BCH
ELECTRIC
LIMITED

BCH MC+

Quick Reference Guide

(BCH MOBILE CONTROLLER)

BCH Electric Ltd

Disposal

Upon decommissioning, our products and their components must be disposed of through accredited recycling organizations or delivered to authorized collection facilities. All disposal activities must strictly adhere to the applicable local laws, regulations, and environmental standards of the country where the disposal takes place.

Please note that our products and batteries must not be discarded with household waste. Battery disposal must comply with all relevant national and international regulations.

Improper disposal may result in legal penalties under applicable legislation. By ensuring proper disposal, you contribute to the conservation of valuable resources and the protection of human health and the environment.

Introduction

The BCH MOBILE Pump Controller leverages GSM mobile technology to provide remote control and monitoring of motors or pumps. With the BCH MOBILE Controller system, users can operate the motor or pump through their mobile phone via android app, voice call, missed call, or SMS. Additionally, the system sends SMS notifications to keep users informed about the operational status, fault conditions, and power supply status of the motor or pump.

Key Features of the BCH MOBILE Pump Controller

Remote Motor/Pump Operation:

Start or stop the motor/pump remotely using a mobile phone. The controller can be operated through SMS, missed calls, or an Interactive Voice Response System (IVRS), offering convenient and flexible control from virtually any location.

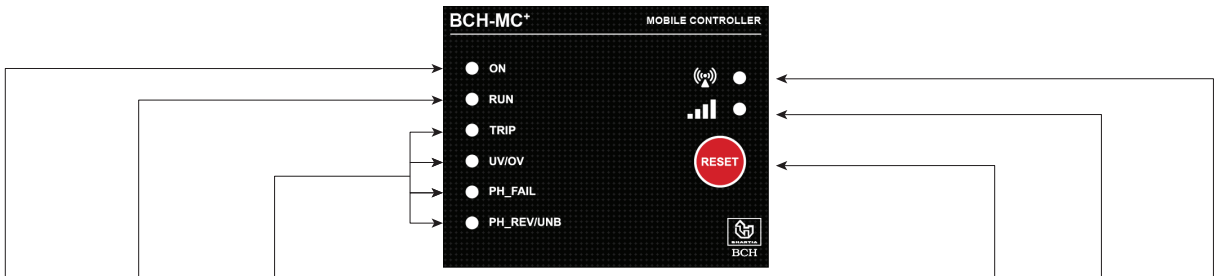
- **Multi-User Accessibility:**
  The system can be accessed by one designated Master User and up to four additional Monitoring Users. This allows multiple stakeholders to monitor and manage the device as needed.
- **Versatile Compatibility:**
  Compatible with Three-Phase power supplies, as well as Direct-On-Line (DOL) starters and Star Delta, ensuring broad applicability across various installation types.
- **Comprehensive Electrical Protection:**
  Built-in protection features guard against:
  - Under-voltage and over-voltage
  - Phase reversal and phase failure
  - Voltage unbalance

  These protections help safeguard the motor/pump and enhance system reliability.
- **Fault Management:**
  Faults can be reset in two ways:
  - Automatically, based on system recovery logic
  - Manually, by pressing the RESET button on the controller
- **Real-Time Alerts:**
  - The system sends SMS alerts for critical events, including:
  - Power ON/OFF status
  - Fault occurrences and their subsequent restoration
  - These alerts keep users informed and enable prompt action if needed.
- **Dual Operation Modes – AUTO and MANUAL:**
  - **In AUTO Mode**, if a power failure occurs while the motor/pump is running, the BCH MOBILE CONTROLLER will automatically restart the motor/pump once power is restored.
  - **MANUAL Mode** allows users to operate the motor/pump directly without automation, giving full control when needed.
- **Advanced Timing Functions:**
  - **Timer Mode:** Automatically starts and stops the motor/pump based on user-defined timing settings.
  - **Retentive Timer Mode:** Retains the elapsed time during a power failure and resumes operation accordingly once power returns.
  - **Daily Timer Mode:** Enables scheduling of daily operations. This feature functions only when network time is available to ensure precise timing.

