GE
Grid Solutions

MVUA

Time Delayed Auxiliary Relays

MVUA 11 is a time delayed auxiliary relay with a self-reset output element. It may be used where a delayed operate/delayed reset or pulse operation is required.

Application

The MVUA is a time delayed auxiliary relay for general applications in protection and control schemes applied to electrical power systems and industrial process plant. A wide range of contact configurations is available with self reset mechanisms.

In addition to the normal duty contacts, heavy duty contacts fitted with blowout magnets are available (see Figure 2 for breaking capacity).

The time delay is internally set to the required value by two banks of PCB mounted DIL switches; these allow the overall time delay, including auxiliary operating time, to be adjusted from 60 ms to 327.72 s in 10 ms steps.

The MVUA 11 can also be connected to obtain a pulse of a fixed duration. This is achieved by setting the internal DPU/DDO (delayed pick-up/delayed drop-off) switch to DDO and connecting the relay as shown in Figure 5.

Description

The type MVUA is basically an auxiliary relay type MVAA operated in conjunction with a static time delay circuit which provides time delayed operation, timed reset operation or pulsed operation. The operation mode is determined by the connections to the relay and the position of a DIL switch on the pcb inside the relay.

The required operate time delay is selected by DIL switches mounted on a pcb inside the relay which gives the relay a wide operating time delay range.

Key Features

- Wide time delay range
- Compact design
- Mechanically stable
- Self-reset versions available
- Wide voltage range

Description (continued)

For the delayed operate configuration the output auxiliary picks up after the set time delay from the application of the rated dc voltage. See Figure 3.

In the delayed reset configuration the output auxiliary operates instantaneously when the initiating contact closes, applying rated dc voltage to the relay. The output auxiliary resets after the set time delay from the initiating contact opening. See Figure 4.

With the pulsed operation configuration the output picks up on the application of the rated dc voltage and resets after the set time delay. See Figure 5.

The output auxiliary is an attracted armature unit of compact design with a positive action and a high degree of mechanical stability.

The output contacts are of a silver/ copper alloy, shaped and positioned to ensure a reliable, low resistance make or break contact. Normal duty change-over contacts are also available; alternatively heavy duty magnetic blowout contacts are recommended for breaking highly inductive dc loads.

Where heavy duty contacts are fitted, the number of available output contacts is reduced.

The relays can perform with consistent accuracy over a large number of operations with little or no maintenance for long periods.

Also, the static circuits have been designed to perform with complete reliability in the electrically hostile environments often encountered in power stations and sub-stations, over a wide range of ambient temperatures.

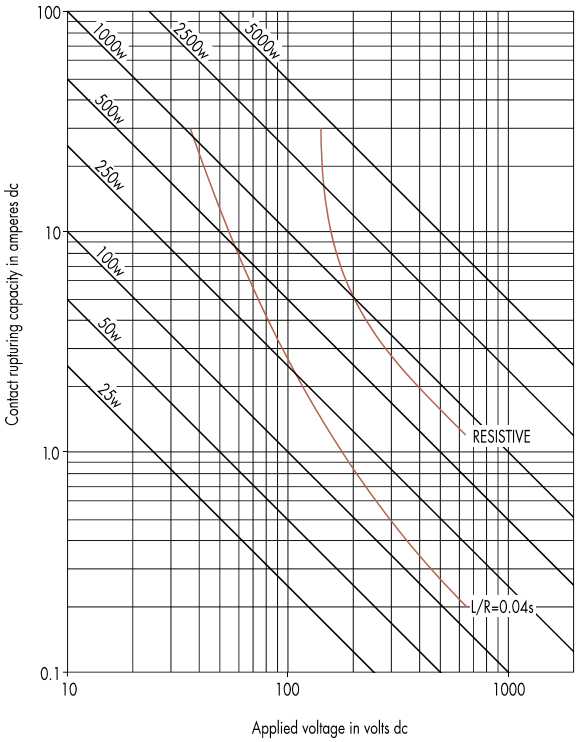


Fig. 2: Contact breaking capacity

Technical Data

Auxiliary voltage rating dc (V)	Operative range	
Vx	Vmin	Vmax
24/27	19.2	33
30/34	24	40
48/54	37	65
110/125	87	150
220/300	175	300

