

MAGNUM[®]

More Power, Better Controls

USER MANUAL

THREE PHASE MaU STAR DELTA STARTER

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KALP CONTROLS

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INTRODUCTION

Dear Customer,

Congratulations on purchase of MAGNUM SEMI/FULLY AUTOMATIC STAR DELTA MOTOR STARTER. Magnum Three Phase MaU Star Delta Motor Starter is a powerful controlling device for your submersible pump/motor made with heavy duty components, which protects the pump from hazards caused due to over-current and voltage.

Located in Bangalore, Kalp Controls commenced its operations in the year 2009. At Kalp Controls, we are focused on offering you heavy duty

1. Submersible Pump Panel - DOL & Star Delta
2. Open Well Pump Panel
3. Starters - DOL & Start Delta
4. Single Phasing Preventer & Auto Start Unit.
5. Spares like Contactor, Relay, Capacitor, Meters etc.

ABOUT MAGNUM SEMI/FULLY AUTOMATIC STAR DELTA MOTOR STARTERS

Magnum Star Delta Starters are controlling devices for your submersible Pumps/Motors. These are made from quality raw materials, enabling it to protect and control your motor consistently.

Functions

1. Switches your pump/motor on and off.
2. Being based on Star-Delta mechanism the starting torque & current is considerably reduced on the motor.
3. Protects the pump/motor from over-current.
4. Under voltage protection & trips when persistent overload on the motor.
5. Ensures reliable performance in high ambient temperatures, humidity & under-voltage conditions

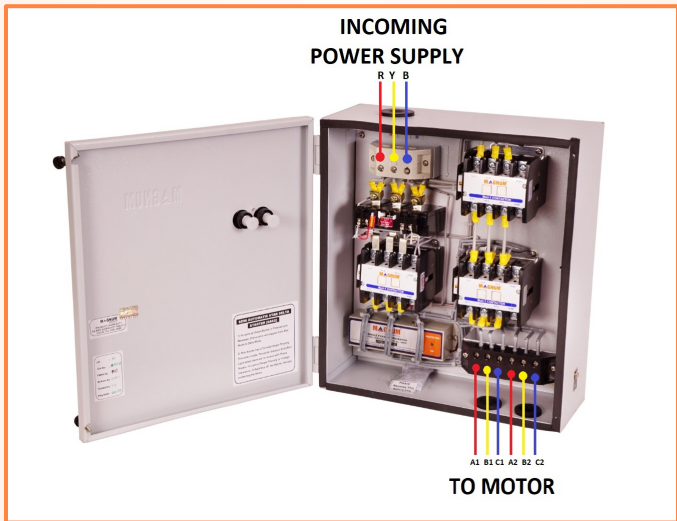
Salient Features

1. Powder coated MS enclosure for complete corrosion resistance.
2. Rugged MaU contactors with wide voltage band (200-440V).

3. Fitted with MaU type relay for reliable overload protection.
4. Manual reset facility after overload protection.
5. A latch on the push button can be used to keep the stop button locked, thus preventing accidental starting.
6. Input & Output connections are terminated through a terminal block [Hence no intervention is required on the circuit]
7. All connections are terminated through appropriate crimping Lugs.
8. Easy & quick mounting.
9. Ergonomic design with aesthetic looks.
10. There is a provision for using an auxiliary contact block with configuration 1NO + 1NC.
11. No screw protrusion from the panel, hence additional safety from water, dust, corrosion and electric shock.

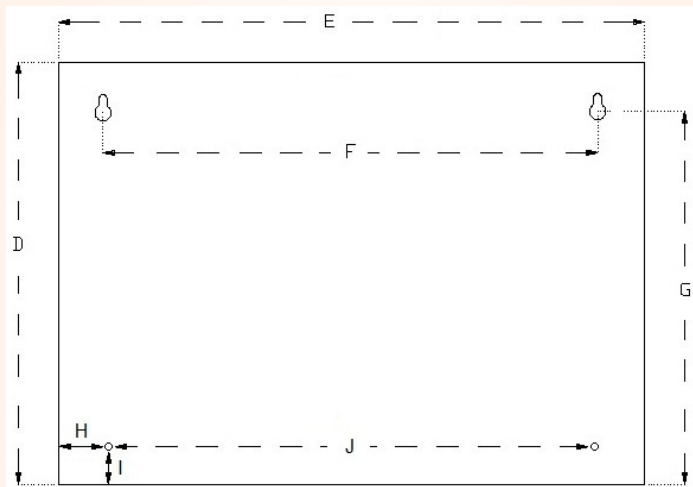
INSTALLATION INSTRUCTIONS

- It is very important to ensure the current rating (Power in HP) of your motor and Starter are same.
- Drill holes with the help of the given template.
- Starter to Motor Connection



- Connect the supply cables to the terminals R, Y, B as shown in the above figure.
- Connect the motor cables to the terminals A1, B1, C1 and A2, B2, C2 as shown in the above figure.

