

Kurzbezeichnung: UFR1001E	Bezeichnung: Example connection plans UFR1001E	ZIEHL	
bearbeitet: 2024-08-22 /Sc	Index	Maßstab: - EA-Nr.: 15390	Ers. für: 12420-0911-20 page: 1 of 30 Zeichnungsnummer: 12420-0911-21

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Questions to the circuit diagrams?
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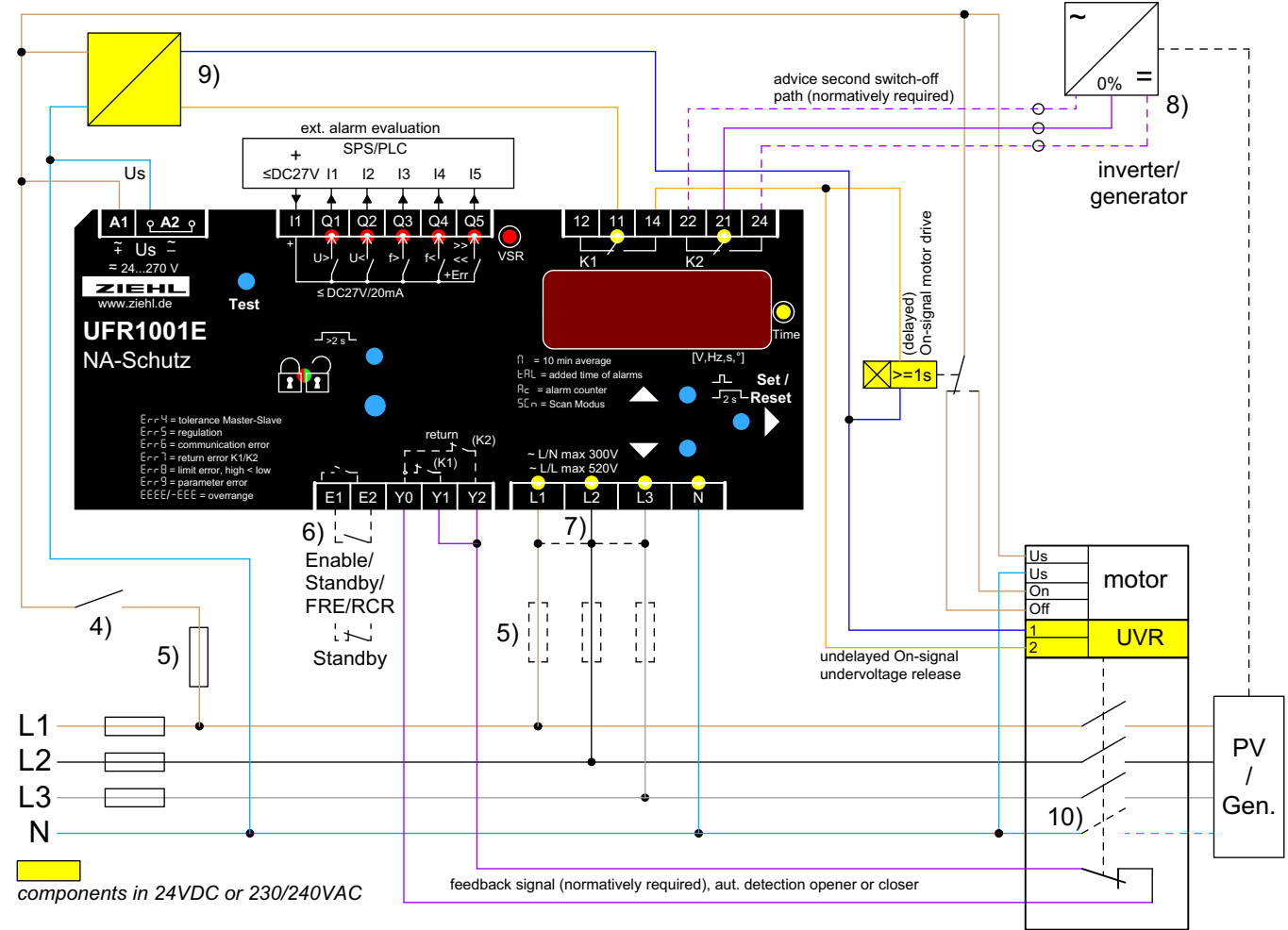


UFR1001E operating videos

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

["FRT component recommendation"](#)

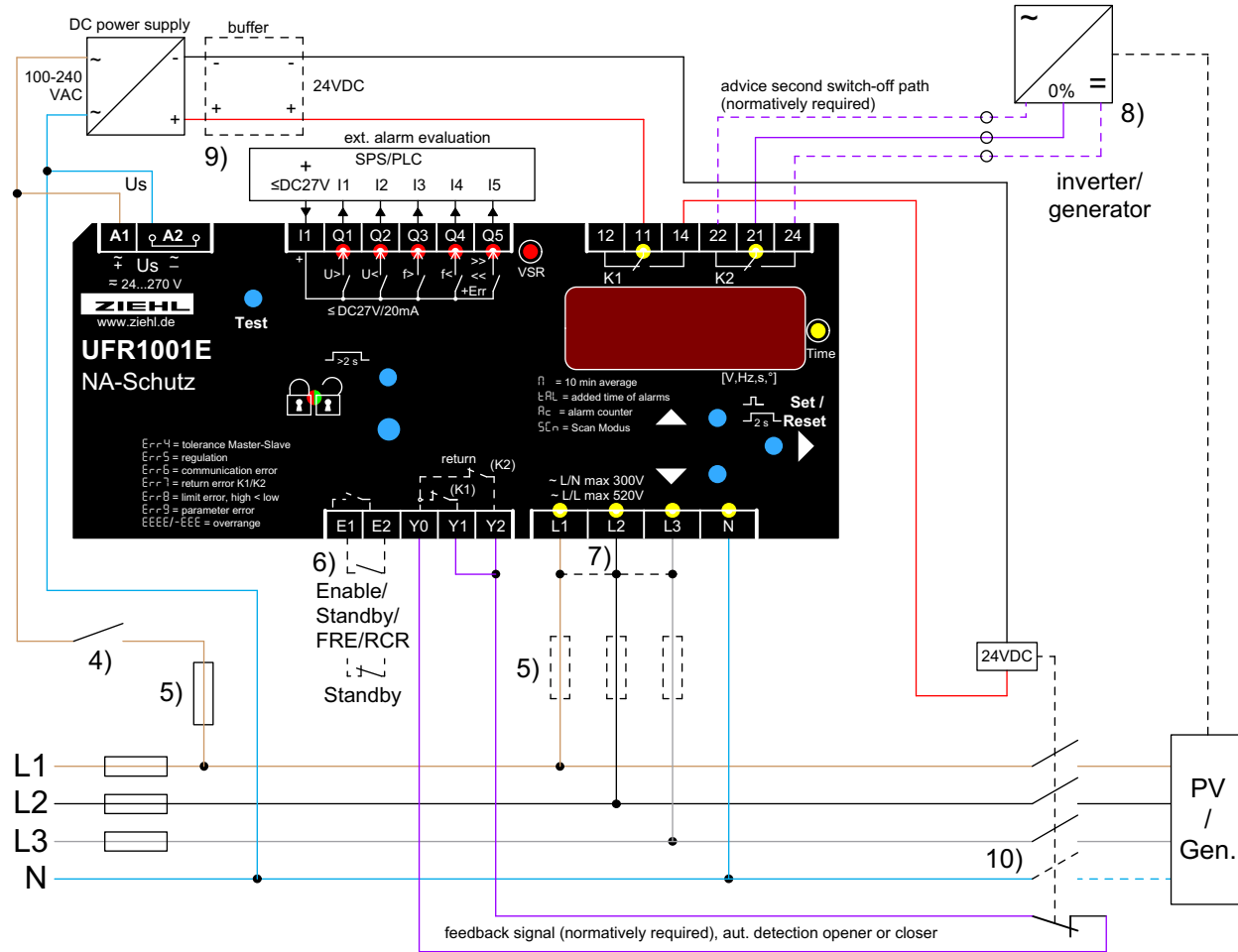
VDE-AR-N 4105:2018-11
NA/EEA-NE7 – CH 2020



- 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} . / $5\epsilon b5$. (default setting to Fnr 0-16) = 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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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. ($\epsilon 5\epsilon z$)
- 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



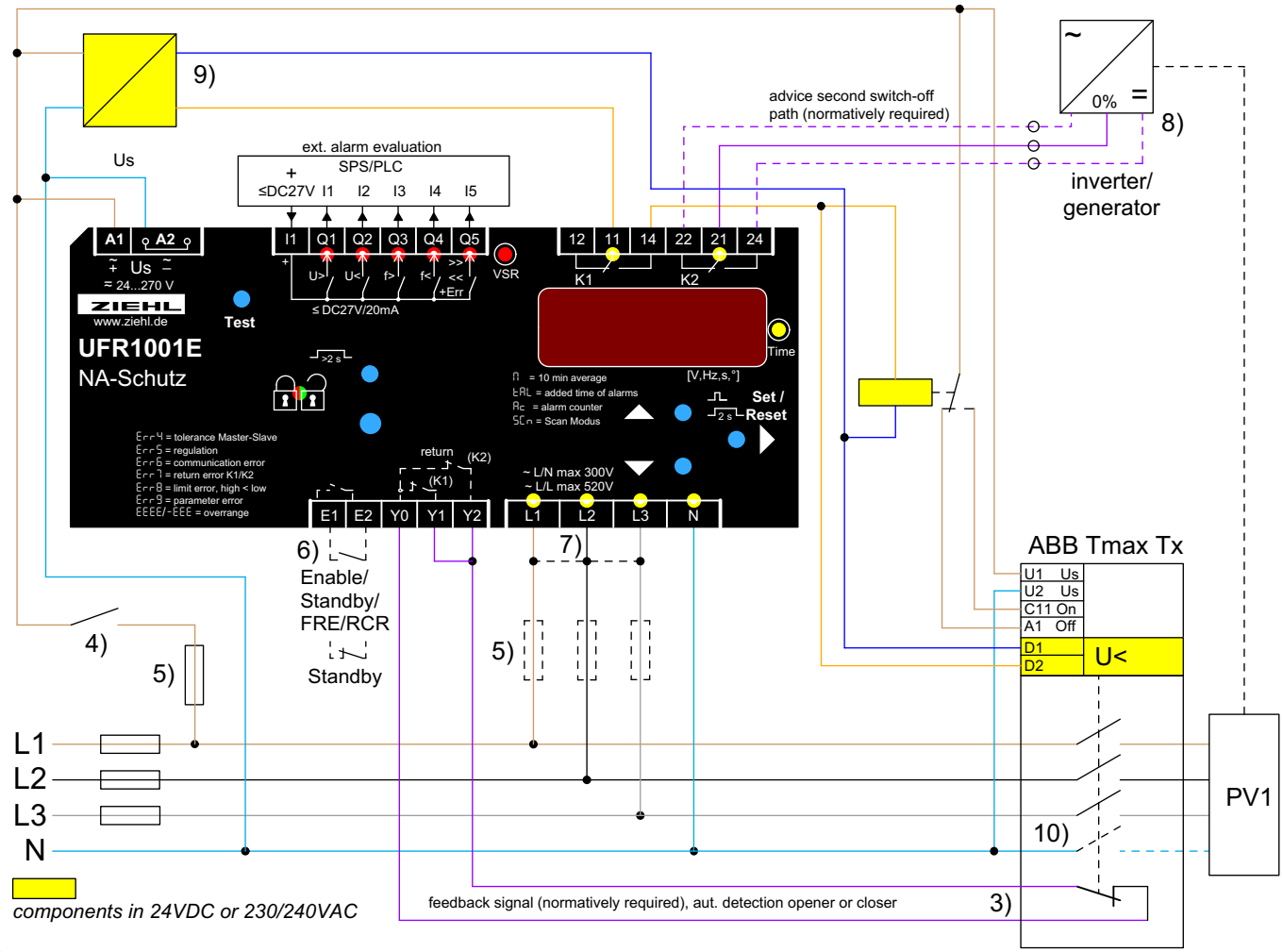
VDE-AR-N 4105:2018-11
NA/EEA-NE7 – CH 2020



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and $U_{5r} / 5\epsilon b5$. (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 $U_{5r} / 5\epsilon b0$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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

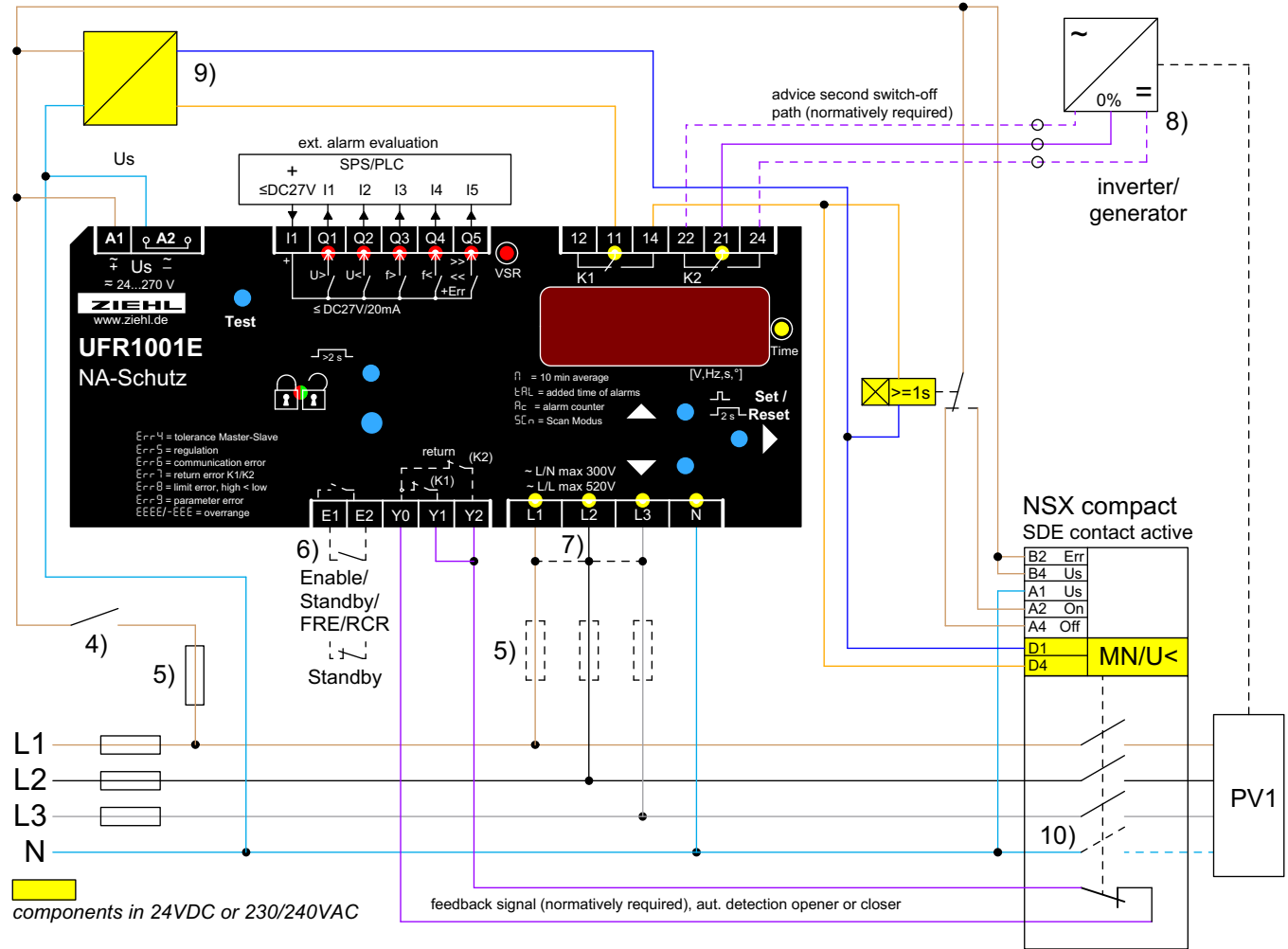


VDE-AR-N 4105:2018-11
NA/EEA-NE7 – CH 2020



- 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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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_{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 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

