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INSTALLATION & OPERATING INSTRUCTIONS

A1 Smart Starter User Manual

Digital Starter - Models 1/2/3

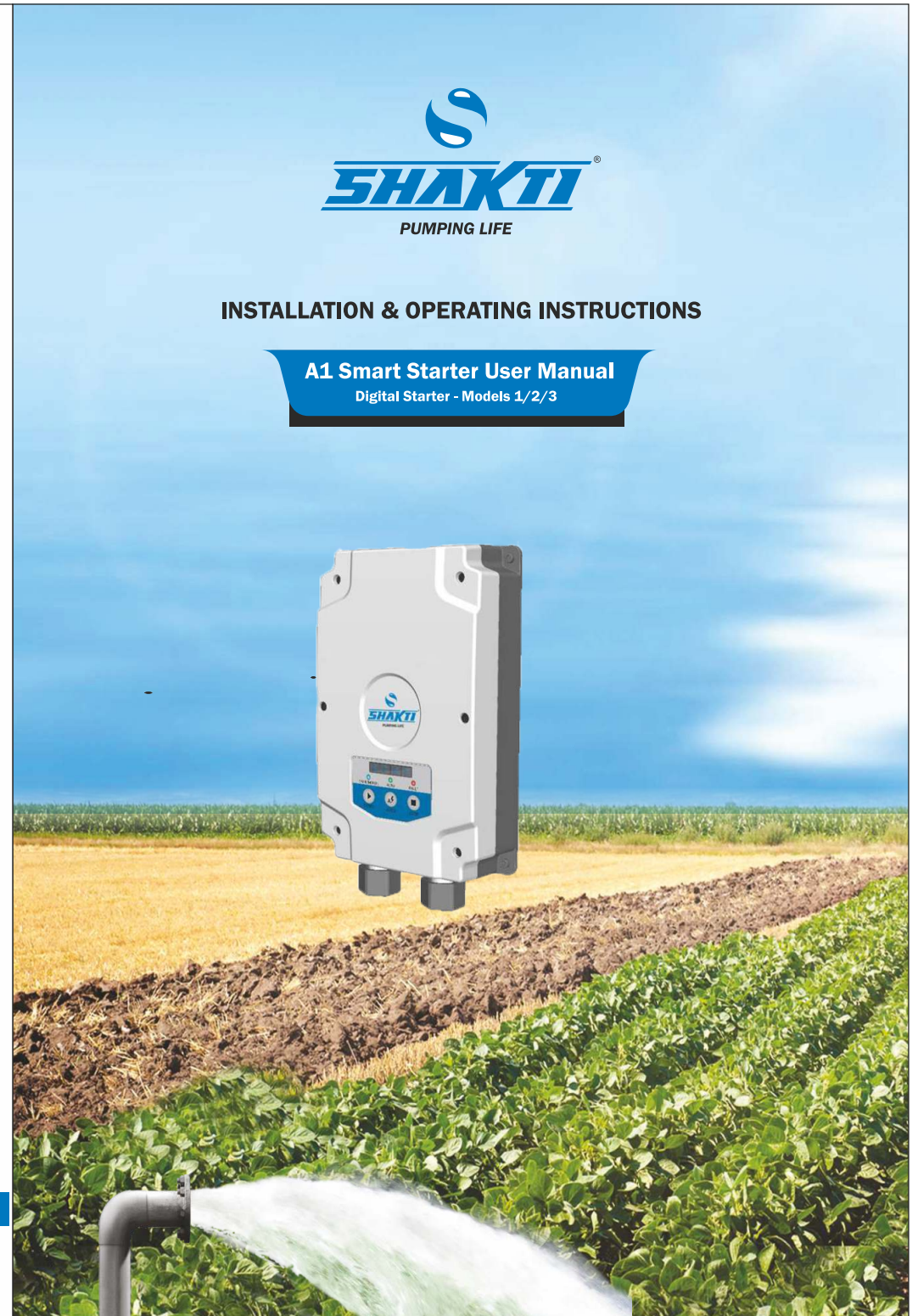


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CHAPTER 1: SAFETY & INTRODUCTION

1.1 Safety Instructions

- Read the user manual before operating the product.
- Installation and maintenance of the product must be carried out by trained and qualified person.
- Starter must be disconnected from mains power supply 5 minutes before opening the cover.
- Ensure that polarity, tightness and wire size are correct, before energizing the starter.
- Starter must be connected to earth using minimum 4.0 mm² wire and earth wire diameter should not be less than input power supply wires (refer regional safety standard specific to your location).
- Ensure the motor, starter and power specifications are matching.

1.2 Product Overview

Shakti presents a next generation, IOT enabled smart motor cushion product which insures smooth starting, advanced protection and monitoring via integrated micro computer. Incorporation of multiple features in a single product makes it A1 (All in one) Smart Starter. Considering harsh environmental conditions, IP54 rated environmental protection is provided. A seven segment display has been used in the starter for convenient monitoring of the unit. Development of electronic circuitry provides opportunity to add voltage, current, power measurements along with communication which makes the starter smart. The inbuilt energy measurement, Bluetooth and GPRS connectivity make it a next generation starter.

The basic function of a A1 Smart Starter is to start and stop the motor based on user requirement. It also protects motor from potential failure causes like overload, under voltage, over voltage, dry run, etc. The motors draw high current at startup, which is typically, 5 to 6 times of the full load current. The starter ranges from 2.8 A to 66 A rated current which covers 0.5 HP to 15 HP motors. It can operate from 130 VAC to 265 VAC motors and is compatible with 50 or 60 Hz supply frequency.

This starter supports Capacitor Start, Capacitor Run and Capacitor Start + Run type motors. The IP54 rated starter also houses start and run capacitors in the enclosure which makes it ready to use, reduces installation time and down time.

1.3 Package Contents

1.3.1 Inspection

Check the following items when unpacking the Digital Starter:

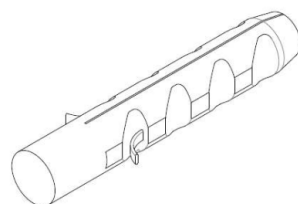
- Inspect the entire exterior of the Digital Starter to see if there are any scratches or other damage resulting from shipping.
- Ensure there is operation manual and warranty card in the packing box.
- Ensure the nameplate is correct as ordered.
- Ensure the optional parts are as per order, if ordered.

Note: Never install or operate any Digital Starter which is damaged or has missing components. Doing so can result in injury.

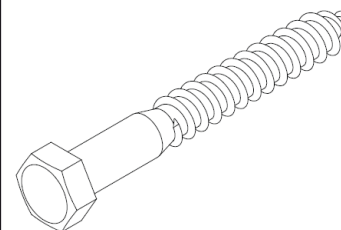
Contact the customer care if there is any damage to the Digital Starter or the optional parts.

All models

4 numbers anchor / expansion tube



4 number hex head screw



1.4 Specifications

1 Ph, 230 V	Model 1	Model 2	Model 3
Technical Data			
Rated Output Power*	0.5 HP to 3 HP*	4 HP to 5 HP*	5.5 HP to 15 HP*
Rated Voltage	230 V 50/60 Hz, Single Phase		
Rated Current (A)	14.4 A	23.8 A	66.1A
Number of capacitors supported	2	3	5
Protection Functions			
Dry Run	Programmable dry run setting. 30 min retry with Enable/		
Overload	Inverse thermal overload, starts at 160% of rated current, 10 seconds for 460%		
Transient Surge	4 kV 8/10 uS Surge Protection by MOVs		
Under Voltage	Trip 130 V, Recovery 140 V		
Over Voltage	Trip 270 V, Recovery 265 V		
Pump Stalled Trip	By Measuring Current		
Installation Data			
Working Temperature	-25 °C to +55 °C		
Working Humidity	20% to 90% RH, non-condensing		
Altitude	Up to 1000 m above sea level		
Degree of Protection	IP54		
Type of Installation	Wall mount, Vertical		
Dimensions in mm (WxLxH)	208 x 390 x 75	240 x 460 x 75	408 x 570 x 110

1 Ph, 230 V	Model 1	Model 2	Model 3
Weight	2.5 kg	3.5 kg	10.5 kg
Special Functions			
4 Number of Dry-Contact	Programmable for Liquid level control, Pressure		
Control Method	Manual/Auto/Remote		
Connectivity	GPRS and Bluetooth		
Energy measurement	Class 2		
Inbuilt Space for Capacitors	Yes		
Relay operation	DOL Type		
Capacitor Configuration	Capacitor run, Capacitor start, Capacitor start and run		
Supported Delay between each restart	30 seconds		

Table 1.1 Specification

* Power rating for indication only. Maximum motor current should be less than or equal to the rated current of starter

CHAPTER 2: CONNECTION & INSTALLATION

2.1 Installation

WARNING

- Violation of these messages will cause severe injury or property damage.
- Untrained person should not work on any parts/systems of A1 Smart Starter.
- Only licensed person, who has been trained on design, installation, commissioning and operation of A1 Smart Starter, is permitted to operate this equipment.
- Input power cable must be connected tightly.
- Earth the equipment securely.
- Wait for 5 minutes after the power is switched off to install/service the A1 Smart Starter.
- The gauge of the grounding cable must be not be less than that of power supply cable.
- Use recommended circuit breaker for A1 Smart Starter input.
- Do not connect switch gears or capacitors in the A1 Smart Starter output.

