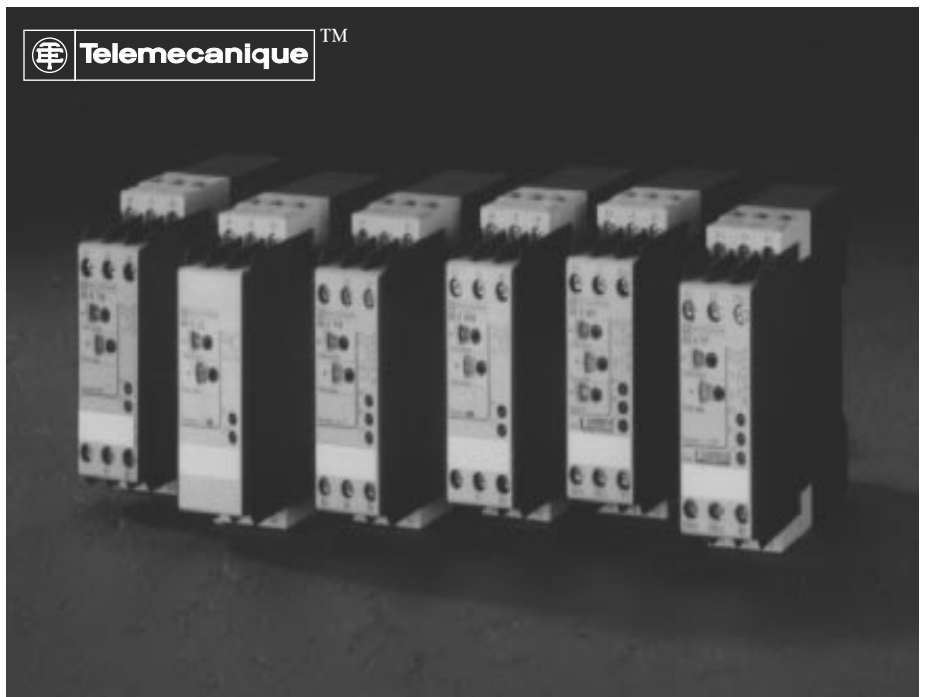


ELECTRONIC TIMING RELAYS

Class 0140



CONTENTS

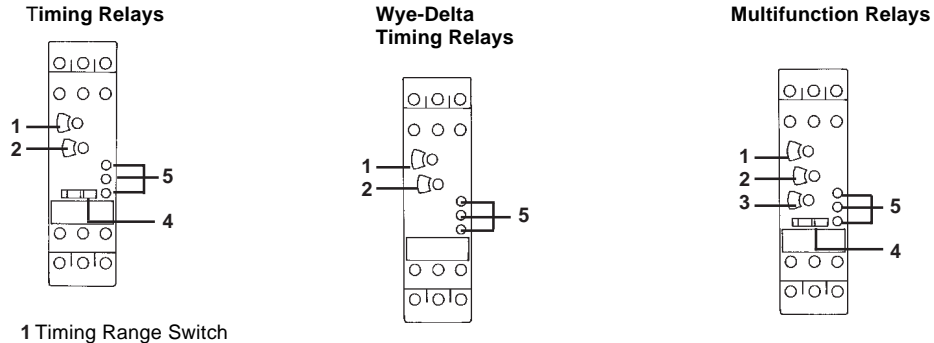
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SQUARE D
GROUPE SCHNEIDER

Presentation and Selection Guide

RE4 electronic timing relays have been specifically designed to fit into automation systems in industrial environments. They are compact in size, only **22.5 mm wide**.



1 Timing Range Switch

- Ten positions :
- 0.05...1 s
- 0.15...3 s
- 0.5...10 s
- 1.5...30 s

- 5...100 s
- 15...300 s
- 1.5...30 min

- 15...300 min
- 1.5...30 h
- 15...300 h

2 Fine adjustment potentiometer with linear scale.

3 Function selector switch (for multifunction relays).

4 Switch allowing the second single pole, double throw (SPDT) contact to be used in instantaneous mode (products with 2 SPDT contacts).

