



DRC-003 USER GUIDE



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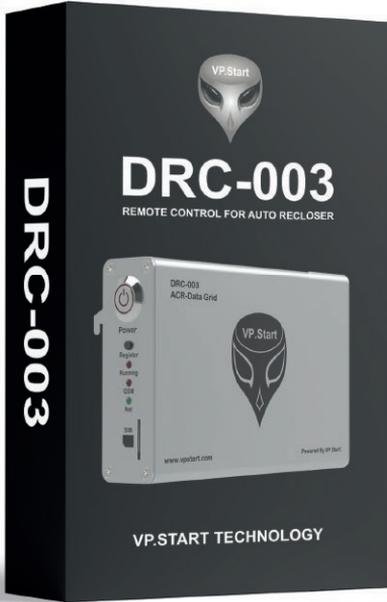


INTRODUCTION

The DRC-003 is a smart controller for Cooper Auto Reclosers. The DRC-003 effectively enables electric utility operators to take advantage of enhanced remote control, monitoring and distribution grid management for medium voltage operations (22kV & 35kV). Operators benefit from greater insights such as line fault activity, current loads information, power quality data and other vital information that help minimize outages, outage duration times and increase power reliability. In addition, the enhanced capabilities offered by the DRC-003 “Smart-Controller” solution for Cooper Auto Reclosers have not only yielded impressive results in increasing energy reliability and minimizing power losses on the network, It has also enabled increased safety for maintenance teams due to the data-insights the DRC-003 provides for Cooper Auto Reclosers. As a result, operators benefit from decreased OPEX & CAPEX while ensuring a higher level of energy supply reliability for their downstream consumers.



PRODUCT OVERVIEW

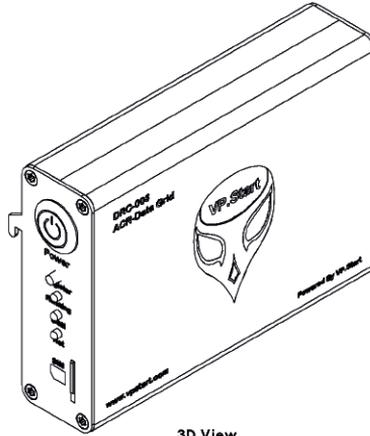


DRC-003 BOX PACKAGING

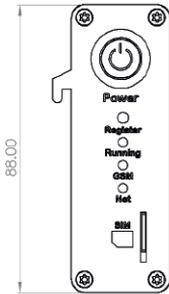
DRC-003 DEVICE



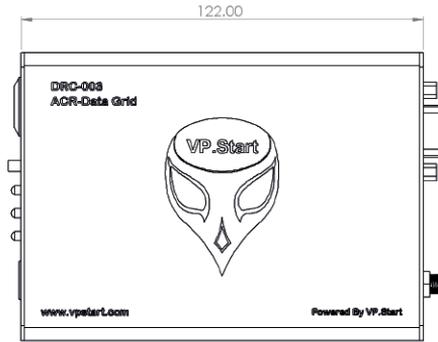
HARDWARE DIMENSIONS



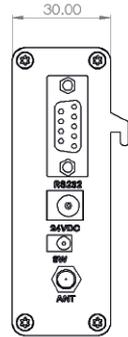
3D View



Side View



Front View



Side View



SPECIFICATIONS & FEATURES

Description

Specifications

Remote Control Unit

Country of Origin	Cambodia
Manufacturer's Name	VP.Start Technology
Manufacturer's Reference	DRC-003
Remote Controller (GSM/GPRS/Call Control) for Cooper Auto Reclosers 22/35kV	Yes
Remote Control Via Smartphone or PC for Cooper Auto Recloser 22/35kV and can be Configured to RPM-Grid System (Supporting System for a Smart Grid).	Yes
Voltage Supply Range	12-36 Vdc
Operating Frequency Bandwidth	GSM/GPRS: 900/1800 MHz
Ambient Temperature Range	0 to 65°C
Humidity	30% to 95%

Installation

The Remote Control (DRC-003) is Connected Inside the Auto Recloser Cabinet (COOPER).	Yes
--	-----

Remote Control Functions & Features

Control Functions:

Control Switchgear (Open/Close)	Yes
---------------------------------	-----



Setting Functions:

Alarm Setting: Source Alarm (On/Off), Switchgear Alarm (On/Off)	Yes
---	-----

Monitoring Features:

Measurements: Current, Voltage, Real Power, Reactive Power, Apparent Power, Power Factor, Controller Version, Frequency, Battery Voltage.	Yes
---	-----

Switchgear Position (Open/Close)	Yes
----------------------------------	-----

View: Alarm Statuses, System Statuses	Yes
---------------------------------------	-----

View: Controller Location on Google Map by using the Tracking Abilities Function.	Yes
---	-----

View: User Event Logs	Yes
-----------------------	-----

View: Recloser Cooper Event Logs	Yes
----------------------------------	-----

Alarm Notifications:

Switchgear OFF Alarm	Yes
----------------------	-----

Source Supply OFF Alarm	Yes
-------------------------	-----

Software Management:

Add/Remove User	Yes
-----------------	-----

Add/Remove Controller (DRC-003)	Yes
---------------------------------	-----

View all Users	Yes
----------------	-----

View all Controllers (DRC-003)	Yes
--------------------------------	-----

Controller ID Setting & Tracking Abilities	Yes
--	-----



Map Views	Yes
Check/Top-Up Balance	Yes

Remote Control System Software:

Smartphone App (Android)	Yes
RPM Grid Software (PC)	Yes

Call Control Features

Key Tone Control Features:

Read Measurements [Current, Voltage, Power]	Yes
Control Switchgear (Open/Close)	Yes
Read Switchgear State (Open/Close)	Yes

Language & Voice Support:

Language (Khmer)	Yes
Voice Instruction	Yes

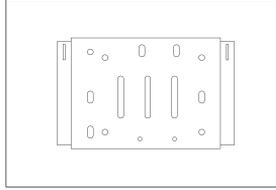


INSTALLATION INSTRUCTIONS

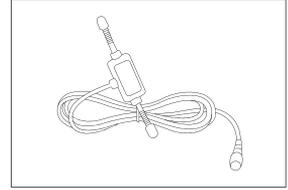
ACCESSORIES



DRC-003 Controller (1pc)