2.1.1 Wall mount dimensions

Use the dimension given in the image to wall mount the Digital Starter.

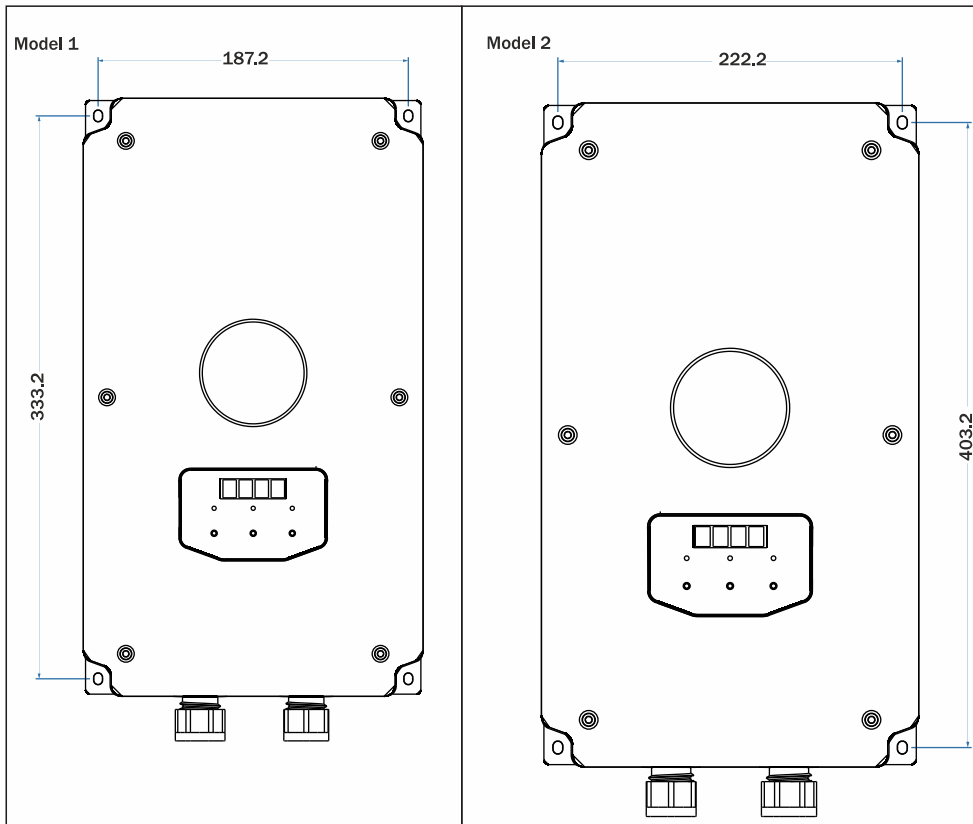


Fig 2.1: Mounting dimension for Model 1 & Model 2.

Note: The dimensions are in mm and are not to scale.

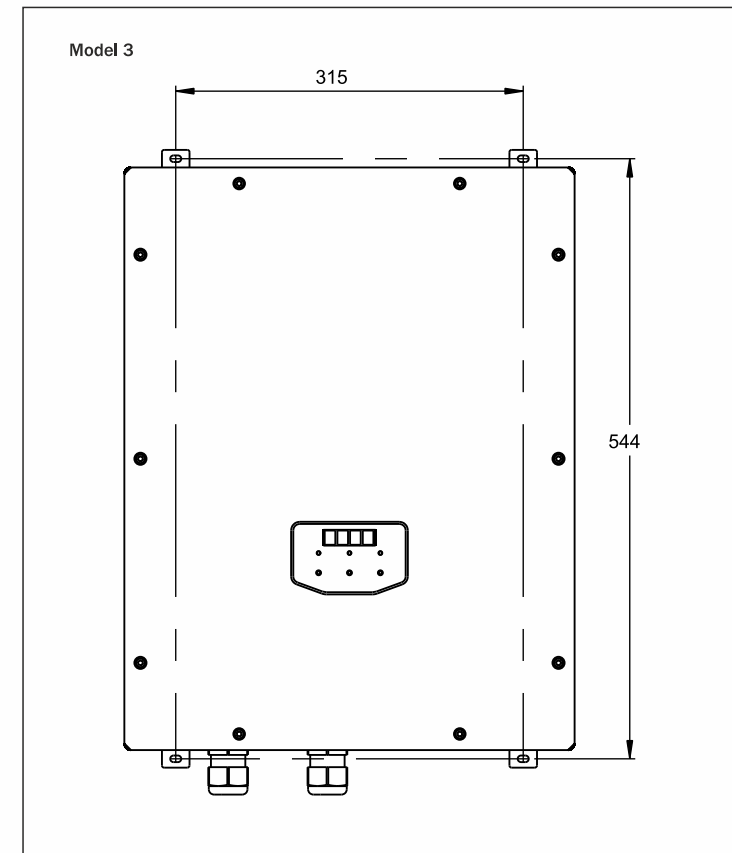


Fig 2.2: Mounting dimension for Model 3

Secure the wall mount brackets to the A1 smart Starter with 4 numbers of hex head screws for each model.

