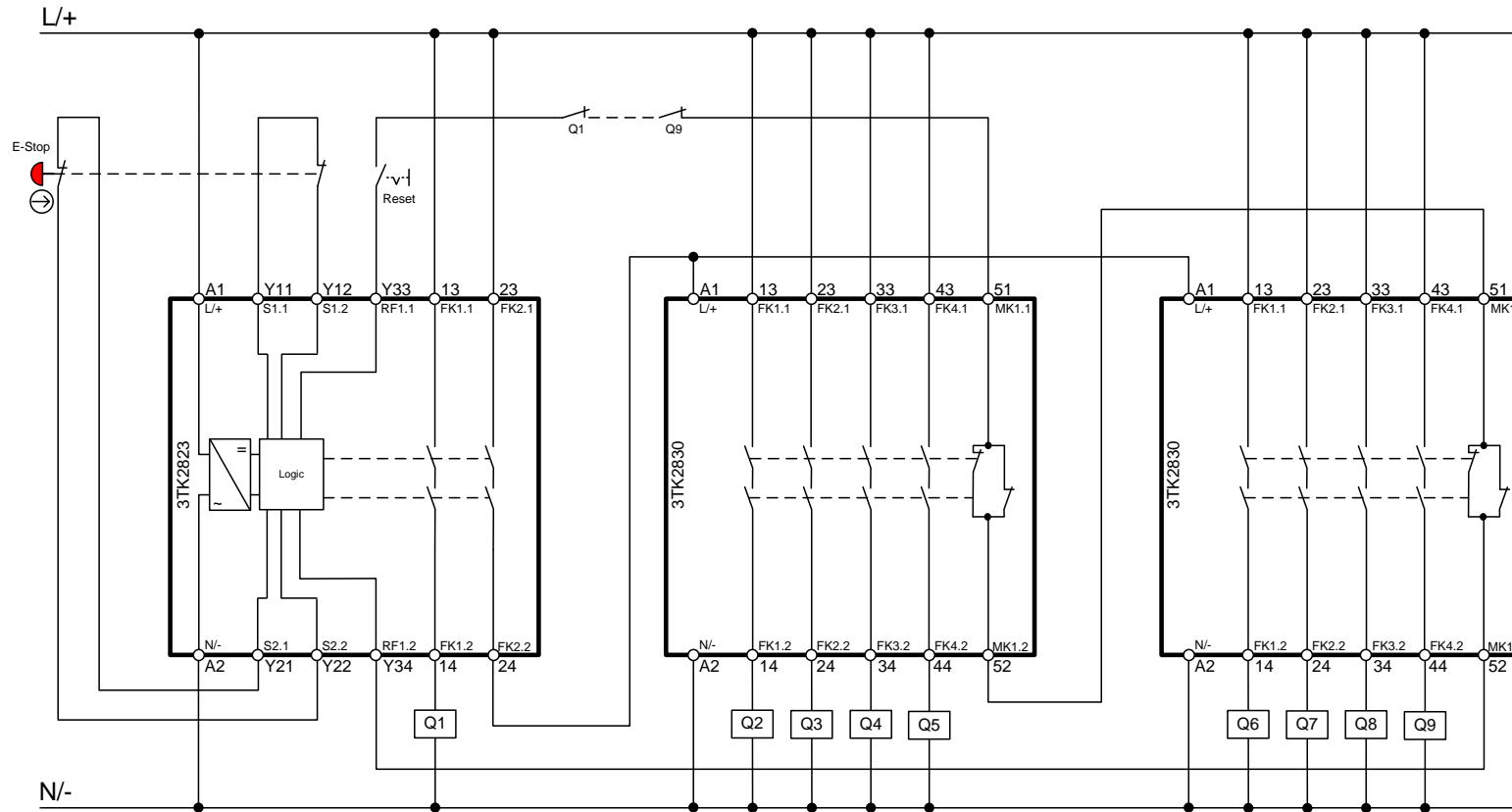
**Note** In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

### 2.12.3 Emergency stop monitoring with several contact expansions

#### Example: 3TK2823 + 3TK2830 + 3TK2830

Safety function	Configuration
Emergency stop monitoring with contact expansions SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"><li>• monitored start</li><li>• cross-circuit detection activated</li><li>• 1x2-channel</li><li>• startup test deactivated</li></ul>

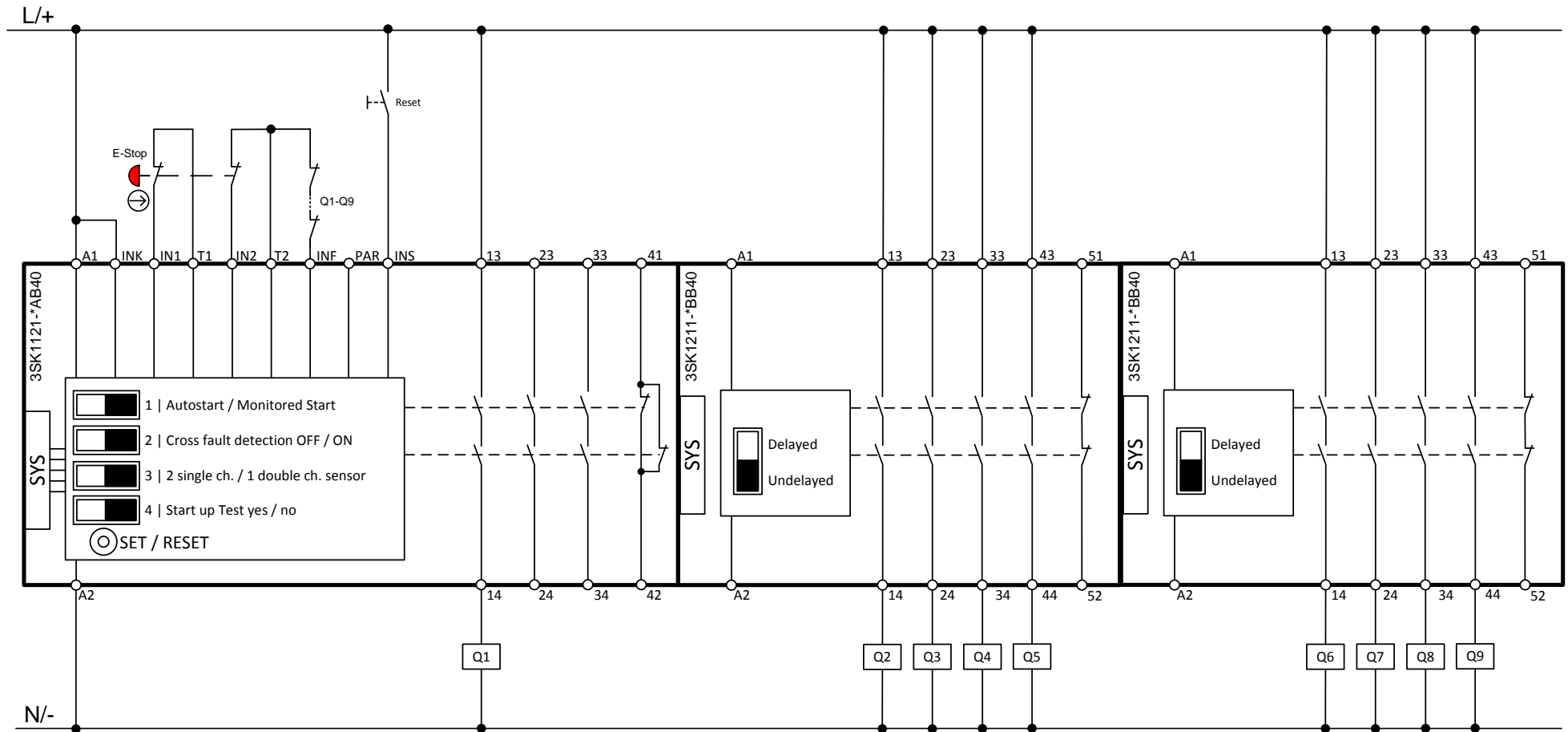
**Wiring diagram 3TK28**



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**Wiring diagram 3SK1 Advanced**



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**Note**

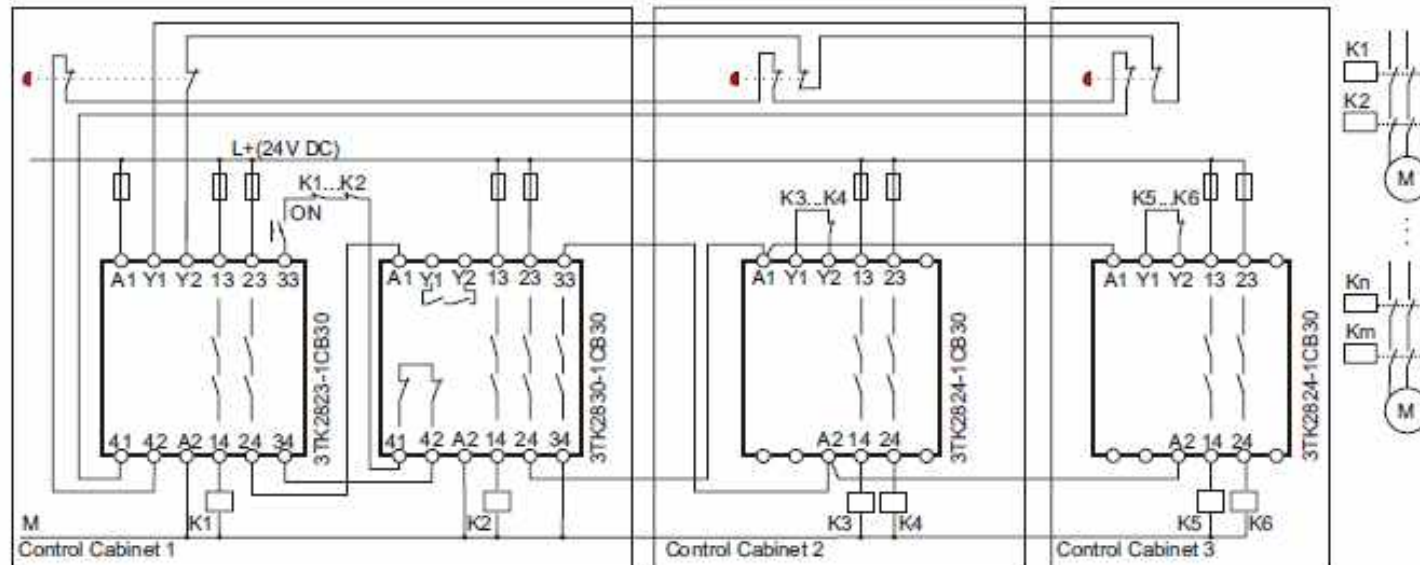
In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

### 2.12.4 Emergency stop monitoring with peripheral contact expansions

#### Example: 3TK2823 + 3TK2830 + 3TK2824 + 3TK2824

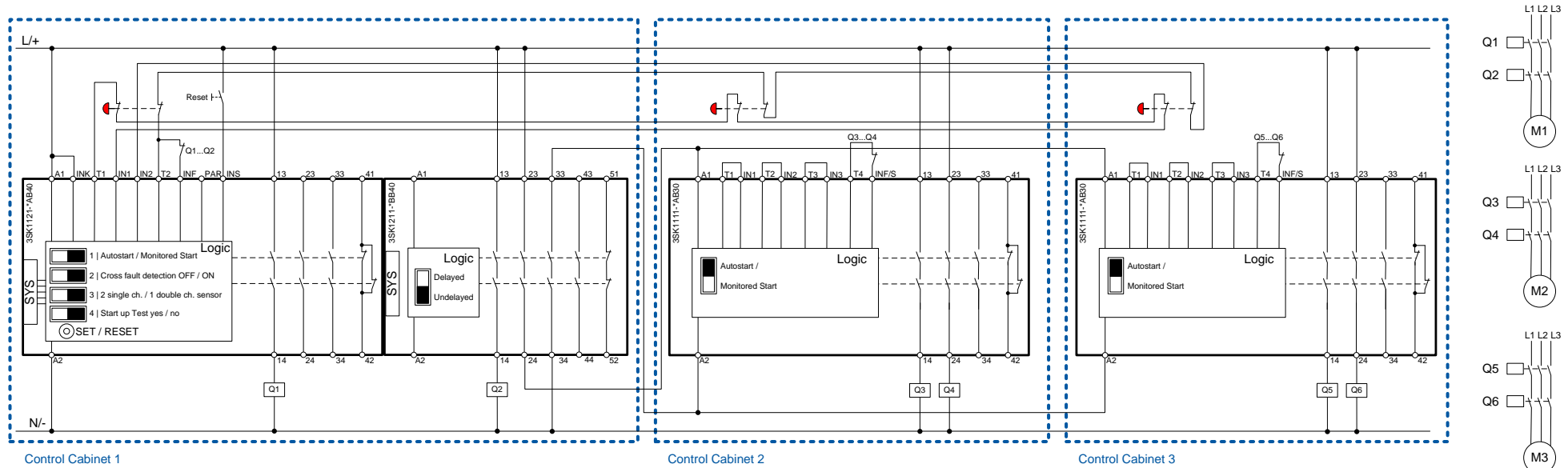
Safety function	Configuration
Emergency stop monitoring spread over 3 control cabinets	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>1x2-channel</li> <li>startup test deactivated</li> </ul>
SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	

#### Wiring diagram 3TK28



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**Wiring diagram 3SK1 Advanced**



**Note**

In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 2.13 3TK2824-..B.0

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Comments
3TK2824-1CB30	3SK1111-1AB30	3SK1121-1AB40	Screw-type
3TK2824-2CB30	3SK1111-2AB30	3SK1121-1AB40	Push-In
3TK2824-1BB40	3SK1111-1AB30	3SK1121-2AB40	Screw-type
3TK2824-2BB40	3SK1111-2AB30	3SK1121-2AB40	Push-In

### Terminal marking

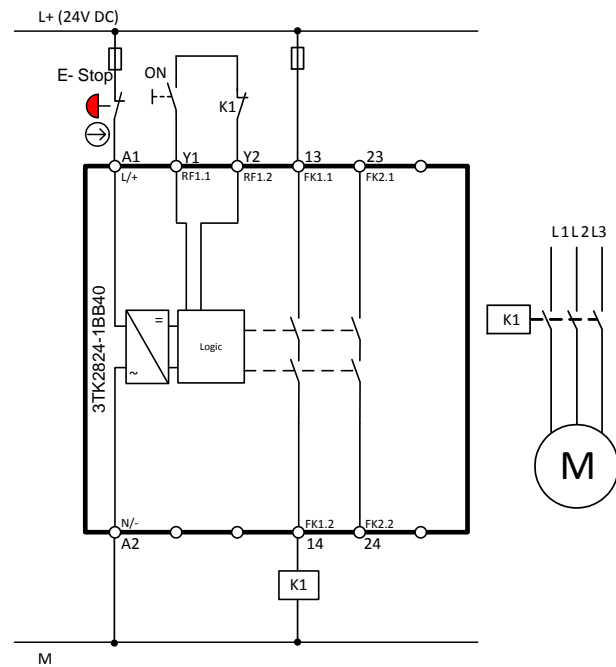
3TK2824	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
--	T1/IN1	T1/IN1	Channel 1
--	T2/IN2	T2/IN2	Channel 2
--	T3/IN3	DIP switch	Channel 2 for use of OSSDs
Y1/Y2	T4/INF/S	INS	Reset button
Y1/Y2	T4/INF/S	T2/INF	Feedback circuit
--	--	INK	Cascading input
--	--	PAR	Configuration input for NO/NC evaluation
13/14	13/14	13/14	Output circuit (NO)
23/24	23/24	23/24	Output circuit (NO)
--	33/34	33/34	Output circuit (NO)
--	41/42	41/42	Signaling circuit (NC)

### 2.13.1 Emergency stop monitoring (1 ch.)

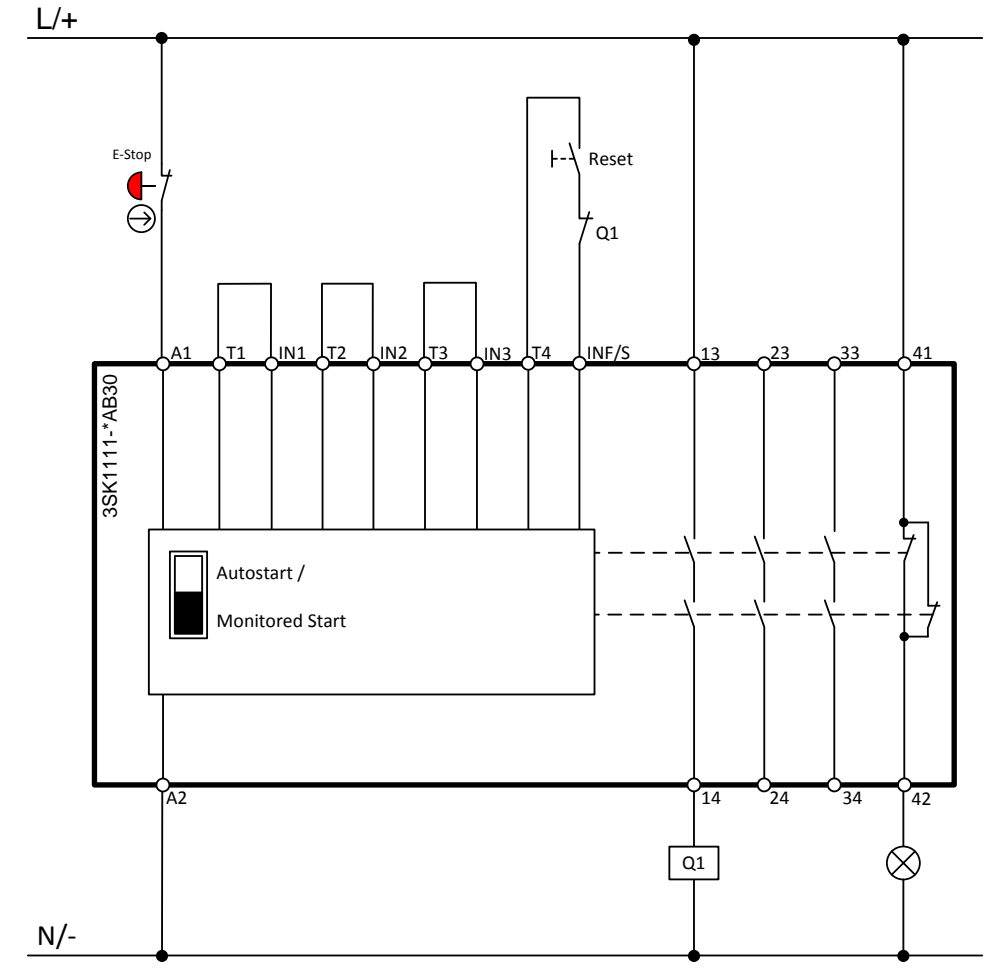
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>• monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (2x1 channel)</li> <li>• (startup test deactivated)</li> </ul>

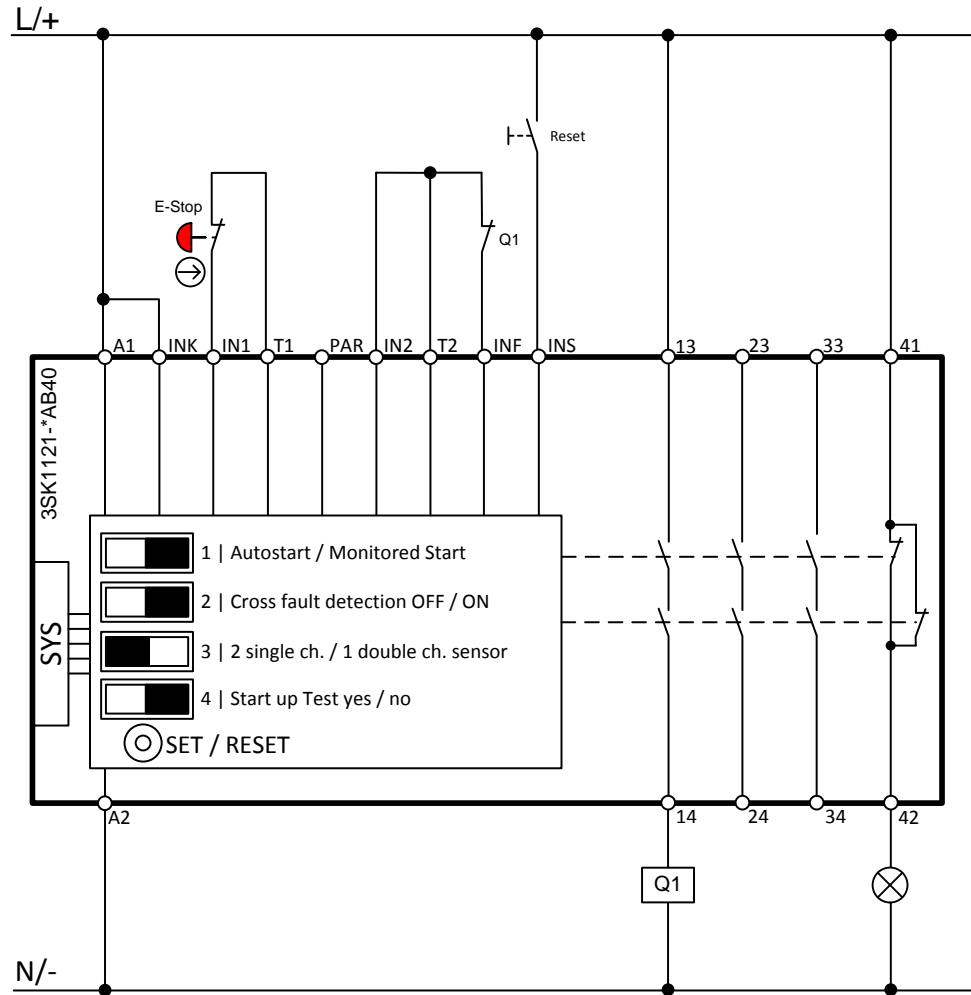
#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Standard



**Wiring diagram 3SK1 Advanced**



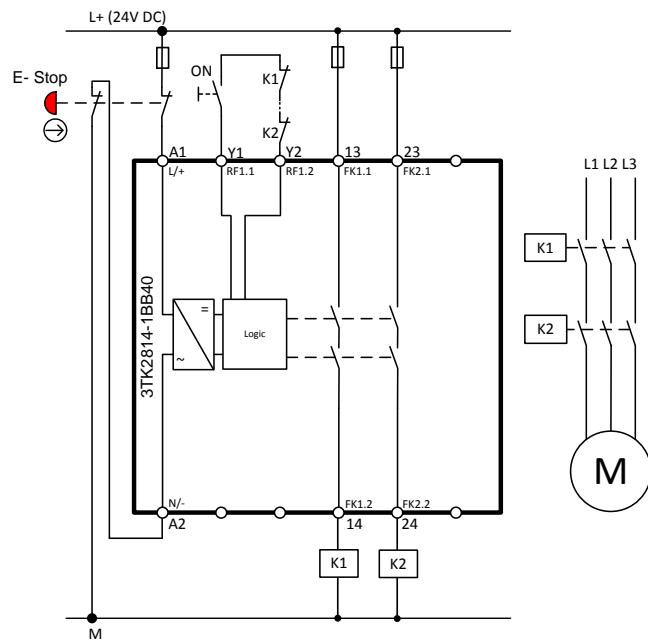
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### 2.13.2 Emergency stop monitoring (2 ch.)