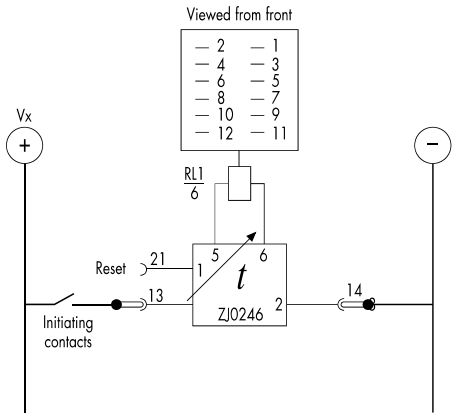
Time delay setting 10 ms to 327.67s in 10 ms steps

Operating time Set time + 50 ms

Burden

Maximum current taken by relay (mA)

Vx	Timing output de-energised	Timing output energised	Timer inhibited ouput de-energised
24/27	45	205	90
30/34	35	175	65
48/54	20	95	40
110/125	20	60	35
220/250	25	50	40

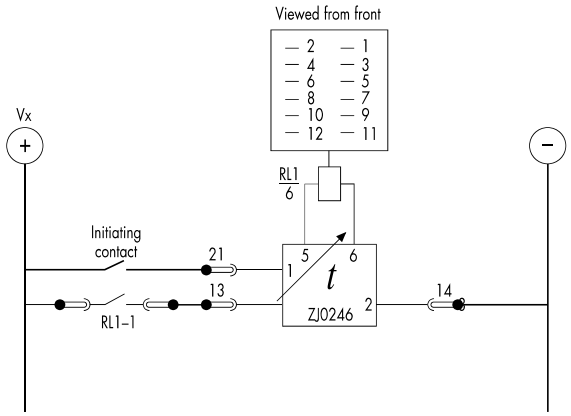


Combination of output contacts		Output contacts to module terminals					
		1 3	5 7	9 11	2 4	6 8	10 12
6M	–	M	M	M	M	M	M
5M	1B	M	M	M	B	M	M
4M	2B	B	M	M	B	M	M
3M	3B	B	M	M	B	B	M
2M	4B	B	B	M	B	B	M
1M	5B	B	B	M	B	B	B
–	6B	B	B	B	B	B	B

Combination of output contacts	Output contacts to module terminals			
	1 3 5	7 9 11	2 4 6	8 10 12
4BBM	M/B	M/B	M/B	M/B
	M/B	M/B	M/B	M/B

Contact description
M : Make B : Break
BBM : Break before make (changeover contact)

Figure 3: MVUA 11 time delayed operation

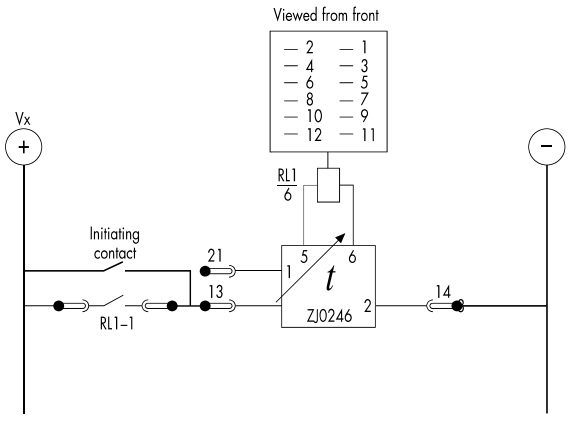


Combination of output contacts		Output contacts to module terminals					
		1 3	5 7	9 11	2 4	6 8	10 12
6M	–	M	M	M	M	M	M
5M	1B	M	M	M	B	M	M
4M	2B	B	M	M	B	M	M
3M	3B	B	M	M	B	B	M
2M	4B	B	B	M	B	B	M
1M	5B	B	B	M	B	B	B

Combination of output contacts	Output contacts to module terminals			
	1 3 5	7 9 11	2 4 6	8 10 12
4BBM	M/B	M/B	M/B	M/B
	M/B	M/B	M/B	M/B

Contact description
M : Make B : Break
BBM : Break before make (changeover contact)

Figure 4: MVUA 11 time delayed reset operation



Combination of output contacts		Output contacts to module terminals					
		1 3	5 7	9 11	2 4	6 8	10 12
6M	–	M	M	M	M	M	M
5M	1B	M	M	M	B	M	M
4M	2B	B	M	M	B	M	M
3M	3B	B	M	M	B	B	M
2M	4B	B	B	M	B	B	M
1M	5B	B	B	M	B	B	B

Combination of output contacts	Output contacts to module terminals			
	1 3 5	7 9 11	2 4 6	8 10 12
4BBM	M/B	M/B	M/B	M/B
	M/B	M/B	M/B	M/B

