SALES 2002 (Pty) Ltd

ProLoc

Protection & Control

ProLoc 2
MMI-420

User Manual

ProLoc 2 MMI-420
Version 01A - 02
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Content

Page
1. ABSTRACT 4
2. SPECIFICATIONS 5
2.1 Technical Specifications of ProLoc 2 MMI-420 5
2.2 Button Specification 6
2.3 Structure Of Actual Menu 7
2.3.1 Structure Of Actual Main Menu 7
2.3.2 Structure Of Actual Menu 8
2.3.3 Structure Of Actual View Settings Menu 8
2.3.4 Structure Of View Protection Menu 9
2.3.5 Structure Of Protection Current Menu 9
2.3.6 Structure Of Protection Voltage Menu 10
2.3.7 Structure Of Protection Frequency Menu 10
2.3.8 Structure Of Protection Earth Leakage Menu 10
2.3.9 Structure Of Protection Starts Per Hour Menu 11
2.3.10 Structure Of Protection Enable Features Menu 12
2.3.11 Structure Of View Logic Menu 13
2.3.12 Structure Of Logic Functions Menu 13
2.3.13 Structure Of Timers Menu 14
2.3.14 Structure Of 24 Hour Timer Menu 14
2.3.15 Structure Of Comparators Menu 14
2.3.16 Structure Of Latch Menu 15
2.3.17 Structure Of Field Inputs Menu 15
2.3.18 Structure Of Relay Outputs Menu 15
2.3.19 Structure Of View Starter Menu 16
2.3.20 Structure Of Starter Setting Menu 16
2.3.21 Structure Of Emergency And External Stop Menu 17
2.3.22 Structure Of Communication Menu 17
2.3.23 Structure Of Labels Menu 18
2.3.24 Structure Of Faults Menu 18
2.3.25 Structure Of Events Menu 19
2.4 Structure Of Presets Menu 20
2.4.1 Structure Of Presets Menu 20
2.4.2 Structure Of Slot Description Menu 21
2.4.3 Structure Of MMI Settings Menu 21
2.5 Keyboard Edit Screen 22
2.6 LED Indication 23
2.7 Relays Fail Safe 24
3. DEFINITIONS AND TERMINOLOGY 25
4. FUNCTIONAL DESCRIPTION 26
5. OPERATING INSTRUCTIONS 27
5.1 Connecting The ProLoc 2 MMI-420 27
5.2 Switching Between Actual And Presets Menu 27
5.3 Actual Menu Structure 27
5.4 View Setting Menu Structure 27
5.5 View Faults 28
5.6 View Events 28
5.7 MMI Settings 28
5.8 Memory Area Menu Structure 28
6. DIAGRAMS 29
6.1 Block Diagram of ProLoc 2 MMI-420 29
6.2 Wire Diagram 30
6.3 Control Panel 31

6.4 Control Panel Cutout Area 32

1. ABSTRACT

The ProLoc 2 MMI-420 provides a user friendly interface to the ProLoc relay as well as providing a iRDA RS232 interface between the ProLoc frontend PC based front-end configuration software and the ProLoc relay, providing the system integrator an interface to change and view information, settings and values on the ProLoc Relay.

The manual *"ProLoc 2 Relay user manual"* will provide a more detailed functional description of the ProLoc Relay. It is advisable to also read through the *"ProLoc 2 Relay user manual"* to familiarize the user with the functional, protection and management features of this protection and control relay

2. SPECIFICATIONS

2.1 Technical Specifications of ProLoc 2 MMI-420

General Data	Mounting Positions	● Door panel cut out x mm x x mm
	Allowed Ambient Temperature	● Operation : 0 ºC to +60 ºC
	Humidity	● < 87%
ProLoc 2 MMI-420	Power Supply	● 110 Vac ~ 220 Vac
	Consumption	● 110 mA
Indication Lights	Type	● Light Emitting Diode (LED)
	LED Indications	● Unit has supply voltage.
IrDA	Communication Distance	● 0 to 1 Meter.
	Baudrate	● 19200 kbps.
Inputs	Minimum Voltage	● 10 Vdc or ac
	Maximum Voltage	● 220 Vac ● 30 Vdc
	Internal burden resistor	● 82 KOhm 1 Watt.
Outputs	Rating	● 6 Amp @ 250 Vac ● 6 Amp @ 30 Vdc
	Life	● 10×10^6 operations minimum
Cutout	Recommended cutout area	● 98 mm Width x 77 mm Height

2.2 Control Panel push button Specification

The MMI control panel has 6 pushbuttons to migrate the control menu's.

Return button (**Rt**) has three functions.

1. Go back to the previous menu structure.
2. Reset a value back to the original value before editing.
3. When the reset button is pressed for more than 4 seconds then the ProLoc 2 MMI-420 will then reset the ProLoc 2 Relay trip condition.

Enter button (**En**) has three functions.

1. Go into another menu structure.
2. Save a value that has been edited.
3. Confirm a command that is asked for the system integrator by the ProLoc 2 MMI-420

Actual menu button (**A**). Provides access to the actual values menu structure.

Preset menu button (**Pr**). Provides access to the Preset values menu structure.

Up button (**U**) has two functions.

1. Go up in a menu structure.
2. Increment a value that is being edited.

Down button (**D**) has two functions.

1. Go down in a menu structure.
2. Decrement a value that is being edited.

Left button (**L**) has two functions.

1. Go left in a menu structure.
2. Move left in a value that is being edited.

Right button (**R**) has two functions.

1. Go right in a menu structure.
2. Move right in a value that is being edited.

2.3 Structure Of Actual Menu

On powering up the ProLoc 2 MMI-420 the "*Act Menu*" will then be displayed.
This menu allows the system integrator to view all values and settings of the ProLoc 2 Relay.

Displaying the character ">" in the menu line such as "1> ACTUAL", means that you can accesses into another sub menu structure.

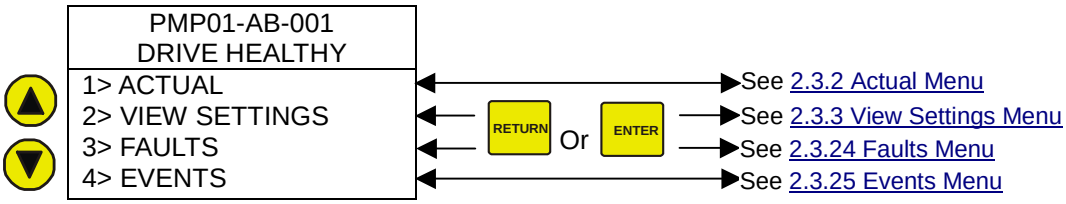
The menu structure is laid out as follow:

2.3.1 Structure Of Actual Main Menu

1st line will be the description field of the ProLoc II relay. Every 3 seconds the line will alternate to show the actual kilowatts selected.