MOUNTING TEMPLATE (Not to scale)



D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)
370	330	277	344	43	26	234

SWITCHING AND OPERATING

- Ensure the over load relay range matches to the ampere rating in your motor.

Switching On and Off

- Switch on the supply.
- To start the motor,

a) SASD STARTER:

Press and Hold the START (green) button for 6-10 seconds or upto motor reaches 75-80% of full speed. As soon as START button is released, conversion will happen from Star to Delta mode. **(Never attempt to press the green button when the motor is running)**

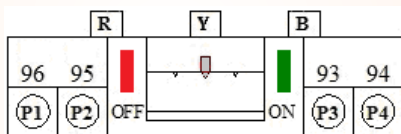
b) FASD STARTER:

Press the START (green) button and immediately release the button after motor starts, conversion will happen from Star to Delta mode once Timer reaches preset time. **(Factory setting is kept at 9 sec) (Never attempt to press the green button when the motor is running)**

- The motor can be switched off by pressing STOP (Red) button.

- Rubber Bushes are provided near the connecting terminals. Just make holes in the rubber bushes for connection and don't remove it. They offer a degree of ingress protection.
- If the motor/pump switches off automatically, (may be due to over-current) please press the reset button (OFF) on the left side of overload relay inside the panel.

MaU Overload Relay



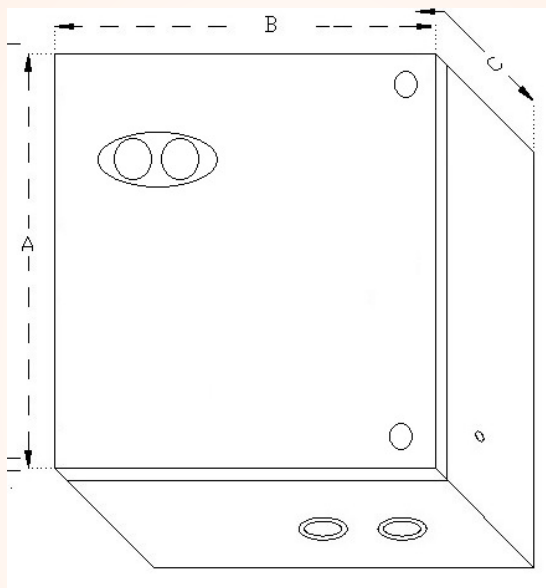
TECHNICAL SPECIFICATIONS

1. Power range : Up to 20 HP
2. Coil Voltage : 440 V
3. Operating Voltage : 70% to 110% of coil voltage
4. Pick up voltage : Minimum 60% of coil voltage
5. Drop off voltage : Below 50% of coil voltage
6. Contactor 4P : MaU [16A / 25A / 32A / 40A]
7. Relay 4P : MaU
8. Area : MaU (370 * 330 * 143) mm
9. Net Weight : 8.6 – 8.7 Kilo grams
10. Frequency : 50Hz
11. Insulation Voltage Ac (Vi) : 660V
12. Ambient Temperature : -25°C to +55°C
13. Terminal Capacity : 1 * 16 mm² or 2 * 10mm²