5 LEDs, depending on model :

- Green LED : flashing during time delay period (except first 2 timing ranges), permanently on, outside time delay period.
- Red LED 1 : on when 1st relay is energized.
- Red LED 2 : on when 2nd relay is energized.

Other Characteristics

- Remote Control For :
 - Starting of time delay period, by external contact, to be ordered separately or by 3-wire type proximity sensor, (compatible models XS1, XS2, XS4 or XU).
 - Temporary interruption or pause of time delay period, by external contact (to be ordered separately).
 - Remote setting of time delay, by external potentiometer (to be ordered separately).
- Connection by screw terminals for (2) #12-16 AWG wire.

Selection Guide

Functions	RE4-T	RE4-R	RE4-PE, PP	RE4-PM, PD	RE4-CL	RE4-Y	RE4-ML	RE4-MY
Timing Relays	On-Delay	—	—	—	—	—	—	—
	Off-Delay	—	—	—	—	—	—	—
Interval Timing Relays	At Switch-On	—	—	—	—	—	—	—
	By Remote Control	—	—	—	—	—	—	—
Repeat Cycle Commencing	OFF Period	—	—	—	—	—	—	—
	ON period	—	—	—	—	—	—	—
Flashing During :	OFF Period or ON Period (1)	—	—	—	—	—	—	—
	Timing Relays For Wye-Delta Starters	—	—	—	—	—	—	—

Functions built into relay

(1) With independent adjustment of On-delay and Off-delay





Environment

Conforming to Standards			DIN VDE 0110, DIN EN 50022, VDE 0106 (part. 100), VDE 0435 (part. 201), IEC 255-1-00.
Approvals			CSA, GL, UL.
Ambient Air Temperature	Storage	°F °C	- 104...+ 149 - 40...+ 85
	Operation	°F °C	- 84...+ 124 - 20...+ 60
Rated Insulation Voltage Ui	Conforming to CSA	V	300
Vibration Resistance	At 75 Hz for 2 hours. (Operating)		4 g
Shock Resistance	1/2 sine wave for 20 ms		10 g
Degree of Protection	Enclosure		IP 50
	Terminals		IP 20
Wire Termination		mm² AWG	2 x 2.5 (2) #12-16
Mounting Position without Derating	In relation to normal vertical mounting position		All positions

Timing Characteristics

Timing Range	0.05 s...300 h in 10 timing ranges		0.05...1 s 0.15...3 s 0.5...10 s	1.5...30 s 5...100 s 15...300 s	1.5...30 min 15...300 min	1.5...30 h 15...300 h
Setting Accuracy			< ± 14 %			
Repeat Accuracy			< 0.2 %			
Drift	Voltage	Within voltage range 0.85...1.1 Un	< 0.2 %			
	Temperature	Per °C	< 0.07 %			
Immunity to Power Supply Interruption		ms	3			
Minimum Energizing Time at Switch-on		ms	20 (1)			
Minimum Reset Time		ms	50			

Output Characteristics

Maximum Operational Voltage		V	250
Rated Thermal Current		A	4
Rated Breaking Capacity	On resistive circuit : --- 100 V	A	0.5
	Category AC-11 : ~ 250 V	A	1.5
Mechanical Life	In millions of operating cycles		20
Input/Output Insulation Voltage		kV	2.5

Signalling

Time Delay	Green LED	First 2 timing ranges : permanently on during time delay period Other timing ranges : flashing during time delay period, permanently on outside time delay period.
Output Relay	1 red LED per output relay (1) If the device has been stored without being switched on for more than one month, it must be switched on for about 5 minutes to activate it.	On when the relay is energized