2nd line will show the drives status. In the event of a reset that will take time to reset the ProLoc II relay. The 2nd line will then alternate every 3 seconds indicating the time needed to reset the ProLoc II relay.

Line 3 and 4 can be changed by pressing the up and down buttons. When pressing enter the menu will go to a different menu.



2.3.2 Structure Of Actual Menu

Line 1 and 2 acts the same as mentioned in chapter "2.3.1 Structure Of Actual Main Menu".

Return button will take the menu back to actual main menu "2.3.1 Structure Of Actual Main Menu".

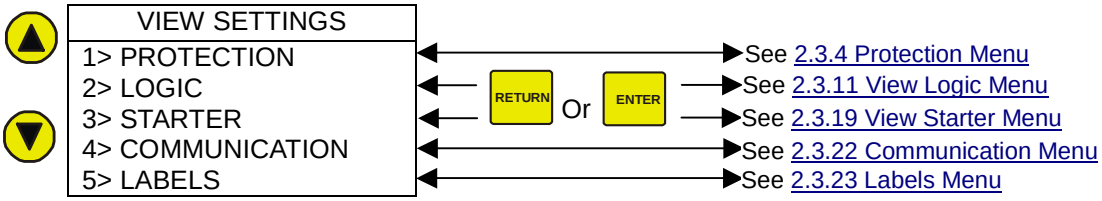
PMP01-AB-001 DRIVE HEALTHY	
1 I Load	100.0 mA
2 TC Used	30 %
3 V Line	110 V
4 I load	20 %
5 V Red	63 V
6 V White	63 V
7 V Blue	63 V
8 E Leak	30 mA
9 I Unbal	5 %
10 V Sym	95 %
11 Insul	25 kOhm
12 Freq	52 Hz
13 Pwr Fac	85 %
14 App Pwr	18.83 VA
15 Real Pwr	16.0 WA
16 START	OFF
17 STOP	ON
18 E STOP	ON
19 INTERLOC	ON
20 MCCB	ON
21 START	ON
22 RUN IND	ON
23 RELAY 4	OFF
24 RELAY 5	OFF

2.3.3 Structure Of Actual View Settings Menu

Listed under "Actual View Settings" are the ProLoc 2 Relay settings. These settings can only be viewed and not edited in this menu (Use Relay settings under slots with dongle).
Settings of the ProLoc 2 Relay are broken up into different categories to allow easier access to a specific setting.

Return button will go back to the "2.3.1 Structure Of Actual Main Menu" menu.

Save button will enter a subset of settings.



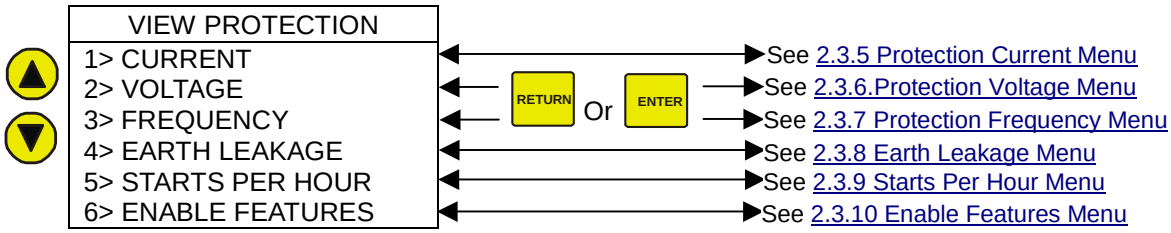
2.3.4 Structure Of View Protection Menu

Listed under “Protection View Protection” are the ProLoc 2 Relay settings that relates to protection features of the ProLoc 2 Relay.

Settings of the ProLoc 2 Relay are broken up into different categories to allow easier access to a specific setting.

Return button will go back to the “2.3.3 Structure Of Actual View Settings Menu “ menu.

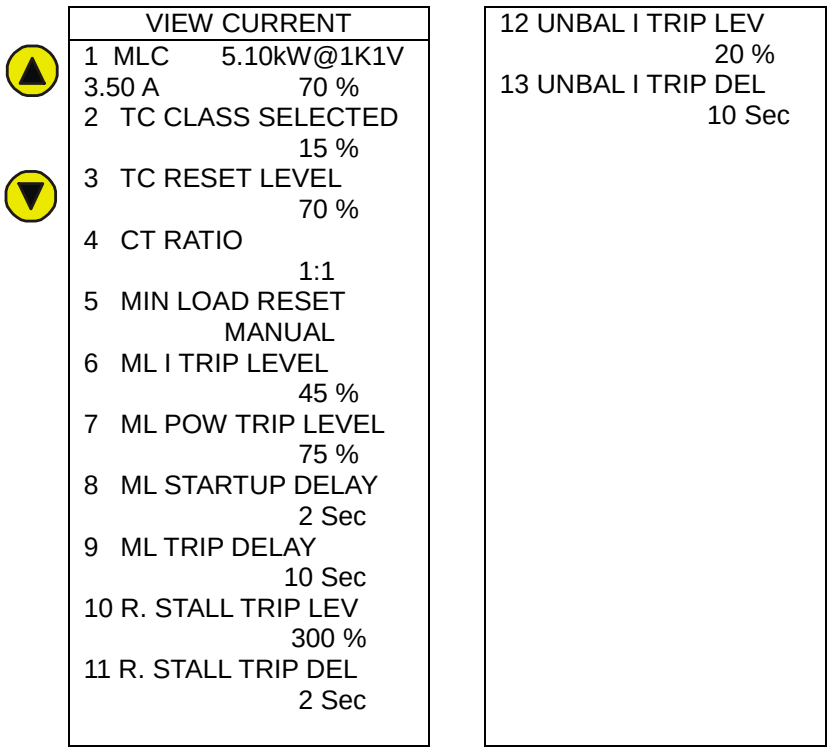
Save button will enter a subset of settings.



2.3.5 Structure Of Protection Current Menu

Listed under “Protection -> Current” are the ProLoc 2 Relay settings that relates to current settings of the ProLoc 2 Relay. This will include protections features like overload, minimum load etc...

Return button will go back to the “2.3.4 Structure Of View Protection Menu” menu.



2.3.6 Structure Of Protection Voltage Menu

Listed under “Protection -> Voltage” are the ProLoc 2 Relay settings that relates to voltage settings of the ProLoc 2 Relay. This will include protections features like line voltage, over voltage etc...

Return button will go back to the “2.3.4 Structure Of View Protection Menu” menu.

VIEW VOLTAGE
1 LINE VOLTAGE SEL 110 Vac
2 VOLTAGE HIGH LIMIT 15 %
3 VOLTAGE LOW LIMIT 15 %
4 VOLT SYM TRIP LEV 85 %

2.3.7 Structure Of Protection Frequency Menu

Listed under “Protection -> Frequency” are the ProLoc 2 Relay settings that relates to frequency settings of the ProLoc 2 Relay. This will include protections features like line frequency, over frequency etc...

