

UTM

SERIES

MULTISCALE TIMER RELAY

APPLICATIONS



UTMR

OVERVIEW

- Static timer relay, operating on pick-up or drop-out
- Compact dimensions
- Timer control suitable for all AMRA relays
- Wide time setting range from 0.1s to 9 hours, great accuracy over the entire adjustment range
- Availability of 2 outputs: timed and instantaneous
- Led indicating power-up status
- Time setting with dials
- High electromagnetic interference immunity
- Solid and rugged construction for heavy or intensive duty
- Wide range of sockets
- Retaining clip for secure locking of relay on socket
- Transparent cover

DESCRIPTION

The UTM relay is a static timer module, designed for applications requiring a time delay activated on pick-up or on drop-out.

Offered in 2 versions, these relays can be used to control an external load, introducing a delay either on pick-up (UTME) or on drop-out (UTMR).

There are 2 outputs available: one timed, the other instantaneous, with maximum rated power 6W.

The UTM offers high reliability, thanks to the use of an electronic circuit requiring few components, and to the selection of professional grade products.

Switching times ranging from 0.1 second to over 9 hours are obtainable, with extreme accuracy guaranteed over the entire setting range. This is made possible as the module has 16 intermediate scales, freely selectable by the user.

Switching time is adjustable by means of two dipswitches, 4 and 8-bit respectively, located on the front of the relay.

The 4-bit dipswitch allows selection of the most suitable intermediate scale, whilst the 8-bit dipswitch is used for selection of the exact switching time.

The electronic circuit is immune to high electromagnetic interference, typical of high voltage electricity distribution stations.

The construction of the module and careful choice of the materials are such as to ensure long life and considerable strength even in harsh operating environments and in the presence of strong temperature fluctuations.

In particular, with its notable shock and vibration resistance, the relay is ideal for use on rolling stock.

STANDARD COMPLIANCY

EN 61810-1	EN 60695-2-10
EN 61810-2	EN 61000
EN 61810-7	EN 60529

MODELS	FUNCTION		OUTPUT		ROLLING STOCK APPLICATION
	Pick-up	Drop-out	Instantaneous	Time-delayed	
UTME	•		•	•	•
UTMR		•	•	•	•

FOR PRODUCT CODE CONFIGURATION, SEE THE "ORDERING SCHEME" TABLE

COIL DATA

Nominal voltages Un ⁽¹⁾	DC: 24-36-72-110-128
Max. consumption at Un (DC/AC)	0.6 W
Operating range	80...115% Un
Rolling stock version ⁽²⁾	70...125% Un
Type of duty	Continuous
Maximum power at outputs	6 W (total)

(1) Other values on request.

(2) See "Ordering Scheme" table for order code.

INSULATION

Insulation resistance (at 500Vdc) between electrically independent circuits and between these circuits and ground	> 1,000 MΩ
Withstand voltage at industrial frequency between electrically independent circuits and between these circuits and ground	2 kV (1 min) - 2.2 kV (1 s)
Impulse withstand (1.2/50μs - 0.5J) between electrically independent circuits and ground	5 kV

MECHANICAL SPECIFICATIONS

Degree of protection (with relay mounted)	IP40
Dimensions (mm) ⁽¹⁾	40x40x50
Weight (g)	~ 60

(1) Output terminals excluded.

ENVIRONMENTAL SPECIFICATIONS

Operating temperature	Standard	-25° to +55°C
	Version for railways, rolling stock	-25° to +70°C
Storage and shipping temperature		-40° to +85°C
Relative humidity		Standard: 75% RH
Resistance to vibrations		5g - 10 to 55 Hz - 1 min
Resistance to shock		20g - 11 ms
Fire behaviour		V0

STANDARDS AND REFERENCE VALUES



EN 61812-1	Timer relays
EN 60695-2-10	Fire behaviour
EN 61000	Electromagnetic compatibility
EN 60529	Degree of protection provided by enclosures

Unless otherwise specified, products are designed and manufactured according to the requirements of the European and International standards indicated above.

In accordance with EN 61810-1, all items of technical data are referred to ambient temperature 23°C, atmospheric pressure 96kPa and 50% humidity.

Tolerance for coil resistance, nominal electrical input and nominal power is $\pm 7\%$.

RAILWAYS, ROLLING STOCK - STANDARDS



EN 60077	Electric equipment for rolling stock - General service conditions and general rules
EN 50155	Electronic equipment used on rolling stock
EN 61373	Shock and vibration tests, Cat 1, Class B
EN 45545-2	Fire behaviour, Cat E10, Requirement R26, V0
ASTM E162, E662	Fire behaviour

CONFIGURATIONS - OPTIONS



LOW TEMPERATURE	Minimum operating temperature -50°C , only for rolling stock version (option "L").
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ORDERING SCHEME



PRODUCT CODE	APPLICATION ⁽¹⁾	CONFIGURATION A	CONFIGURATION B	TYPE OF POWER SUPPLY	NOMINAL VOLTAGE (V) ⁽²⁾	KEYING POSITION ⁽³⁾ / OPTION
UTME	E: Energy	1: Standard	0: Standard	C: Vdc	024 - 036	XXX
UTMR	R: Railway Rolling Stock				072 - 110	L = Low Temperature

Example	UTME	E	1	0	C	110	
	UTMEE10-C110 - UTME relay, ENERGY series, nominal voltage 110Vdc						
	UTMR	R	1	0	c	024	L
	UTMRR-C024L - UTMRR-C024L - UTMRR relay, ROLLING STOCK series, nominal voltage 24 Vdc, with option "L" (low temperature)						

(1) **E = ENERGY:** all applications except for railway.

