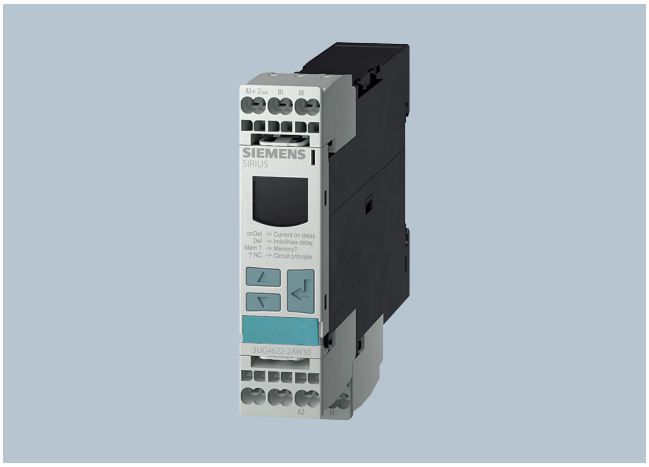
Overview



The relays monitor single-phase AC currents (rms value) and DC currents against the set threshold value for overshoot and undershoot. They differ with regard to their measuring ranges and supply voltage types.

Function

3UG46 21/3UG46 22 monitoring relays

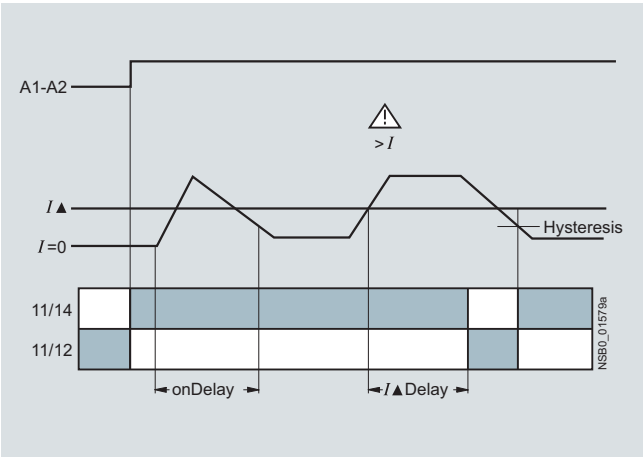
The 3UG46 21/3UG46 22 current monitoring relay is supplied with an auxiliary voltage of 24 V AC/DC or 24 ... 240 V AC/DC and performs overshoot, undershoot or window monitoring of the current depending on how it is parameterized. The device is equipped with a display and is parameterized using three buttons.

The measuring range extends from 3 ... 500 mA or 0.05 ... 10 A. The rms value of the current is measured. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds according to the set principle of operation as soon as the tripping delay time I_{Del} has elapsed. This time and the ON-delay time on_{Del} are adjustable from 0.1 ... 20 s.

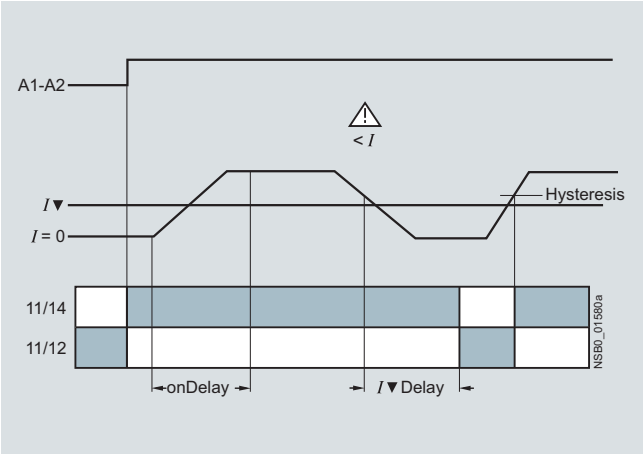
The hysteresis is adjustable from 0.1 ... 250 mA or 0.01 ... 5 A. The device can be operated with manual or auto RESET and on the basis of either the open-circuit or closed-circuit principle. Following options are available: Response of the output relay when the supply voltage U_s = ON is applied or not until the lower measurement range limit of the measuring current (I > 3 mA/ 50 mA) is reached. One output changeover contact is available as signaling contact.