Return button will go back to the “2.3.4 Structure Of View Protection Menu” menu.

VIEW FREQUENCY
1 FREQUENCY SELECTED 50 Hz
2 FREQ HIGH LIMIT 65 Hz
3 FREQ LOW LIMIT 45 Hz

2.3.8 Structure Of Protection Earth Leakage Menu

Listed under “Protection -> Earth Leakage” are the ProLoc 2 Relay settings that relates to earth leakage settings of the ProLoc 2 Relay. This will include protections features like earth leakage trip type, earth leakage trip level etc...

Return button will go back to the “2.3.4 Structure Of View Protection Menu” menu.

VIEW EARTH LEAKAGE
1 EL TRIP TYPE INST
2 EL TRIP LEVEL 250 mA
3 EL TRIP DELAY 150 mSec

2.3.9 Structure Of Protection Starts Per Hour Menu

Listed under “Protection -> Starts Per Hour” are the ProLoc 2 Relay settings that relates to starts settings of the ProLoc 2 Relay. This will include protections features like starts per hour and consecutive starts.

Return button will go back to the “2.3.4 Structure Of View Protection Menu” menu.

VIEW STARTS PER HR
1 STARTS PER HOUR 6
2 CONSECUTIVE STARTS 3

2.3.10 Structure Of Protection Enable Features Menu

Listed under “Protection -> Enable Features” are the ProLoc 2 Relay features that can be enabled or disabled.

Return button will go back to the “2.3.4 Structure Of View Protection Menu” menu.

VIEW ENABLE FEATURE
1 FAIL SAFE ENABLED
2 THERMAL RESET AUTO
3 MOVING AVG FILTER DISABLED
4 AUTO CAL TC RST L DISABLED
5 STARTS PER HOUR DISABLED
6 MIN LOAD TRIP ENABLED
7 MIN LOAD TRP TYPE CURRENT
8 UNBALANCE TRIP ENABLED
9 SHORT CIRCUIT TRP ENABLED
10 SINGLE PHASE TRIP ENABLED
11 RUN STALL TRIP ENABLED
12 VECT STALL TRIP DISABLED
13 OVER VOLTAGE TRIP ENABLED
14 UNDER VOLTAGE TRIP ENABLED
15 VOLT SYM TRIP DISABLED
16 VOLT PH ROT TRIP ENABLED

17 V PHASE ROTATION RWB
18 EARTH LEAKAGE TRP ENABLED
19 INSULATION TRIP ENABLED
20 VACUUM TRIP ENABLED
21 EXT STOP 1 DISABLED
22 EXT STOP 2 DISABLED
23 EXT STOP 3 DISABLED
24 FREQUENCY TRIP ENABLED
25 SHORT CIRCUIT RST DISABLED
26 EARTH FAULT RST DISABLED
27 VACUUM LOSS RST DISABLED
28 INSULATION RST DISABLED
29 FROZEN CONT RST DISABLED
30 EARTH LEAK RST DISABLED
31 UNAUTH CURRNT RST ENABLED
32 SYSTEM FAULT RST ENABLED

33 EXECUTION RST ENABLED
34 FEEDBACK RST ENABLED
35 EMG STOP RST ENABLED
36 EXT STOP RST ENABLED
37 OVER CURRENT RST ENABLED
38 UNBALANCE RST ENABLED
39 SINGLE PHASE RST ENABLED
40 RUN STALL RST ENABLED
41 SYMMETRY RST ENABLED
42 OVER VOLTAGE RST ENABLED
43 UNDER VOLTAGE RST ENABLED
44 PHASE ROT RST ENABLED
45 OVER FREQ RST DISABLED
46 UNDER FREQ RST DISABLED
47 MIN. LOAD RST ENABLED
48 START PER HR RST DISABLED

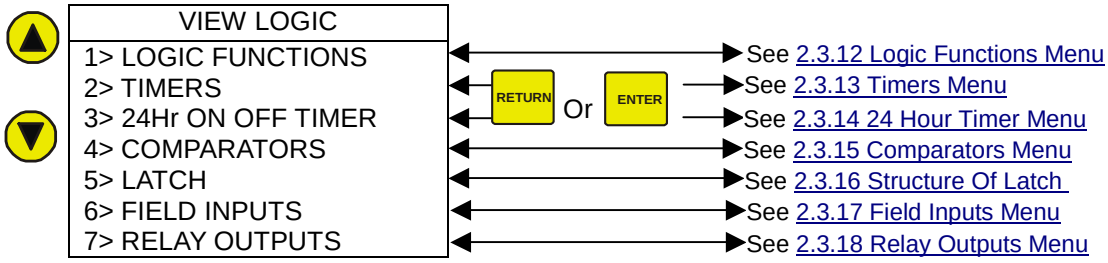
2.3.11 Structure Of View Logic Menu

Listed under “Logic View” are the ProLoc 2 Relay settings that relates to the logic functionality of the ProLoc 2 Relay.

Inputs can be mapped through the ProLoc 2 logic to give a desire output relating to a complex system.

Return button will go back to the “2.3.3 Structure Of Actual View Settings Menu” menu.

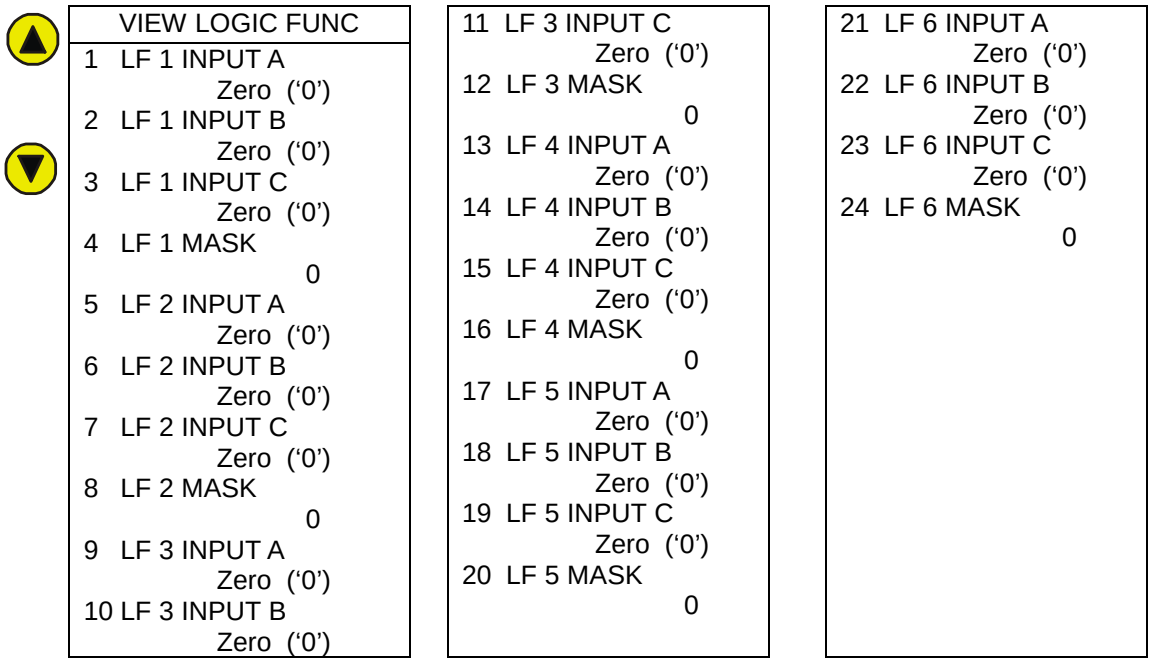
Enter will take the menu structure one down depending on the selection.



