# INOVANCE



## User Guide

## MDKE9 Multi-Language LCD Keypad

User Guide

B03

# Preface

MDKE9 Multi-language LCD keypad is a new generation AC drive commissioning tool, which supports MD200 series, MD310 series, MD500/MD500E/MD500-PLUS series, MD290 series, CS710 series, IS580 series GP products AC Drives and MD380L series, ME320LN series Elevator AC drives.

This user guide describes the MDKE9 Multi-language LCD keypad product information, installation and wiring, function and application, maintenance and repair. Please be careful to read and understand the user guide before use MDKE9 keypad. Contact our customer service center if you have any questions.



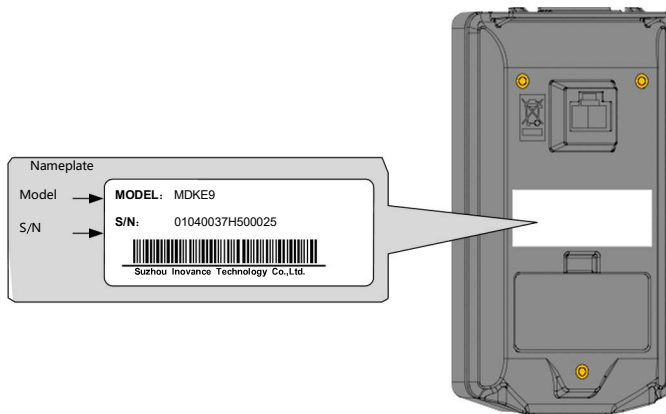| Note |
|------|
| The drawings in the user guide are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions. |
| The drawings in the user guide are shown for description only and may not match the product you purchased. |
| The instructions are subject to change, without notice, due to product up-grade, specification modification as well as efforts to increase the accuracy and convenience of the user guide. |
| Contact our agents or customer service center if you have problems during the use. |
| E-mail: info@inovance.eu |

# Contents
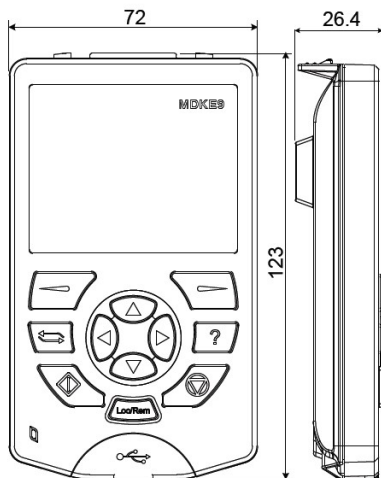
# Chapter 1 Product Information

## 1.1 Nameplate

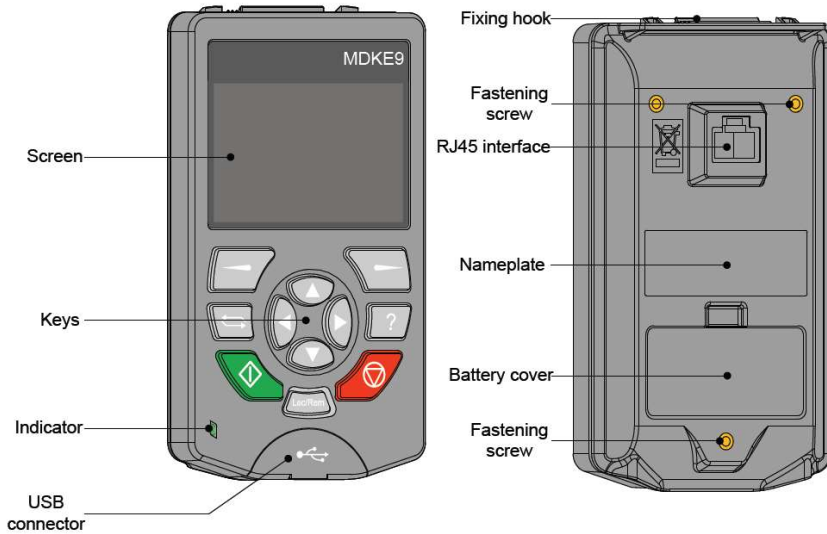Figure 1-1 Nameplate



## 1.2 MDKE9 keypad dimensions

Figure 1-2 MDKE9 keypad dimensions (Unit: mm)

## 1.3  Components

Figure 1-3 MDKE9 keypad components



- USB connector

Connect the MDKE9 to a PC via a USB cable for data exchange after connection, it can work in USB disk mode to read/write the MDKE9 SD card from the PC.

- RJ45 connection terminal

To connect MDKE9 keypad to the AC drive. Mechanical connection is completed through the top buckle.

- Nameplate

To show information such as product model and serial number.

- Battery cover

The battery and SD card slot are beneath the cover. The battery provides power to the real-time clock. The SD card stores factory parameters and real-time data of the AC drive, which helps in fault diagnosis and analysis. The SD card can also be used to store user program, update firmware.

| *Note* | Due to safe transportation requirements, the battery is not installed when the product is shipped. Please ensure to install the battery (CR2032 type) before starting operation in order to get correct and complete functionality of this product. |
|---|---|

- Fixing hook

To fix the MDKE9 keypad to the mounting base.

- Fastening screw

The MDKE9 keypad can be installed on the cabinet door by using the installation base (default IP rating is IP20), the higher IP rating (IP54) installation base is optional. After installing the base, the MDKE9 keypad has to be fixed with fastening screws.