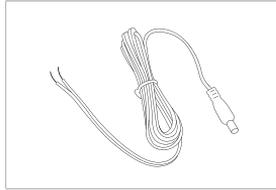
Controller Support (1pc)



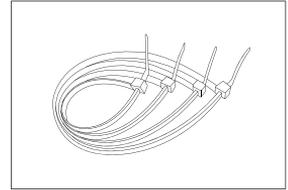
GSM Antenna (1pc)



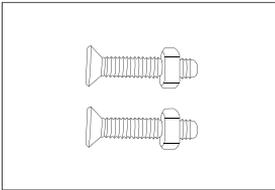
Serial Cable (Male to Female)
(1pc)



DC Power Cable (1pc)



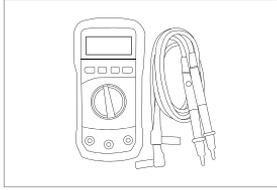
Cable Tie (6pcs)



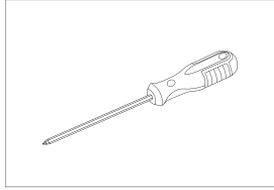
Screw + Nut (M4*15cm)
(2pcs)



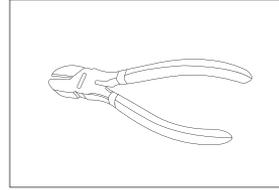
SUPPORTING TOOLS



Multimeter



Screwdriver PH2



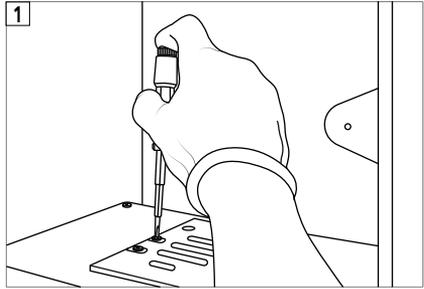
Diagonal Cutting Pliers



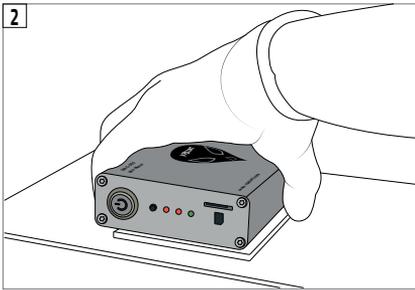
Controller Installation Process

NOTE

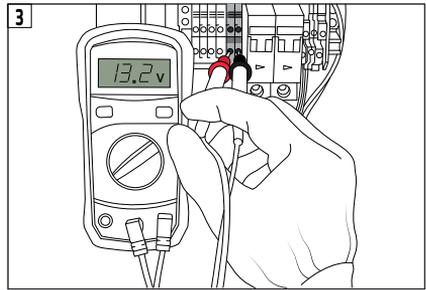
- ❖ For Cooper Auto Recloser firmware version lower than 2.34 needs to update to firmware 2.34.
- ❖ Firmware version lower than 3.03.08 needs to update to firmware 3.03.08.
- ❖ Firmware version higher than 3.22.08 no need to update.



1 Mount the controller's mounting support panel onto Cooper support panel.



2 Mount the DRC-003 controller onto the controller's mounting support panel.

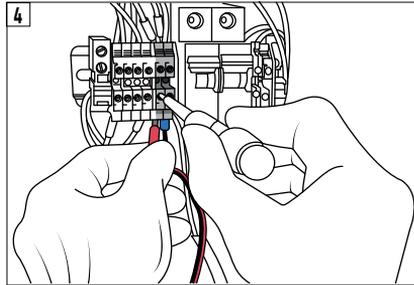


3 Check the voltage level through the connector (13.5V+) and connector (13.5V-) on DC auxiliary power supply connector with the multimeter (Handheld).

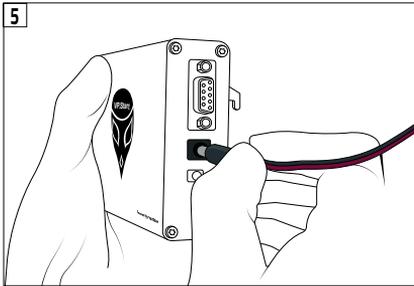


NOTE

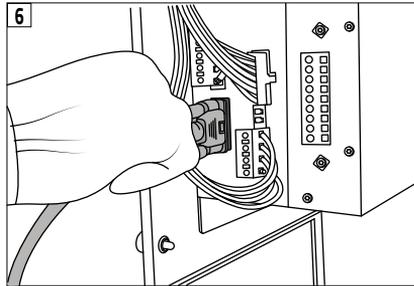
⚡ A suitable voltage range of 12VDC to 24VDC is recommended.



Connect DC Power Cable by the Red Cable connect to connector (13.5V+) and Black Cable connect to connector (13.5V-).

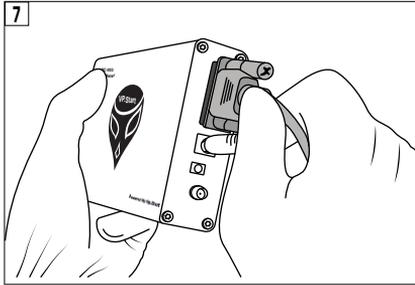


Then Connect the DC power jack to the DC 24V port on the DRC-003 controller as shown.

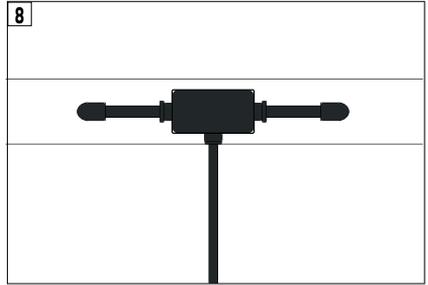


Connect Serial Cable (Female) to RS232 port on Cooper Controller.