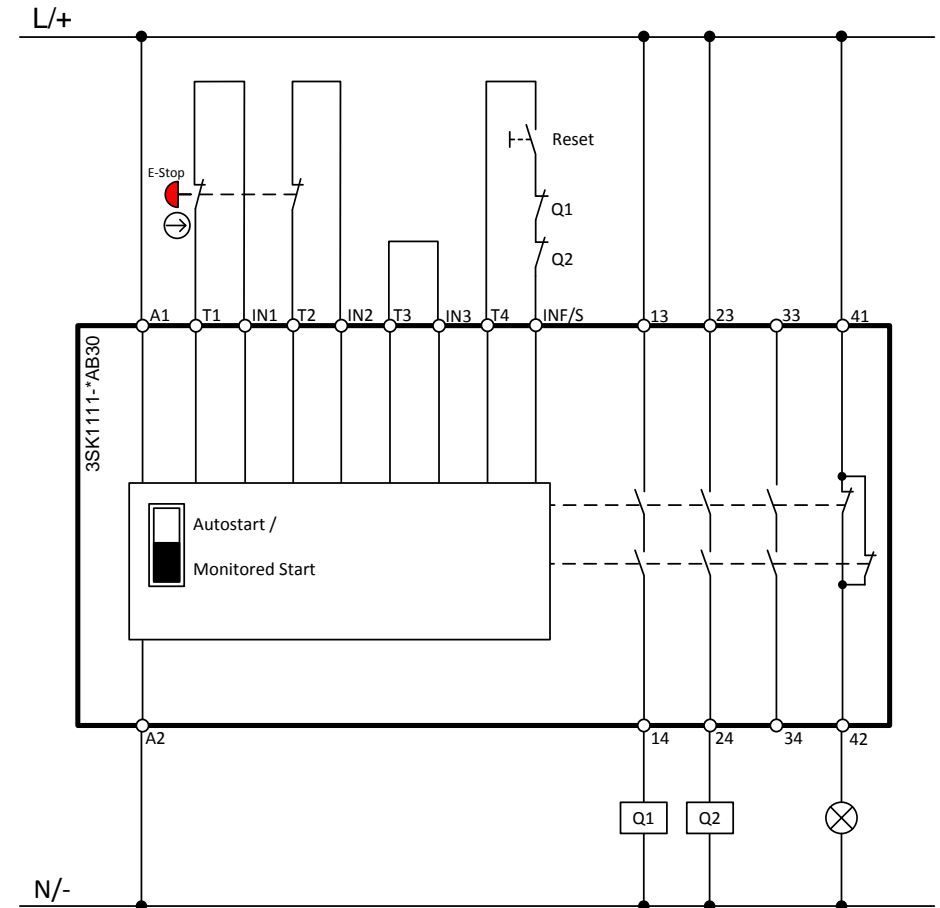
#### Description of safety function and configuration

Safety function 3TK28 (3SK1)	Configuration 3SK1 (Advanced)
Emergency stop monitoring SIL 1 (SIL 3) (IEC 62061) PL c (PL e) (ISO 13849-1) Stopp-Kategorie 0 (EN 60204-1) DC = 0% (99%)	<ul style="list-style-type: none"> <li>• Monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (1x2-channel)</li> <li>• (startup test deactivated)</li> </ul>

#### Wiring diagram 3TK28

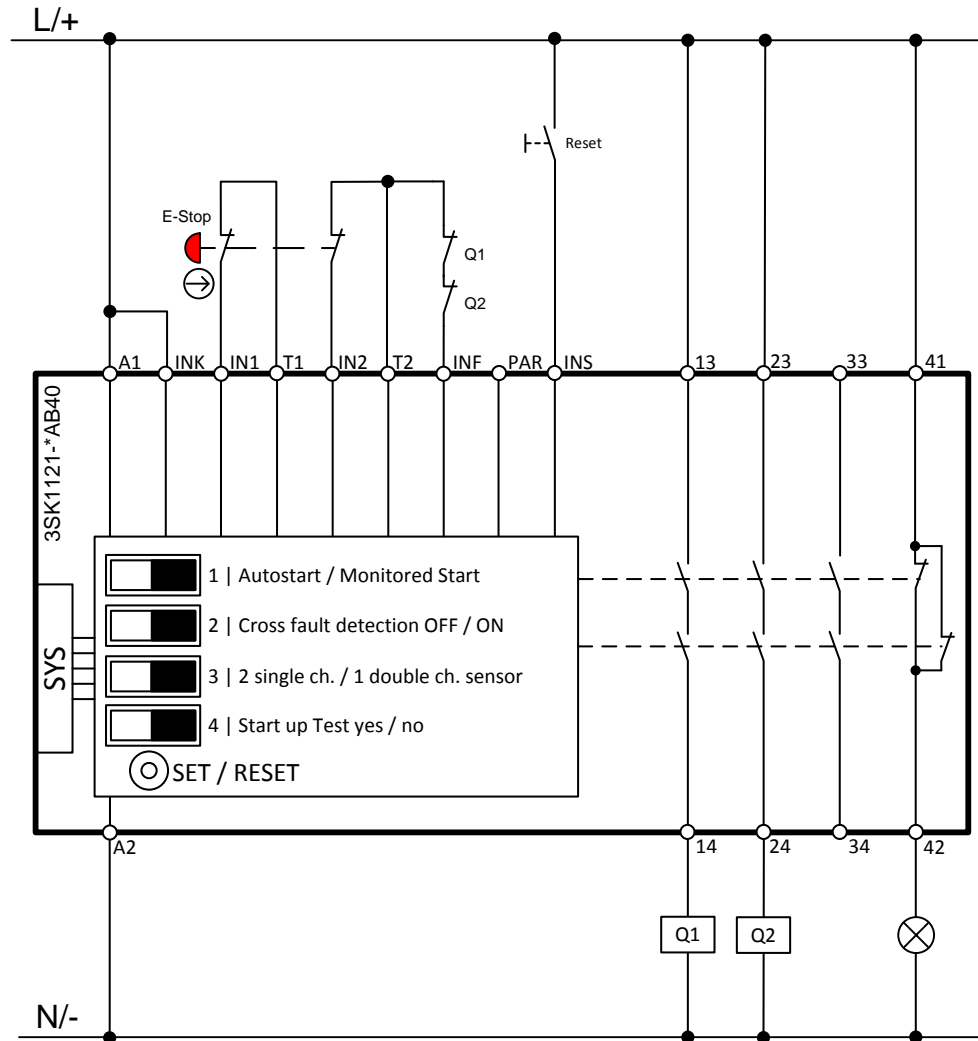


#### Wiring diagram 3SK1 Standard



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**Wiring diagram 3SK1 Advanced**



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## 2.14 3TK2824-.A.20

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Comments
3TK2824-1AJ20	3SK1111-1AW20	3SK1121-1AB40 *	Screw-type
3TK2824-1AL20	3SK1111-1AW20	3SK1121-1AB40 *	Screw-type
3TK2824-2AJ20	3SK1111-2AW20	3SK1121-2AB40 *	Push-In
3TK2824-2AL20	3SK1111-2AW20	3SK1121-2AB40 *	Push-In

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

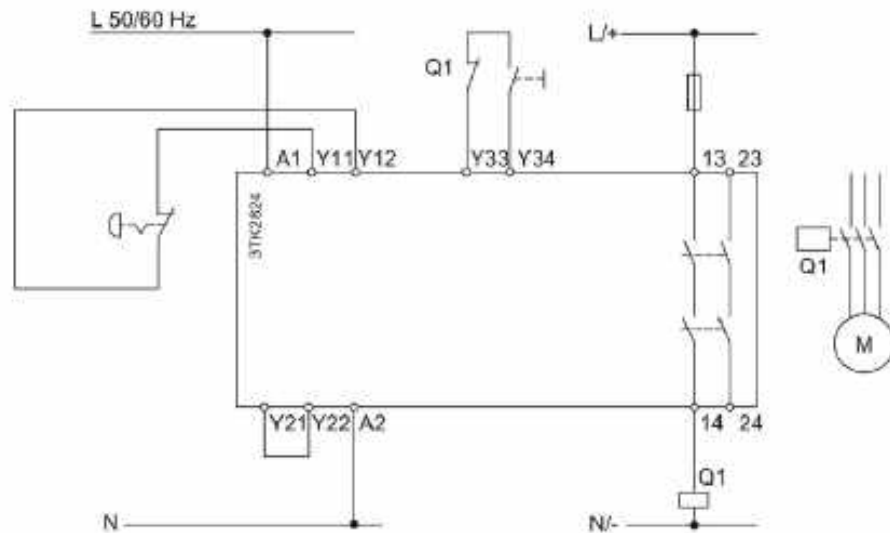
3TK2823	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
Y11/Y12	T1/IN1	T1/IN1	Channel 1
Y21/Y22	T2/IN2	T2/IN2	Channel 2
--	T3/IN3	DIP switch	Channel 2 for use of OSSDs
Y33/Y34	T4/INF/S	INS	Reset button
Y33/Y34	T4/INF/S	T2/INF	Feedback circuit
--	--	INK	Cascading input
Y43/Y44	DIP switch	DIP switch	Configuration input for activation type
--	--	PAR	Configuration input for NO/NC evaluation
13/14	13/14	13/14	Output circuit (NO)
23/24	23/24	23/24	Output circuit (NO)
--	33/34	33/34	Output circuit (NO)
--	41/42	41/42	Signaling circuit (NC)

### 2.14.1 Emergency stop monitoring (1 ch.)

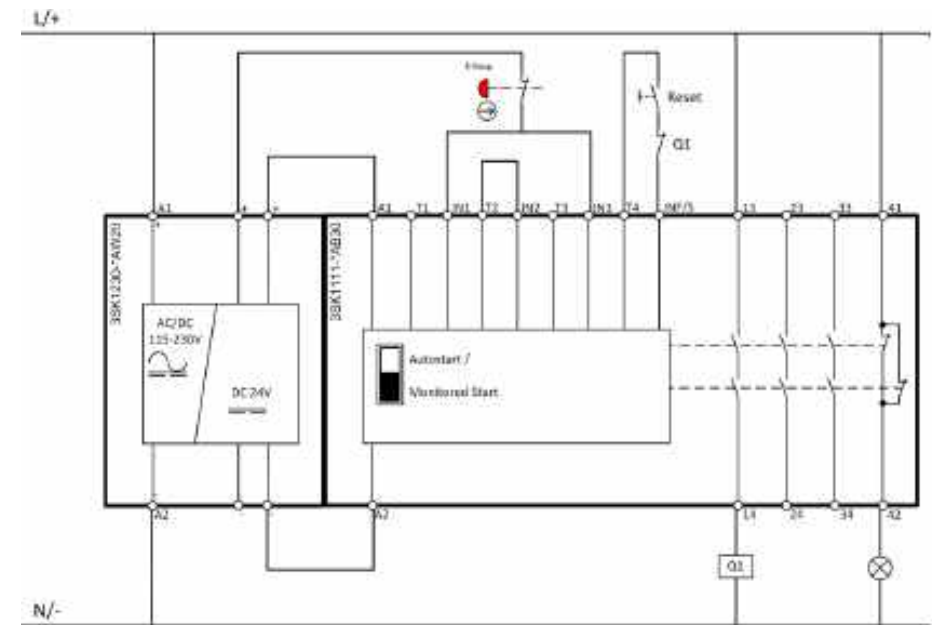
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>• monitored start</li> <li>• (cross-circuit detection activated)</li> <li>• (2x1 channel)</li> <li>• (startup test deactivated)</li> </ul>

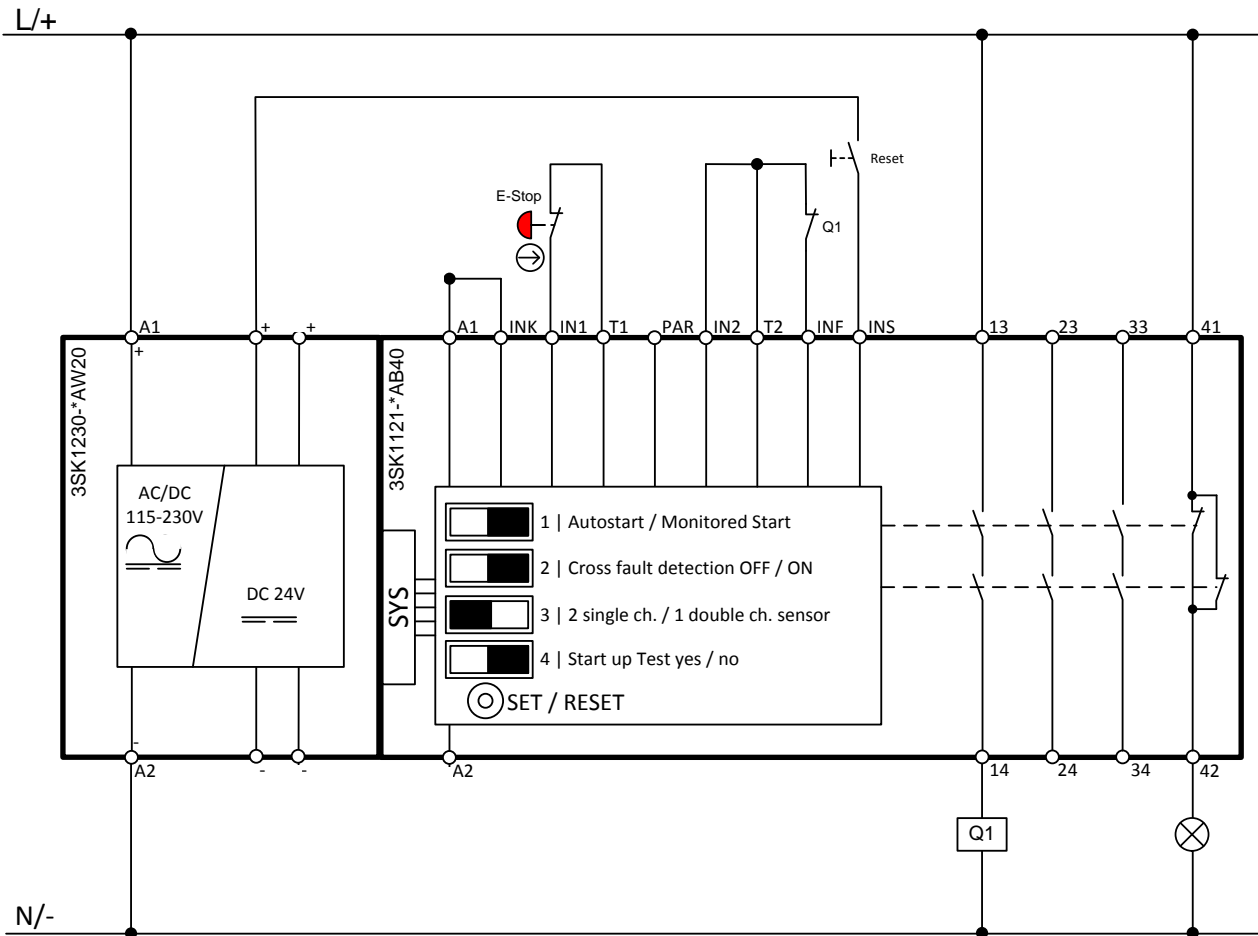
#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Standard



**Wiring diagram 3SK1 Advanced**



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**Note**

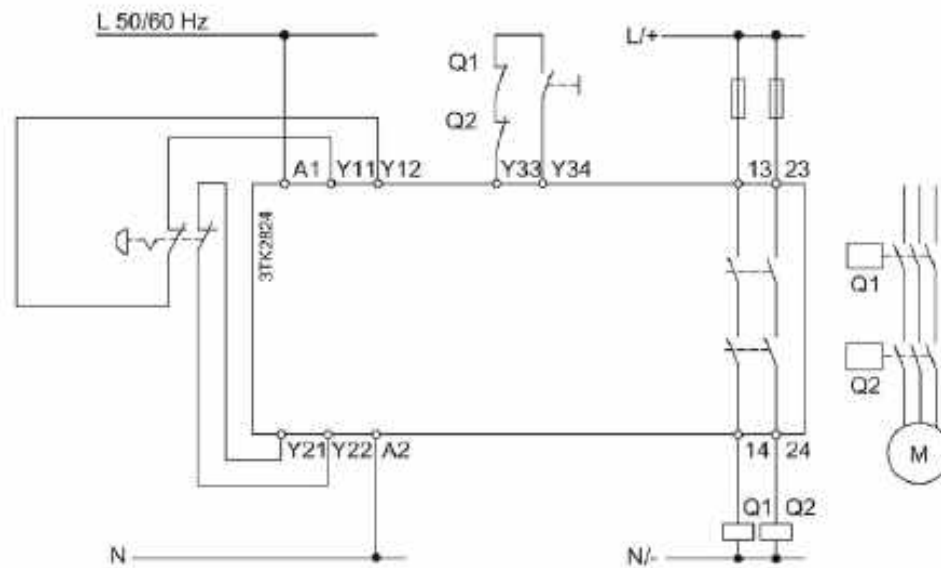
In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 2.14.2 Emergency stop monitoring (2 ch.)

### Description of safety function and configuration

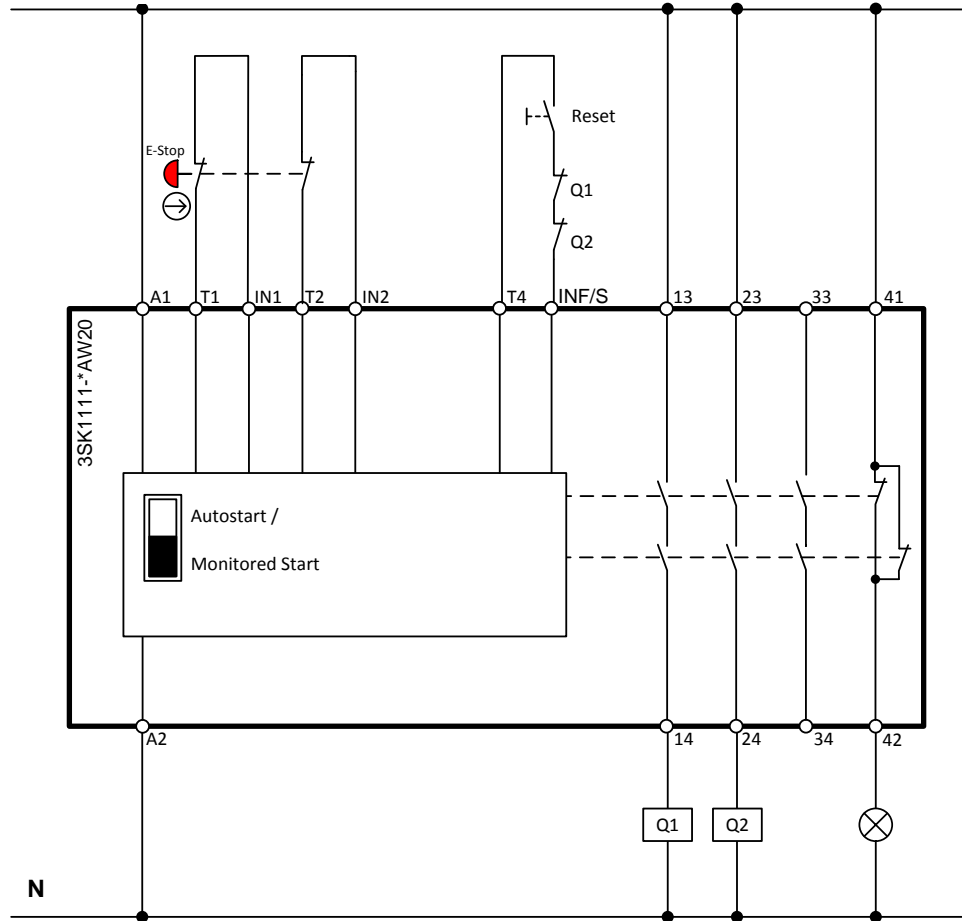
Safety function	Configuration
Emergency stop monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>monitored start</li> <li>(cross-circuit detection activated)</li> <li>(2x1 channel)</li> <li>(startup test deactivated)</li> </ul>

