



RELAYS

MULTI-SCALE TIMER RELAYS

UTM SERIES

USER SECTORS



Power generation



Nuclear



Power transmission



Rolling Stock



Fixed railway installations



Shipbuilding



Petroleum industry



Heavy industry



UTM

PRODUCT ADVANTAGES

- Static timer unit, operating on pick-up or drop-out
- Compact dimensions
- Timer control suitable for all our 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 dipswitches
- High electromagnetic interference immunity
- Solid and rugged construction for heavy or intensive duty
- Wide range of sockets
- Retaining clip for secure locking of unit on socket
- Transparent cover

DESCRIPTION

The **UTM unit** 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 units 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 unit is ideal for use on rolling stock

	Models	Function		Output		Rolling stock application
		Pick-up	Drop-out	Instantaneous	Time-delayed	
	UTME	•		•	•	•
	UTMR		•	•	•	•

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

Power supply data

Nominal voltages Un ⁽¹⁾	DC: 24-36-72-110-128
Max. consumption at Un (DC/AC)	0.6 W
Operating range ⁽¹⁾	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 voltage (1.2/50μs - 0.5J) between electrically independent circuits and between these circuits and ground	5 kV

Mechanical Specifications

Degree of protection (with unit mounted)	IP40
Dimensions (mm) ⁽¹⁾	40 x 40 x 50
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 behavior	V0

Standards and reference values

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

Unless otherwise specified, products are designed and manufactured 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 ±7%.

Railways, rolling stock - Standards

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

Configurations - Options

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



UTM Ordering scheme

Product code	Application ⁽¹⁾	Configuration A	Configuration B	Label	Type of power supply	Nominal voltage (V) ⁽²⁾	Keying position ⁽³⁾ / Options
UTME	E: Energy						XXX
UTMR	R: Railway Rolling Stock	1: Standard	0: Standard	F	C: Vdc	024 - 036 072 - 110	L = Low temperature

Example	UTME	E	1	0	F	C	110	
	UTMEE10F-C110 - UTME unit, ENERGY series, nominal voltage 110Vdc							
	UTMR	R	1	0	F	C	024	L
	UTMRR10F-C024L - UTMR unit, ROLLING STOCK series, nominal voltage 24 Vdc, with option "L" (low temp.)							

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

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 second to 32,768 seconds
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 < 400ms
Insensitivity to power losses	< 100 ms

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

The switching time is adjustable by way of two dipswitches (4- 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).

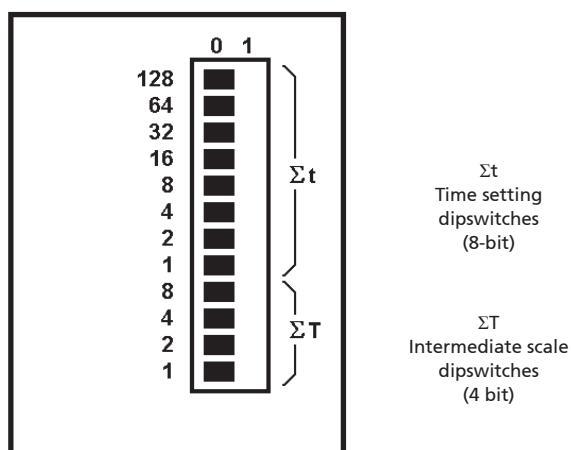
To determine the switching time, the first step is to adjust the intermediate scale T(s), by selecting one of the 16 available settings with the 4-bit dipswitch. The values available are given in table 1.

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.



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":

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

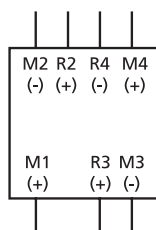
Example: relay with time delay 22 s. and full scale time 32 s.

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".

T(s)	ΣT	Switch reference			
		8	4	2	1
		Switch position			
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

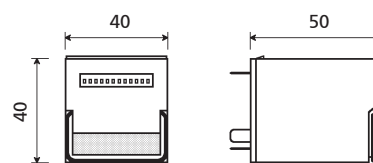
Table 1

Wiring diagram

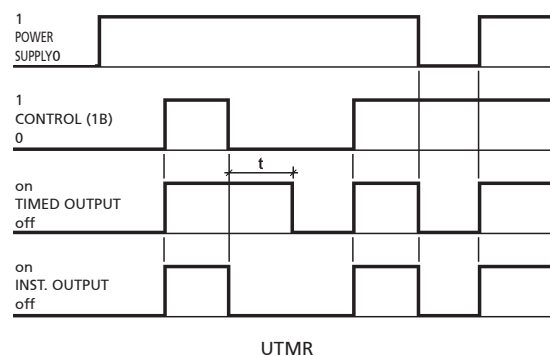
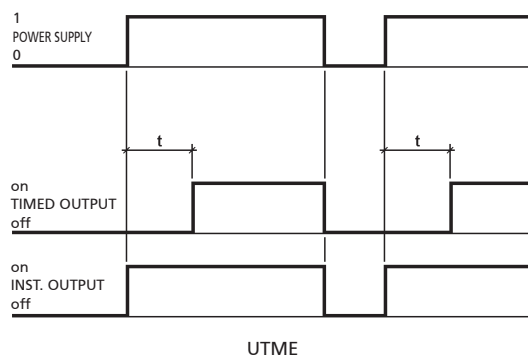


M3 - R3 = POWER SUPPLY
M1 = CONTROL SIGNAL
M4 - R4 = TIMED OUTPUT
R2 - M2 = INSTANTANEOUS OUTPUT

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	
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, 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.

Mounting tips

The preferred mounting position is on the wall, with the module positioned horizontally in the reading direction on the nameplate. For correct use, modules should be spaced apart by at least 5 mm in the horizontal direction and 20 mm in the vertical direction. This is to allow correct upward dissipation of the heat generated. Set these distances according to the socket used. Distances can be reduced depending on the environmental conditions during operation, and on the relay duty cycle. For safe and secure operation, it is advisable to use retaining clips. No special maintenance is required.