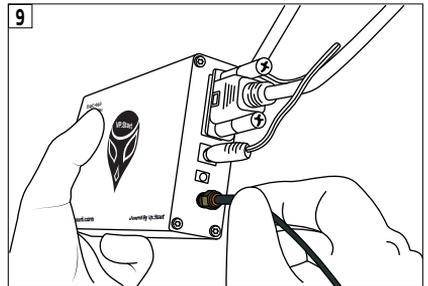
Connect Serial Cable (Male) to RS232 on DRC-003 Controller.



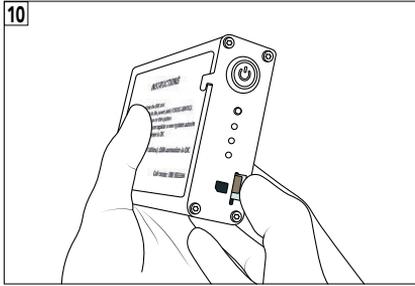
Install GSM Antenna to the appropriate area on site.

NOTE

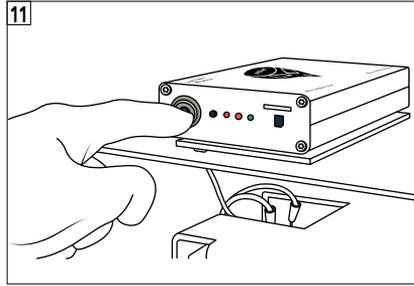
- Keep an appropriate and safe spot to ensure adequate signal strength.



Then connect GSM antenna cable to the ANT port on the DRC-003 controller.



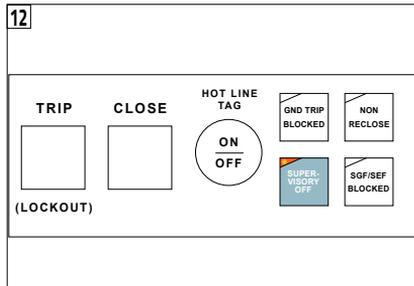
Insert micro SIM into SIM Slot on DRC-003.



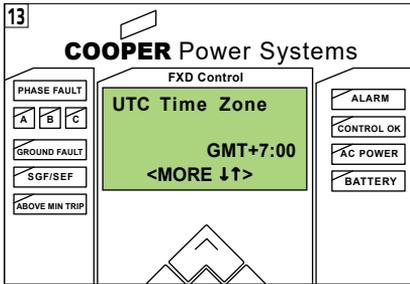
To start up the DRC-003, push the power button.

NOTE

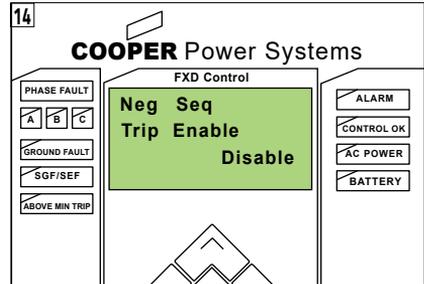
- 📍 The DRC-003 is running normally if the running LED is blinking every 1s.
- 📍 The GSM connection is Good if Net LED flashing every 3s.
- 📍 The GSM Module is Okay if GSM LED is ON.



Turn on "SUPER-VISORY OFF" button.



- Set Time Zone to GMT+7:00
- > CLOCK
 - > UTC Time Zone
 - > GMT +7:00



- Disable Negative Sequence
- > SETTINGS
 - > Modify
 - > OverCurrent
 - > Neg Seq Param
 - > Neg Seq Enable
 - > Disable



APP USER GUIDE

Mobile Phone Interface Usage

01 How to Install DRC-003 App on Smartphone



Fig. 01

Click on "DRC-003 .apk" to install.



Click on "Install".

Fig. 02



Click on "Done" to finish.

Fig. 03



DRC-003 App installed.

Fig. 04



02 Create User Account



Fig. 05

Click on "DRC-003 App" to open App.

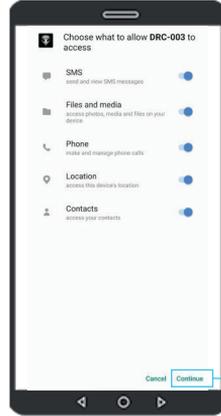


Fig. 06

If the system pop up allow DRC-003 to access.

Then click on "Continue".



Fig. 07

Create User Account login interface.

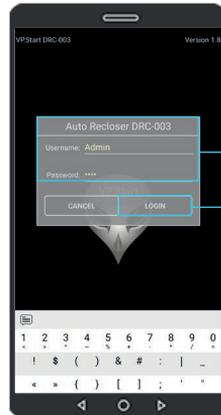


Fig. 08

Create: Username and Password.

Then click on "LOGIN".





Fig. 09

NOTE
 When installing the DRC-003 smartphone application for the first time, users will have to register the first DRC-003 controller before they can access other functions.



Fig. 10

NOTE
 After the first controller is registered, users can access other functionalities as shown.

03 Login to App



Fig. 11

Click on "DRC-003 App" to open App.



Fig. 12

Input the Password.
 Click on "LOGIN".



Fig. 13

DRC-003 App functions.

04 Service



Fig. 14

Click here to view "Help, Service and Exit".

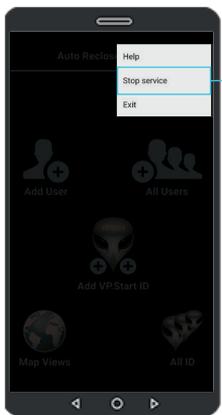


Fig. 15

After the device (s) has been registered. Alarm service is enabled by default. To stop it, click on Stop service to stop receiving automated alarms from the controller through the smartphone app.



Fig. 16

Alarm service is not running when your smartphone has not enabled DRC-003 alarm service as shown in Fig.16.



Fig. 17

To start alarm service. Click to view "Help, Service and Exit". Click on "Start service" to start receiving automated alarms from the controller through the smartphone app.



Fig. 18

Alarm service is running when your smartphone has enabled DRC-003 alarm service as shown in Fig.18.

05 Adding Users

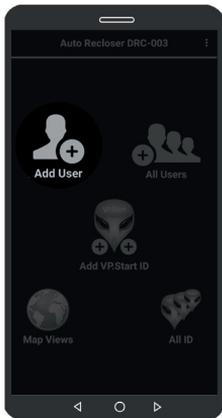


Fig. 19

Click to open "Add User".