### Wiring diagram 3TK28



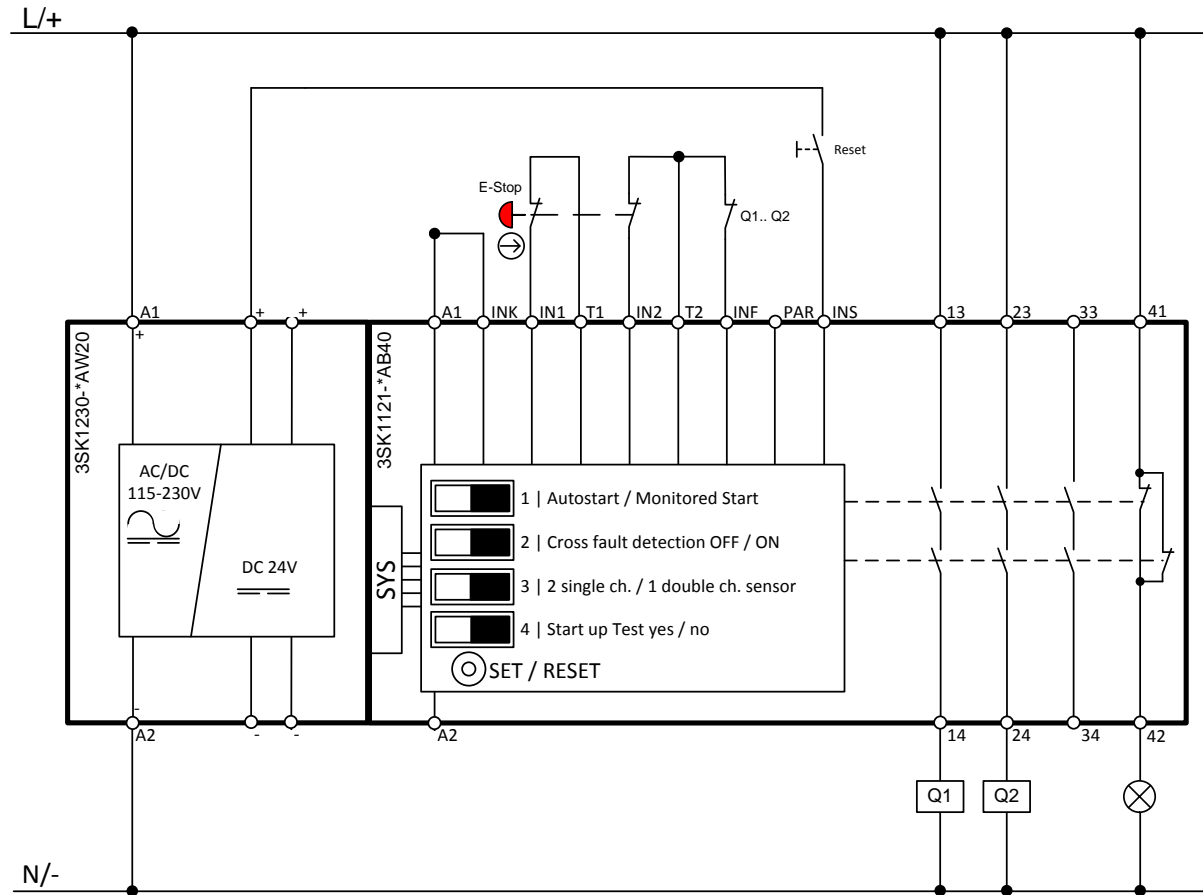
**Wiring diagram 3SK1 Standard**

110 – 240 V AC/DC



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**Wiring diagram 3SK1 Advanced**



**Note**

In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 2.15 3TK2825

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Comments
3TK2825-1AB20	3SK1111-1AB30	-	Screw-type
3TK2825-1AJ20	3SK1111-1AW20	3SK1121-1AB40 *	Screw-type
3TK2825-1AL20	3SK1111-1AW20	3SK1121-1AB40 *	Screw-type
3TK2825-1BB40	3SK1111-1AB30	3SK1121-1AB40	Screw-type
3TK2825-2AB20	3SK1111-2AB30	-	Push-In
3TK2825-2AJ20	3SK1111-2AW20	3SK1121-2AB40 *	Push-In
3TK2825-2AL20	3SK1111-2AW20	3SK1121-2AB40 *	Push-In
3TK2825-2BB40	3SK1111-2AB30	3SK1121-2AB40	Push-In

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

3TK2825	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
Y10/Y11	--	--	Channel 1 (1 ch.)
Y11/Y12	T1/IN1	T1/IN1	Channel 1 (2 ch.)
Y21/Y22	T2/IN2	T2/IN2	Channel 2 (2 ch.)
--	T3/IN3	<i>DIP switch</i>	Channel 2 for use of OSSDs
Y33/Y34	T4/INF/S	INS	Reset button
Y33/Y34	T4/INF/S	T2/INF	Feedback circuit
--	--	INK	Cascading input
Y43/Y44	<i>DIP switch</i>	<i>DIP switch</i>	Configuration input for activation type
--	--	PAR	Configuration input for NO/NC evaluation
13/14	13/14	13/14	Output circuit (NO)
23/24	23/24	23/24	Output circuit (NO)
33/34	33/34	33/34	Output circuit (NO)
41/42	41/42	41/42	Signaling circuit (NC)
51/52	--	--	Signaling circuit (NC)

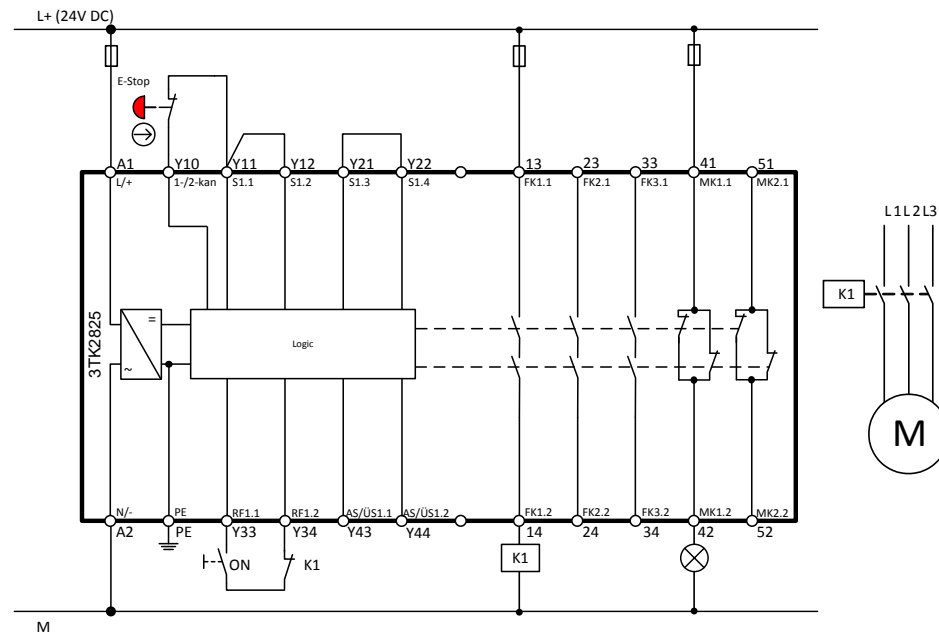


### 2.15.1 Emergency stop monitoring (1 ch.)

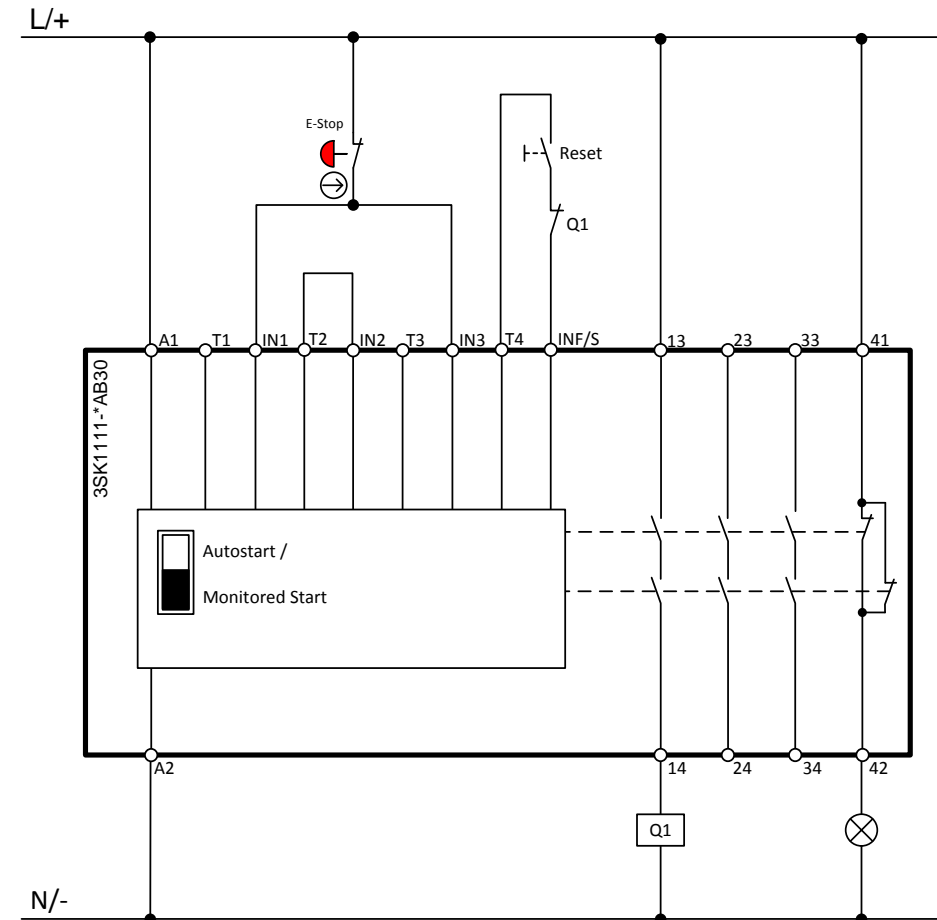
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>monitored start</li> <li>(cross-circuit detection activated)</li> <li>(2x1 channel)</li> <li>(startup test deactivated)</li> </ul>

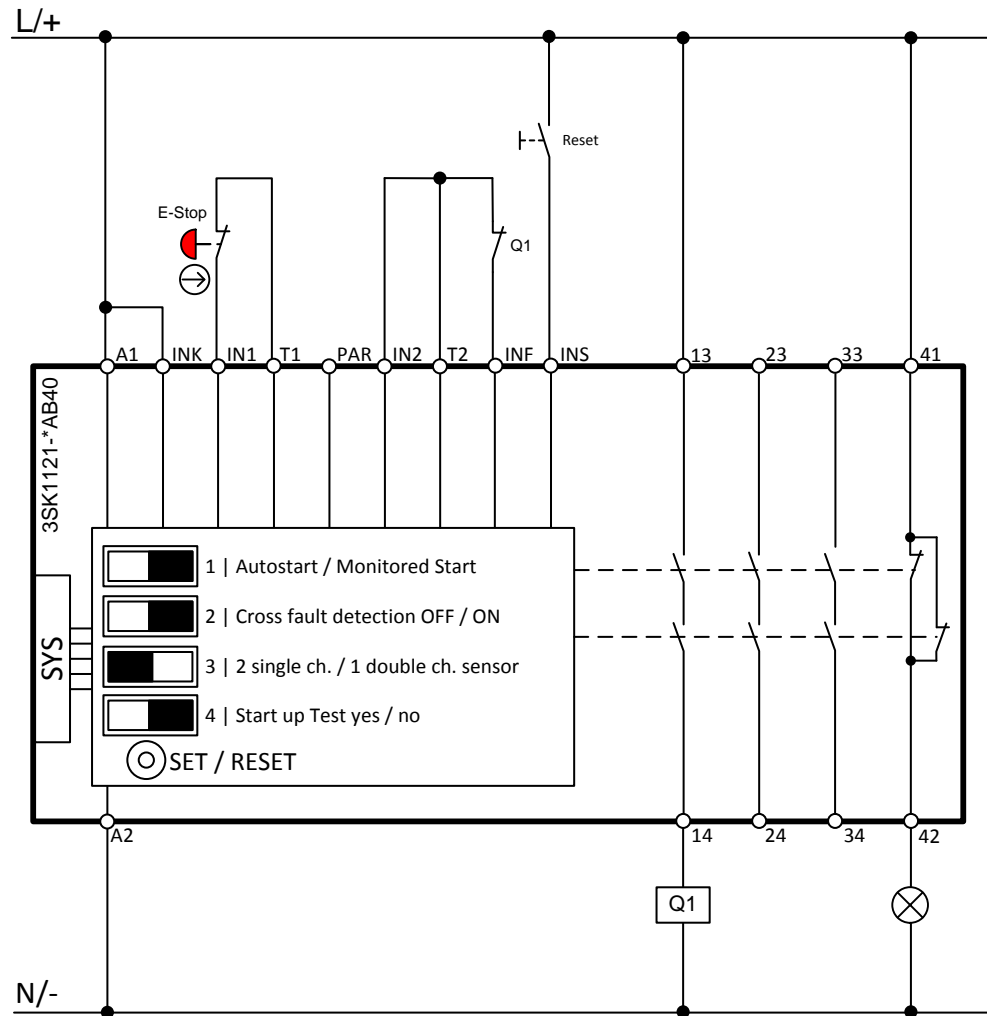
#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Standard



**Wiring diagram 3SK1 Advanced**



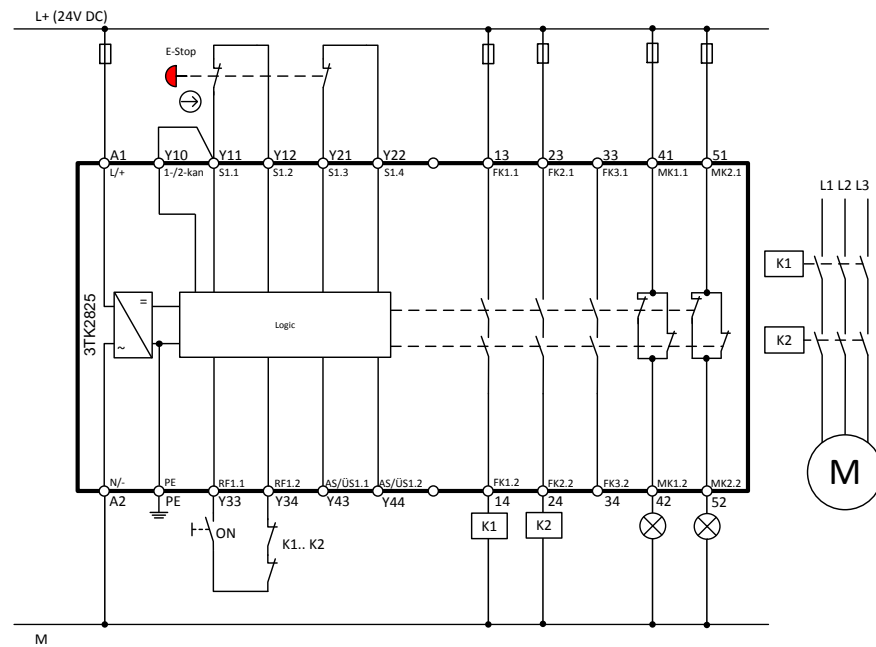
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### 2.15.2 Emergency stop monitoring (2 ch.)

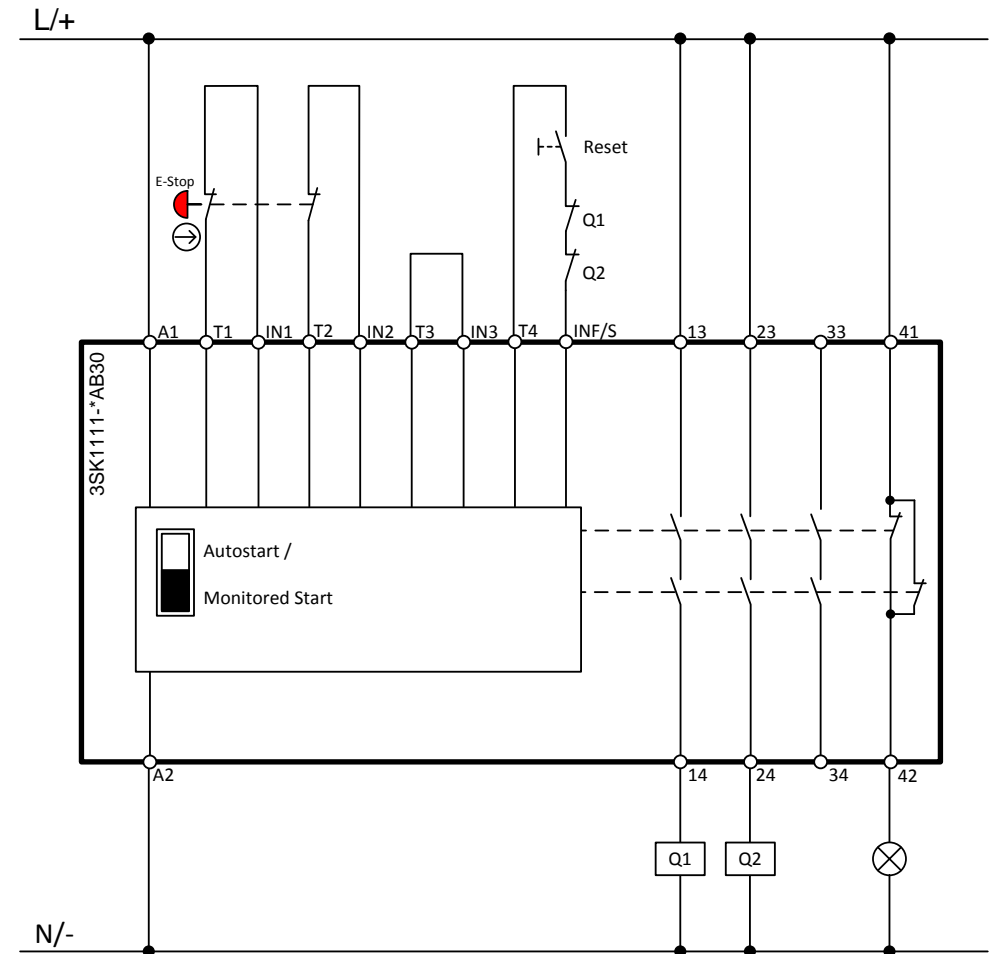
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>monitored start</li> <li>(cross-circuit detection activated)</li> <li>(1x2 channels)</li> <li>(startup test deactivated)</li> </ul>

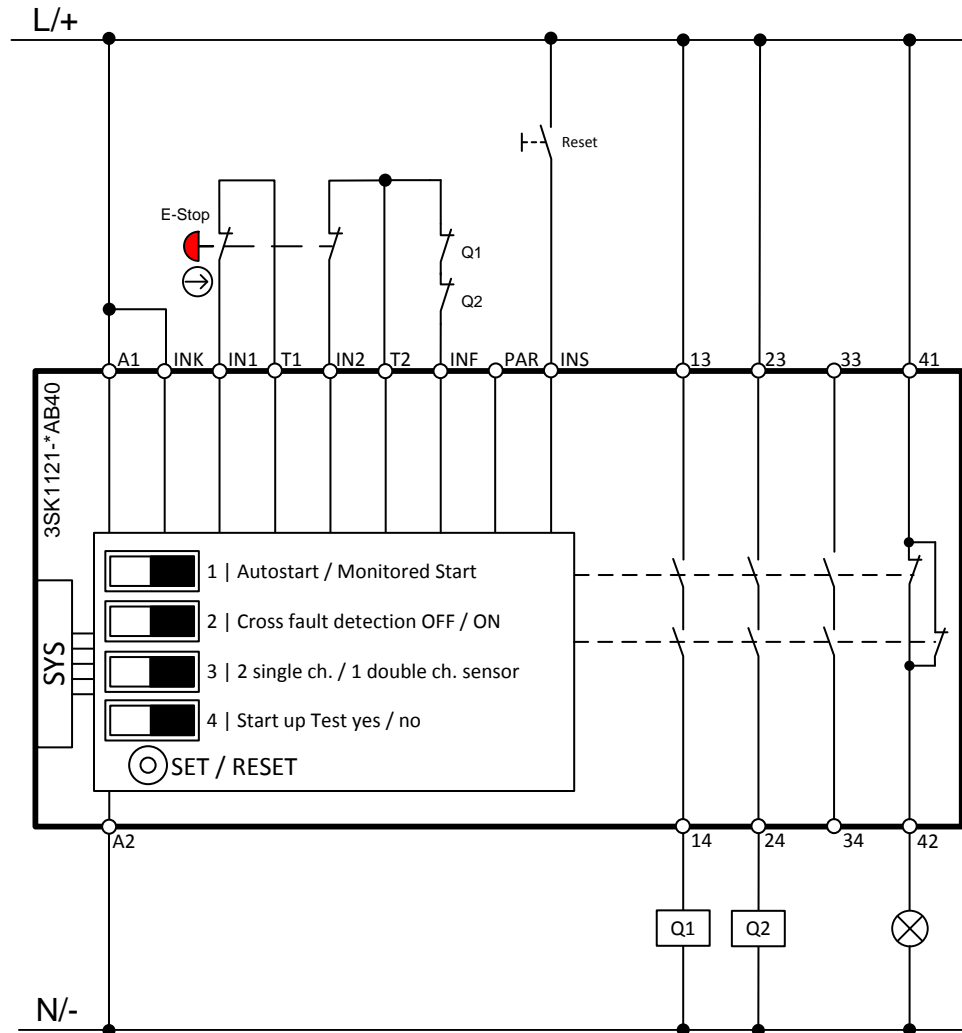
#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Standard



