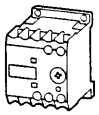
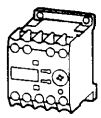
DATA SHEET 320-3967
COVERS: 320-3979
722-0533
722-0545
320-3980
320-3992
320-4005
320-3920
320-3943
320-3931
320-3955.

DIL ET Electronic Timing Relays

Moeller HPL 1999/2000 GB

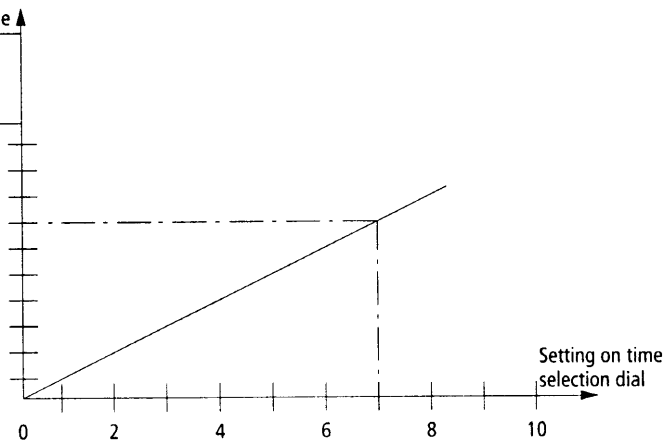
	Rated operational current I_e AC-11 220V 230V 240V	380V 400V 440V	Conv. therm. current I_{th}	Time range	24 – 240 V, 50/60 Hz, AC 24 – 240 V, DC Type Article no.	Price See Price List	346 – 440 V, 50/60 Hz, AC Type Article no.	Price See Price List	Std. pack
	A	A	A						
Timing relay, On-delayed									
	3	3	6	1.5 – 30 s	**DIL ET 11-30-A** 048878		**DIL ET 11-30-W** 048904		1 off
	3	3	6	0.05 – 1 s 0.15 – 3 s 0.5 – 10 s 3 – 60 s 0.15 – 3 min 0.5 – 10 min 3 – 60 min 0.15 – 3 h 0.5 – 10 h 3 – 60 h	**DIL ET 11-M-A** 048886		**DIL ET 11-M-W** 048891		1 off
Multi-function relay with connection for remote potentiometer									
	3	3	6	0.05 – 1 s 0.15 – 3 s 0.5 – 10 s 3 – 60 s 0.15 – 3 min 0.5 – 10 min 3 – 60 min 0.15 – 3 h 0.5 – 10 h 3 – 60 h	**DIL ET 70-A** 048893		**DIL ET 70-W** 048899		1 off

Notes [1] DIL ET 11 supplied with this function as standard

Time diagram

Approximate values, not applicable for remote potentiometer

–	h	h	–	h
–	min	min	–	min
s	s	s	s	s
1	3	10	30	60
0.9	2.7	9	27	54
0.8	2.4	8	24	48
0.7	2.1	7	21	42
0.6	1.8	6	18	36
0.5	1.5	5	15	30
0.4	1.2	4	12	24
0.3	0.9	3	9	18
0.2	0.6	2	6	12
0.1	0.3	1	3	6



Setting example

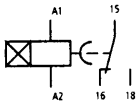
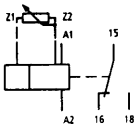
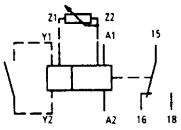
Read off from diagram:
Time range of timing relay: 60 min
Time required: 42 min
Setting required on time selection dial: 7

Calculated as follows:

$$\frac{\text{Time required} \times 10}{\text{Time range of timing relay}} = \text{Setting on time selection dial}$$

$$\frac{42\ \text{min} \times 10}{60\ \text{min}} = 7$$

DIL ET Electronic Timing Relays

Available functions[1]	Terminal markings to EN 50 042
	 Potential-free contact **Do not** apply voltage!
11	
11	
11, 21, 42, 81	
12, 16, 22, 82	

Notes

Type suffix	Actuating voltage printed on unit	
	V DC	V AC
-A	24 – 240	24 – 240, 50/60 Hz
-W	–	346 – 440 50/60 Hz
	Voltage tolerance:	
	V DC	V AC
-A	16.8 – 288	20.4 – 264
-W	–	294.1 – 484

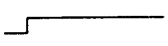
Admissible cable length:

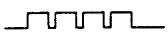
Cable unscreened Cable cross-section 0.5 – 1.5 mm²	Connection to Y1/Y2 Z1/Z2
Two-core cable	250 m
Two-core cable in same cable duct as mains cable 50/60 Hz	50 m