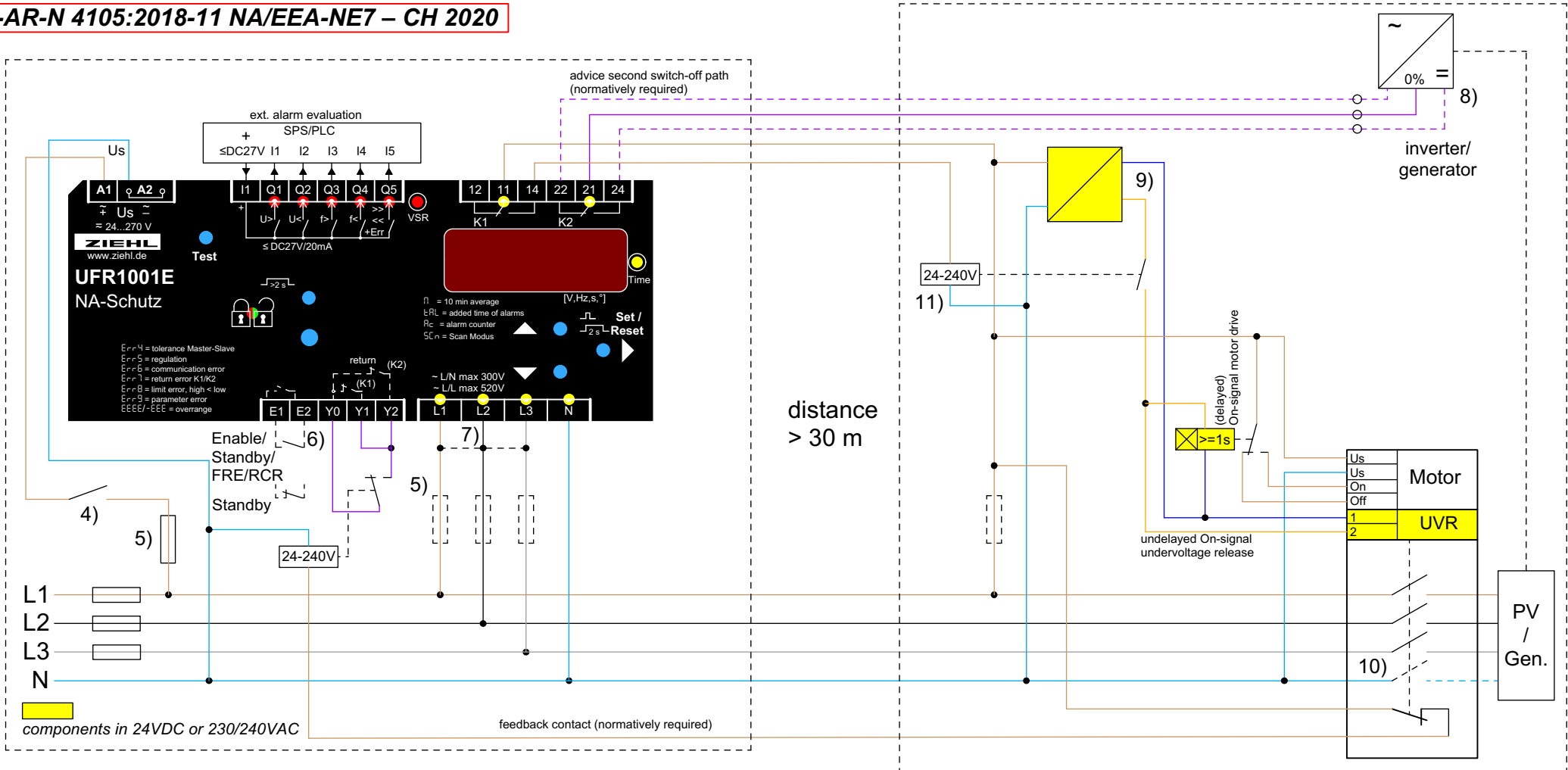
VDE-AR-N 4105:2018-11
NA/EEA-NE7 – CH 2020



- 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} / $5\epsilon b5$. (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} / $5\epsilon b\alpha$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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 Us 230 V to 0 V: 400 ms
- 10) TT-system: switch all line conductors and N, TN-system: only switch line conductor



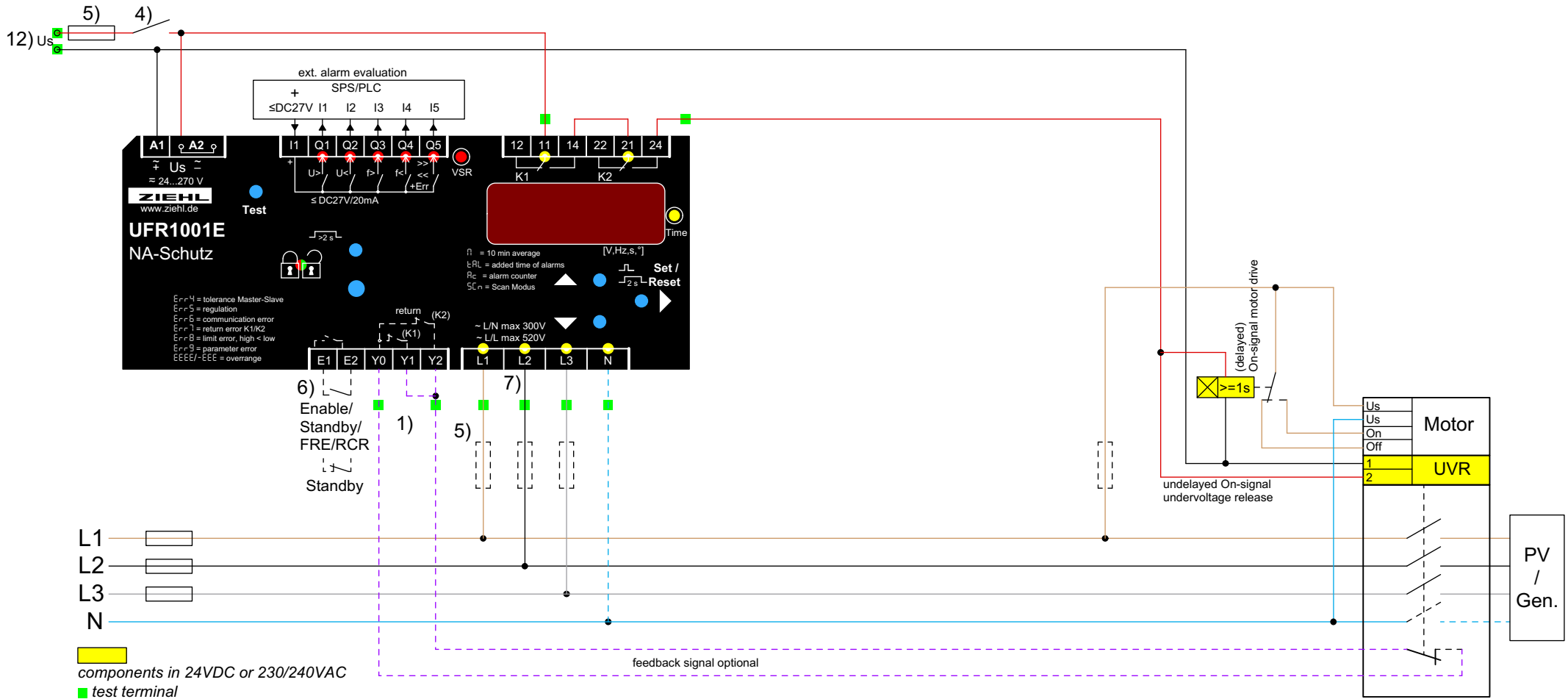
VDE-AR-N 4105:2018-11 NA/EEA-NE7 – CH 2020



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and $u_{5r} / 5\epsilon b5$. (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 $u_{5r} / 5\epsilon b6$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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. ($5\epsilon b2$)
- 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
- 11) Coupling relay extends switch-off time (total switch-off time must be $\leq 100ms$)

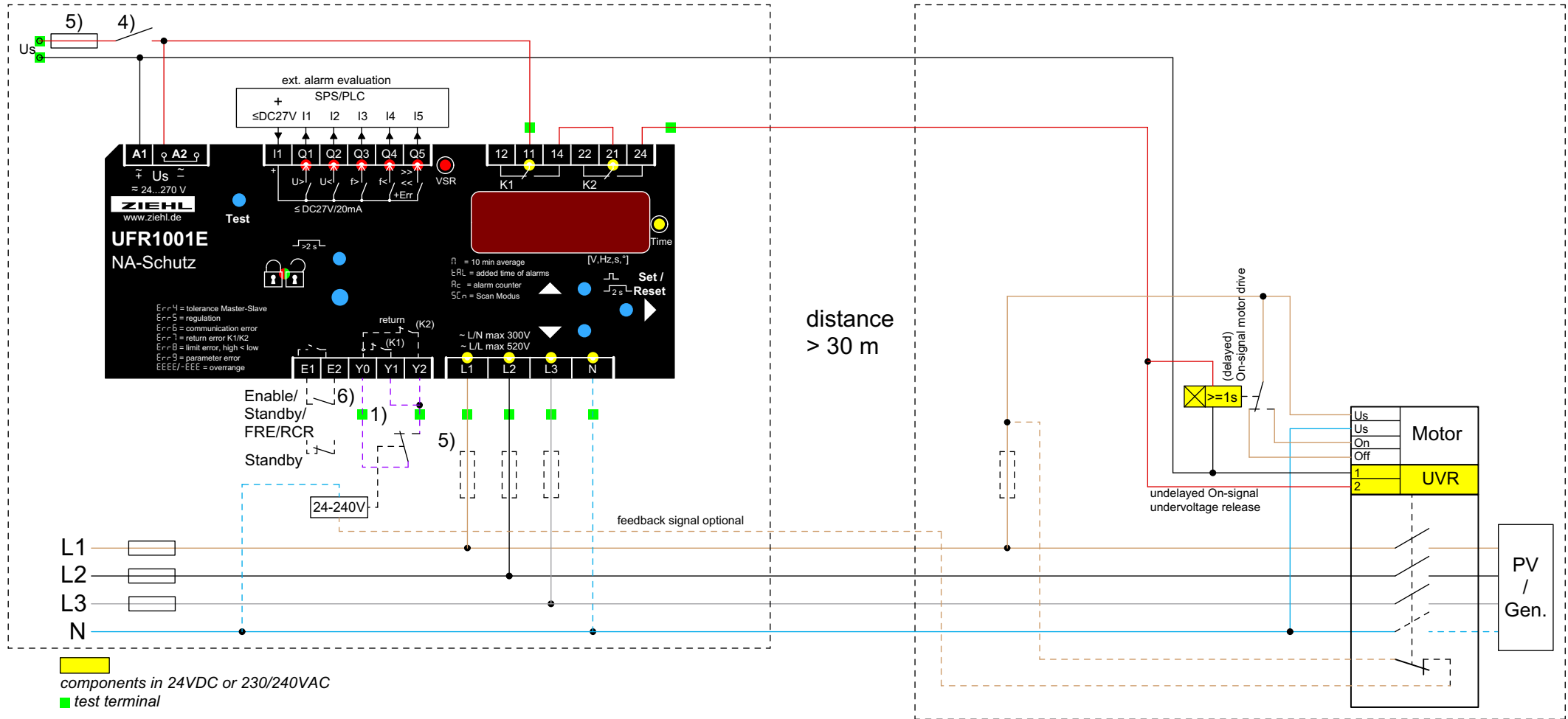
This information is supplied without liability.