Additional Advantages of the BCH MOBILE Pump Controller

- **Remote Accessibility:**
  Operate and monitor your motor or pump from virtually anywhere using a mobile phone. Whether you're in the field or away from the site, full control is just a call or text away.
- **User-Friendly Operation:**
  Designed with simplicity in mind, users can easily check the live operational status of the motor/pump by sending a simple SMS command. The system responds promptly with up-to-date information.
- **Real-Time Notifications:**
  Receive instant SMS alerts about the motor/pump's running status and any changes or events, enabling proactive monitoring and response.
- **Compact and Convenient Installation:**
  The controller is designed for easy integration and can be seamlessly mounted inside an existing starter panel, reducing installation time and effort.
- **Self-Powered Operation:**
  The device operates without the need for an external auxiliary power source, making it more efficient and easier to install in various environments.

Front Interface of the Relay



RESET KEY:
Short Press: To perform the Fault Reset of BCH MC+
Long Press: To perform the Master configuration of BCH MC+

LED:
Steady Glow: Network Connected & strength >70%
Blinks: Network connected & strength >30% & <70%
OFF: Network not connected or strength <30%

LED:
ON: When there is a communication with master/user
OFF: When there is no communication

TRIP LED:
When any specific fault occurs, the LED turns on; otherwise, it stays off.

UV/OV LED:
Steady ON: When under voltage fault persist.
Blink: When over voltage fault persist.
OFF: When there is no under/over voltage fault.

PH_fail LED:
Steady ON: When phase loss fault persist.
OFF: When there is no phase loss fault.

Phase Rev/Unb:
Steady ON: When Phase Rev fault persist.
Blink: When voltage unbalance fault persis.
OFF:When there is no Phase Rev/Unb fault persist.

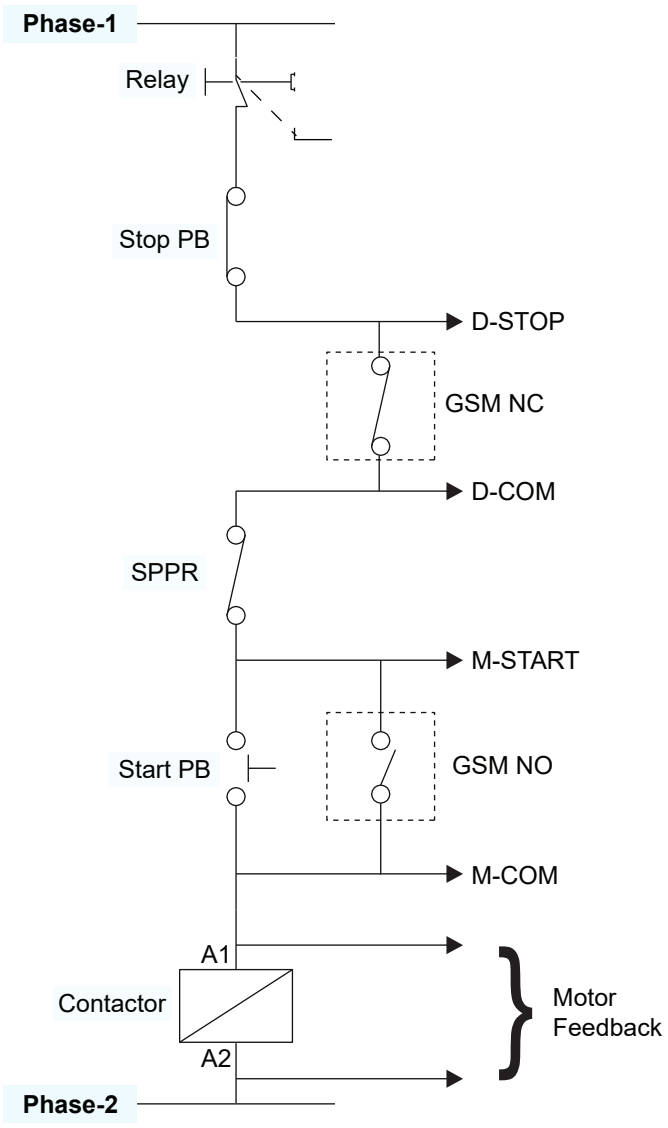
PUMP ON LED
Steady Glow : When Motor/Pump is in ON state
OFF : When Motor/Pump is in OFF state