**Wiring diagram 3SK1 Advanced**

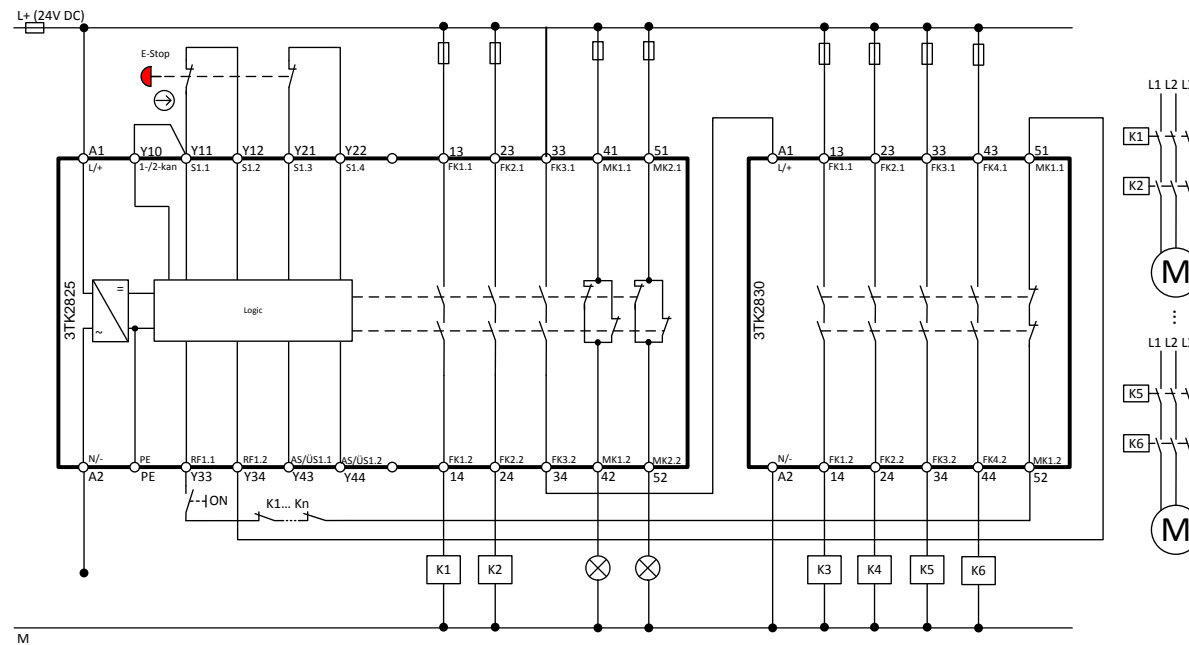


### 2.15.3 Emergency stop monitoring with contact expansion

#### Example: 3TK2825 + 3TK2830

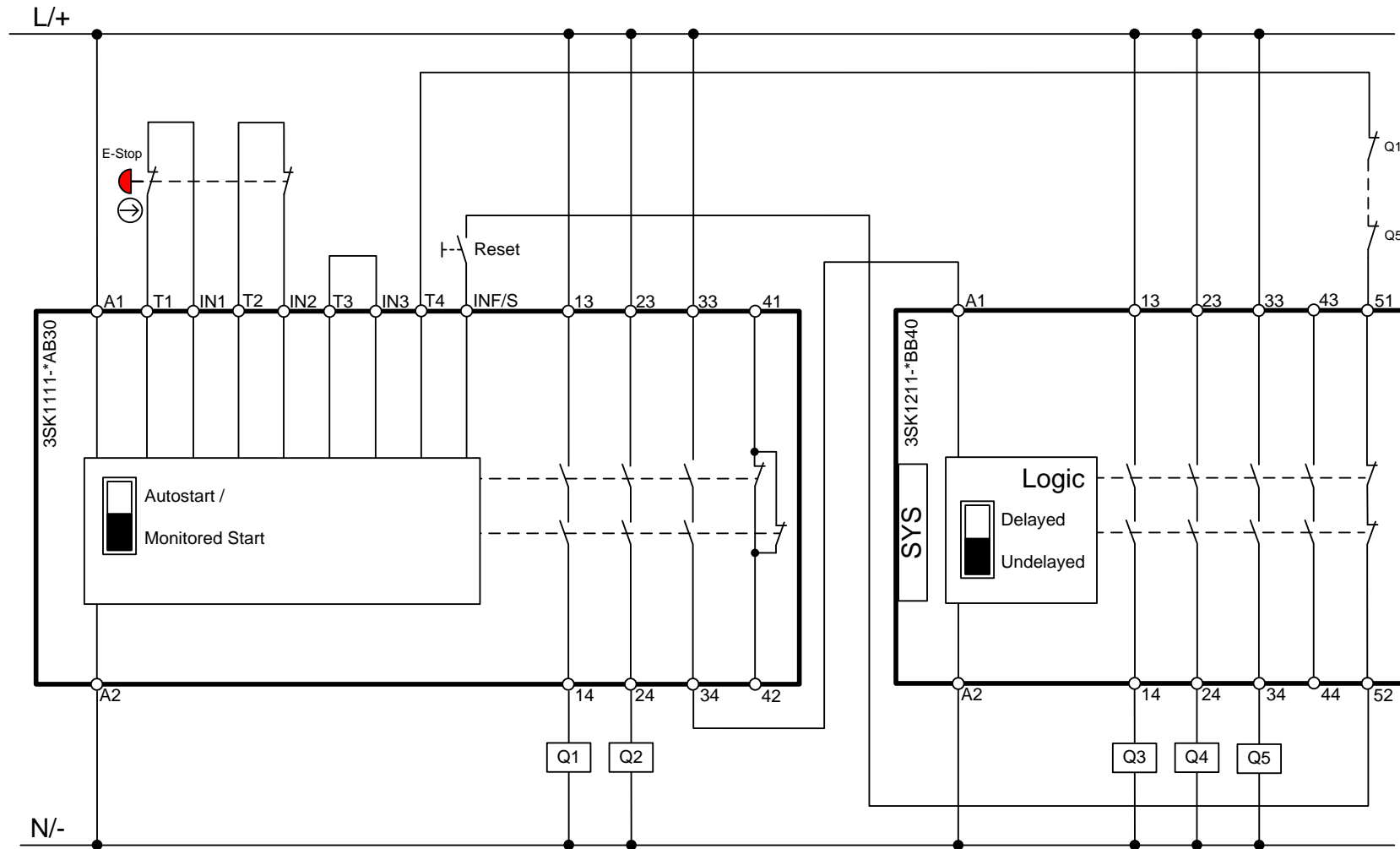
Safety function	Configuration
Emergency stop monitoring with contact expansion SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>1x2 channels</li> <li>startup test deactivated</li> </ul>

#### Wiring diagram 3TK28



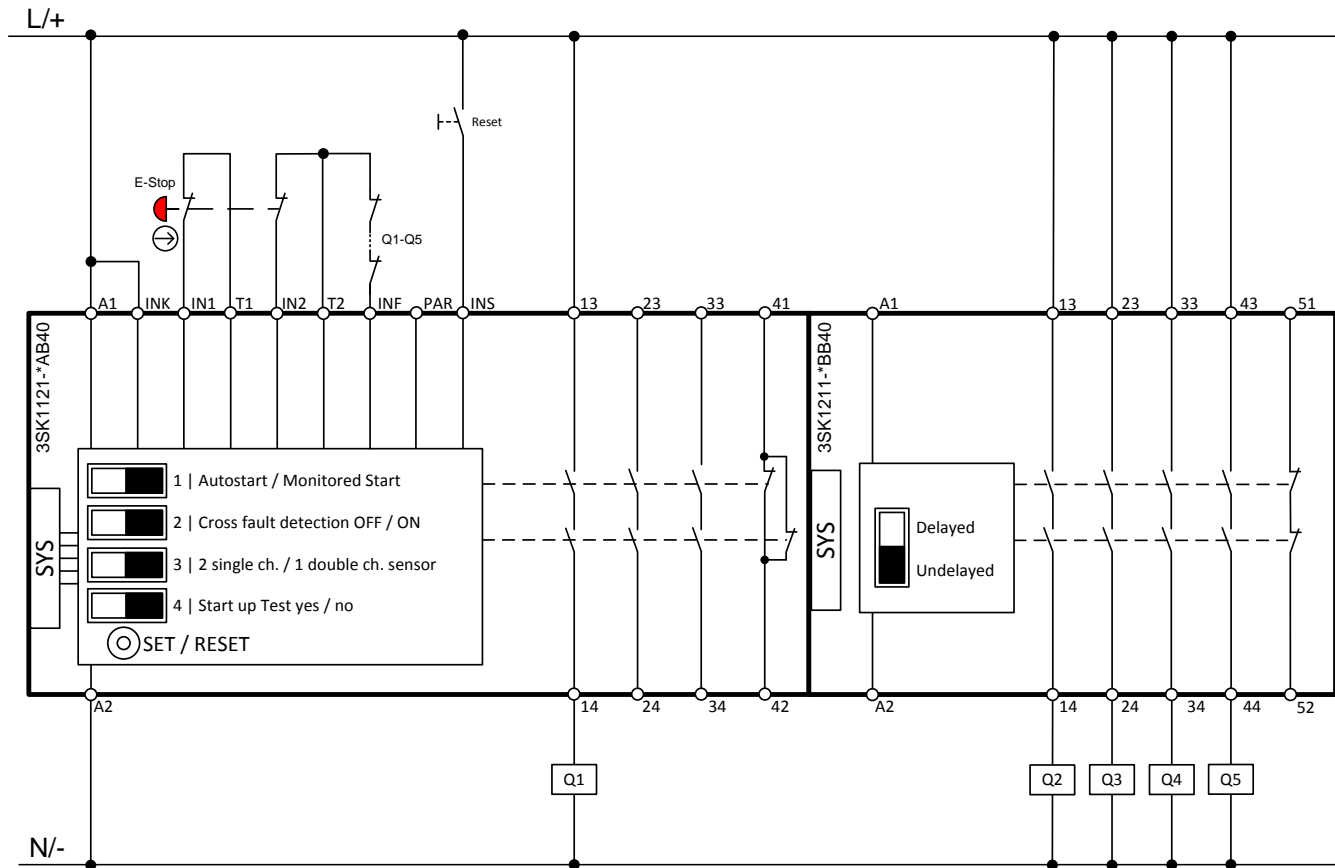
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**Wiring diagram 3SK1 Standard**



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**Wiring diagram 3SK1 Advanced**



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**Note**

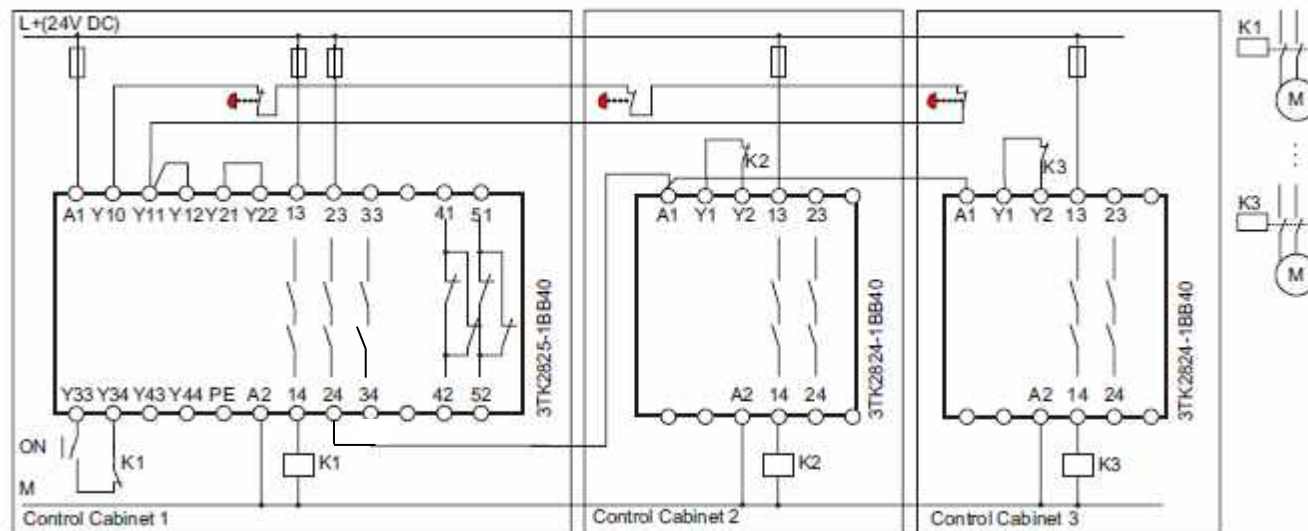
In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 2.15.4 Emergency stop monitoring with peripheral contact expansions

### Example: 3TK2825 + 3TK2824 + 3TK2824

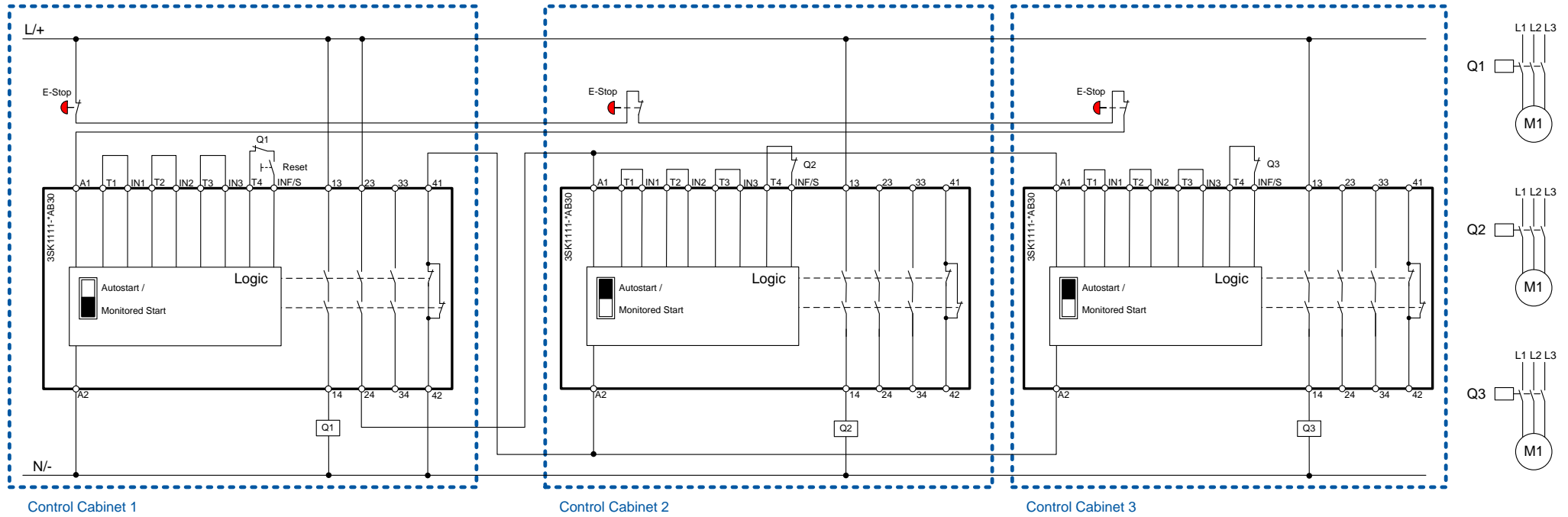
Safety function	Configuration
Emergency stop monitoring verteilt auf drei Schaltschränke SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>2x1 channel</li> <li>startup test deactivated</li> </ul>

### Wiring diagram 3TK28



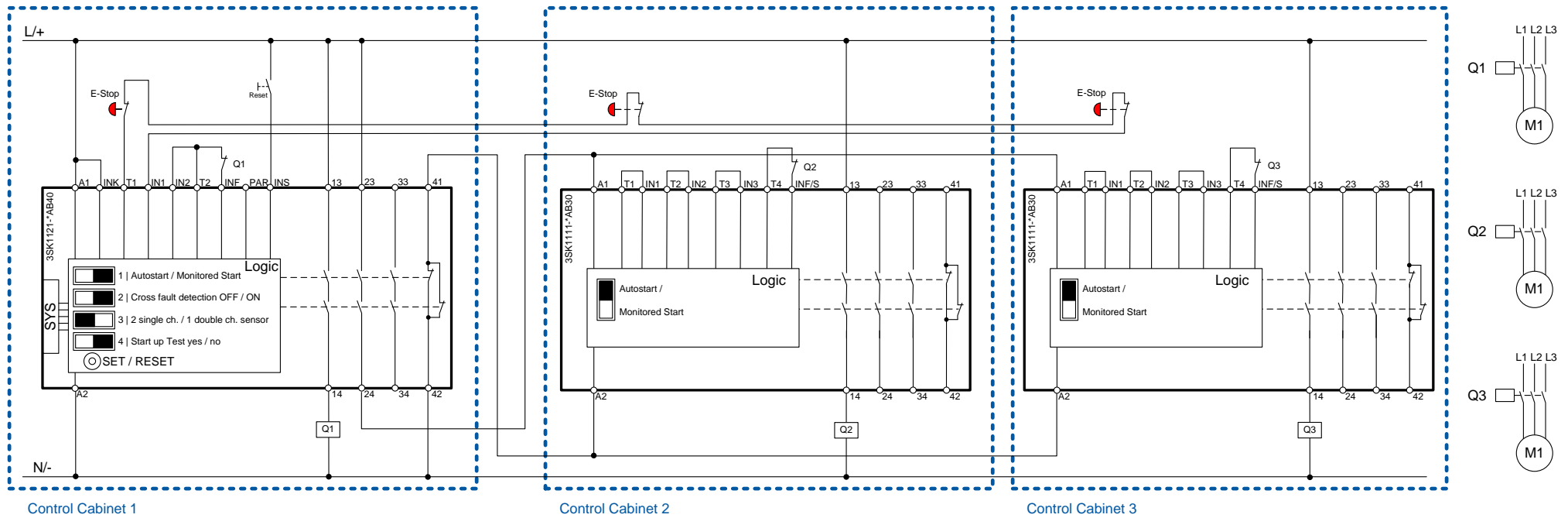


**Wiring diagram 3SK1 Standard**



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**Wiring diagram 3SK1 Advanced**



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## 2.16 3TK2827

### Corresponding order numbers

3TK28	3SK1 Advanced	Comments
3TK2827-1AB20	--	Screw-type
3TK2827-1AB21	--	Screw-type
3TK2827-1AJ20	3SK1121-1CB42 *	Screw-type
3TK2827-1AJ21	3SK1121-1CB41 *	Screw-type
3TK2827-1AL20	3SK1121-1CB42 *	Screw-type
3TK2827-1AL21	3SK1121-1CB41 *	Screw-type
3TK2827-1BB40	3SK1121-1CB42	Screw-type
3TK2827-1BB41	3SK1121-1CB41	Screw-type
3TK2827-2AB20	--	Push-In
3TK2827-2AB21	--	Push-In
3TK2827-2AJ20	3SK1121-2CB42 *	Push-In
3TK2827-2AJ21	3SK1121-2CB41 *	Push-In
3TK2827-2AL20	3SK1121-2CB42 *	Push-In
3TK2827-2AL21	3SK1121-2CB41 *	Push-In
3TK2827-2BB40	3SK1121-2CB42	Push-In
3TK2827-2BB41	3SK1121-2CB41	Push-In

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

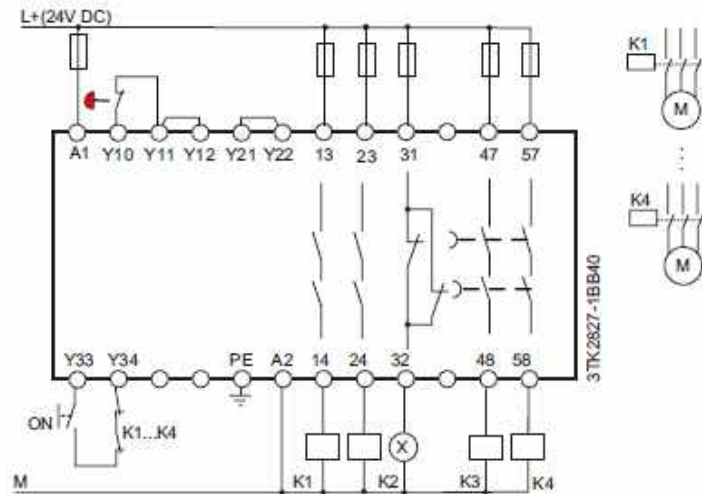
3TK2827	3SK1 Advanced	Terminal description
A1	A1	Power supply +
A2	A2	Power supply -
Y10/Y11	--	Channel 1 (1 ch.)
Y11/Y12	T1/IN1	Channel 1 (2 ch.)
Y21/Y22	T2/IN2	Channel 2 (2 ch.)
Y33/Y34	INS	Reset button
Y33/Y34	T2/INF	Feedback circuit
--	INK	Cascading input
--	PAR	Configuration input for NO/NC evaluation
13/14	13/14	Output circuit (NO)
23/24	23/24	Output circuit (NO)
47/48	37/38	Output circuit (NO, delayed)
57/58	47/48	Output circuit (NO, delayed)
31/32	--	Signaling circuit (NC)

### 2.16.1 Emergency stop monitoring (1 ch.)

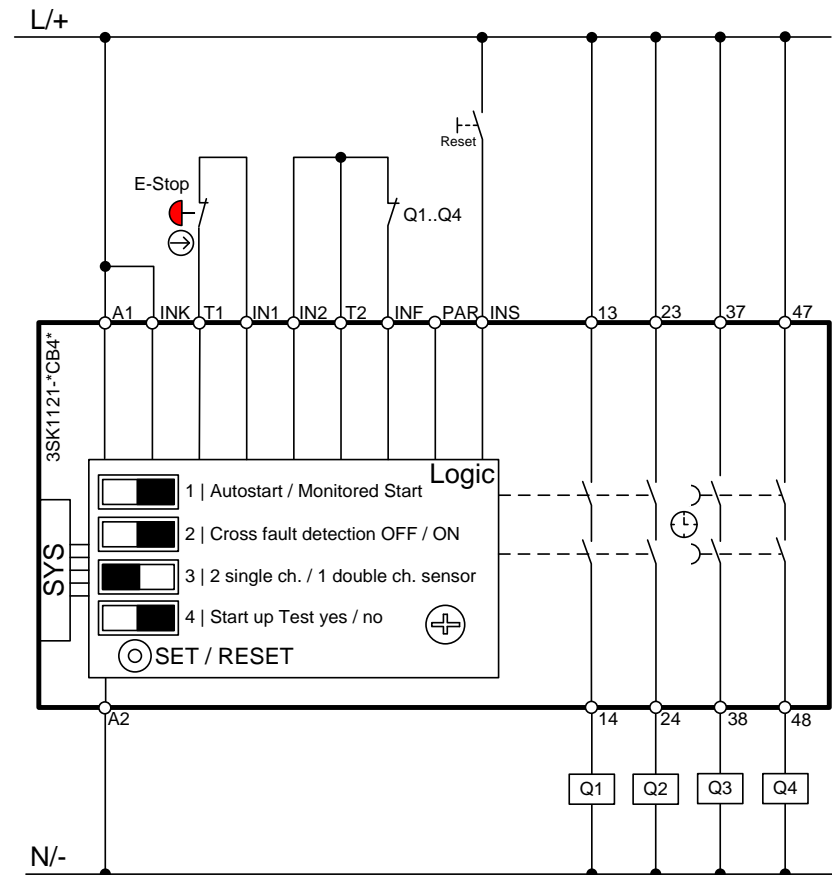
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>2x1 channel</li> <li>startup test deactivated</li> </ul>

#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Advanced



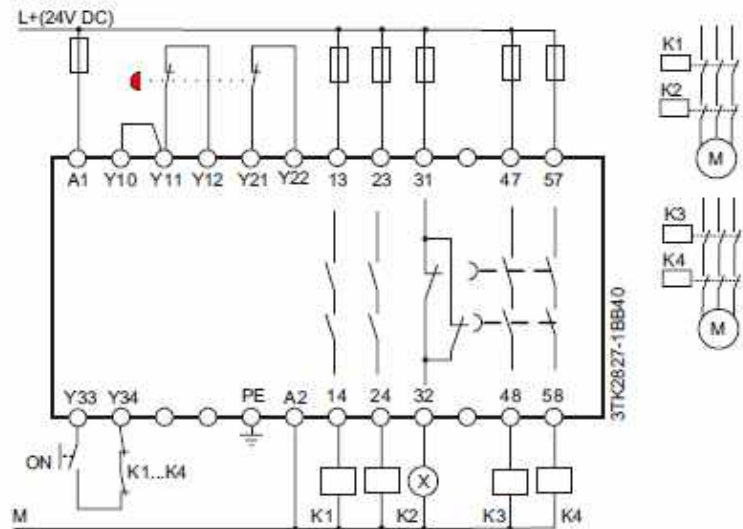
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### 2.16.2 Emergency stop monitoring (2 ch.)