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



- 1) Feedback contacts not connected: set $t_{rEL} = \infty$ 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 F_{nr} 0-17) or u_{5r} / $5t_{b5}$. (default setting to F_{nr} 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
 contact open and u_{5r} / $5t_{b5}$. (since F_{nr} 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)

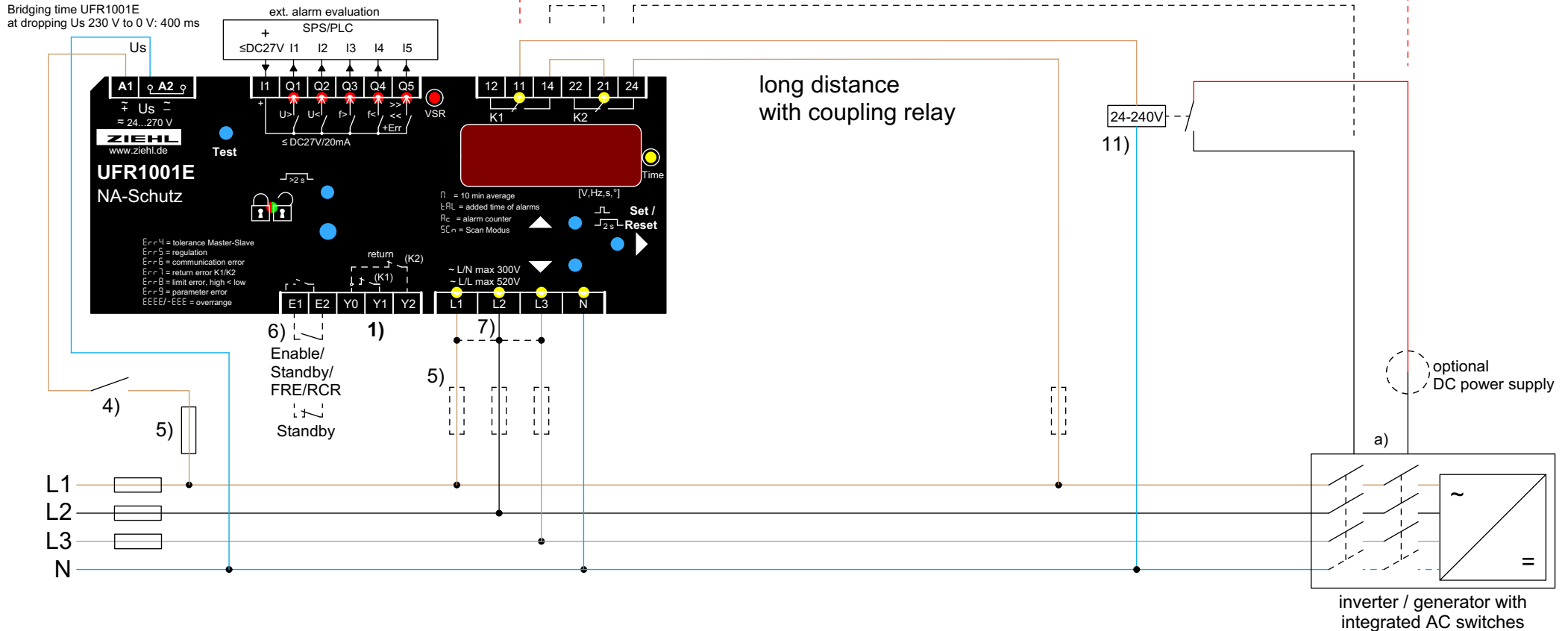


- 1) Feedback contacts not connected: set Er-EL = oFF to deactivate feedback-contacts [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and u5r. / 5t5. (default setting since Fnr 0-17) or u5r. / 5t5. (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
 contact open and u5r. / 5t5. (since Fnr 0-17)= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)

VDE-AR-N 4105:2018-11
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short distance (note the max. cable length)

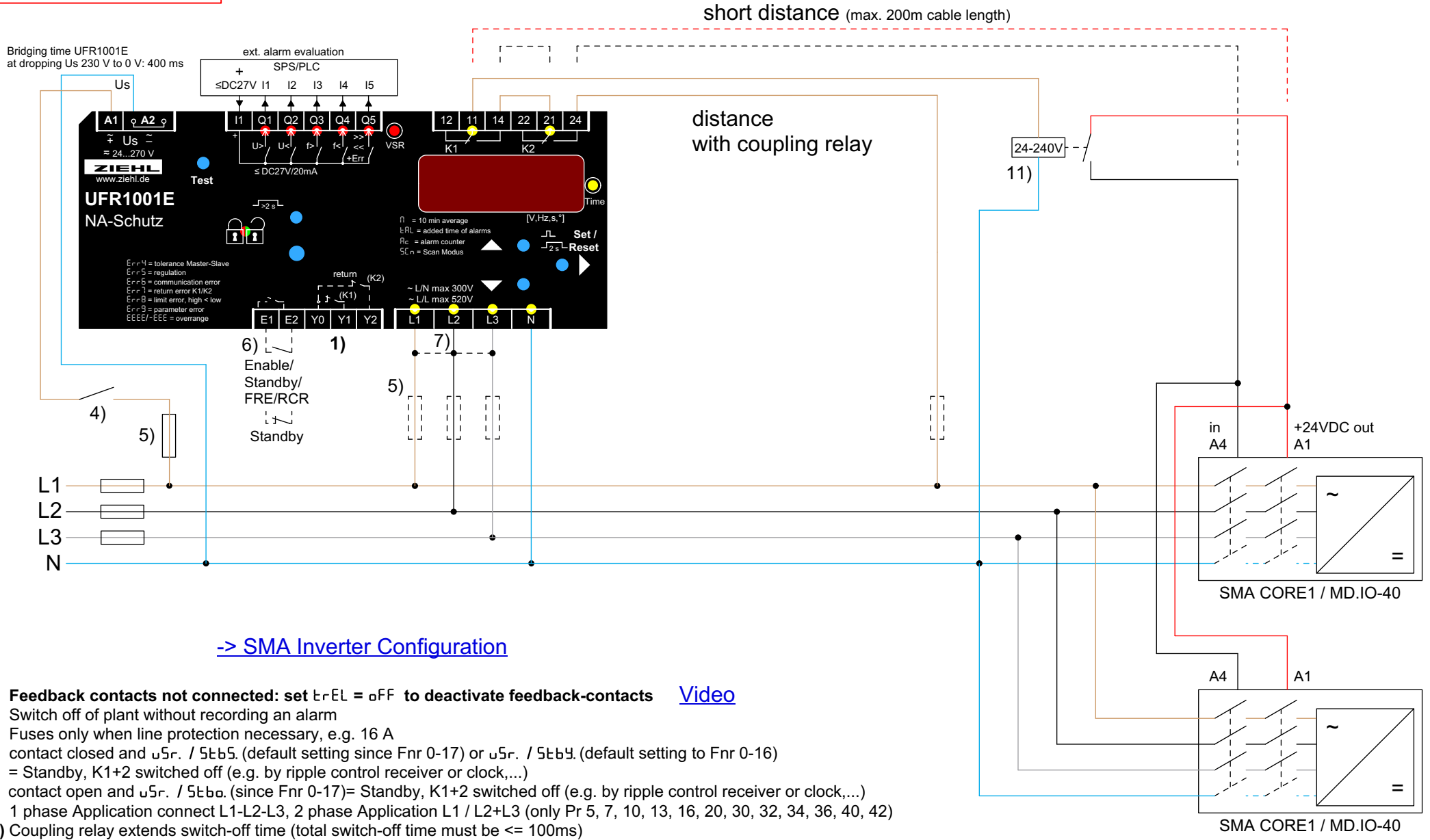
long distance
with coupling relay



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

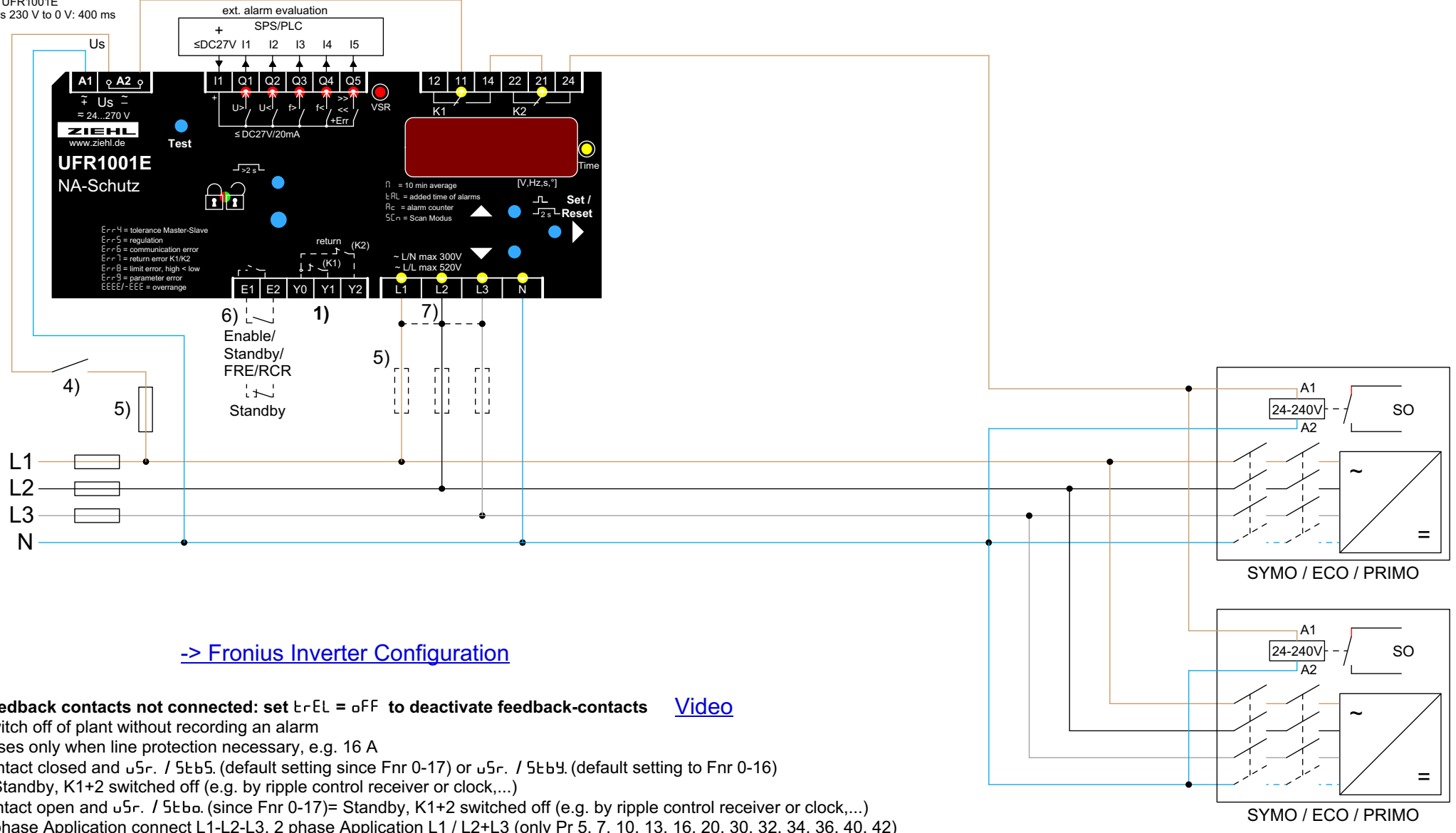
- 1) Feedback contacts not connected: set $t_{rEL} = \text{off}$ to deactivate feedback-contacts [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and $u_{5r} / 5t_{b5}$. (default setting since Fnr 0-17) or $u_{5r} / 5t_{b9}$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 11) Coupling relay extends switch-off time (total switch-off time must be $\leq 100\text{ms}$)

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



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

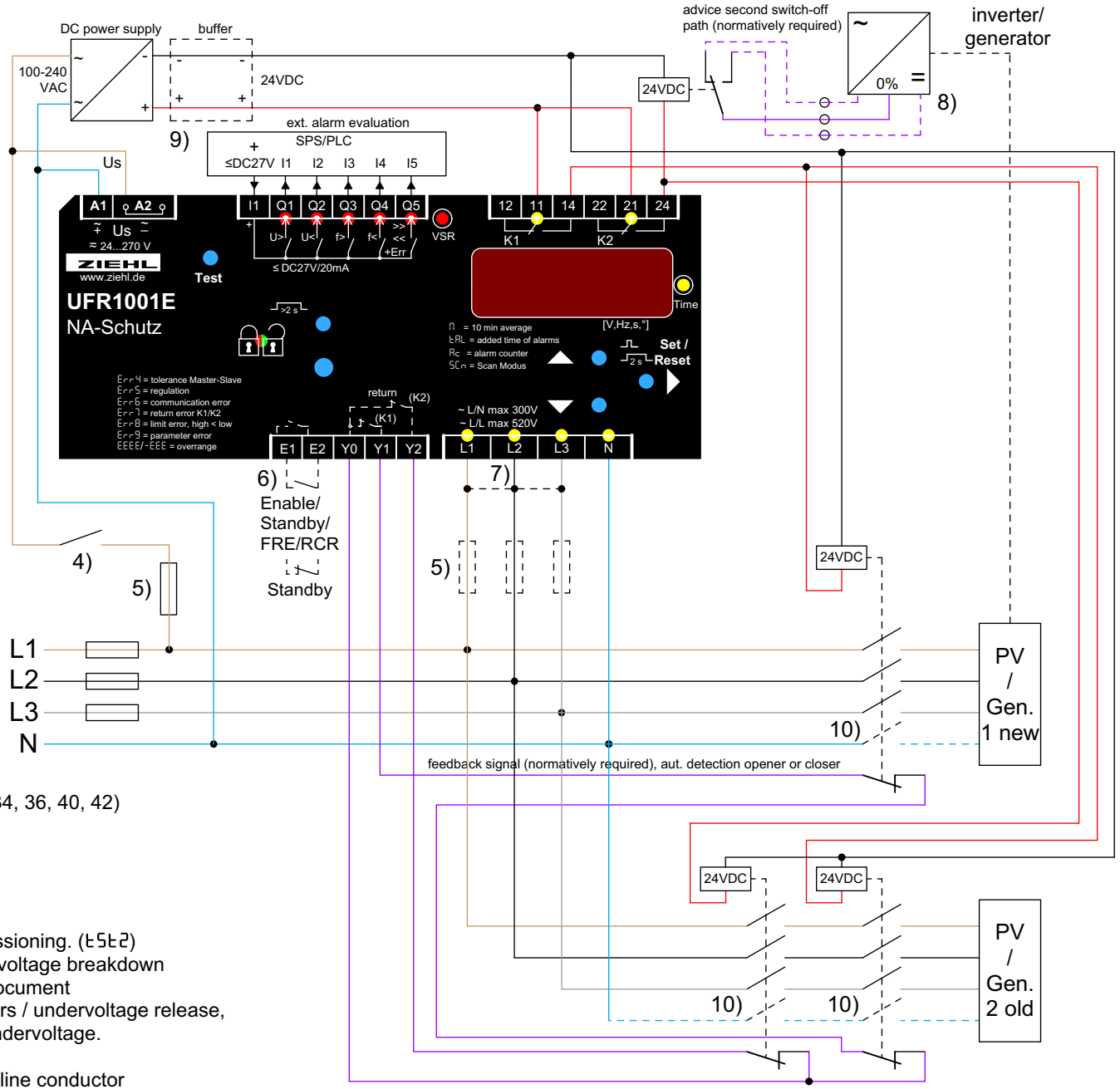
Bridging time UFR1001E
at dropping Us 230 V to 0 V: 400 ms