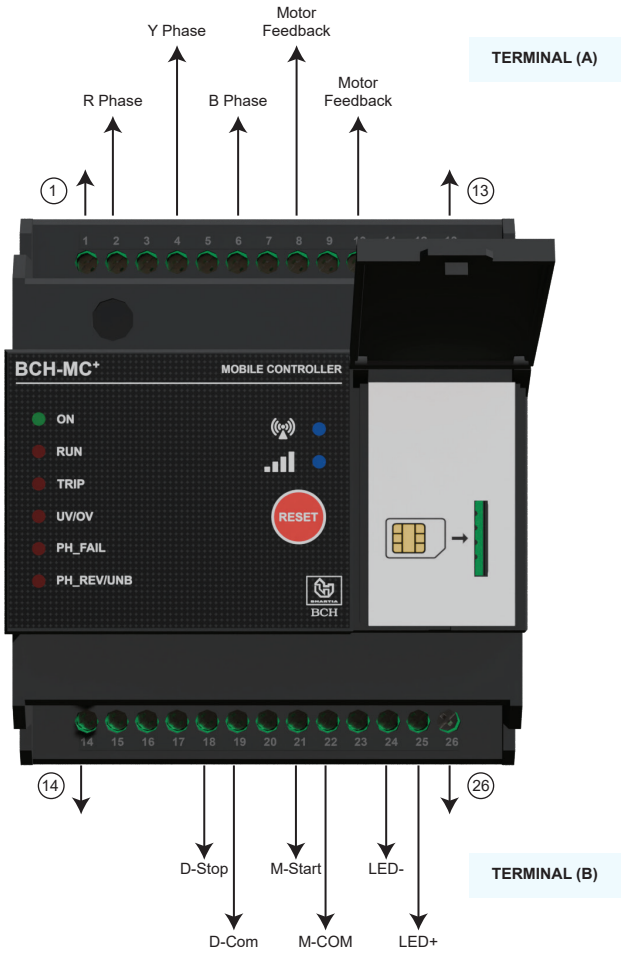
POWER ON LED
Steady Glow : When BCH MC+ works on Mains power supply

Technical Data

Supply Voltage	180 - 500V AC
Rated Voltage (Vnom)	415V AC
Supply Frequency	47-53 Hz
No. of DO's Contact (Rating)	Two contacts - 8A @ 250VAC/0.5A @ 415VAC
	NO - COM (START)
	NC - COM (STOP)
Feedback Digital Input	To check contactor status
External LED output terminals	To connect Ext. LED LAMP
(LED +, LED -)	Rating : 12V DC, 10mA (Max.)
Initialization Time	1.5 minutes (Network Registration and bootup time)
Backup supply time	<2 minutes in absence of voltage
GSM Modem	2G-GSM Modem, 2G/3G/4G network compatible except JIO SIM
SIM Specification	Nano type SIM
LED's - (8) Nos.	Device POWER ON LED
	MOTOR ON Status LED
	GSM NETWORK Status LED
	COMM Status LED
	FAULT indication LED
	FAULT indication LED UV/OV
	Indication LED PH Fail
	Indication PH_rev/unb
Mounting	DIN Rail mountable
Configurable users for SMS	1 + 4 (1 Master + 4 Users)
Protection against Dust & Water	IP-20
EMI/EMC	As per IEC-61000
Storage Temperature Range	-10°C to +70°C
Operating Temperature Range	0°C to +60°C

Wiring Connection Diagram





EXTERNAL LED:-

LED+ Blink: There are two conditions of Blink State, One is "During ON DELAY Time" And second is when Pump is in Faulty State. In both case Pump Can't start.