## 1.4   Keys Introduction

Table 1-1 Keys and functions

| Key | Name | Function |
|---|---|---|
| | Left | To return or cancel. |
| | Right | To select or confirm. |
| | Shift | To switch between Operation Status Menu screen and Main Menu |
| | Help | To open the help interface.<br>The content on the help page relevant to corresponding menu or interface. |
| | Run | To start the device in local control mode. |
| | Stop | To stop the device in local control mode.<br>To reset the fault when the device in fault status. |
| | Multifunctional | To delete backup files, select parameters to be shown on user views and show user view options. |
| | Direction | To use and to select items in the menu and list, scroll the text page, and adjust the values (time setting, password entering, or parameter value modification).<br><br>To use and to move the cursor left or right when you are modifying parameters. |

## 1.5   Indicator Status

The status indicator is used to indicate whether a fault or alarm exists.

Table 1-2 Indicator status

| Indicator state | Appearance | Meaning |
|---|---|---|
| Always on green | | The device runs normally. |
| Flashing in green | | Data is transferring between the MDKE9 keypad and PC via USB. |
| Always on red | | Communication between the MDKE9 keypad and the device is normal, but the device is faulty. |
| Flashing in red | | Communication between the MDKE9 keypad and the device is interrupted. |

## 1.6   General Specifications

Table 1-3 General  Specifications

| S.N | Item | Running | Storage | Transportation |
|-----|------|---------|---------|----------------|
| 1 | Working temperature range | -20ºC ~ +55ºC | -40ºC ~ +70ºC | -40ºC ~ +70ºC |
| 2 | Altitude requirement | < 4000 m | - | - |
| 3 | Relative humidity | 95% (non-condensing) | | |
| 4 | Pollution / class | 3C3 (IEC 60721-3-3，IEC 60721-3-2，IEC 60721-1-3-1) | | |
| 5 | Vibration | IEC 61800-5-1 ed 2<br>EN 60082-2-6 test Fc (1g) | - | 2M3 class<br>(EN 60082-2-6) |
| 6 | Impact | 3M4 class<br>(EN 60062-2-27) | - | 2M2 class<br>(EN 60082-2-27) |
| 7 | Free drop | IEC 60068-2-32<br>Drop height 1 m | - | - |
| 8 | IP rating | Connected to drive equipment: IP54 (select IP54 accessories)<br>Single unit: IP20 | | |
| 9 | Electromagnetic compatibility | IEC 61800-3 | | |
| 10 | Material | Disposal: the MDKE9 keypad is recyclable.<br>Refer to relevant international and local laws and regulations for disposal and recycling. | | |

# Chapter 2 Installation and Wiring

This user guide takes MD310 AC drive as the example to describe the installation and wiring of the MDKE9 keypad. Refer to the corresponding drive user guide for details if the MDKE9 keypad is installed on other AC drives.

## 2.1 Connect the MDKE9 keypad with AC Drive

Open the external panel cover on MD310 AC drive, connect the RJ45 connection terminal at the back of the MDKE9 keypad via a network cable (optional).



External panel interface
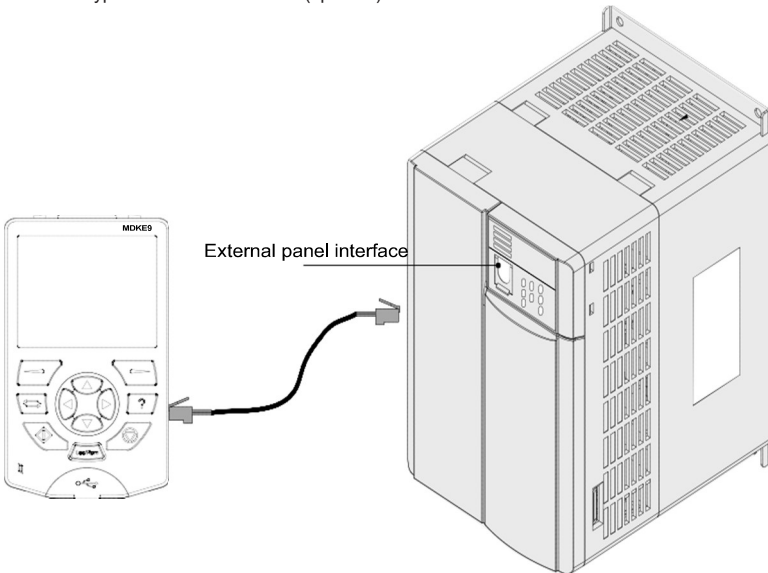
Table 2-1 Recommended Inovance standard network cables

| rchase code | Model | Description |
| --- | --- | --- |
| 01040020 | C45590-GNCN-C25003 | Standard network cable with length of 3000 mm |
| 01040017 | C45590-GNCN-C250015 | Standard network cable with length of 1500 mm |
| 01040016 | C45590-GNCN-C2500080 | Standard network cable with length of 800 mm |

## 2.2　Connect MDKE9 keypad with PC

The PC connection USB cable type is mini-B, the maximum length is 3 m. The communication protocol between the MDKE9 keypad and the PC is USB 2.0

1)　　Open the cover of the USB connection terminal.