- 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} / $5\epsilon b5$. (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,...)
- 7) contact open and u_{5r} / $5\epsilon b\alpha$. (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, 16, 20, 30, 32, 34, 36, 40, 42)

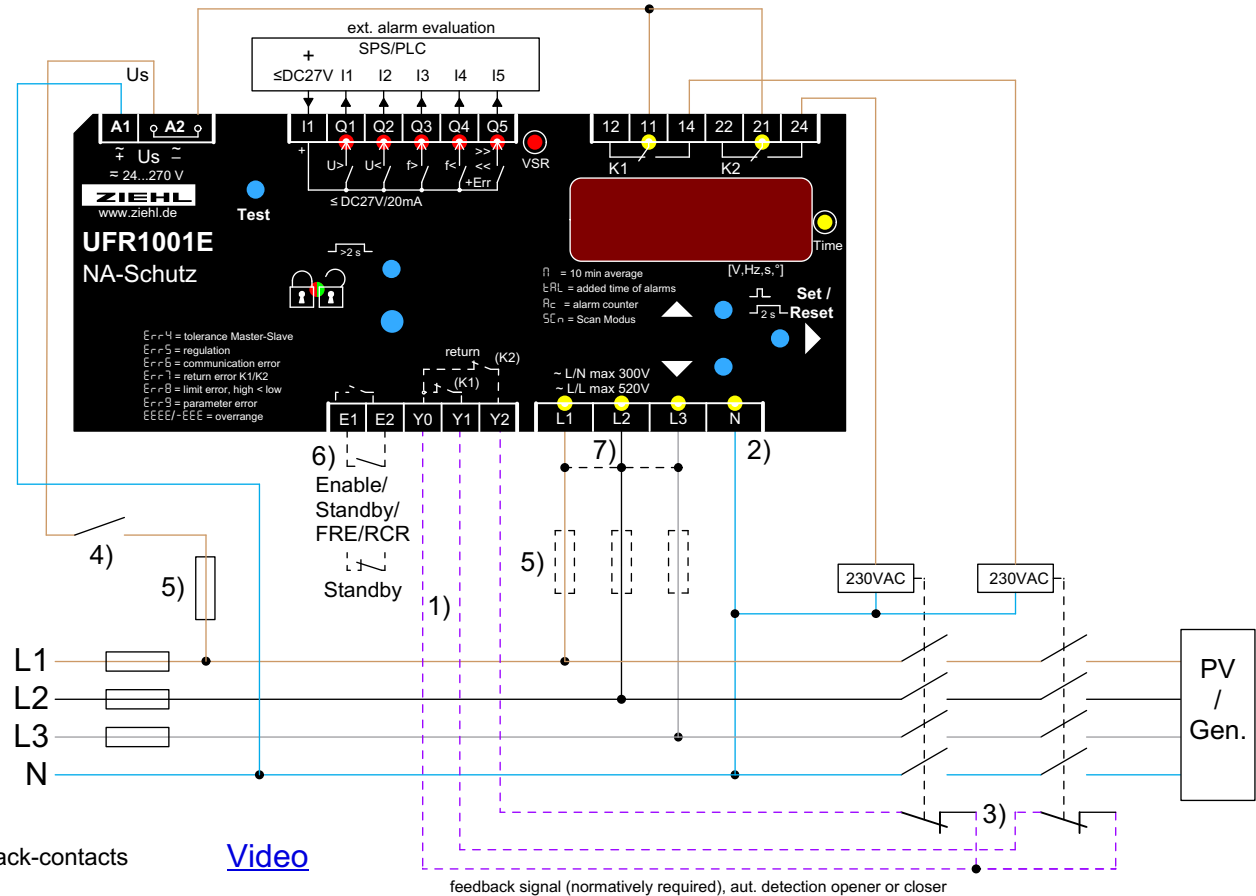


VDE-AR-N 4105:2018-11



- 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} / $5t_{b5}$. (default setting to Fnr 0-16) = Standby, K1+2 switched off contact open and U_{5r} / $5t_{b5}$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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. (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

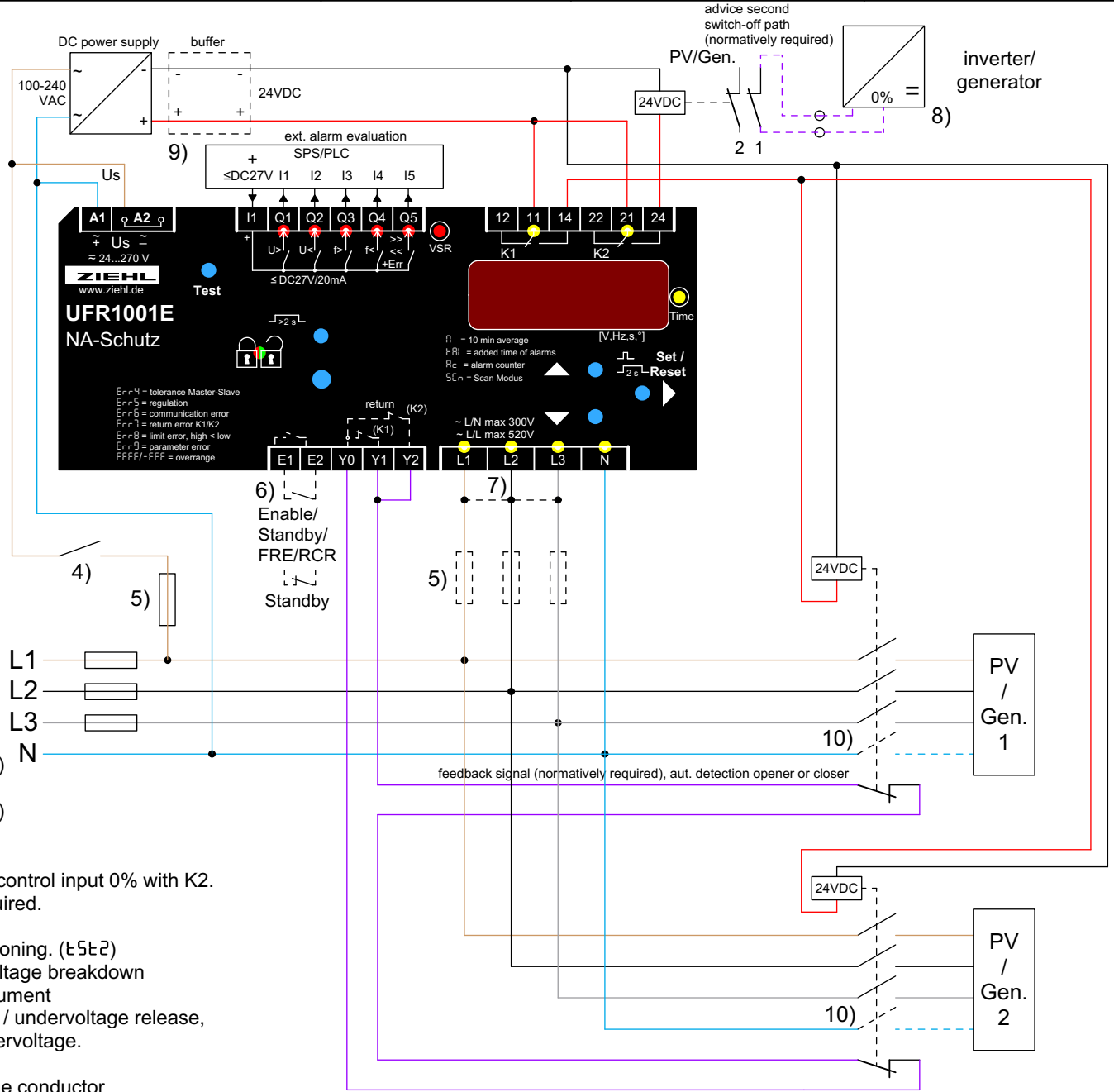
VDE-AR-N 4105:2011



- 1) Feedback contacts not connected: set $t_{r-EL} = OFF$ 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 $u_{5r} / 5t_{b5}$. (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, 16, 20, 30, 32, 34, 36, 40, 42)

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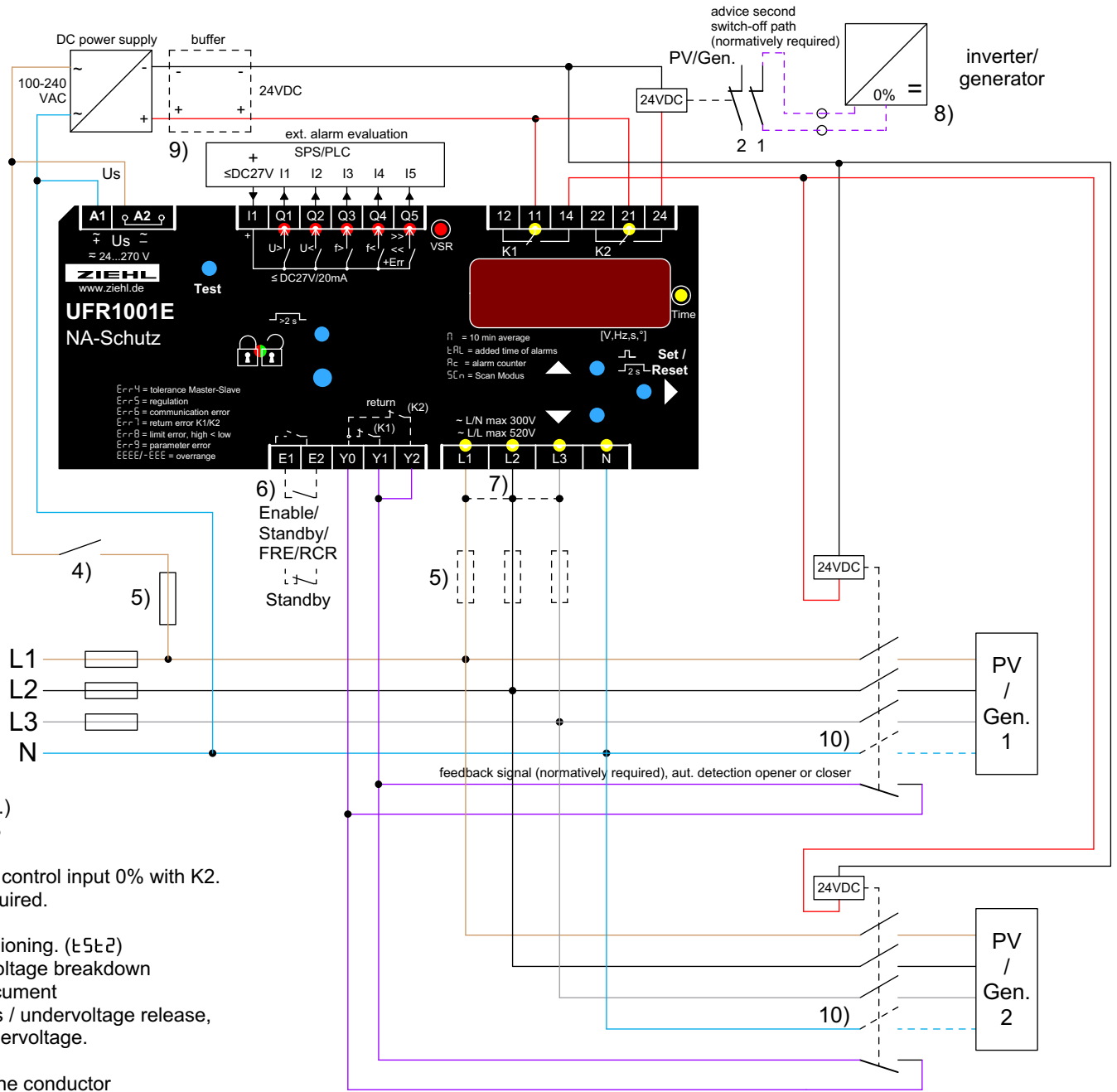
Correct wiring of the 2 section switch:
With correct wiring monitoring of feedback contacts **MUST NOT RESPOND**, when one of the switches is switched off manually.



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and $u_{Sr} / 5t_{b5}$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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_{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

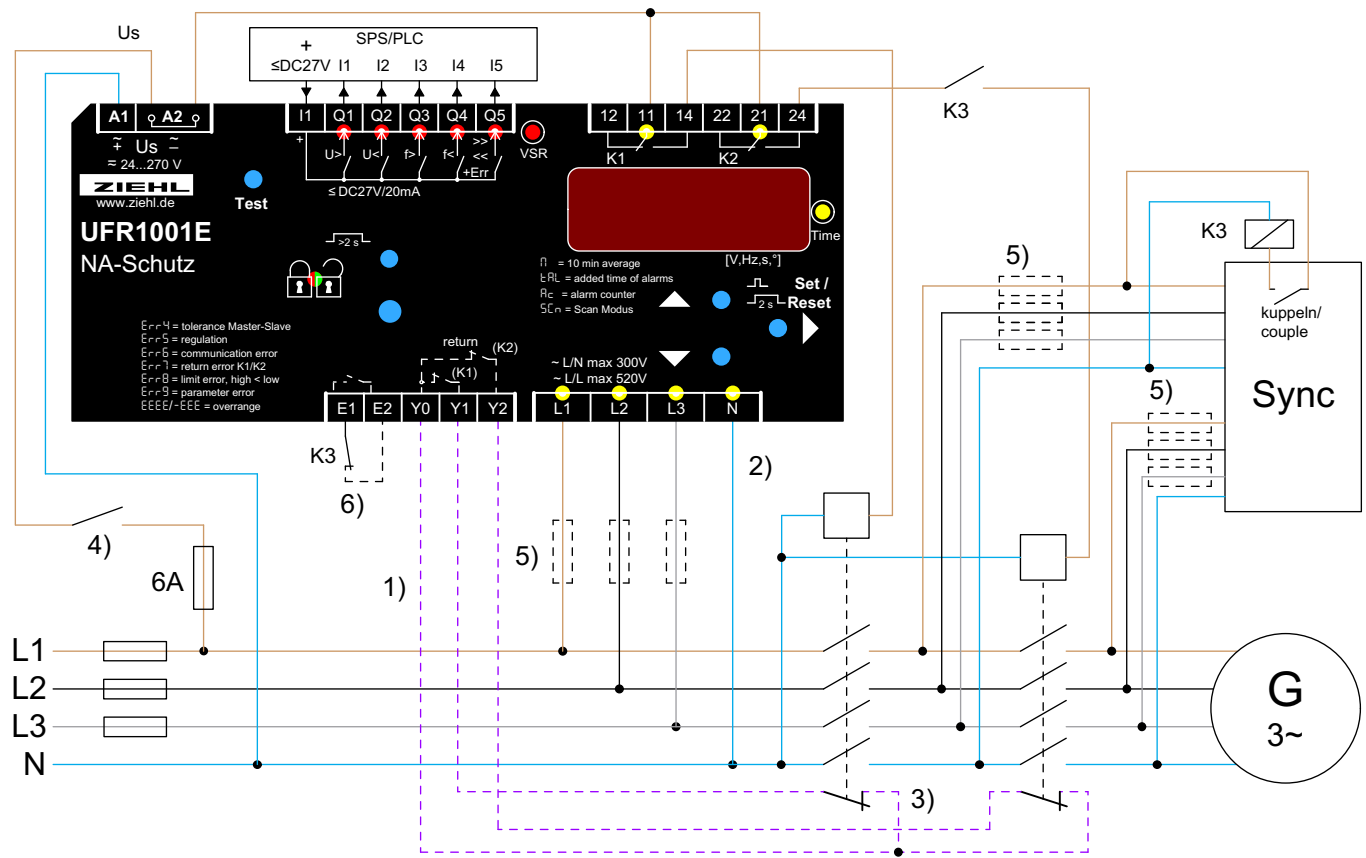
VDE-AR-N 4105:2018-11

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 $U_{sr} / 5 \leq b_5$. (default setting since Fnr 0-17) or $U_{sr} / 5 \leq b_4$. (default setting to Fnr 0-16) = Standby, K1+2 switched off contact open and $U_{sr} / 5 \leq b_a$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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. (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 4105:2011
VDE-AR-N 4105:2018-11 Pgen ≤ 50kW



