

Thermistor monitor S1MO



The thermistor monitoring relay S1MO is used as a protection device in temperature monitoring circuits in accordance with EN 44081. It protects motors, generators, storage areas, etc. from overheating.

Unit features

- ▶ For DC and AC supplies
- ▶ Normally energised mode
- ▶ Monitors sensor short circuits
- ▶ Non-volatile fault latching
- ▶ Manual reset via internal or external reset button

Description

The thermistor monitoring relay is enclosed in an S-95 slimline housing. There are 5 versions available for AC operation and one for AC and DC operation.

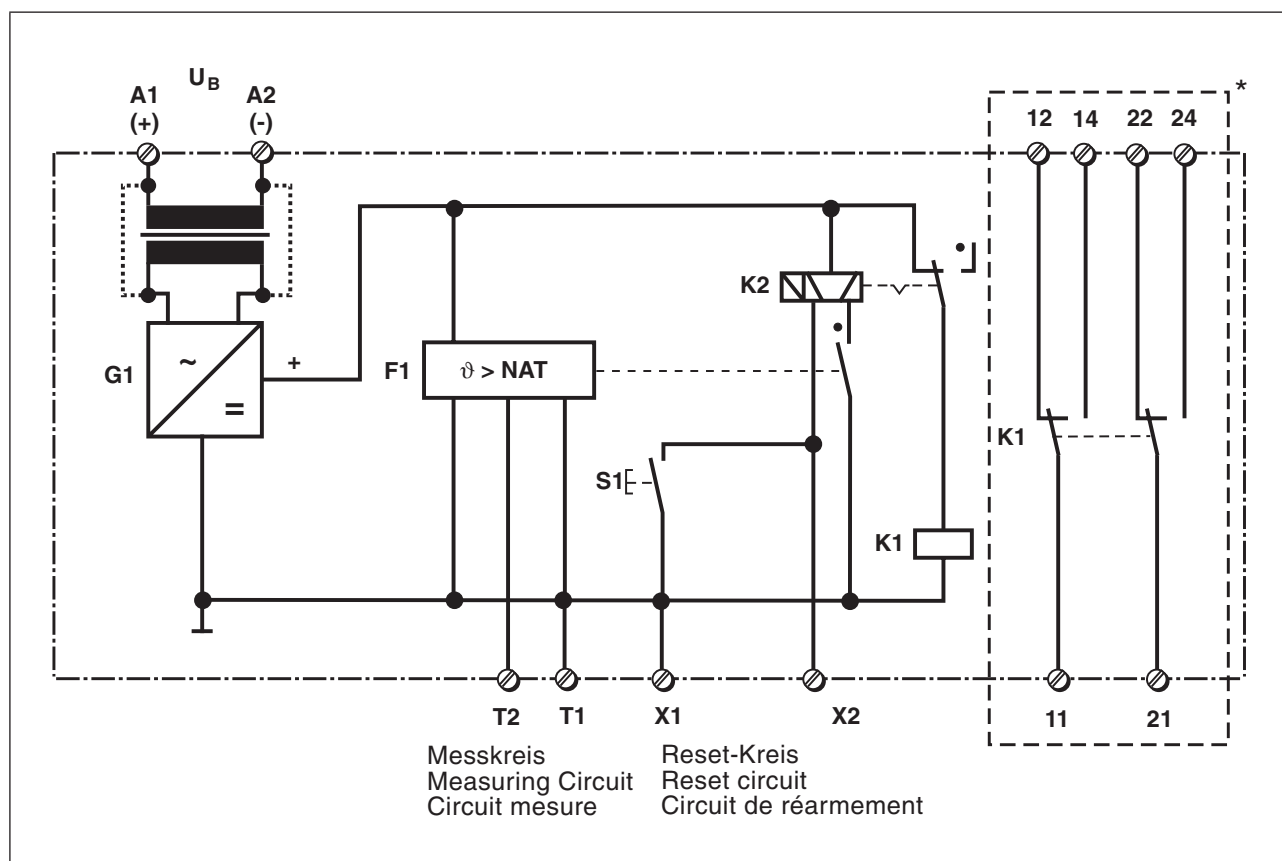
Features:

- ▶ Relay outputs: 2 auxiliary contacts (2 C/O)
- ▶ Measuring circuit for connecting a temperature sensor (PTC resistor)
- ▶ Monitors the temperature sensor for short circuit
- ▶ Reset button
- ▶ Connection option for external reset button
- ▶ Manual reset with non-volatile reset latch
- ▶ LED for supply voltage and fault

A temperature sensor is connected to the S1MO measuring circuit. If the temperature exceeds a defined value, i.e. the resistance of the temperature sensor reaches the response value, the output contacts switch. Contacts 11-14 and 21-24 open, contacts 11-12 and 21-22 close. If the temperature then falls, i.e. the resistance of the temperature sensor reaches the release value, the unit can only be switched back on by pressing the reset button S1 (or the external reset button). The non-volatile reset latch prevents the unit from starting up again automatically after a fault, when the voltage fails and is then restored.

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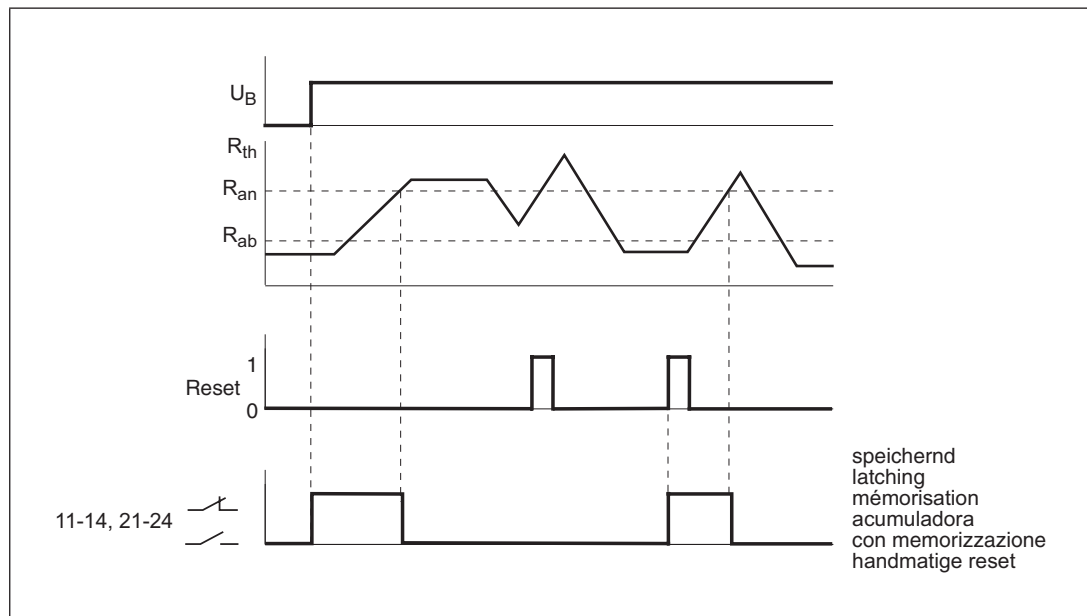
Internal wiring diagram



* Insulation between the non-marked area and the relay contacts: Basic insulation (over-voltage category III), safe separation (overvoltage category II)