2.2 Connections

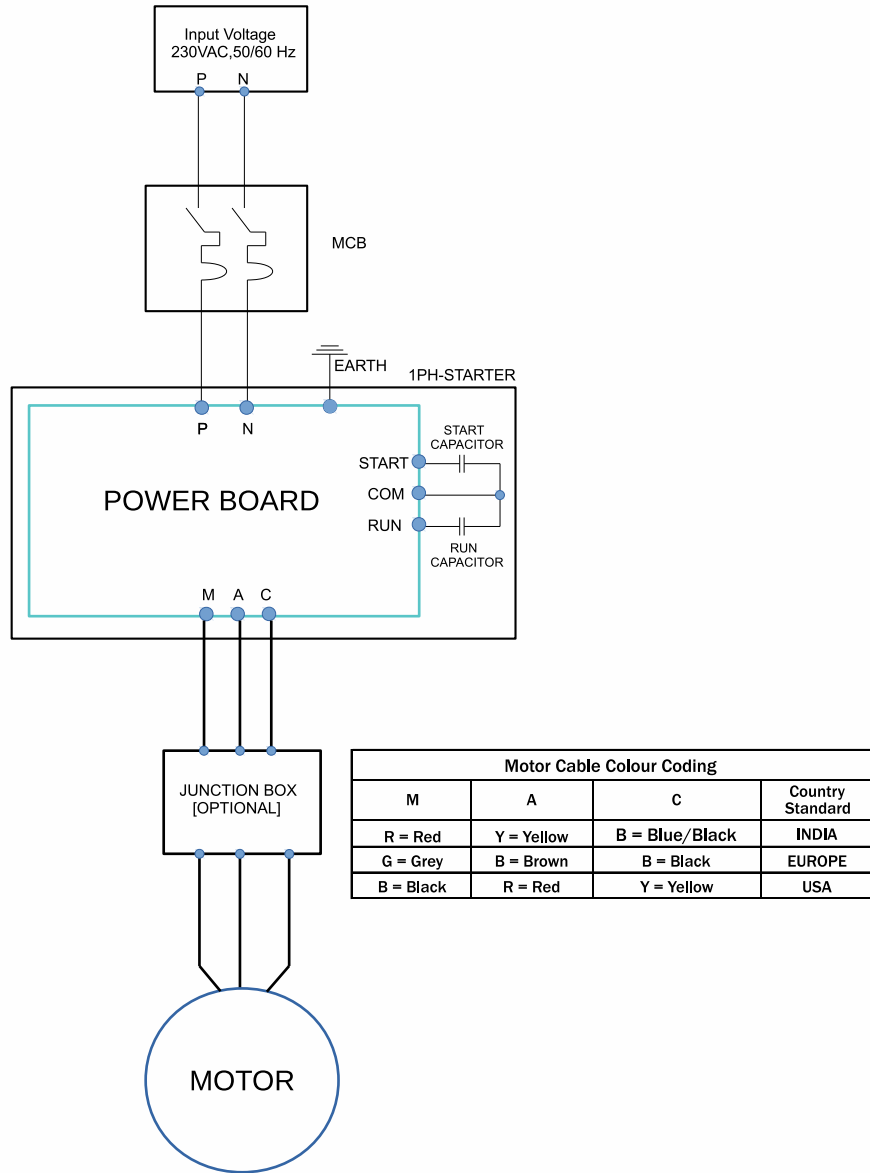


Fig 2.3 Connection Diagram

2.2.1 Steps for Connection

1. Read and follow safety instructions.
2. Open front cover.
3. Do not disturb protective cover (warranty void).
4. Connect earthing wire to 'E' terminal of input terminal block. Use minimum 4 mm² wire. The earthing wire size should not be less than power input wires. Connect earth wire directly to earth pit or main power earth bus-bar.
5. Ensure capacitors are in deenergized condition, assemble capacitors.
6. Connect one wire of run capacitor to 'RUN' terminal, one wire of start capacitor to 'START' terminal and connect common wires to 'COM' terminal of capacitor terminal block.
7. Connect motor mains wire to 'M', capacitor wire to 'A' and common wire to 'C' terminals of output terminal block.
8. Refer Motor 'Installation and Operating Instructions' for output wire size.
9. If intended wire size is higher than supported size of starter, use external junction box.
10. Connect input power supply phase to 'P' and neutral to 'N' terminal of starter input terminal block.
11. Input wire size should be same as output wire.
12. Recommended wire gauge for input and output terminals:
 - a. Model 1 – 1.5 mm² to 4 mm²
 - b. Model 2 – 2.5 mm² to 6mm²
 - c. Model 3 – 6 mm² to 16mm².
13. Recommended MCB rating (Schneider Electric make) for 1Phase models:
 - a. Model 1: 2 pole, 25 A, Curve C MCB; ref part number: A9N2P25C
 - b. Model 2: 2 pole, 40 A, Curve C MCB; ref part number: A9N2P40C
 - c. Model 3: 2 pole, 100 A, Curve C MCB; ref part number: A9N18362

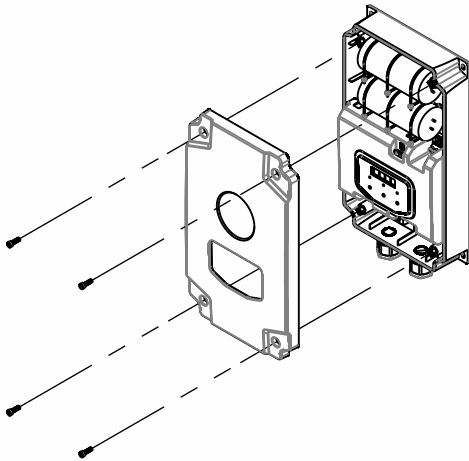
NOTE: Remove the capacitors from the starter for connecting the surface single phase motor (if capacitor present with motor).

Power Input, Output and Capacitor Connection terminal block	Model 1	Model 2	Model 3
Tightening torque, min.	0.5 Nm	1.2 Nm	3.5 Nm
Tightening torque max.	0.6Nm		
Screw thread	M3	M4	M5
Stripping length	8 mm	12 mm	15 mm
Conductor cross section stranded min.	1.5 mm ²	2.5 mm ²	4 mm ²
Conductor cross section AWG/kcmil min.	24	20	12
Conductor cross section stranded max.	4 mm ²	6 mm ²	16 mm ²
Conductor cross section AWG/kcmil max.	12	10	6

Table 2.1: Terminal Block Connection

2.2.2 Capacitor Mounting
 Step 1: Remove top cover

Model 1: Loosen 4 screws and remove top cover



Model 2: Loosen 6 screws and remove top cover

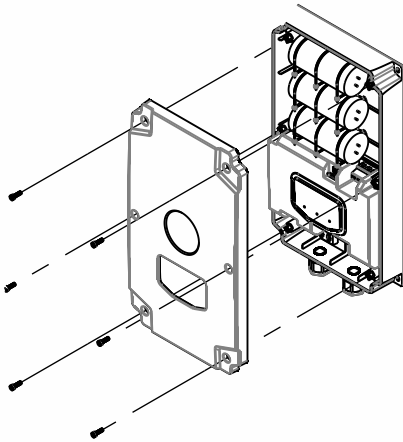


Fig 2.4

Model 2: Loosen 10 screws and remove top cover

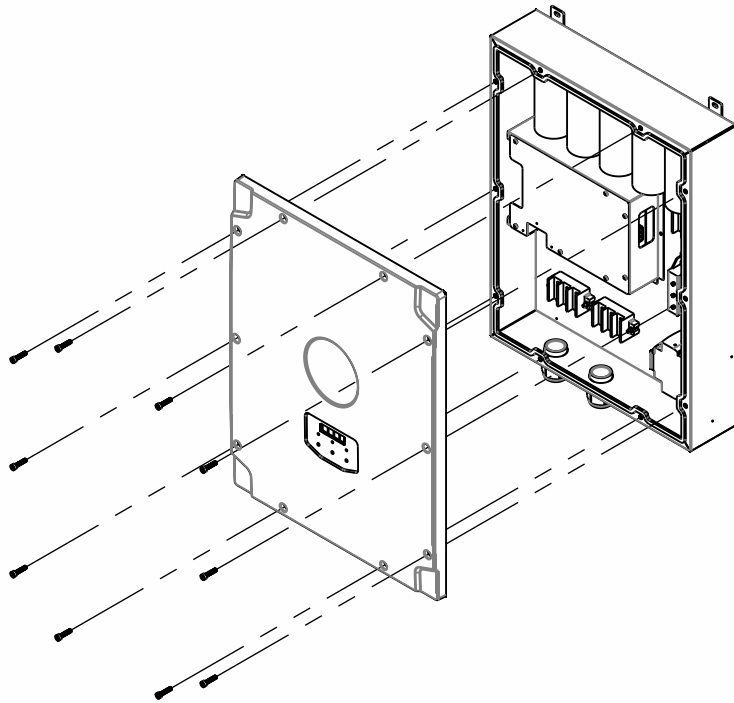
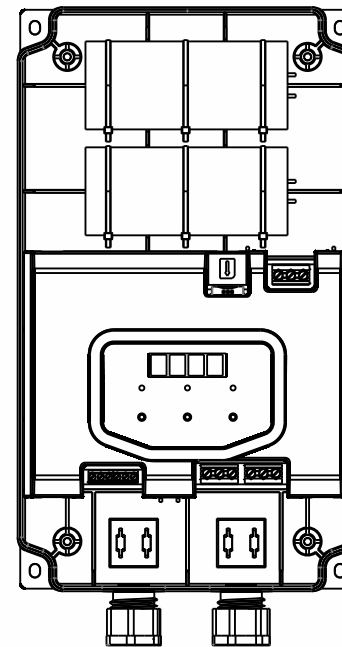