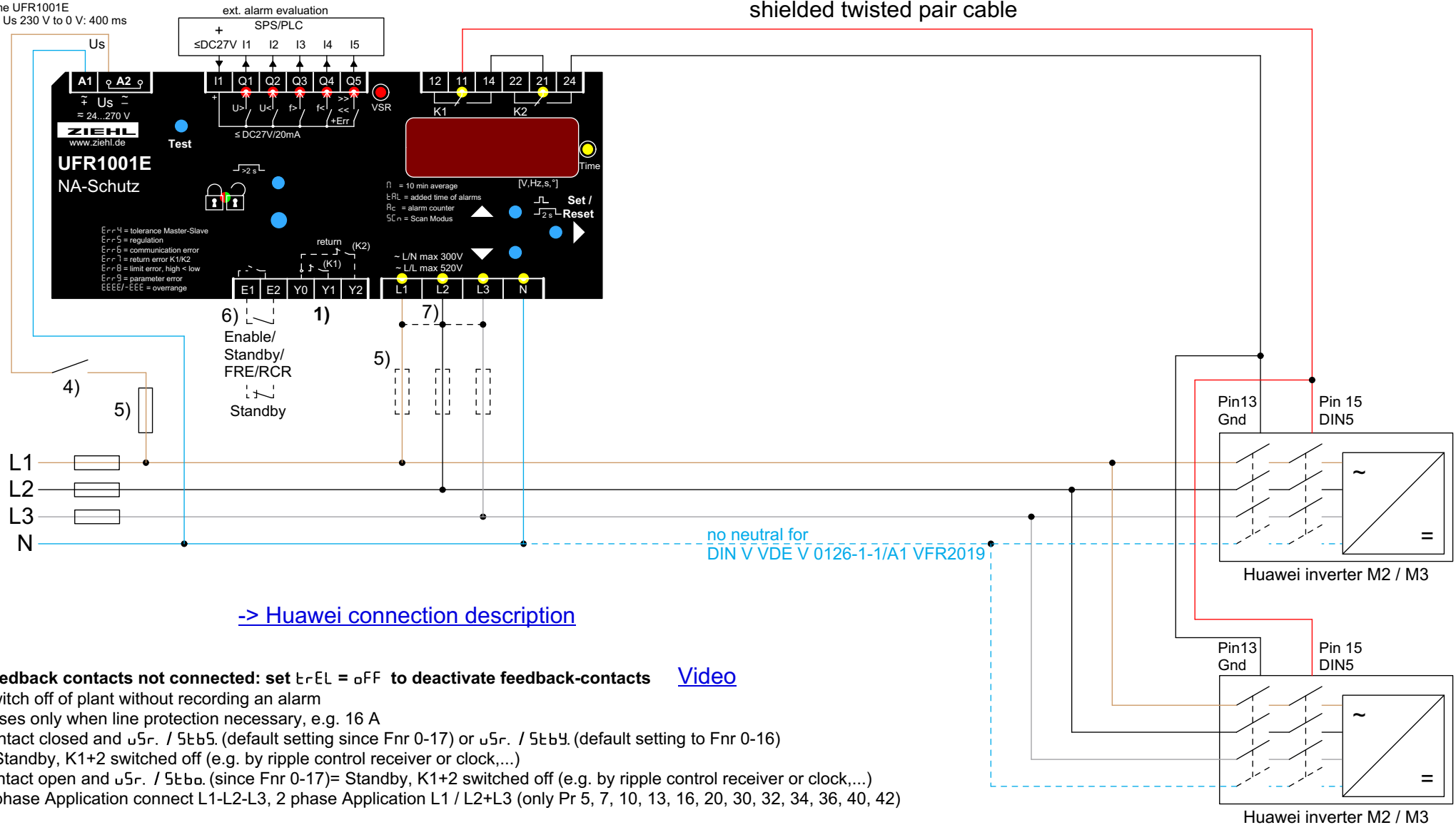
- 1) Feedback contacts not connected: set $t_{rEL} = \text{OFF}$ to deactivate feedback-contacts
- 2) N connected → only for programs with N
- 3) NC- or NO-contacts can be connected, self-learning when switching on
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and U_{5r} / U_{I2} . (adjust) = no evaluation Y1 and Y2 in switch-on direction

[Video](#)

VDE-AR-N 4105:2018-11
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Bridging time UFR1001E
at dropping Us 230 V to 0 V: 400 ms

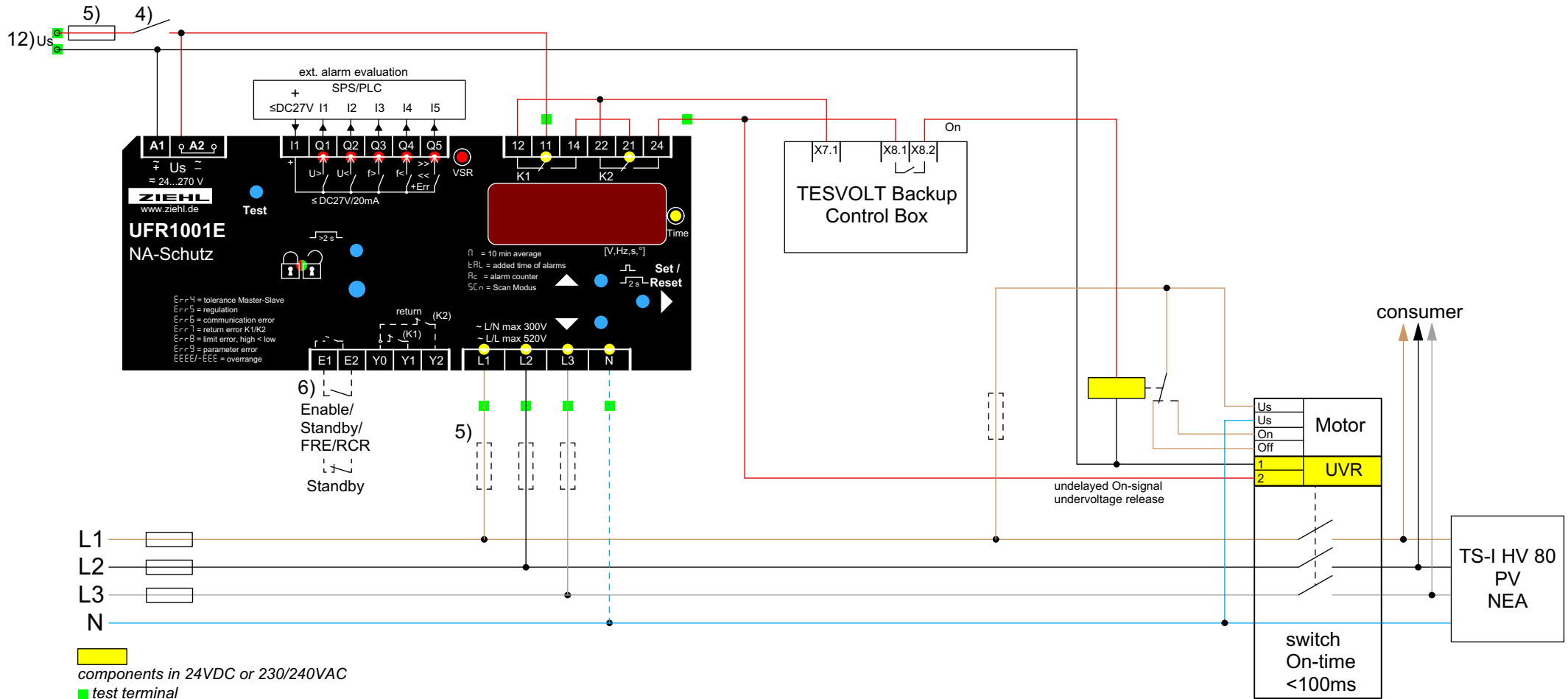
shielded twisted pair cable



[-> Huawei connection description](#)

- 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 $u_{sr} / 5t_{b9}$. (default setting to Fnr 0-16)
= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- contact open and $u_{sr} / 5t_{b0}$. (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, 16, 20, 30, 32, 34, 36, 40, 42)

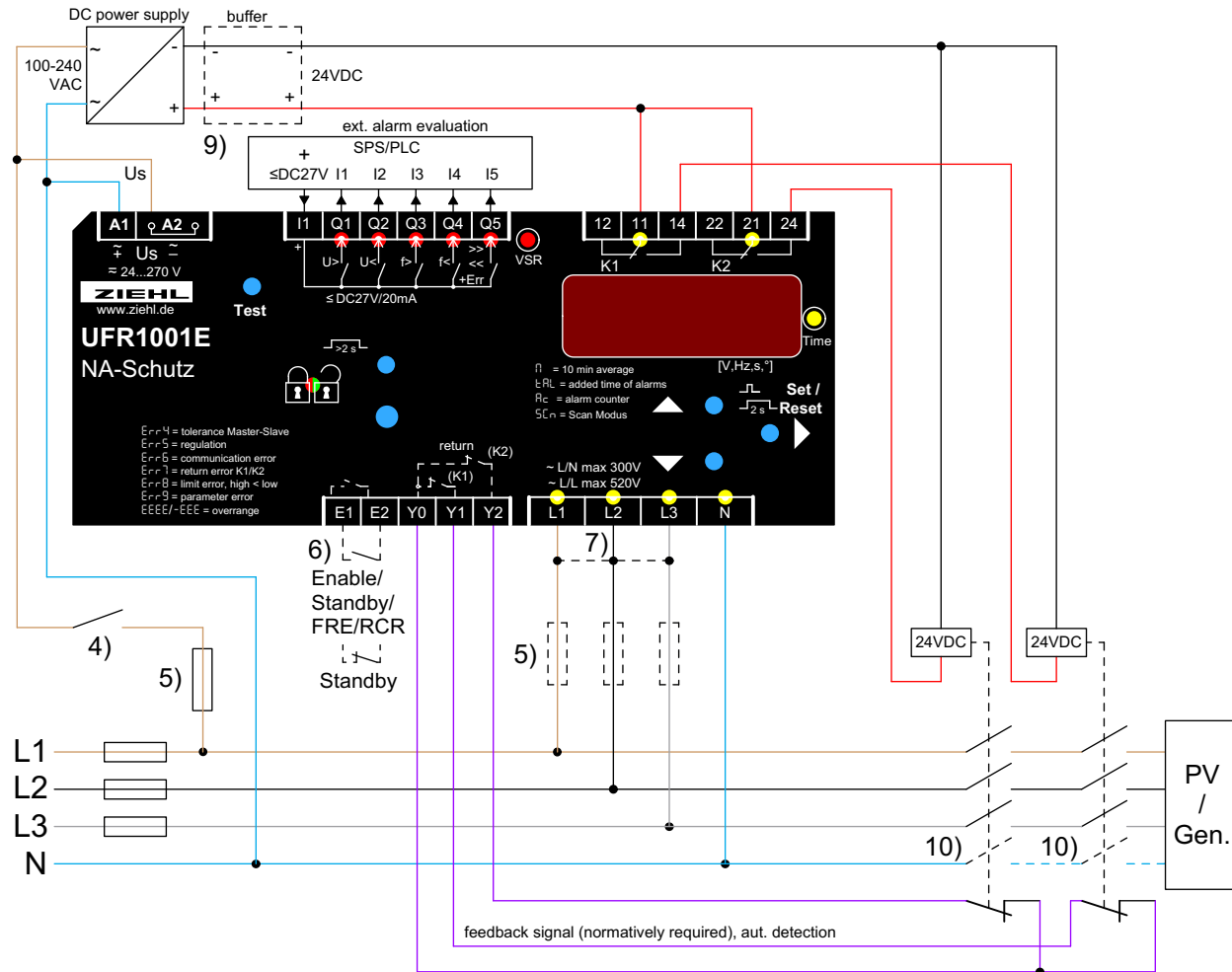
VDE-AR-N 4110:2018-11 (medium voltage)



- 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} . / 5t₅. (default setting since Fnr 0-17) or u_{5r} . / 5t₅. (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...) contact open and u_{5r} . / 5t₅. (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**