Fig. 20

Click here to view all VP.Start ID (Phone Number).





Fig. 21

Click to choose a VP.Start ID.

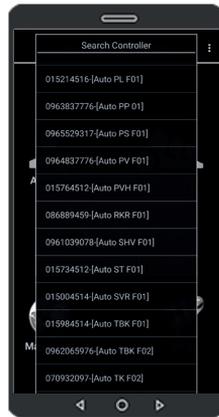


Fig. 22

NOTE
 Scroll up or down
 to view more
 VP.Start ID.



Fig. 23

VP.Start ID chosen.



Fig. 24

Write user phone number in "Add User ID".
 Choose user position as Admin, User or Guest.
 Click on "SUBMIT" and confirm by "OK" button.



06 All Users

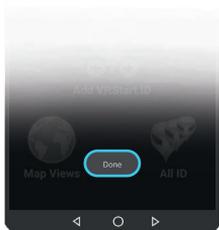
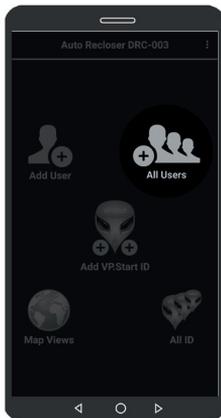


Fig. 25

NOTE

⚠ The application will display "Done" as a pop up notification to confirm the registration of the new user into the system for a specific controller.



Click to open "All Users".

Fig. 26



Click here to view all VP.Start ID (Phone Number).

Fig. 27



Choose a VP.Start ID.

Fig. 28



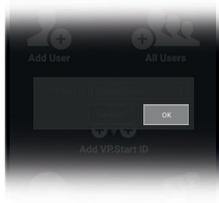


Fig. 29

Confirm "OK" button.

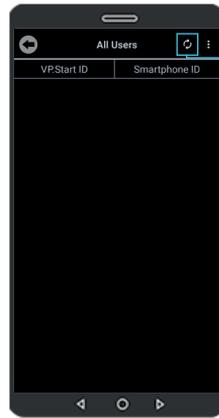


Fig. 30

Click on Refresh button. And confirm by "OK" button.

07 Delete User

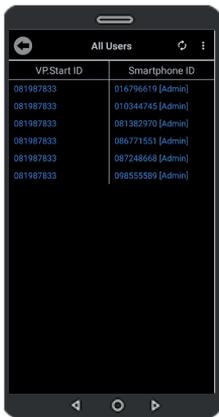


Fig. 31

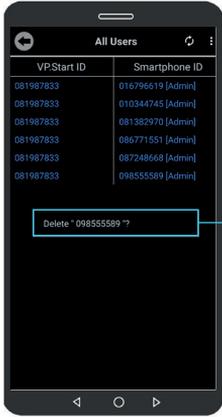
All Users view.



Fig. 32

To delete user from your DRC-003, click and hold a user number.





Click on "Delete Users phone number" and confirm by "OK" button.

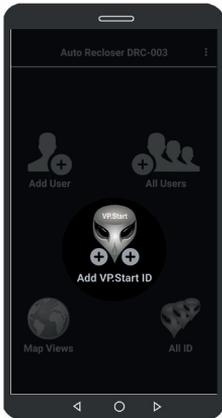
Fig. 33



User deleted.

Fig. 34

08 Add VP.Start ID



Click to open "Add VP.Start ID".

Fig. 35



Add VP.Start ID interface

Fig. 36



Click to write location name (DRC-003 name).
Click to write VP.Start ID (DRC-003 phone number).

Fig. 37



Click on "ADD" button and confirm by "OK" button.

Fig. 38

09 Map Views

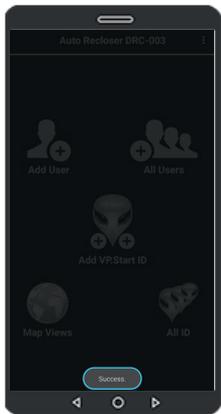


Fig. 39

NOTE
The application will display "Success" as a pop up notification to confirm the registration of the DRC-003 controller into the system.



Scroll down notification bar.

Fig. 40





Fig. 41

Turn on location.



Fig. 42

Turn on Internet.

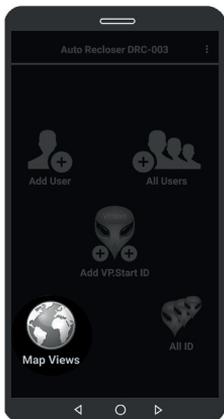


Fig. 43

Click to open "Map Views".



Fig. 44

Select a VP.Start ID.





Fig. 45

Click here to choose map views.

View Normal map.

View Hybrid map.

View Satellite map.

View Terrain map.



Fig. 46

Normal view

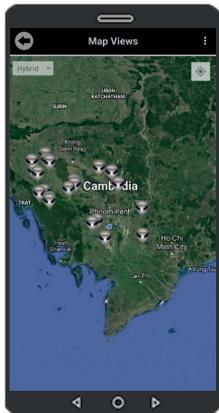


Fig. 47

Hybrid view



Fig. 48

Satellite view





Fig. 49

Terrain view

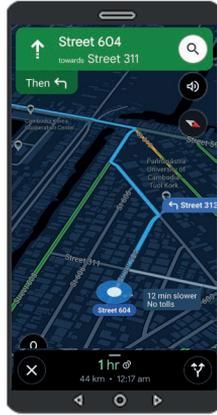


Fig. 50

Hold on VP.Start icon to show Drive Mode to VP.Start controller on Google Map.

10 Map Views (Change Map Coordinates)



Fig. 51

To change map coordinates, click and hold VP.Start ID in "Map Views".

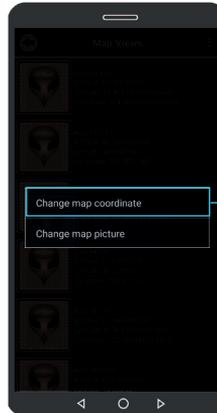


Fig. 52

Click on "Change map coordinates".





Fig. 53

Click on "GET CURRENT LOCATION".

Click on "OK" button.