Fig 2.5

Step 2: Insert Capacitor

Model 1: Can connect 2 capacitors
Secure each capacitor with three cable ties



Model 2: Can connect 3 capacitors
Secure each capacitor with three cable ties

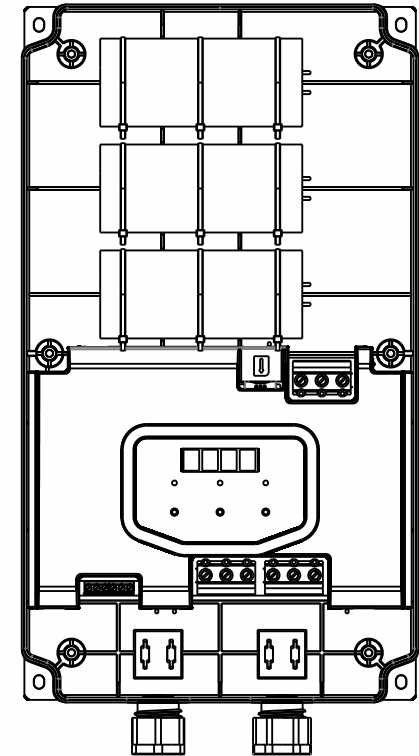


Fig 2.6

Model 3: Can connect 5 capacitors
Secure each capacitor with three cable ties

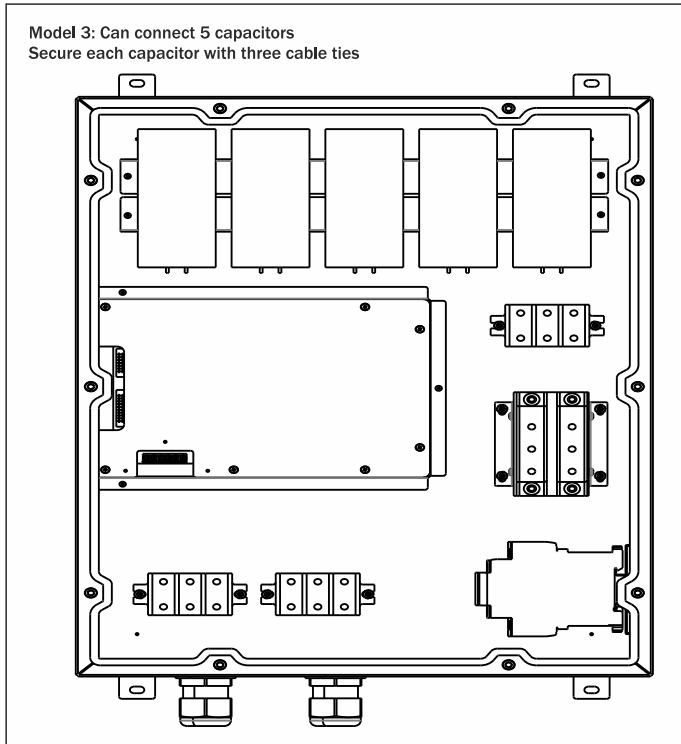


Fig 2.7

Step 3: Make input and output capacitor connections

Model 1 and 2

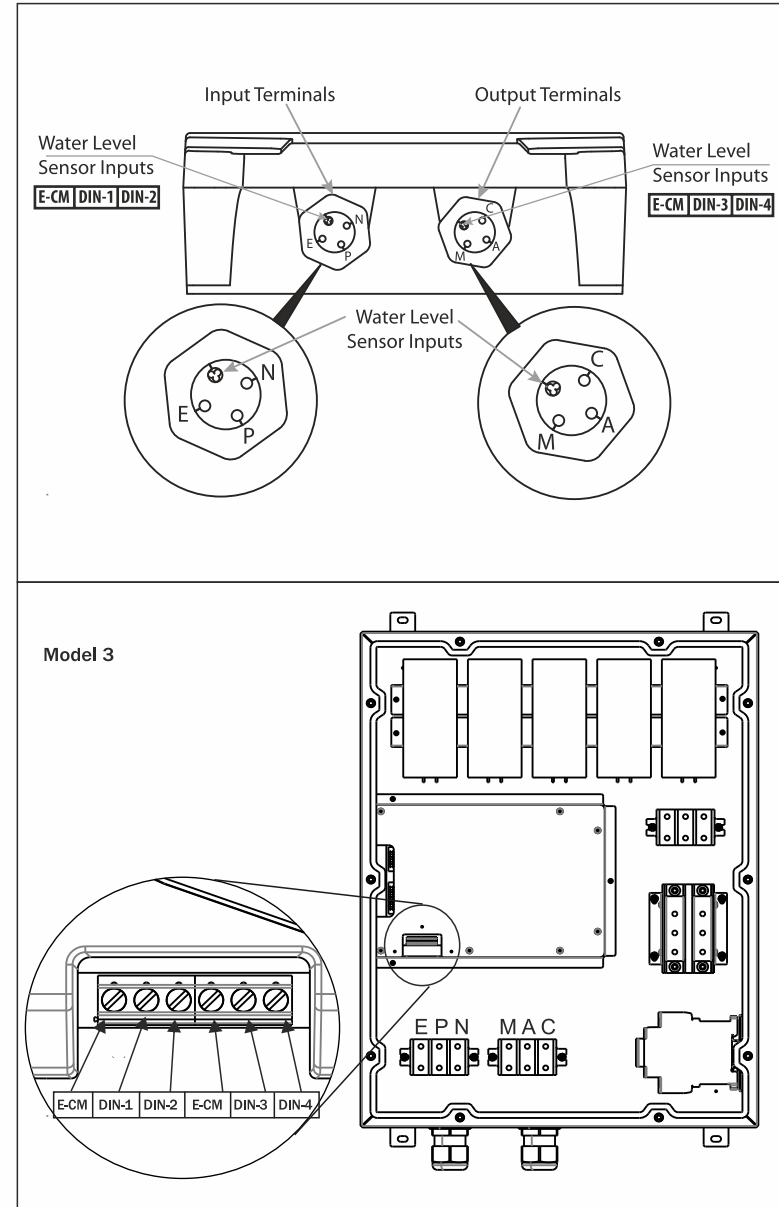
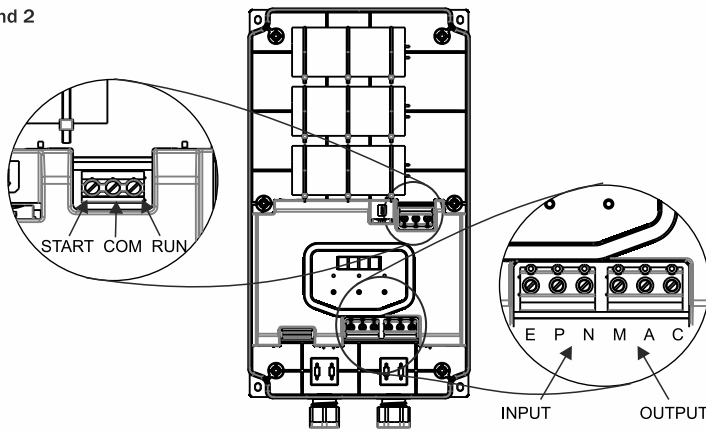
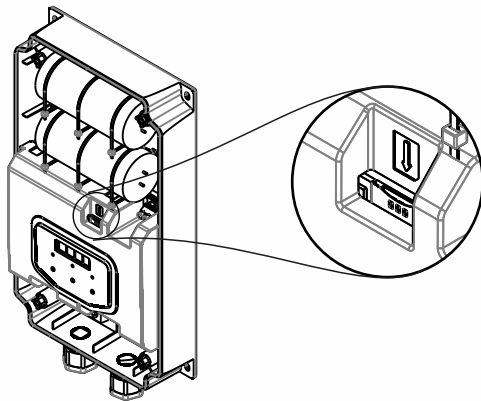


Fig 2.8

Step 4: Insert Sim Card

1. Remove the top cover. See "Remove top cover" for details.
2. Insert the working Sim card into the slot. Ensure that the Sim is inserted into the slot correctly.
3. Close the top cover after the Sim card is inserted.

Model 1 & 2



Model 3

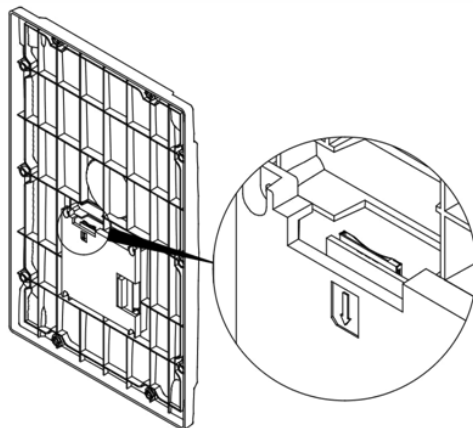


Fig 2.9

Caution: Insert the Sim card only when the Digital Starter is in the power off condition

CHAPTER 3: OPERATION

CAUTION

- Verify that there is no physical damage to the module and terminal blocks.
- Ensure proper connection of start/run capacitors as per the motor data.
- All the input and output connections are properly tightened with required torque levels.
- Display shows correct ID on start-up.
- SIM Card is inserted and is ready to send/receive data.
- Ensure that all the parameters are set correctly before starting the motor during first installation.

3.1 Operating Modes

The starter operates in automatic mode, manual mode and remote mode.

3.1.1 Automatic mode

Press Auto button for automatic mode selection. Selection of automatic mode is indicated by turning ON the Auto LED. In automatic mode the motor start and stop depends on sensor feedback. See "Dry Contacts" for details.

