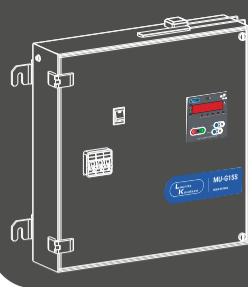


3Ø FASD SMART CONTROLLER

15-25HP SUBMERSIBLE PUMP APPLICATION
 MU-G15S, MU-G15HS, MU-G20S, MU-G20HS, MU-G25S



INSTRUCTION MANUAL
Lauritz Knudsen
 Electrical & Automation

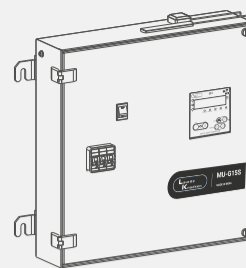


HAZARD OF ELECTRIC SHOCK OR ARC FLASH
 Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E, CSA Z462, NOM-029-STPS, or local equivalent. Turn off power supplying this equipment before working on or inside the equipment. User must use a properly rated voltage sensing device to confirm power is off. Failure to follow these instructions will result in death or serious injury.

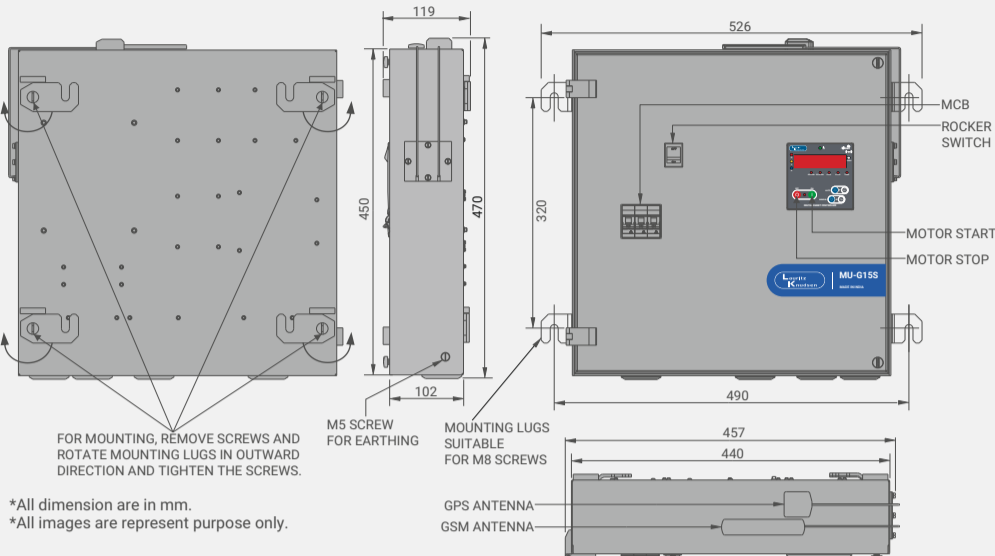
HAZARD OF ELECTRIC SHOCK OR ARC FLASH
 Use only specified wiring cross-section with the equipment and comply with the specified wiring requirements. Tighten the connections to the specified torque values. The opening of the branch-circuit protective device may be an indication that a fault current has been interrupted. To reduce the risk of fire or electric shock, current-carrying parts and the other components of the product should be examined and replaced if damaged. Failure to follow these instructions can result in death, serious injury or equipment damage.

UNPACKING

- 3Ø FASD SMART CONTROLLER
- INSTRUCTION MANUAL

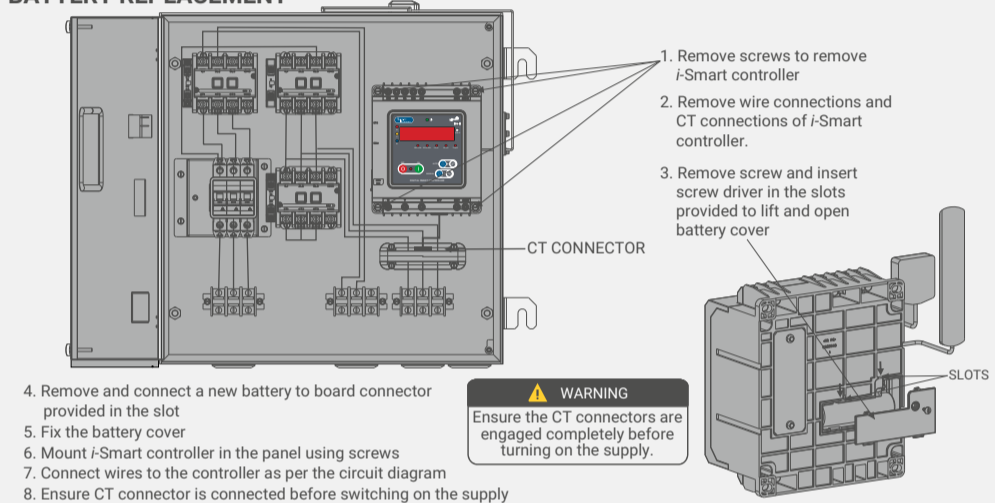


OVERALL DIMENSIONS, PRODUCT MOUNTING AND FEATURES



*All dimension are in mm.
 *All images are represent purpose only.