With the closed-circuit principle selected upon application of the supply voltage

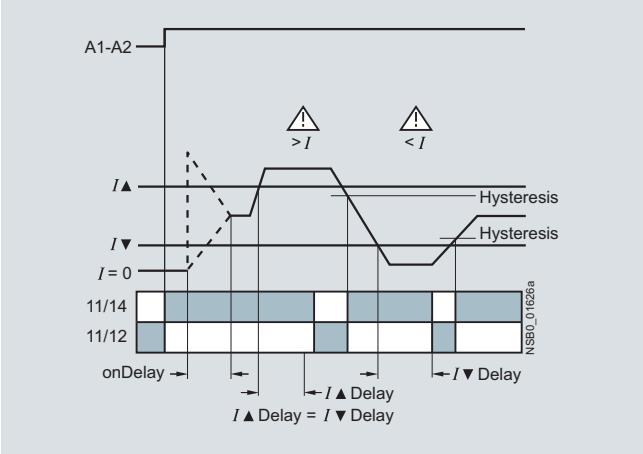
Current overshoot



Current undershoot



Window monitoring



Technical specifications

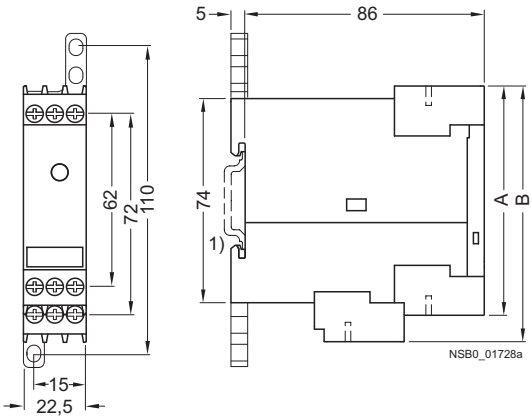
		3UG46 21-.AA	3UG46 21-.AW	3UG46 22-.AA	3UG46 22-.AW
General data					
Rated control supply voltage U_s	V	24	24 … 240	24	24 … 240
Rated frequency	Hz	50/60			
Operating range	V	20.4 ... 26.4	20.4 ... 264	20.4 ... 26.4	20.4 ... 264
Rated power	W/VA	2/4			
Width	mm	22.5			
RESET		Automatic/manual			
Availability time after application of U_s	ms	1000			
Response time once a switching threshold is reached	ms	Max. 450			
Adjustable tripping delay time/ON-delay time	s	0.1 … 20			
Mains buffering time, minimum	ms	10			
Rated insulation voltage U_i Degree of pollution 3; overvoltage category III acc. to IEC 60664	V	690			
Rated impulse withstand voltage U_{imp}	kV	6			
Protective separation acc. to IEC 60947-1, Annex N	V	300			
Permissible ambient temperature • During operation • During storage	 °C °C	 -25 … +60 -40 … +85			
EMC tests[1]		IEC 60947-5-1/IEC 61000-6-2/IEC 61000-6-4			
Degree of protection acc. to IEC 60529		IP40 Enclosure IP20 Terminals			
Mounting position		Any			
Vibration resistance acc. to IEC 60068-2-6		1 ... 6 Hz: 15 mm; 6 ... 500 Hz: 2 *g*			
Shock resistance acc. to IEC 60068-2-27 for half-sine shock type	g/ms	15/11			
Connection type		**Screw terminals**			
• Terminal screw • Solid • Finely stranded with end sleeve • AWG cables, solid or stranded • Tightening torque	 mm^2 mm^2 AWG Nm	M 3 (standard screwdriver, size 2 and Pozidriv 2) 1 x (0.5 ... 4)/2 x (0.5 ... 2.5) 1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5) 2 x (20 ... 14) 0.8 … 1.2			
Connection type		**Spring-type terminals**			
• Solid • Finely stranded, with end sleeves • Finely stranded • AWG cables, solid or stranded	mm^2 mm^2 mm^2 AWG	2 x (0.25 ... 1.5) 2 x (0.25 ... 1.5) 2 x (0.25 ... 1.5) 2 x (24 ... 16)			
Measuring circuit					
Measuring range for single-phase AC/DC current	A	0.003 … 0.6		0.05 … 15	
Setting range for single-phase current	A	0.003 ... 0.5		0.05 ... 10	
Load supply voltage	V	24	Max. 300[2] Max. 500[3]	24	Max. 300[2] Max. 500[3]
Measuring accuracy	%	5			
Repeat accuracy at constant parameters	%	1			
Accuracy of digital display		±1 digit			
Deviations for temperature fluctuations	%/°C	±0.1			
Hysteresis for single-phase current		0.1 ... 250 mA		0.01 ... 5 A	
Permissible overcurrent, continuous	A	0.6		15	
Permissible overcurrent, < 1 s	A	5		50	
Protection against destruction, DIAZED gL/gG	A	2		16	
Measuring circuit internal resistance, shunt	mΩ	500		5	
Control circuit					
Load capacity of the output relay • Conventional thermal current I_{th}	 A	 5			
Rated operational current I_e • AC-15 at 24 ... 400 V • DC-13 at 24 V • DC-13 at 125 V • DC-13 at 250 V	 A A A A	 3 1 0.2 0.1			
Minimum contact load at 17 V DC	mA	5			
Output relay with DIAZED fuse gL/gG	A	4			
Electrical endurance AC-15, 3 A, million operating cycles		0.1			
Endurance with contactor relay million operating cycles		10			

