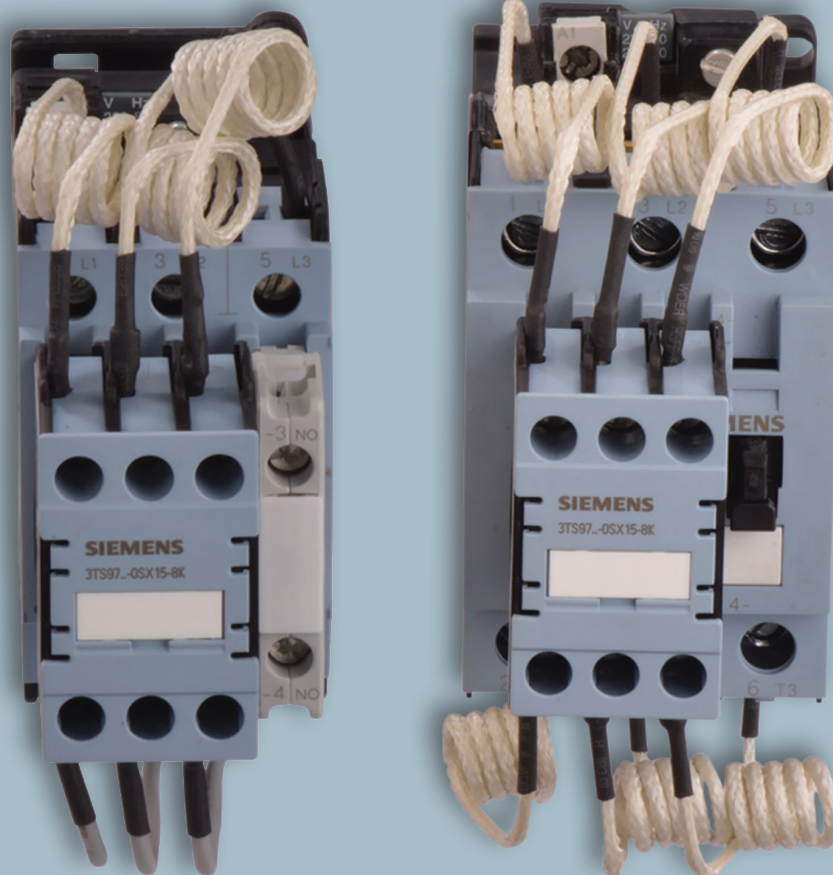


**SIEMENS**



# 3TS Capacitor duty contactors

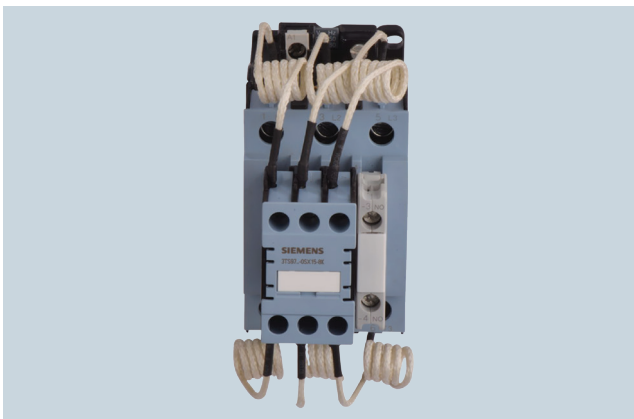
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## Overview:

For more than 125 years, Siemens has been developing and manufacturing industrial control products. We offer a wide product range which caters to fulfill the demand of our esteemed customers with satisfactory performance level and improved reliability. The new range of capacitor duty contactor has been launched to provide a reliable and economical solution for capacitor switching applications.

## Capacitor Duty Contactor



### Range:

- 7kVAr - 25kVAr

### Features:

- Delatching operating principle
- SIGUT Termination technique
- Finger touch proof terminals
- Compact Dimensions
- DIN / Screw mounting

### Benefits:

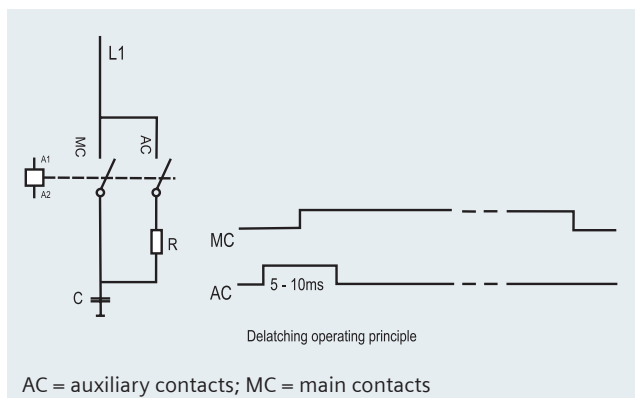
- Reliable switching of capacitor banks
- Ease of wiring (can obviate use of lugs)
- Operator Safety
- Space saving
- Flexible mounting