2.3.12 Structure Of Logic Functions Menu

Listed under “Logic -> Logic Functions” are the ProLoc 2 Relay logic tables that can create complex logic to be executed depending on the inputs and mask of the logic table.

Return button will go back to the “ 2.3.11 Structure Of View Logic Menu” menu.



2.3.13 Structure Of Timers Menu

Listed under "Logic -> Timers" are the ProLoc 2 Relay timers that can be used to delay input signals.

Return button will go back to the "2.3.11 Structure Of View Logic Menu" menu.

VIEW TIMERS
1 TMR A START INPUT Zero ('0')
2 TMR A STOP INPUT Zero ('0')
3 TMR A TIME 0 Sec
4 TMR B START INPUT Zero ('0')
5 TMR B STOP INPUT Zero ('0')
8 TMR B TIME 0 Sec

2.3.14 Structure Of 24 Hour Timer Menu

Listed under "Logic -> 24 Hr ON OFF Timer" is the ProLoc 2 Relay start and stop clock that can be used to start and stop a drive during certain parts of the day.

Return button will go back to the "2.3.11 Structure Of View Logic Menu" menu.

VIEW 24Hr TIMER
1 START TIME 00h00
2 STOP TIME 00h00

2.3.15 Structure Of Comparators Menu

Listed under "Logic -> Comparators" are the ProLoc 2 Relay comparators that can be used to compare a value to produce a on or off signal.

Return button will go back to the "2.3.11 Structure Of View Logic Menu" menu.

VIEW COMPARATORS
1 COMPARATOR A INPUT CURRENT
2 COMP A HIGH LEVEL 80 %
3 COMP A LOW LEVEL 40 %

4 COMPARATOR B INPUT CURRENT
5 COMP B HIGH LEVEL 60 %
6 COMP B LOW LEVEL 50 %

2.3.16 Structure Of Latch Menu

Listed under "Logic -> Latch" is the ProLoc 2 Relay method of remembering if a input was set till a memory clear signal is given.

Return button will go back to the "2.3.11 Structure Of View Logic Menu" menu.

VIEW LATCH
1 LATCH SET INPUT Zero ('0')
2 LATCH RESET INPUT Zero ('0')

2.3.17 Structure Of Field Inputs Menu

Listed under "Logic -> Field Inputs" are the ProLoc 2 Relay inputs settings that can be used to prevent input bouncing.

Return button will go back to the "2.3.11 Structure Of View Logic Menu" menu.

VIEW FIELD INP
1 INPUT 1 DELAY 0 mSec
2 INPUT 2 DELAY 0 mSec
3 INPUT 3 DELAY 0 mSec
3 INPUT 4 DELAY 0 mSec

2.3.18 Structure Of Relay Outputs Menu

Listed under "Logic -> Relay Outputs" are the ProLoc 2 Relay, relay input signals. These signals will control the relay state. When selecting a starter type like direct online starter make sure that the correct starter output has been assigned to a relay.

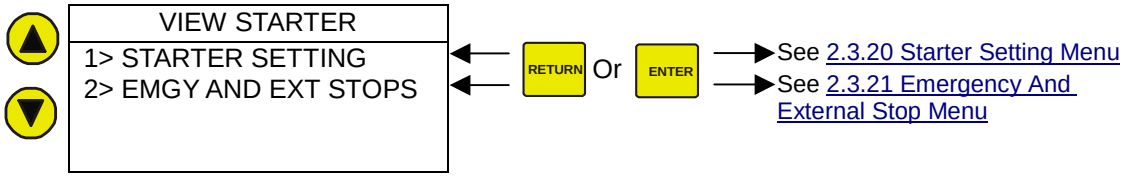
Return button will go back to the "2.3.11 Structure Of View Logic Menu" menu.

VIEW RELAY OUT
1 RELAY 1 INPUT TripFlag
2 RELAY 2 INPUT Zero ('0')
3 RELAY 3 INPUT Zero ('0')
3 RELAY 4 INPUT Zero ('0')

2.3.19 Structure Of View Starter Menu

Listed under "View Settings" is the ProLoc 2 Relay starter setup. The starter setup has been broken up into sections for ease of setup. This will allow the ProLoc 2 Relay to be configured as a starter.

Return button will go back to the "2.3.3 Structure Of Actual View Settings Menu" menu.



2.3.20 Structure Of Starter Setting Menu

Listed under "View Starters -> Starter Settings" is the ProLoc 2 Relay starter setup. Configuration of the starter type is configured in this menu structure.

Return button will go back to the "2.3.19 Structure Of View Starter Menu" menu.

Depending on the selection of the starter type one of the following menus will be viewed.

VIEW STARTER
1 STARTER TYPE PROTECTION
2 NOT USED BY START
3 NOT USED BY START
4 NOT USED BY START
5 NOT USED BY START
6 NOT USED BY START
7 NOT USED BY START Sec
8 NOT USED BY START Sec
9 NOT USED BY START mSec
10 NOT USED BY START mSec
11 NOT USED BY START mSec

VIEW STARTER
1 STARTER TYPE FORWARD
2 FEEDBACK SIGNAL InService
3 START SIGNAL DigFld_Inp_1
4 NOT USED BY START
5 STOP SIGNAL DigFld_Inp_3
6 INTERLOCK DigFld_Inp_4
7 PRE WARNING TIME 5 Sec
8 BACK SPIN TIME 5 Sec
9 EXECUTION TIME 2000 mSec
10 FEEDBACK TIME 2000 mSec
11 UNATHRIZED I TIME 2000 mSec

VIEW STARTER
1 STARTER TYPE REVERSAL
2 FEEDBACK SIGNAL InService
3 FORWARD SIGNAL DigFld_Inp_1
4 REVERSE SIGNAL DigFld_Inp_2
5 STOP SIGNAL DigFld_Inp_3
6 INTERLOCK DigFld_Inp_4
7 PRE WARNING TIME 5 Sec
8 BACK SPIN TIME 5 Sec
9 EXECUTION TIME 2000 mSec
10 FEEDBACK TIME 2000 mSec
11 UNATHRIZED I TIME 2000 mSec

2.3.21 Structure Of Emergency And External Stop Menu

Listed under "View Starters -> Emergency And External Stop" is the ProLoc 2 Relay emergency stop input. Also added to the stops are three external stops that can be used as external faults.