R = RAILWAY, ROLLING STOCK: Application on board rolling stock (rail-tram-trolley vehicles). Electrical specifications according to EN60077.

(2) Other values on request.

(3) Optional value. Multiple selection possible. Positive mechanical keying is applied according to the manufacturer's model.



TIMING - TIME DELAY SETTING

Time setting	By means of dipswitches
Time setting range	100 ms ... 32,768 s
Intermediate scales	16, from 1 to 32,768 s
Resolution of operating time setting	1/256 of selected scale
Accuracy, time-delay ⁽¹⁾	± 1% of the switching time ± 0.5% of the scale
Accuracy, repeatability	DC : ± 0.5% AC : ± 0.5% + 20 ms
Reset	< 100 ms in time-delay phase < 400 ms
Insensitivity to power loss	< 100 ms

(1) Additional error for drop-out versions: 100 ms

The switching time is adjustable by way of two dipswitches (4-bit and 8-bit respectively) located on the front of the relay, which can be used to set time delays from 100 ms to 32,768 seconds (approximately 9 hours).

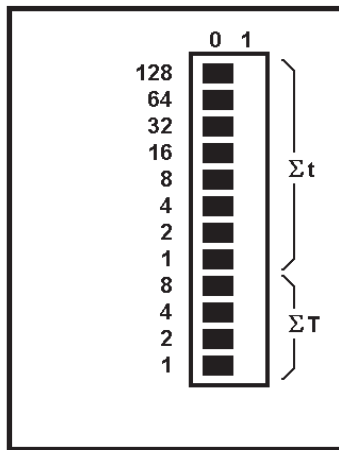
To determine the switching time, the first step is to adjust the intermediate scale T(s), by selecting one of the 16 available settings with the 4-bit dipswitch. The values available are given in table 1.

The value of the T(s) scale should be the next highest numerically than the value of the required switching time.

E.g. Switching time: 3,600 seconds → intermediate scale setting: 4,096 seconds

The T(s) scale is set by identifying the switches that add up to the ΣT value indicated in table 1, and positioning them at "1".

Next, proceed to set the switching time by means of the 8-bit dipswitch.



Σt
Time setting
dipswitches
(8-bit)

ΣT
Intermediate scale
dipswitches
(4 bit)

T(s)	ΣT	Switch reference			
		8	4	2	1
1	0	0	0	0	0
2	1	0	0	0	1
4	2	0	0	1	0
8	3	0	0	1	1
16	4	0	1	0	0
32	5	0	1	0	1
64	6	0	1	1	0
128	7	0	1	1	1
256	8	1	0	0	0
512	9	1	0	0	1
1024	10	1	0	1	0
2048	11	1	0	1	1
4096	12	1	1	0	0
8192	13	1	1	0	1
16384	14	1	1	1	0
32768	15	1	1	1	1

Table 1

The switching time is set by identifying the 16-bit dipswitches that add up to the Σt value, as calculated below, and positioning them at "1":

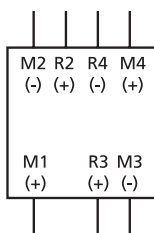
$$\Sigma t = \frac{t \times 256}{T} \quad \text{where } t(\text{s}): \text{required switching time} \quad T(\text{s}): \text{full scale time set previously}$$

Example: Relay with time delay 22 s. and full scale time 32 s.

For the full scale time of 32 s, select value 5 in the ΣT column (see table), then identify the switches corresponding to 4 and 1 (4+1=5) and position them at "1". For the delay time of 22 s, set an Σt value of 176 (i.e. 22x256/32), then identify the switches corresponding to 128, 32 and 16 (128+32+16=176) and position them at "1".