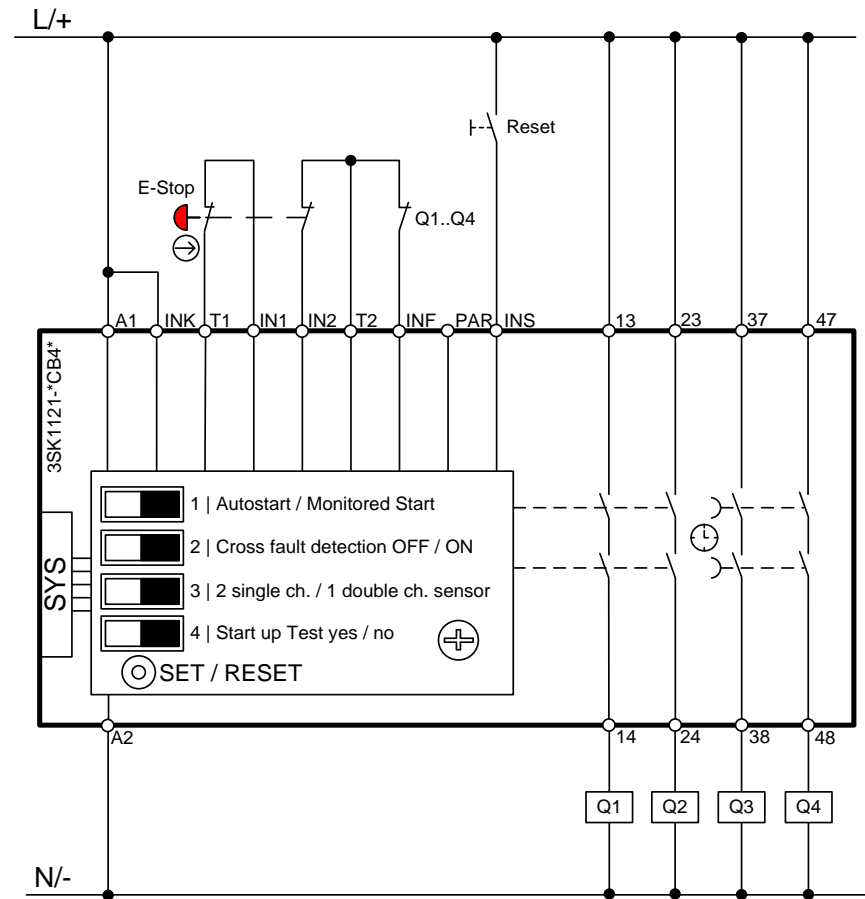
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>1x2 channel</li> <li>startup test deactivated</li> </ul>

#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Advanced



## 2.17 3TK2828

### Corresponding order numbers

3TK28	3SK1 Advanced	Comments
3TK2828-1AB20	--	Screw-type
3TK2828-1AB21	--	Screw-type
3TK2828-1AJ20	3SK1121-1CB42 *	Screw-type
3TK2828-1AJ21	3SK1121-1CB41 *	Screw-type
3TK2828-1AL20	3SK1121-1CB42 *	Screw-type
3TK2828-1AL21	3SK1121-1CB41 *	Screw-type
3TK2828-1BB40	3SK1121-1CB42	Screw-type
3TK2828-1BB41	3SK1121-1CB41	Screw-type
3TK2828-2AB20	--	Push-In
3TK2828-2AB21	--	Push-In
3TK2828-2AJ20	3SK1121-2CB42 *	Push-In
3TK2828-2AJ21	3SK1121-2CB41 *	Push-In
3TK2828-2AL20	3SK1121-2CB42 *	Push-In
3TK2828-2AL21	3SK1121-2CB41 *	Push-In
3TK2828-2BB40	3SK1121-2CB42	Push-In
3TK2828-2BB41	3SK1121-2CB41	Push-In

\* = In connection with power module 3SK1230, see chapter Power module on page 120.

### Terminal marking

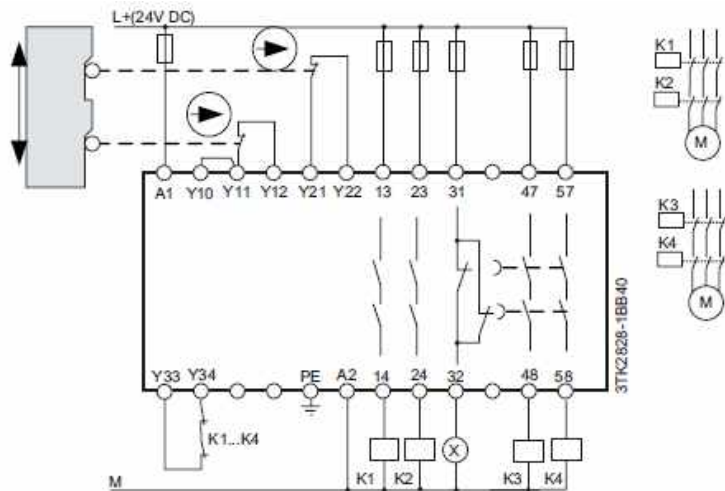
3TK2828	3SK1 Advanced	Terminal description
A1	A1	Power supply +
A2	A2	Power supply -
Y10/Y11	--	Channel 1 (1 single channel)
Y11/Y12	T1/IN1	Channel 1 (1 double channel)
Y21/Y22	T2/IN2	Channel 2 (1 double channel)
Y33/Y34	INS	Reset button
Y33/Y34	T2/INF	Feedback circuit
--	INK	Cascading input
--	PAR	Configuration input for NO/NC evaluation
13/14	13/14	Output circuit (NO)
23/24	23/24	Output circuit (NO)
31/32	--	Signaling circuit (NC)
47/48	37/38	Output circuit (NO, delayed)
57/58	47/48	Output circuit (NO, delayed)

### 2.17.1 Protective door monitoring (2 ch.)

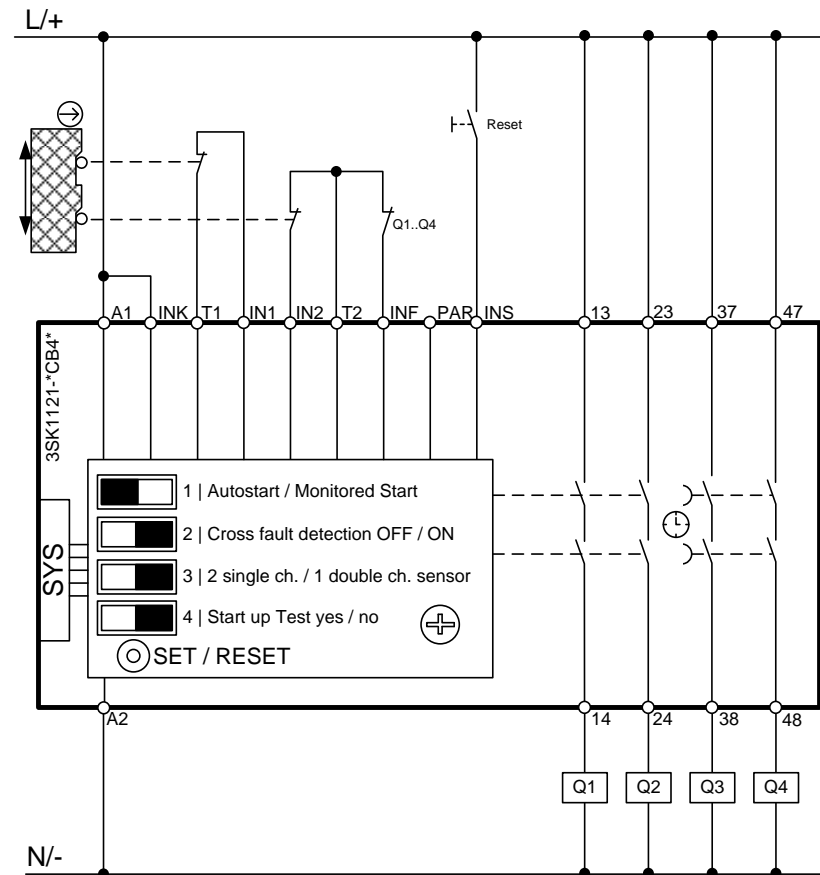
#### Description of safety function and configuration

Safety function	Configuration
Protective door monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>• automatic start</li> <li>• cross-circuit detection activated</li> <li>• 1x2 channel</li> <li>• startup test deactivated</li> </ul>

#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Advanced



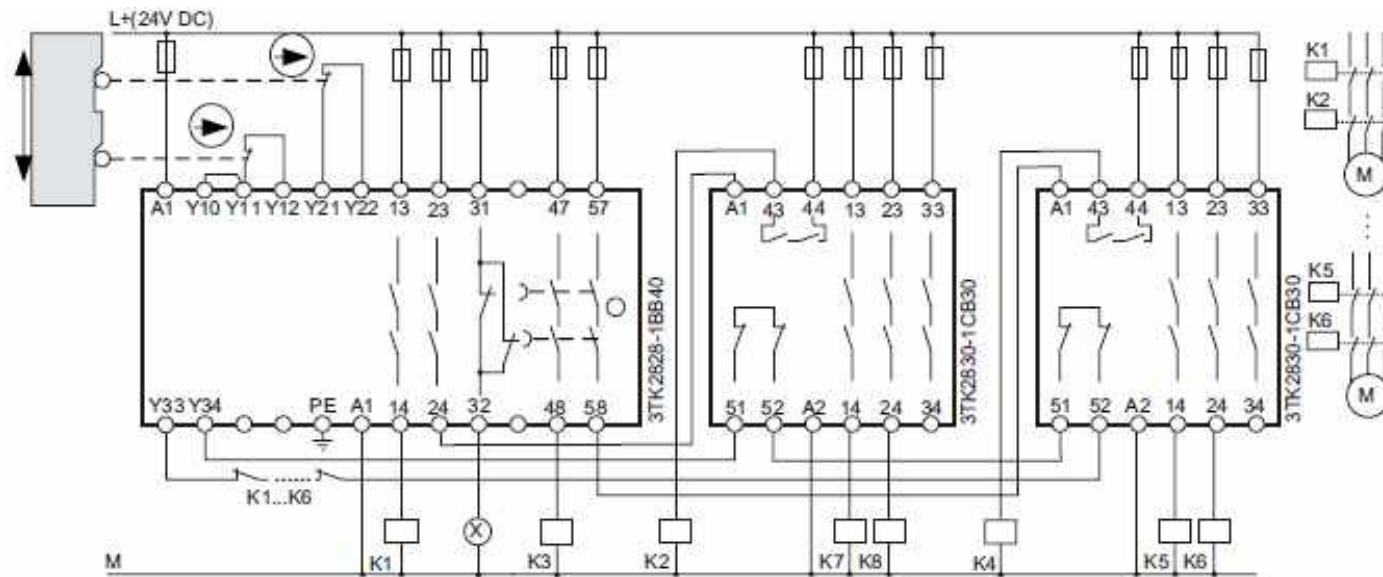
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### 2.17.2 Protective door monitoring with several contact expansions

#### Example: 3TK2828 + 3TK2830 + 3TK2830

Safety function	Configuration
Protective door monitoring with several contact expansions SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 and 1 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>• automatic start</li> <li>• cross-circuit detection activated</li> <li>• 1x2 channel</li> <li>• startup test deactivated</li> </ul>

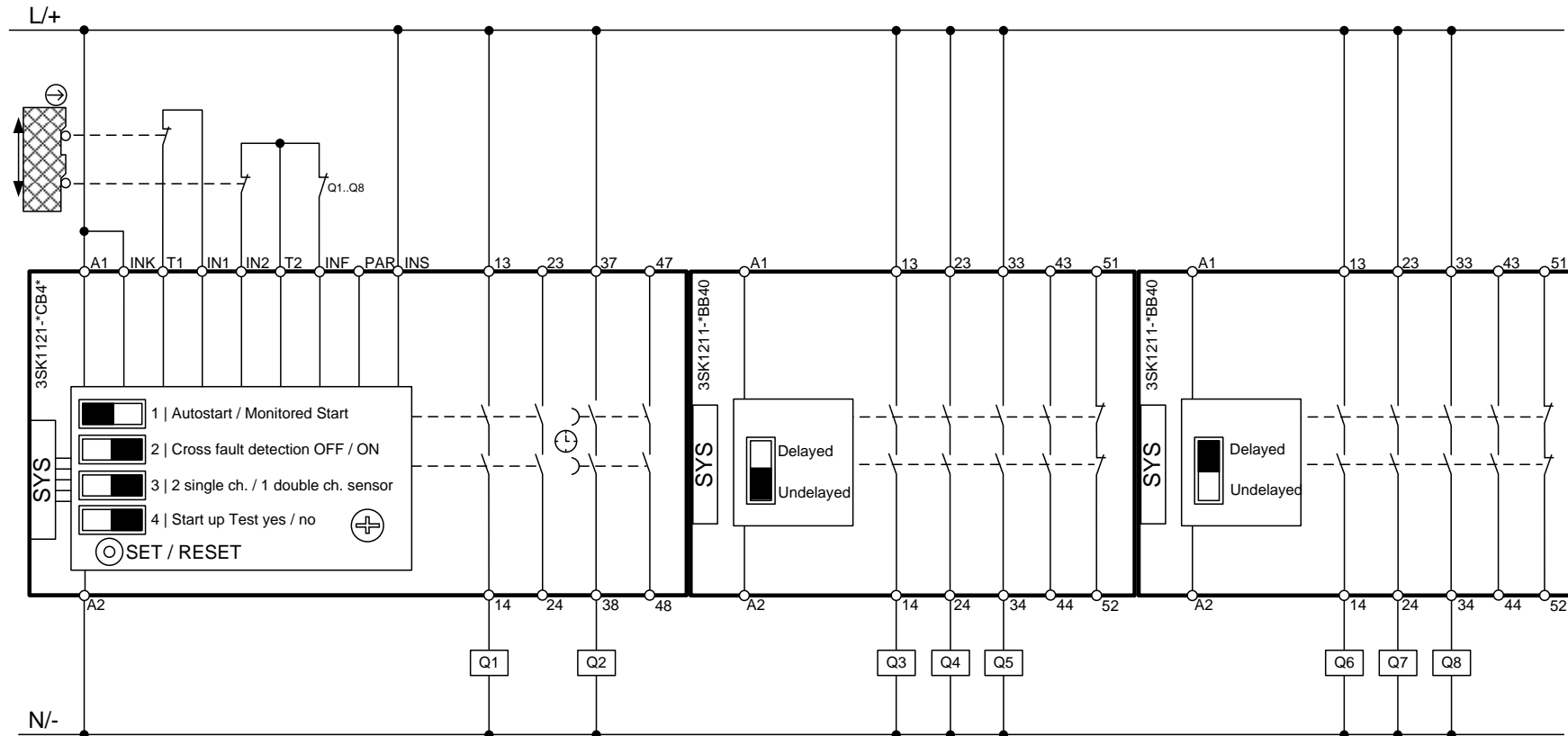
#### Wiring diagram 3TK28



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**Wiring diagram 3SK1 Advanced**



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**Note** In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 2.18 3TK2830

### Corresponding order numbers

3TK28	3SK1	Comments
3TK2830-1AJ20	3SK1211-1BW20	Screw-type
3TK2830-1AL20	3SK1211-1BW20	Screw-type
3TK2830-1CB30	3SK1211-1BB40 (24 V DC) 3SK1211-1BB00 (24 V AC)	Screw-type
3TK2830-2AJ20	3SK1211-2BW20	Push-In
3TK2830-2AL20	3SK1211-2BW20	Push-In
3TK2830-2CB30	3SK1211-2BB40 (24 V DC) 3SK1211-2BB00 (24 V AC)	Push-In

### Terminal marking

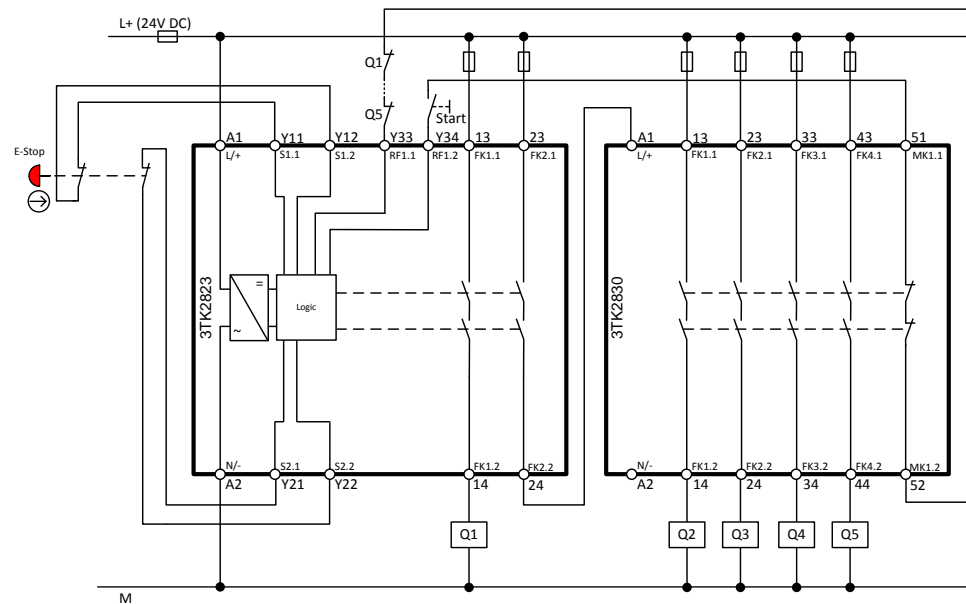
3TK2830	3SK1211	Terminal description
A1	A1	Power supply +
A2	A2	Power supply -
13/14	13/14	Output circuit (NO)
23/24	23/24	Output circuit (NO)
33/34	33/34	Output circuit (NO)
43/44	43/44	Output circuit (NO)
51/52	51/52	Signaling output (NC)

### 2.18.1 Emergency stop monitoring with contact expansion

#### Example: 3TK2823 + 3TK2830

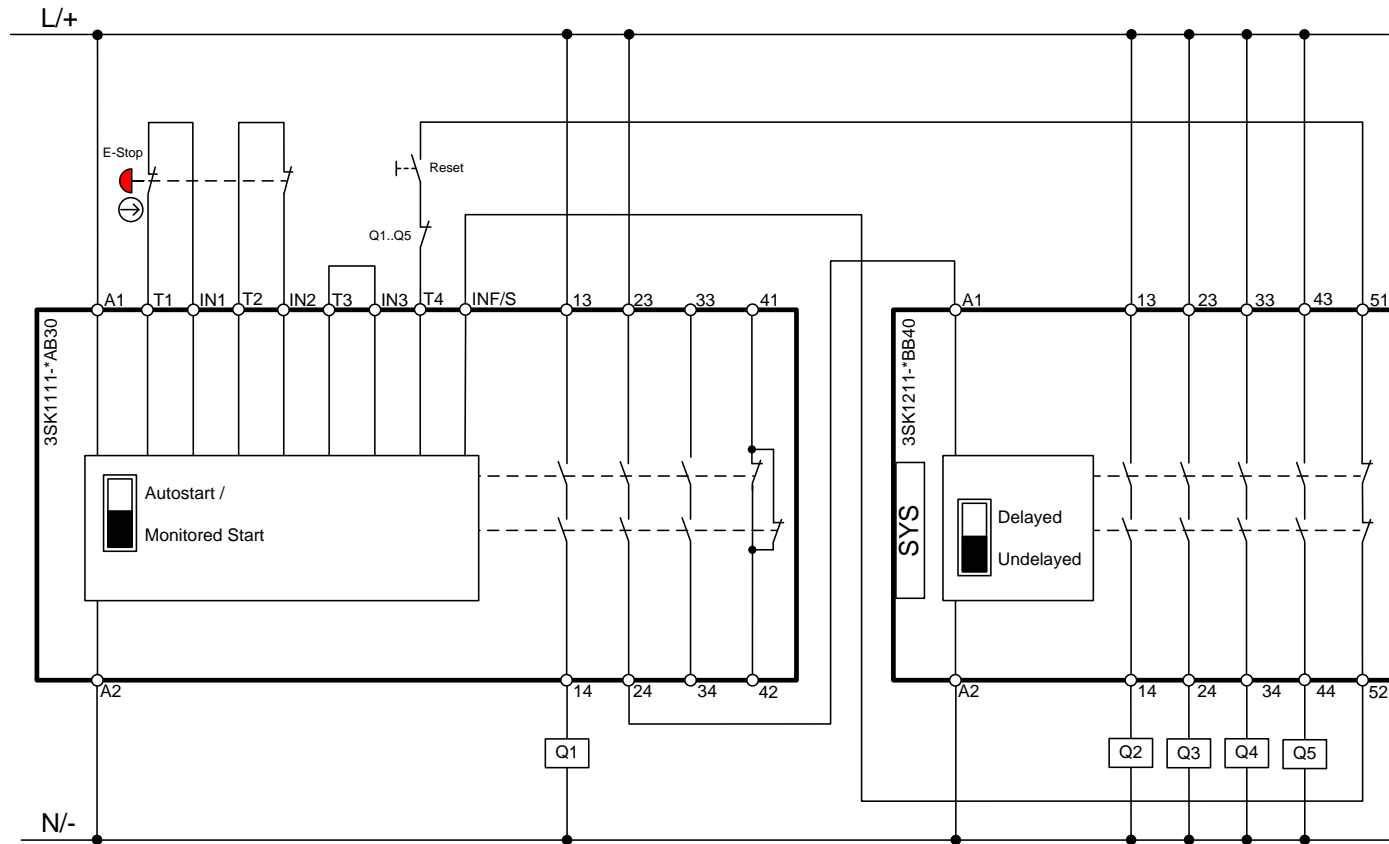
Safety function	Configuration
Emergency stop monitoring with contact expansion SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>1x2 channel</li> <li>startup test deactivated</li> </ul>