Return button will go back to the "2.3.19 Structure Of View Starter Menu" menu.

VIEW STOPS
1 EMERGENCY STOP
DigFld_Inp_3
2 EXTERNAL 1 STOP
DISABLED
3 EXTERNAL 2 STOP
DISABLED
4 EXTERNAL 3 STOP
DISABLED

2.3.22 Structure Of Communication Menu

Listed under "View Settings - Communication" is the ProLoc 2 Relay communication module configuration.

Return button will go back to the "2.3.3 Structure Of Actual View Settings Menu" menu.

VIEW COMMUNICATION
1 COMMS MODULE SEL
PROFIBUS
2 ADDRESS
5
3 BAUDRATE
9600

2.3.23 Structure Of Labels Menu

Listed under "View Settings -> Labels" are the ProLoc 2 Relay description fields of the drive ID, field inputs and relay outputs.

Return button will go back to the "2.3.3 Structure Of Actual View Settings Menu" menu.

Enter will access the "2.5 Keyboard Edit Screen" screen to edit text.

VIEW LABELS
1 DRIVE ID PAN 010 2 DRIVE DESRIPTION FIELD PANEL 10 3 INPUT 1 START 4 INPUT 2 EMERGNCY STOP 5 INPUT 3 STOP 6 INPUT 4 INTERLOCK 7 RELAY 1 MAIN 8 RELAY 2 SHUNT TRIP 9 RELAY 3 PRE START 10 RELAY 4 TRIP IND 11 RELAY 5 NOT ASSIGN

2.3.24 Structure Of Faults Menu

Listed under "Actual" are the ProLoc 2 Relay faults. Before viewing the faults the ProLoc 2 MMI-420 will prompt to upload the faults from the ProLoc2 Relay. If yes is selected then the faults will be uploaded from the ProLoc 2 Relay. Otherwise if no is selected then the ProLoc 2 MMI-420 will retrieve the last faults uploaded.

Return button will go back to the "2.3.1 Structure Of Actual Main Menu" menu.

Left and right button goes through the fault history.

FAULT 1 of 48
1 STATUS ACT 2 DATE AND TIME 13/02/13 1h16 3 FAULT DESCRIPTION OverCrnt_tf 4 RUNNING HOURS 10 Hr

5 LOAD MAXIMUM 638 % 6 VOLT MINIMUM 635 V 7 BREAKER RESET TIME 150 mSec 8 FIELD INPUTS 0011

2.3.25 Structure Of Events Menu

Listed under "Actual" are the ProLoc 2 Relay events. Before viewing the events the ProLoc 2 MMI-420 will prompt to upload the events from the ProLoc2 Relay. If yes is selected then the faults will be uploaded from the ProLoc 2 Relay. Otherwise if no is selected then the ProLoc 2 MMI-420 will retrieve the last events uploaded.

Return button will go back to the "2.3.1 Structure Of Actual Main Menu" menu.

Left and right button goes through the fault history.

EVENT 1 of 200
1 STATUS ACT TRIP 2 DATE AND TIME 13/02/12 10h30 3 FAULT DESCRIPTION E_Stop_tf 4 RUNNING HOURS 10 Hr

5 LOAD MAXIMUM 50 % 6 VOLT MINIMUM 635 V 7 ALARM DESCRIPTION FrznCntct_af 8 FIELD INPUTS 0001

2.4 Structure Of Presets Menu

In order to access “Presets Menu” the “Preset” button must be pressed.

7 slots have been configured for protection settings.

Slot 2 to 6 can be edited only with the use of a dongle key, but can be downloaded to the ProLoc 2 Relay without the use of a dongle key. Description of the slots can be changed with the “SLOT DESCRIPTION” menu selection.

Slot 1 can be edit without a dongle key if the ProLoc 2 MMI-420 is setup that slot 1 is not key locked.

Slot 1 to 6 can only change the ProLoc 2 Relay protection setting. But the logic, starter and description under slot 7 will be downloaded with slot 1 to 6 to the ProLoc 2 Relay. Slot 7 can change the protection, logic, starter and description field of the ProLoc 2 Relay.

A dongle key is also needed to change slot description and MMI settings.

The presets menu structure looks as follow:

2.4.1 Structure Of Presets Menu

1st line will be show that the settings menu is active.

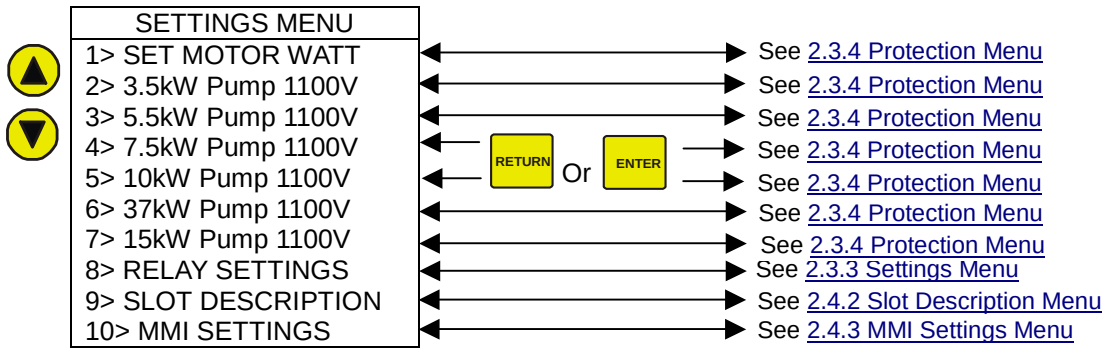
When selecting 1 to 8 the following action can take place:

- EDIT VALUES – Edit the slots settings. (Dongle key is needed, unless it is slot 1 that has no key lock on)
- DOWNLOAD TO RELAY – Download slot to the ProLoc 2 Relay.
- UPLOAD FROM RELAY – Upload the settings from the ProLoc 2 Relay to the slot. (Dongle key needed).

Slot 1 to 7 will only access the protection menu.

Slot 8 will access all settings of the ProLoc 2 Relay.

In order to edit a value press the “Enter” button. The curser will start flashing over the value. Use the “Left” and “Right” to move left and right of the value selected. Use the “Up” and “Down” button to change the value. After the value has been edited press the “Enter” button, the value will then be saved. If the value needs to be reset while still editing the value then press the “Return” button, this action will then restore the value.



