

Kurzbezeichnung: <b>UFR1001E</b>	Bezeichnung: <b>Example connection plans UFR1001E</b>	<b>ZIEHL</b>	
bearbeitet: 2023-06-12/Ba	<b>Index</b>	Maßstab: - EA-Nr.: 15390	Ers. für: 12420-0911-19 page: 1 of 29
			Zeichnungsnummer: <b>812420-0911-20</b>

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Questions to the circuit diagrams?  
 Contact us:  
 +49 791 5040  
 sales@ziehl.de

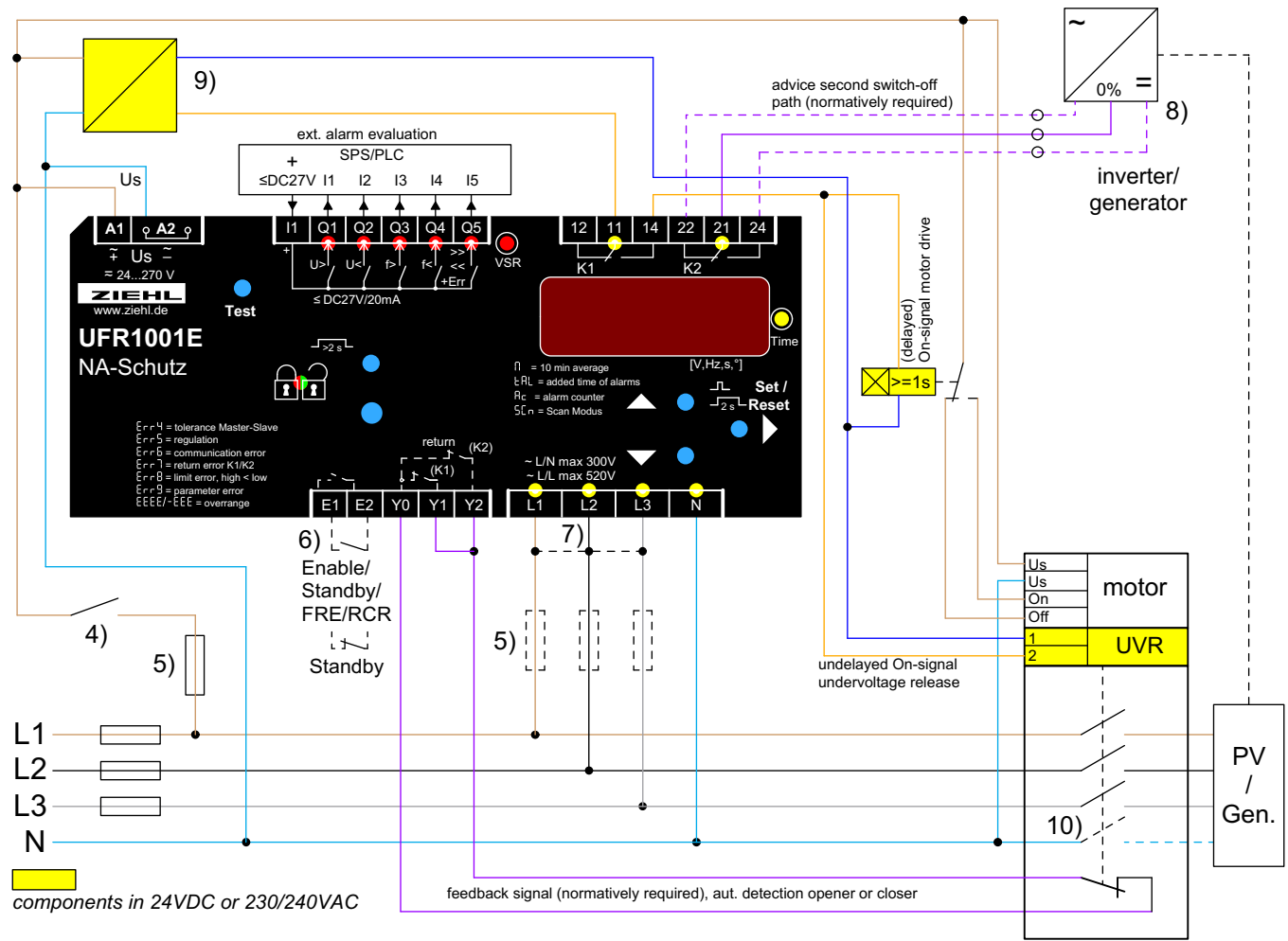


UFR1001E operating videos

Recommendations for the FRT component power supply / buffering,  
see separate document:

["FRT component recommendation"](#)

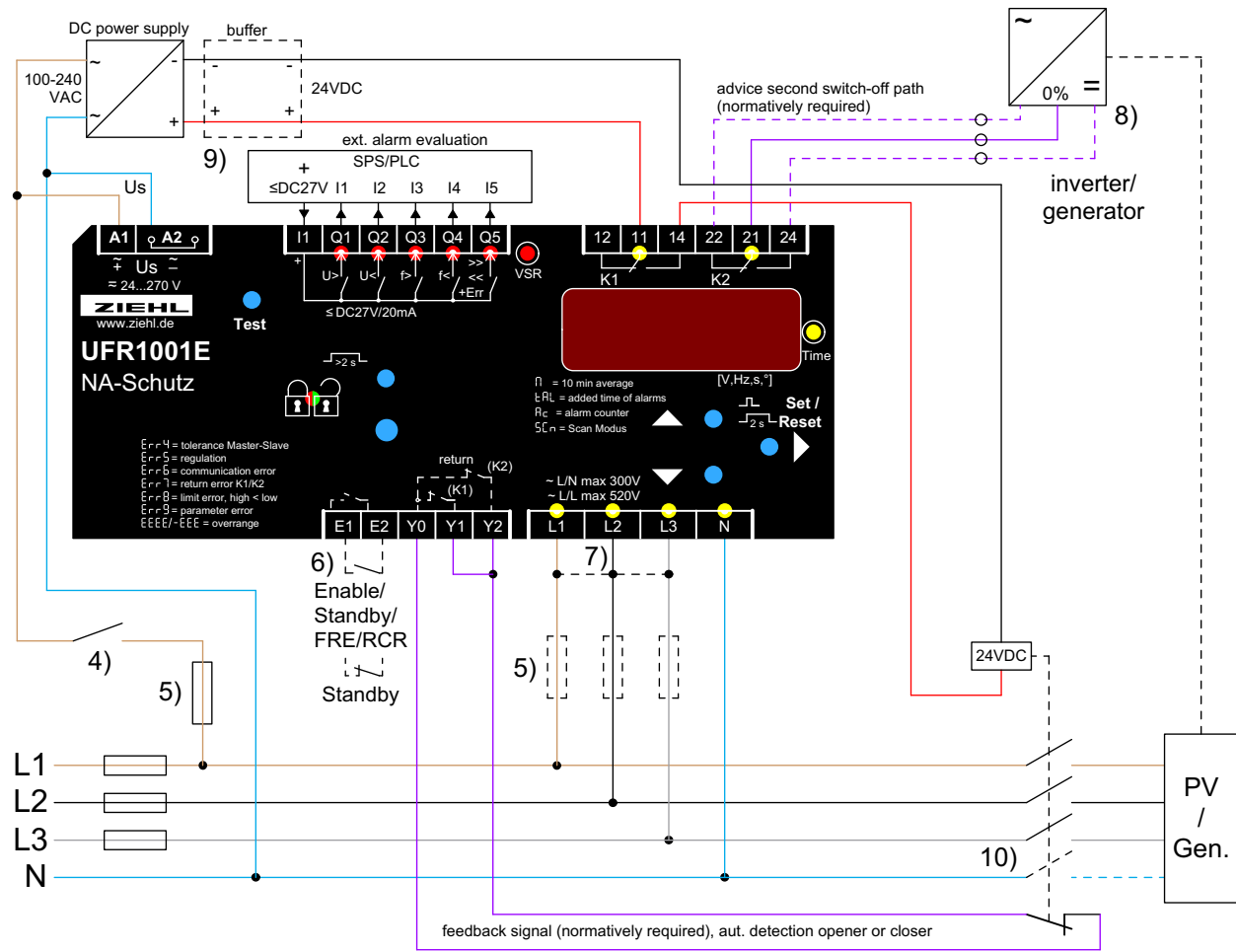
**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{5r} / 5\epsilon b5$ . (default setting since Fnr 0-17) or  $u_{5r} / 5\epsilon b4$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
contact open and  $u_{5r} / 5\epsilon b0$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 8) Single-fault safety: shutdown of the self generation plant e.g. by ripple control input 0% with K2. Use coupling relays ford contact multiplication of if safe isolation is required. (control voltage 24-230VAC or feeded over power supply / buffer)  
This second switch-off path must be tested separately during commissioning. ( $\epsilon 5\epsilon 2$ )
- 9) Power supply / buffering. Switches have to withstand undervoltage / voltage breakdown for min. 3 s / 0,3 s (FRT)  
The power supplies listed in the separate document "FRT Komponenteneempfehlung", in connection with 24VDC contactors / undervoltage release, ensure that the switch-off delay time (3s) is fulfilled in the event of undervoltage. Bridging time UFR1001E at dropping  $U_s$  230 V to 0 V: 400 ms
- 10) TT-system: switch all line conductors and N, TN-system: only switch line conductor

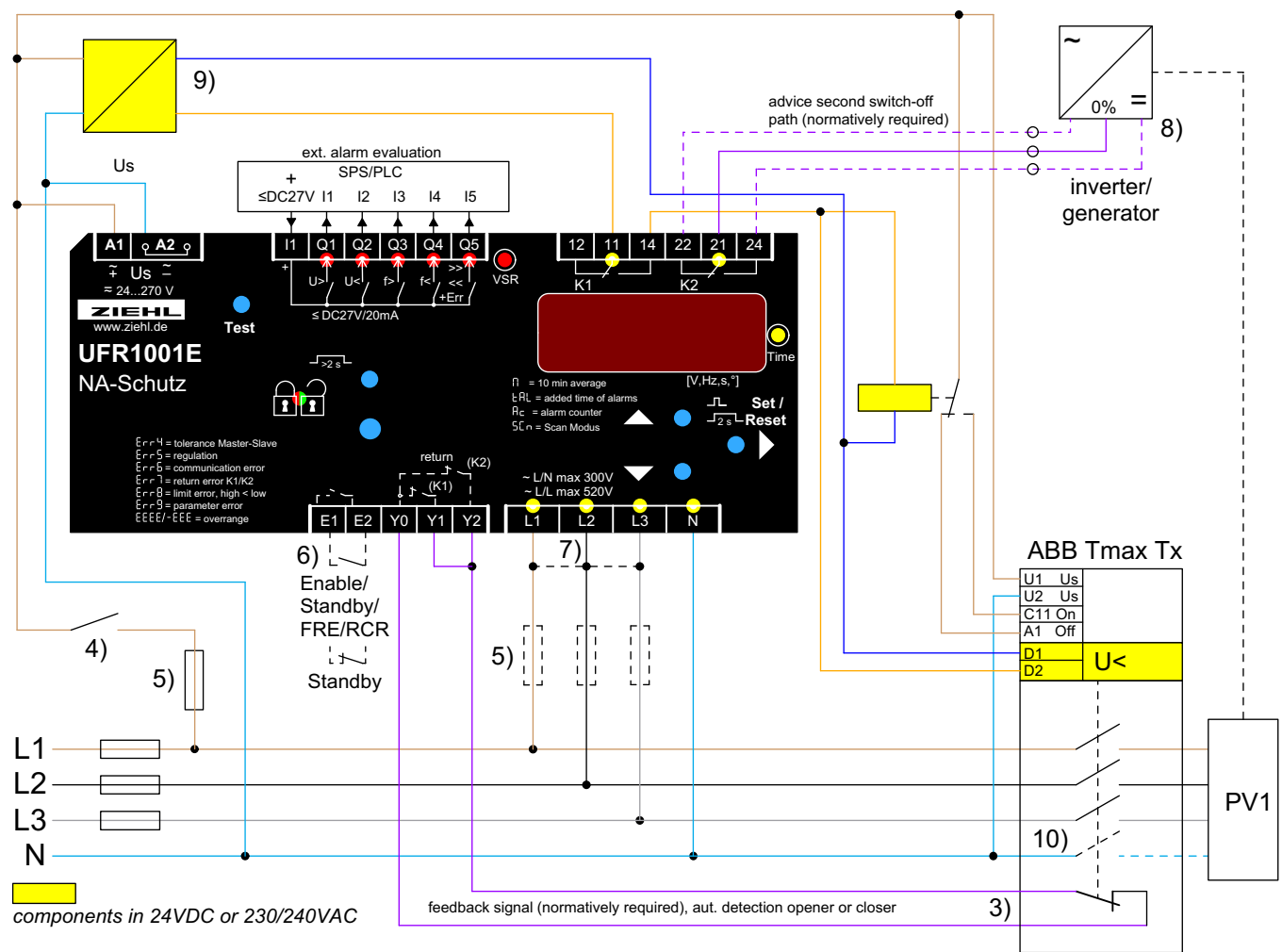


**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**



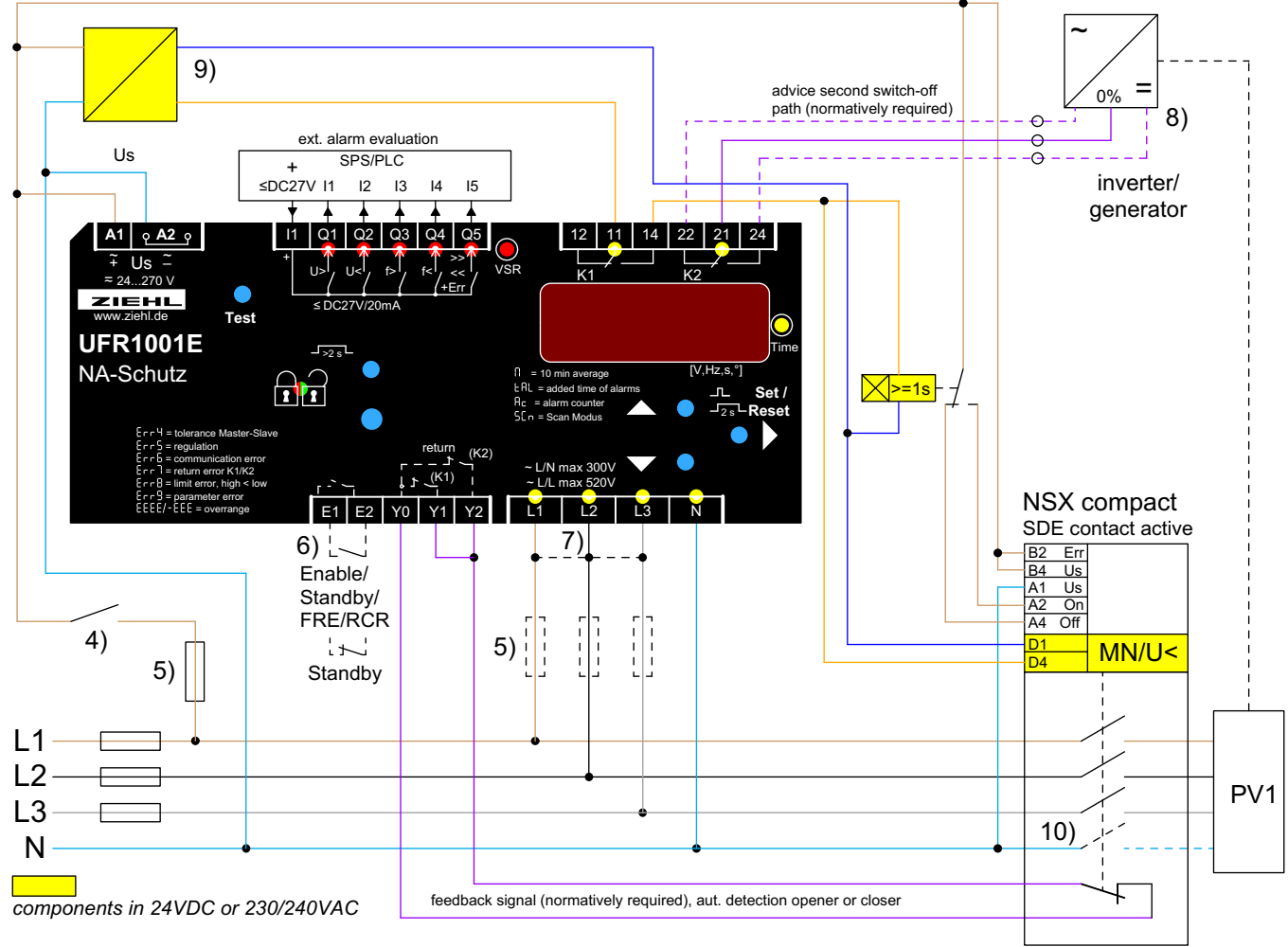
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{5r} / 5t_{b5}$ . (default setting since Fnr 0-17) or  $u_{5r} / 5t_{b4}$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
contact open and  $u_{5r} / 5t_{b6}$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 8) Single-fault safety: shutdown of the self generation plant e.g. by ripple control input 0% with K2. Use coupling relays for contact multiplication of if safe isolation is required. (control voltage 24-230VAC or feeded over power supply / buffer)  
This second switch-off path must be tested separately during commissioning. (t5t2)
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The power supplies listed in the separate document "FRT Komponenteneempfehlung", in connection with 24VDC contactors / undervoltage release, ensure that the switch-off delay time (3s) is fulfilled in the event of undervoltage. Bridging time UFR1001E at dropping  $U_s$  230 V to 0 V: 400 ms
- 10) TT-system: switch all line conductors and N, TN-system: only switch line conductor