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Timing diagram

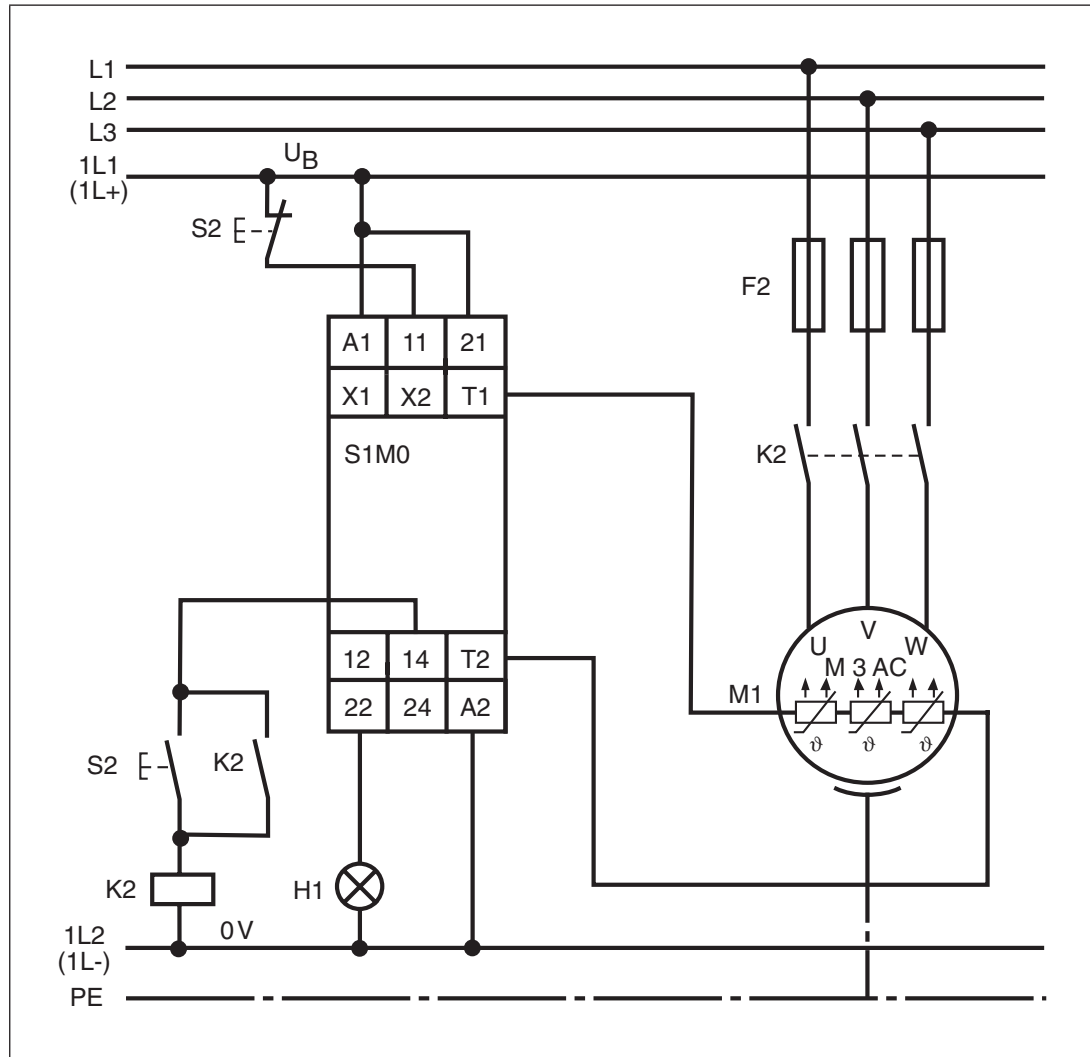


Legend

- ▶ U_B Supply voltage
- ▶ R_{on} Response value
- ▶ R_{off} Release value
- ▶ R_{th} PTC resistor

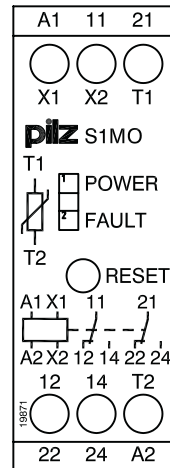
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Connection example



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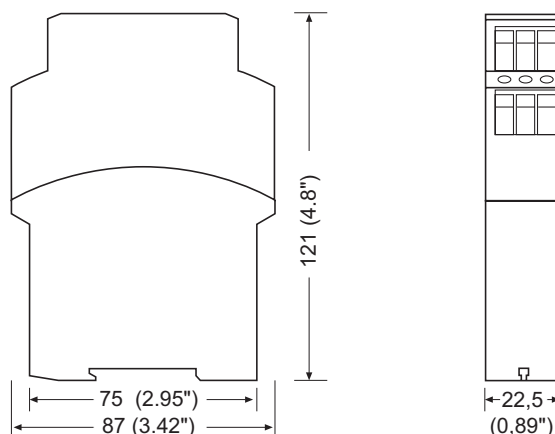
Terminal configuration



