SIEMENS

RAJA+ Automatic Direct-On-Line Starter 3TE7111

For dependable service, it is of utmost importance that instructions given below are followed for selection, inspection, installation, commissioning, operation and maintenance.

RAJA+ Automatic DOL Starter

Selection of Starter

- Refer Table 1 for recommended selection of 3TE7 starters.
- 3TE7 starters are available from 7.5 HP/5.5kW to 17.5HP/13kW suitable for 3 phase and Submersible pump application motors.



Fig. 1: ADOL Starter

Installation, Operation & Maintenance Instructions Please read and understand these instructions before installing, operating or maintaining the equipment. Keep of

installing, operating or maintaining the equipment. Keep for future reference.

Danger

Hazardous voltage can cause death or serious injury. Disconnect power before working on equipment.

Warning

Automatic Motor Restart

LMRA has "Auto" mode selection. Use this function with caution, Motor will restart automatically when healthy power is restored back.

Reliable functioning of the equipment is only ensured with certified components. Commissioning and maintenance by qualified personnel only.

NOTICE

This product has been designed for environment A. Use of this product in environment B may cause unwanted electromagnetic disturbances in which case the user may require to take adequate mitigation measures.

Complies to standard: IS/IEC 60947-4-1

- 1. 'ON' push button (green)
- 2. 'OFF/RESET' push button (red)
- 3. Doorknob
- 4. Metal Enclosure
- 5. Door
- 6. Mechanical Latch (OFF push button) to be used for preventing undesired ON operation of Starter
- 7. Name plate
- 8. LED (amber) to indicate healthiness of incoming power supply
- 9. Earthing screw



- 1. Contactor
- 2. Thermal Overload Relay
- 3. Contact Block 1NO
- 4. Contact Block 1NC
- 5. Thermal Overload Relay Setting Dial
- 6. Relay Red Test button
- 7. Contactor Incoming Terminal Screws
- 8. Contactor Outgoing Terminal Screws
- 9. Wiring diagram Label
- 10. Links
- 11. Gasket
- 12. Grommet
- 13. Enclosure mounting holes 4x
- 14. Terminal Block TB1
- 15. Terminal Block TB2
- 16. Amber LED
- 17. LMRA
- 18. LMRA mode selector switch
- 19. Earthing (for customer)

Fig. 2: ADOL Starter inside view

Installation:

- Open the door by unscrewing the door knob.
- Mount the starter enclosure vertically on a rigid surface free from vibration. Refer Fig. 5.
- Remove the rubber Grommets for incoming and outgoing cable connections. (Fig. 2).
- Connect incoming and outgoing cables as follows: (Fig. 2)
 - Select correct size of cable from Table 1.
 - Remove approx. length of insulation as per following table:

Length of insulation removal (mm)	Cu cable size (mm²)
10	10
6	4 and 2.5
5	1.5

- Pass the cable through proper cable gland to avoid ingress of material.
- Connect the incoming supply cables to terminal block TB1 (Fig. 2) and tighten the screws firmly (ref. tightening torque from Table 2).

NOTE: LMRA is set in Manual mode (Factory setting)

- Set the overload relay scale (Fig. 2) using proper screwdriver as follows:
 - Set the overload relay to rated current mentioned on motor name plate.
 - Press green button of the contact block CB1 (Fig. 2) to start the motor and wait till it reaches to normal speed. Reduce the overload relay settings till it trips.
 - Set the overload relay at slightly higher value.
 - Allow a reset time appr. 4 min. and reset the overload relay manually.
 - Restart the motor. If the relay does not trip, consider the overload relay as properly set.
 - If it trips, set it at little higher value and recheck.
 - Press the red knob (Fig. 2) on the overload relay to stop the motor.
 - Fix the door by screwing the knob.

Operation:

- Ensure the door is closed.
 - Rotate the Latch away from OFF push button.
 - Check the status of amber LED. Ensure that amber LED is continuously ON and then only proceed.
 - Switch 'ON' the starter by pressing the green push button (marked 'l') (Fig. 1) on starter door.
 - To Switch 'OFF' the starter press red push button (marked 'O') (Fig. 1) on the starter door.
- Reset Operation
 - If the overload relay trips, Reset manually. (Allow a reset time of approx. 4 min.)

Maintenance:

- Switch off the starter and put Latch on the OFF push button, (marked 'O'). Disconnect the main supply by switching OFF main switch before maintenance.
- Keep the interior dust free.
- Re-tighten the terminal screws from time to time.
- No maintenance is needed for overload relay. Please do not open the overload relay.
- Replace the contactors / contacts of the contactors if they were severely pitted or when only 40% of the original contact tip remains.

(Contacts replacement possible only for 3TS33, 3TS34, 3TS35, 3TS36 contactors).