**VDE-AR-N 4105:2018-11  
NA/EEA-NE7 – CH 2020**



- 3) NC- or NO-contacts can be connected, self-learning when switching on
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{5r} / 5t_{b5}$ . (default setting since Fnr 0-17) or  $u_{5r} / 5t_{b4}$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
contact open and  $u_{5r} / 5t_{b4}$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 8) **Single-fault safety:** shutdown of the self generation plant e.g. by ripple control input 0% with K2. Use coupling relays for contact multiplication of if safe isolation is required. (control voltage 24-230VAC or feeded over power supply / buffer)  
This second switch-off path must be tested separately during commissioning. (t5t2)
- 9) Power supply / buffering. Switches have to withstand undervoltage / voltage breakdown for min. 3 s / 0,3 s (FRT)  
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- 10) TT-system: switch all line conductors and N, TN-system: only switch line conductor

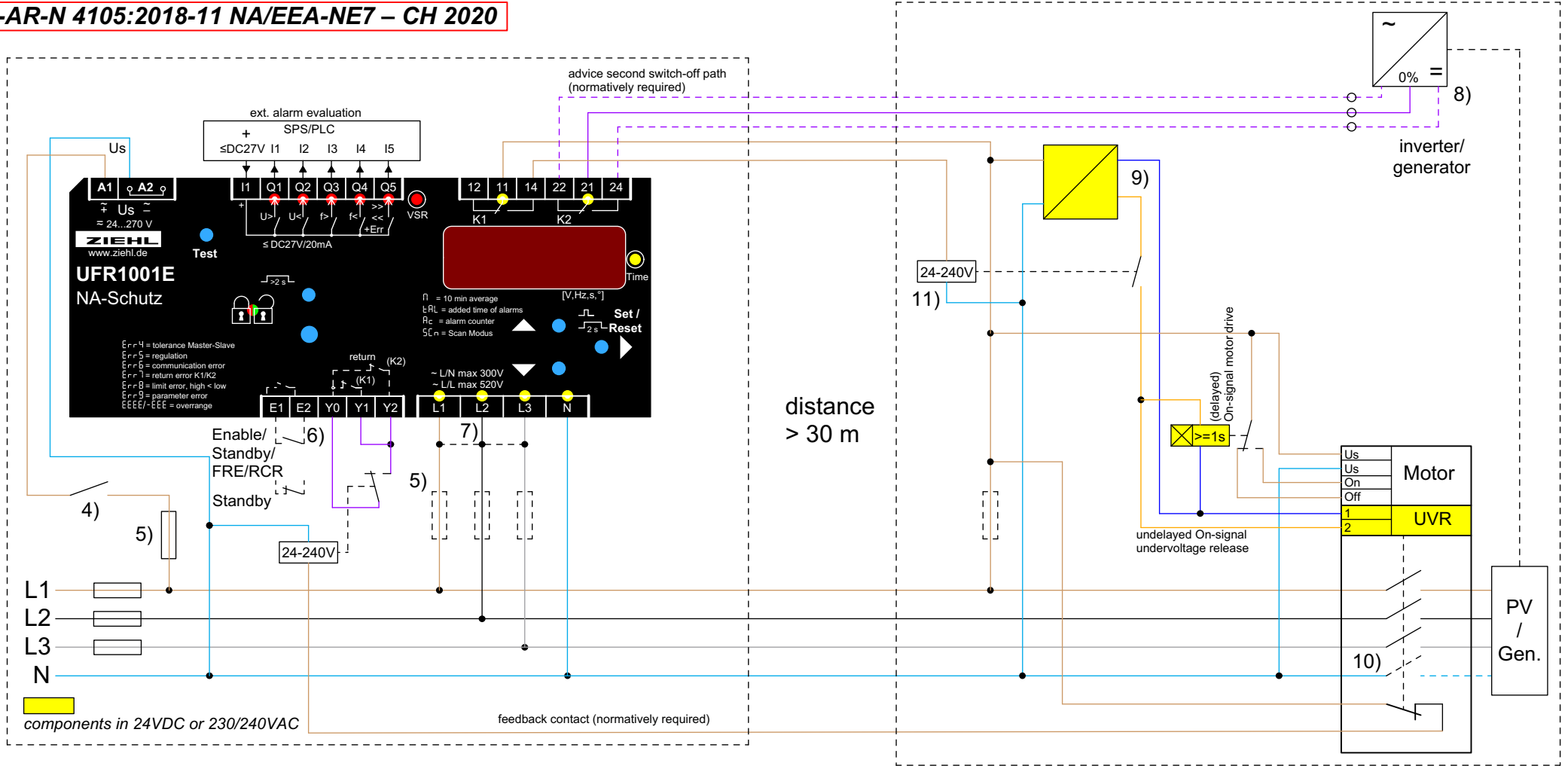
**VDE-AR-N 4105:2018-11  
NA/EEA-NE7 – CH 2020**



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{5r} / 5\epsilon b5$ . (default setting since Fnr 0-17) or  $U_{5r} / 5\epsilon b4$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
contact open and  $U_{5r} / 5\epsilon b0$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 8) Single-fault safety: shutdown of the self generation plant e.g. by ripple control input 0% with K2. Use coupling relays for contact multiplication of if safe isolation is required. (control voltage 24-230VAC or feeded over power supply / buffer)  
This second switch-off path must be tested separately during commissioning. ( $\epsilon 5\epsilon 2$ )
- 9) Power supply / buffering. Switches have to withstand undervoltage / voltage breakdown for min. 3 s / 0,3 s (FRT)  
The power supplies listed in the separate document "FRT Komponenteneempfehlung", in connection with 24VDC contactors / undervoltage release, ensure that the switch-off delay time (3s) is fulfilled in the event of undervoltage. Bridging time UFR1001E at dropping  $U_s$  230 V to 0 V: 400 ms
- 10) TT-system: switch all line conductors and N, TN-system: only switch line conductor



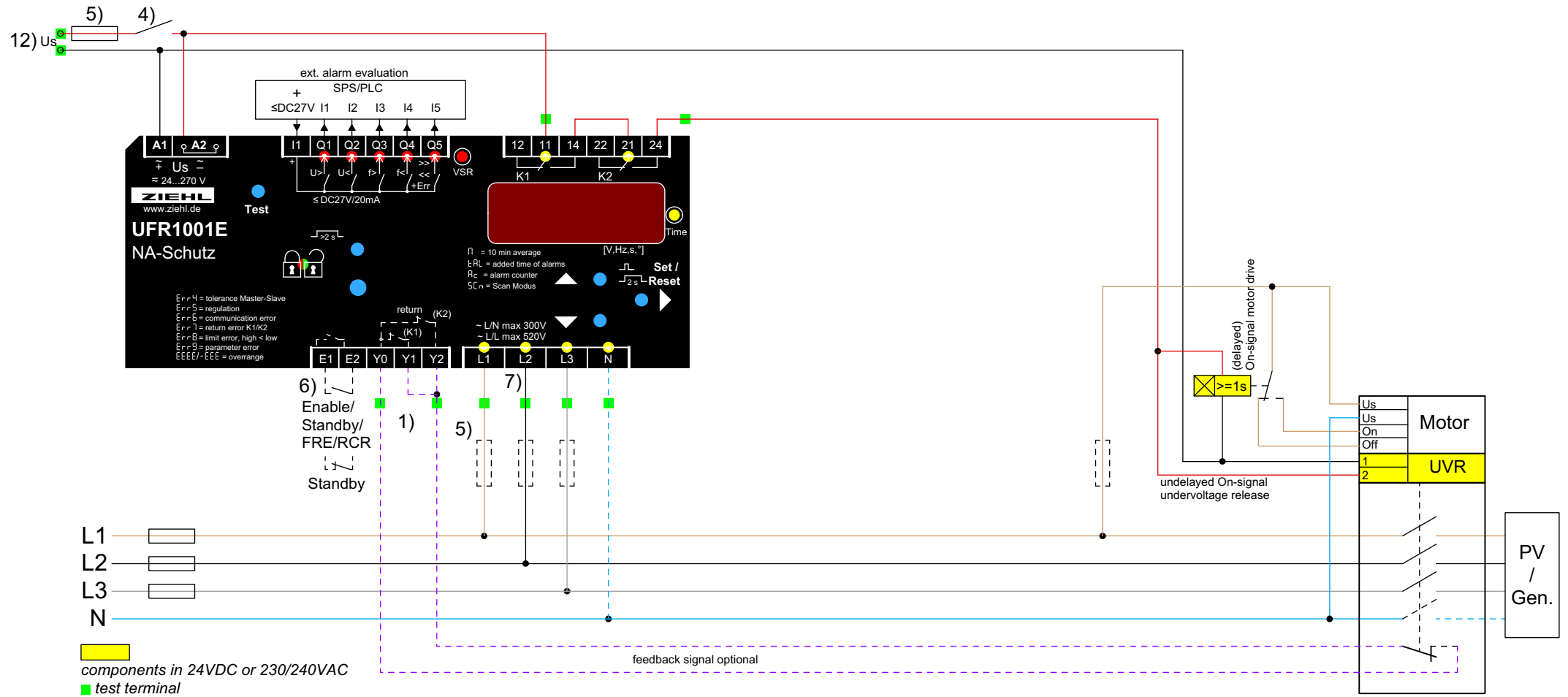
**VDE-AR-N 4105:2018-11 NA/EEA-NE7 – CH 2020**



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{Sr} / 5 \leq U_{S5}$ . (default setting since Fnr 0-17) or  $U_{Sr} / 5 \leq U_{S4}$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...) contact open and  $U_{Sr} / 5 \leq U_{S6}$ . (since Fnr 0-17) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 8) Single-fault safety: shutdown of the self generation plant e.g. by ripple control input 0% with K2. Use coupling relays ford contact multiplication of if safe isolation is required. (control voltage 24-230VAC or feeded over power supply / buffer) This second switch-off path must be tested separately during commissioning. ( $t_{S2}$ )
- 9) Power supply / buffering. Switches have to withstand undervoltage / voltage breakdown for min. 3 s / 0,3 s (FRT) The power supplies listed in the separate document "FRT Komponenteneempfehlung", in connection with 24VDC contactors / undervoltage release, ensure that the switch-off delay time (3s) is fulfilled in the event of undervoltage. Bridging time UFR1001E at dropping  $U_s$  230 V to 0 V: 400 ms
- 10) TT-system: switch all line conductors and N, TN-system: only switch line conductor
- 11) Coupling relay extends switch-off time (total switch-off time must be  $\leq 100$ ms)

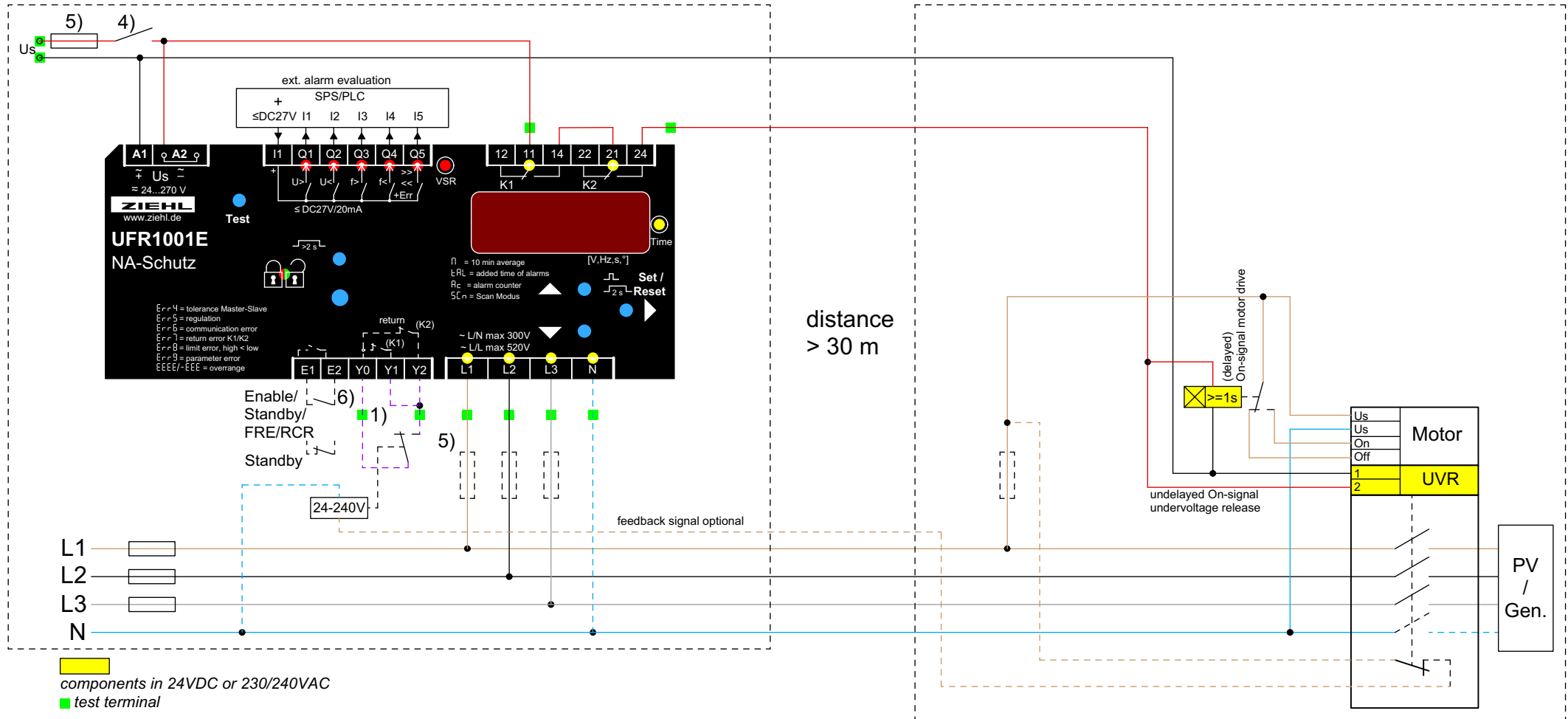
This information is supplied without liability.