Figure 2-1 Connect MDKE9 keypad to PC (step 1)
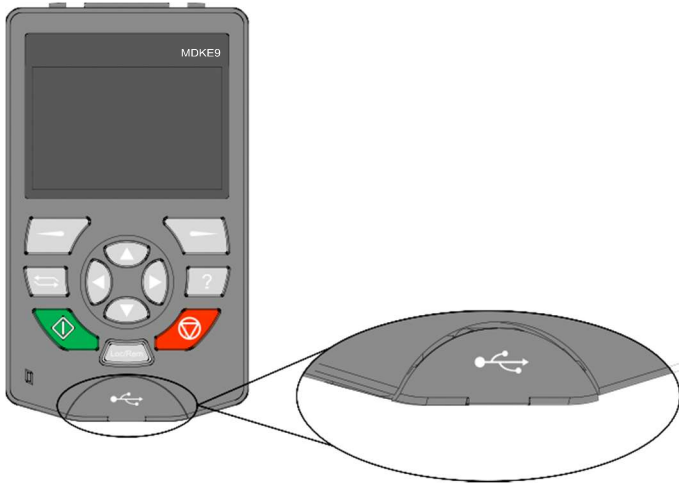
2)　　Plug in the USB cable; we suggest to use cable with toroidal ferrite. Then connect the cable to PC.

Figure 2-2 Connect MDKE9 keypad to PC (step 2)
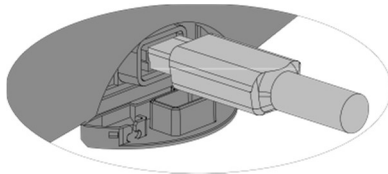
Figure 2-3 MDKE9 keypad display after connected to PC.

# Multi-Language Keypad

Inovance ETC – Milan
Rev.1.21.228
[7/06/2022]

Data Storage
USB Serial Adapter

| Note | The MDKE9 keypad supports the data storage and USB serial adapter functions. |
|------|------------------------------------------------------------------------------|

## 2.3 Install MDKE9 keypad on the Cabinet Door

When installing the MDKE9 keypad on the cabinet door, first install the panel base (optional), the installation procedure is as follows:

| Material code | Model | Description |
|---|---|---|
| 01040022 | CP600-BASE1 | Panel installation base |

1) Panel installation base

Use four screws ❶ as shown in figure 2-4 to fix the base on the cabinet door

Figure 2-4 Installing base on the cabinet door
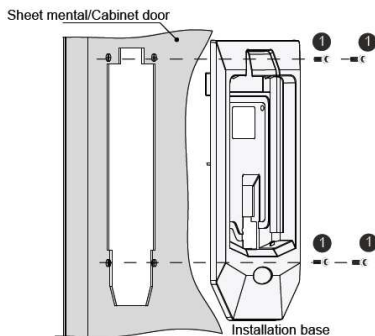


2) MKDE9 keypad installation

Place the bottom of the MDKE9 keypad at the bottom of the base slot. Rotate the MDKE9 keypad at the rotation point and push the upper part until it clicks, and the keypad is mounted on the base successfully.

Figure 2-5 Installing the MDKE9 keypad into the base

3) Take the MDKE9 keypad out.

Press clip **2** in figure 2-5 with the index finger and middle finger to release the MDKE9 keypad, then pull the upper end of the MDKE9 keypad out of the base slot.

Figure 2-6 Sheet metal slot  dimensions                     Figure 2-7 Keypad installation base dimensions
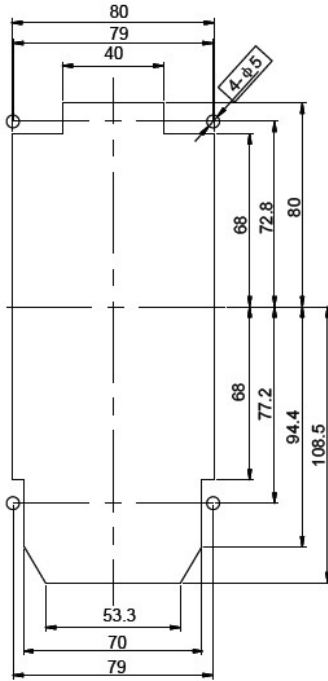
Unit: mm
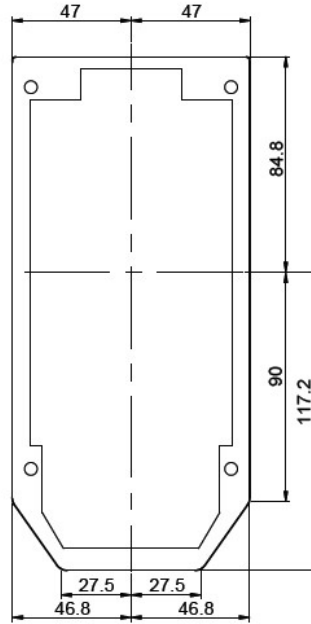
# Chapter 3 Functions and Applications

## 3.1 Summary

Figure 3-1 MDKE9 keypad Main Menu structure diagram

```
Main Menu
 ├── Parameter Groups
 ├── Parameter List
 ├── Authority
 │    ├── Customer Login ──── Maintenance Params
 │    └── Factory Login
 │              ├── Factory Default
 │              └── Edit Customer Password
 ├── Parameters Backup
 │    ├── All
 │    └── By Group
 ├── Parameters Restore
 ├── User View
 │    ├── Short List
 │    ├── Long List
 │    ├── Big Digits
 │    ├── Meter
 │    ├── Auto show
 │    ├── Load
 │    └── Save/Delete
 └── Settings
      ├── Select Model
      ├── System Language
      ├── Baudrate
      ├── Protocol Type
      ├── Date & Time
      ├── LCD Brightness
      └── LCD Backlight
```