Installation

- ▶ The unit should be installed in a control cabinet with a protection type of at least IP54.
- ▶ Use the notch on the rear of the unit to attach it to a DIN rail.
- ▶ Ensure the unit is mounted securely on a vertical DIN rail (35 mm) by using a fixing element (e.g. retaining bracket or an end angle).

Dimensions



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Technical details

Order no. 839600 – 839630

See below for more order numbers

General	839600	839620	839630
Approvals	CCC, CE, cULus Listed	CCC, CE, cULus Listed	CCC, CE, cULus Listed
Electrical data	839600	839620	839630
Supply voltage			
Voltage	24 V	48 V	110 V
Type	AC/DC	AC	AC
Voltage tolerance	-15 %/+10 %	-15 %/+10 %	-15 %/+10 %
Frequency range AC	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Max. inrush current at UB	10,00 A	10,00 A	10,00 A
Continuous duty	100 %	100 %	100 %
Min. unit fuse protection	1,00 A	1,00 A	1,00 A
Max. unit fuse protection F1	Max. cable cross section	Max. cable cross section	Max. cable cross section
Measuring circuit	839600	839620	839630
Response value Ron	3,6 kOhm, ±10 %	3,6 kOhm, ±10 %	3,6 kOhm, ±10 %
Release value Rab	1,8 kOhm, ±10 %	1,8 kOhm, ±10 %	1,8 kOhm, ±10 %
Cold resistance at 20 °C	1,5 kOhm	1,5 kOhm	1,5 kOhm
Relay outputs	839600	839620	839630
Utilisation category			
In accordance with the standard	EN 60947-4-1	EN 60947-4-1	EN 60947-4-1
Auxiliary contacts, AC1 at	240 V	240 V	240 V
Min. current	0,10 A	0,10 A	0,10 A
Max. current	5,0 A	5,0 A	5,0 A
Max. power	1200 VA	1200 VA	1200 VA
Auxiliary contacts, DC1 at	24 V	24 V	24 V
Min. current	0,10 A	0,10 A	0,10 A
Max. current	5,0 A	5,0 A	5,0 A
Max. power	120 W	120 W	120 W
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
Auxiliary contacts, AC15 at	230 V	230 V	230 V
Max. current	2,0 A	2,0 A	2,0 A
Auxiliary contacts, DC13 (6 cycles/min) at	24 V	24 V	24 V
Max. current	1,5 A	1,5 A	1,5 A

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Relay outputs	839600	839620	839630
Contact fuse protection, external auxiliary contacts			
Blow-out fuse, quick	6 A	6 A	6 A
Blow-out fuse, slow	4 A	4 A	4 A
Circuit breaker, 24 V AC/DC, characteristic B/C	4 A	4 A	4 A
Contact material	AgCdO + 3,0 µm Au	AgCdO + 3,0 µm Au	AgCdO + 3,0 µm Au
Times	839600	839620	839630
Switch-on delay			
Typ. switch-on delay	350 ms	350 ms	350 ms
Environmental data	839600	839620	839630
Climatic suitability	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Ambient temperature			
Temperature range	-10 - 55 °C	-10 - 55 °C	-10 - 55 °C
Storage temperature			
Temperature range	-40 - 85 °C	-40 - 85 °C	-40 - 85 °C
EMC	EN 60947-5-1, EN 61000-6-2	EN 60947-5-1, EN 61000-6-2	EN 60947-5-1, EN 61000-6-2
Vibration			
In accordance with the standard	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Frequency	10,0 - 55,0 Hz	10,0 - 55,0 Hz	10,0 - 55,0 Hz
Max. amplitude	0,35 mm	0,35 mm	0,35 mm
Airgap creepage			
In accordance with the standard	EN 60947-1	EN 60947-1	EN 60947-1
Overvoltage category	III / II	III / II	III / II
Pollution degree	2	2	2
Rated insulation voltage	250 V	250 V	250 V
Rated impulse withstand voltage	4,00 kV	4,00 kV	4,00 kV
Protection type			
Mounting (e.g. cabinet)	IP54	IP54	IP54
Housing	IP40	IP40	IP40
Terminals	IP20	IP20	IP20
Mechanical data	839600	839620	839630
Mounting position	Any	Any	Any
Mechanical life	10,000,000 cycles	10,000,000 cycles	10,000,000 cycles
Material			
Bottom	PPO UL 94 V0	PPO UL 94 V0	PPO UL 94 V0
Front	ABS UL 94 V0	ABS UL 94 V0	ABS UL 94 V0
Top	PPO UL 94 V0	PPO UL 94 V0	PPO UL 94 V0