LED+ Steady ON: Pump is in Healthy State & Ready to Operate.

NOTE :

- Wire cross section : 2.5 mm^2
- Torque : 0.4Nm - 0.6Nm
- Screw Thread : M3

TERMINAL DETAILS Terminal A	
Description	**Terminal No.**
-	1
R PHASE	2
-	3
Y PHASE	4
-	5
B PHASE	6
-	7
MOTOR FEEDBACK	8
-	9
MOTOR FEEDBACK	10
-	11
-	12
-	13

TERMINAL DETAILS Terminal B	
Description	**Terminal No.**
-	14
-	15
-	16
-	17
D-STOP	18
D-COM	19
-	20
M-START	21
M-COM	22
-	23
LED-	24
LED+	25
-	26

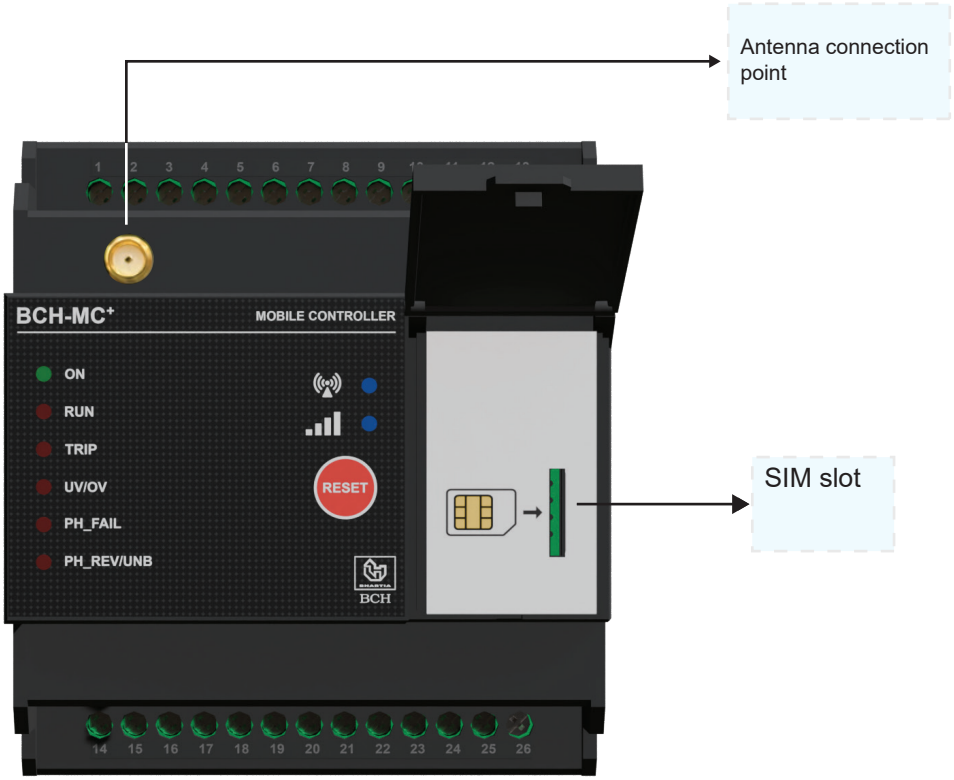
Installation Procedure of BCH Mobile Controller

Follow these steps for proper installation of the BCH Mobile Controller:

1. **Mounting :**
   Secure the controller inside the starter panel using screws, as per the connection diagram.

2. **Electrical Connection:**
   Connect the power supply, motor relays and all necessary input/output terminals as per the wiring diagram.