Characteristics Specific to On-Delay Relays

Type of Relay			On-delay		
			RE4-TL11BU	RE4-TM11BU	RE4-TP13BU
Rated Control Circuit Voltage (Uc)	--- DC	V	24	24 42...48	24 42...48
	~ 50/60 Hz AC	V	24 110...240	24 42...48 110...240	24 42...48 110...240
Average Consumption at 20 °C and at Uc	--- DC 24 V 48V	W	0.5	0.5	0.5
		W	–	2	2
	~ AC 24 V 48V 110 V 240 V	VA	0.5	0.5	0.5
		VA	–	2	2
		VA	2.5	2.5	2.5
	VA	12	12	12	
Voltage Limits	Of control circuit		0.85...1.1 Uc		
Load Factor			100 %		
Number of Output Contacts	SPDT		1	1	2

Characteristics Specific to Off-Delay Relays

Type of Relay			RE4-RL13BU	RE4-RM11BU
			Rated Control Circuit Voltage (Uc)	--- DC
	~ 50/60 Hz AC	V	24 42...48 110...240	24 42...48 110...240
Average Consumption at 20 °C and at Uc	--- DC 24 V 48V	W	0.5	0.5
		W	2	2
	~ AC 24 V 48V 110 V 240 V	VA	0.5	0.5
		VA	2	2
		VA	2.5	2.5
	VA	12	12	
Voltage Limits	Of control circuit		0.85...1.1 Uc	
Load Factor			100 %	
Number of Output Contacts	SPDT		2	1

Characteristics Specific to Interval Timing Relays

Type of Relay			RE4-PD13BU	RE4-PE11BU	RE4-PM11BU	RE4-PP13BU
			Rated Control Circuit Voltage (Uc)	--- DC	V	24 42...48
	~ 50/60 Hz AC	V	24 42...48 110...240	24 110...240	24 42...48 110...240	24 42...48 110...240
Average Consumption at 20 °C and at Uc	--- DC 24 V 48V	W	0.5	0.5	0.5	0.5
		W	2	–	2	2
	~ AC 24 V 48V 110 V 240 V	VA	0.5	0.5	0.5	0.5
		VA	2	–	2	2
		VA	2.5	2.5	2.5	2.5
	VA	12	12	12	12	
Voltage Limits	Of control circuit		0.85...1.1 Uc			
Load Factor			100 %			
Number of Output Contacts	SPDT		2	1	1	2



Characteristics Specific to Repeat Cycle Timing Relays and Relays for Wye-Delta Starters

Type of Relay			Repeat Cycle		For Wye-Delta Starters	
			RE4-CL11BU	RE4-CP13BU	RE4-YA12BU	RE4-YR12BU
Rated Control Circuit Voltage (Uc)	--- DC	V	24 –	24 42...48	24 42...48	24 42...48
	~ 50/60 Hz AC	V	24 110 ...240	24 42...48 110...240	24 42...48 110...240	24 42...48 110...240
Average Consumption at 20 °C and at Uc	--- DC	24 V	W	0.5	0.5	0.5
		48 V	W	–	2	2
	~ AC	24 V	VA	0.5	0.5	0.5
		48 V	VA	–	2	2
110 V	VA	2.5	2.5	2.5		
240 V	VA	12	12	12		
Voltage Limits	Of control circuit		0.85...1.1 Uc			
Load Factor	100 %					
Number of Output Contacts	SPDT		1	2	2	2 with common point

Characteristics Specific to Multifunction Relays

Type of Relay			RE4-ML11BU	RE4-MY13MW
Rated Control Circuit Voltage (Uc)	--- DC	V	24 42...48	24...240
	~ 50/60 Hz AC	V	24 42...48 110...240	24...240
Average Consumption at 20 °C and at Uc	--- DC	24 V	W	0.5
		48 V	W	2
	~ AC	24 V	VA	0.5
		48 V	VA	2
110 V	VA	2.5	2.5	
240 V	VA	12	2.5	
Voltage Limits	Of control circuit		0.85...1.1 Uc	
Load Factor	100 %			
Number of Output Contacts	SPDT		1	2

Characteristics of Remote Control Components (to be ordered separately)