**VDE-AR-N 4110+4120:2018-11 (medium voltage)**



- 1) Feedback contacts not connected: set  $t_{rEL} = \text{oFF}$  to deactivate feedback-contacts [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{5r} / 5t_{b5}$ . (default setting since Fnr 0-17) or  $u_{5r} / 5t_{b4}$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
 contact open and  $u_{5r} / 5t_{b0}$ . (since Fnr 0-17) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 12) (existing) control voltage that ensures the protective functions for at min. 5s, e.g. by using a DC power supply unit with wide-range input and buffering

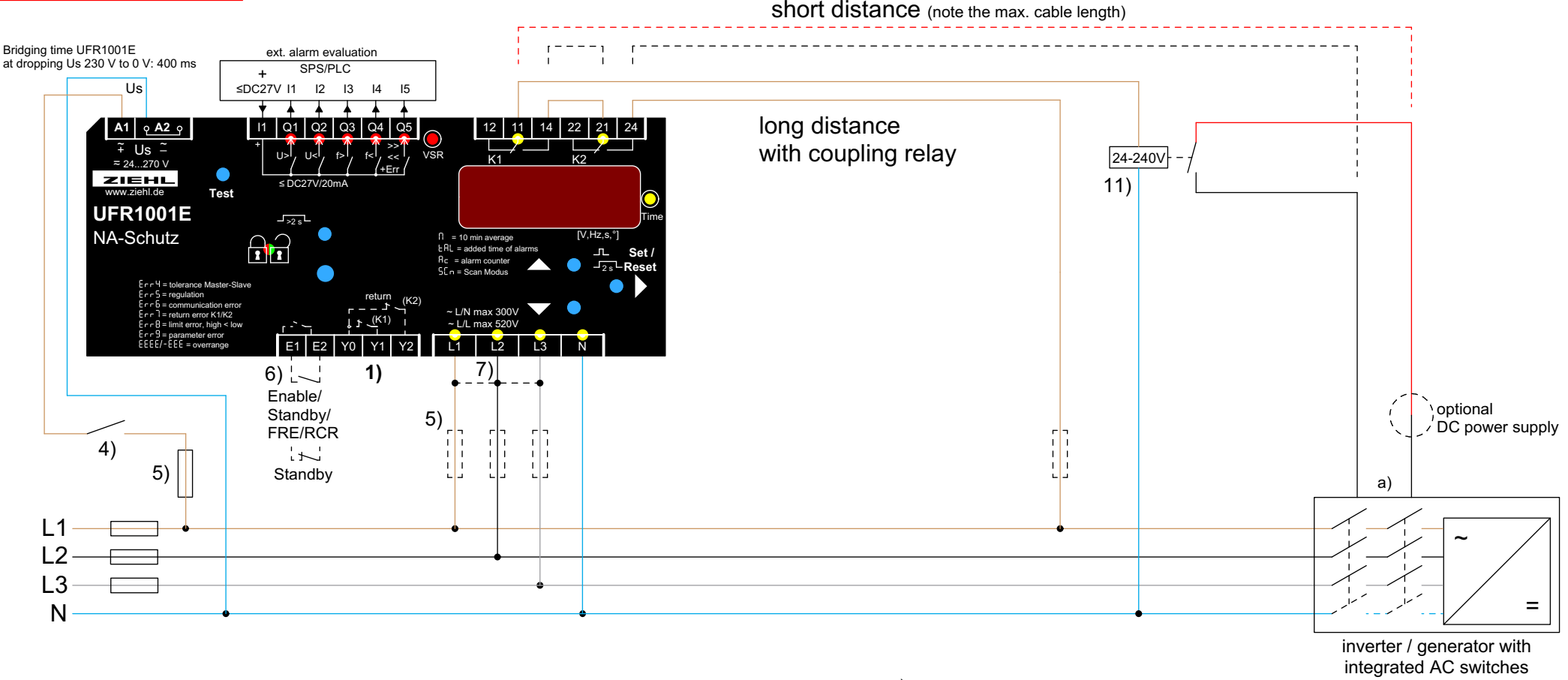
**VDE-AR-N 4110+4120:2018-11 (medium voltage)**



- 1) Feedback contacts not connected: set ErEL = OFF to deactivate feedback-contacts [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{Sr} / 5 \leq U_{Sb}$ . (default setting since Fnr 0-17) or  $U_{Sr} / 5 \leq U_{Sb}$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
 contact open and  $U_{Sr} / 5 \leq U_{Sb}$ . (since Fnr 0-17) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)



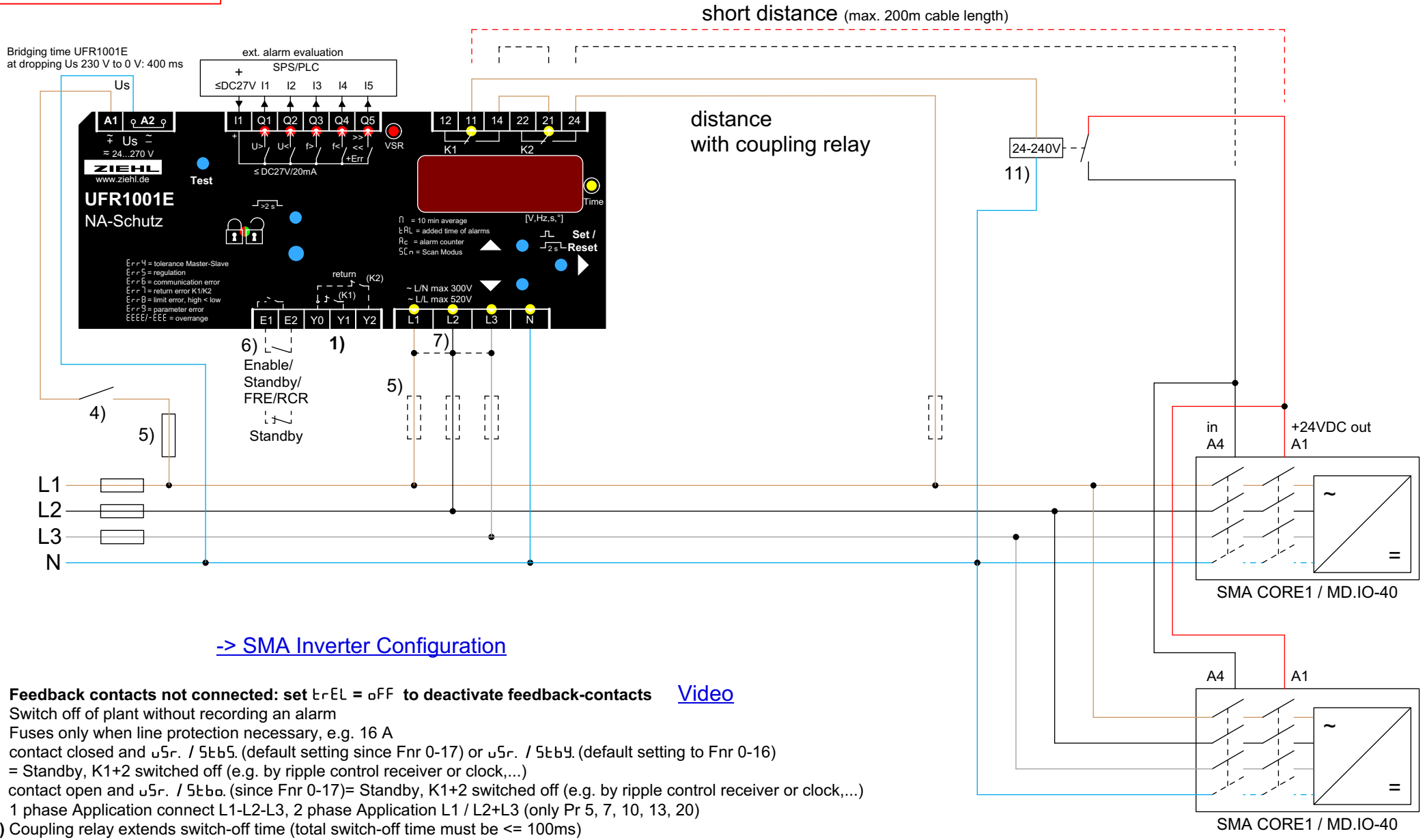
**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**



a)	Manufacturer	input module	connectors	max. cable length	ext. power supply
	SMA	MD.IO-40	A1 + A4	200 m	nein
	Solar Edge	Wechselrichter	5V + L1	-	nein

- 1) **Feedback contacts not connected: set  $t_{rEL}$  = off to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{5r}$  /  $5t_{b5}$ . (default setting since Fnr 0-17) or  $u_{5r}$  /  $5t_{b9}$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...) contact open and  $u_{5r}$  /  $5t_{b0}$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 11) Coupling relay extends switch-off time (total switch-off time must be  $\leq 100ms$ )

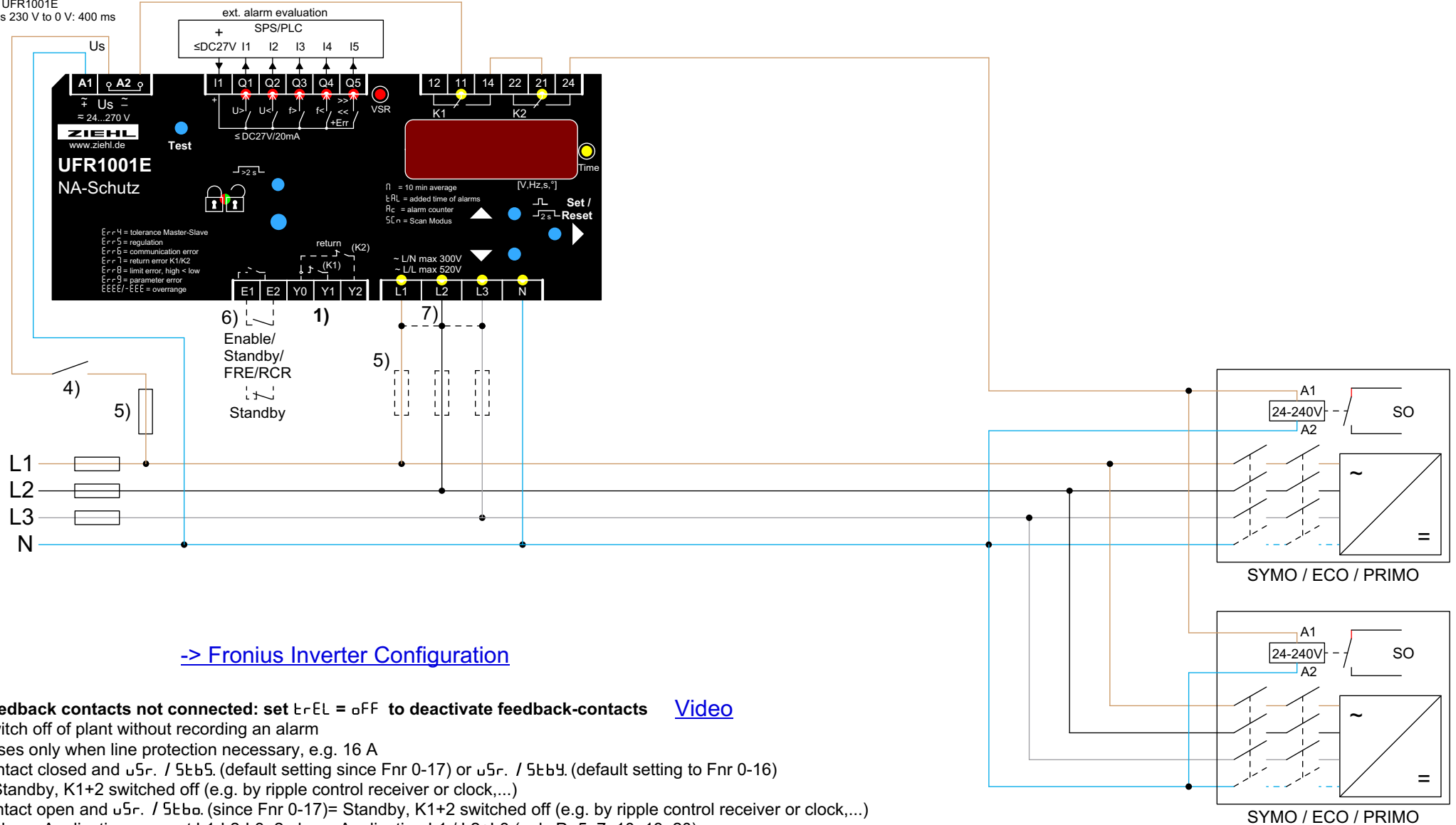
**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**



- 1) **Feedback contacts not connected: set ErrEL = OFF to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{Sr} / 5 \leq U_{S5}$ . (default setting since Fnr 0-17) or  $U_{Sr} / 5 \leq U_{S9}$ . (default setting to Fnr 0-16)  
= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 6) contact open and  $U_{Sr} / 5 \leq U_{S0}$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 11) Coupling relay extends switch-off time (total switch-off time must be  $\leq 100ms$ )