3. **SIM Card Installation:**
   - Insert a standard NANO SIM card into the SIM slot.
   - Ensure the SIM card is active and has sufficient balance for SMS and calls.



4. **Antenna Connection:**
   Connect the GSM antenna securely to ensure strong signal reception.

5. **Power ON the device:**
   Turn on the main supply. The LEDs on the front panel will indicate the system status.

5. **Download mobile app:**
   Scan the QR code to download mobile app.

MASTER MOBILE NUM. REGISTRATION

6. **via SMS**
   Keeping the RESET button pressed, send SMS MASTRCONF# to the no. which is inserted in sim card slot. Wait for SMS to receive.

OR

via MISS CALL
Press the RESET button and call the no. which is inserted in sim card slot. Once registered your call will automatically get disconnected. Wait for SMS to receive.

7. **Control via SMS**
   To start the Motor/Pump, send SMS : 1#
   To stop the Motor/Pump, send SMS : 2#

OR

Control via MISS CALL
To start the Motor/Pump, Give TWO Rings
To stop the Motor/Pump, Give FOUR Rings

8. To get the status of the Motor/Pump, send SMS 10#, user will get the Motor/Pump Start/ Stop Status, Power Status, Signal strength etc.

NOTE :

Master can register up-to 04 users.

Please ensure that IVRS is disable before MASTER registration by Miss call.

GENERAL SMS COMMANDS :

S.No.	Commands	Functions	Access
1	MASTRCONF#	To configure master user. RESET button needs to be pressed simultaneously	New Master Registration
2	1#	To start Motor/Pump	All users
3	2#	To stop Motor/Pump	
4	4#X	To start Motor/Pump with scheduler To start Motor/Pump for particular X duration X=1 to 48 where 1=30 min. 48=24 Hours e.g 4#2 Scheduler works in retentive mode (in Auto mode)	
	5#0	To set manual mode. During Running of Motor/Pump, If MAINs fail, it will not restart the Motor/Pump when power resumes	
5	5#1	To set AUTO mode. During Running of Motor/Pump,if MAINs fail, it will restart the Motor/Pump when power resumes.	
6	8#X#	ON TIME DELAY : Settable from 30 sec up-to 15 min X=0 to 15 where X=0,1,2,3,4,5,10,15 X=0 means 0.5min/30sec, 15 means 15min. e.g 8#1# (Steps 0.5, 1, 2, 3, 4, 5, 10, 15 min)	Only Master User
7	9#0	To disable IVRS and enable Missed Call Mode	
	9#1	To enable IVRS and disable Missed Call Mode	
8	20#	To get the set users	
	15#<mobile no>#	To set User1 for Mobile Controller	
9	16#<mobile no>#	To set User2 for Mobile Controller	
	17#<mobile no>#	To set User3 for Mobile Controller	
	18#<mobile no>#	To set User4 for Mobile Controller	
	25#1234#	To reset all users	
	25#1#	To reset User1	
10	25#2#	To reset User2	
	25#3#	To reset User3	
	25#4#	To reset User4	
11	10#	To get the information of :	
		Power state	
		Pump state	
		IVRS state	All Users
		Signal strength	
		Mode (Auto/Manual)	
		Daily Timer	
12	23#*199##	To get the balance information e.g. 23#*199## where *199# is the USSD code for checking balance information	
13	24#	To get the time set on the device from the network clock	
14	26#	To get info. of IMEI Number & F/W version	
15	30#HHMM#MIN#	To set a schedule Daily Timer Where HHMM : Start Hour & Minute MIN : Motor/Pump run duration settable from 1 to 720 min.	Only master user
16	30#0#	To disable a schedule daily timer	