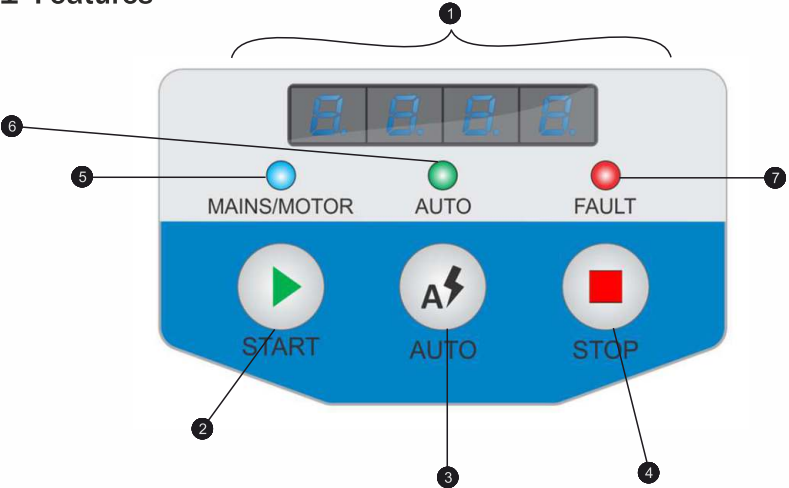
3.1.2 Manual mode

When starter is powered up and system is healthy, press Auto button to disable automatic mode. Auto LED turns OFF indicating that the starter is working in manual mode. In manual mode starter can be controlled manually by pressing START and STOP buttons.

3.1.3 Remote mode

The remote mode is an additional feature of the starter with enables user to control using mobile application. See mobile app for details.

3.2 Display
3.2.1 Features



1	Four digit seven segment display
2	Start button: Press this button to start the motor in the Manual mode.
3	Auto button : Press this button to toggle between Auto and Manual modes.
4	Stop button: Press this button to stop the motor in the Manual mode.
5	Mains/Motor LED : Yellow LED On - Frequency and Voltage OK Yellow LED Flashes Fast - Under/Over Voltage fault. Yellow LED Flashes Slow - Frequency fault. Green LED On - Motor Runs at normal mode
6	Auto LED : Green LED On - Auto mode enabled Green LED Off - Manual mode
7	Fault LED : Red LED On - Temperature or SCR or Relay fault Red LED Blinking - Dry run or Communication error. Red LED Off - No fault.

Fig 3.1

3.2.2 Four digit seven segment display

Seven Segment Display indicates the input voltage and output current during running.
It also indicates starter type during power ON and fault status.

Power on
1-Phase model 1 IPH 1
1-Phase model 2 IPH 2
1-Phase model 3 IPH 3

Table 3.1 Indication of starter type during power ON and fault status.

Motor Starter Condition	Display
When in READY Mode, and RUN command is not available	234V RDY
When motor is running, display alternates between voltage and current. Voltage for 3 seconds and Current for 2 seconds.	234V 32A

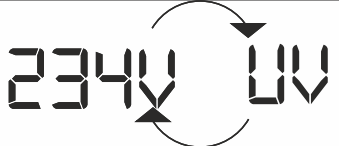
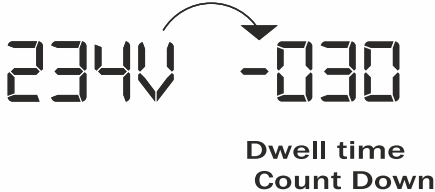
Motor Starter Condition	Display
Under fault conditions the display alternates between input voltage and actual fault.	
In case starter is waiting for minimum dwell time / fault recovery time before next start, a countdown will be displayed before entering ready. START operation is prevented until countdown is completed.	

Table 3.2 Seven segment display indicates the input voltage and output current during running

Display	Description	Display	Description
234V	Input Voltage	32 A	Rated Current
-030	Recovery Time	UV	Under Voltage
OV	Over Voltage	OC	Over Current
OL	Over Load Fault	Fr	Frequency Error
ID	SKU ID Error	DrY	Dry Run

Display	Description	Display	Description
SEr	Sensor Error	OTP	Temperature Error
OVF	Overflow Warning	rDY	Ready

Table 3.3 Display & it's Description

3.2.3 Alarms and Indicators

Display	Alarm	Description
UV	Under Voltage Fault	If the Mains input voltage is less than set under voltage limit, starter trips with the alarm. This fault resets if the Mains voltage recovers from under voltage level.
OV	Over Voltage Fault	If the Mains input voltage is more than set over voltage limit, starter trips with the alarm. This fault resets if the Mains voltage recovers from over voltage level.
OC	Over Current Fault	If the actual motor current to the pump motor, goes beyond safe level starter trips with this alarm. Reset the alarm by pressing STOP button on the Digital Starter.
OL	Over Load Fault	Thermal Overload functionality prevents motor over load. If the current drawn by motor exceeds set value for certain time, starter trips with Overload alarm based on actual overload level. Higher the loading, starter trips faster.
Fr	Frequency Error	Mains frequency is sensed by the starter and in case Mains frequency deviates from set 50 Hz / 60 Hz, by ± 2.5 Hz, Frequency alarm is set. Alarm is automatically reset in case Mains frequency is within the ± 2.0 Hz range.

Display	Alarm	Description
OVF	Overflow Warning	This is a warning message in Auto mode if the connected Warning sensors indicate overflow. Alarm resets if the overflow condition is recovered.
ID	Model ID Fault	Digital Starter module configuration is wrongly set. Module rating mismatch Error.
Dry	Dry Run Warning	In Auto/Manual mode of operation, if the active power drawn by motor is less than the set Dry Run power value, alarm is set in 10 seconds. Alarm recovery depends on recovery time set value.
SEr	Sensor Error Warning	In Auto mode, if the connected sensors are wrongly configured or if there is sensor feedback error. This alarm is not set in Manual mode of operation.
OTPI	Device Temperature Error	Device temperature error occurs when the device temperature exceeds 90 °C. Alarm recovers if the temperature drops below 75 °C after 1 minute.
OTP	Module Ambient Temperature Error	Module ambient temperature has exceeded 90 °C. Alarm recovers if the temperature drops below 75 °C after 1 minute.
EFLT	Earth Fault	In Auto/Manual mode of operation, if there is a difference in Line current to Neutral current. Press the STOP key to reset the alarm.
ETy	Empty Warning	In Auto mode, if the connector sensors indicate water level empty. This alarm is automatically reset in case the sensors indicate water availability.
COM	Communication Error	There is communication error. This is a warning message. The pump motor can be manually started/stopped with this alarm condition.

Table 3.4 Alarm & Description

CHAPTER 4: Sensing Unit

4.1 Dry Contacts

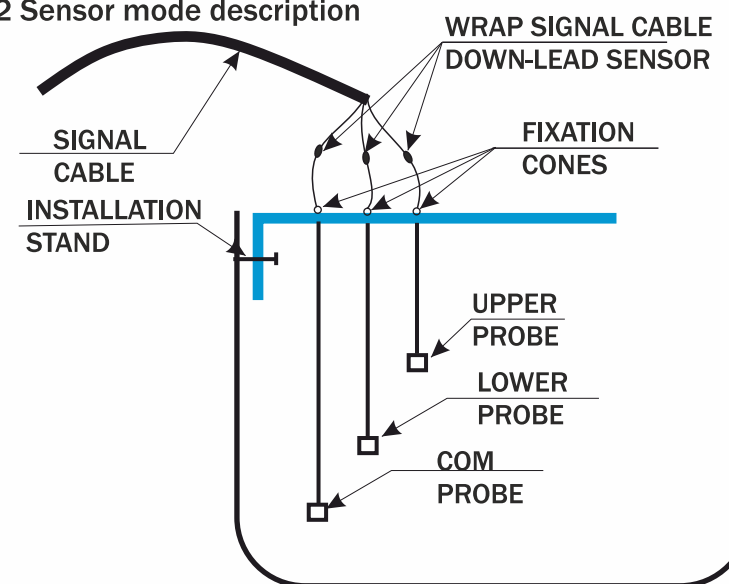
The starter has four feedback interface terminals.

- Di1
- Di2
- Di3
- Di4

Based on Sensor mode parameter selection the inputs can be configured to interface:

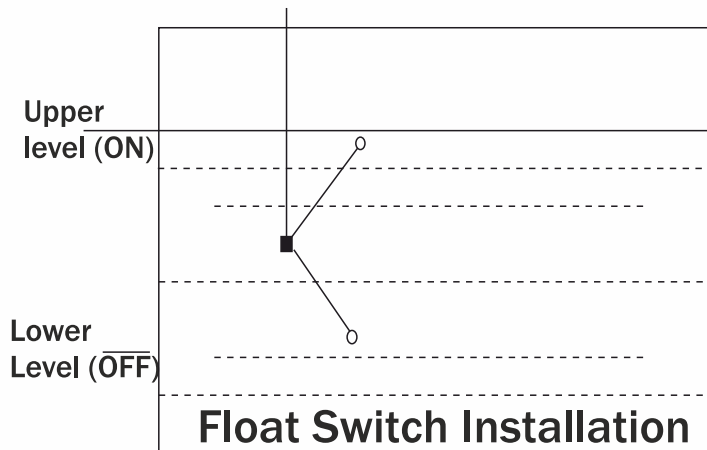
- Float Switch
- Pressure Switch
- Water Level Sensor

4.2 Sensor mode description



Liquid Probe Installation

Note: In the event of high risk of electric storms (lightening) or when liquid medium in well or tank or sump is dirty, it is recommended to use float switch.