#### Wiring diagram 3TK28



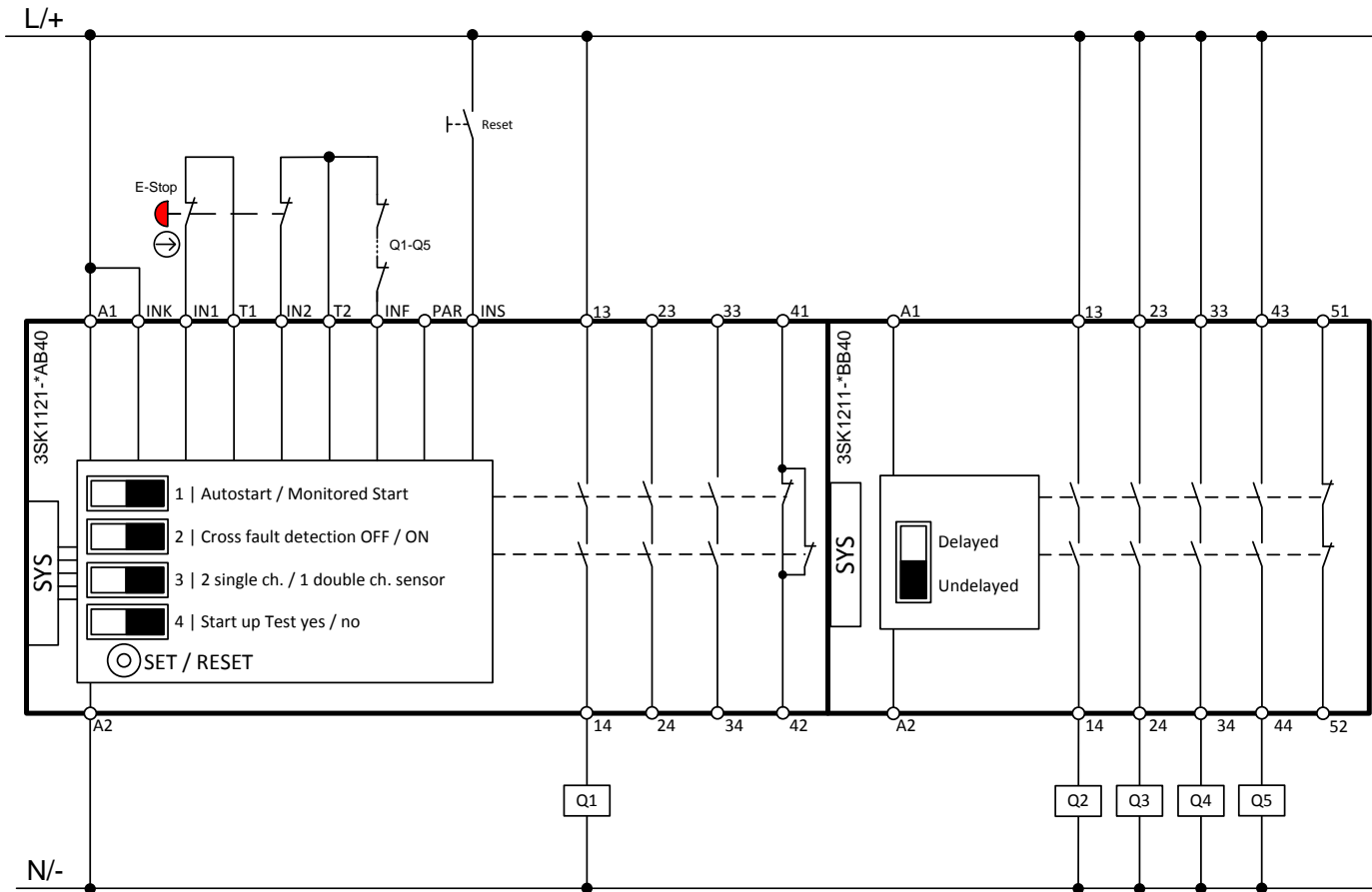
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**Wiring diagram 3SK1 Standard**



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**Wiring diagram 3SK1 Advanced**



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**Note**

In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 3 Safety relays with solid state outputs

### 3.1 3TK2840

#### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Comments
3TK2840-1BB40	3SK1112-1BB40	3SK1122-1AB40	Screw-type
3TK2840-2BB40	3SK1112-2BB40	3SK1122-2AB40	Push-In

#### Terminal marking

3TK2840	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
Y11/Y12	T1/IN1	T1/IN1	Channel 1
Y21/Y22	T2/IN2	T2/IN2	Channel 2
Y34	INS	INS	Reset button
Y33/Y34	T2/INF	T2/INF	Feedback circuit
--	INK	INK	Cascading input
--	--	PAR	Configuration input for NO/NC evaluation
Y20	<i>DIP switch</i>	<i>DIP switch</i>	Configuration input for single channel evaluation
14	Q1	Q1	Solid state output
24	Q2	Q2	Solid state output
--	--	Q3	Solid state output
--	QM1	QM1	Signaling circuit

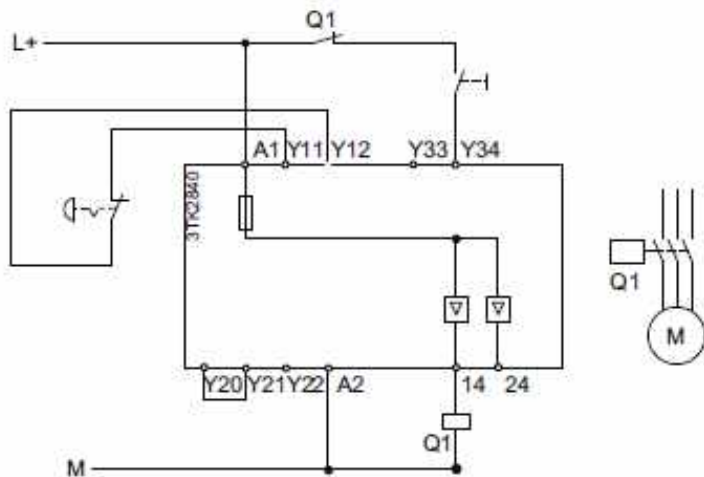
### 3.1.1 Emergency stop monitoring (1 ch.)

#### Description of safety function and configuration

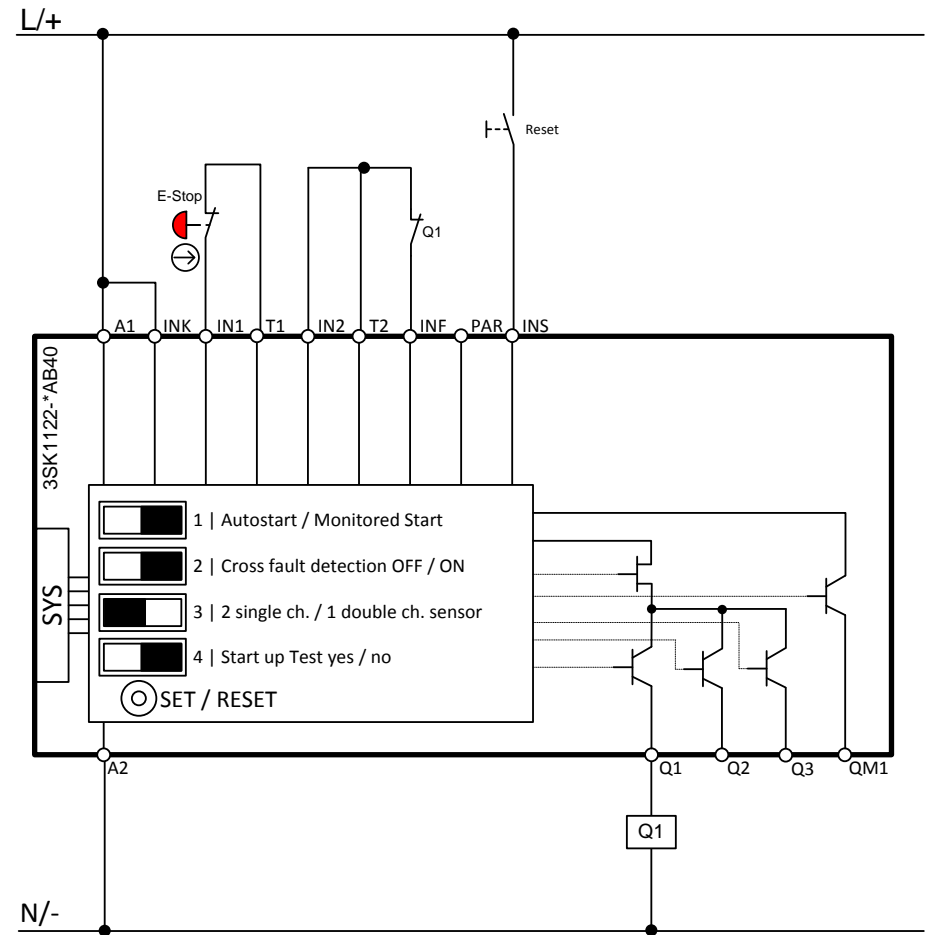
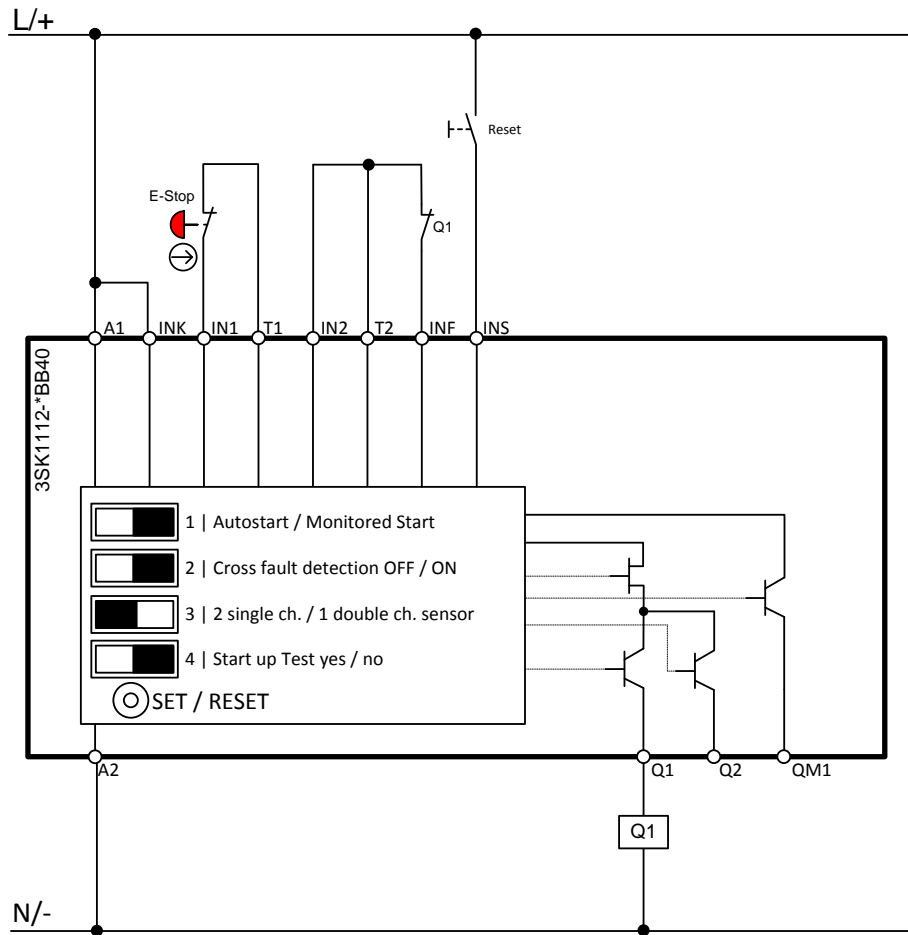
Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>2x1 channel</li> <li>startup test deactivated</li> </ul>

#### Wiring diagram 3SK1 Standard

#### Wiring diagram 3TK28



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**Wiring diagram 3SK1 Advanced**

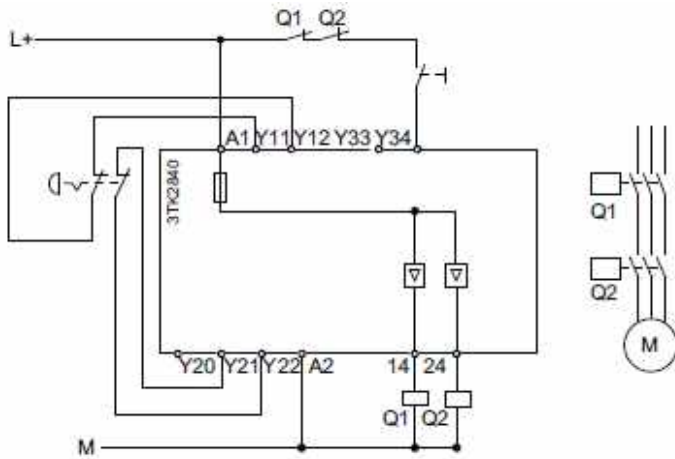


### 3.1.2 Emergency stop monitoring (2 ch.)

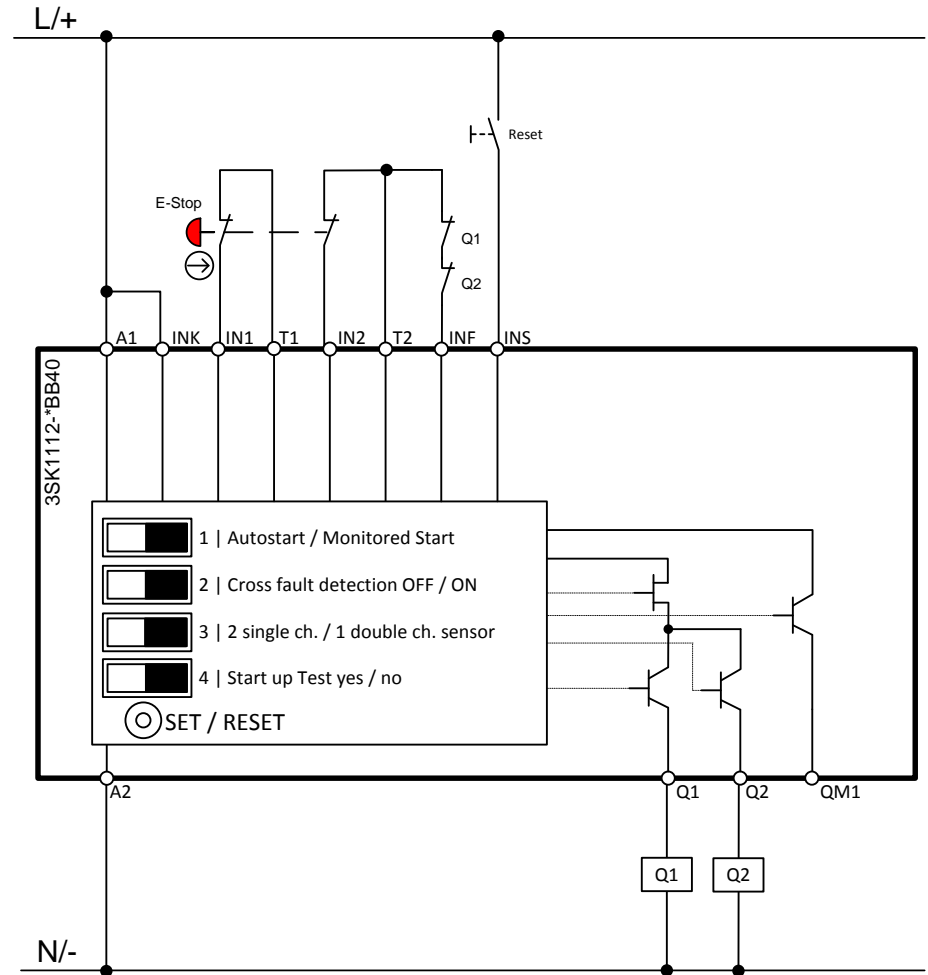
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>1x2 channel</li> <li>startup test deactivated</li> </ul>

#### Wiring diagram 3TK28

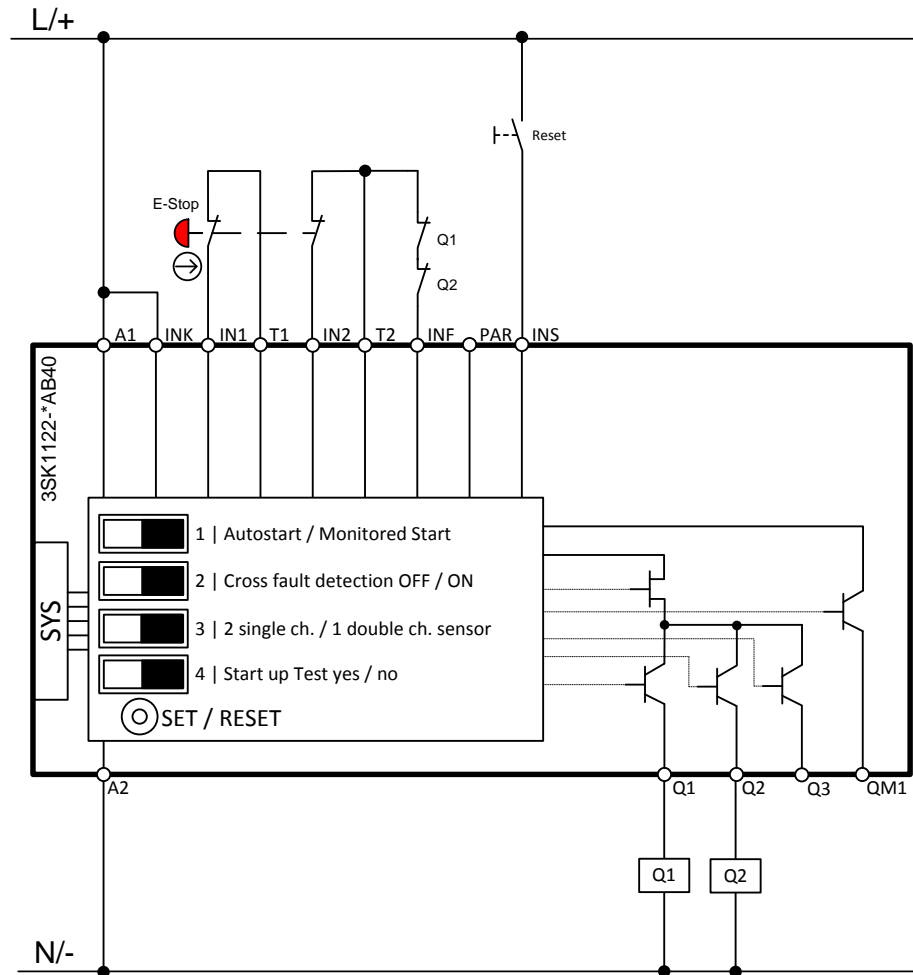


#### Wiring diagram 3SK1 Standard



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**Wiring diagram 3SK1 Advanced**



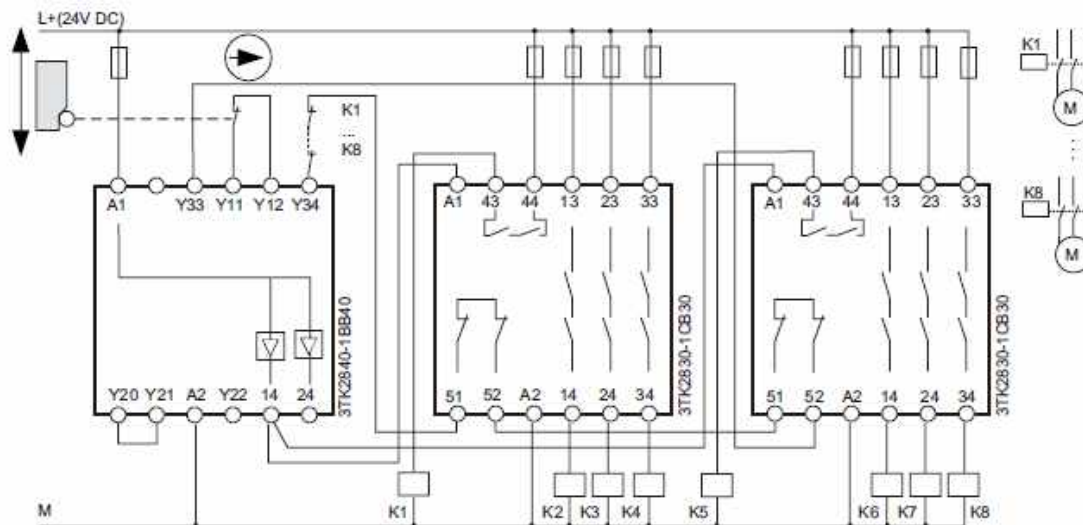
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### 3.1.3 NOT-HALT- und Schutztürüberwachung mit mehreren Kontakterweiterungen