### Standards:

- IEC 60947-4-1

### Approbations:

- CE marking



AC = auxiliary contacts; MC = main contacts

### Operating Principle:

In Low Voltage industrial installations, capacitors are mainly used for reactive power correction (raising the power factor). When these capacitors are energized, overcurrents of high amplitude and high frequencies (3 to 15 kHz) occur during the transient period (~1 ms).

The amplitude of these current peaks, also known as “inrush current peaks”, depends on the following factors:

- The network inductances.
- The transformer power and short-circuit voltage.
- Type of power factor correction: fixed or automatic.
- Harmonics present in the system.

The in-rush current of such high magnitudes is undesirable and it is likely to weld main contacts of any standard contactor. Therefore, contactor for capacitor bank switching must be designed to withstand :

- Permanent current that can reach 1.5 time the nominal current of capacitor bank.
- Short but high peak current on pole closing.

Hence, capacitor duty switching device requires careful selection. It is always recommended to use dedicated capacitor duty switching contactor for switching capacitor bank, which optimizes the switchgear cost & enhances the equipment life.

Siemens 3TS capacitor duty contactor works on mechanical delatching operating principle, which ensures reliable switching of capacitors as per AC-6b utilization category at optimum cost.

### Delatching operating principle:

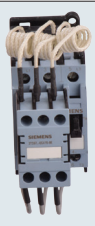

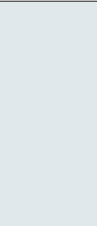

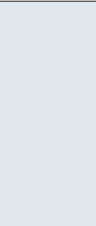
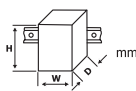


The front-mounted block mechanism of the 3TS capacitor duty contactors ensures:

- early making of the auxiliary contacts “AC” with respect to the main contacts “MC”
- automatic return to the open position of the auxiliary contacts after the main contacts are closed.

**When the coil is energized**, the early making auxiliary contacts connect the capacitor to the network via the set of 3 resistors. The damping resistors attenuate the first current peak and the second inrush current when the main contacts begin to make. Once the main contacts are in the closed position, the auxiliary contacts automatically break.

**When the coil is de-energized**, the main contacts break ensuring the breaking of the capacitive current. The contactor can then begin a new cycle.