## 3.2  Operation Status

After connect to the Drive successfully, MDKE9 will switch automatically to operation status menu, as shown below.

| | |
|---|---|
| **MD500Plus  5.5kW  10:50  N  1 19.2K[---]**<br><br>**STOP**<br><br>**0.00Hz**<br>Running frequency | **MD500Plus  5.5kW  10:50  N  1 19.2K[---]**<br><sup>ST</sup>  **Main Menu**<br>Parameter by Group<br>Parameter by List<br>Parameters Backup<br>Parameters Restore<br>User View<br>Setting |

**MD500Plus  5.5kW  10:50  N  1 19.2K[---]**

**STOP**

**0.00Hz**
Reference Frequency
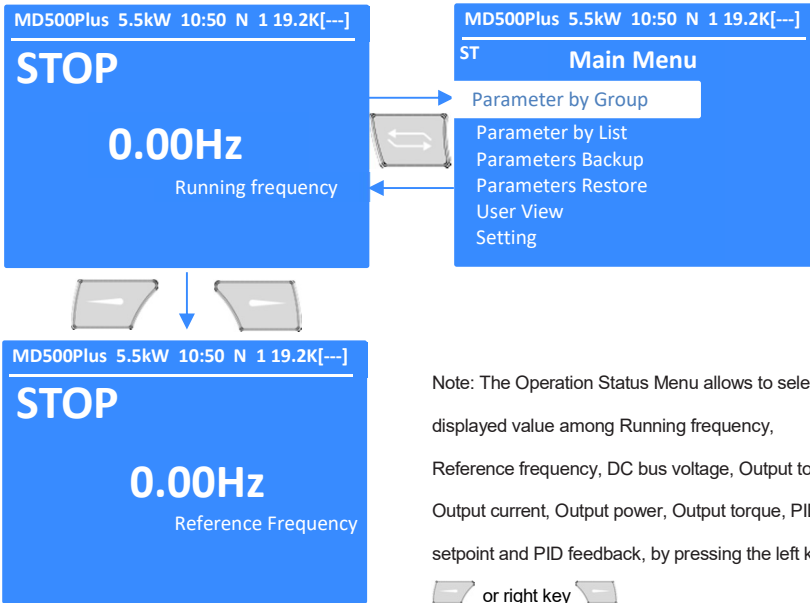
Note: The Operation Status Menu allows to select the displayed value among Running frequency, Reference frequency, DC bus voltage, Output torque, Output current, Output power, Output torque, PID setpoint and PID feedback, by pressing the left key or right key

### 3.3.1 Customer Login

There are some advanced functions related to access authority, which can protect the maintenance parameters and limit the keypad usage.

Table 3-1 Customer Login operation

| Task | Action |
|---|---|
| Customer Login | "Authority" - "Customer Login" - "function select" - "Input password" |
| *Note: Customer password should be set first before login with factory password!* | |

### ➢ Maintenance Params

After login with customer password, the maintenance parameters will be shown in the parameters list. This is an optional function, if you have this requirement, please contact us.

### 3.3.2 Factory Login

Factory Login which allows to edit the customer password and restore the MDKE9 keypad to factory.

Table 3-2 Factory Login operation

| Task | Action |
|---|---|
| Factory Login | "Authority" - "Factory Login" - "Edit Customer Password" - "Input password" |
| *Note: After login by factory password, then the customer password can be edited!* | |

## ➢ Factory Default

Which will be allow the MDKE9 keypad restore to factory default settings. Generally used to fix the unknown issue, which causes that the keypad cannot communicate with AC Drives.

## ➢ Edit Customer Password

If the customer forgets the customer password, we can use this function to reset the customer password after login by factory account.

## 3.4 Parameter Setting

### 3.4.1 Multi-Language Setting

● In the Main Menu select the Settings menu

● In the Settings menu select the System Language menu to switch the keypad menu display language.

Now it supports English, French, Italian, Russian, Spanish and Turkish languages; in the future it will support more languages.

Figure 3-2 System languages setting operation
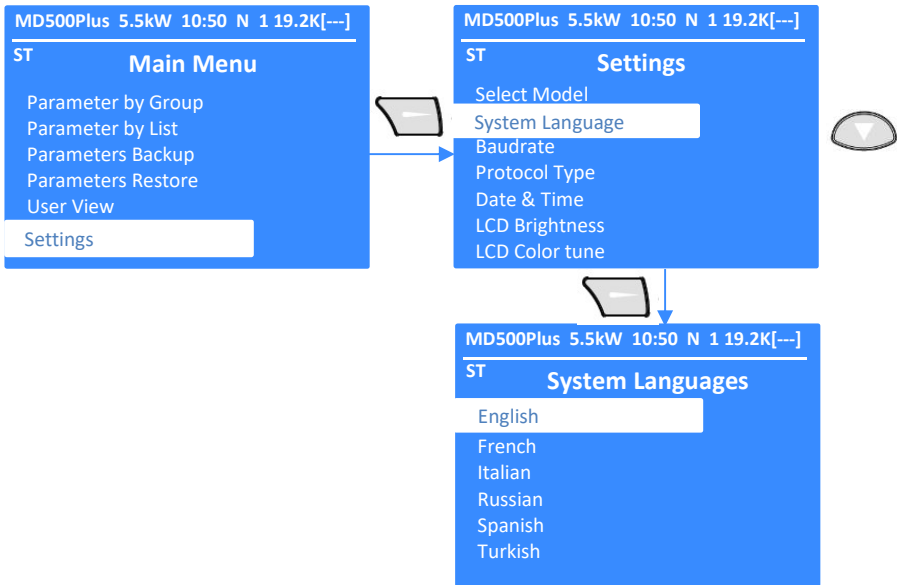