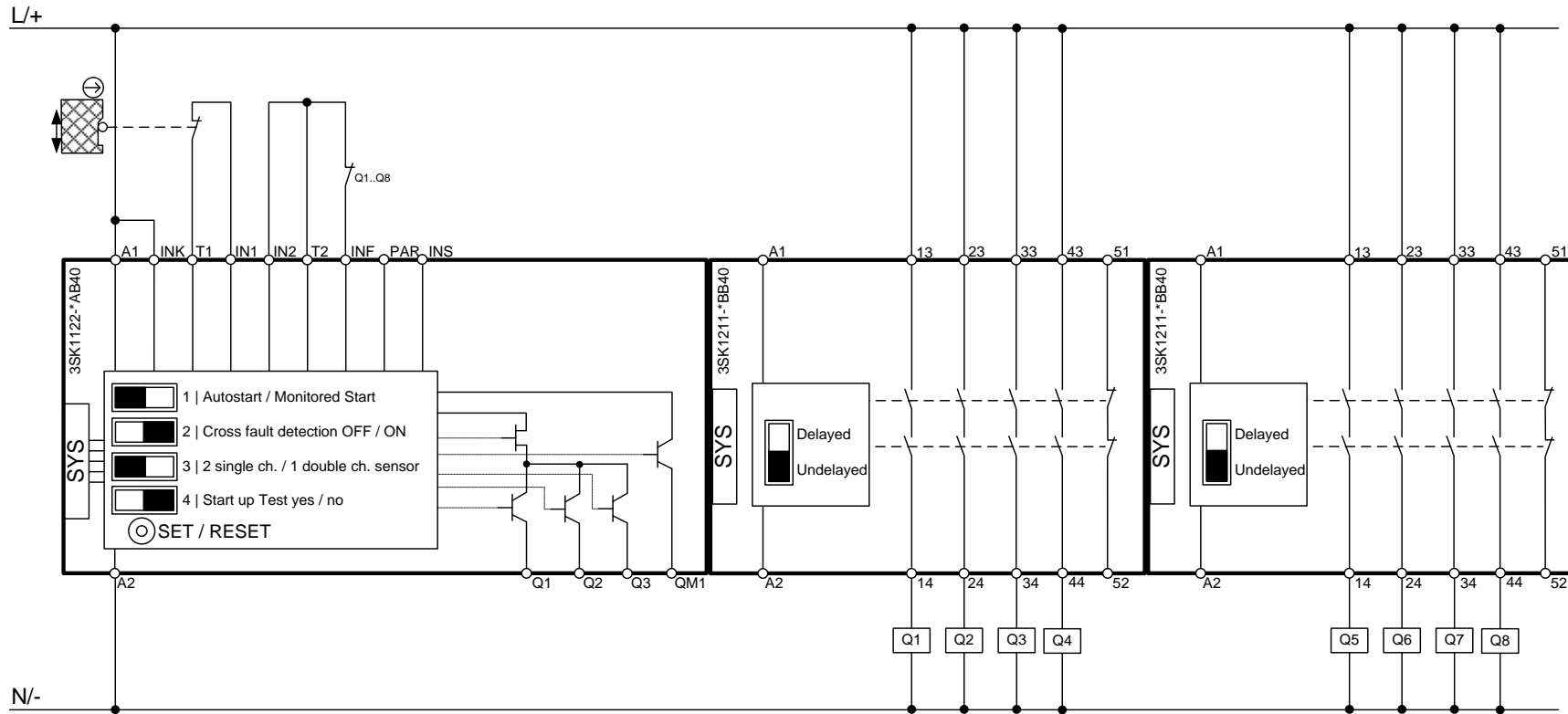
#### Beispiel: 3TK2840 + 3TK2830 + 3TK2830

Sicherheitsfunktion	Parameter 3SK1
Schutztürüberwachung mit Kontakterweiterungen  SIL 1 (IEC 62061) PL c (ISO 13849-1) Stopp-Kategorie 0 und 1 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>• automatischer Start</li> <li>• Querschlusserkennung aktiviert</li> <li>• 2x1-kanalig</li> <li>• Anlaufstest deaktiviert</li> </ul>

#### Wiring diagram 3TK28



**Wiring diagram 3SK1 Advanced**



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**Note**

In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 3.2 3TK2841

### Corresponding order numbers

3TK28	3SK1 Standard	3SK1 Advanced	Comments
3TK2841-1BB40	3SK1112-1BB40	3SK1122-1AB40	Screw-type
3TK2841-2BB40	3SK1112-2BB40	3SK1122-2AB40	Push-In

### Terminal marking

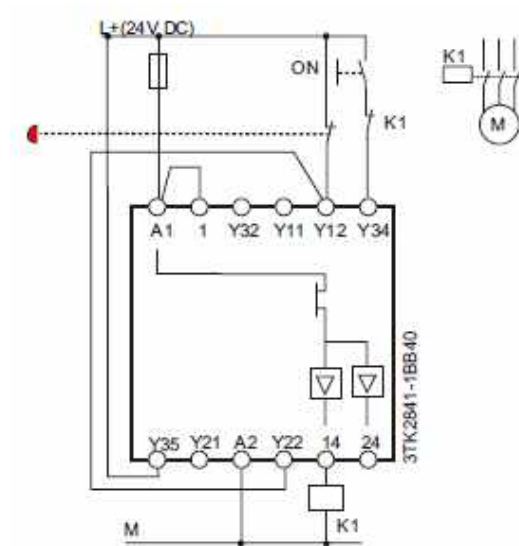
3TK2841	3SK1 Standard	3SK1 Advanced	Terminal description
A1	A1	A1	Power supply +
A2	A2	A2	Power supply -
Y11/Y12	T1/IN1	T1/IN1	Channel 1
Y21/Y22	T2/IN2	T2/IN2	Channel 2
Y34	INS	INS	Reset button
Y33/Y34	T2/INF	T2/INF	Feedback circuit
1	INK	INK	Cascading input
--	--	PAR	Configuration input for NO/NC evaluation
Y35	<i>DIP switch</i>	<i>DIP switch</i>	Configuration input for cross-circuit detection
Y20	<i>DIP switch</i>	<i>DIP switch</i>	Configuration input for single channel evaluation
14	Q1	Q1	Solid state output
24	Q2	Q2	Solid state output
--	--	Q3	Solid state output
--	QM1	QM1	Signaling circuit

### 3.2.1 Emergency stop monitoring (1 ch.)

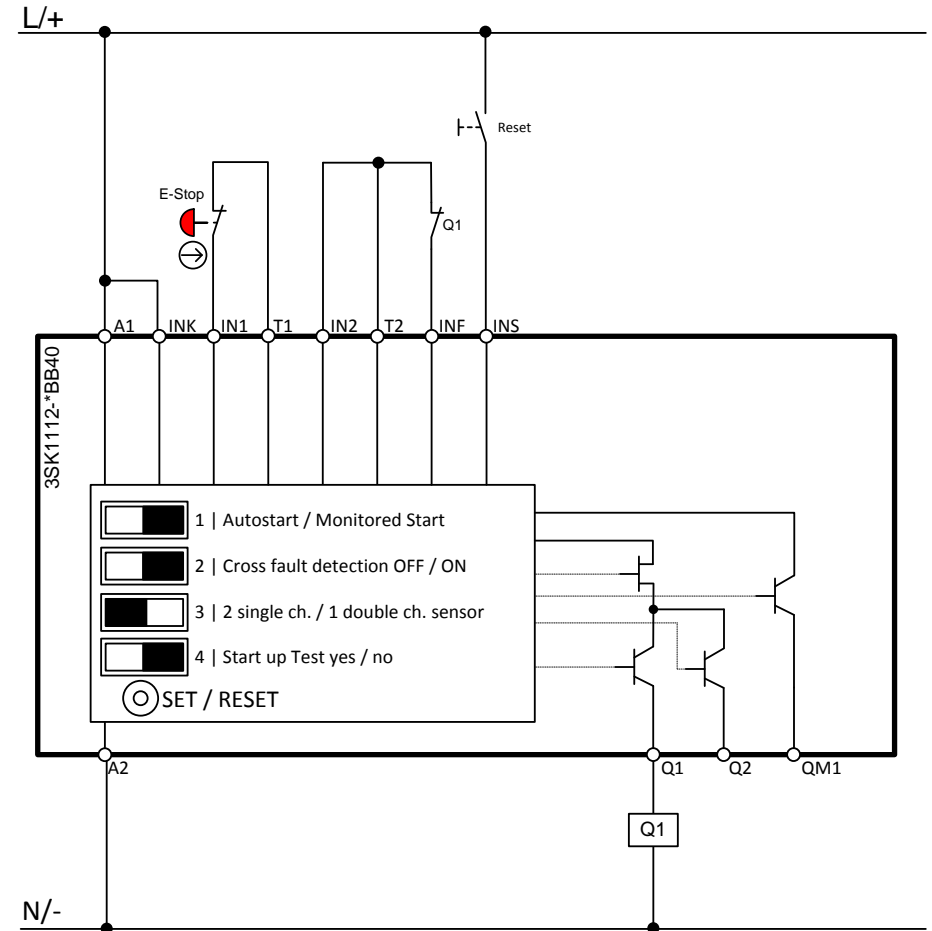
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>2x1 channel</li> <li>startup test deactivated</li> </ul>

#### Wiring diagram 3TK28

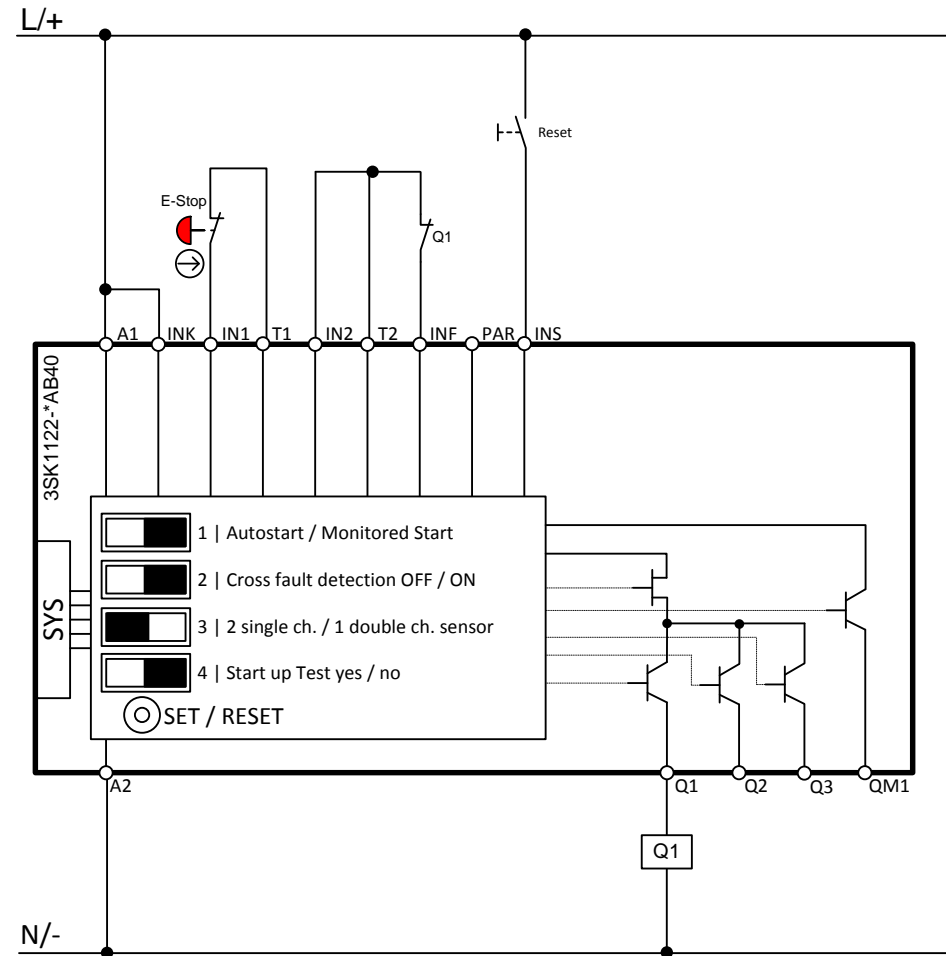


#### Wiring diagram 3SK1 Standard



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**Wiring diagram 3SK1 Advanced**



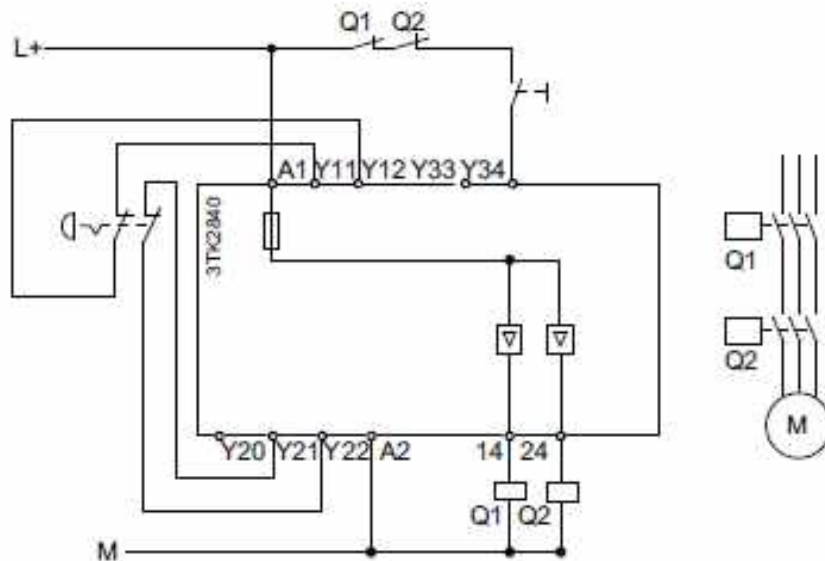
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### 3.2.2 Emergency stop monitoring (2 ch.)

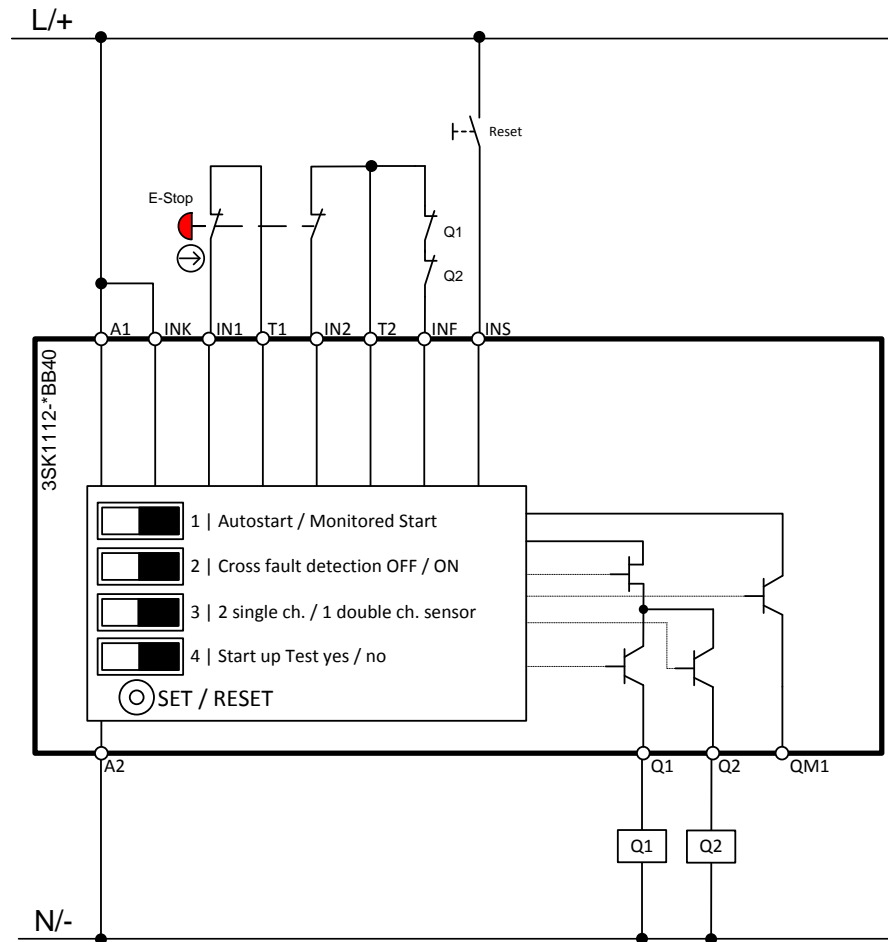
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>1x2 channels</li> <li>startup test deactivated</li> </ul>

#### Wiring diagram 3TK28

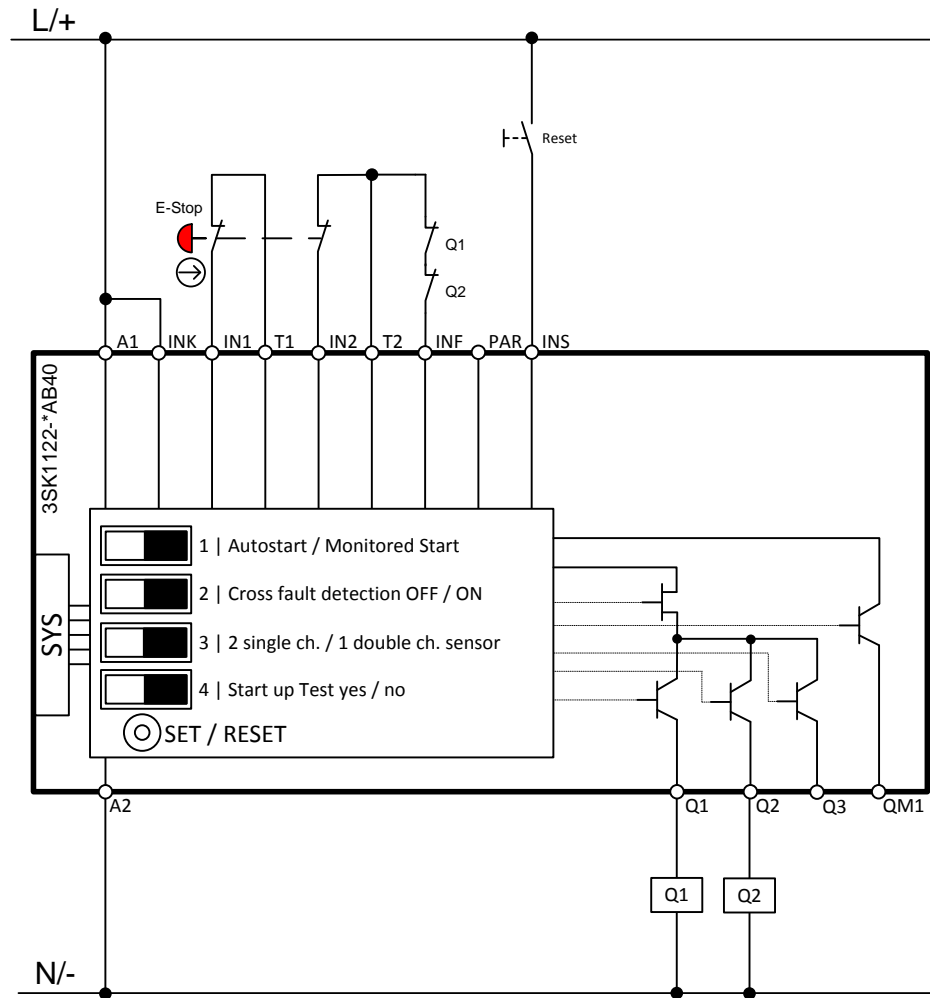


#### Wiring diagram 3SK1 Standard





**Wiring diagram 3SK1 Advanced**



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### 3.3 3TK2842

#### Corresponding order numbers

3TK28	3SK1 Advanced	Comments
3TK2842-1BB41	3SK1122-1CB41	Screw-type
3TK2842-1BB42	3SK1122-1CB42	Screw-type
3TK2842-1BB44	3SK1122-1CB44	Screw-type
3TK2842-2BB41	3SK1122-2CB41	Push-In
3TK2842-2BB42	3SK1122-2CB42	Push-In
3TK2842-2BB44	3SK1122-2CB44	Push-In

#### Terminal marking

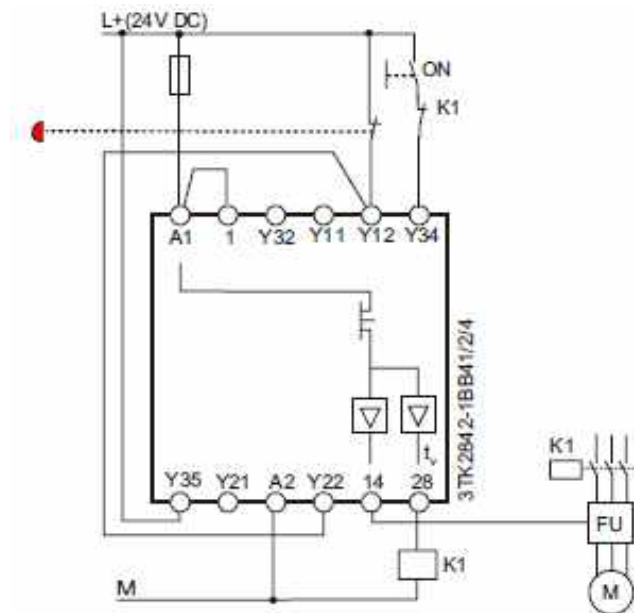
3TK2842	3SK1 Advanced	Terminal description
A1	A1	Power supply +
A2	A2	Power supply -
Y11/Y12	T1/IN1	Sensor Channel 1
Y21/Y22	T2/IN2	Sensor Channel 2
Y34	INS	Reset button
Y34	T2/INF	Feedback circuit
1	INK	Cascading input
--	PAR	Configuration input for NO/NC evaluation
Y35	<i>DIP switch</i>	Configuration input for cross-circuit detection
Y32	<i>DIP switch</i>	Configuration input for single channel evaluation
14	Q1	Solid state output
--	Q2	Solid state output
28	Qt1	Solid state output (delayed)
--	Qt2	Solid state output (delayed)