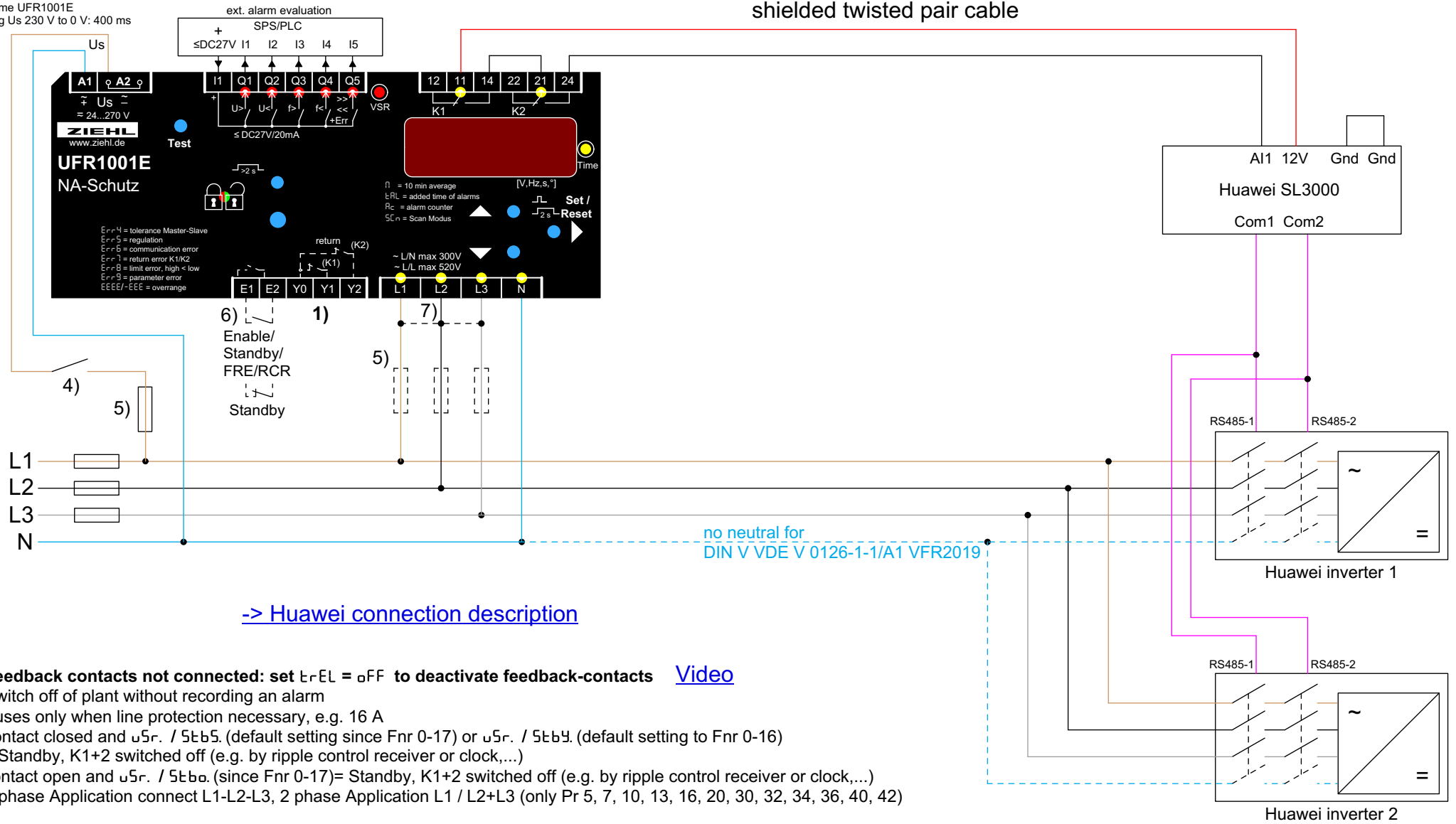
DC power supply must be designed for 2 contactors (switch-on power) use buffer module if necessary



- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and $U_{5r} / 5\epsilon b5$. (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 $U_{5r} / 5\epsilon b6$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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

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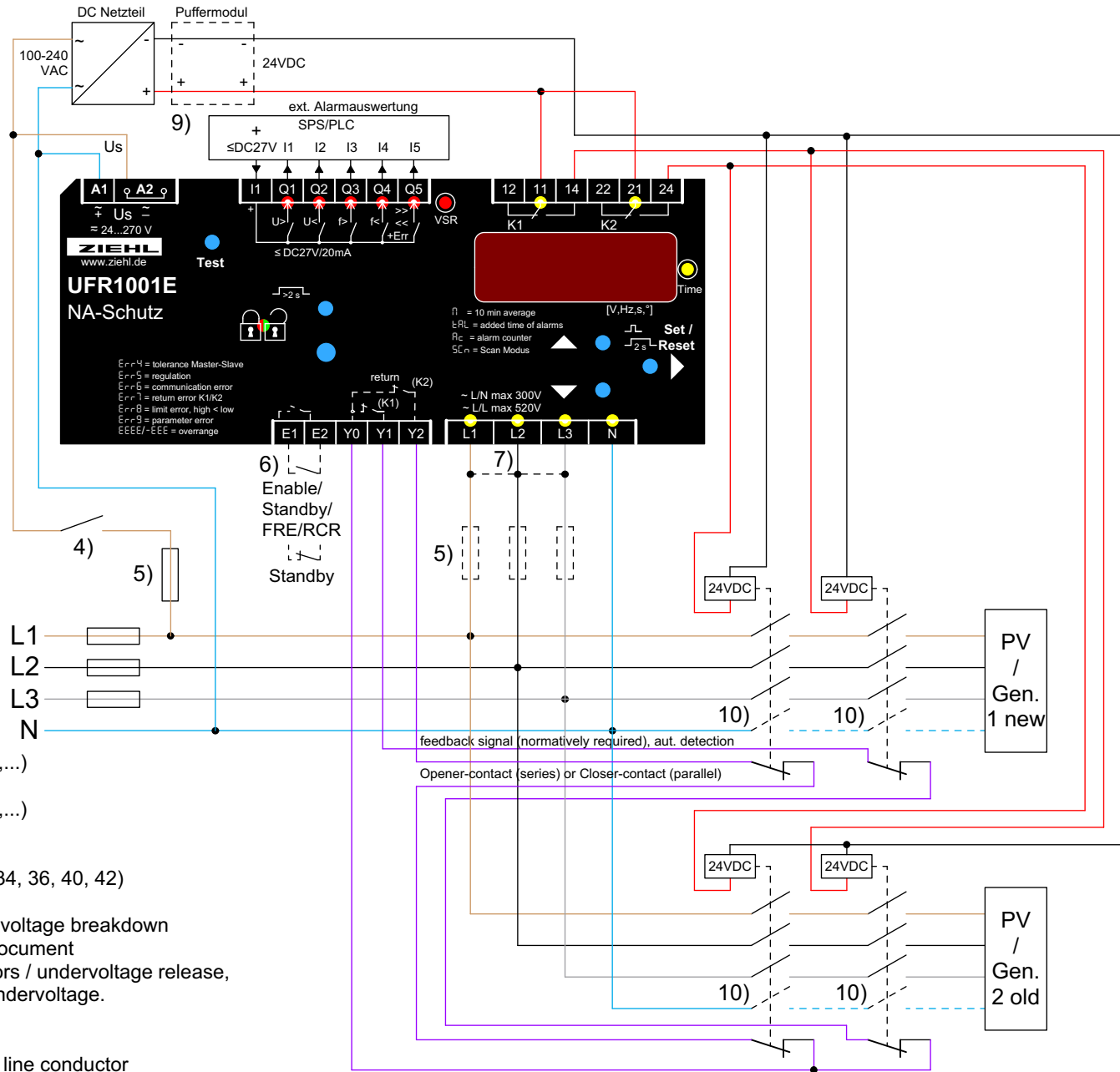
Bridging time UFR1001E
at dropping Us 230 V to 0 V: 400 ms



[-> Huawei connection description](#)

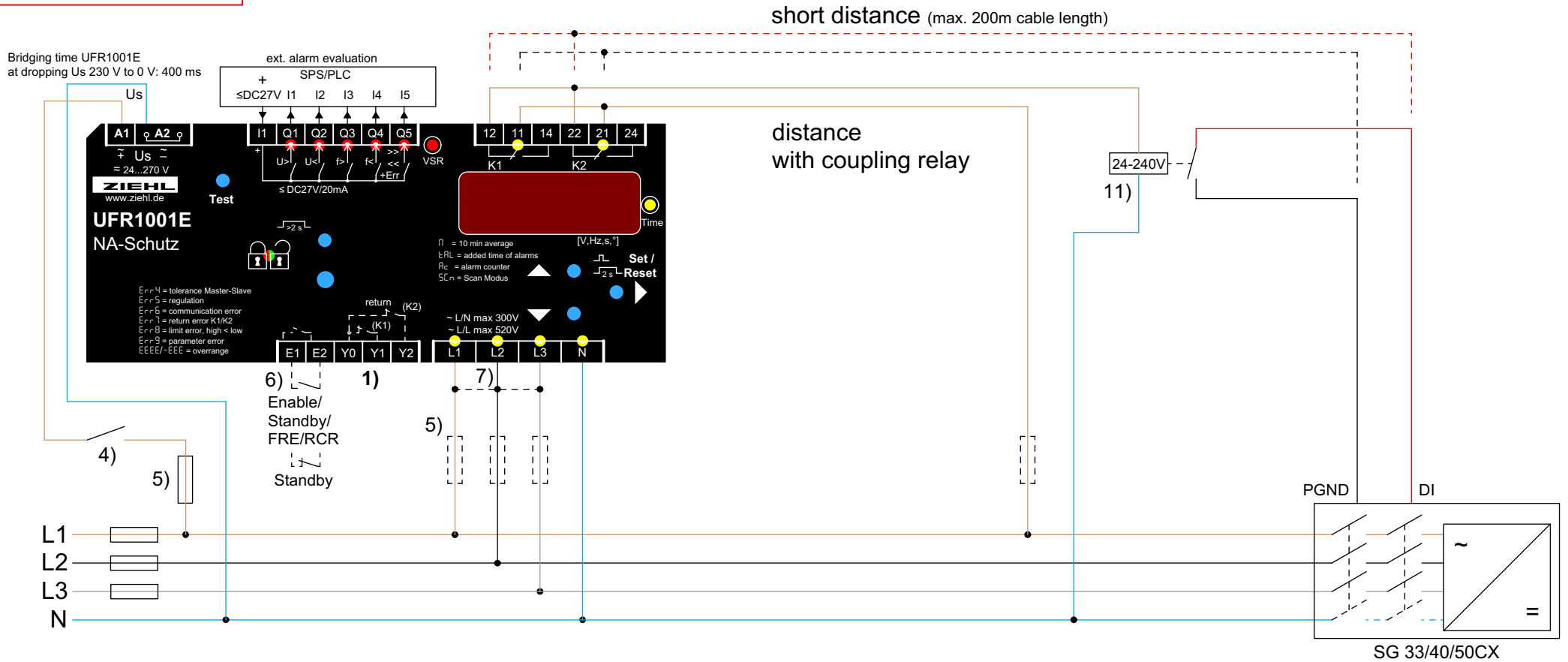
- 1) **Feedback contacts not connected: set $t_{rEL} = OFF$ to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and $u_{sr} / 5t_{b5}$. (default setting since F_{nr} 0-17) or $u_{sr} / 5t_{b4}$. (default setting to F_{nr} 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- contact open and $u_{sr} / 5t_{b0}$. (since F_{nr} 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, 16, 20, 30, 32, 34, 36, 40, 42)

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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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

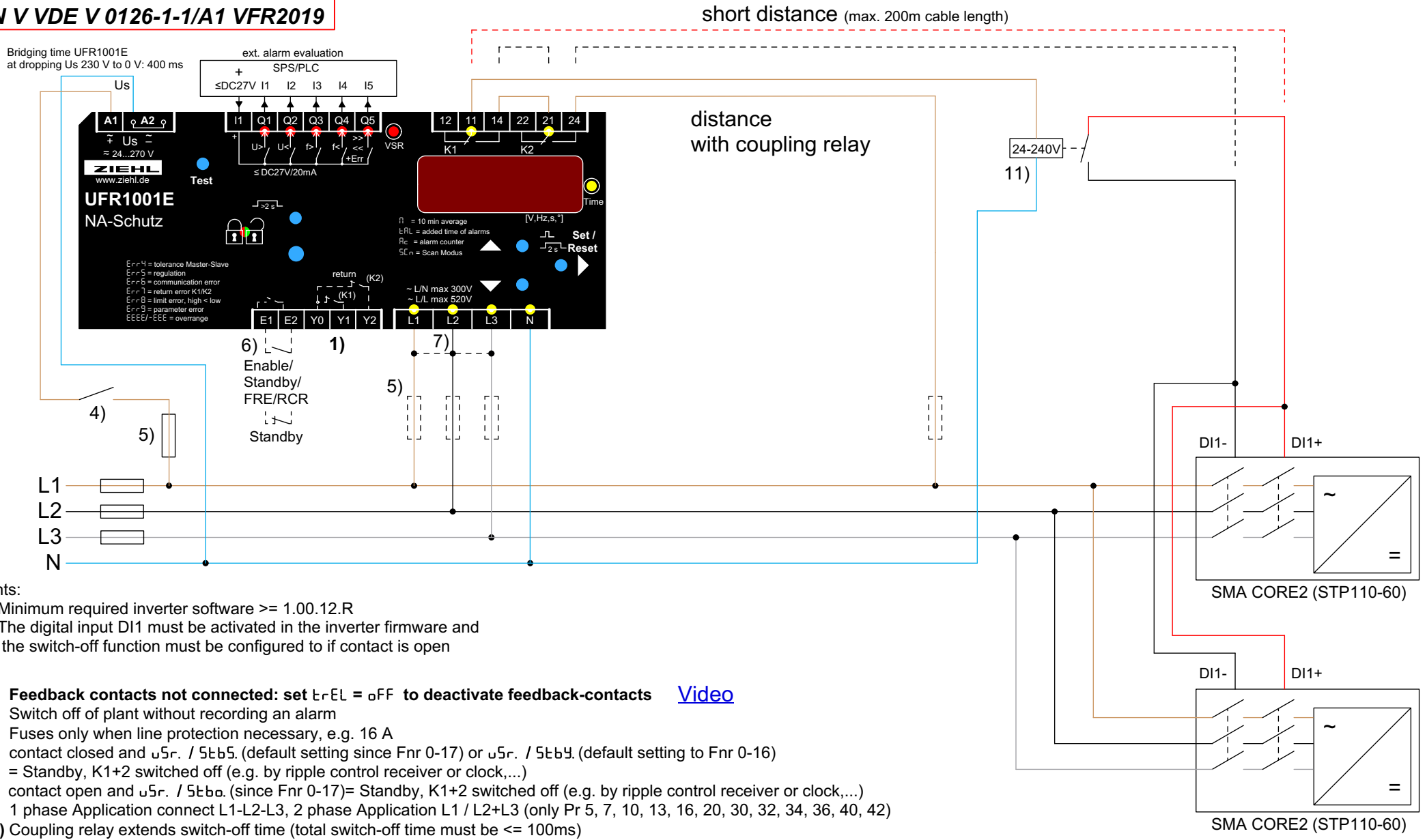
VDE-AR-N 4105:2018-11
NA/EEA-NE7 – CH 2020