- **Master Registration Procedure:**
  Ensure you follow the proper installation steps before registering a new Master.
- **Missed Call Master Registration:**
  If you are registering a Master via missed call, please ensure that IVRS is disabled during the process.
- **Automatic User Removal:**
  Once a new Master is successfully registered, the previous Master and all associated users will be automatically removed.
- **Backup Power Supply:**
  The internal backup power supply supports the device for approximately 1 to 2 minutes after a mains power failure. The device will function on backup power only if it was powered via mains for at least 1 hour before the failure.
- **Fault Condition Behavior:**
  In the event of a fault, BCH MOBILE CONTROLLER prevents the motor or pump from starting. An SMS notification is sent to all users to inform them of the fault.
- **Factory Default Settings:**
  - IVRS: Disabled
  - Mode: Manual
  - On Delay: 30 seconds
  - Daily Timer: Disabled
- **IVRS Mode Operation:**
  In IVRS mode, a pre-recorded voice message guides the user in operating the motor or pump.
- **SIM Card Change Alert:**
  If the inserted SIM card is changed, the device sends an alert SMS to the current Master and locks itself. To unlock and resume normal operation, the Master must send an SMS in the format:
  ALLOW#XXXX#
  where XXXX is the last 4 digits of the current Master's mobile number. During the locked state, the Master can still operate the device using SMS commands.
- **Time Synchronization:**
  The device time is synchronized with the Network Provider's time and will function correctly only when network connectivity is available.

SMS / EVENT RELATED INFORMATION		
1	Power Resume message	To all users when Mains supply to BCH MC+ resumes
2	Power Resume / Pump ON message	To all users when Motor/Pump starts automatically on power resumption in auto mode
3	Power Off	To all users
4	Manual Start/Stop	To all users
5	Fault occurrence/Recovery	To all users

Fault Description

Phase loss:

A Phase loss occurs when one of the three supply phases is missing or disconnected. This condition is also referred to as "single-phasing" or "phase-fail". It can lead to unbalanced current and potential damage to the motor or pump.

System response:

- The **BCH Mobile Controller** identifies the absence of a phase.
- It registers a Phase Fail fault.
- The system automatically stops the motor/pump to prevent damage.
- An alert is sent to all registered users.

Under voltage:

This fault arises when the phase to phase voltage drops below the defined under voltage trip threshold. Prolonged low voltage can cause overheating of the motor.

System Response:

- **BCH Mobile Controller** continuously monitors voltage levels.
- If voltage falls below the preset value, it flags an under Voltage condition.
- The motor/pump is shut down until voltage returns to a safe level.

Over Voltage:

Over voltage occurs when the line voltage exceeds the configured Over Voltage rip threshold. This condition can damage electrical components and reduce equipment lifespan.

System response:

- The **BCH Mobile Controller** detects and logs the event.
- The controller stops the motor/pump if the overvoltage persists.
- Operation resumes automatically once the voltage drops below the reset threshold.

Phase Unbalance

Phase unbalance indicates significant deviation between phase-to-phase voltages .It can lead to uneven motor loading, overheating, and premature failure.

System response:

- If the difference between the phases exceeds the Phase Voltage Unbalance Trip setting **BCH Mobile Controller** activates the Phase Unbalance Fault.
- The motor/pump operation is halted until balance is restored.

Phase Reversal:

In a three-phase system, if the correct phase sequence is altered, the motor may rotate in the wrong direction. This is called phase reversal.

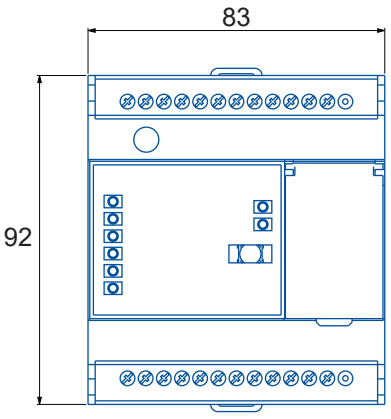
System response:

- The **BCH Mobile Controller** identifies the incorrect phase.
- It registers a Phase Reversal fault.
- The pump is prevented from starting or immediately stops to prevent damage.
- An alert is sent to all registered users.