Start Contact	No-load voltage	V	10...50
	Current switched	mA	1...5
Potentiometer	Type	Linear	± 20 %
	Resistance	k Ω	50 ± 20 %
	Power	W	0.2
	Maximum distance	m	10
ft		33	





On-Delay Relays

Supply	SPDT contact	Green LED	Supply Voltages (2)	Output Contacts (SPDT)	Remote Control of Time Delay			Reference	Weight
					Start	Partial Stop	Adjustment		
	15/18 15/16		--- or ~ 24 V --- or ~ 110...240 V	1	-	-	-	RE4-TL11BU	0.150
	Y1/Z2 15/18 15/16		--- or ~ 24 V --- or ~ 42...48 V ~ 110...240 V	1	With (3)	With (6)	With (4)	RE4-TM11BU	0.150
	15/18 15/16 25/28 25/26 21/24 21/22		--- or ~ 24 V --- or ~ 42...48 V ~ 110...240 V	2 (5)	-	-	With (4)	RE4-TP13BU	0.150

- (1) A lead sealing kit may be added: see page 10.
- (2) See wiring diagrams, pages 11-12.
- (3) By contact or by 3-wire type proximity sensor with NPN output, to be ordered separately.
- (4) By external potentiometer, to be ordered separately; if external potentiometer is used, the internal potentiometer is automatically disconnected.
- (5) A switch on the front face of the relay allows the 2nd SPDT contact to be used in instantaneous mode.
- (6) X1-Z2 Contact.

de-energised
 energised
 open
 closed
 ta : adjustable On-delay
 ta or tr = t1 + t2
 ts : partial stop time





Off-Delay Relays

	Supply Voltages (2)	Output Contacts (SPDT)	Remote Control of Time Delay			Reference	Weight kg
			Start	Partial Stop	Adjustment		
	--- or ~ RM11BU or ~ ~ 110...240 V	24 V 0.150 42...48 V	1	With (3)	With (6)	With (4)	RE4-
	--- or ~ RL13BU or ~ ~ 110...240 V	24 V 0.150 42...48 V	2	With (3)	-	-	RE4-

- (1) A lead sealing kit may be added: see page 10.
- (2) See wiring diagrams, pages 11-12.
- (3) By contact or by 3-wire type proximity sensor with NPN output, to be ordered separately.
- (4) By external potentiometer, to be ordered separately; if external potentiometer is used, the internal potentiometer is automatically disconnected.
- (5) A switch on the front face of the relay allows the 2nd SPDT contact to be used in instantaneous mode.
- (6) X1-Z2 Contact.

de-energised
 energised
 open
 closed
 tr : adjustable Off-delay
 tr = t1 + t2
 ts : partial stop time





Interval Timing Relays

	Supply Voltages (2)	Output Contacts (SPDT)	Remote Control of Time Delay			Reference	Weight kg
			Start	Partial Stop	Adjustment		
At Switch-on							
	--- or ~ ~ 110...240 V	24 V	1	-	-	RE4-PE11BU	0.150
Supply							
SPDT contact							
Green LED							
	--- or ~ ~ 110 ...240 V	24 V 42...48 V	2 (3)	-	-	With (4) RE4-PP13BU	0.150
Supply							
1 st SPDT cont.							
2 nd SPDT cont. time delay							
2 nd SPDT instantaneous							
Green LED							
By Remote Control (5)							
	--- or ~ ~ 110...240 V	24 V 0.150 42...48 V	1	With (6)	With (7)	With (4)	
Supply							
Start of time delay							
SPDT contact							
Green LED							
Partial stop of time delay							
	--- or ~ ~ 110...240 V	24 V 42...48 V	2 (3)	With (6)	-	RE4-PD13BU	0.150
Supply							
Start of time delay							
1 st SPDT cont.							
2 nd SPDT cont. time delay							
2 nd SPDT cont. instantaneous							
Green LED							

- de-energised
- energised
- open
- closed
- adjustable flashing time
- t_r : adjustable Off-delay
- $t_r = t_1 + t_2$
- t_s : partial stop time

(1) A lead sealing kit may be added: see page 10.
 (2) See wiring diagrams, pages 11-12.
 (3) A switch on the front face of the relay allows the 2nd SPDT contact to be used in instantaneous mode.
 (4) By external potentiometer, to be ordered separately; if external potentiometer is used, the internal potentiometer is automatically disconnected.
 (5) When the relay is switched on, terminals Y1-Z2 must be linked.
 (6) By contact or by 3-wire type proximity sensor with NPN output, to be ordered separately.
 (7) X1-Z2 Contact.