Note: Once the language has been selected, the keypad will look if the parameters description is available in this language. If not, the keypad selects automatically English language for the parameter description. The table below lists the available languages for the different AC drive types.

| Note | MD200/310/290/500/ | English/Turkish/Russia/French/Spanish |
|------|--------------------|----------------------------------------|
|      | MD380L | English/French |
|      | MD500E/IS580 | English |
|      | CS710 | English/Turkish/Russian/Spanish |
|      | MD500-Plus | English/Russia/Spanish |
|      | ME320LN[new] | English/Turkish/Russian/French |

## 3.4.2   Model Selection

Model selection setting operation, as shown in figure 3-3, is as follows:

● In the Main Menu select the Settings menu.

● In the Settings menu select the Select Model menu to switch the device model; after successfully switched, the model's name will be displayed on the left of the status bar.

Now MDKE9 keypad supports MD200, MD310, MD290, MD500, MD500E, CS710, IS580, MD380L, ME320LN[new] and MD500-Plus drives.

*Note: When powered on, MDKE9 keypad runs an auto-searching to identify the drive model, therefore user can skip reading the model selection (chapter 3.4.2), Protocol type selection (chapter 3.4.3) and Baud rate selection (chapter 3.4.4) sections of this manual.*

Figure 3-3 Model selection operation
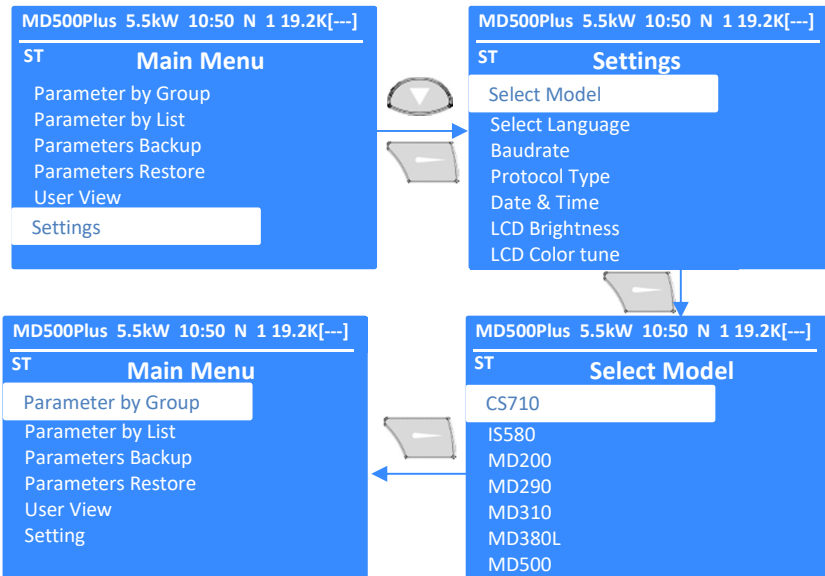


## 3.4.3   Protocol Type Selection

As the different models use a different communication protocol, so after model selection, the correct protocol should be selected; now supports three different protocols, the details are shown in table 3-3.

Table 3-3 Protocol Type with different Model device

| Model device | Protocol Type |
|---|---|
| MD200/MD310/MD290/MD500/MD500E/CS710/MD380L/ME320LN[new] | MD/ME/CS Series |
| IS580/MD500-PLUS | Protocol Type 1 |
| Others | Modbus RTU |

| *Note* | In MD200 and MD310 drives parameter FD-07 = 1 should be set to enable the MDKE9 keypad communication protocol! |
|---|---|

Figure 3-4 describes the protocol type selection operation.

Figure 3-4 Protocol type selection operation
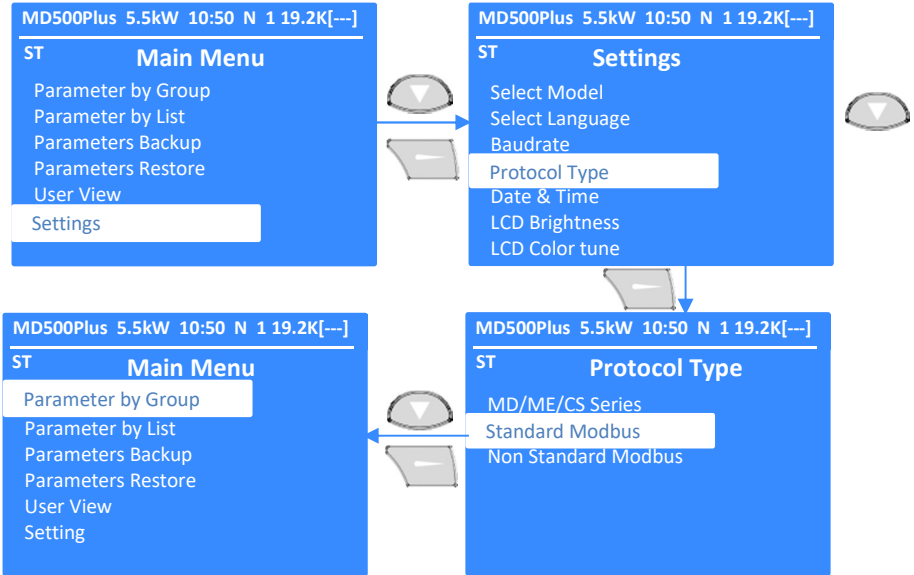


### 3.4.4   Baud Rate Selection

Figure 3-5 describes the Modbus communication baudrate selection operation.