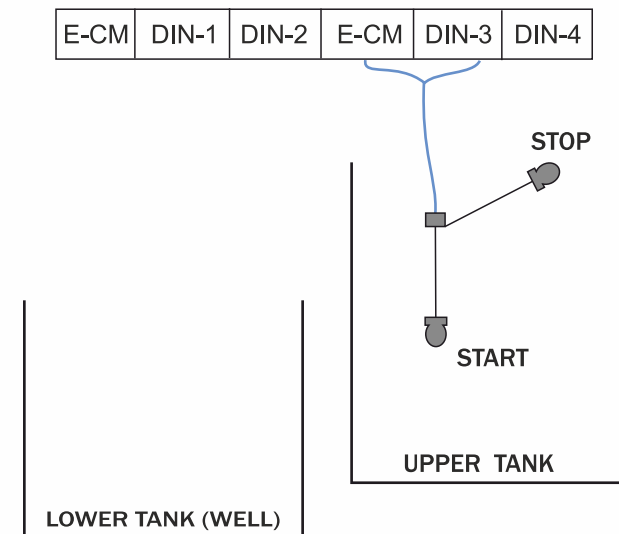
Note: Do not encase sensor leads, float switch wire or signal cables in metal pipes.
Use PVC or PE tubing to encase.

Note:

- Float and Pressure switched are assumed to be potential free.
- Float switch conducts [closed contacts] when in lower position and contact opens in upper position.
- Pressure switch conducts when pressure is low and opens when pressure reaches set value.
- All inputs are Active Low.
- Do not connect direct current [DC] type sensors.

4.2.1 Sensor mode 0:
No sensor interface

4.2.2 Sensor mode 1:
Single Float switch used for Upper Tank filling



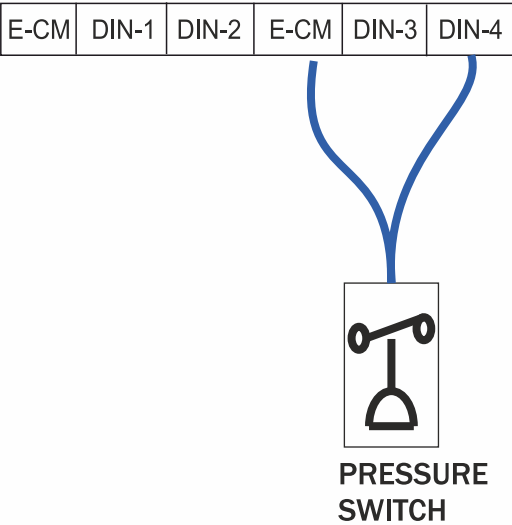
- E-CM: Common probe
- DIN-3: Lower probe
- DIN-4: Upper probe

Tank Condition	Contact Condition	Action
Water reached upper limit	Open	Pump turns OFF
Water reached lower limit	Close	Pump turns ON

Table 4.1

4.2.3 Sensor mode 2:

Single Pressure switch used for pressure booster.



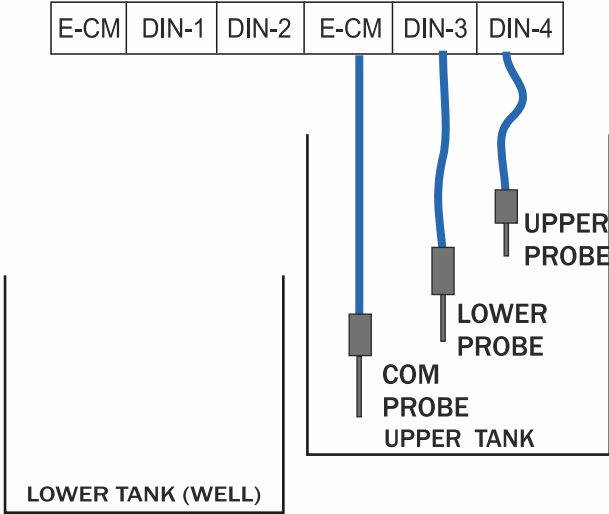
- E-CM: Pressure switch common
- DIN4: Pressure switch input

Pressure Condition	Contact Condition	Action
Pressure has reached set value	Open	Pump turns OFF
Pressure is less than set value	Close	Pump turns ON

Table 4.2

4.2.4 Sensor mode 3:

Upper tank filling using Liquid sensor probes

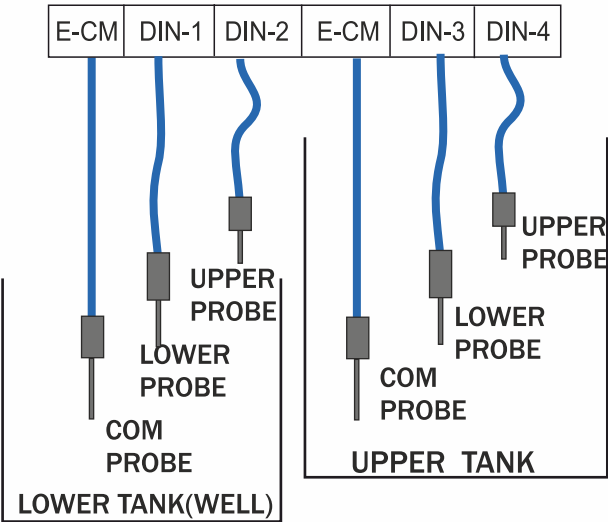


- E-CM: Common probe
- DIN-3: Lower probe
- DIN-4: Upper probe

Tank Condition	Action
Water level lower than lower probe	Pump turns ON
Water level above lower probe and below upper probe	Previous state
Water level above upper probe	Pump turns OFF

Table 4.3

4.2.5 Sensor mode 4: Upper tank filling and lower tank monitoring using Liquid sensor probes



- E-CM: Lower tank (well) Common probe
- DIN-1: Lower tank (well) Lower probe
- DIN-2: Lower tank (well) Upper probe
- E-CM: Upper tank Common probe
- DIN-3: Upper tank Lower probe
- DIN-4: Upper tank Upper Probe

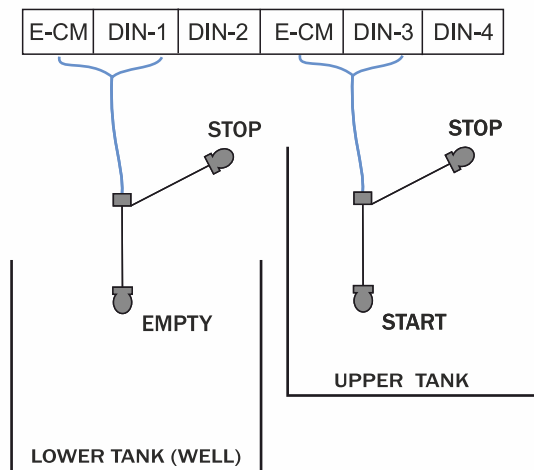
Lower Tank (Well)	Upper Tank	Action
Water level above lower probe and below upper probe	Water level lower than lower probe	Pump turns ON
	Water level above lower below upper probe	Previous state
	Water level above upper probe	Pump turns OFF

Lower Tank (Well)	Upper Tank	Action
Water level above upper probe	Water level lower than lower probe	Pump turns ON + Overflow warning
	Water level above lower below upper probe	Previous state + Overflow warning
	Water level above upper probe	Pump turns OFF + Overflow warning
Water level lower than lower probe	Water level lower than lower probe	Pump Turns OFF + Empty Warning
	Water level above lower below upper probe	
	Water level above upper probe	

Table 4.4

4.2.6 Sensor mode 5:

Upper tank filling and lower tank monitoring using two Float switches



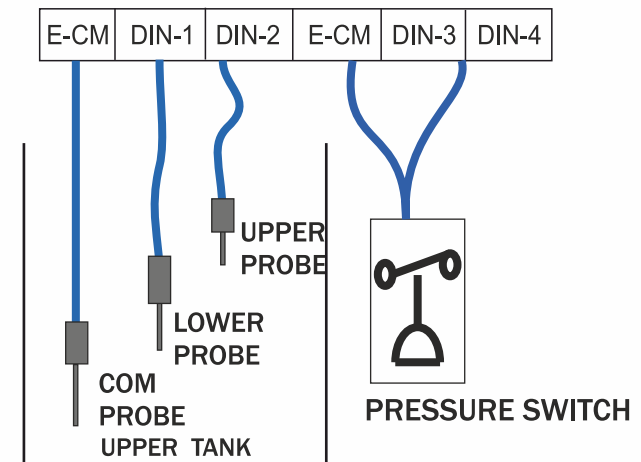
- E-CM: Lower tank (well) Float Switch common
- DIN-1: Lower tank (well) Float Switch input
- E-CM: Upper tank Float Switch common
- DIN-3: Upper tank Float Switch input