BATTERY REPLACEMENT



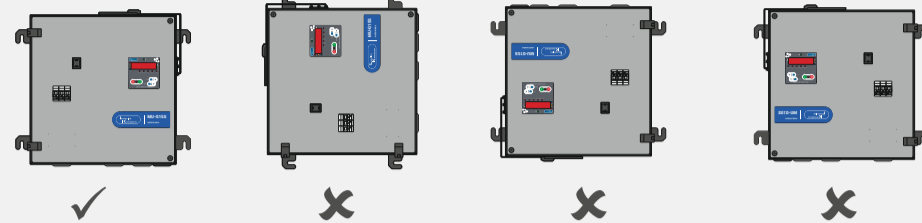
TERMINATION CAPACITY

Table 1.0

| Type | Lug Termination - Supply | | | Lug Termination - Motor | | |
|------------------|--------------------------|-----------------|-------------------|-------------------------|-----------------|-------------------|
| | Cross Section | Max. Palm Width | Tightening Torque | Cross Section | Max. Palm Width | Tightening Torque |
| MU-G15S/15HS/20S | 16 Sq. mm | 12 mm | 1.3 Nm | 16 Sq. mm | 12 mm | 1.3 Nm |
| MU-G20HS/25S | 35 Sq. mm | 20 mm | 3.8 Nm | 16 Sq. mm | 12 mm | 1.3 Nm |

- Ensure proper Insulation of Supply and Motor Cables with lugs during Installation
- In Bypass mode, all the protections will be bypassed and faults will not be detected. (For emergency use only, at the user's discretion.)
- The unit to be unmounted incase of service, repair or replacement of any spares.

PRODUCT MOUNTING



USER INTERFACE

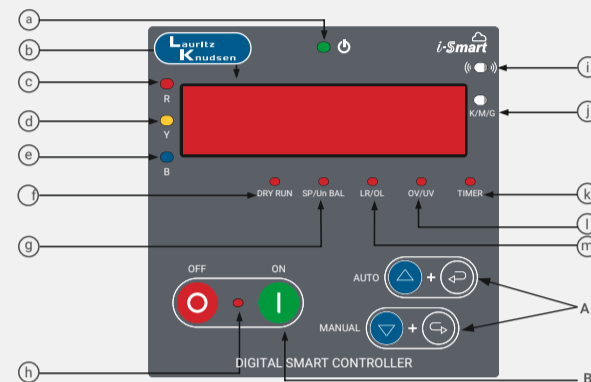


Table 2.0

| LED No | LED Name | LED Functionality |
|--------|----------|---|
| a | Power | ON: Healthy supply Blink: Phase Reversal Fault |
| b | - | Seven segment display 888 888 |
| c | R | ON: Presence of R phase voltage and metering |
| d | Y | ON: Presence of Y phase voltage and metering |
| e | B | ON: Presence of B phase voltage and metering |
| f | Dry Run | ON: Dry run Fault Blink: Rated current setting |
| g | SP/Unbal | ON: Single Phasing Fault Blink: Unbalance Fault |
| h | - | ON: Pump ON OFF: Pump OFF |
| i | - | Network LED. Red Flicker: No SIM Red Blink: SIM present but no network Green Blink: Registered on network |
| j | K | Power / Energy indication K:ON - Kilo |
| k | M | Power / Energy indication M:ON - Mega G:K and M LED ON |
| l | Timer | Blink: ON time delay timer running ON: S1 is not connected properly or Rocker Switch OFF |
| m | OV/UV | ON: Over Voltage Fault Blink: Under Voltage Fault |
| n | OL/LR | ON: Locked Rotor Fault Blink: Overload Fault |

A : Navigation Key details

- Down Key** is used to scroll down the parameter and to decrement parameter setting value
- Up Key** is used to scroll up the parameter and to increment parameter setting value
- Enter key** is used to enter into setting menu and to save the parameter setting values.
- Escape key** is used to escape from menu and return to the default screen.
- Auto Mode** (Up + Enter)
- Manual Mode** (Down + Enter)

B : Push Buttons details

- PUMP OFF** (Circle with diagonal line)
- PUMP ON** (Vertical bar)

INSTALLATION PROCEDURE

Before configuration keep both the Antennas outside the panel and GPS antenna should be always placed in "Open Sky" condition with top facing towards sky. Ensure Rocker Switch is ON.
SIM Card Specification: Mini SIM Card (2FF) - 2G/4G. Insert the SIM Card in SIM Card slot as shown on the i-Smart.
 On Power ON, if system is not previously configured and healthy supply voltage is present then display shows "Ir Aut" (Ir Aut), to set rated current of pump. If fault is present then display shows fault message, e.g. (FLC Phr).