- Replacement of overload Relay
 - I. Disconnect the cable between Relay terminals T1, T2, T3 and Outgoing Terminal Block TB2.
 - II. Loosen the outgoing terminals screws of contactor (Fig. 3).
 - III. Disengage the relay terminals & hook from contactor.
 - IV. Take the overload relay of same range.
 - V. Connect & tighten the relay terminals (L1, L2, L3 to the contactor terminals (T1, T2, T3).
 - VI. Ensure that the relay hook (Fig. 3) is engaged in the slot of the contactor and slide the relay inwards till the cover is flush with contactor ribs.
 - VII. Reconnect the disconnected Terminal block (TB2) wires to relay and check the correctness of the starter wiring by referring to the wiring diagram.



Fig. 3: Contactor – Relay connection



Replacement of coil

Table 1:

Motor Rating At 415V 3ph 50Hz HP/kW		Starter MLFB Contactor MLFB	Thermal Overload relay	Relay range	HRC Fuse	Cu cable	Max. Full Load Current (A)		
Motor	Submersible Pump			MLFB	(A)	(A) *	sıze (mm²)	Motor	Submersible Pump
7.5 / 5.5	7.5 / 5.5	3TE7111-2SC18-1Axx	3TS3210-0Axx-08K	3UW5102-2A	10–16	32A	2.5	11.4	14.5
10/7.5	_	3TE7111-2BC21-1Axx	3TS3311-0Axx-08K	3UW5102-2B	12.5–20	32A	2.5	15.4	-
12.5/9.3	10/7.5	3TE7111-2CC21-1Axx	3TS3311-0Axx-08K	3UW5202-2C	16–25	32A	2.5	19.5	19.5
-	12.5/9.3	3TE7111-2DC23-1AZ8	3TS3511-0AZ8-08K	3US5600-2D8K	20-32	63A	4	-	25
15/11	_	3TE7111-2CC24-1Axx	3TS3411-0Axx-08K	3UW5202-2C	16–25	32A	4	23	-
-	15 / 11	3TE7111-2QC24-1AZ8	3TS3511-0AZ8-08K	3US5600-2Q8K	25–36	63A	10	_	29
-	17.5 / 13	3TE7111-2RC25-1AZ8	3TS3611-0AZ8-08K	3US5600-2R8K	32–40	80A	10	-	34

* Recommended Max. Back-up HRC Fuse rating, SIEMENS Make type 3NA7 – 500V

Selection of contactor coil and LMRA

Coil voltage code xx	Coil voltage (VAC)	Line Monitoring Relay		
Z6 200 - 400		7UG0613-0FE20		
Z8 260-460		7UG0613-0FF20		

Table 3: Spares list

	Description	Order No.			
	Contactor	3TS3210-0AZ6-08K			
	Contactor	3TS3210-0AZ8-08K			
	Contactor	3TS3311-0AZ6-08K			
	Contactor	3TS3311-0AZ8-08K			
	Contactor	3TS3411-0AZ6-08K			
	Contactor	3TS3411-0AZ8-08K			
Je	Contactor	3TS3511-0AZ8-08K			
)	Contactor	3TS3611-0AZ8-08K			
.4	Thermal Overload Relay	3UW5102-2A			
.5	Thermal Overload Relay	3UW5102-2B			
0	Thermal Overload Relay	3UW5202-2C			
	Thermal Overload Relay	3US5600-2D8K			
.4	Thermal Overload Relay	3US5600-2Q8K			
.1	Thermal Overload Relay	3US5600-2R8K			
.2	Coil for 200-400V	3TY7403-0AZ6			
.1	Coil for 260-460V (Z8)	3TY7403-0AW415			
.1	For 3TS32/33/34 contactor				
.2	Coil for 260-460V (Z8) For 3TS35/36 contactor	3TY7443-0AW415			
.2	1NO Contact Block	3SB5420-0B			
5	1NC Contact Block	3SB5420-0C			
	Amber LED	3SB5285-6HL33			
.0	LMRA for 260-460V	7UG0613-0FF20			
.9	LMRA for 200-400V	7UG0613-0FE20			

Table 2: Terminal torque values

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Туре	Screw Size	Torque (Nm)
3TS3032	M3.5	0.8-1.4
3TS33/34	M4	1.0-1.5
3TS35/36	M4	2.5-3.0
(TB1/2) Terminal block 30A	M4	0.8-1.4
(TB1/2) Terminal block 60A	M5	1.5-2.1
Contact block 3SB5	M3.5	0.8-1.2
Aux terminal of 3TS 30/32	M3.5	0.8-1.1
3TY7561Aux Terminals	M3.5	0.8-1.1
Coil Terminals A1/A2	M3.5	0.8-1.2
Aux. terminals of all Relays	M3.5	0.8-1.2
3UW51/52	M4	1.0-1.5
3US56	M5	2.5-3.0
Indicating light - Amber	М3	0.8-0.9

NOTE: Contact sales for ON & OFF Push Button, Terminal block 30A/60A.

For more Technical details like LMR-A wiring, operating sequence, tightening torque, mounting details etc., refer Installation & Troubleshooting guide no. A5E50797230A.



Fig. 4: Automatic Direct-on-line Starter Wiring diagram



Fig. 5: Overall Dimension Drawing

	Disp	oosal		
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Customer Care Toll free no. 1800 220 987	Email: ics.india@siemer	ns.com	Order No. A5E50494685000A/AA	
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