Normal Configuration of the Starter

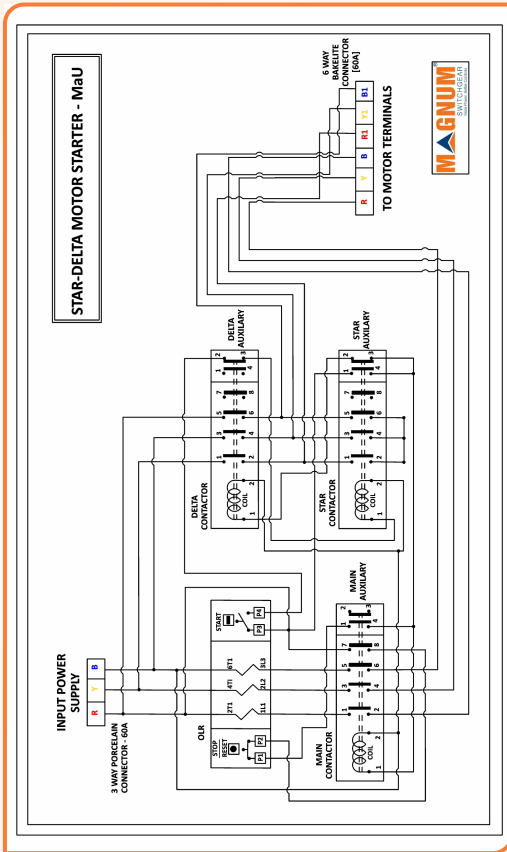
Sl. No.	Power (HP)	Catalogue No		Relay Range (A)
		SASD	FASD	
1	7.5	SDU7H	SDFU7H	6-10
2	10	SDU10	SDFU10	9-14
3	12.5	SDU12H	SDFU12H	11-18
4	15	SDU15	SDFU15	13-21
5	17.5	SDU17H	SDFU17H	20-32
6	20	SDU20	SDFU20	20-32
7	20	SDU2042	SDFU2042	28-42

STARTER DIMENSIONS:



A (in mm)	B (in mm)	C (in mm)
370	330	143

CIRCUIT DIAGRAM:



PRECAUTIONS & MAINTENANCE

- It's best that a qualified electrician installs the starter and repairs it in case of any problem.
- A dust free environment is vital for long run of the starter. It is very important to keep the starter away from water or moisture. In very humid places it is strongly recommended to keep it in a closed setting.
- The best way for prolonged life of the starter is to periodic inspection of the contactor contacts and keeping them free of dust and water.

TROUBLE SHOOTING

1) Motor starts when the green button is pressed, Once released it switches off.

- Check if all six connections are provided to the output terminal.
- Check if all the six connections are connected as per phase sequence mentioned in the sticker.
- There are few instances where phase wires from motor are not correctly marked. Find out if any phase connection has been reversed and rectify it.

2) **Motor starts with difficulty when start button is pressed**

- In this case release the start button earlier than what you have been doing.

3) **Relay has been changed in semi-automatic starter, however when the main switch is on, the motor starts immediately without the necessity of pressing the start button. Motor stops when the start button is released.**

- You may have changed the original relay yourself.
- All factory-made relays have loop-wires 2-3 wired, in semi-automatic starters.
- 2-4 terminals on relays must be connected. Check relay before connecting it on starter.

4) **If motor/pump does not start:**

- Reset the relay and then try starting again
- Ensure adequate supply voltage.
- Check the contacts of the contactor.

5) **If motor draws excess current:**

- Absence of water or load in the pump.

SPARES AND ASSEMBLIES AVAILABLE FOR THIS STARTER

Part Description	Specification	Part No.
Magnum MaU-1 Contactor 4P 415V	16A	CTU16
Magnum MaU-2 Contactor 4P 415V	25A	CTU25
Magnum MaU-3 Contactor 4P 415V	32A	CTU32
MaU Coil 415V	-	CTU
MaU Auxiliary	-	AU
MaU-1 Relay	(6-10) A (9-14) A (13-21) A	RTU10 RTU14 RTU21
MaU-2 Relay	20-32 A	RTU32
MaU DOL Button	MaU	BUD
Toroidal Preventor [Current sensing]	1-20 HP	PRTT
Terminal Block 3-way Porcelain Connector – Close	60A	CPC63
Terminal Block 6-way Bakelite Connector – Close	60A	CBC66

Warranty Policy

1. This product carries a warranty, against manufacturing defects only for a period of **12 months** from the **date of** manufacturing.
2. The warranty is however subject to provision of proper usage, efficient maintenance and **does not cover** defects arising out of **fire accident, Voltage Surge, Inefficient maintenance, faulty operation and willful or accidental damage**. Warrant is not covered for charred or burnt components at all.
3. The company will not be liable for any consequential loss, injury or damages attributable to defect or failure of its products.
4. We believe in our products and hence provide you with product guarantee, should it prove to be defective due to faulty workmanship or otherwise, we will remedy the defect or replace the faulty parts or the whole product at our discretion, as soon as possible, free of cost.
5. This product is made from quality raw materials and skilled assemblers. We believe in our product and hence provide you with this warranty of 12 months.
6. Proof of purchase (Invoice) is to be produced to avail the warranty.