Figure 3-5 Modbus baudrate selection operation
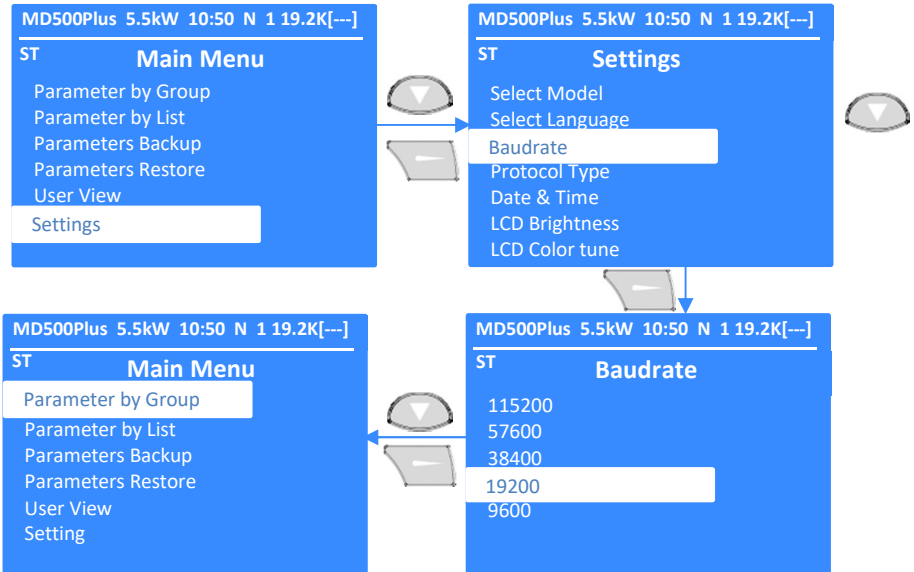
### 3.4.5 Date & Time Setting

MDKE9 keypad supports the RTC function; we can set the system date and time in Settings menu; the setting operation is as shown below in figure 3-6.

Figure 3-6 Date & Time Setting Operation

Figure 3-7 shows the brightness time setting operation.

Figure 3-7 LCD brightness time setting operation
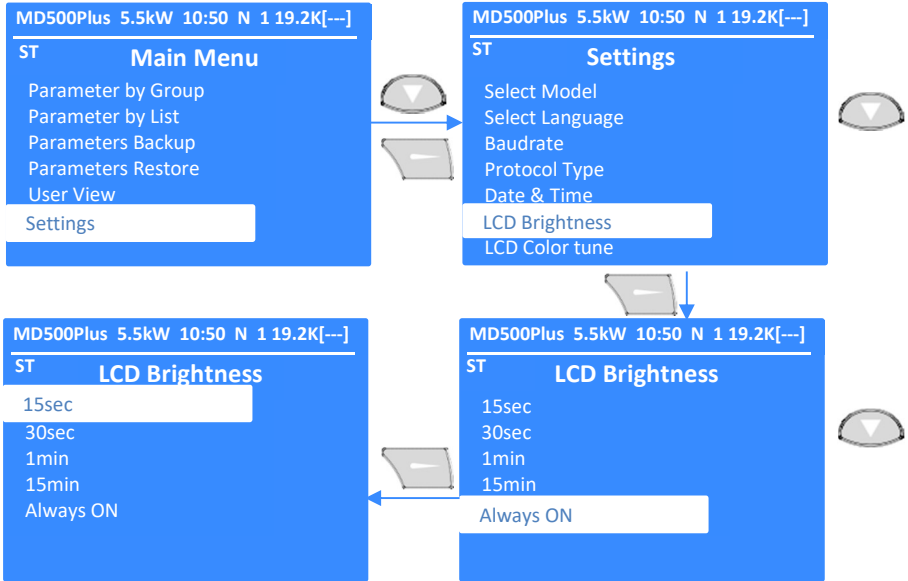


## 3.4.7   LCD Color tune Setting

Figure 3-8 shows the operation to reverse the LCD backlight color.

Figure 3-8 LCD display backlight color reverse operation
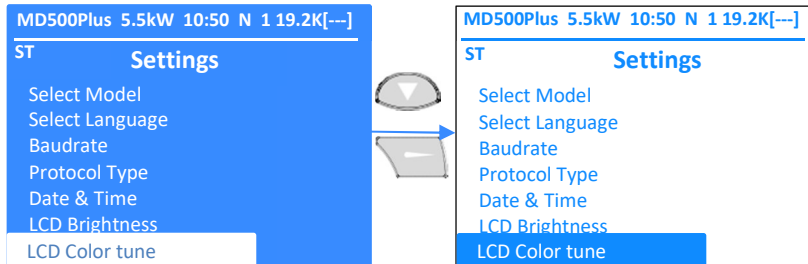


## 3.4.8   Firmware Version Info

MDKE9 keypad latest firmware version is 1.21.228, release date is 2022-07-06.