Repeat Cycle Timing Relays

	Supply Voltages (2)	Output Contacts (SPDT)	Remote Control of Time Delay			Reference	Weight kg
			Start	Partial Stop	Adjustment		
<p>With flash commencing during OFF period </p>							
<p>Supply </p> <p>SPDT contact 15/18, 15/16</p> <p>Green LED</p> <p>t t</p>	<p>--- or ~ CL11BU ~ 110 ... 240 V</p>	<p>24 V 0.150</p>	1	-	-	-	RE 4 -
<p>Supply </p> <p>1st SPDT cont. 15/18, 15/16</p> <p>2nd SPDT cont. 25/28, 25/26 time delay</p> <p>2nd SPDT cont. 21/24 instantaneous 21/22</p> <p>Green LED</p> <p>t t</p>	<p>--- or ~ CP13BU ~ 110...240 V</p>	<p>24 V 0.150 42...48 V</p>	2 (3)	-	-	With (4)	RE 4 -

Time Delay Relays for Wye-Delta Starters (5)

	Supply Voltages (2)	Output Contacts (SPDT)	Remote Control of Time Delay			Reference	Weight kg
			Start	Partial Stop	Adjustment		
<p>Supply </p> <p>1st SPDT cont. 15/18, 15/16</p> <p>2nd SPDT cont. 25/28, 25/26</p> <p>wye</p> <p>delta</p> <p>Green LED</p> <p>t t_3</p>	<p>--- or ~ YA12BU ~ 110...240 V</p>	<p>24 V 0.150 42...48 V</p>	2	-	-	-	RE 4 -
<p>Supply </p> <p>1st SPDT cont. 17/18</p> <p>2nd SPDT cont. 17/28</p> <p>wye</p> <p>delta</p> <p>Green LED</p> <p>t t_3</p>	<p>--- or ~ YR12BU ~ 110...240 V</p>	<p>24 V 0.150 42...48 V</p>	2	-	-	With common point	RE 4 -

- (1) A lead sealing kit may be added, see page 10.
- (2) See wiring diagrams, pages 11 & 12.
- (3) A switch on the front face of the relay allows the 2nd SPDT contact to be used in instantaneous mode.
- (4) By external potentiometer, to be ordered separately; if external potentiometer is used, the internal potentiometer is automatically disconnected.
- (5) Time delay adjustable for operation in wye connection, and fixed (50 ms) for switching from wye to delta connection to ensure sufficient breaking time.

de-energised
 energised
 open
 closed
 t : adjustable time delay
 t_3 : switching time = 50 ms



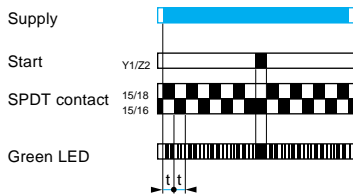


Multifunction Relay - 6 Functions

Functions	Reference	Weight kg
<ul style="list-style-type: none"> ● Time delay relays <ul style="list-style-type: none"> - On-delay : operation identical to that of relay RE4-TM11BU. - Off-delay : operation identical to that of relay RE4-RM11BU. ● Interval timing relays <ul style="list-style-type: none"> - at switch-on by remote control: - operation identical to that of relay RE4-PM11BU. ● Repeat cycle timing relays <ul style="list-style-type: none"> - With flash commencing during OFF period : operation identical to that of relay RE4-CL11BU, with stop contact and facility for remote adjustment of time delay. - With flash commencing during ON period : operation similar to previous description but without remote adjustment facility. 	RE4-ML11BU	0.150