**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**

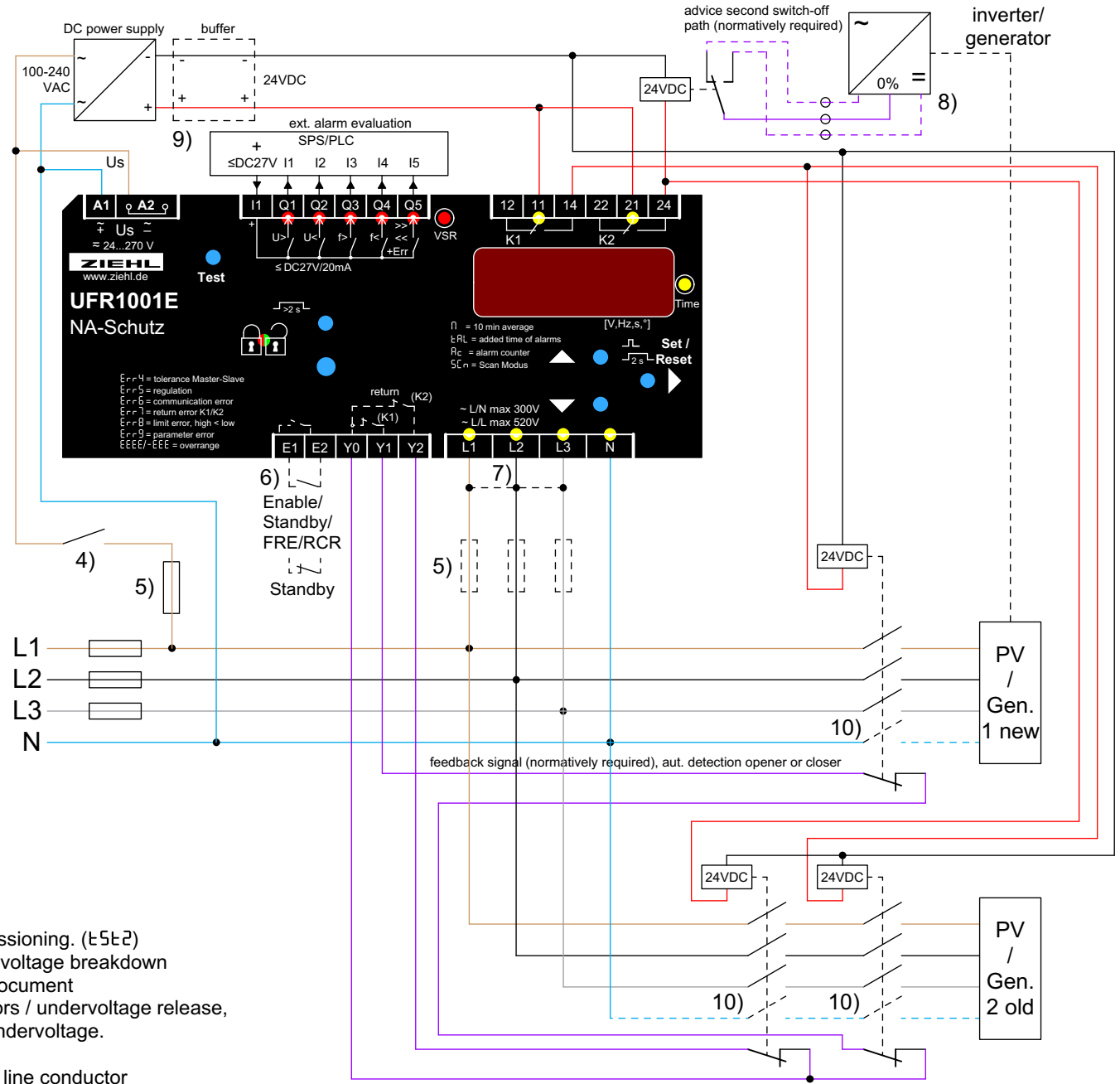
Bridging time UFR1001E  
at dropping Us 230 V to 0 V: 400 ms



[-> Fronius Inverter Configuration](#)

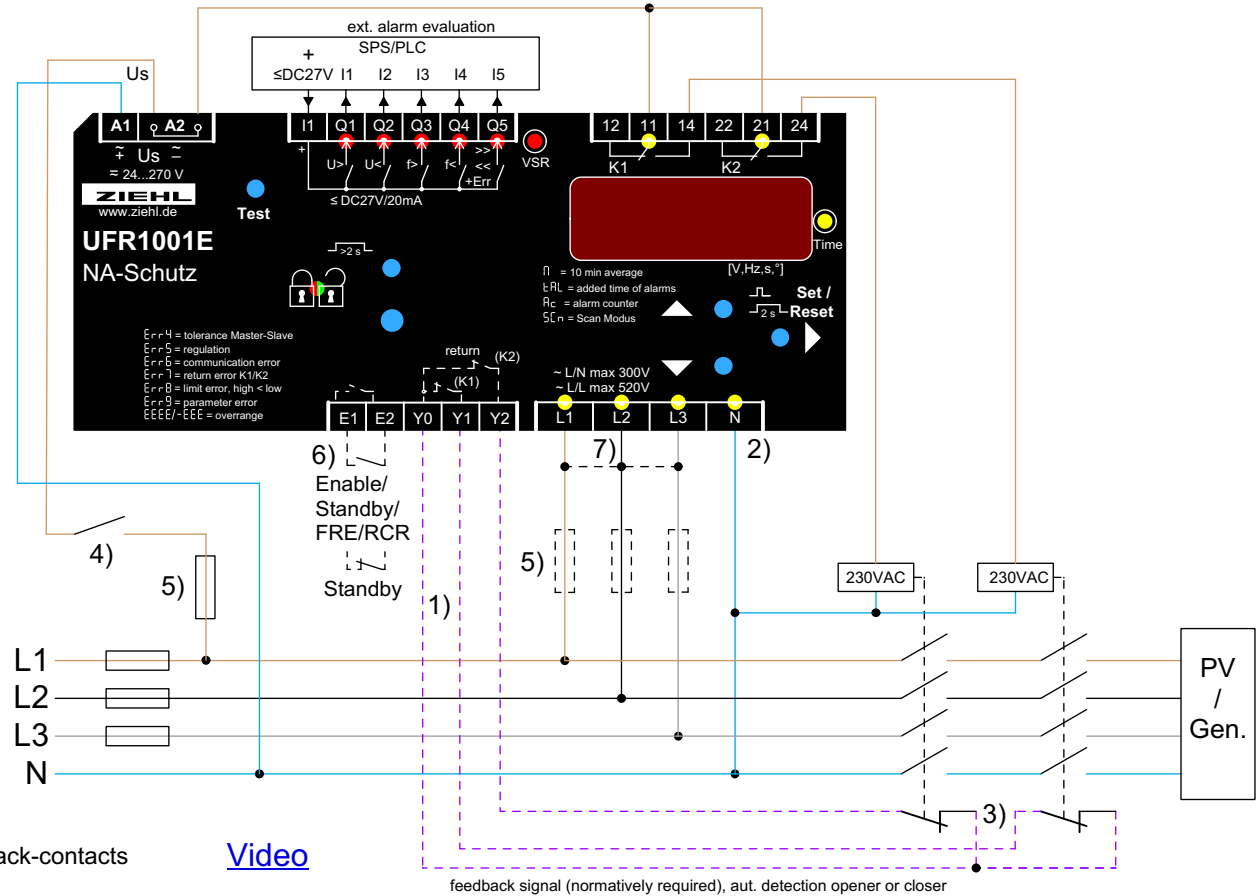
- 1) **Feedback contacts not connected: set  $t_{rEL} = OFF$  to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{Sr} / 5 \leq b_5$ . (default setting since Fnr 0-17) or  $u_{Sr} / 5 \leq b_9$ . (default setting to Fnr 0-16)  
= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 6) contact open and  $u_{Sr} / 5 \leq b_0$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)

**VDE-AR-N 4105:2018-11**



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{5r}$  /  $5\epsilon b5$ . (default setting since Fnr 0-17) or  $U_{5r}$  /  $5\epsilon b4$ . (default setting to Fnr 0-16)  
= Standby, K1+2 switched off  
contact open and  $U_{5r}$  /  $5\epsilon b6$ . (since Fnr 0-17)  
= Standby, K1+2 switched off  
(e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3,  
2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 8) Single-fault safety: shutdown of the self generation plant  
e.g. by ripple control input 0% with K2. Use  
coupling relays for contact multiplication  
if safe isolation is required.  
(control voltage 24-230VAC or feeded over power supply / buffer)  
This second switch-off path must be tested separately during commissioning. ( $\epsilon 5\epsilon 2$ )
- 9) Power supply / buffering. Switches have to withstand undervoltage / voltage breakdown  
for min. 3 s / 0,3 s (FRT) The power supplies listed in the separate document  
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ensure that the switch-off delay time (3s) is fulfilled in the event of undervoltage.  
Bridging time UFR1001E at dropping  $U_s$  230 V to 0 V: 400 ms
- 10) TT-system: switch all line conductors and N, TN-system: only switch line conductor

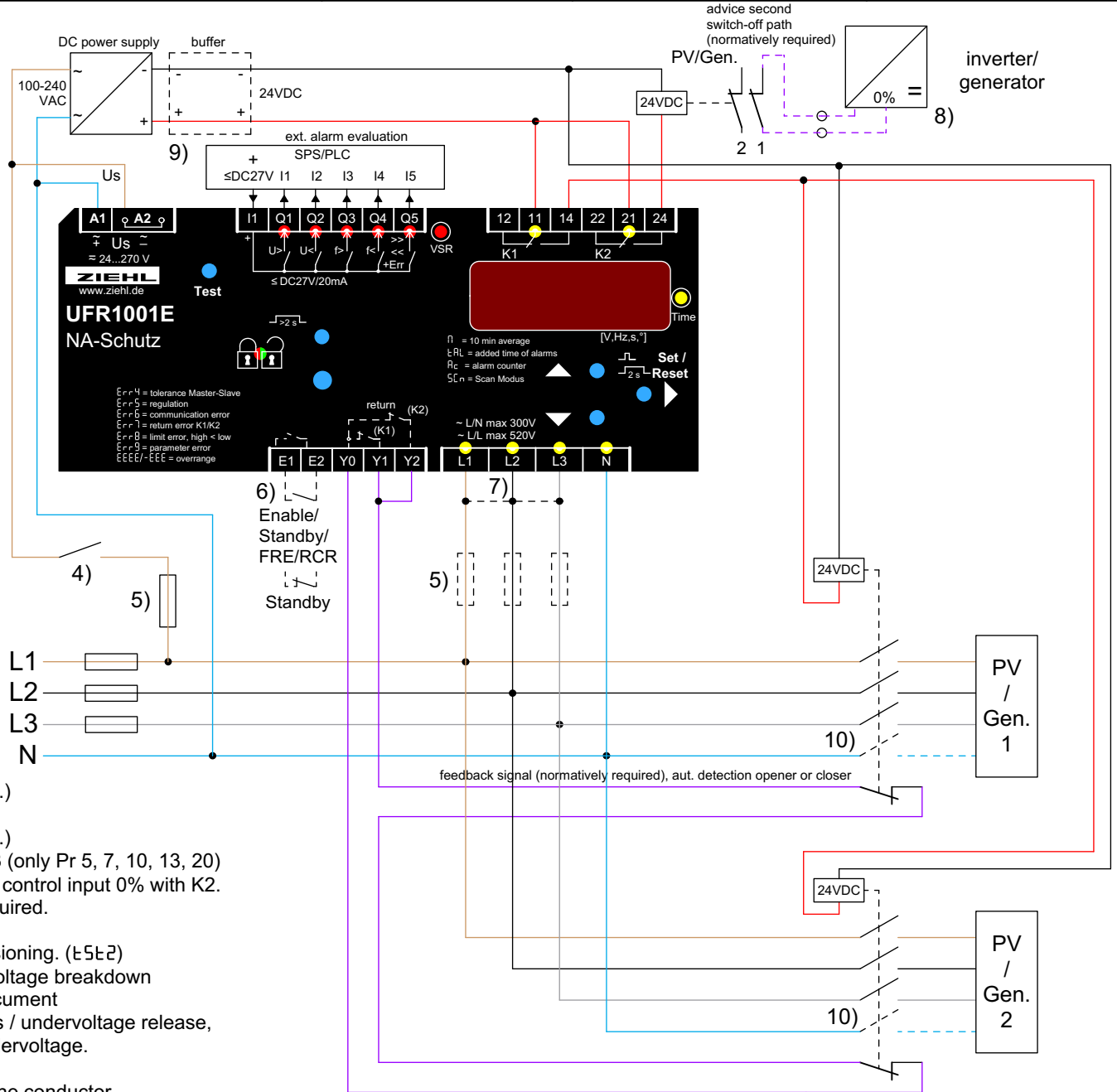
**VDE-AR-N 4105:2011**



- 1) Feedback contacts not connected: set  $t_{rEL} = OFF$  to deactivate feedback-contacts
- 2) N connected → only for programs with N
- 3) NC- or NO-contacts can be connected, self-learning when switching on
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{5r} / 5t_{b5}$ . (default setting since Fnr 0-17) or  $U_{5r} / 5t_{b9}$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
contact open and  $U_{5r} / 5t_{b0}$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)

**VDE-AR-N 4105:2018-11**

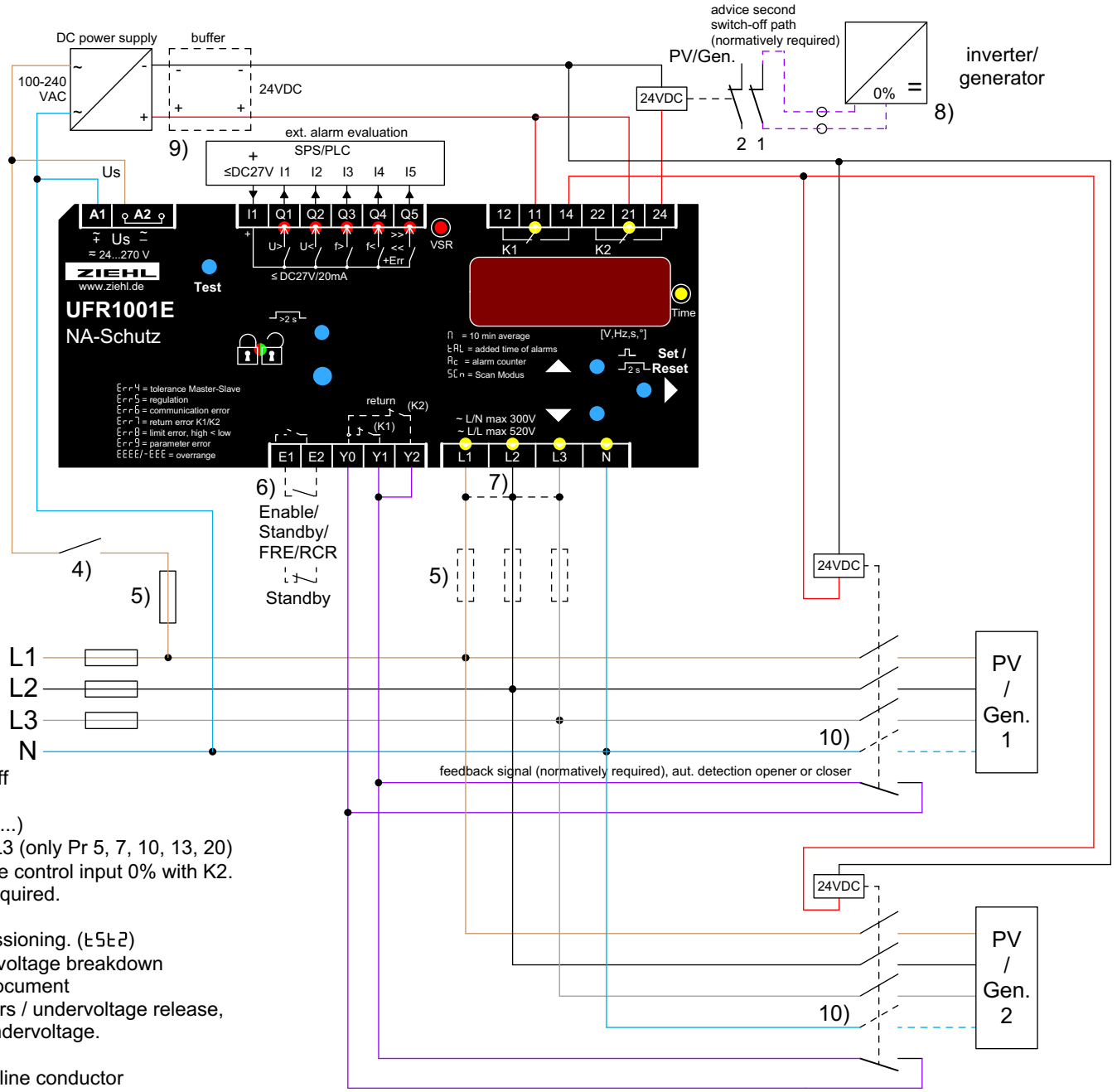
Correct wiring of the 2 section switch:  
With correct wiring monitoring of feedback contacts **MUST NOT RESPOND**, when one of the switches is switched off manually.