## Technical specifications:

						
<b>Type</b>		3TS1110 - 0A..5-8K	3TS1200- 0A..5-8K	3TS1300- 0A..5-8K	3TS1400- 0A..5-8K	3TS1500- 0A..5-8K
<b>Size</b>		1	2	3	3	3
<b>Dimensions (H x D x W) including auxiliary switches and connecting cables</b>		H x D x W	H x D x W	H x D x W	H x D x W	H x D x W
• Screw-type terminals	mm	115 x 125 x 45	115 x 136 x 45	120 x 148 x 55	120 x 148 x 55	120 x 148 x 55
<b>General technical specifications</b>						
<b>Conformance to</b>		IEC-60947-4-1				
<b>Approvals</b>		CE				
<b>Degree of protection acc. to IEC 60529</b>	IP	IP 20	IP 20	IP20 for Aux block IP00 contactor	IP20 for Aux block IP00 contactor	IP20 for Aux block IP00 contactor
<b>Storage temperature</b>	°C	-25 to +55				
<b>Operating temperature</b>	°C	-25 to +40				
<b>Altitude of site (without technical restrictions)</b>	m	2000				
<b>Type of mounting</b>		DIN / Screw				
<b>Main Circuit</b>						
<b>Rated insulation voltage Ui</b>	V	690				
<b>Rated operational voltage Ue</b>	V	415 / 440				
<b>Rated operational Current Ie (Harmonic &amp; Safety factor excluded)</b>	A	9.7	17.4	22.3	27.8	34.8
<b>Impulse withstand voltage Uimp</b>	kV	6				
<b>Rated frequency</b>	Hz	50				
<b>Capacitor rating at rated power (utilization category AC-6b) 415/440 V, 50Hz</b>	kVAr	7	12.5	16	20	25
<b>Max. switching frequency</b>	Cycles per hour	180				
<b>Coil operating range</b>		0.85 to 1.1Us				
<b>Auxiliary contacts mounted</b>		1 NO	-			
<b>Auxiliary contacts mountable</b>		1NO or 1NC				
<b>Short-circuit protection device for contactors With Fuse - Operational class gG - Type 1 co-ordination (3NA7)</b>	A	20	32	50	50	63
<b>Connecting characteristics</b>						
<b>Main conductors</b>		 Screw terminals				
<b>Terminal screw size</b>		M3.5	M4			
<b>Screw head type</b>		Slotted Cheese Head				
<b>Tightening torque Recommended</b>	N-m	0.8 to 1.4	1 to 1.5	2.5 to 3		
<b>Conductor cross-section</b>						
	Solid mm <sup>2</sup>	1 x (1 to 2.5)	1 x (2.5 to 6)	1 x (1 to 16)		
	Finely stranded with end sleeve mm <sup>2</sup>	1 x (0.75 to 2.5)	1 x (1.5 to 4)	1 X (1.5 to 16)		
	Finely stranded mm <sup>2</sup>	-	-	1 X (1.5 to 16)		
	Finely stranded with pin end connector mm <sup>2</sup>	1 x (0.75 to 2.5)	1 x (1.5 to 4)	1 x (1.5 to 16)		
<b>Auxiliary conductors (built-in auxiliary terminals + coil terminals)</b>		 Screw terminals				
<b>Screw head type</b>		Slotted Cheese Head				
<b>Tightening torque Recommended</b>	N-m	0.8 to 1.4				
<b>Conductor cross-section</b>						
	Solid mm <sup>2</sup>	2 x (0.5 to 1, 1 to 2.5), 1 x 4				
	Finely stranded with end sleeve mm <sup>2</sup>	2 x (0.75 to 2.5)				
	Finely stranded with pin end connector mm <sup>2</sup>	2 x (0.75 to 2.5)				

## Selection and ordering data:

### Capacitor duty contactor - 3TS

For switching capacitor banks with AC coils

Capacitor kVAr 415V, 3ph, 50Hz	Built-in aux. contacts	Type <sup>1)</sup>	Std. pkg. (nos.)
7 kVAr	1 NO	3TS1110 -0A..5-8K †	1
12.5 kVAr	-	3TS1200-0A..5-8K †	1
16 kVAr	-	3TS1300-0A..5-8K †	1
20 kVAr	-	3TS1400-0A..5-8K †	1
25 kVAr	-	3TS1500-0A..5-8K †	1

† Facility to add one contact block of 1NO / 1NC

1) AC 50Hz coil code - Please enter coil codes from table below

	For 3TS contactors		
Code	F0	P0	R0
Coil voltage (V)	110	230	415

For wide band AC 50 Hz coils, please check with sales office.

### Accessories for capacitor duty contactor - 3TS

Auxiliary contact blocks

For contractor	Description	Type	Std.pkg. (nos.)
3TS11 to 3TS15	1NO	3TX4 010-2A	10
	1NC	3TX4 001-2A	10

### Spares for capacitor duty contactor - 3TS

Pre-charge resistor + Contact block kit

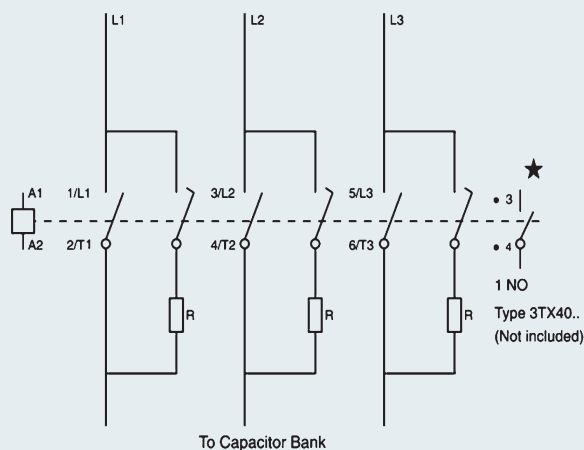
Contactor kVAr	Description	Type	Std. pkg. (nos.)
12.5 kVAr	Pre-charge resistor + aux contact block kit + main contacts kit	3TS9762-0SX15-8K	1
16 kVAr		3TS9763-0SX15-8K	1
20 kVAr		3TS9764-0SX15-8K	1
25 kVAr		3TS9765-0SX15-8K	1