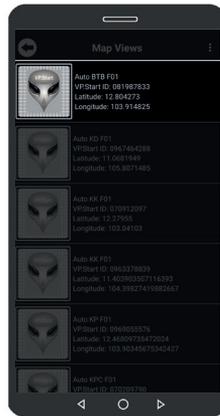


Fig. 54

DRC-003 location changed.

11 Map Views (Change Map Picture)

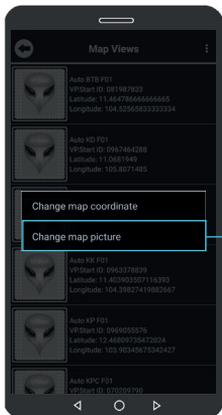


Fig. 55

To change map picture, click and hold VP.Start ID in "Map Views" as Fig. 51. And click on "Change map picture".

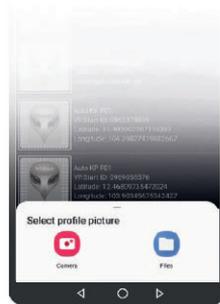


Fig. 56

Take photo from "Camera" or choose photo from "File". And confirm by "OK" button.



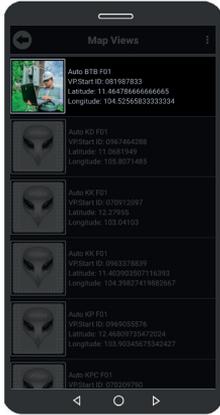


Fig. 57

DRC-003 map picture changed.

12 Map Views (Delete Map Picture)

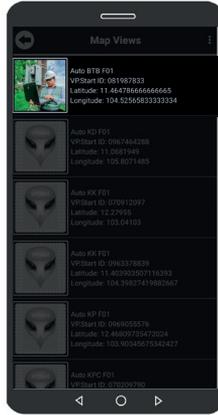


Fig. 58

To Delete Map Picture, click and hold on map picture.



Fig. 59

Click on "Delete map picture" and confirm by "OK" button.



Fig. 60

Map picture deleted.



13 All IDs

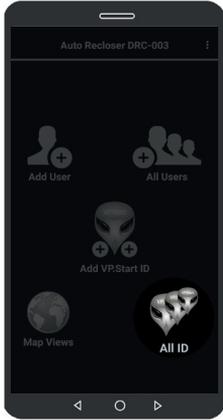


Fig. 61

Click on "All ID".



Fig. 62

All VP.Start ID view.

14 Control Interface



Fig. 63

NOTE
 Scroll up or down to view more VP.Start ID.



Fig. 64

Select a VP.Start ID.

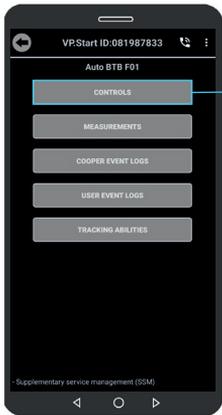


Fig. 65

Click on "CONTROLS".



Fig. 66

Click on "OK" button.



Fig. 67

NOTE

⚠ The "Signal Strength" will pop up as a notification message below indicating signal strength between 1 - 31 at the controller's site location. Signal strength of 15 and above is recommended.



Fig. 68

To control "Trip Switchgear", click on "Trip" button.



Fig. 69

Click on "YES" button to Trip Switchgear.



Fig. 70

Control "Trip Switchgear" success.



Fig. 71

To control "Close Switchgear", click on "Close" button.



Fig. 72

Click on "YES" button to close switchgear.





Fig. 73

Control "Close Switchgear" success.



Fig. 74

To turn Switch alarm on, click on "Switch Alarm OFF" button. And confirm by "OK" button.



Fig. 75

Switch Alarm ON success.

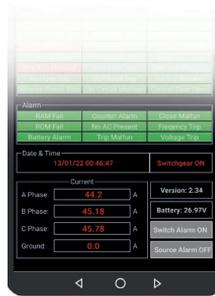


Fig. 76

To turn source alarm on, click on "Source Alarm OFF" button. And confirm by "OK" button.

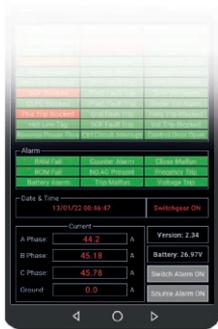


Fig. 77

Source alarm on success.



Fig. 79

Click on "OK" button.



Measurement Interface

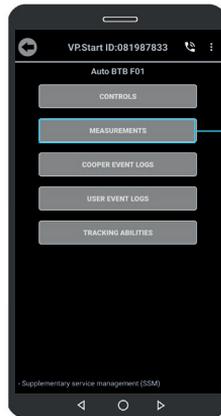


Fig. 78

Click on "MEASUREMENTS":

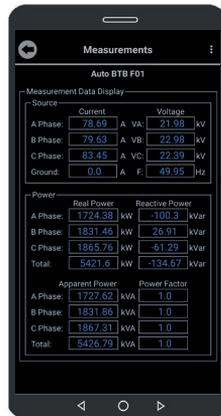
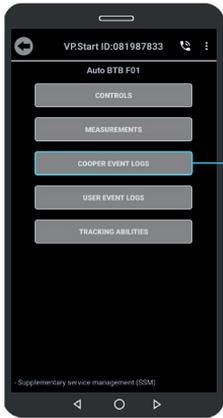


Fig. 80

Measurement Interface.

16 Cooper Event Logs Interface



Click on "COOPER EVENT LOGS".

Fig. 81



Click on "Refresh" button to read Cooper Event Logs.

Fig. 82



Confirm by "OK" button.

Fig. 83



Fig. 84

NOTE

"Receive SMS" will pop up as a notification message below indicating that 5 SMS are loading from the controller to Cooper Event Logs displayed in the App as shown in Fig. 84.

17 Delete Cooper Event Logs Interface



Click on "Refresh" button to get more Cooper Event Logs.

NOTE
 Scroll up or down to view more Cooper Even Logs.

Fig. 85



To delete Cooper Event Logs, click and hold on Cooper Event Logs.

Fig. 86



Click on "Delete All Event Logs".

Fig. 87



Confirm by "OK" button.

Fig. 88

18 User Event Logs Interface



Fig. 89

Cooper Event Logs deleted from App interface.