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{5r} / 5t_{b5}$ . (default setting since Fnr 0-17) or  $U_{5r} / 5t_{b4}$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...) contact open and  $U_{5r} / 5t_{b6}$ . (since Fnr 0-17) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 8) Single-fault safety: shutdown of the self generation plant e.g. by ripple control input 0% with K2. Use coupling relays for contact multiplication of if safe isolation is required. (control voltage 24-230VAC or feeded over power supply / buffer) This second switch-off path must be tested separately during commissioning. ( $t_{5t2}$ )
- 9) Power supply / buffering. Switches have to withstand undervoltage / voltage breakdown for min. 3 s / 0,3 s (FRT) The power supplies listed in the separate document "FRT Komponentenempfehlung", in connection with 24VDC contactors / undervoltage release, ensure that the switch-off delay time (3s) is fulfilled in the event of undervoltage. Bridging time UFR1001E at dropping  $U_s$  230 V to 0 V: 400 ms
- 10) TT-system: switch all line conductors and N, TN-system: only switch line conductor

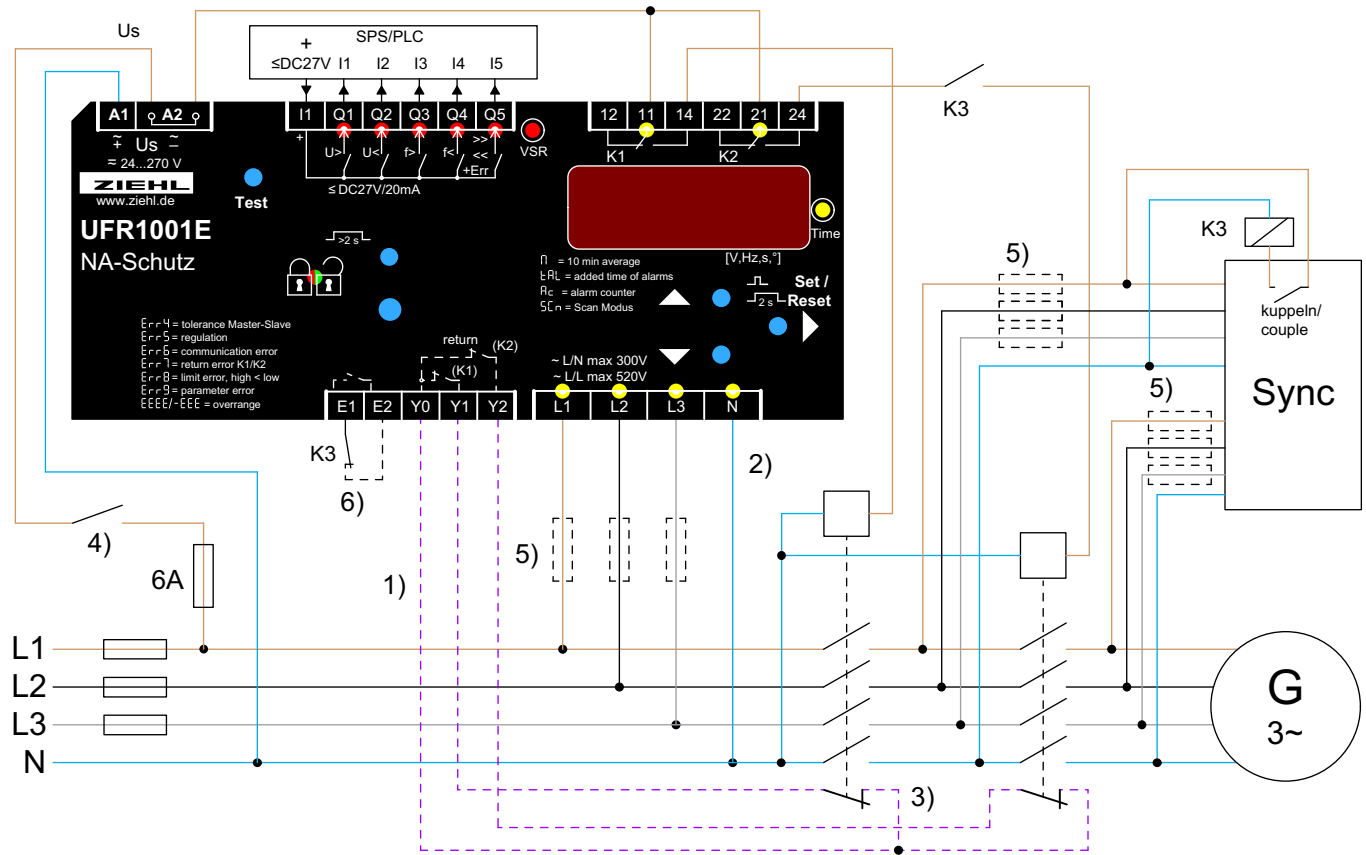
**VDE-AR-N 4105:2018-11**

Correct wiring of the 2x2 section switch:  
With correct wiring monitoring of feedback contacts **MUST NOT RESPOND**, when one of the switches is switched off manually.



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $\leq 5r$ . /  $5\leq b5$ . (default setting since Fnr 0-17) or  $\leq 5r$ . /  $5\leq b4$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off contact open and  $\leq 5r$ . /  $5\leq b0$ . (since Fnr 0-17) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 8) Single-fault safety: shutdown of the self generation plant e.g. by ripple control input 0% with K2. Use coupling relays for contact multiplication if safe isolation is required. (control voltage 24-230VAC or fed over power supply / buffer) This second switch-off path must be tested separately during commissioning. ( $\leq 5\leq 2$ )
- 9) Power supply / buffering. Switches have to withstand undervoltage / voltage breakdown for min. 3 s / 0,3 s (FRT) The power supplies listed in the separate document "FRT Komponenteneempfehlung", in connection with 24VDC contactors / undervoltage release, ensure that the switch-off delay time (3s) is fulfilled in the event of undervoltage. Bridging time UFR1001E at dropping  $U_s$  230 V to 0 V: 400 ms
- 10) TT-system: switch all line conductors and N, TN-system: only switch line conductor

**VDE-AR-N 4105:2011**  
**VDE-AR-N 4105:2018-11 Pgen ≤ 50kW**



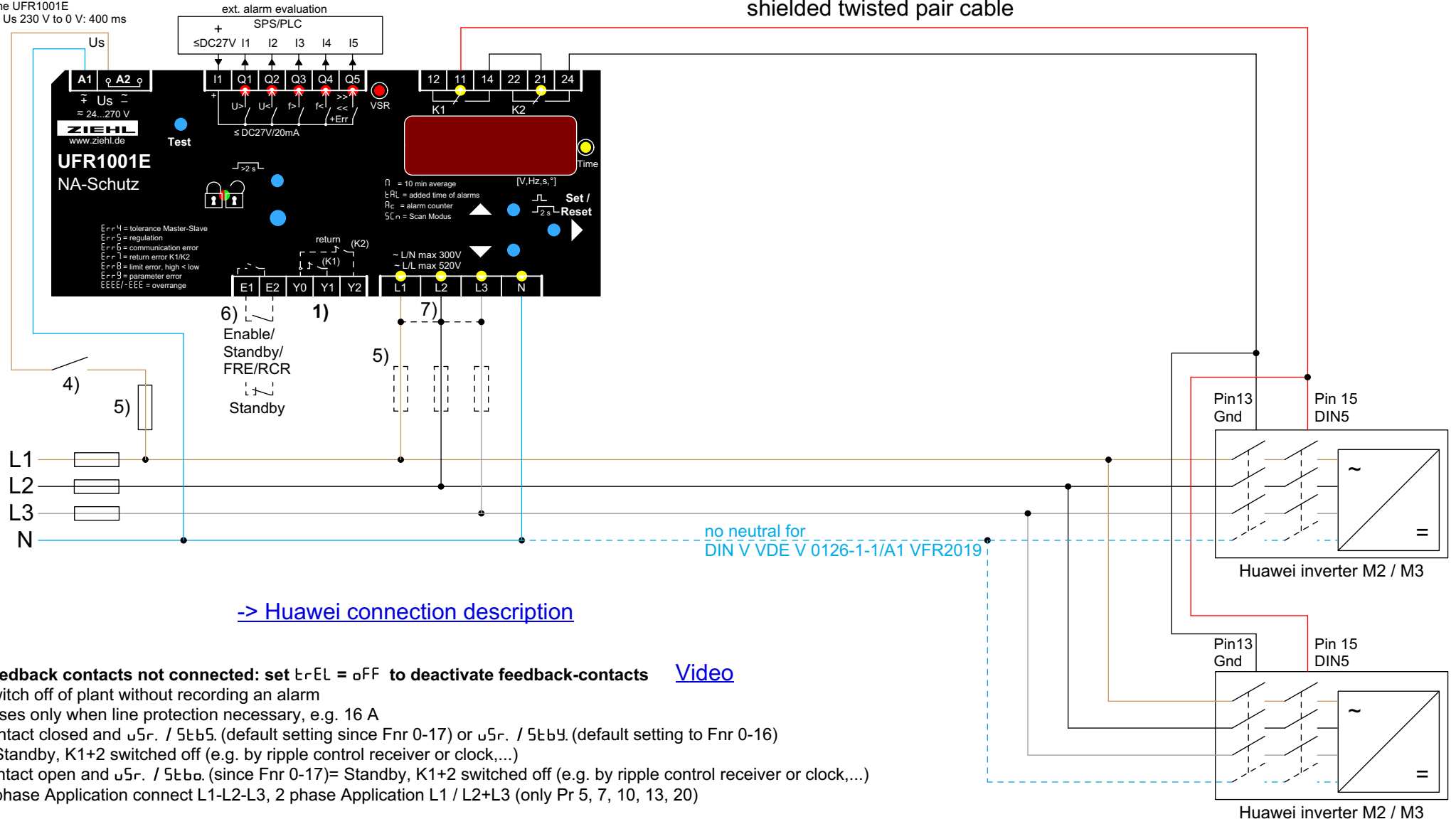
- 1) Feedback contacts not connected: set  $t_{r-EL} = \text{OFF}$  to deactivate feedback-contacts
- 2) N connected → only for programs with N
- 3) NC- or NO-contacts can be connected, self-learning when switching on
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{5r} / u_{42}$ . (adjust) = no evaluation Y1 and Y2 in switch-on direction

[Video](#)



**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**  
**DIN V VDE V 0126-1-1/A1 VFR2019**

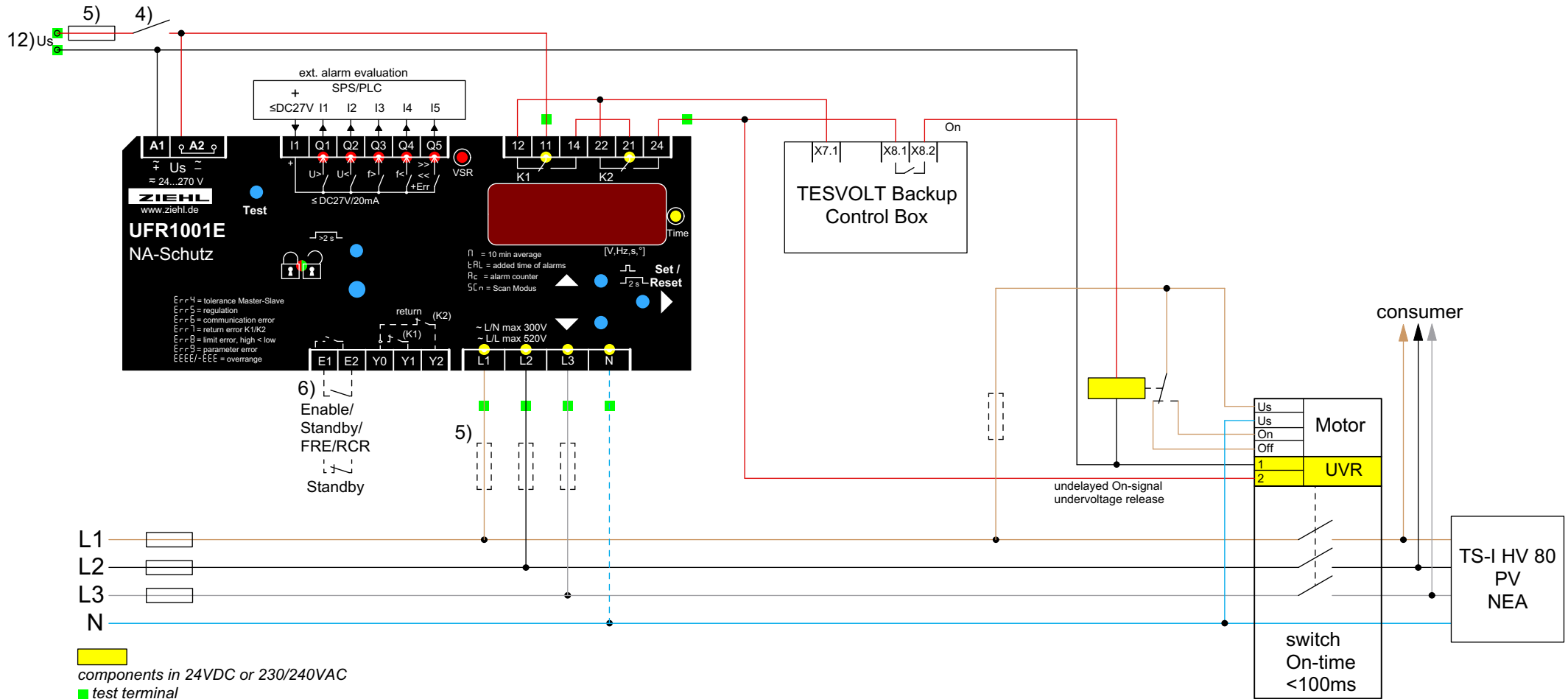
Bridging time UFR1001E  
at dropping Us 230 V to 0 V: 400 ms



[-> Huawei connection description](#)

- 1) **Feedback contacts not connected: set ErrEL = OFF to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{Sr} / 5 \leq b5$ . (default setting since Fnr 0-17) or  $U_{Sr} / 5 \leq b9$ . (default setting to Fnr 0-16)  
= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- contact open and  $U_{Sr} / 5 \leq b0$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)