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Mechanical data	839600	839620	839630
Cross section of external conductors with screw terminals			
1 core flexible	0,20 - 4,00 mm ² , 24 - 10 AWG	0,20 - 4,00 mm ² , 24 - 10 AWG	0,20 - 4,00 mm ² , 24 - 10 AWG
2 core with the same cross section, flexible with crimp connectors, no plastic sleeve	0,20 - 2,50 mm ² , 24 - 14 AWG	0,20 - 2,50 mm ² , 24 - 14 AWG	0,20 - 2,50 mm ² , 24 - 14 AWG
2 core with the same cross section, flexible without crimp connectors or with TWIN crimp connectors	0,20 - 2,50 mm ² , 24 - 14 AWG	0,20 - 2,50 mm ² , 24 - 14 AWG	0,20 - 2,50 mm ² , 24 - 14 AWG
Torque setting with screw terminals	0,60 Nm	0,60 Nm	0,60 Nm
Connection type	Screw terminal	Screw terminal	Screw terminal
Mounting type	Fixed	Fixed	Fixed
Dimensions			
Height	87,0 mm	87,0 mm	87,0 mm
Width	22,5 mm	22,5 mm	22,5 mm
Depth	121,0 mm	121,0 mm	121,0 mm
Weight	120 g	160 g	160 g

Thermistor monitor S1MO

Order no. 839650 – 839660

General	839650	839655	839660
Approvals	CCC, CE, cULus Listed	CCC, CE, cULus Listed	CCC, CE
Electrical data	839650	839655	839660
Supply voltage			
Voltage	230 V	240 V	400 V
Type	AC	AC	AC
Voltage tolerance	-15 %/+10 %	-15 %/+10 %	-15 %/+10 %
Frequency range AC	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Max. inrush current at UB	10,00 A	10,00 A	10,00 A
Continuous duty	100 %	100 %	100 %
Min. unit fuse protection	1,00 A	1,00 A	1,00 A
Max. unit fuse protection F1	Max. cable cross section	Max. cable cross section	Max. cable cross section
Measuring circuit	839650	839655	839660
Response value Ron	3,6 kOhm, ±10 %	3,6 kOhm, ±10 %	3,6 kOhm, ±10 %
Release value Rab	1,8 kOhm, ±10 %	1,8 kOhm, ±10 %	1,8 kOhm, ±10 %
Cold resistance at 20 °C	1,5 kOhm	1,5 kOhm	1,5 kOhm
Relay outputs	839650	839655	839660
Utilisation category			
In accordance with the standard	EN 60947-4-1	EN 60947-4-1	EN 60947-4-1
Auxiliary contacts, AC1 at	240 V	240 V	240 V
Min. current	0,10 A	0,10 A	0,10 A
Max. current	5,0 A	5,0 A	5,0 A
Max. power	1200 VA	1200 VA	1200 VA
Auxiliary contacts, DC1 at	24 V	24 V	24 V
Min. current	0,10 A	0,10 A	0,10 A
Max. current	5,0 A	5,0 A	5,0 A
Max. power	120 W	120 W	120 W
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
Auxiliary contacts, AC15 at	230 V	230 V	230 V
Max. current	2,0 A	2,0 A	2,0 A
Auxiliary contacts, DC13 (6 cycles/min) at	24 V	24 V	24 V
Max. current	1,5 A	1,5 A	1,5 A