- 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 $U_{5r} / 5\leq b5$. (default setting since Fnr 0-17) or $U_{5r} / 5\leq b9$. (default setting to Fnr 0-16)
= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
contact open and $U_{5r} / 5\leq b0$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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
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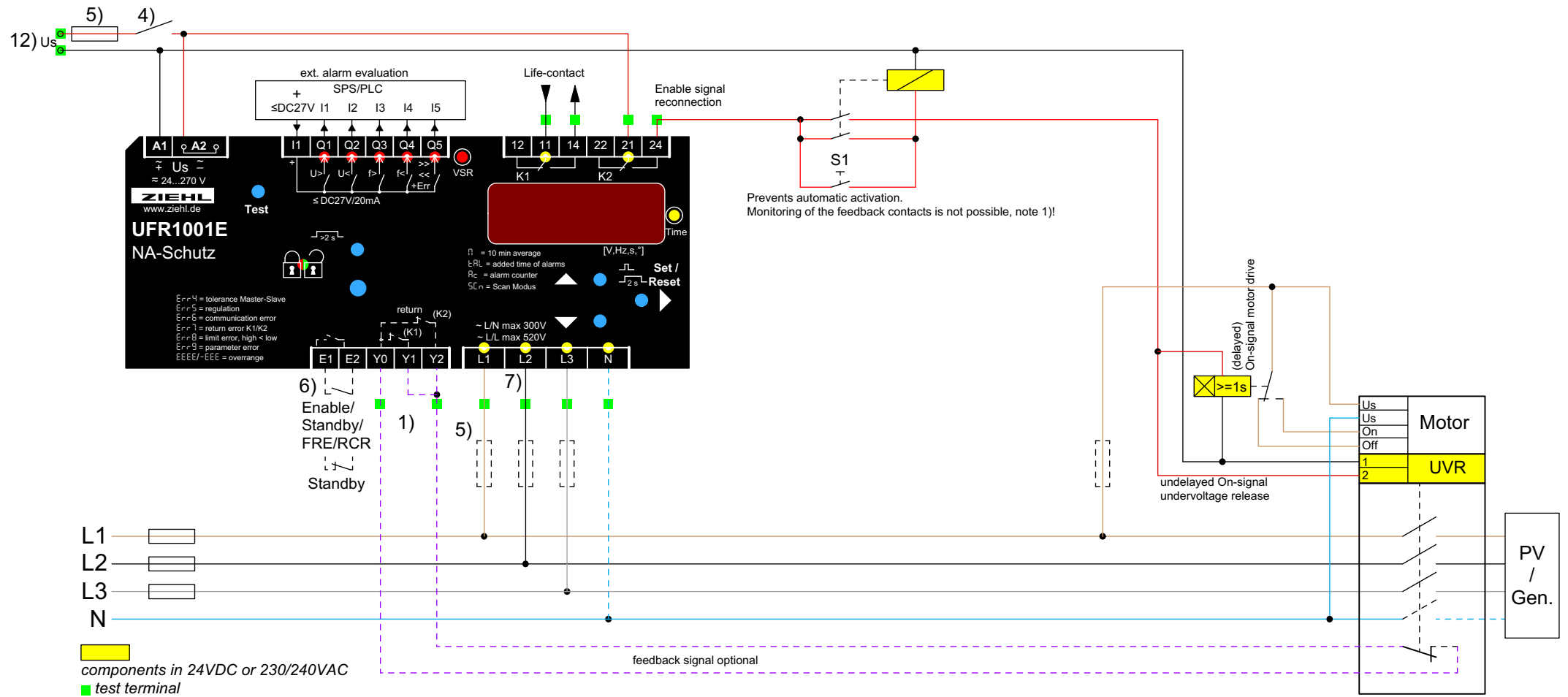
Hints:

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

- 3) **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 $u_{Sr} / 5 \leq b5$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 11) Coupling relay extends switch-off time (total switch-off time must be <= 100ms)

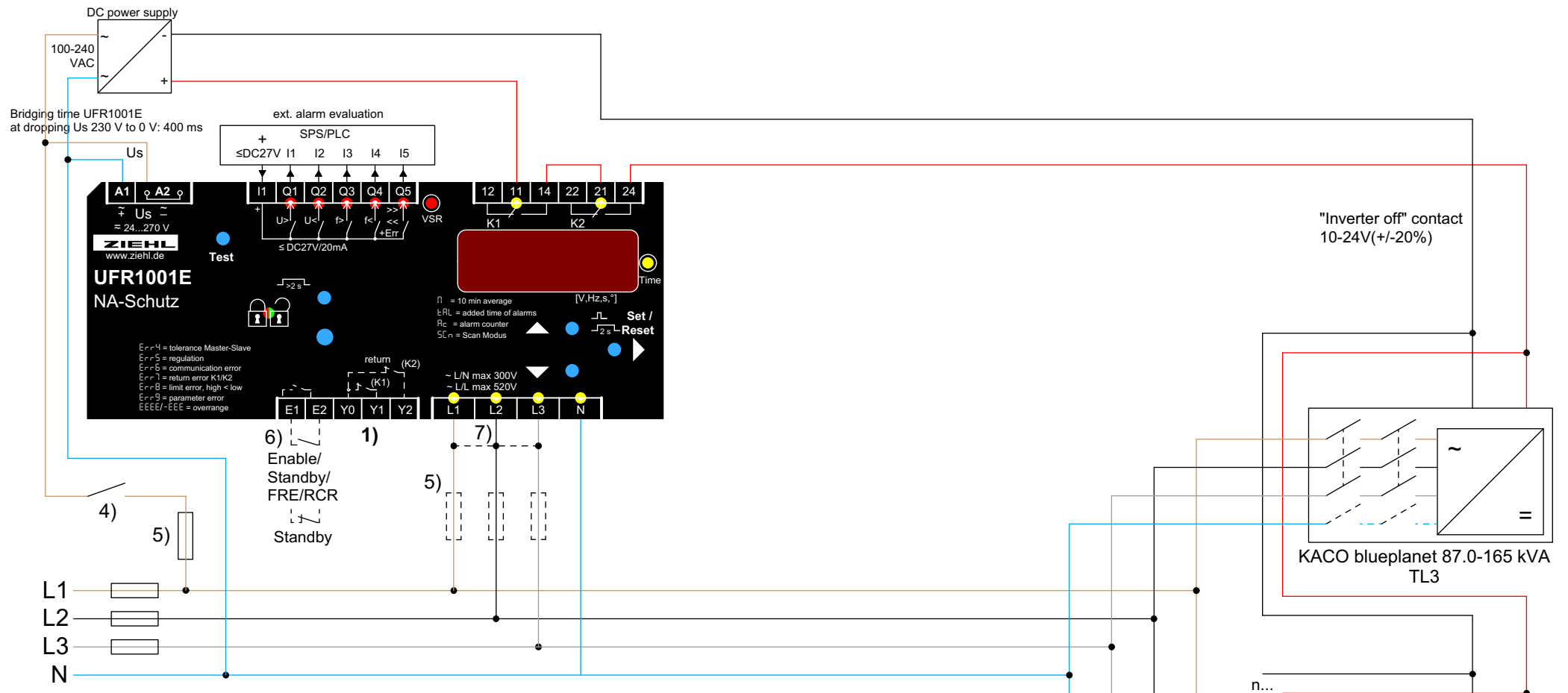


VDE-AR-N 4110+4120:2018-11 (medium voltage)



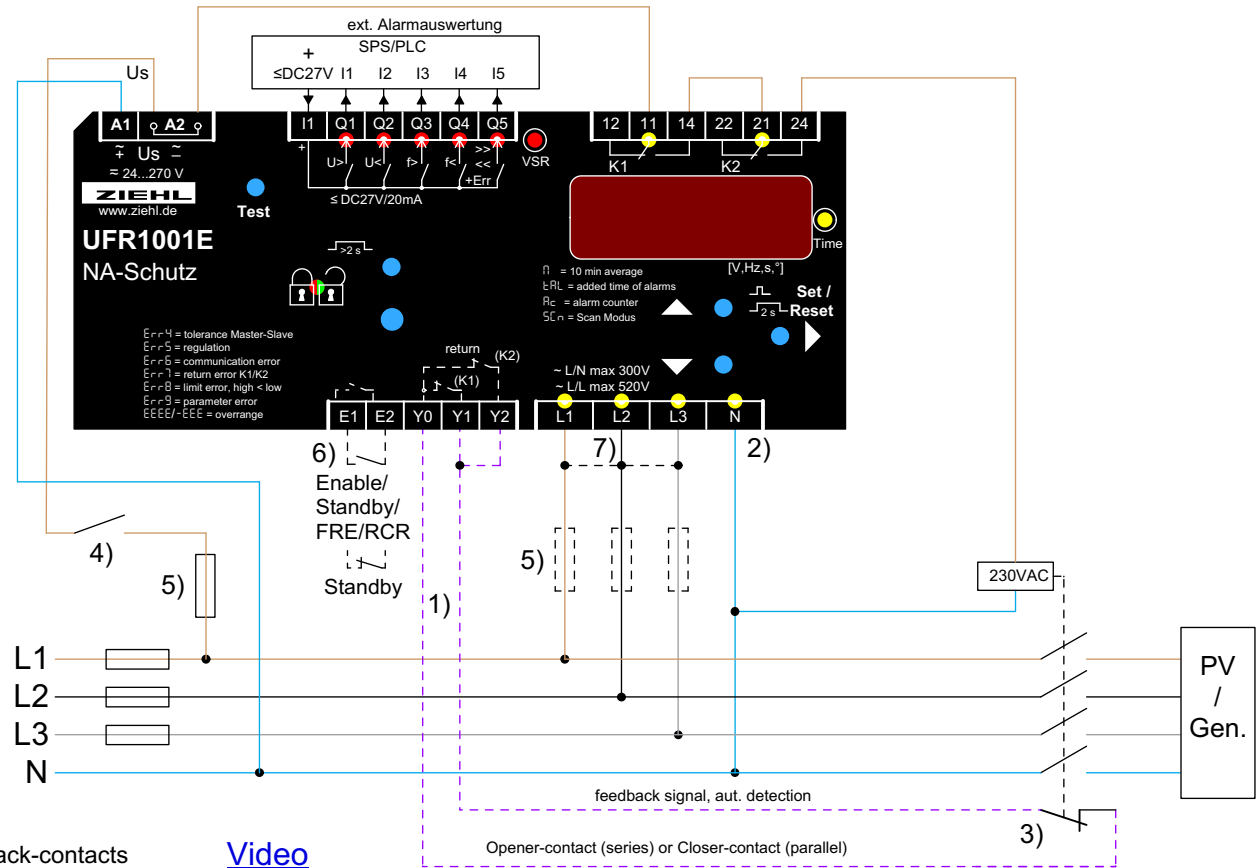
- 1) Feedback contacts not connected: set $t_{r-EL} = \text{oFF}$ to deactivate feedback-contacts [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and $u_{5r} / 5t_{b5}$. (default setting since $F_{nr} 0-17$) or $u_{5r} / 5t_{b4}$. (default setting to $F_{nr} 0-16$) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
contact open and $u_{5r} / 5t_{b0}$. (since $F_{nr} 0-17$) = 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
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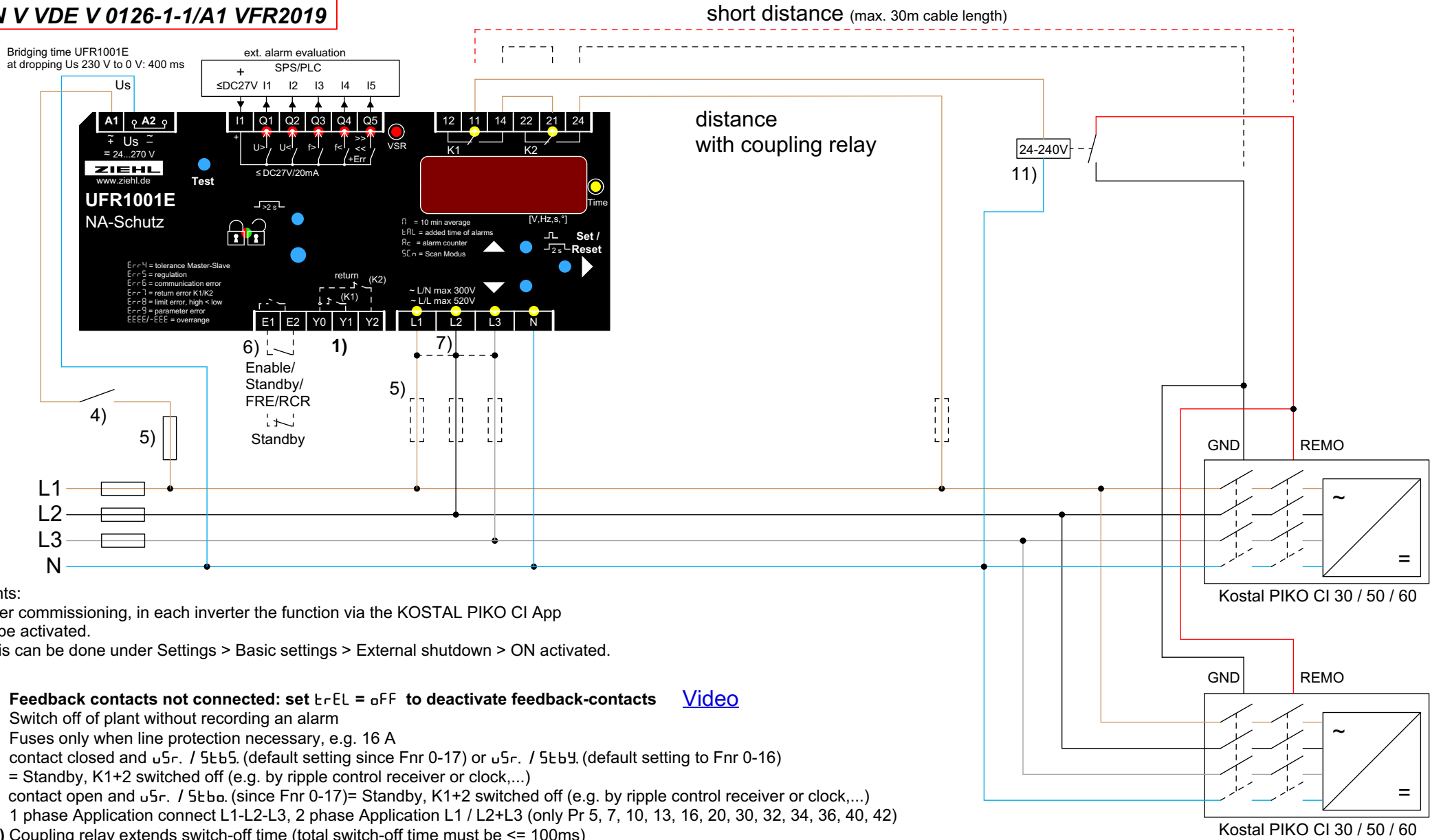
- 1) **Feedback contacts not connected: set $t_{rEL} = \text{off}$ to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and $u_{5r} / 5t_{b5}$. (default setting since $F_{nr} 0-17$) or $u_{5r} / 5t_{b9}$. (default setting to $F_{nr} 0-16$)
= Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- 7) contact open and $u_{5r} / 5t_{b0}$. (since $F_{nr} 0-17$)= 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, 16, 20, 30, 32, 34, 36, 40, 42)

