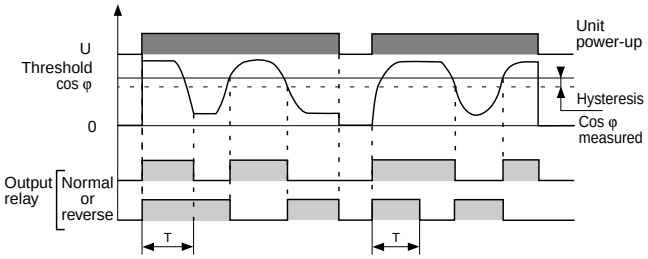
Power factor control relay (cosine φ) DTR2/LTR2

- **Measures the phase shift between current and voltage (cosine φ)**
- **Threshold adjustable between 0 and 0.95 on the front face**
- **Delay on energisation adjustable from 0.2 to 20 s on front face**
- **Normal or reverse relay selection by switch on front face**

Operating principle

The DTR2 / LTR2 control relay is designed to measure the phase shift between current and voltage (cos φ) of installations with inductive loads, in particular three-phase motors.
In this case, the phase shift is inversely proportional to the mechanical load.
Thus the DTR2 / LTR2 control relay is used to control motors where the load is subject to large variations.
When the value of cosine φ reaches the threshold displayed on the front face, the output relay immediately changes state.
The relay returns to its initial state as soon as the cosine φ value drops below 3 to 15% (hysteresis) of the threshold.
For currents greater than 10 A ~, a current transformer combined with control relay DTR2 / LTR2 must be used.



T = Inhibition time delay

Note :

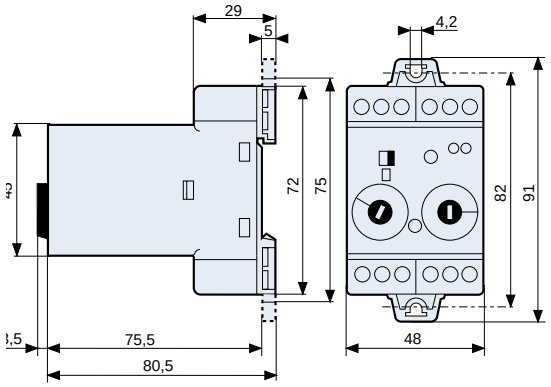
The delay on energisation (adjustable between 0.2 and 20 seconds on the front face) inhibits current peaks caused by motor starting, thus preventing spurious triggering of the output relay.
One red LED indicates the state of the output relay : LED "ON" - Relay "ON".
A green LED indicates presence of the power supply.

Type		
DIN rail or panel mounting	**DTR2**	
11-pin plug-in		**LTR2**
Part numbers (and voltages)		
3 x 380 • 415 V ~	**84 895 219**	**84 895 229**

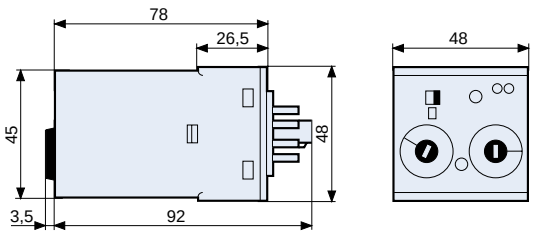
Technical specification		
Supply voltage	three-phase	3 x 380 V • 415 V ~
Un (50/60 Hz)	single phase	220 V ~ • 240 V ~
Supply tolerance		0.85 • 1.10 x Un
Maximum power consumption		25 VA
Internal resistance		20 mΩ
Current range	minimum	0.5 A ~
	maximum	10 A ~
Permitted overload for a time < 1 s		30 A ~
Range of adjustment cos φ		0 • 0.95
Hysteresis fixed according to cos φ setting		3 • 15%
Display accuracy (of the full scale)		≤ ±15%
Repetition accuracy	with constant parameters	≤ ±0.1%
	with voltage variations	≤ ±0.1% (± 10 % Un)
Drifts	with temperature variations	± 0.02% / °C
Typical response time	on pick-up	400 ms
	on drop-out	200 ms
Adjustable inhibit delay		0.2 s • 20 s ±20%
Availability delay (maximum)		2 s
Output relay (to meet AC1 requirements, resistive load)		1 AgCdO changeover, 10 A ~ max.
Temperature limits	Use	-10 °C • +60 °C
	Stored	-20 °C • +70 °C
Weight		200 g

Dimensions

D2 clip-on casing
Rear connections

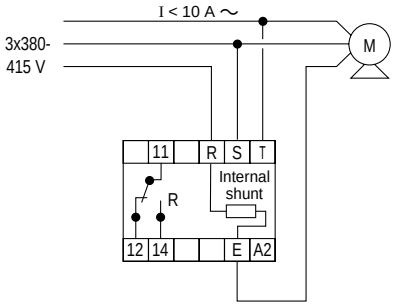


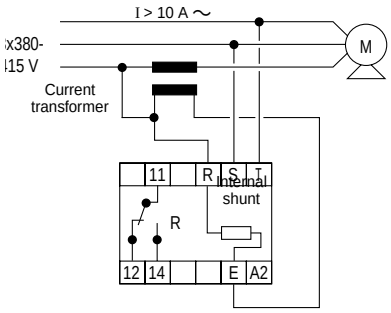
L2 plug-in casing
for 11-pin socket



Wiring diagrams and applications

DTR2 / LTR2
Operation on 3 x 380V - 415 V AC three-phase network





DTR2	E	A2	11	12	14	R	S	T
LTR2	9	10	1	4	3	5	6	7

The secondary winding of the current transformer cannot be connected to ground (nominal output current of transformer: 1 A or 5 A secondary).

Operation on single phase network