2.4.2 Structure Of Slot Description Menu

Listed under "Settings Menu" are the ProLoc 2 MMI-420 slot descriptions. This is used to give Slot 2 to 6 meaning full descriptions.

A dongle will be needed to edit these settings.

Return button will go back to the "2.4.1 Structure Of Presets Menu" menu.

Enter will access the "2.5 Keyboard Edit Screen" screen to edit text.

SLOT DESCRIPTIONS
1 SLOT 1
3.5kW Pump 1100V
2 SLOT 2
5.5kW Pump 1100V
3 SLOT 3
7.5kW Pump 1100V
4 SLOT 4
10kW Pump 1100V
5 SLOT 5
37kW Pump 1100V

2.4.3 Structure Of MMI Settings Menu

Listed under "Settings Menu" is the ProLoc 2 MMI-420 configuration screen.

A dongle will be needed to edit these settings.

"Auto rotate act" – Rotate the actual screen after 5 minutes if no key was pressed.
"Backlight Auto off" – Switch the backlight off after 5 minutes.
"Slot 1 key locked" – Slot 1 needs a dongle key to change settings.
"Slot desc frm rela" – Load the description field from the relay as the slots name.
"Load default type" – Fills the MMI slots with factory presets.

Return button will go back to the "2.4.1 Structure Of Presets Menu" menu.

MMI SETTINGS
1 AUTO ROTATE ACT
DISABLED
2 BACKLIGHT AUTO OFF
DISABLED
3 SLOT 1 KEY LOCKED
ENABLED
4 SLOT DESC FRM RELA
DISABLE
5 LOAD PANEL TYPE
NONE

2.5 Keyboard Edit Screen

Used mainly when editing a text field like slot description. This will allow quick scrolling and placing of a character.

1st line of the keyboard screen is the line being edited. This line will always show at the top. Rest of the lines will be locked.

Buttons are used to navigate the keyboard screen.

2nd and 3rd line are task lines.

"[xxx]" Brackets are used to show what action is selected.

"◄ " and " ► " is used to move the cursor in the text left and right.

"CAPS", "caps", "ODDC" and "NUMB" used to select different character sets. Pressing the "ENTER" button will change the character set.

"OVR" will over write the current character and "INS" will insert the character.

"EXIT" will exit the keyboard screen and return the text to its original value.

"SAVE" will exit the keyboard screen and save the text.

SLOT 0 DESC					
◄ ►		[CAPS]		INS	
	EXIT			SAVE	
A	B	C	D	E	F

2.6 LED Indication

LED at the front of the panel indicates the following:

- Green – ProLoc 2 Relay and ProLoc 2 MMI-420 is healthy and communicating.
- Orange – Current or feedback signal is active.
- Red – Fault is present in the ProLoc 2 Relay or communication has been lost.

2.7 Relays Fail Safe

In the event that the communication fails between the ProLoc 2 Relay and ProLoc 2 MMI-420 all relays will return to there normally open state.

3. DEFINITIONS AND TERMINOLOGY

LED	Light emitting diode (It is used as visual indicators)
Motor protection relay	Intelligent (computerized) unit monitoring an electric motor's current and voltage supply. In case of overloading, phase lost etc. the power supply of the motor will be interrupted by the protection relay to prevent damage to the motor.
ProLoc2 MMI-420	Protection control relay man machine interface 4 by 20 character LCD display unit.
LCD	Liquid crystal display unit.
Memory area	Location on the ProLoc 2 MMI-420 that is used to store different settings in the ProLoc 2 MMI-420 memory. Even after power down the memory area will retain the settings that have been programmed into the memory area.
IrDA	Infrared Data Association. Method to communicate with the use of light emitting diodes without a physical connection between two devices.

4. FUNCTIONAL DESCRIPTION

ProLoc 2 MMI-420 can be broken up into the following function blocks:

- Micro-Controller.
- Relays.
- Inputs.
- 4 x 20 Character Liquid Crystal Display
- Light Emitting Diodes (LED).
- Infrared Data Association (IrDA).
- Communication

Micro-Controller – Is the core of the system. The micro-controller ensures that the operation of the ProLoc MMI-420 gets executed. The micro-controller acts as a communication medium between the ProLoc relay and the system integrator.

Relays – Configured as normally open contacts. With the aid of the ProLoc relay logic table or starter configuration, relay 3 to 5 can be configured as the system integrator sees fit.

Inputs – Four inputs that are differential configured. Meaning that the inputs can be configured independently with their own supply voltages from the field. The inputs can be configured in the ProLoc relay logic or starter configuration.

4 x 20 Character Liquid Crystal Display – Used to help the system integrator to see what is being configured or to view what is going on inside of the ProLoc relay.

LED – Shows that the ProLoc2 MMI-420 has power.

IrDA – Bridge for ProLoc relay and ProLoc front end to communicate with each other with the use of the ProLoc 2 MMI-420.

Communication – Communication protocol between ProLoc 2 MMI-420 and ProLoc relay.

5. OPERATING INSTRUCTIONS

5.1 Connecting The ProLoc 2 MMI-420

Items needed to connect the ProLoc 2 MMI-420 to the ProLoc relay are as follow:

- CAB0100. Cable that comes between the ProLoc 2 MMI-420 and the ProLoc relay.
- CAB0007. Dongle key that is needed to unlock the settings menu.
- Power cable that can supply 110 Vac to 220 Vac to the ProLoc 2 MMI-420.

If all connection are done successfully, then the ProLoc 2 MMI-420 will indicate *"Drive Healthy"* LCD display.
If the cable between the units are not successful then will show "*NO COMMS*".

5.2 Switching Between Actual And Presets Menu

Pressing the "*Actual*" button will display the act menu structure. Under this menu structure the system integrator can view actual values, settings in the ProLoc relay, faults and events.

Pressing the "*Preset*" button will display the memory area menu structure. System integrator can edit, download memory area to ProLoc 2 Relay and upload to the ProLoc 2 MMI-420 memory area.

5.3 Actual Menu Structure

Pressing the "Enter" button on the "*1> ACTUAL*" text will show the system integrator the actual values of the ProLoc 2 Relay.

5.4 View Setting Menu Structure

When selecting the "*2> VIEW SETTING*" text, the ProLoc 2 MMI-420 will then break the settings up into the following groups:

- PROTECTION
- LOGIC
- STARTER
- COMMUNICATION
- LABELS

This break up of the settings will allow faster navigation of the view settings menu structure.

Protection is also broken up into the following croups:

- CURRENT. View current related settings.
- VOLTAGE. View voltage related settings.
- FREQUENCY. View frequency related settings.
- EARTH LEAKAGE. View earth leakage related settings.
- STARTS PER HOUR. View starts per hour related settings.
- ENABLE FEATURES. View features that are enabled.