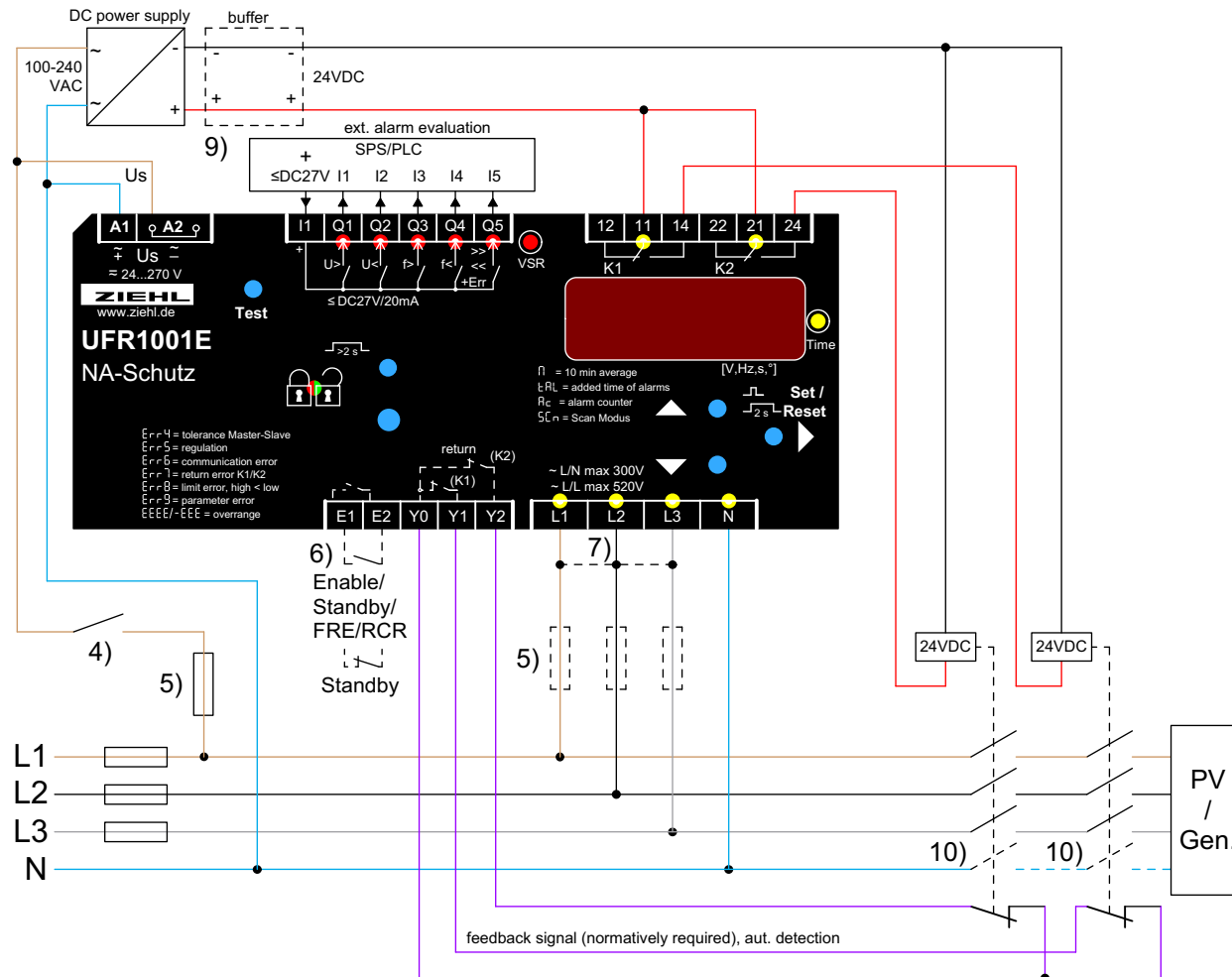
**VDE-AR-N 4110:2018-11 (medium voltage)**



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{5r}$ . /  $5\epsilon b5$ . (default setting since Fnr 0-17) or  $u_{5r}$ . /  $5\epsilon b9$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
 contact open and  $u_{5r}$ . /  $5\epsilon b6$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 12) (existing) control voltage that ensures the protective functions for at min. 5s, e.g. by using a DC power supply unit with wide-range input and buffering

**VDE-AR-N 4105:2018-11  
NA/EEA-NE7 – CH 2020**

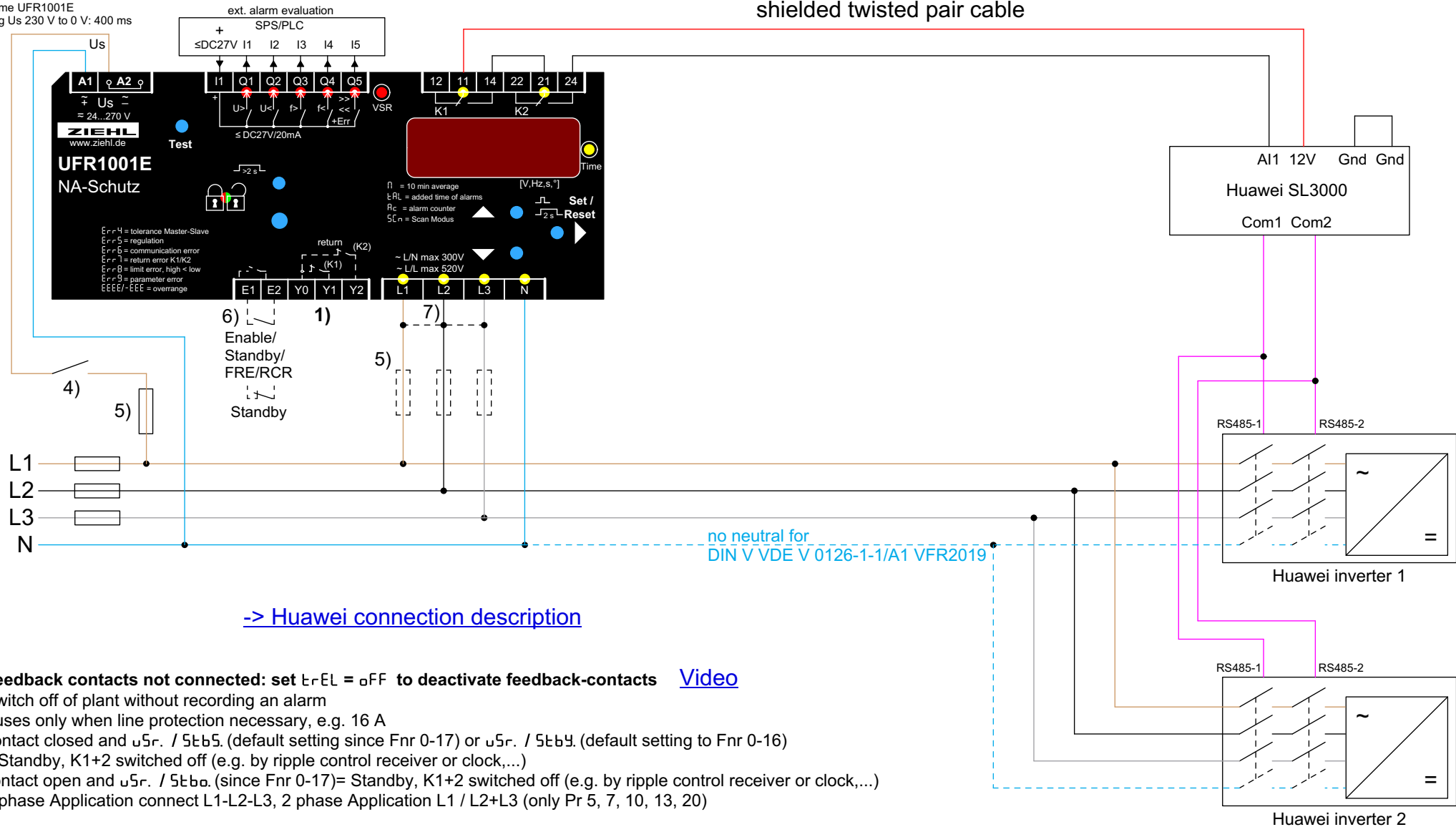
DC power supply must be designed for 2 contactors (switch-on power) use buffer module if necessary



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{5r}$  /  $5t_{b5}$ . (default setting since Fnr 0-17) or  $U_{5r}$  /  $5t_{b4}$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
contact open and  $U_{5r}$  /  $5t_{b6}$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 9) Power supply / buffering. Switches have to withstand undervoltage / voltage breakdown for min. 3 s / 0,3 s (FRT)  
The power supplies listed in the separate document "FRT Komponentenempfehlung", in connection with 24VDC contactors / undervoltage release, ensure that the switch-off delay time (3s) is fulfilled in the event of undervoltage. Bridging time UFR1001E at dropping  $U_s$  230 V to 0 V: 400 ms
- 10) TT-system: switch all line conductors and N, TN-system: only switch line conductor

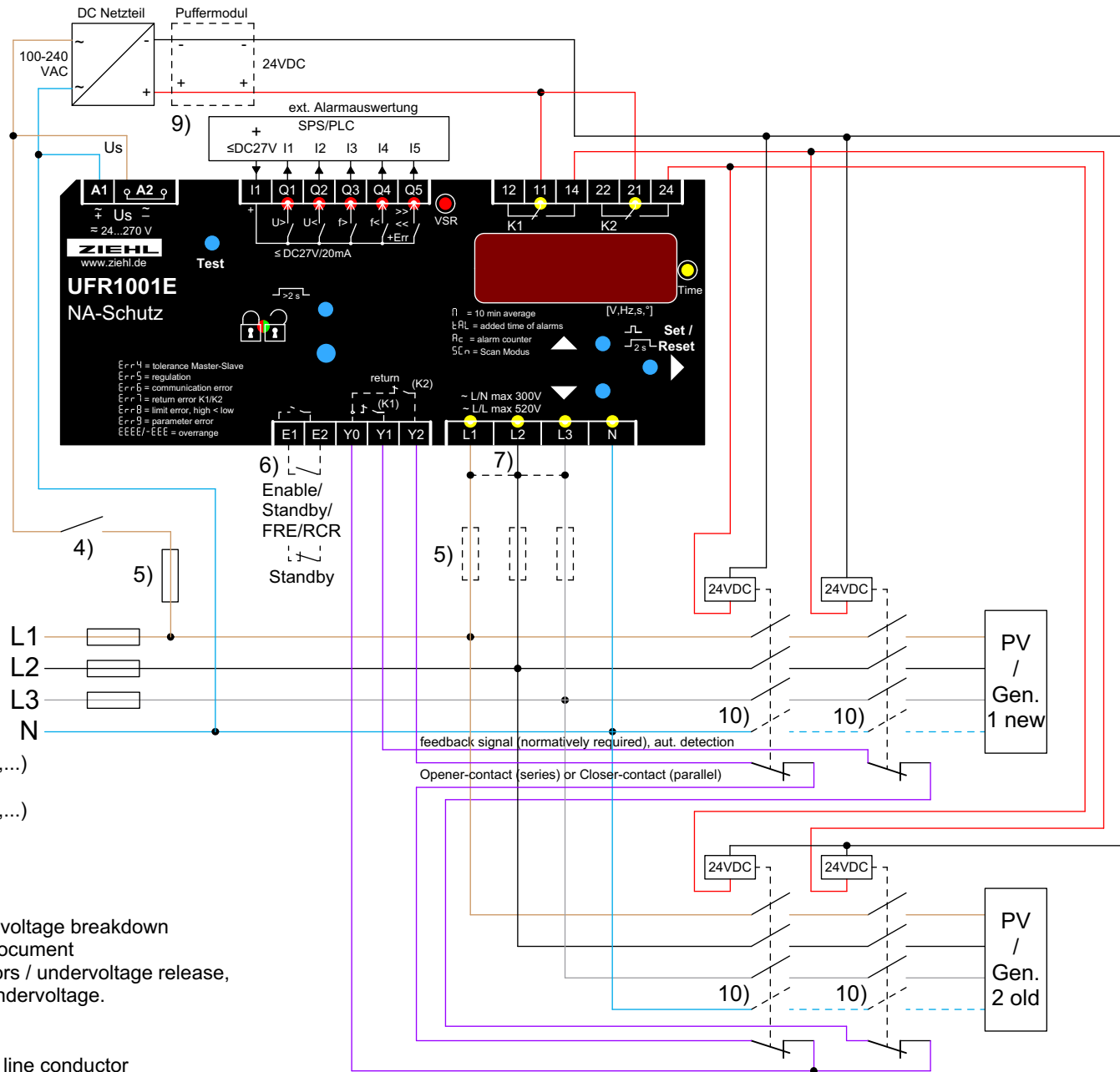
**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**  
**DIN V VDE V 0126-1-1/A1 VFR2019**

Bridging time UFR1001E  
at dropping Us 230 V to 0 V: 400 ms



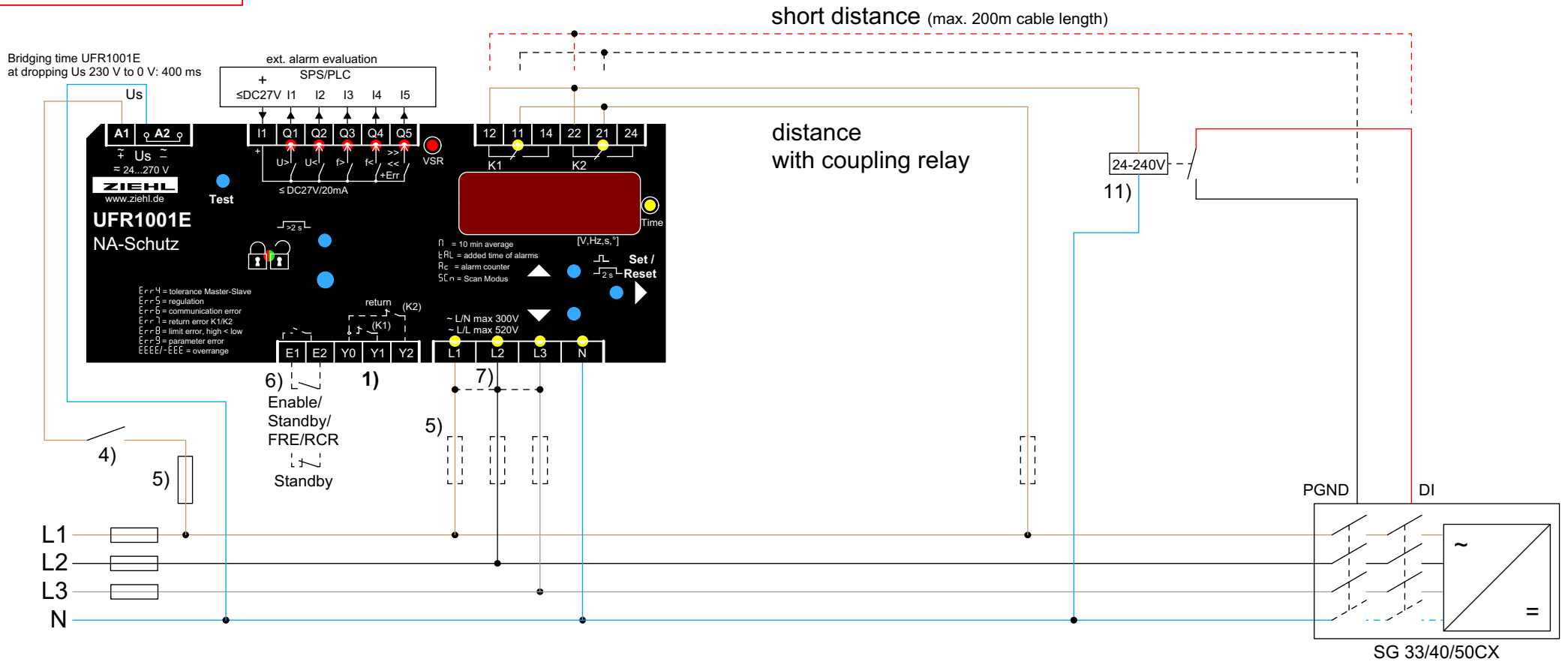
- 1) **Feedback contacts not connected: set t<sub>r</sub>EL = OFF to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and u<sub>5r</sub> / 5t<sub>5</sub>. (default setting since Fnr 0-17) or u<sub>5r</sub> / 5t<sub>5</sub>. (default setting to Fnr 0-16)  
= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- contact open and u<sub>5r</sub> / 5t<sub>5</sub>. (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)

**VDE-AR-N 4105:2018-11**



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{5r}$  /  $5t_{b5}$ . (default setting since Fnr 0-17) or  $u_{5r}$  /  $5t_{b4}$ . (default setting to Fnr 0-16)  
= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
contact open and  $u_{5r}$  /  $5t_{b0}$ . (since Fnr 0-17)  
= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3,  
2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 9) Power supply / buffering. Switches have to withstand undervoltage / voltage breakdown for min. 3 s / 0,3 s (FRT) The power supplies listed in the separate document "FRT Komponentenempfehlung", in connection with 24VDC contactors / undervoltage release, ensure that the switch-off delay time (3s) is fulfilled in the event of undervoltage.  
Bridging time UFR1001E at dropping  $U_s$  230 V to 0 V: 400 ms
- 10) TT-system: switch all line conductors and N, TN-system: only switch line conductor