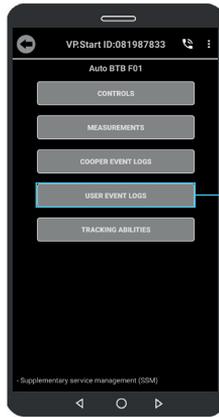


Fig. 90

Click on "User Event Logs".



Fig. 91

Click on "Refresh" button to read User Event Logs.

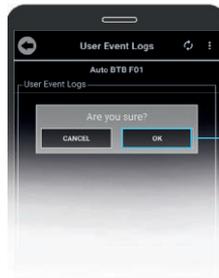


Fig. 92

Confirm by "OK" button.





Fig. 93

User Event Logs shown.

19 Delete User Event Logs Interface

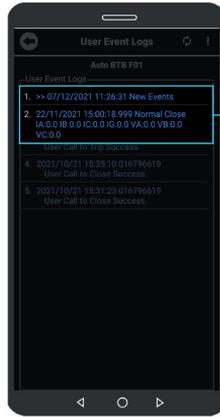


Fig. 94

To delete User Event Logs, click and hold User Event Logs.



Fig. 95

Click on "Delete All User Event Logs" and click on "OK" button to confirm.



Fig. 96

User Event Logs deleted from app interface.



20 Tracking Abilities Interface

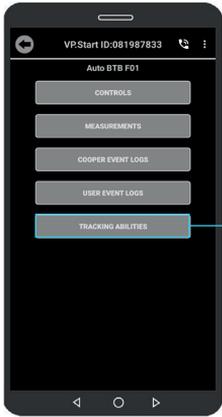


Fig. 97

Click on "TRACKING ABILITIES".

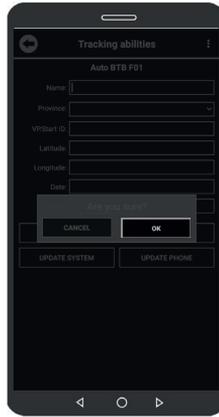


Fig. 98

Click on "OK" button to read DRC-003 controller Tracking Abilities.

21 Remote "Call Control"



Fig. 99

Click to read data on phone.

Click to update data from phone to system.

Click to update data to phone.

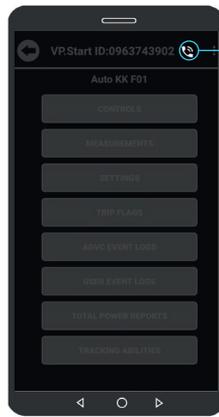


Fig. 100

Click on "Call" button to initiate call control.





Fig. 101

CALL CONTROL

- Click ① for Khmer.
- Click ② for English.
- Click ③ for an introduction to its features and an explanation of how to use the DRC-003.
- Click ⑤ for "Current".
- Click ⑥ for "Voltage".
- Click ⑦ to know about the "Switching Position" function.
- Click ⑧ for "Re-start Controller".
- Click ⑨ for "Power Consumption".
- Click ⑩ for Opening "Control Mode".
- Click * for "Trip".
- Click # for "Close".

- Click to turn on Speaker.
- Click to Mute.
- Click to show Keypad.

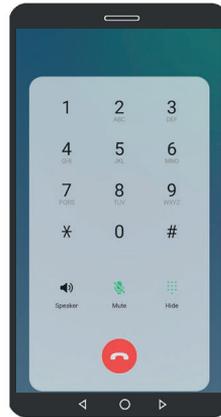


Fig. 102

Remote call control interface.

②② Renaming VP.Start IDs (DRC-003 Controllers)

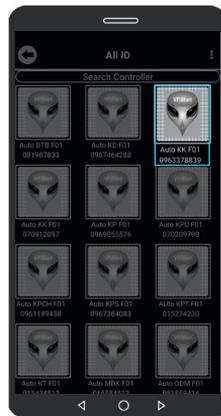


Fig. 103

To rename VP. Start ID click and hold on VP.Start ID icon.





Fig. 104



Fig. 105

Rename existing name. And click on "OK" button.

23 Delete VP.Start ID

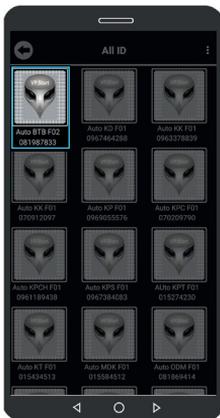


Fig. 106

Controller's name changed.

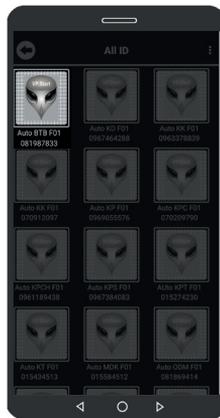


Fig. 107

To delete VP.Start ID, click and hold on VP.Start ID icon.

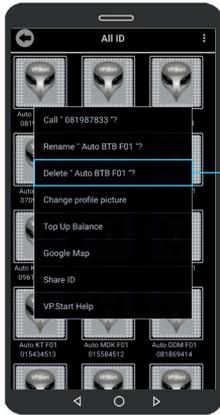


Fig. 108

Click on "Delete". Then click on "OK" button.



Fig. 109

NOTE
 "Success" will pop up as a notification message below indicating that the controller has been successfully deleted from the system.

24 Clear Alarm



Fig. 110

To Clear Alarm, click and hold on alarmed VP.Start ID.

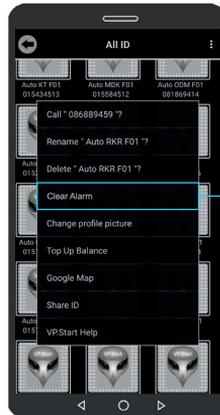


Fig. 111

Click on "Clear Alarm". Click on "Back" sign.





Fig. 112

Alarm VP.Start ID cleared.

25 Change Profile Picture



Fig. 113

To change profile picture, click and hold on VP.Start ID icon.

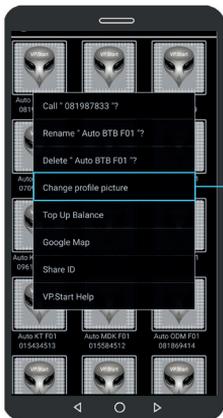


Fig. 114

Click on "Change profile picture".