Contact description
M : Make B : Break
BBM : Break before make (changeover contact)

Figure 5: MVUA 11 pulse output operation

Accuracy - reference conditions

		Operative range
DC auxiliary voltage (V)	Vx	Applied voltage
	24/27	24
	30/34	30
	48/54	48
	110/125	110
	220/250	220
Time setting	1 second	
Ambient temperature	20°C	
Mode	Delayed pick-up (DPU)	

Accuracy - influencing quantities

DC auxiliary voltage	Variation over operative range 2% or 20ms whichever is the greater
Ambient temperature	Operative range: – 25°C to + 55°C Variation in timing error over temperature range: ±6.5%

Accuracy - general

Operating time	±2% or 20ms whichever is the greater
Resetting time	Greater than 10 ms and less than 50 ms
Minimum initialisation time	40 ms. Delayed drop-off only
Minimum timer reset pulse	10 ms. Minimum pulse applied to terminal 21 'Inhibit' to ensure timer resets
Contact disengaging time	25 ms. Maximum disengaging time upon removal of the dc supply with output element energised
Repeatability (within basic accuracy claim)	±0.5% or ±5 ms whichever is the greater

Flag indicator

MVUA 11	Hand reset flag indicator	Standard
	No flag indicator	

Contacts

MVUA 11	4 change over	Standard
	6 make or break	
	4 contacts, 2 heavy duty make or break, and 2 normal duty make or break	

NOTE: Reduce contacts by 1 if coil cut-off contact is required.

Contact ratings

type of contact	Current	Make and carry continuously	Make and carry for 3 seconds	Break
Standard or change over	ac	1250 VA with maxima of 5A and 300 V	7500 VA with maxima of 30 A and 300 V	1250 VA with maxima of 5 A and 300 V
	dc	1250 W with maxima of 5 A and 300 V	7500 VA with maxima of 30 A and 300 V	100 W (resistive) 50 W (Inductive) L/R = 40 ms with maxima of 5 A and 300 V
Heavy duty	dc	1250 W with maxima of 5 A and 300 V	7500 VA with maxima of 30 A and 300 V	See curves, Figure 2
Operation		Maximum rate of operation 600 per hour		

High voltage withstand

Dielectric withstand IEC 60255-5:1977	2 kV rms for 1 minute between all terminals and case earth. 2 kV rms for 1 minute between all terminals of independent circuits, with terminals on each independent circuit connected together. 1 kV rms for 1 minute across normally open contacts
High voltage impulse IEC 60255-5:1977	Three positive and three negative impulses of 5 kV peak, 1.2/50 µs, 0.5 J between all terminals and all terminals and case earth

Electrical environment

DC supply interruption IEC 60255-11:1979	The unit will withstand a 10ms interruption in the auxiliary supply, under normal operating conditions, without de-energising.
AC ripple on DC supply IEC 60255-11:1979	The unit will withstand 12% AC ripple on the DC supply.
High frequency disturbance IEC 60255-22-1:1988 Class III	2.5 kV peak between independent circuits and between independant circuits and case earth 1.0 kV peak across terminals of the same circuit (except metallic contacts) No additional tolerances are required for the operating time or the unit's thresholds
Electrostatic discharge IEC 60255-22-2:1989 Class II	4.0 kV - discharge in air with cover in place. 4.0 kV - contact discharge with cover removed. No additional tolerances are required for the operating time or the unit's thresholds
Fast transient disturbance IEC 60255-22-4:1992 Class III	2.0 kV, 5 kHz applied directly to auxiliary supply 2.0 kV, 5 kHz applied directly to all inputs No additional tolerances are required for the operating time or the unit's thresholds.
EMC compliance 89/336/EEC EN 50081-2:1994 EN 50082-2:1995	Compliance to the European Commission Directive on EMC is claimed via the Technical Construction File route. Generic standards were used to establish conformity.

Product safety

72/23/EEC	Compliance with European Commission Low Voltage Directive
EN 61010-1:1993/A2:1995 EN 60950:1992/A11:1997	Compliance is demonstrated by reference to generic safety standards.