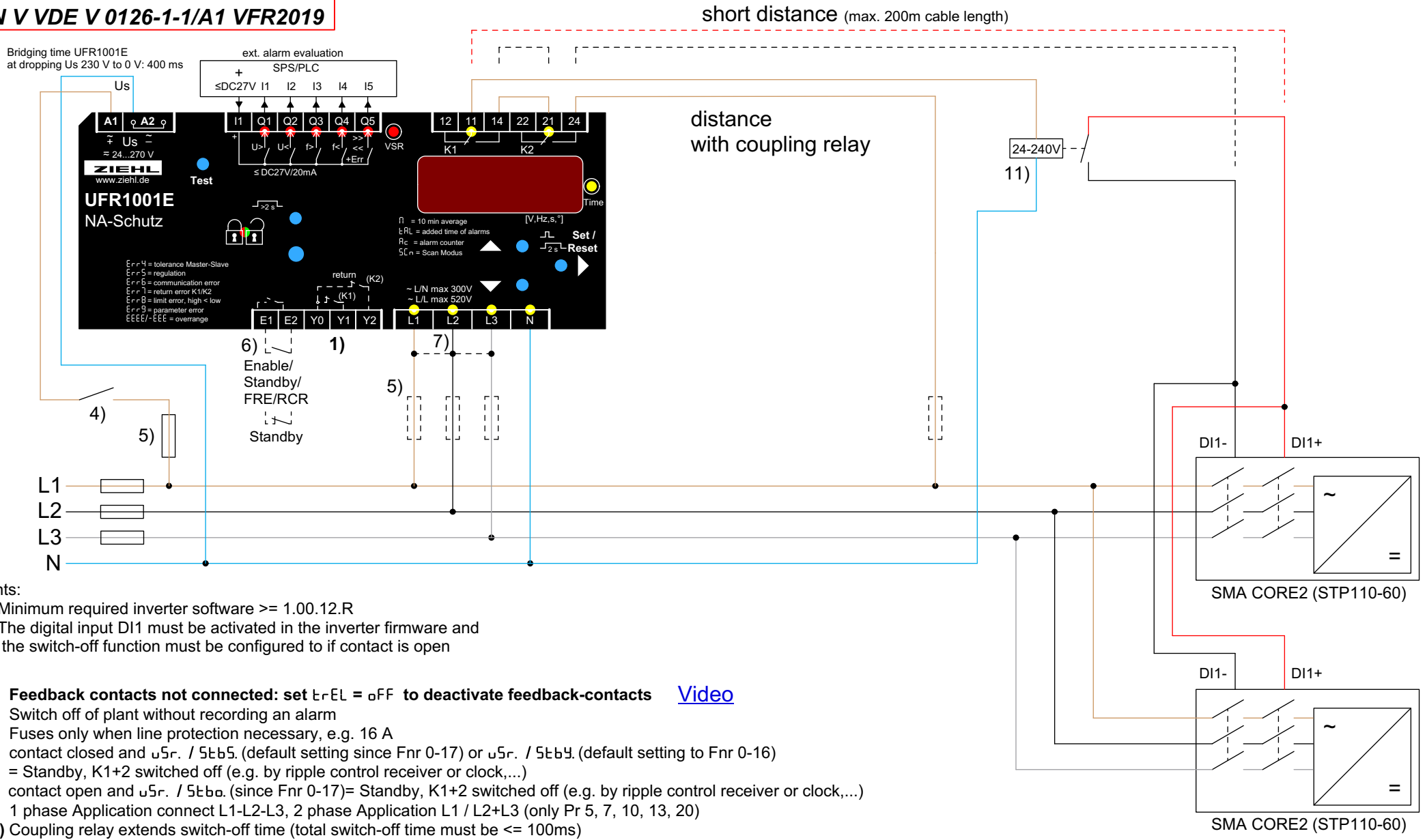
**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**



- 1) **Feedback contacts not connected: set  $E_{rEL} = OFF$  to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{Sr} / 5E_{b5}$ . (default setting since Fnr 0-17) or  $U_{Sr} / 5E_{b4}$ . (default setting to Fnr 0-16)  
= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
contact open and  $U_{Sr} / 5E_{b0}$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 11) Coupling relay extends switch-off time (total switch-off time must be  $\leq 100ms$ )

**Notice:**  
The inverter switches off, when a contact at input DI is closed.  
In the event of a cable break or line interruption, the switch-off no longer works.

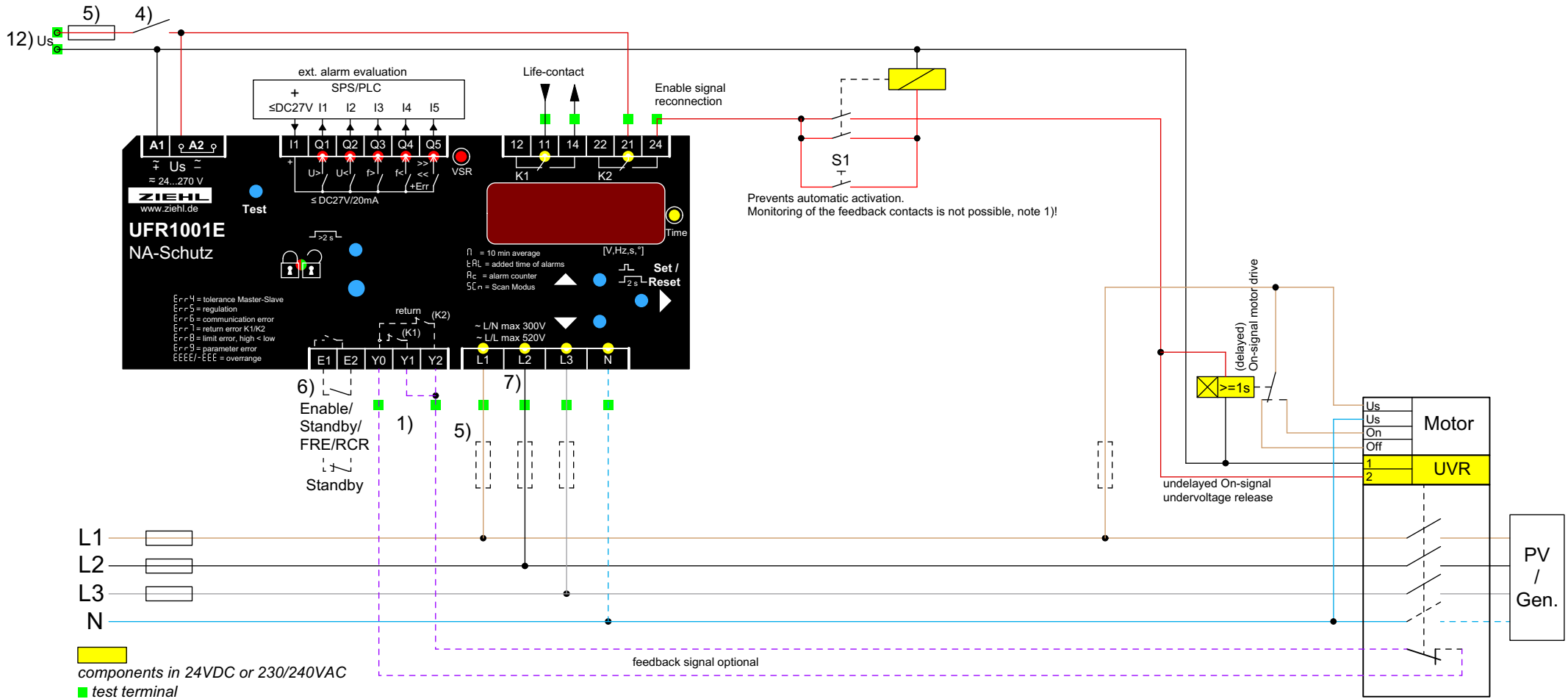
**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**  
**DIN V VDE V 0126-1-1/A1 VFR2019**



**Hints:**

1. Minimum required inverter software >= 1.00.12.R
2. The digital input DI1 must be activated in the inverter firmware and the switch-off function must be configured to if contact is open
  
- 1) **Feedback contacts not connected: set ErrEL = oFF to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{Sr} / 5 \leq b5$ . (default setting since Fnr 0-17) or  $u_{Sr} / 5 \leq b9$ . (default setting to Fnr 0-16)  
 = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
 contact open and  $u_{Sr} / 5 \leq b0$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 11) Coupling relay extends switch-off time (total switch-off time must be <= 100ms)

**VDE-AR-N 4110+4120:2018-11 (medium voltage)**

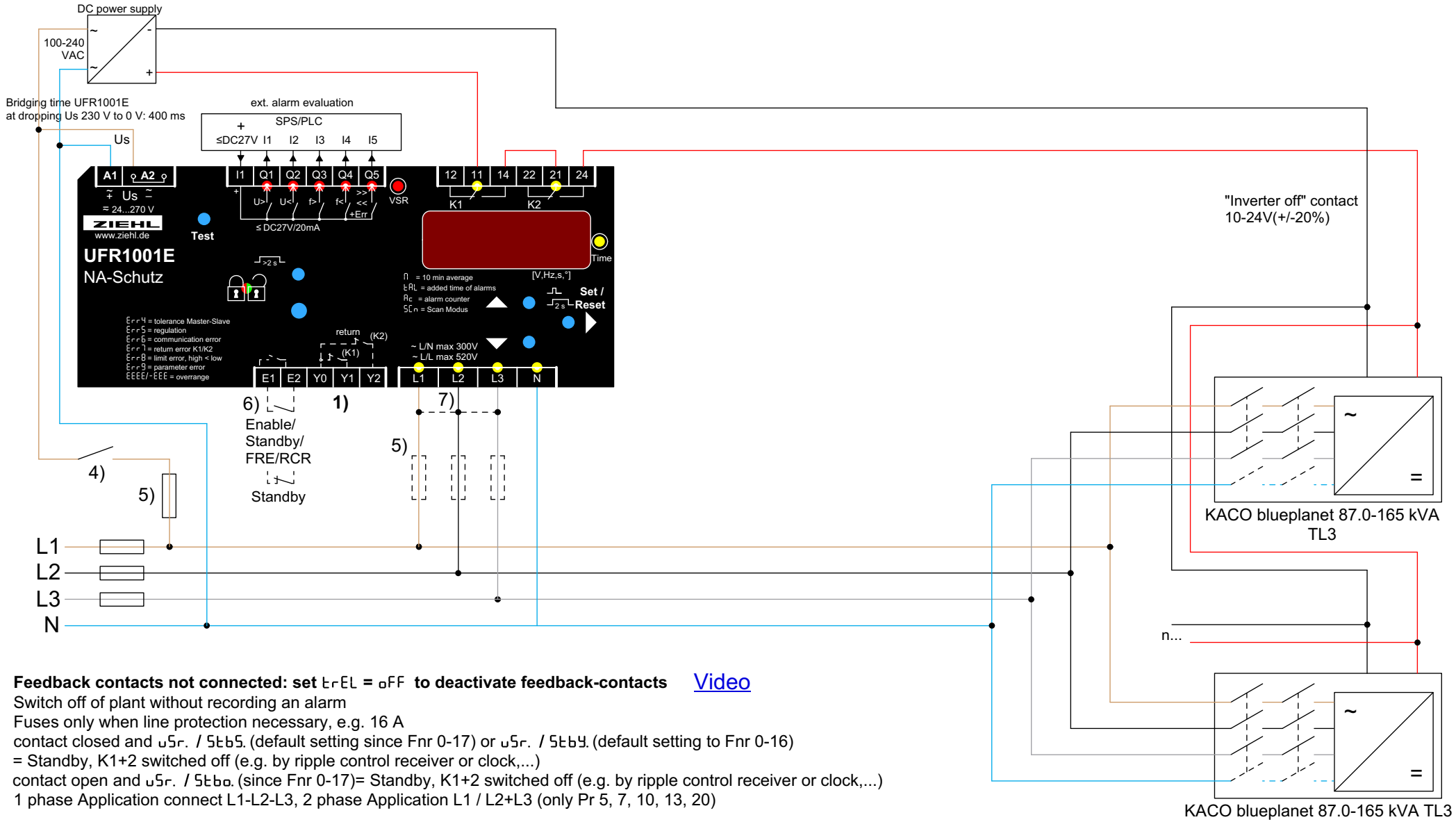


- 1) Feedback contacts not connected: set  $\text{Er-EL} = \text{oFF}$  to deactivate feedback-contacts [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $\text{u5r.} / 5\text{Eb5.}$  (default setting since Fnr 0-17) or  $\text{u5r.} / 5\text{Eb5.}$  (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 6) contact open and  $\text{u5r.} / 5\text{Eb5.}$  (since Fnr 0-17) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 12) (existing) control voltage that ensures the protective functions for at min. 5s, e.g. by using a DC power supply unit with wide-range input and buffering