Lower Tank (Well)	Lower Tank (Well) Float Switch Contact	Upper Tank	Upper Tank Float Switch Contact	Action
Water reached upper limit	Open	Water reached upper limit	Open	Pump turns OFF + Overflow Warning
		Water reached lower limit	Close	Pump turns ON + Overflow Warning
Water reached lower limit	Close	Water reached upper limit	Open	Pump turns OFF + Empty Warning
		Water reached lower limit	Close	

Table 4.5

4.2.7 Sensor mode 6:

Lower tank monitoring using Liquid sensor probes for pressure booster



- E-CM: Liquid sensor probe common (in Lower tank)
- DIN-1: Lower probe (in Lower tank)
- DIN-2: Upper probe (in Lower tank)
- E-CM: Pressure switch common
- DIN-4: Pressure switch input

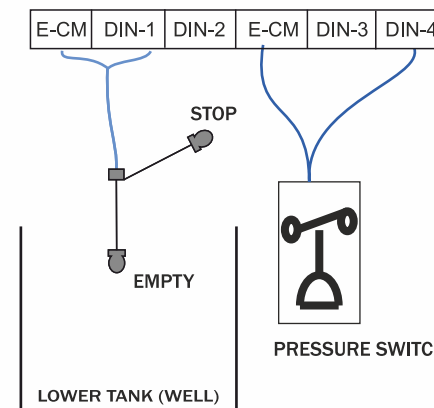
Lower Tank Water Level	Pressure Condition Condition	Pressure Switch Contact	Action
Water level above lower probe and below upper probe	Pressure reached set value	Open	Pump turns OFF
	Pressure less than set value	Close	Pump turns ON

Lower Tank Water Level	Pressure Condition	Pressure Switch Contact Condition	Action
Water level above upper probe	Pressure reached set value	Open	Pump turns OFF + Overflow warning
	Pressure less than set value	Close	Pump turns ON + Overflow warning
Water level lower than lower probe	Pressure reached set value	Open	Pump turns OFF + Empty Warning
	Pressure less than set value	Close	Pump turns OFF + Empty Warning

Table 4.6

4.2.8 Sensor mode 7:

Lower tank monitoring using Float switch for pressure booster

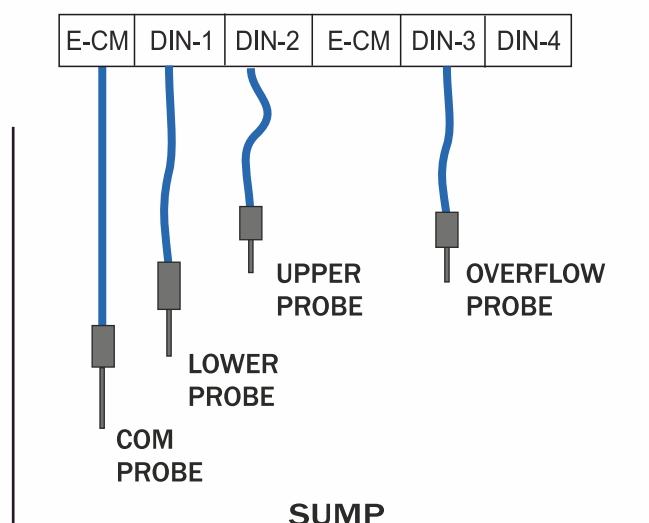


- E-CM: Float switch common
- DIN-1: Float switch input
- E-CM: Pressure switch common
- DIN-4: Pressure switch input

Lower Tank (Well)	Lower Tank (Well) Float Switch Contact	Pressure Condition	Pressure Switch Contact Condition	Action
Water reached upper limit	Open	Pressure reached set value	Open	Pump turns OFF + Overflow Warning
		Pressure less than set value	Close	Pump turns ON + Overflow Warning
Water reached lower limit	Close	Pressure reached set value	Open	Pump turns OFF + Empty Warning
		Pressure less than set value	Close	Pump turns OFF + Empty Warning

Table 4.7

4.2.9 Sensor mode 8: Using Liquid sensor probes in Sump for Overflow detection

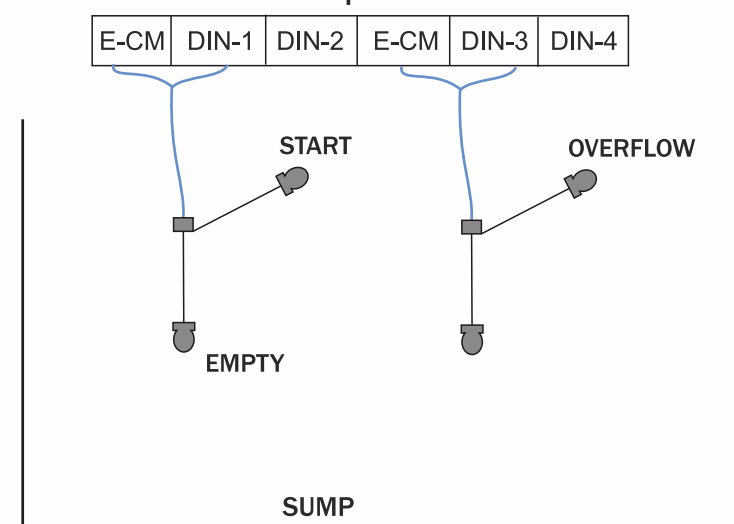


- E-CM: Common probe
- DIN-1: Lower probe
- DIN-2: Upper probe
- DIN-3: Overflow Probe

Water Level In The Sump	Status	Action
Below lower probe	Sump empty	Pump turns OFF + Empty Warning
Above lower probe and below upper probe	Sump filled half	Previous Status
Above upper probe and below over-flow probe	Sump full	Pump turns ON
Above over-flow probe	Sump over-flow	Pump turns ON and Overflow Warning

Table 4.8

4.2.10 Sensor mode 9: Using two Float switches in Sump for Overflow detection



- E-CM: Lower Float Switch common
- DIN-1: Lower Float Switch input
- COM: Upper Float Switch (over flow detection) common
- DIN-3: Upper Float Switch (over flow detection) input

Water Level in Sump	Lower Float Switch Contact	Upper (Over-Flow) Float Switch Contact	Status	Action
Below lower limit	Close	Close	Sump empty	Pump turns OFF + Empty Warning
Above lower limit	Open	Close	Sump filled half	Pump turns ON
Reached upper limit	Open	Open	Sump full	Pump turns ON + Overflow Warning

Table 4.9

Dry-contact terminal block details

Dry-contact Terminal Block	Model 1	Model 2	Model 3
TB Part number	MKDSN 1,5/ 3-5,08 or equivalent		
Tightening torque, min.	0.5 Nm		
Tightening torque max.	0.6 Nm		
Screw thread	M3		
Stripping length	6 mm		
Conductor cross section stranded min.	0.14 mm ²		
Conductor cross section AWG/kcmil min.	26		
Conductor cross section stranded max.	1.5 mm ²		
Conductor cross section AWG/kcmil max.	16		

Table 4.10

Mobile application installation and operation procedure is given on website.

Go directly from
<http://solar10.shaktisolararms.com>
or from Shakti official website.