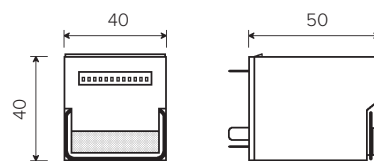
WIRING DIAGRAM



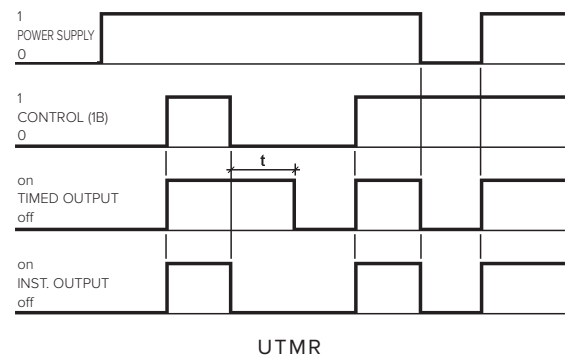
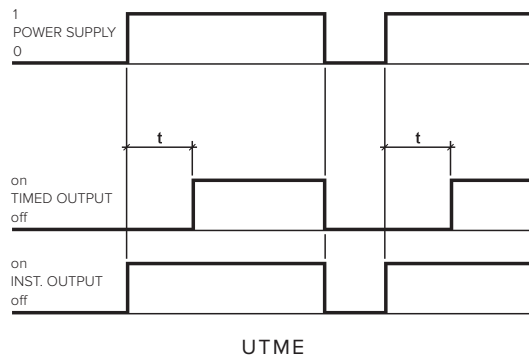
M3 - R3 = POWER SUPPLY
M1 = CONTROL SIGNAL
M4 - R4 = TIMED OUTPUT
R2 - M2 = INSTANTANEOUS OUTPUT



DIMENSIONS



FUNCTIONAL DIAGRAM



SOCKETS

Number of terminals	16
For wall or rail mounting	
Spring clamp, wall or DIN H35 rail mounting	PAIR160
Screw, wall or DIN H35 rail mounting	48BIP20-I DIN
Screw, wall mounting	48BL
For flush mounting	
Spring clamp	PRIR160
Double faston (4.8 x 0.8 mm)	ADF2
Screw	43IL
For mounting on PCB	
	65

For more details, see specifications of mounting accessories.

RETAINING CLIPS - CORRESPONDENCE WITH SOCKETS

Number of clips per relay	
SOCKET MODEL	CLIP MODEL
For wall or rail mounting	
PAIR160, PRIR160, 48BIP20-I DIN, 48BL	RPB48
For flush mounting	
ADF2	RPB48
43IL ⁽¹⁾	RPB43
For mounting on PCB	
65	RPB43

(1) Insert the clip before fastening the socket on the panel.

INSTALLATION, OPERATION AND MAINTENANCE

Installation

Before installing the relay on a wired socket, disconnect the power supply.

The preferential mounting position is on the wall, with the relay positioned horizontally in the "reading orienting" of marking so that the label is readable in the correct sense.

Spacing: no relay spacing is required.

For a safe use, the retaining clip is recommended.

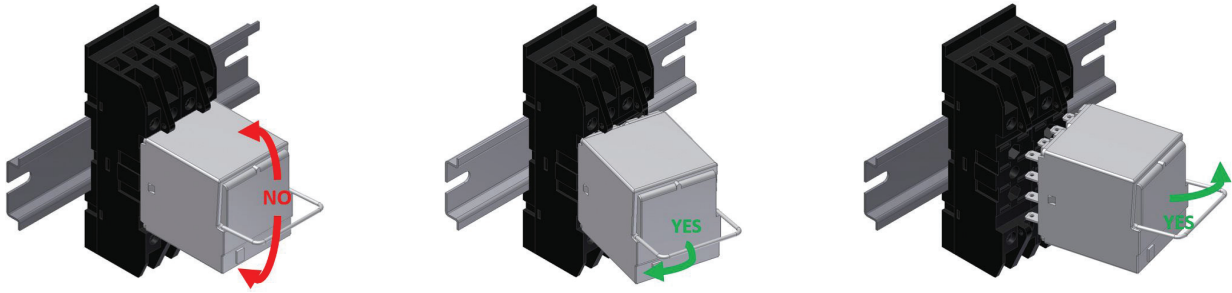
For use on rolling stock, relays have been tested to EN 61373 standard equipped with retaining clip(s).

Maintenance

No maintenance is required.

In case of normal relay wear (reaching the end of electrical or mechanical life), the relay cannot be restored and must be replaced.

To check the component, relay removal must be carried out with slight lateral movements. An "up and down" movement can cause terminals damage.



Often the malfunctions are caused by power supply with inverted polarity, by external events or by use with loads exceeding the contact performance.

- If it does not work, we recommend to use a relay of the same model and configuration.

If an investigation by AMRA is required, pull-out the relay from the socket, don't remove the cap, avoid any other manipulation and contact us. You will be asked for the following data: environmental conditions, power supply, switching frequency, contact load, number of operations performed.

The fault can be described through the "TECHNICAL SUPPORT" section of the website www.amra-chauvin-arnoux.it.

In any case, the relay cannot be repaired by the user.

Storage

Storage conditions must guarantee the environmental conditions (temperature, humidity and pollution) required for the product conservation, in order to avoid deterioration.

The product must be stored in an environment sheltered from atmospheric agents and not polluted, with an ambient temperature between -40 and +85°C with max 75% RH. Humidity can reach peaks of 95%. In any case, there must be no condensation. Before use, please read carefully "OPERATION" section.