Logic is broken up into the following groups:

- LOGIC FUNCTIONS. View logic table configuration.
- TIMES. View timer configuration.
- 24Hr ON OFF TIMER. View on off timer.
- COMPARATORS. View comparator settings.
- LATCH. View Latch configuration.
- FIELD INPUTS. View field inputs delayed time.
- RELAY OUTPUTS. View relay 1 to 5 input pointer configurations.

Starter shows how the starter is configured.

Communication shows the communication module that has been selected for the ProLoc 2 Relay.

Labels will show the description field of the ProLoc 2 Relay, inputs and relays.

5.5 View Faults

Due to memory limitation on the ProLoc 2 MMI-420 only the last 48 faults are uploaded from the ProLoc Relay. "*Left*" and "*Right*" button can be used to navigate between the different faults.

Faults can be viewed even after communication is lost with the ProLoc Relay.

5.6 View Events

Due to memory limitation on the ProLoc 2 MMI-420 only the last 200 events are uploaded from the ProLoc Relay. "*Left*" and "*Right*" button can be used to navigate between the different events.

Events can be viewed even after communication is lost with the ProLoc Relay.

5.7 MMI Settings

System integrator can turn auto rotate of the actual value menu structure on or off. After 5 minutes of no button operation, the ProLoc 2 MMI-420 will then go to the actual menu structure. At an interval of 20 seconds the display will then move down the actual menu structure. When the cursor is at the very bottom of the actual menu structure, the cursor will then be moved to the beginning of the actual menu structure. To end auto rotate just press any button.

System integrator can turn the auto backlight on or off. When activated the display will then turn off backlight in 5 minutes time, when no button has been pressed. To turn on the backlight just press any key.

Slot 1 can be selected to be editable without the use of a dongle key.

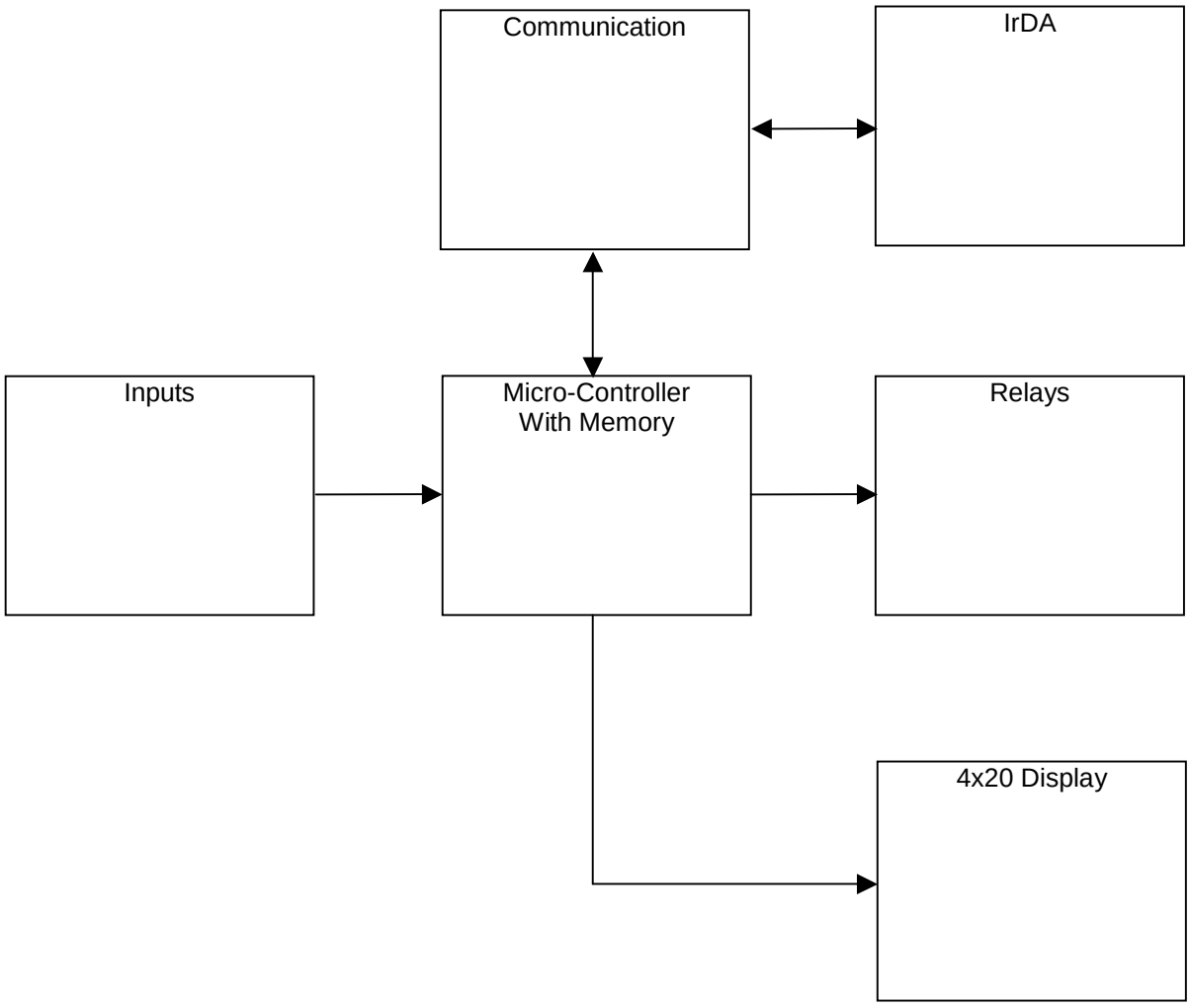
5.8 Memory Area Menu Structure

6 Slot memory areas are available for storing different settings. When selecting a memory area the system integrator has the following options:

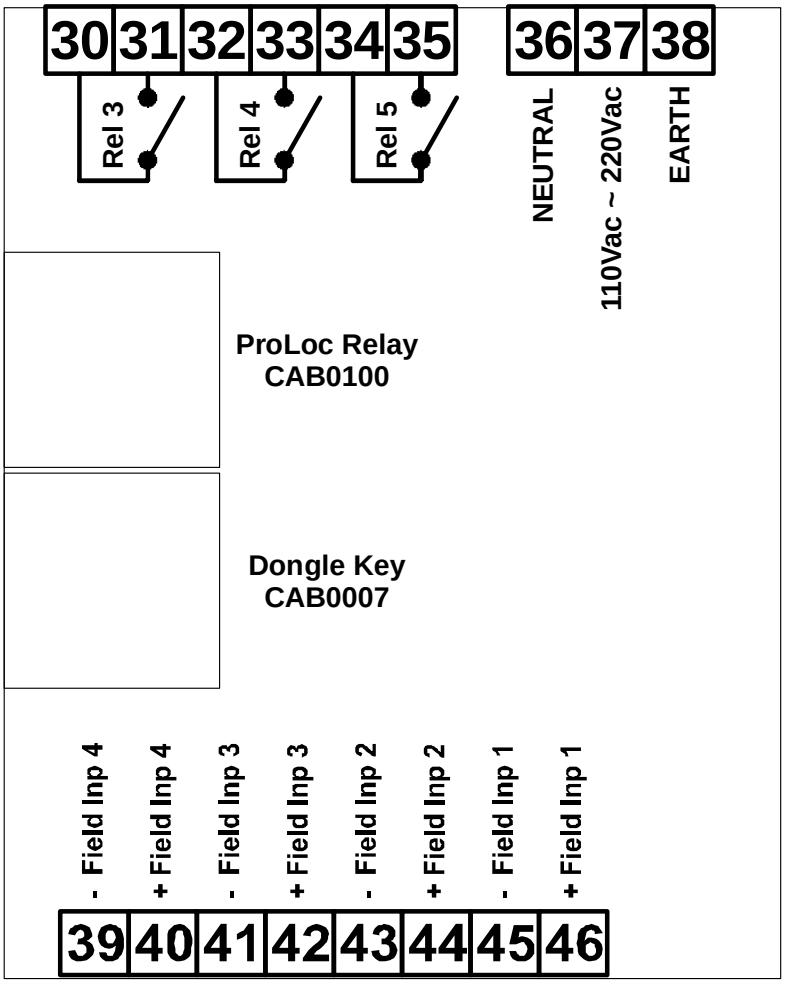
- EDIT SETTINGS. Edit the settings in the ProLoc 2 MMI-420.
- DOWMLOAD TO RELAY. Download memory area settings to ProLoc 2 Relay.
- UPLOAD FROM RELAY. Upload ProLoc relay settings to ProLoc 2 MMI-420 memory area.

6. DIAGRAMS

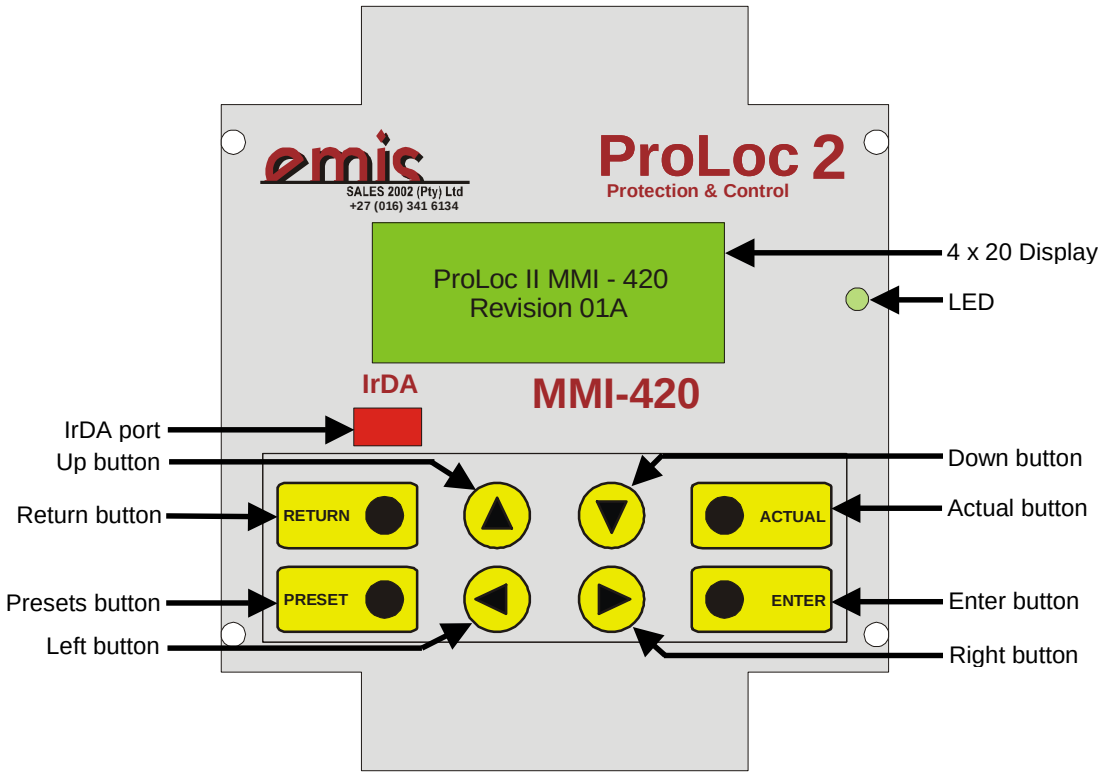
6.1 Block Diagram of ProLoc 2 MMI-420



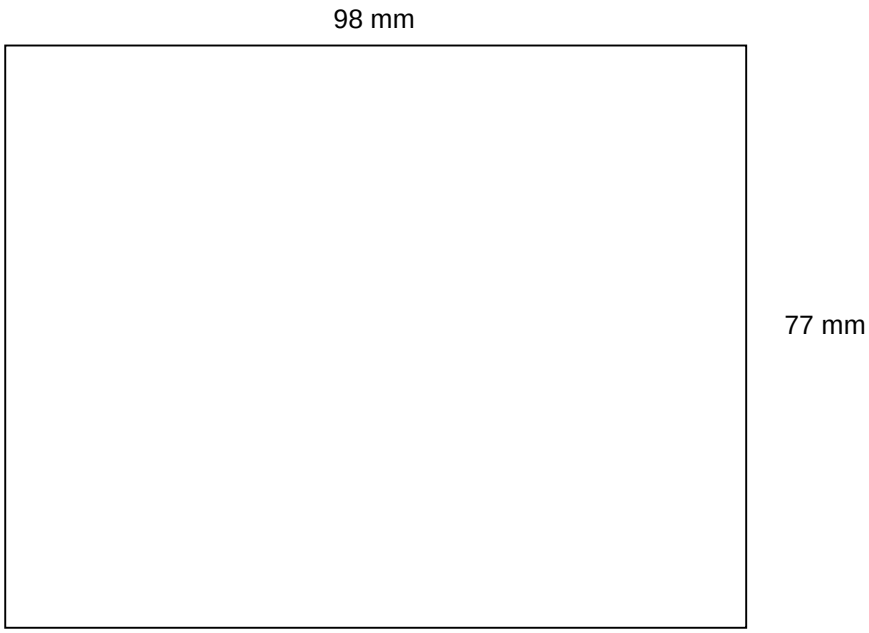
6.2 Wire Diagram



6.3 Control Panel



6.4 Control Panel Cutout Area



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