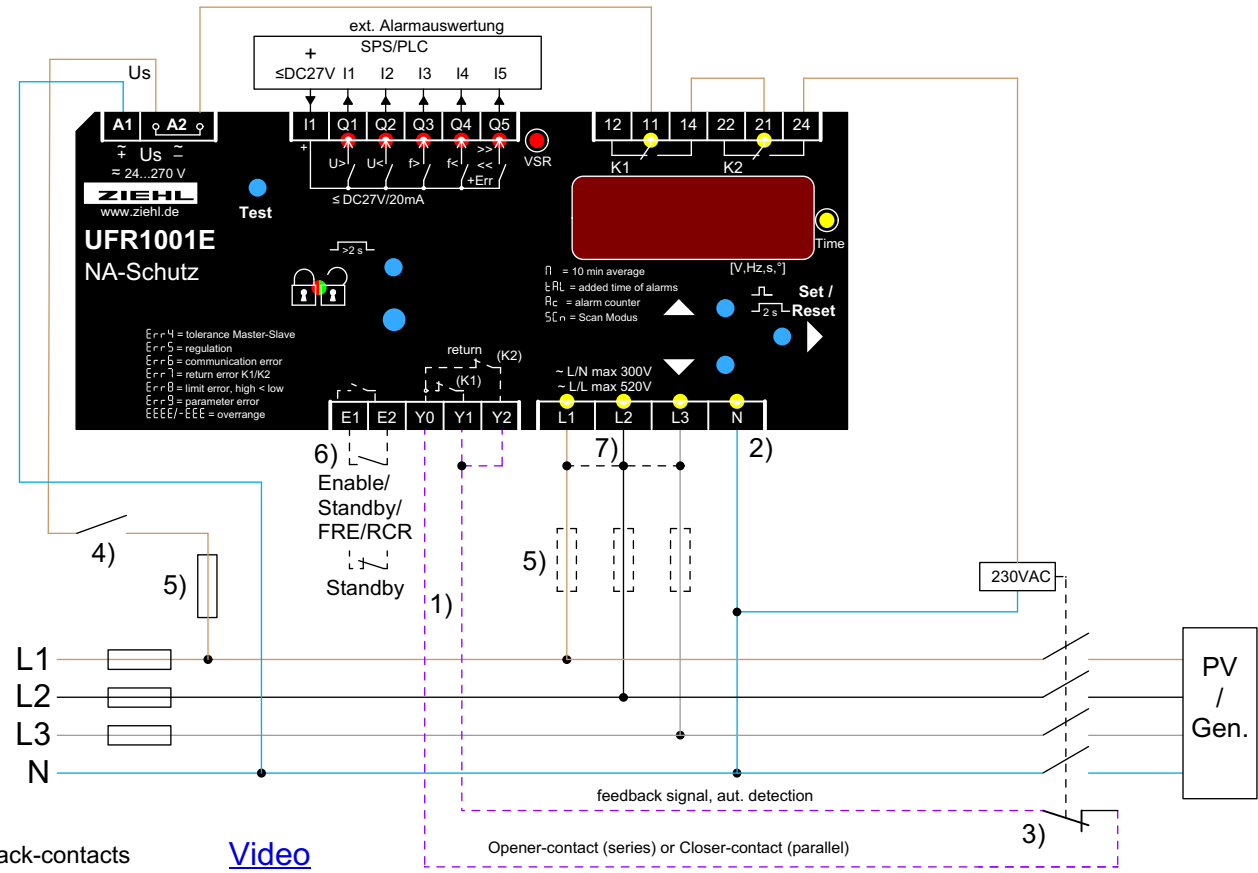


**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**



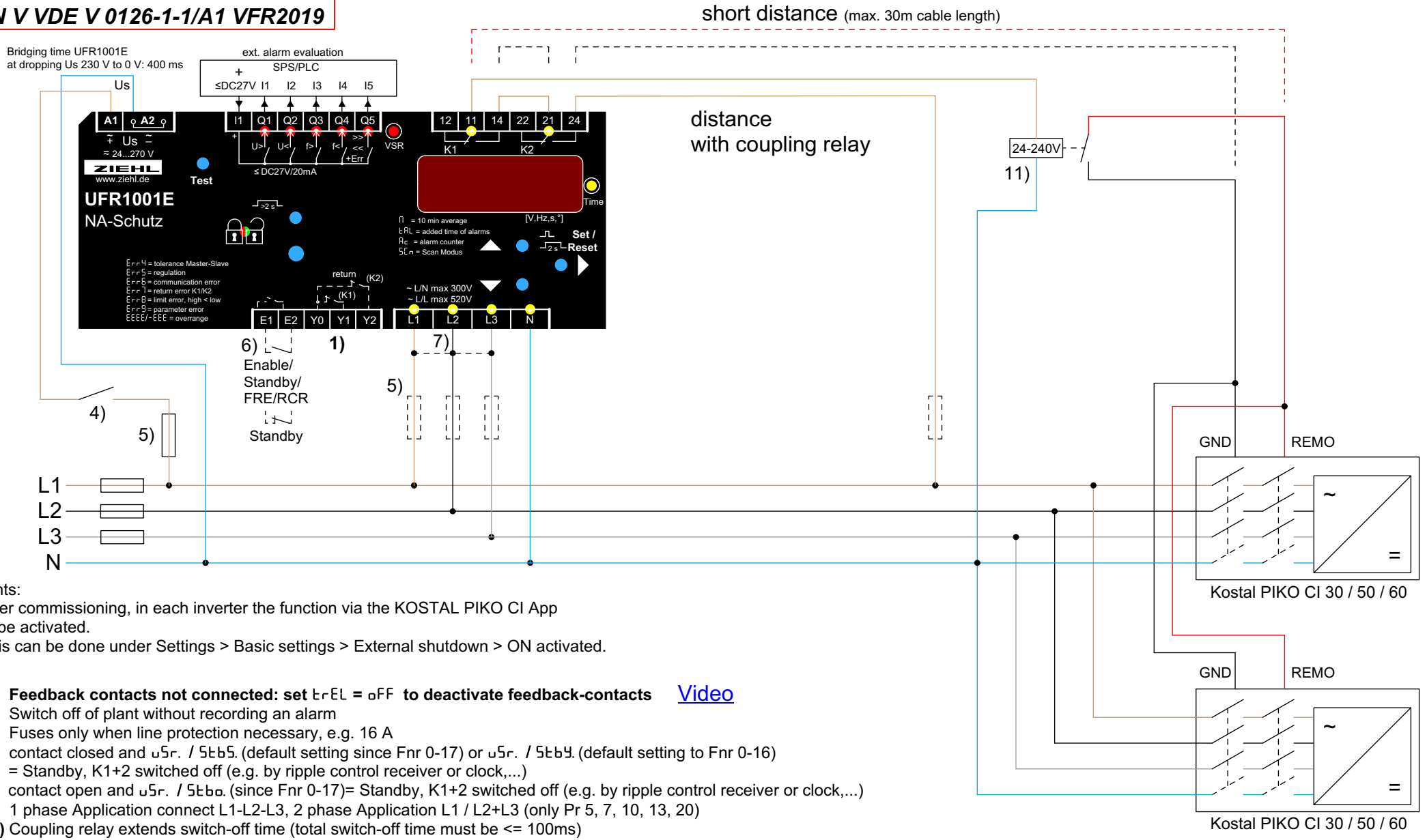
- 1) Feedback contacts not connected: set t<sub>r</sub>EL = oFF to deactivate feedback-contacts [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{Sr}$ . / 5t<sub>b5</sub>. (default setting since Fnr 0-17) or  $u_{Sr}$ . / 5t<sub>b9</sub>. (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
contact open and  $u_{Sr}$ . / 5t<sub>b0</sub>. (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)

**EN 50549-1:2019, SFS-EN 50549-1:2019**  
**EN 50549-2:2019, SFS-EN 50549-2:2019**



- 1) Feedback contacts not connected: set  $t_{rEL} = \text{OFF}$  to deactivate feedback-contacts [Video](#)
- 2) N connected → only for programs with N
- 3) NC- or NO-contacts can be connected, self-learning when switching on
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{5r} / 5t_{b5}$ . (default setting since Fnr 0-17) or  $U_{5r} / 5t_{b4}$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
 contact open and  $U_{5r} / 5t_{b0}$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)

**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**  
**DIN V VDE V 0126-1-1/A1 VFR2019**



Hints:  
 After commissioning, in each inverter the function via the KOSTAL PIKO CI App to be activated.  
 This can be done under Settings > Basic settings > External shutdown > ON activated.

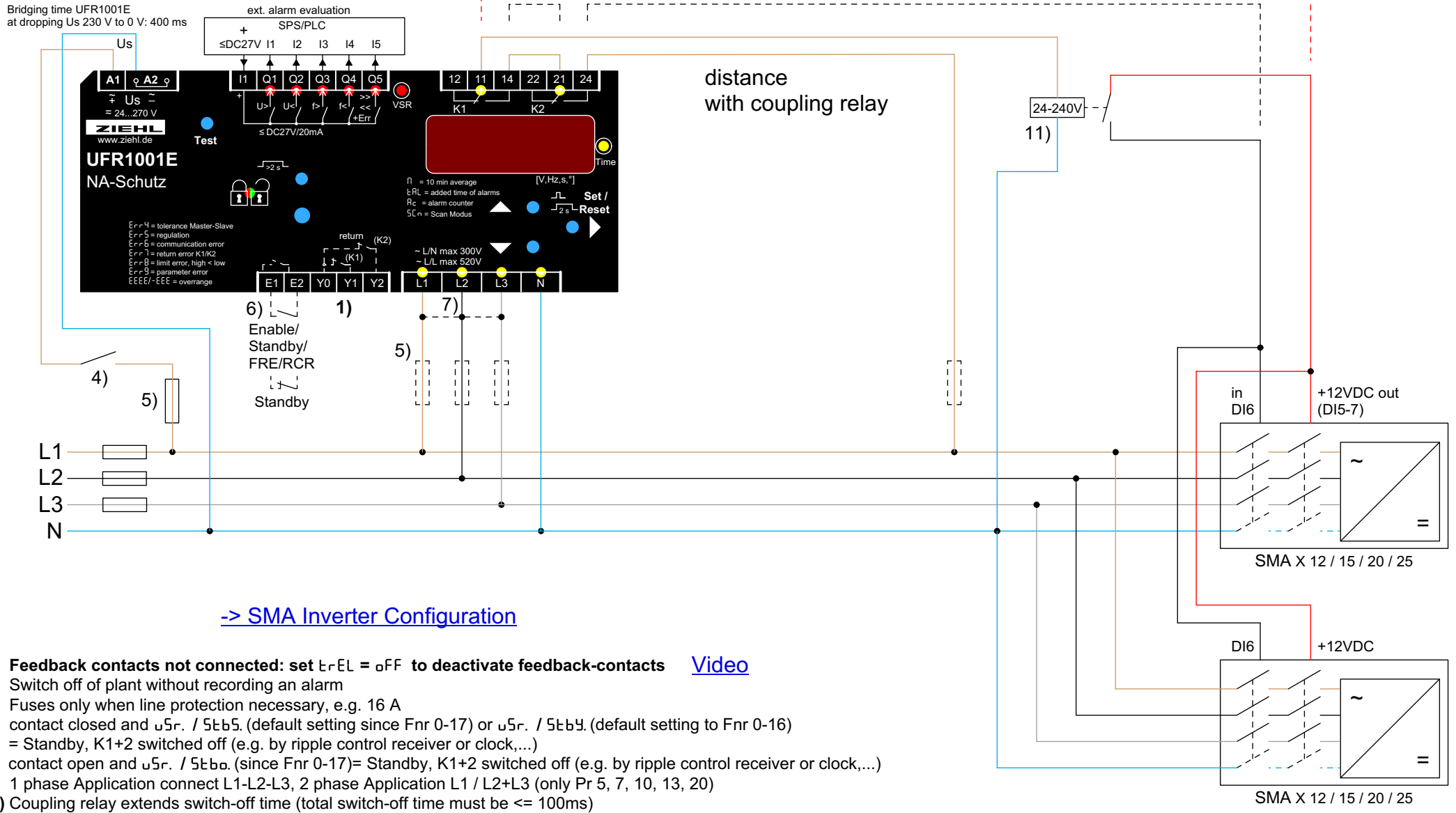
- 1) **Feedback contacts not connected: set ErrEL = OFF to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $U_{Sr} / 5 \leq U_{Sb5}$ . (default setting since Fnr 0-17) or  $U_{Sr} / 5 \leq U_{Sb9}$ . (default setting to Fnr 0-16)  
 = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)  
 contact open and  $U_{Sr} / 5 \leq U_{Sb0}$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 11) Coupling relay extends switch-off time (total switch-off time must be  $\leq 100ms$ )



**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**

short distance (max. 30 m cable length)

distance with coupling relay



**-> SMA Inverter Configuration**

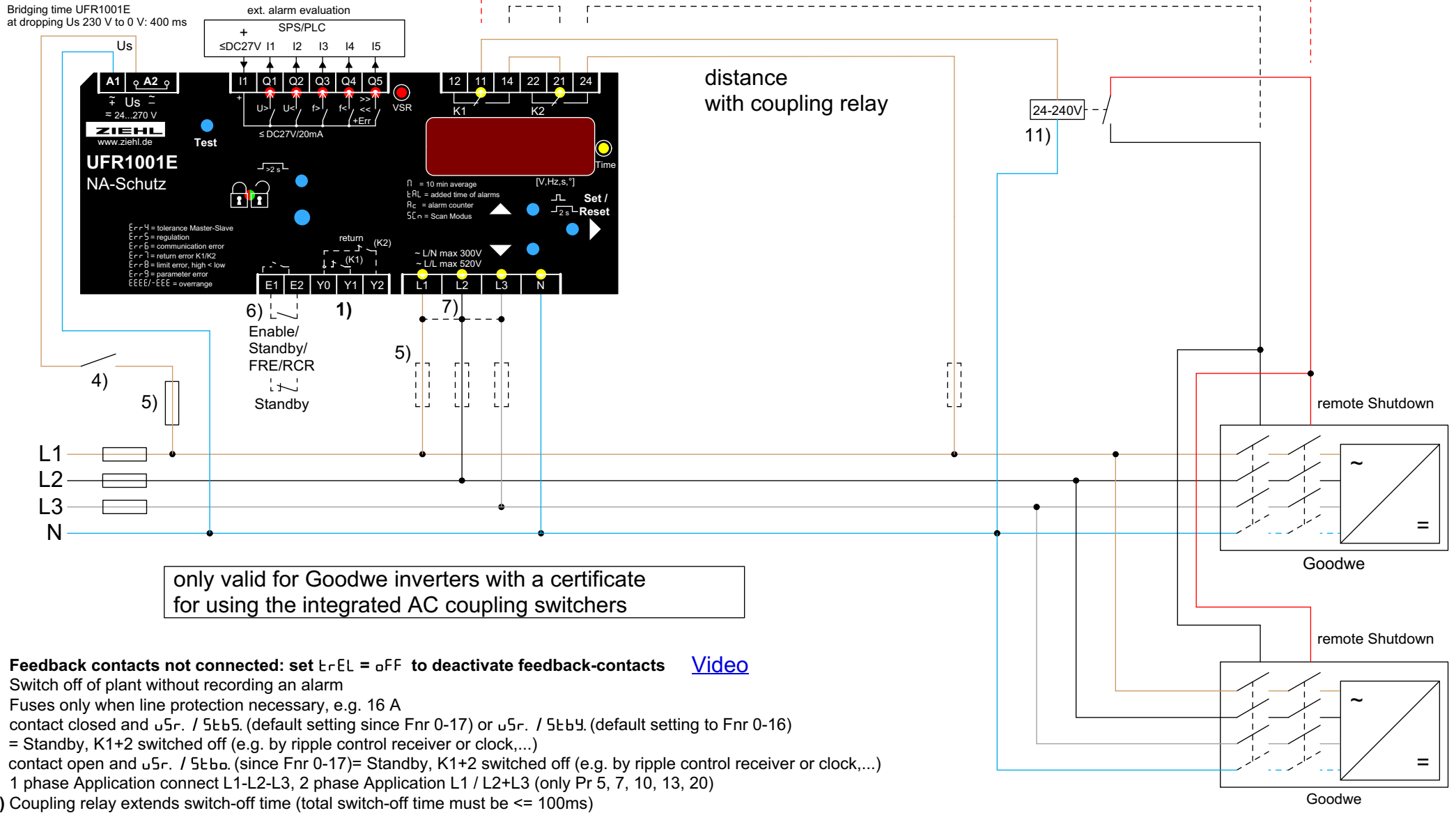
- 1) **Feedback contacts not connected: set  $t_{rEL} = 0FF$  to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{Sr} / 5t_{b5}$ . (default setting since Fnr 0-17) or  $u_{Sr} / 5t_{b4}$ . (default setting to Fnr 0-16)  
= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- contact open and  $u_{Sr} / 5t_{b0}$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 11) Coupling relay extends switch-off time (total switch-off time must be  $\leq 100ms$ )



**VDE-AR-N 4105:2018-11**  
**NA/EEA-NE7 – CH 2020**

short distance (max. cable length see inverter manual)

distance with coupling relay



only valid for Goodwe inverters with a certificate for using the integrated AC coupling switches

- 1) **Feedback contacts not connected: set  $t_{rEL} = \text{oFF}$  to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and  $u_{Sr} / 5t_{b5}$ . (default setting since Fnr 0-17) or  $u_{Sr} / 5t_{b4}$ . (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- contact open and  $u_{Sr} / 5t_{b0}$ . (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) 1 phase Application connect L1-L2-L3, 2 phase Application L1 / L2+L3 (only Pr 5, 7, 10, 13, 20)
- 11) Coupling relay extends switch-off time (total switch-off time must be  $\leq 100\text{ms}$ )