## 3.5  Parameters Backup

The MDKE9 keypad supports the parameters backup function, which allows to select all parameters or by parameter groups. The backup file will be saved in SD card Backup directory, the format is .csv which can be convenient to edit using PC Microsoft Office suite.

The backup file is named by the model name and date & time, which can be convenient to manage.

If needed, backup files can be deleted pressing the Loc/Rem Key

Figure 3-10 shows the parameters backup operation.

Figure 3-10 Parameters backup operation



| | |
|---|---|
| **MD500Plus  5.5kW  10:50  N  1 19.2K[---]**<br>**ST**        **Settings**<br><br>Parameter by Group<br>Parameter by List<br>Authority<br>Parameters Backup<br>Parameters Restore<br>User View<br>Setting | **MD500Plus  5.5kW  10:50  N  1 19.2K[---]**<br>**ST**     **Parameters Backup**<br><br>All<br>By Group |
| **MD500Plus  5.5kW  10:50  N  1 19.2K[---]**<br>**ST**        **Info**<br><br>Read Parameters<br>COMPLETED | **MD500Plus  5.5kW  10:50  N  1 19.2K[---]**<br>**ST**     **Parameters Backup**<br>From Group 00 ... FF<br><br>Filename:<br>MD500Plus_20220715_153254.csv<br><br>FuncCode F3-15[ 5%] Errors 0<br>RUNNING |

| | |
|---|---|
| **Note** | When executing parameters backup operation, MDKE9 keypad will display the progress percentage, if any error occurs, it will also show the number of errors. The errors will be recorded in the same directory for convenient check. |

## 3.6  Parameters Restore

The MDKE9 keypad can support the backup of many different model's parameters in the SD card. The default SD card capacity is 8GB, and the maximum capacity can be up to 32GB.

Figure 3-11 shows the parameters restore operation.

Figure 3-11 Parameters restore operation
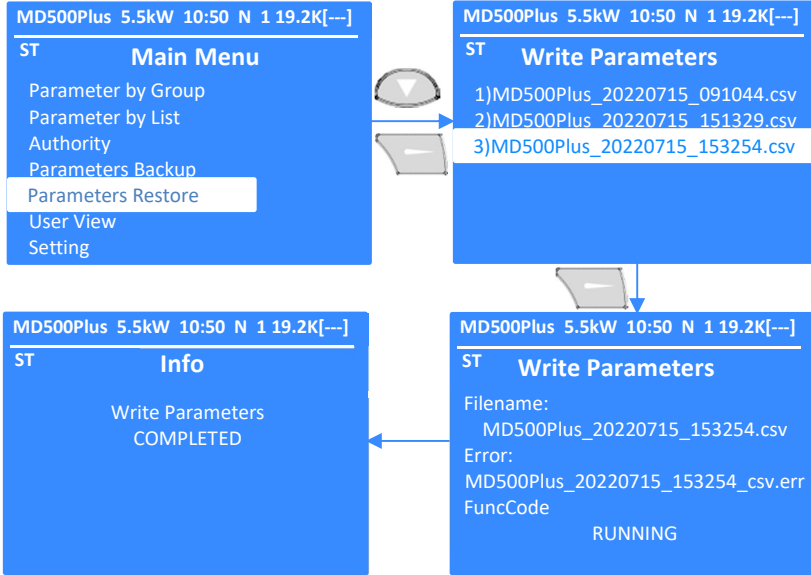


| Note | When executing parameters restore operation, MDKE9 keypad will display the process progress, if any error occurs, it will be also recorded in the same directory for convenient check. |

## 3.7  User View

The MDKE9 keypad is able to display some special user-defined parameters with different types of display, as described in table 3-4.

Table 3-4 User View Display Types

| User View Display Type | Contents |
|---|---|
| Short List | Display the value and the function code description |
| Long List | Display the value without description |
| Big Digits | Display up to 3 parameters with big font |
| Meter | Display one parameter with meter gauge |

| | |
|---|---|
| *Note* | The User View operation supports saving, loading, deleting the customer selected parameters. After selecting the parameters of the user view, this configuration can be saved in MDKE9 SD card. The saving procedure is described below. Then after every power on, the saved configuration can be loaded for quick use. |

The first step of the User View setting operation is to select the parameters, as shown in figure 3-12. The procedure is as follows:

● From the Main Menu select the menu of Parameters by Group or Parameters by List

● Select the parameter which you want to add to User View

● Press Loc/Rem Key ⬭ in MDKE9 keypad, to confirm the selection of the parameter for the User View. After pressing this key, the symbol > will be shown in the front of the function code