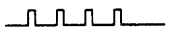
Accessories:	**Page**
Sealable shroud	05/021
Remote potentiometer	05/022

flow diagrams

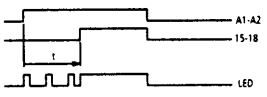
LED display


Time t not running
Contact 15 – 18 closed

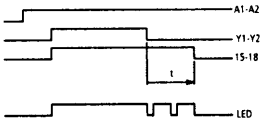

Time t running
Contact 15 – 18 closed


Time t running
Contact 15 – 18 open

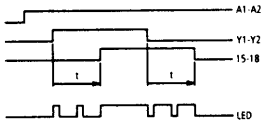
11 On-delayed



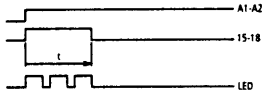
12 Off-delayed



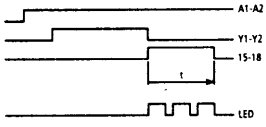
16 On- and Off-delayed



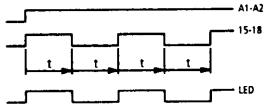
21 Fleeting contact on energization



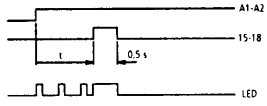
22 Fleeting contact on de-energization



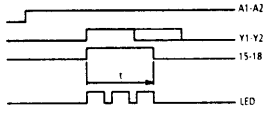
42 Flashing



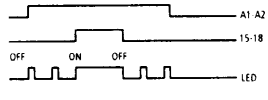
81 Pulse generating



82 Pulse shaping



ON-OFF function



DIL ET, ETR 4 Timing Relays
Technical Data

				DIL ET-A	DIL ET-W	ETR 4-A	ETR 4-W
Magnet systems							
Voltage tolerance							
AC-operated 50/60 Hz							
	Pick-up		Page	05/014	05/014	05/016	05/018
DC-operated[1] when taken directly from mains or transformer > 1000 VA							
	Pick-up		Page	05/014	05/014	05/016	05/018
Power consumption							
AC-operated 50/60 Hz							
	Pull-in		VA/W	2/–	0.5/–	2/–	0.5/–
	Sealing		VA/W	2/–	0.5/–	2/–	0.5/–
DC-operated							
	Pull-in		W	1.8	–	1.8	–
	Sealing		W	1.8	–	1.8	–
Duty factor			% DF	100	100	100	100
Maximum operating frequency			Ops./h	4000	4000	4000	4000
Minimum command time		AC/DC	ms	50/30	50/–	50/30	50/–
Voltage variation				0.01% Δ U	0.01% Δ U	0.01% Δ U	0.01% Δ U
Variation due to temperature fluctuation based on +20 °C				0.025	0.025	0.025	0.025
Repetition accuracy			%	0.1	0.1	0.1	0.1
Recovery time (after 100% time delay)			ms	70	70	70	70
Contact changeover time t_u			ms	–	–	4 (50)[2]	4 (50)[2]

Notes

[1] Not DIL ET...-W
[2] ETR 4-51

DIL ET, ETR 4 Timing Relays
Technical Data

				DIL ET-A	DIL ET-W	ETR 4-A	ETR 4-W
General							
Standards				IEC/EN 60 255, VDE 0435, IEC/EN 60 947, UL , CSA			
Lifespan, mechanical							
AC operated	Operations		× 10^6	30	30	30	30
DC operated	Operations		× 10^6	30	30	30	30
Climatic proofing				Damp heat, constant, to IEC 60 068-2-3 Damp heat, cyclic, to IEC 60 068-2-30			
Ambient temperature							
Open	Min./Max.		°C	–20/+60	–20/+60	–25/+60	–25/+60
Enclosed	Min./Max.		°C	–20/+45	–20/+45	–20/+45	–20/+45
Mounting position				As required	As required	As required	As required
Mechanical shock resistance	Make contact		g	4	4	4	4
Degree of protection	Terminals			IP 20	IP 20	IP 20	IP 20
Dimensions			Page	05/038	05/038	05/038	05/038
Weight			kg	0.09	0.09	0.1	0.1
Terminal capacity			Page	05/022 (as DIL ER)		05/025 (as ETS 4 VS 3)	
Contacts							
Rated impulse withstand voltage U_{imp}			V AC	6000	6000	6000	6000
Overvoltage category/pollution degree				III/2	III/2	III/3	III/3
Rated insulation voltage U_i			V AC	600	600	600	600
Rated operational voltage U_e			V AC	440	440	440	440
Safe isolation to IEC 536 between coil and auxiliary contacts, and between the auxiliary contacts			V AC	250	250	250	250
Making capacity							
AC-14	cos φ = 0.3	440 V	A	48	48	48	48
AC-15	cos φ = 0.3	220 V	A	50	50	50	50
DC-11	L/R ≦ 40 ms		× I_e	1.1	1.1	1.1	1.1
Breaking capacity							
AC-14	cos φ = 0.3	440 V	A	3	3	3	3
AC-15	cos φ = 0.3	220 V	A	3	3	3	3
DC-11	L/R ≦ 40 ms		× I_e	1.1	1.1	1.1	1.1
Rated operational current I_e							
AC-14		440 V	A	3	3	3	3
AC-15		220 V	A	3	3	3	3
DC-11[1] Above 110 V and at L/R > 15 ms: it is essential that an arc-quenching device (RC suppressor) be used in parallel with the contacts. C: 1 µF, R: 0.5 Ω in series							
L/R ≦ 15 ms: e.g. contactor coils, solenoid valves, DC motors							
24 V			A	1.5	1.5	1.5	1.5
L/R ≦ 50 ms:			A	1.2	1.2	1.2	1.2
Conventional free air thermal current I_{th}			A	6	6	6	6
Short-circuit rating[2] without welding							
Maximum fuse			A gL	6	6	6	6

Notes

[1] Making and breaking conditions to DC-13, time constant as stated

[2] When taken directly from mains or transformer > 1000 VA