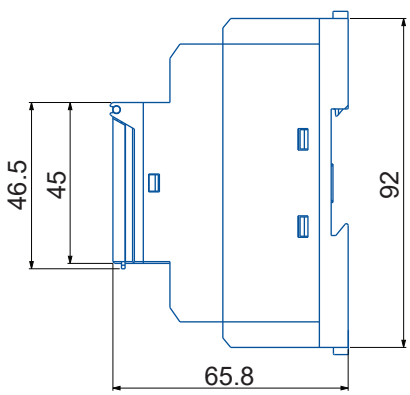
Fault Specifications		
Fault Type	**3 Phase**	
Model	N	Z
	380V - 415V AC (50Hz)	240V - 400V AC (50Hz)
Under Voltage Trip	<=235V AC (±8V)	<=175V AC (±8V)
Under Voltage Reset	>=250V AC (±8V)	<=195V AC (±8V)
Over Voltage Trip	>=490V AC (±8V)	>=490V AC (±8V)
Over Voltage Reset	<=475V AC (±8V)	<=475V AC (±8V)
Phase Voltage unbalance Trip	50V ±10V	
Phase Voltage unbalance Reset	40V ±10V	

Dimension Details

Front View



Side View

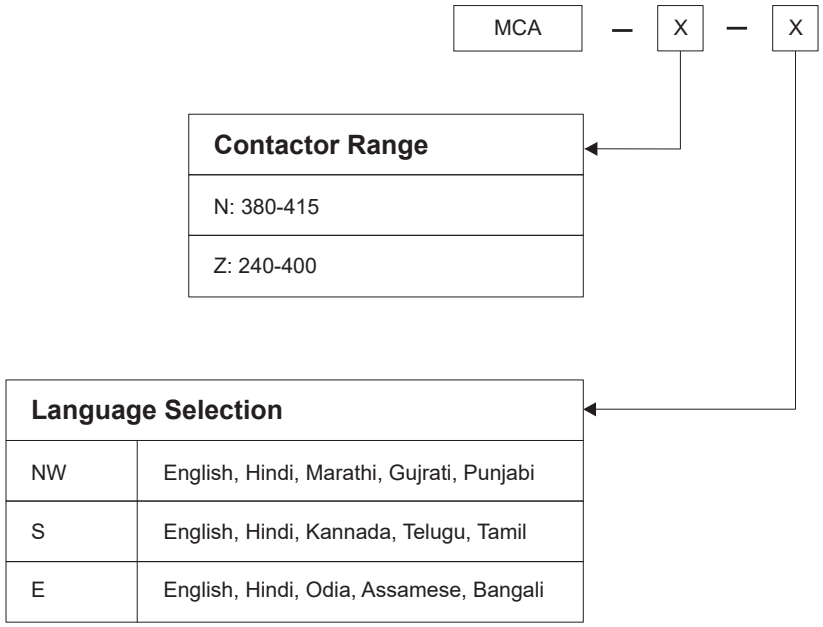


All the dim. are in mm (Gen. Tol : ± 1.0 mm)
Mounting : 35 mm DIN Rail

Trouble Shooting Points

Problem	Cause of Problem	Remedy
Motor/Pump Star / Stop not working	Wrong connection / Fault condition	Check the wiring scheme as shown on page 05/06.
CALL/SMS not working	▪ Network Signals not available ▪ Network LED: OFF state	▪ Check GSM Antenna, it must be connected in open sky area. It should not be put inside any metal cage.
	▪ Insufficient balance in SIM	▪ Check your SIM, sufficient balance must be present to do communication.
	▪ SIM not registered with service provider	▪ Check your SIM it must be 2G compatible as well as it must be registered with service provider.

Ordering Information



Product Revision History

S.No.	Rev.No.	Details	Date
01	02	Product Release Date	23-02-2026

Issue Date: 02.02.2026, Rev. No: 01, Rev. Date:- 03.02.2026

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