Fig. 115

Take photo from "Camera" or choose photo from "File". And confirm by "OK" button.



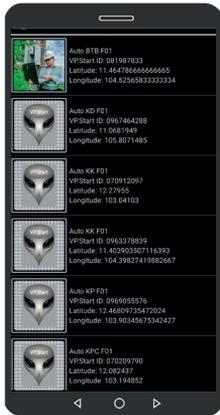


Fig. 116

Profile picture changed.

26 Delete Profile Picture



Fig. 117

To Delete profile picture, click and hold on VP.Start ID icon.

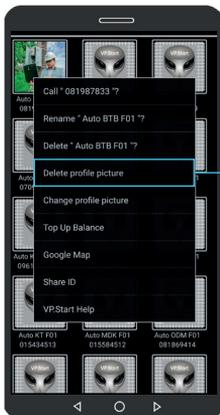


Fig. 118

Click on "Delete profile picture". And confirm by "OK" button.

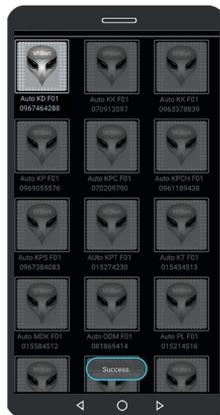


Fig. 119

Controller profile picture deleted.

NOTE

- Success will pop up as a notification message below indicating that the controller has been successfully deleted from the system.

27 Top Up / Check Balance

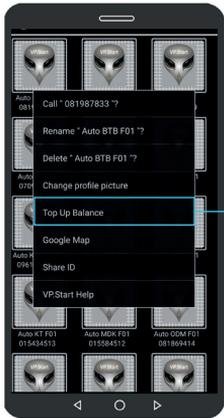


Fig. 120

To top up or check balance, click and hold on VP.Start ID icon and click on "Balance".



Fig. 121

Input the check or top up balance command.
Click on "SUBMIT" to send the "Check or top up balance" command to the controller.



Fig. 122

Confirm by "OK" button.



Fig. 123

Balance interface showed.

28 Google Map



Fig. 124

View Google Map with Drive Mode to VP.Start controller, click on "Google Map".



Fig. 125

Google Map Drive Mode showed.



Fig. 126

Click on "X" sign to view in Google Map view.

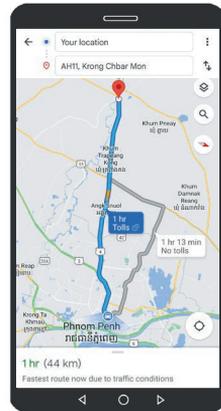


Fig. 127

Google Map viewed.



29 Share ID



Fig. 128

To share VP.Start ID to other phone number, click and hold on VP.Start ID icon and click on "Share ID".



Fig. 129

Click to write phone number to share.
Click on "SEND" button.

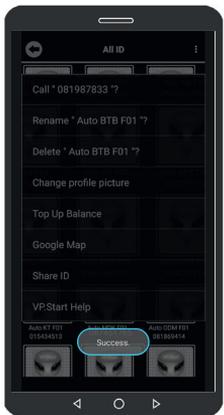


Fig. 130

NOTE
"Success" will pop up as a notification message below indicating that you have successfully shared the DRC-003 controller's ID and controller information to another phone number as an SMS as shown in Fig. 130.



Fig. 131

NOTE
Controller ID and information displayed as an SMS with a shared number.



 VP.Start Help



Fig. 132

To alert to call center immediately for help, click and hold on VP.Start ID icon and click on "VPStart Help".

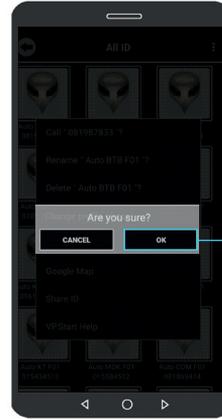


Fig. 133

Click on "Ok" button. The app will command the DRC-003 controller to automatically share its ID information and call directly to VP.Start's call center to alert our support team immediately.

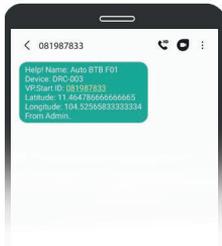


Fig. 134

NOTE
As shown in Fig. 134, the DRC-003 controller will share its ID to VP.Start's call center.



Fig. 135

NOTE
As shown in Fig. 135, the DRC-003 controller is calling VP.Start's call center to immediately alert the support team.



Fig. 136

→ If the controller is inaccessible for any reason, the app can be used to manually send the controller ID to the VP.Start call center. Click on "SEND CONTROLLER ID: 09855589" to execute the command. And confirm by "OK" button.

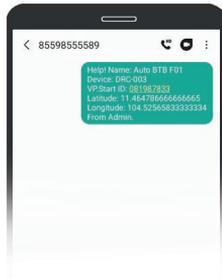


Fig. 137

NOTE

↕ The user has shared the controller's ID manually with VP.Start's call center as shown in Fig. 137.



Fig. 138

→ Or Click on "CALL CENTER: 098 555 589" to call to VP.Start's call center.



Fig. 139

NOTE

↕ User has manually executed the command to call VP.Start's call center.



31 Alarm System

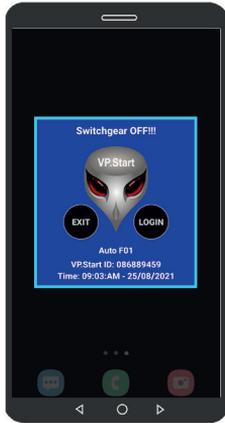


Fig. 140

Switchgear OFF Alarm.

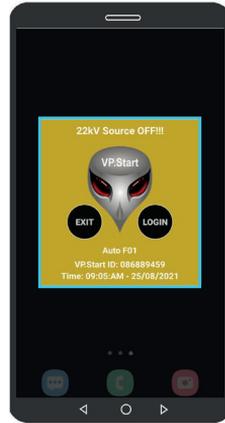


Fig. 141

22kV Source OFF Alarm.