1) Important: This is a Class A product. In the household environment this device may cause radio interference. In this case the user must introduce suitable measures.

2) With protective separation.

3) With simple separation.

Dimensional drawings



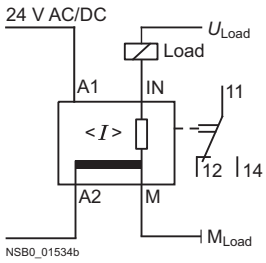
Type	3UG46 21 3UG46 22 A	B
Removable terminal		
Screw-type terminal	83	92
Spring-loaded terminal	84	94

1) For standard mounting rail according to EN 60715.

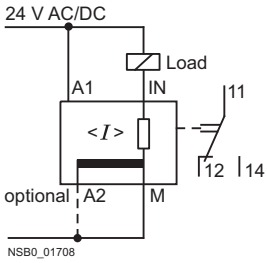
Schematics

3UG46 21-.AA30
3UG46 22-.AA30

Operation with separate control circuit and load circuit

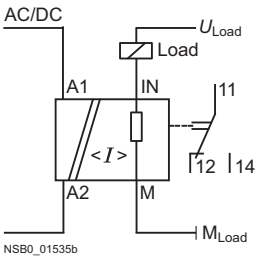


Operation with joint control circuit and load circuit

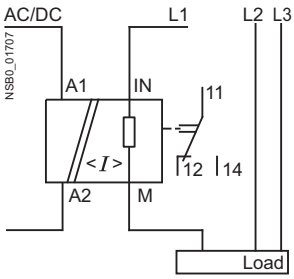


3UG46 21-.AW30
3UG46 22-.AW30

Single-phase operation

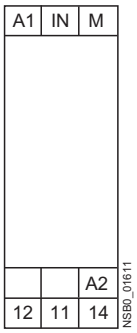


3-phase operation



Position of the terminals

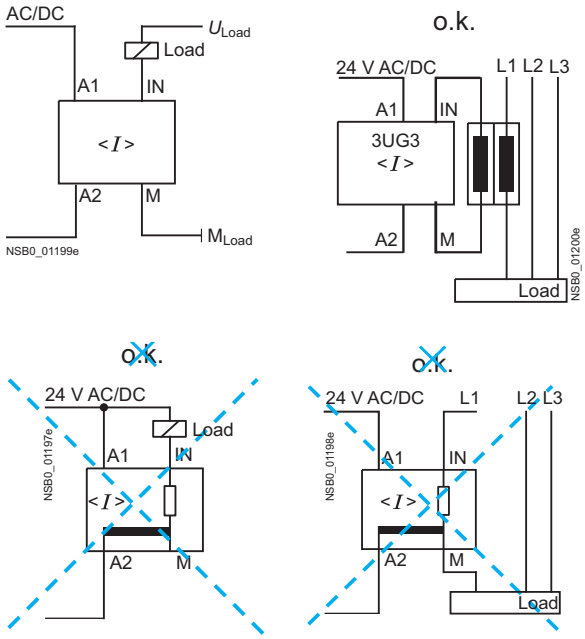
3UG46 21
3UG46 22



Current monitoring

Wiring diagram for 24 V AC/DC (only 3UG46 2.-.AA30)

From the following circuit diagrams it is clear that loads in measuring circuits have to be in the current flow upstream from the monitoring relay. Otherwise, the monitoring relay could be destroyed and the short-circuit current could cause damage to the plant.



Configuring note:

A2 and M are electrically connected internally!

For applications in which the load to be monitored and the monitoring relay are supplied from the same power supply, there is no need for connection A2!

The load current must always flow through M or the monitoring relay may be destroyed!