**Note:** Pre-charge resistor + aux contact block kit + main contacts should be replaced simultaneously

Spare coils

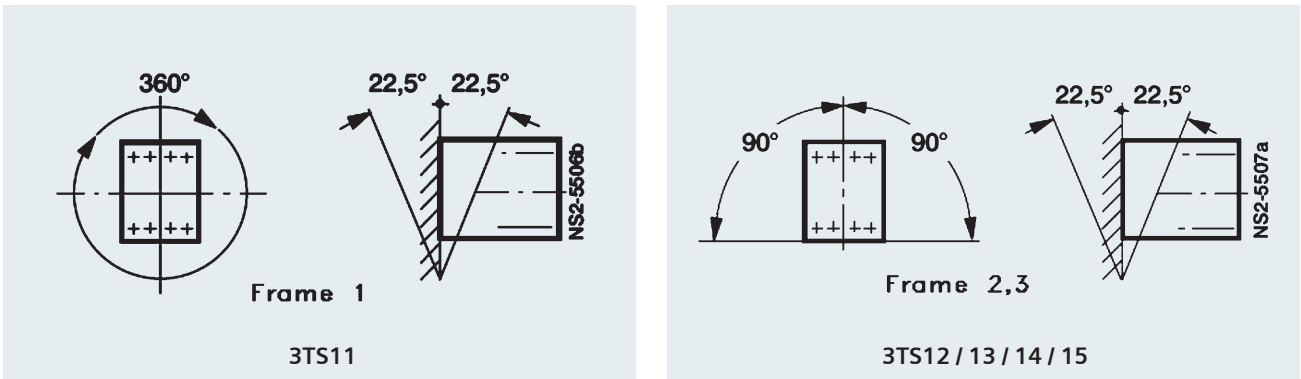
Contactor kVAr	Description	Type <sup>1)</sup>	Std. pkg. (nos.)
7 kVAr	AC 50Hz coil	3TY74030A..	1
12.5 kVAr			
16 kVAr		3TY74430A..	1
20 kVAr			
25 kVAr			

## Circuit diagram:



★ In built NO incase of 7kVAr only.

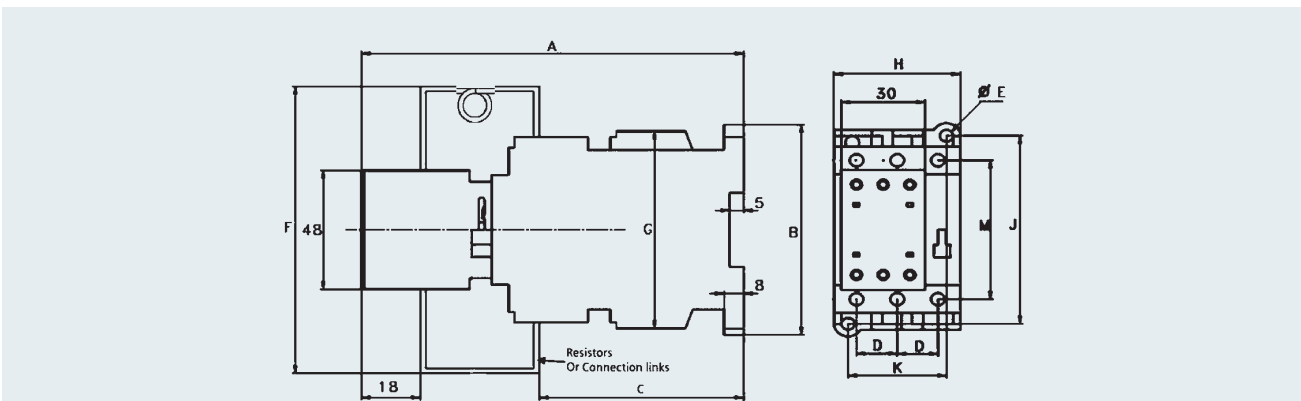
## Mounting details:



## Terminal drawing:



## Dimensional drawing:



Type	A	B	C	D	F	G	H	J	K	øE	M	Term Screw
3TS11	125	74	60	10	115	78	45	60	35	4.8	48	M3.5
3TS12	136	85	70	14.5	115	85	45	75	35	4.8	51	M4
3TS13..15	148	85	63	18	120	103	55	75	45	5	62.5	M4

Dimensional drawing : 7, 12.5, 16, 20, 25 kVAr (3TS11/12/13/14/1500-0A..5-8K)

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