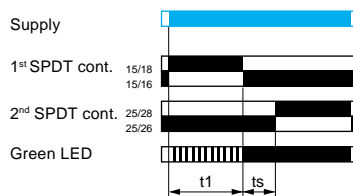
Description of operation of interval timing relays at switch-on

Supply Voltages (2)	Output Contacts (SPDT)	Remote Control of Time Delay		
		Start	Partial Stop	Adjustment
--- 24 V --- 42...48 V ~ 110...240 V	1	With (3)	With (5)	With (4)



Multifunction Relay - 8 Functions

Functions	Reference	Weight kg
The following functions are identical to those of relay RE4-ML11BU with 2 SPDT contacts : <ul style="list-style-type: none"> ● Time delay relays <ul style="list-style-type: none"> - On-delay - Off-delay ● Interval timing relays <ul style="list-style-type: none"> - at switch-on - by remote control ● Repeat cycle timing relays <ul style="list-style-type: none"> - With flash commencing during OFF period. - With flash commencing during ON period. Other functions performed by this relay : <ul style="list-style-type: none"> ● time delay relays for wye-delta starters <ul style="list-style-type: none"> - without pulse on energizing contact : operation identical to that of relay RE4-YA12BU. - With pulse on energizing contact : Operation described below. 	RE4-MY13MW	0.150



Description of operation of relay with pulse on energizing contact at switch-on

Supply Voltages (2)	Output Contacts (SPDT)	Remote Control of Time Delay		
		Start	Partial Stop	Adjustment
--- or ~ 24...240 V	2	-	-	-

- de-energised
- energised
- open
- closed
- t : adjustable flashing time
- t1 : adjustable acceleration
- ts : partial stop time

- (1) A lead sealing kit may be added, see page 10.
- (2) See wiring diagrams, pages 11 & 12.
- (3) By contact or by 3-wire type proximity sensor with NPN output, to be ordered separately.
- (4) By external potentiometer, to be ordered separately; if external potentiometer is used, the internal potentiometer is automatically disconnected.
- (5) X1-Z2 Contact.



Electronic Timing Relays
Order Information

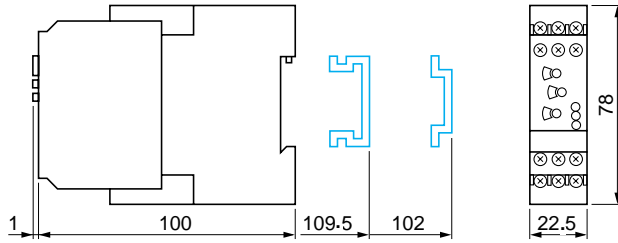


Accessory (to be ordered separately)

Description	Reference	Weight kg
Lead Sealing Kit	LA9-RE02	0.015

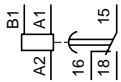


Dimensions
RE4-

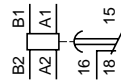


On-Delay Timing Relays

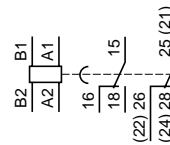
RE4-TL11BU



RE4-TM11BU



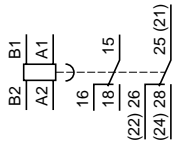
RE4-TP13BU (1)



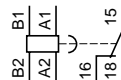
	⎓ (V DC)		~ (V AC)		
RE4-	24	42...48	24	42...48	110...240
TL11BU	A2-B1	-	A2-B1	-	A1-A2
TM11BU	A2-B1	A2-B2	A2-B1	A2-B2	A1-A2
TP13BU	A2-B1	A2-B2	A2-B1	A2-B2	A1-A2

Off-Delay Timing Relays

RE4-RL11BU (1)



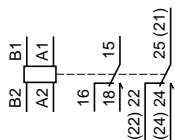
RE4-RM11BU



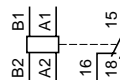
	⎓ (V DC)		~ (V AC)		
RE4-	24	42...48	24	42...48	110...240
RL13BU	A2-B1	A2-B2	A2-B1	A2-B2	A1-A2
RM11BU	A2-B1	A2-B2	A2-B1	A2-B2	A1-A2