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Relay outputs	839650	839655	839660
Contact fuse protection, external auxiliary contacts			
Blow-out fuse, quick	6 A	6 A	6 A
Blow-out fuse, slow	4 A	4 A	4 A
Circuit breaker, 24 V AC/DC, characteristic B/C	4 A	4 A	4 A
Contact material	AgCdO + 3,0 µm Au	AgCdO + 3,0 µm Au	AgCdO + 3,0 µm Au
Times	839650	839655	839660
Switch-on delay			
Typ. switch-on delay	350 ms	350 ms	350 ms
Environmental data	839650	839655	839660
Climatic suitability	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Ambient temperature			
Temperature range	-10 - 55 °C	-10 - 55 °C	-10 - 55 °C
Storage temperature			
Temperature range	-40 - 85 °C	-40 - 85 °C	-40 - 85 °C
EMC	EN 60947-5-1, EN 61000-6-2	EN 60947-5-1, EN 61000-6-2	EN 60947-5-1, EN 61000-6-2
Vibration			
In accordance with the standard	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Frequency	10,0 - 55,0 Hz	10,0 - 55,0 Hz	10,0 - 55,0 Hz
Max. amplitude	0,35 mm	0,35 mm	0,35 mm
Airgap creepage			
In accordance with the standard	EN 60947-1	EN 60947-1	EN 60947-1
Overvoltage category	III / II	III / II	III / II
Pollution degree	2	2	2
Rated insulation voltage	250 V	250 V	250 V
Rated impulse withstand voltage	4,00 kV	4,00 kV	4,00 kV
Protection type			
Mounting (e.g. cabinet)	IP54	IP54	IP54
Housing	IP40	IP40	IP40
Terminals	IP20	IP20	IP20
Mechanical data	839650	839655	839660
Mounting position	Any	Any	Any
Mechanical life	10,000,000 cycles	10,000,000 cycles	10,000,000 cycles
Material			
Bottom	PPO UL 94 V0	PPO UL 94 V0	PPO UL 94 V0
Front	ABS UL 94 V0	ABS UL 94 V0	ABS UL 94 V0
Top	PPO UL 94 V0	PPO UL 94 V0	PPO UL 94 V0

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Mechanical data	839650	839655	839660
Cross section of external conductors with screw terminals			
1 core flexible	0,20 - 4,00 mm ² , 24 - 10 AWG	0,20 - 4,00 mm ² , 24 - 10 AWG	0,20 - 4,00 mm ² , 24 - 10 AWG
2 core with the same cross section, flexible with crimp connectors, no plastic sleeve	0,20 - 2,50 mm ² , 24 - 14 AWG	0,20 - 2,50 mm ² , 24 - 14 AWG	0,20 - 2,50 mm ² , 24 - 14 AWG
2 core with the same cross section, flexible without crimp connectors or with TWIN crimp connectors	0,20 - 2,50 mm ² , 24 - 14 AWG	0,20 - 2,50 mm ² , 24 - 14 AWG	0,20 - 2,50 mm ² , 24 - 14 AWG
Torque setting with screw terminals	0,60 Nm	0,60 Nm	0,60 Nm
Connection type	Screw terminal	Screw terminal	Screw terminal
Mounting type	Fixed	Fixed	Fixed
Dimensions			
Height	87,0 mm	87,0 mm	87,0 mm
Width	22,5 mm	22,5 mm	22,5 mm
Depth	121,0 mm	121,0 mm	121,0 mm
Weight	160 g	160 g	160 g

Order reference

Order reference					
Product type	U _B				Order no.
S1MO	24 VAC/DC				839 600
S1MO	48 VAC				839 620
S1MO	110 VAC				839 630
S1MO	230 VAC				839 650
S1MO	240 VAC				839 655
S1MO	400 VAC				839 660

U_B: Supply voltage

Additional versions on request