Atmospheric environment

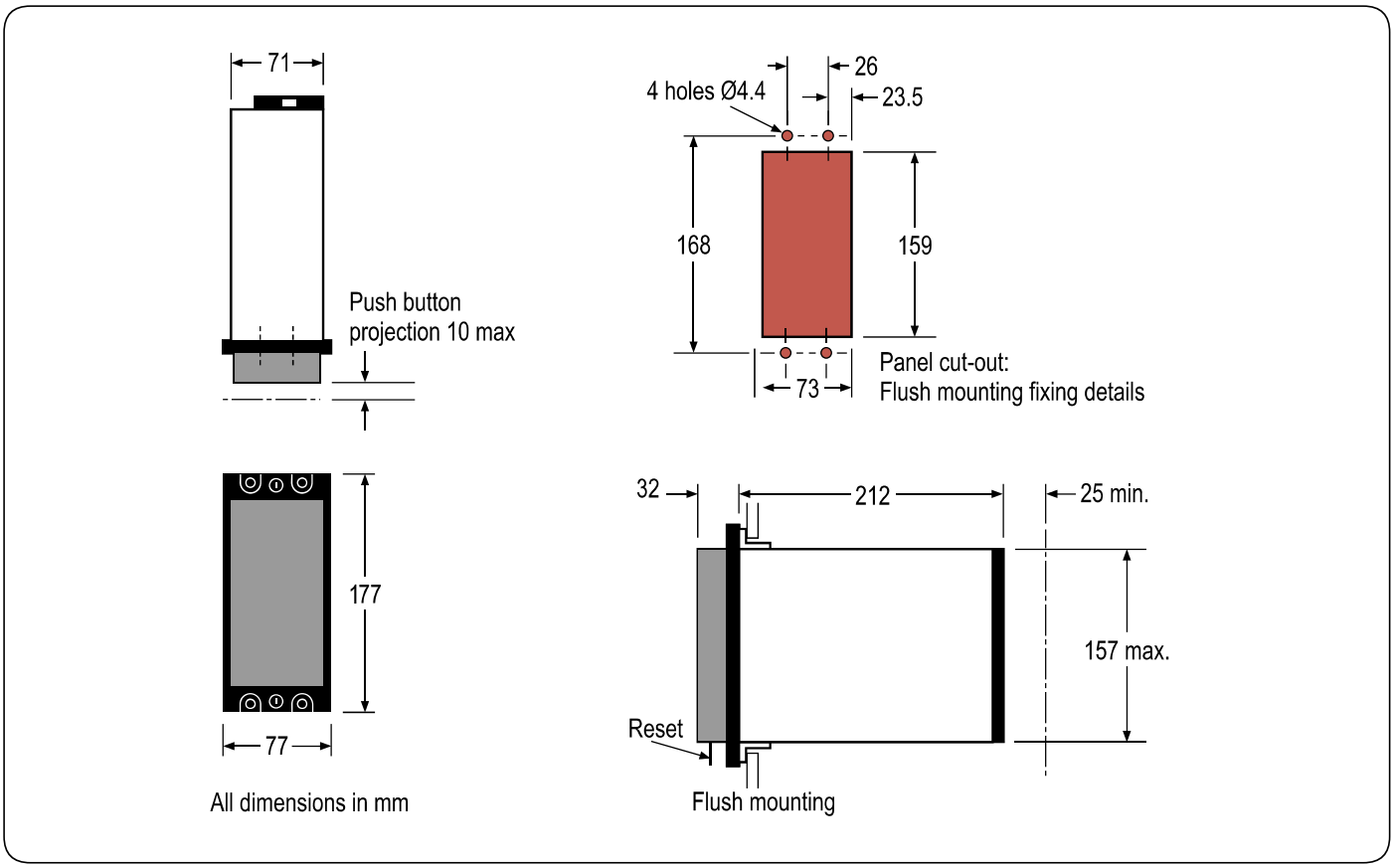
Temperature IEC 60255-6:1988	Storage and transit: -25°C to +70°C Operating: -25°C to +55°C
IEC 60068-2-1:1990	Cold
IEC 60068-2-2:1974	Dry Heat
Humidity IEC 60068-2-3:1969	56 days at 93% RH and 40°C
Enclosure protection IEC 600529:1989	IP50 (dust protected)

Mechanical environment

Vibration IEC 60255-21-1:1988	Response: Class 1 Endurance: Class 1
Mechanical durability	
Loaded contact	10,000 operations minimum
Unloaded contact	100,000 operations minimum

Cases

Type MVUA relays are housed in size 2 cases



Information Required with Order

- Relay type: MVUA 11
- Voltage rating
- Type, number of contacts
- Operation indicator

For more information please contact
GE
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Worldwide Contact Center

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