Interval Timing Relays

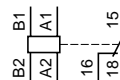
RE4-PD13BU (1)



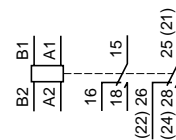
RE4-PE11BU



RE4-PM11BU



RE4-PP13BU (1)



	⎓ (V DC)		~ (V AC)		
RE4-	24	42...48	24	42...48	110...240
PD13BU	A2-B1	A2-B2	A2-B1	A2-B2	A1-A2
PE11BU	A2-B1	-	A2-B1	-	A1-A2
PM11BU	A2-B1	A2-B2	A2-B1	A2-B2	A1-A2
PP13BU	A2-B1	A2-B2	A2-B1	A2-B2	A1-A2

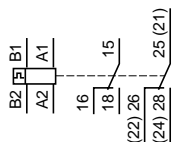
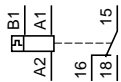
(1) The figures in brackets relate to the 2nd SPDT time delay contact switched to operate in instantaneous mode.



Repeat Cycle

RE4-CL11BU

RE4-CP13BU (1)

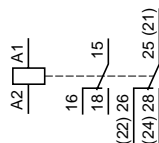
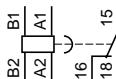


	--- (V DC)		~ (V AC)		
RE4-	24	42...48	24	42...48	110...240
CL11BU	A2-B1	-	A2-B1	-	A1-A2
CP13BU	A2-B1	A2-B2	A2-B1	A2-B2	A1-A2

Multifunction Relays

RE4-ML11BU

RE4-MY13MW (1)

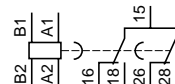
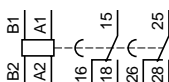


	--- (V DC)			~ (V AC)		
RE4-	24	42...48	110...240	24	42...48	110...240
ML11BU	A2-B1	A2-B2	-	A2-B1	A2-B2	A1-A2
MY13MW	A2-B1	A1-A2	A1-A2	A1-A2	A1-A2	A1-A2

Time Delay Relays for Wye-Delta Starters

RE4-YA12BU

RE4-YR12BU



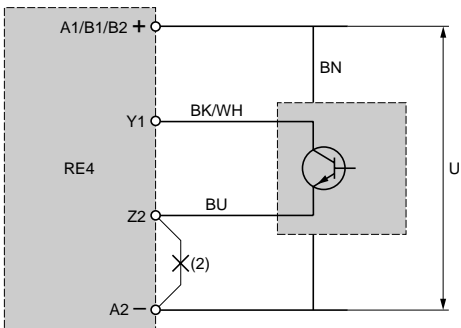
	--- (V DC)		~ (V AC)		
RE4-	24	42...48	24	42...48	110...240
YA12BU	A2-B1	A2-B2	A2-B1	A2-B2	A1-A2
YR12BU	A2-B1	A2-B2	A2-B1	A2-B2	A1-A2

(1) The figures in brackets relate to the 2nd SPDT time delay contact selected to operate in instantaneous mode.

Connection of External Control Devices

RE4-	Sensor start contact	Partial stop contact	Adjustment potentiometer(s)
CP13BU	-	-	Z1-Z2
ML11BU	Y1-Z2	X1-Z2	Z1-Z2
MY13MW	Y1-Z2	X1-Z2	Z1-Z2
PD13BU	Y1-Z2	-	-
PM11BU	Y1-Z2	X1-Z2	Z1-Z2
PP13BU	-	-	Z1-Z2
RL13BU	Y1-Z2	-	-
RM11BU	Y1-Z2	X1-Z2	Z1-Z2
TM11BU	Y1-Z2	X1-Z2	Z1-Z2
TP13BU	-	-	Z1-Z2

Wiring Scheme for a 3-Wire Proximity Sensor



(2) Except for RE4-MY13MW.