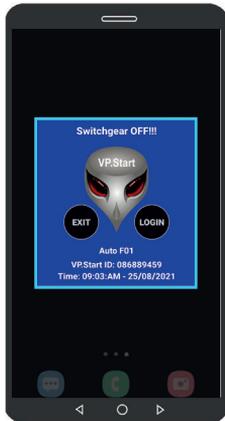


Fig. 142

NOTE

⚠ An alarm notification message will appear whenever the system develops a problem such as Switchgear OFF and 22kV Source OFF.

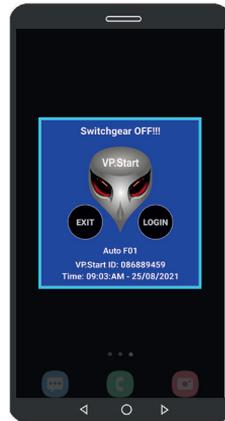


Fig. 143

NOTE

- ⚡ Click on "LOGIN" to login controls interface panel.
- ⚡ Click on "EXIT" to exit an alarm notification message.

TROUBLESHOOTING

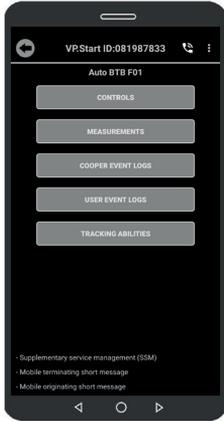


LED Light Status Explanation

LED Light	LED Status	System Working Status
Power	Off	The Power button is not turned On. No power input.
	Red	Power On
Running	Red (blinking every 1s)	Running normally
GSM	Red On	GSM On
	Off	GSM Off
Net	64ms On/800ms Off	GSM has not registered to a network
	64ms On/3000ms Off	GSM has registered to a network
	64ms On/300ms Off	GPRS communication
	Off	GSM is not running

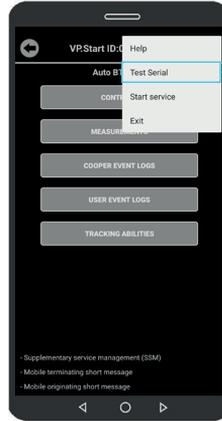


Test Serial DRC-003 Controller



01

To Test Serial DRC-003 Controller, click on "Menu Option" sign.



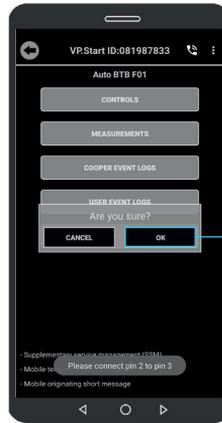
02

Click on "Test Serial".



03

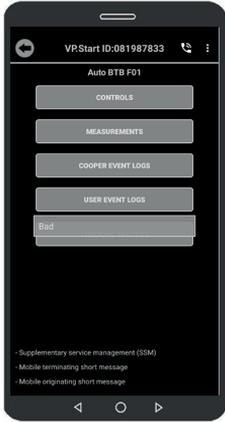
Connect pin 2 to pin 3 on DRC-003 controller.



04

Click on "OK" button.



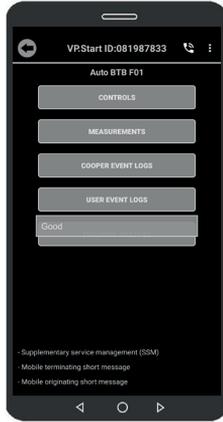


05

Serial Error.

NOTE

⚠ The notification message "Bad" indicating that DRC-003 controller's Serial Error.



06

Serial OK.

NOTE

⚠ The notification message "Good" indicating that DRC-003 controller's Serial OK.



CONTACT US



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120408, Cambodia.



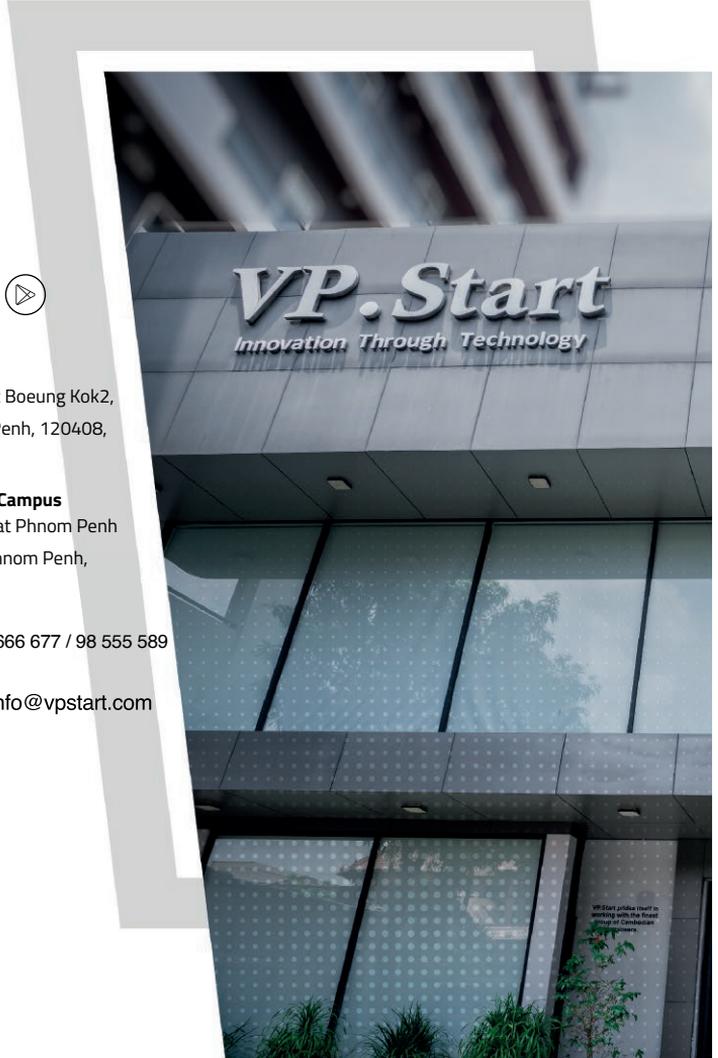
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