Phase Reversal Fault: (Power LED Blinking)
 If the unit shows Phase reversal fault, then interchange any two phases of the incoming Power Supply to Starter/controller. For any other fault, please wait till system recovers to steady state / healthy supply voltage. When unit switches to "Ir Aut" screen, follow below steps:

- Step 1: To set Rated current or Full Load current (FLC)**
- At "Ir Aut" (Ir Aut) screen press ENTER (Enter) key.
 - When "Ir rSt" (Ir rSt) and "Dry Run" LED starts blinking, Turn ON the Pump by pressing ON (ON) key on display after ODT is elapsed.
 - Unit will automatically set the current flowing through the pump as a FLC of pump provided the current is within relay range.

Refer Table 3.0 for details of set relay and respective FLC range:
 Once rated current is set, display moves to Master Registration screen.
Note: Rated current will be set only in Delta configuration

Table 3.0

| Sr no | Relay Set | FLC range |
|-------|-----------|-----------|
| 1 | 75 | 30-75 A |
| 2 | 90 | 45-90 A |

- Step 2: To Register Master number**
- At "mAS rSt" (mAS rSt) screen press ENTER (Enter) key.
 - When "mAS rSt" (mAS rSt) starts blinking, call on the inserted SIM card number.
 - Unit will cut the call and set the number as master number.
 - It shows last 3-digits on display of registered master number and send SMS to Master.
 - Unit will set the GPS location of the installed pump and send SMS to registered master number as GPS Fixed with Google Map link of the location.
- Note:** If there is error in setting GPS location, unit will send SMS as GPS not Fix ed. Once Master number is set, display will move to periodic screen or metering screen.

STARTER MODE

- Auto Mode:** To set AUTO mode, Press UP (Up) & ESC (Esc) keys together or send SMS L240<space>1K or set through display navigation. In Auto mode, when ON time delay elapsed unit turns ON Pump automatically. No manual command is required. Note: But if Pump is turned OFF forcefully by SMS, IVRS or OFF button then unit will not turn ON automatically till next ON command or Power Reset.
- Manual Mode:** To set MANUAL mode, Press DOWN (Down) & ENTER (Enter) keys together or send SMS L240<space>0K or set through display navigation. In Manual Mode user has to turn ON pump manually after ON time delay (through ON push button (ON)), SMS or IVRS).
- Bypass Mode:** To set BYPASS mode, send SMS L240<space>2K or set through display navigation. In Bypass Mode, after ON time delay user has to turn ON pump manually. Unit will not trip in any fault; it bypasses the protection feature. Hence no protection is provided against any fault. User will get indication of fault through Display and SMS only.

DISPLAY NAVIGATION

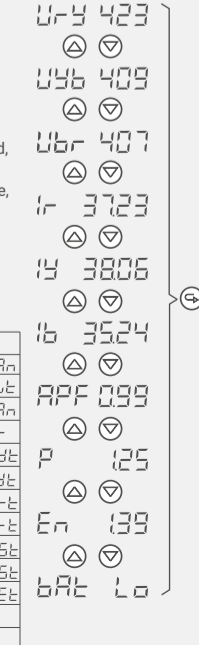
There are total 6 keys given on the front panel of Digital Smart Controller- UP (Up), DOWN (Down), ENTER (Enter), ESC (Esc), ON (ON) and OFF (OFF) ref fig 1.0
 User can perform PUMP ON and PUMP OFF operation using ON and OFF push buttons.
 UP, DOWN, ENTER and ESC push buttons are used for navigation and changing mode.
 Digital Smart Controller has four types of navigation screens:
Periodic Auto Scroll Display: This is the default display mode. User can only see the Metering parameters. Time out for each parameter is 3 Sec.
View Metering Parameters: User can go to this mode by pressing UP (Up)/DOWN (Down) key. In this mode, user can see metering parameters 1 by 1 pressing UP and DOWN key. ESC key is used to come out of this mode or if no key is pressed, then timeout is 1 min.
View Setting Parameters: User can go to this mode by pressing ENTER (Enter) key. In this mode, user can only see the set value of parameters but cannot change it except for GSM signal strength. User can check signal strength by pressing ENTER key at S19(S19). ESC key is used to come out of this mode.
Set Parameter: This mode is Password protected, if password is valid user can change and save the settings. User can go to this mode by entering Password at "SYS SET" parameter. Default Password "111".

| Sr.No | Periodic/View Parameter | View Set Parameter | Set Parameter |
|-------|-------------------------|--------------------|-----------------------|
| 1 | Voltage RY | U _{RY} | Mode |
| 2 | Voltage YB | U _{YB} | System Type |
| 3 | Voltage BR | U _{BR} | Rated voltage |
| 4 | Current R | I _R | Rated Current |
| 5 | Current Y | I _Y | Relay Range |
| 6 | Current B | I _B | **Language Set |
| 7 | Power Factor | PF | Dry Run Pickup |
| 8 | Power | P | ON Delay Time |
| 9 | Energy | E _n | Star-Delta Delay time |
| 10 | *Battery Low | bALt Lo | Dry Run Reset time |
| 11 | | | Lock Rotor Trip Time |
| 12 | | | GSM Signal |
| 13 | | | System Setting |

* : If battery voltage is LOW, ** : Language as per Region (S-South, E-East, n-North)

VIEW PARAMETERS

SCROLLING PARAMETERS



SET PARAMETERS