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



- 1) Feedback contacts not connected: set $t_{rEL} = OFF$ 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, 16, 20, 30, 32, 34, 36, 40, 42)

VDE-AR-N 4105:2018-11
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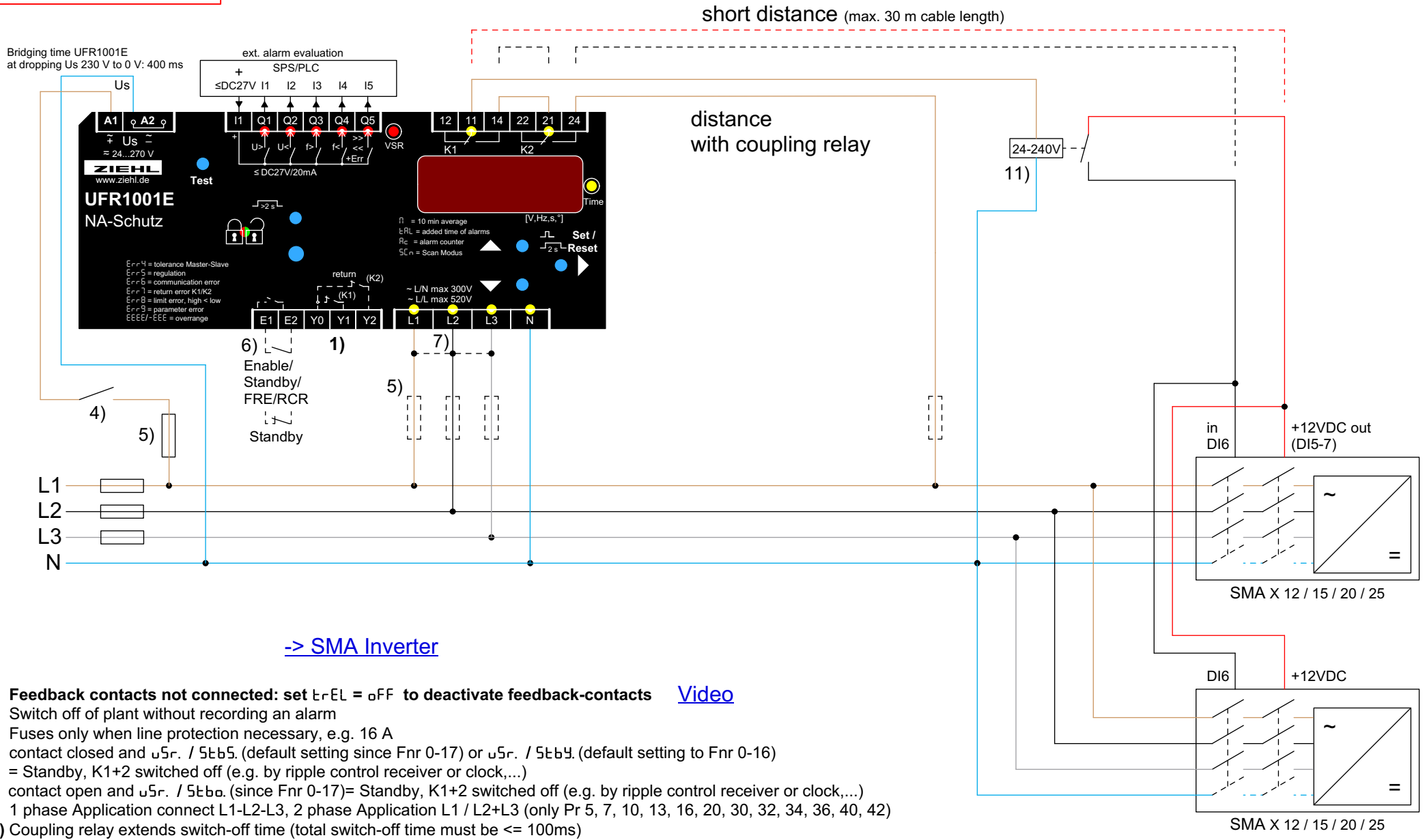


Hints:

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 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 $u_{Sr} / 5 \leq b5$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 11) Coupling relay extends switch-off time (total switch-off time must be ≤ 100 ms)

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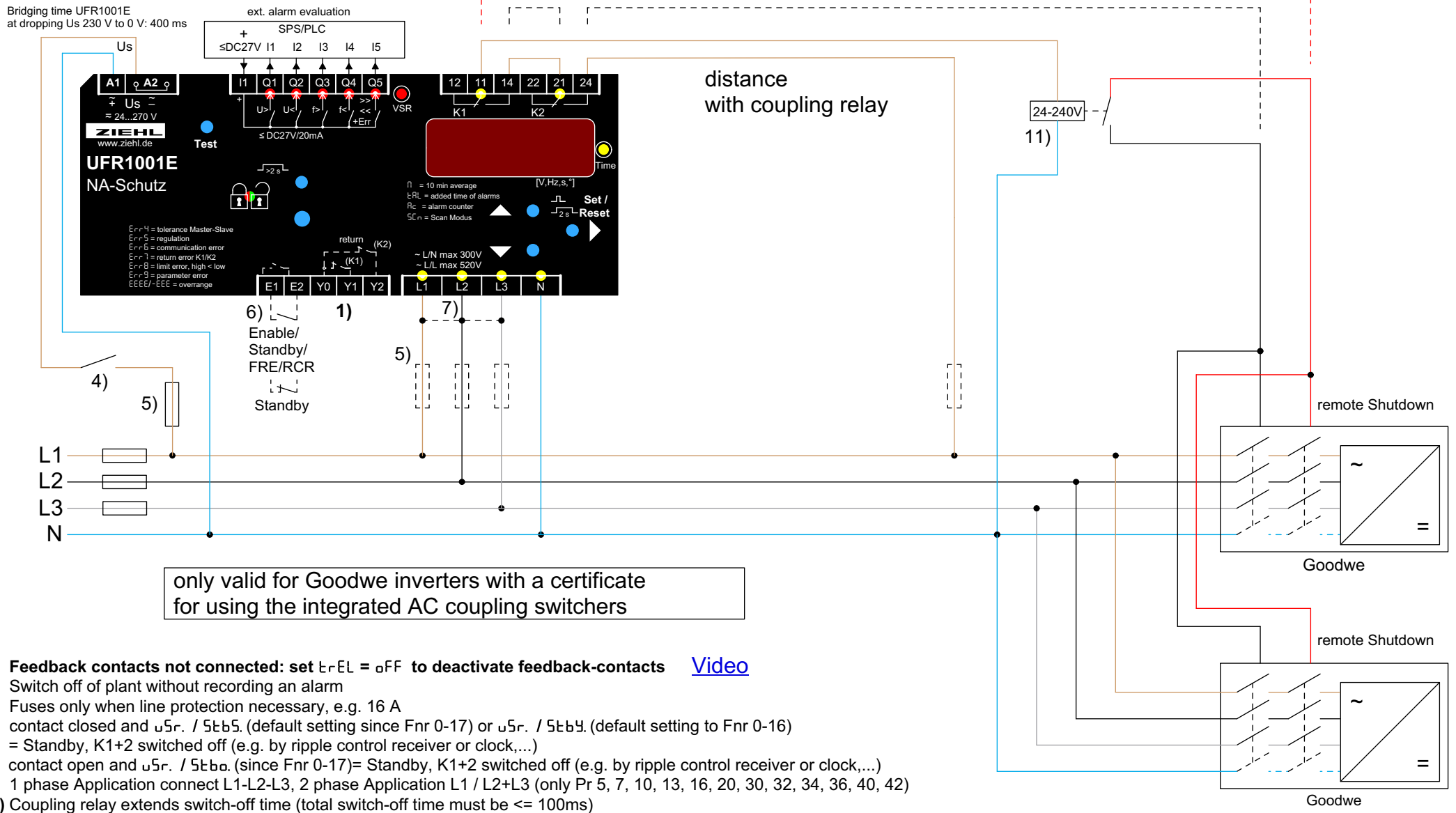


- 1) **Feedback contacts not connected: set $E_{rEL} = \text{oFF}$ to deactivate feedback-contacts** [Video](#)
- 4) Switch off of plant without recording an alarm
- 5) Fuses only when line protection necessary, e.g. 16 A
- 6) contact closed and $u_{Sr} / 5 \leq b_5$. (default setting since Fnr 0-17) 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 $u_{Sr} / 5 \leq b_a$. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 11) Coupling relay extends switch-off time (total switch-off time must be $\leq 100\text{ms}$)



VDE-AR-N 4105:2018-11
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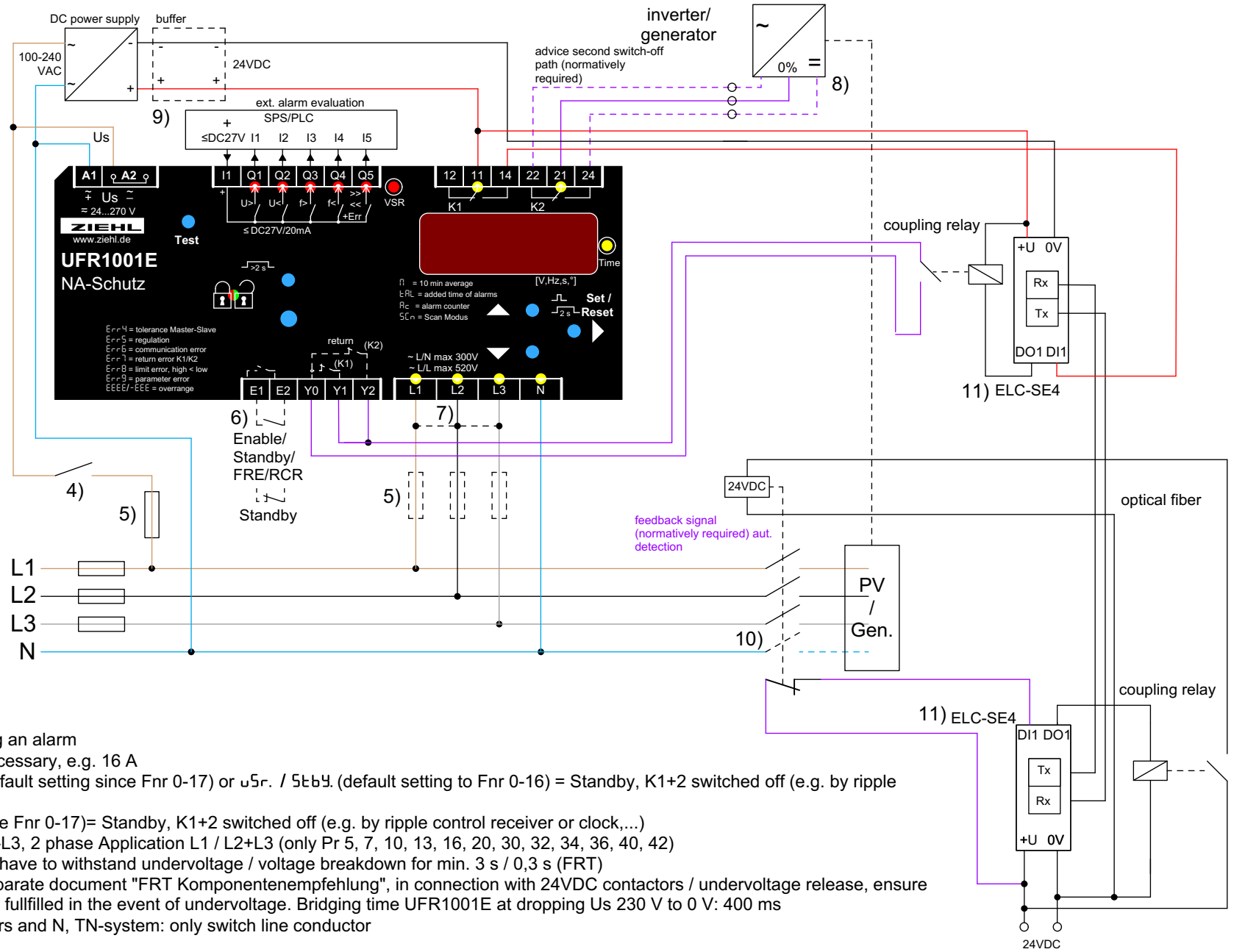
short distance (max. cable length see inverter manual)



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

- 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 u5r. / 5t5y. (default setting since Fnr 0-17) or u5r. / 5t5y. (default setting to Fnr 0-16) = 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, 16, 20, 30, 32, 34, 36, 40, 42)
- 11) Coupling relay extends switch-off time (total switch-off time must be <= 100ms)

**VDE-AR-N 4105:2018-11
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- 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} / 5t₅. (default setting since Fnr 0-17) or u_{5r} / 5t₅. (default setting to Fnr 0-16) = Standby, K1+2 switched off (e.g. by ripple control receiver or clock,...)
- contact open and u_{5r} / 5t₅. (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, 16, 20, 30, 32, 34, 36, 40, 42)
- 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) elseco ELC-SE4-F-ME22-SFP-24V