### 3.3.1 Emergency stop monitoring (1 ch.)

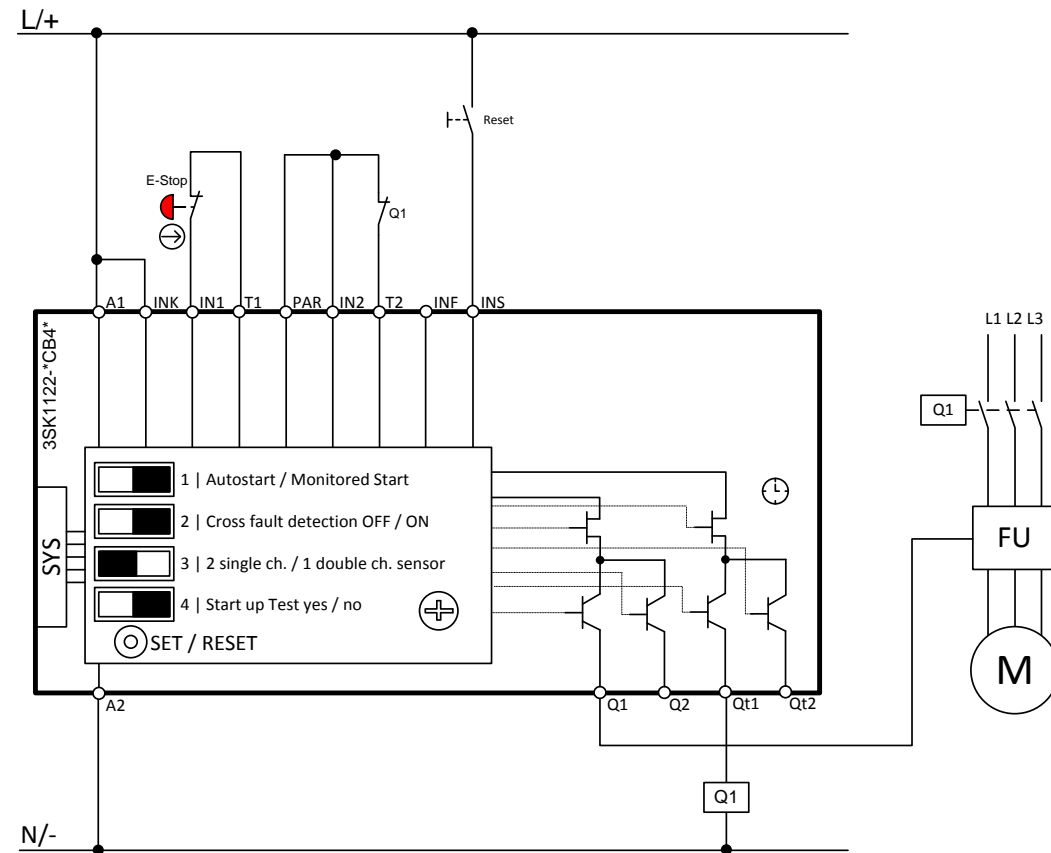
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 1 (IEC 62061) PL c (ISO 13849-1) Stop category 1 (EN 60204-1) DC = 0%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>2x1 channel</li> <li>startup test deactivated</li> </ul>

#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Advanced



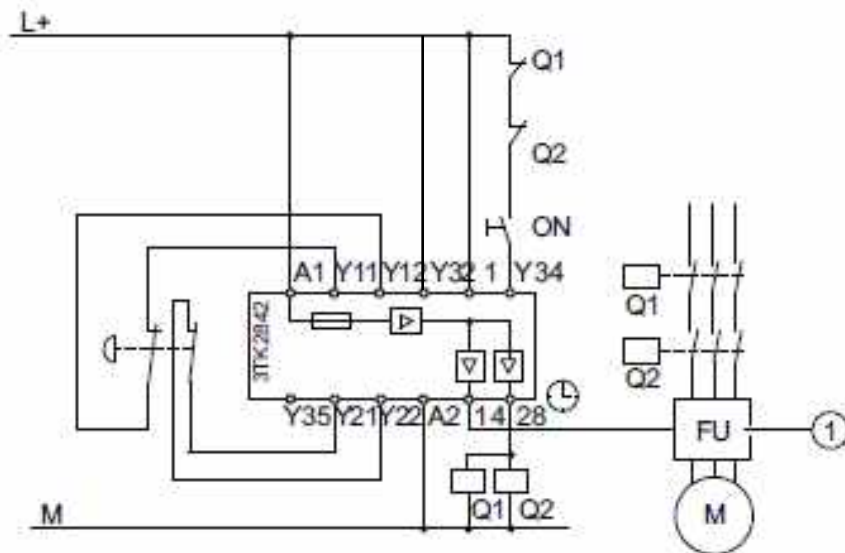
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### 3.3.2 Emergency stop monitoring (2 ch.)

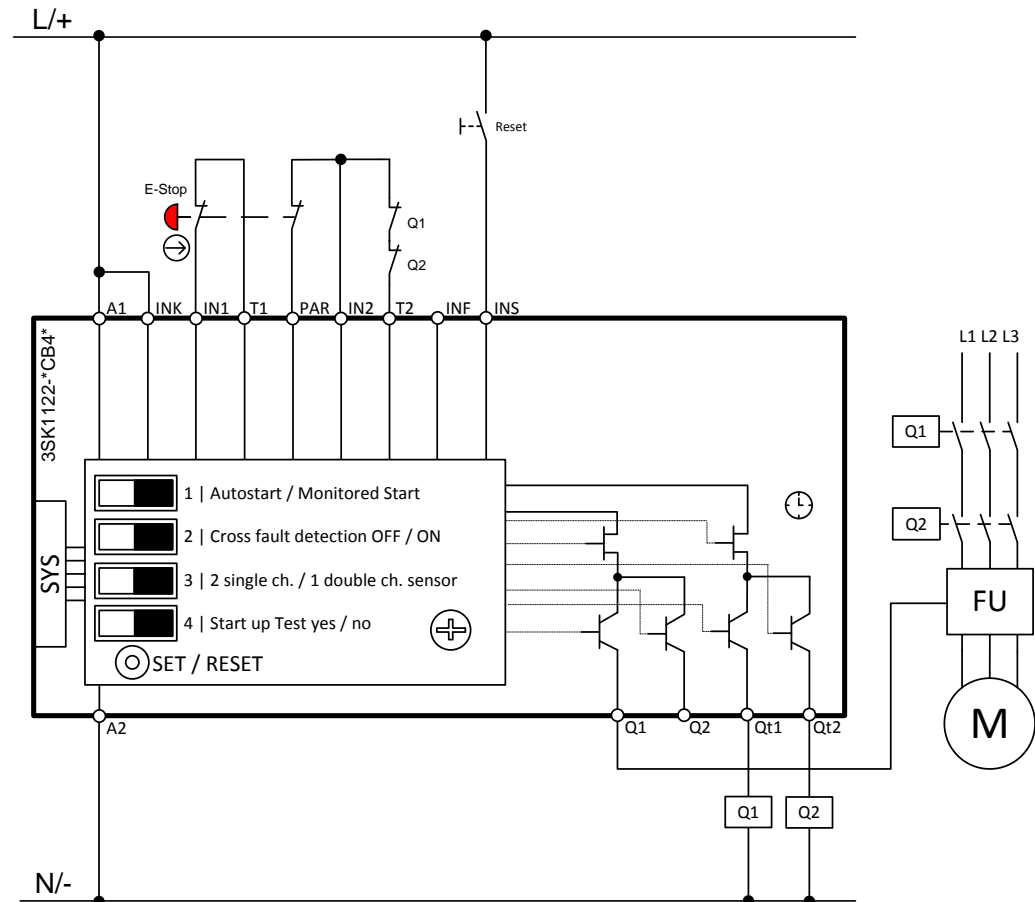
#### Description of safety function and configuration

Safety function	Configuration
Emergency stop monitoring SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 (EN 60204-1) DC = 99%	<ul style="list-style-type: none"> <li>monitored start</li> <li>cross-circuit detection activated</li> <li>1x2 channel</li> <li>startup test deactivated</li> </ul>

#### Wiring diagram 3TK28



#### Wiring diagram 3SK1 Advanced

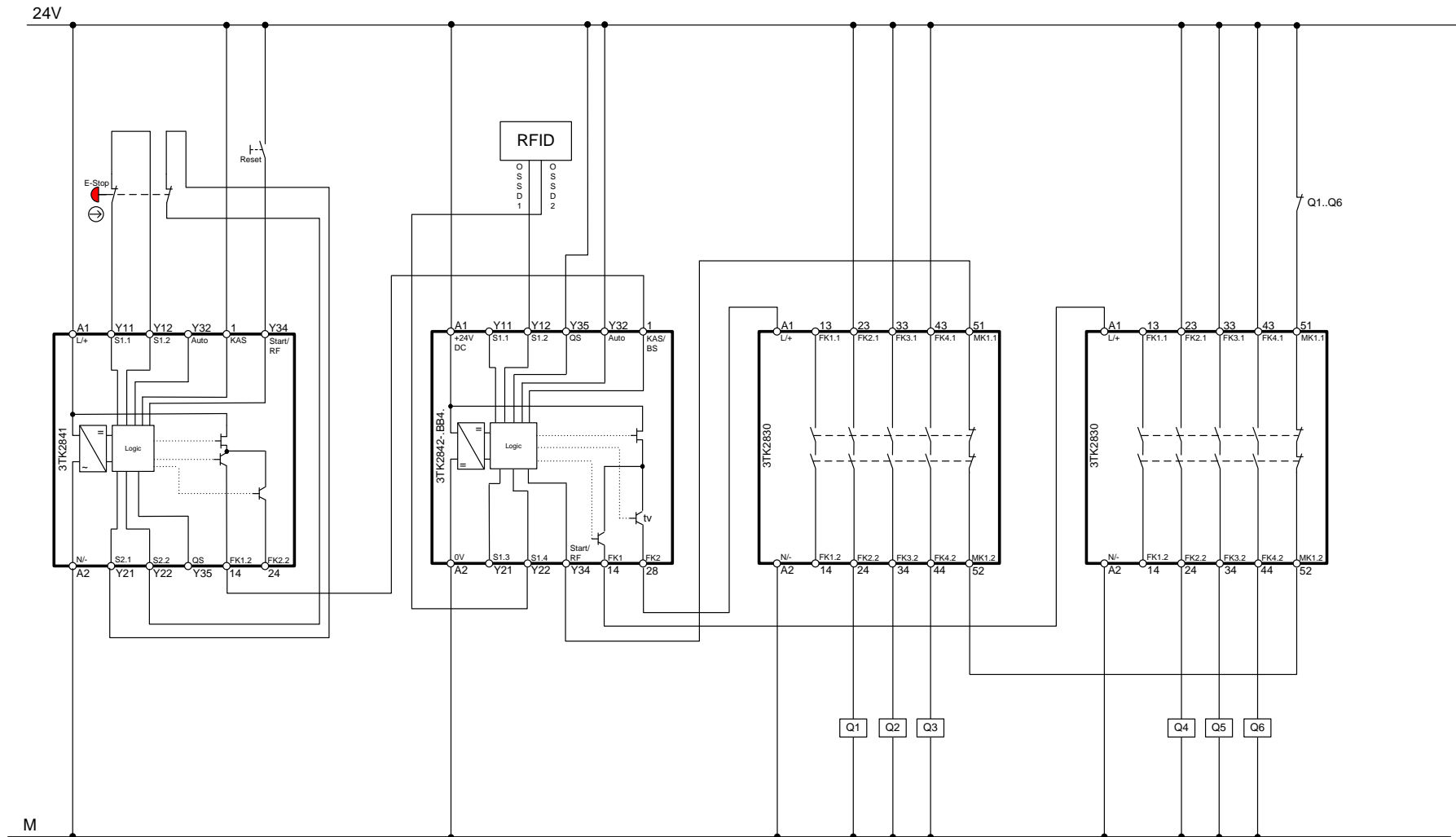


### 3.3.3 Emergency stop and protective door monitoring with contact expansions

#### Example: 3TK2841 + 3TK2842 + 3TK2830 + 3TK2830

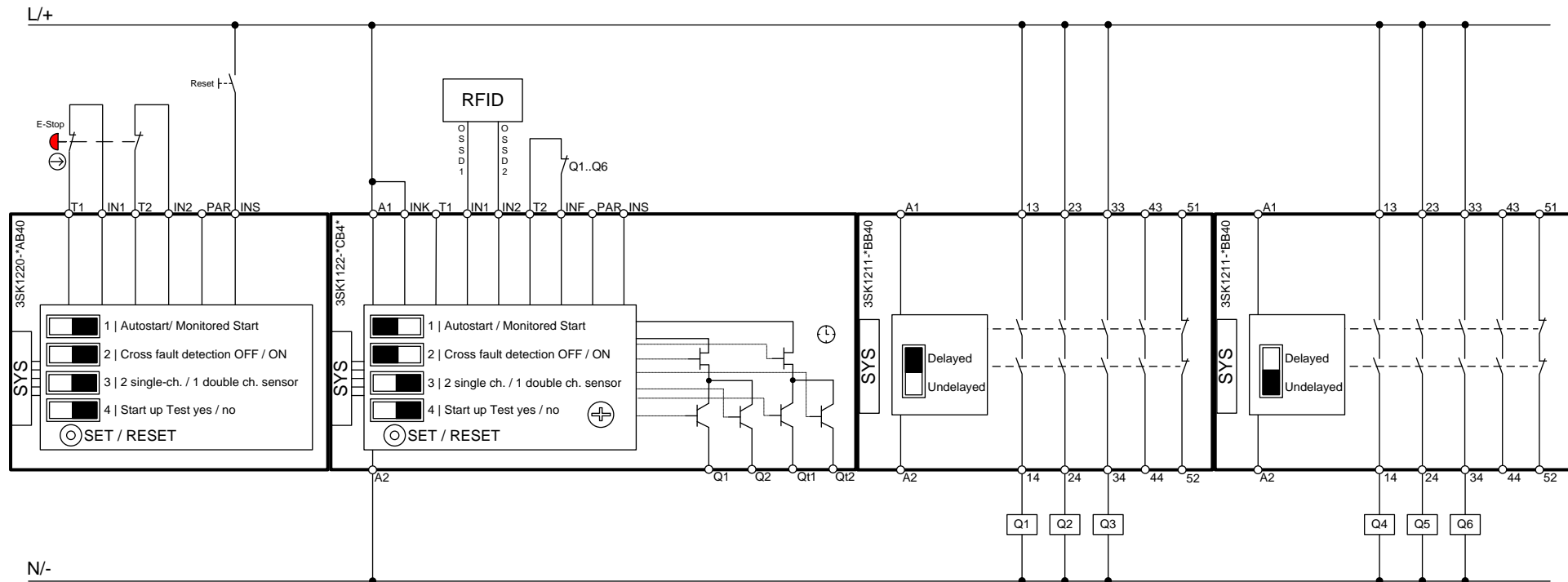
Safety function	Configuration
Emergency stop and protective door monitoring with contact expansions  SIL 3 (IEC 62061) PL e (ISO 13849-1) Stop category 0 and 1 (EN 60204-1) DC = 99%	Input expansion: <ul style="list-style-type: none"> <li>• monitored start</li> <li>• cross-circuit detection activated</li> <li>• 1x2 channel</li> <li>• (startup test deactivated)</li> </ul> Basic unit: <ul style="list-style-type: none"> <li>• automatic start</li> <li>• cross-circuit detection deactivated</li> <li>• 1x2 channel</li> <li>• (startup test deactivated)</li> </ul>

**Wiring diagram 3TK28**



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**Wiring diagram 3SK1 Advanced**



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**Note** In order to connect an expansion module to an Advanced basic unit, an additional device connector is required. You will find the respective order number in chapter Device connectors on page 120.

## 4 Accessoires

### 4.1 Device connectors

MLFB	3SK1
3ZY1212-1BA00	Device connector set type 1 17,5 mm
3ZY1212-2BA00	Device connector set type 1 22,5 mm
3ZY1212-2DA00	Device terminating connector set type 1 22,5 mm
3ZY1212-2EA00	Device connector set type 2 22,5 mm
3ZY1212-2FA00	Device terminating connector set type 2 22,5 mm
3ZY1212-0FA01	Device terminating connector set type 2 45 mm

Usage of device connectors:

- A device connector is always necessary when several devices are connected.
- A device terminating connector is always necessary for the last module on the right.

Device terminating connector set type 1:

- Underneath basic unit: the switch on the device terminating connector must be set to the lower position
- Underneath output expansion 3SK1211: the switch on the device terminating connector must set to the upper position.

For further information please refer to the device manual 3SK1:

<https://support.industry.siemens.com/cs/ww/en/view/67585885>

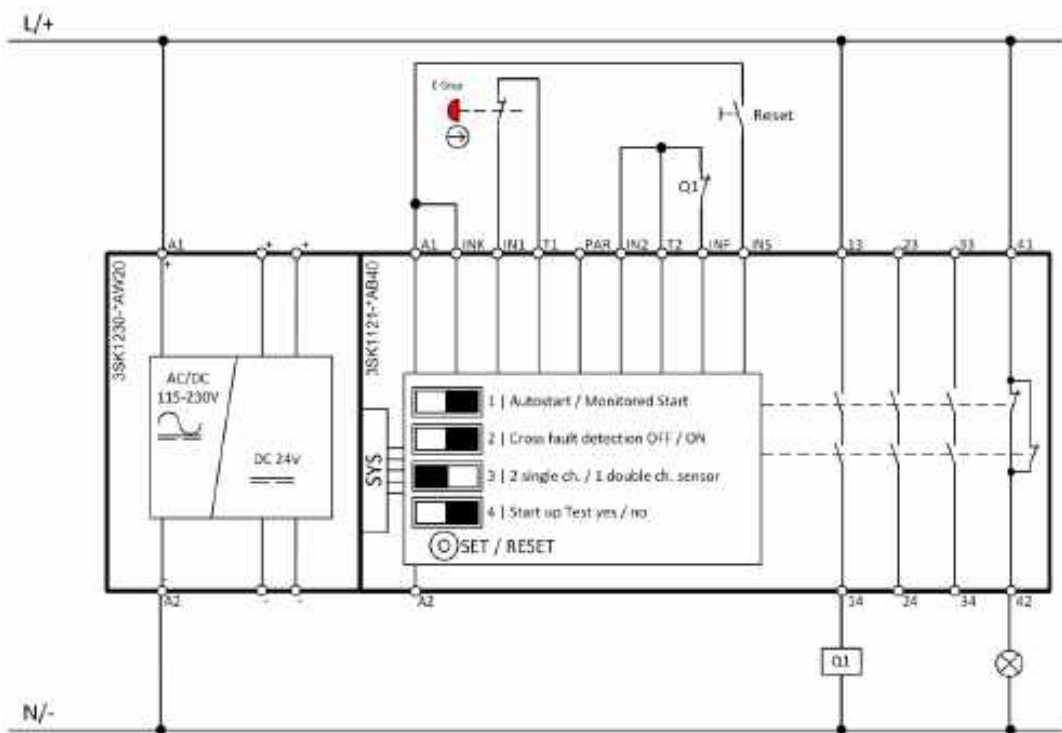
### 4.2 Power module

MLFB	3SK1
3SK1230-1AW20	Power supply AC/DC 110 ... 240 V (Screw-type)
3SK1230-2AW20	Power supply AC/DC 110 ... 240 V (Push-In)

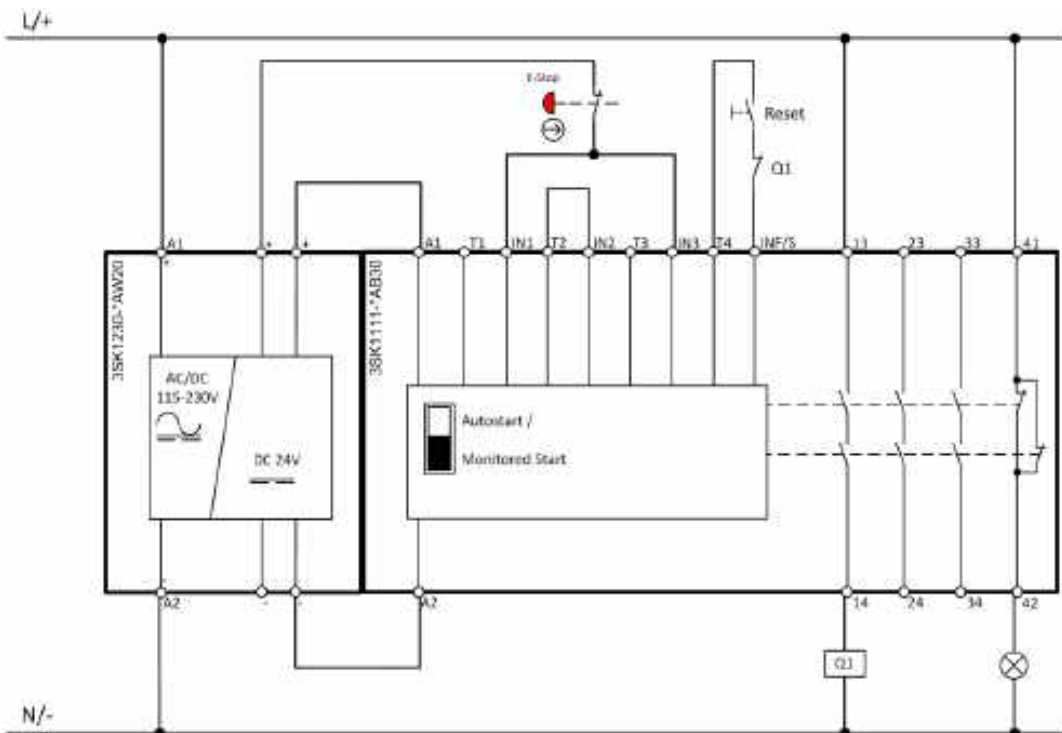
The 24 V power supply supplies up to six components with voltage – whether basic units, input or output expansions. It covers all conventional global control voltages from 110 to 240 V AC/DC. This facilitates the safety relays' international applicability.



**Example – Usage of 3SK1230 power supply via device connector**



**Example – Usage of 3SK1230 power supply via output terminals +/-**



For further information please refer to the device manual 3SK1:

<https://support.industry.siemens.com/cs/ww/en/view/67585885>

## 5 History

Version	Date	Release note
V1.0	20.11.2012	Initial release
V1.1	02.04.2013	Extension of table in chapters 2.10.2 and 2.13.2
V1.2	23.04.2013	Revision of wiring diagrams in chapters 2.11.1, 2.14.1 and 2.14.2
V1.3	16.05.2013	Revision of wiring diagram 3SK1 in chapter 3.3.3
V1.4	25.10.2013	Addition of safety relays 3TK2801 to 3TK2807 Revision of wiring diagram 3TK28 in chapter 3.3.3
V1.5	10.12.2015	Error correction
V1.6	01.09.2016	<ul style="list-style-type: none"><li>• Format adaptation</li><li>• Revision of wiring diagram 3TK28 in chapter 2.1.1</li><li>• Additional chapter 2.8</li><li>• Revision of wiring diagram 3TK28 in chapter 2.12.3</li><li>• Additional content and corrections</li></ul>
V1.7	01.10.2016	Error correction

## 6 Contact/Support

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