BT Commands

Parameter Number (PP)	Parameter Name	Description	Example	Default value	Min value	Max value
00	Para_Res_0	Reserved / Not Used	Reserved / Not Used	0	0	0
01	Para_GPRS_START1	To Change start stop from GPRS			0	0
02	Para_Rated_Cur	To change the rated current based on Motor HP		Follow Current table	10	1
03	Para_Res_1	Reserved / Not Used	Reserved / Not Used	0	0	0
04	Para_OLMAX_Percent	To set the Max Over load Trip Percentage during Starting.		250	150	700
05	Para_AUTO_Select	To select Auto or Manual Mode	.SET 04=0250# for OL 250% of rated current .SET 05=0001# for Manual / .SET 05=0001# for Auto	0	0	1
06	Para_DRY_Power	To set the Dry Run Power (Below this power Trip for Dry Run)	.SET 06=0300# for 300W	350	100	9999
07	Para_DRY_Enable	To Enable / Disable Dry Run Trip	.SET 07=0001# for Enable dry run trip	1	0	1
08	Para_DRY_Restart_Minutes	Set the restart time after dry run trip in minutes	.SET 08=0015# for 15Minutes	15	0	600
09	Para_DRY_Restart_Enable	To enable/disable restart after dry run trip	.SET 09=0001# for Enable restart after dry run	1	0	1
10	Para_GPRS_START10	To Change start stop from GPRS		0	0	1
11	Para_OV_Trip_Level	To set the Overvoltage Trip Level	.SET 11=0255# for 255 Volts	255	200	300
12	Para_MAX_Start_Time	To set the Soft start time for three phase only	NA	NA	NA	NA
13	Para_Stop_Ramp_mS	To set the Soft Stop time for three phase only	NA	NA	NA	NA
14	Para_ONTIME_Min	To set the on time (minutes) in manual mode		0	0	600
15	Para_PUMP_Head_Mtr	To set the pump head in liters		30	1	1000
16	Para_OL_Multiplier	To change OL trip time	.SET 16=0001# for 30 Meters / .SET 16=0030# for 1 Minute	30	1	30
17	Para_Res_2	Reserved / Not Used	Reserved / Not Used	0	0	0
18	Para_UV_Trip_Level	To set the Undervoltage Trip Level	.SET 18=0175# for 175 Volts	175	100	210
19	Para_UNBAL_Cur_Perc	To set the current unbalanced percentage in three phase only	NA	30	10	50
20	Para_VOLT_Unbal_Perc	To set the Voltage unbalanced percentage in three phase only	NA	10	0	20
21	Para_MAX_Start_Stop_1H	Set the maximum allowed start and stop per hour	.SET 21=0015# for 15 Start and Stop	15	1	60
22	Para_DEFAULT_Set	Not used		0	0	1
23	Para_Log_interval	Set the energy and parameter log interval in minutes	.SET 23=0003# for 3 Minutes	3	1	1000
24	Para_OP_freq	To set the Operating Frequency	.SET 24=0000# for 50Hz / .SET 24=0001# for 60Hz	0	0	1
25	Para_Sensor_mode	To set Sensor Configuration as per manual	Please follow Manual	0	0	9
26	Para_Sensor_Polarity	To set Sensor Polarity as per manual	Please follow Manual	0	0	15
27	Para_GrFault_Current	Set reference current for ground leakage current (Increase this to remove ground fault)		10	1	100
28	Para_OL_Percent	To set the Over load Trip Percentage	.SET 28=0110# for OL 110% of rated current	110	30	250
29	Para_DWELL_Sec	To set the Countdown time after healthy grid	.SET 29=0030# for 30 Sec	30	5	655
30	Para_Flow_Calib	Set this to change the pump flow calculation parameter	.SET 30=1300# for MD Str 1300 factor	1300	400	2000
31	Para_Res_4	Reserved / Not Used	Reserved / Not Used			
32	Para_CAP_Volt					
33	Para_Res_6	Reserved / Not Used	Reserved / Not Used	0	0	0
34	Para_Res_7	Reserved / Not Used	Reserved / Not Used	0	0	0

Current Table for 1 Phase

Model Number	Motor Model	Frequency	Power	Default Value of Current
8	V4	50 Hz	0.5 to 1 HP	7.2 Amps
9		N		N
10	V4PR	60 Hz	0.5 HP	5.6 Amps
11	V4PR	60 Hz	3 HP	7.2 Amps
12	V3 & V4	50 Hz	1.5 / 2 HP	14.5 Amps
13	V4PR	50 / 60 Hz	0.5 HP	3.8 Amps
14	V4PR	50 / 60 Hz	0.75 HP	5.6 Amps
30	V4PR	50 / 60 Hz	1 HP	7.2 Amps
31	V4PR	50 / 60 Hz	1.5 HP	13.0 Amps
50	V4PR	50 / 60 Hz	2.0 HP	14.5 Amps
51	V4PR	50 / 60 Hz	3.0 HP	22.5 Amps
63	V4MCIP / SML	50 Hz	3.0 HP	22.5 Amps
52	V4PR	50 / 60 Hz	4 to 5.5 HP	33.0 Amps
53	V6PR	60 Hz	5 HP	30.0 Amps
54	V6SML	50 Hz	5.5 HP	36.0 Amps
55	V6SML	50 Hz	7.5 HP	46.0 Amps
56	V6PR	60 Hz	7.5 HP	46.0 Amps
57	V6SML	50 Hz	10 HP	61.0 Amps
58	V6SML	50 Hz	15 HP	85.0 Amps

Troubleshooting

Display	Description	Fault Clearing Method	Fault Reset
	Under Voltage Fault. Input voltage Low.	Fault automatically clears when input voltage become healthy. If fault not cleared contact customer care.	Automatic
	Over Voltage Fault. Input voltage High.	Fault automatically clears when input voltage become healthy. If fault not cleared contact customer care.	Automatic
	Over Current Fault. Fault may occur due to pump jam, motor problem or use of oversized pump set.	Press STOP button to reset the fault. If fault not cleared contact customer care.	Manual
	Over Load Fault. Fault may occur due to pump jam, motor problem or use of oversized pump set.	Press STOP button to reset the fault. If fault not cleared contact customer care.	Manual
	Frequency Error. Input supply frequency out of range.	Select input frequency 50 Hz or 60 Hz. Fault automatically clears when input supply become healthy. If fault not cleared contact customer care.	Automatic
	Model ID Fault. Module rating mismatch error.	Module configuration is wrongly set.	Contact customer care.
	Dry run fault	Wait for 30 min to 1 hour for the water to recharge in case of pump system. If fault not cleared contact customer care.	Automatic Time depends on set value.

Display	Description	Fault Clearing Method	Fault Reset
SEr	Water level Sensor error. Water level sensors are wrongly configured.	Configure the water level sensors as per recommendation and select respective mode or run in the manual mode. If fault not cleared contact customer care.	Automatic
OTPI	Device Over Temperature Fault. Over temperature may occur due to frequent restart or high ambient temperature.	Fault automatically clears when device temperature reaches healthy level. If fault not cleared contact customer care.	Automatic
OTP	Over Temperature inside module. Over temperature may occur due to frequent restart or high ambient temperature	Fault automatically clears when device temperature reaches healthy level. If fault not cleared contact customer care.	Automatic
EFLT	Earth leakage fault Earth leakage due to faulty output cable or motor.	Press STOP button to reset the fault. If fault not cleared contact customer care.	Manual
ETy	Empty warning	Automatically resets when water level goes above empty level. Check the configuration of sensors.	Automatic
OVF	Overflow warning	Automatically resets when water level goes below overflow level. Check the configuration of sensors.	Automatic
COM	Communication Error This is communication error warning message.	Clears when communication is established. If fault not cleared contact customer care.	Automatic

WARRANTY CERTIFICATE

Dear Customer. Congratulation. for purchasing our product.

Pump and Motor are warranted against defects in workmanship and material under normal use, service & specified duty conditions. We provide one time warranty service for twelve months from the date of purchase by the first user. Shakti Pumps (I) Ltd warrants this product to be free from damage/ defects in material and workmanship under normal use and service for Twelve Months from the date of purchase by the first user. The user shall produce valid and original copy of invoice for availing warranty. The user shall carry defective pump set to nearest authorized service center .

This warranty does not cover any loss or damage/ defect of any nature resulting from wrong product selection/ improper installation or installation by unauthorized/ untrained person/ sandy condition/ dry running and improper use of the pump sets. The warranty also does not cover consequential losses/ damages arising due to failure of pump/ motor. No warranty will be provided on mechanical seal, rubber parts, fasteners, cables in pump. motor / pump sets. Our obligation is limited t to recycling or repairing or replacing product/ parts ex • factory. Equipment for repairs should be returned free of cost to us. The forgoing is subject to the provision that the user does not open the unit and make any change or repair without prior approval of authorized service center during the warranty period. This warranty excludes every condition whether statutory or otherwise, whatsoever not herein expressly set out.



WARRANTY CARD

Customer to fill following details

Name :
 Address :
 City/Village :
 District :
 State :
 Country :
 Pin Code :
 Mobile no. :
 Email id :

Information on Device:

Model no :
 Serial no. :
 Invoice no. :
 Commissioning date :
 Fault date and time :
 Message related to fault on display :
 Brief fault description and photo of display :
 Sign :
 Date :
 Place :

Installer to fill following details

Modules Used :
 Modules per string :
 Number of strings :
 Dealer license Number :
 Company :
 City/Village :
 State :
 Country :
 Pin Code :
 Mobile no. :
 Email id :
 Sign :
 Date :
 Place: :

INSTALLATION & OPERATING INSTRUCTIONS

BOOK-POST

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Stamp