● Repeat the above operation to continue selecting parameters in User View

Figure 3-12 User View setting operation
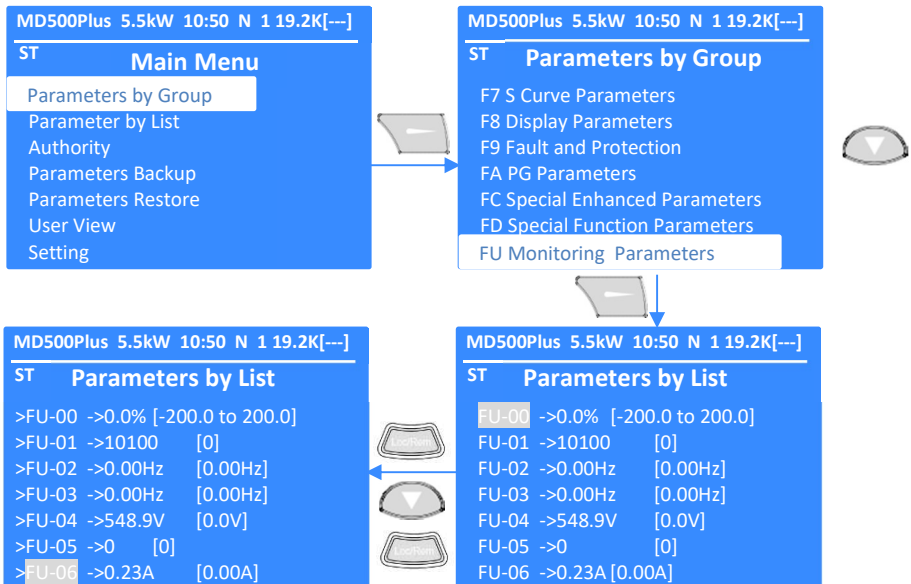
Press return key [icon] to go back to Main Menu after finishing to add parameters to user view. Figure 3-13 shows how to access the User View Menu.

Figure 3-13 User View Menu

| MD500Plus  5.5kW  10:50  N  1 19.2K[---] | | MD500Plus  5.5kW  10:50  N  1 19.2K[---] |
|---|---|---|
| **ST**   **Main Menu** | | **ST**   **User View** |
| Parameter by Group | | Short List |
| Parameter by List | | Long List |
| Authority | | Big Digits |
| Parameters Backup | | Meter |
| Parameters Restore | | Auto Show |
| User View | | Load |
| Setting | | Save |
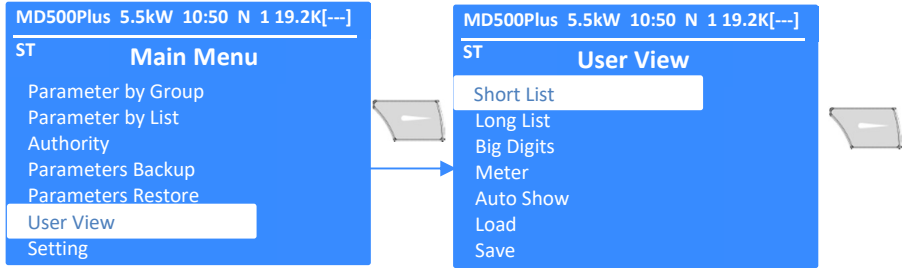
➢ **Short List**

Figure 3-14 shows the appearance of the short list display type.

Figure 3-14 Short list display

| MD500Plus  5.5kW  10:50  N  1 19.2K[---] | | MD500Plus  5.5kW  10:50  N  1 19.2K[---] |
|---|---|---|
| **ST**   **User View** | | **ST**   **User View Options** |
| FU-00  0.0%  Pre-torque current | | Meter |
| FU-01  10100  Logic information | | Row1 |
| FU-02  0.00Hz  Frequency reference | | Row2 |
| FU-03  0.00Hz  Feedback frequency | | Row3 |
| FU-04  544.8V  DC Bus voltage | | |
| FU-05  0  Output voltage | | |
| FU-06  0.22A  Output current | | |
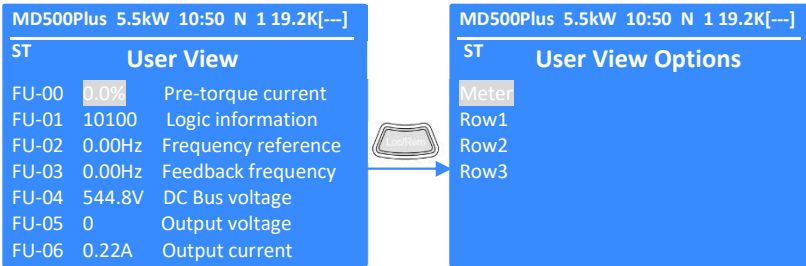
➢ **Long List**

Figure 3-15 shows the appearance of the long list display type.

Figure 3-15 Long list display
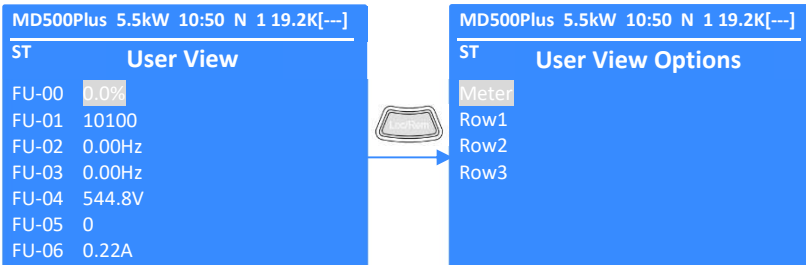
| MD500Plus  5.5kW  10:50  N  1 19.2K[---] | | MD500Plus  5.5kW  10:50  N  1 19.2K[---] |
|---|---|---|
| **ST**   **User View** | | **ST**   **User View Options** |
| FU-00  0.0% | | Meter |
| FU-01  10100 | | Row1 |
| FU-02  0.00Hz | | Row2 |
| FU-03  0.00Hz | | Row3 |
| FU-04  544.8V | | |
| FU-05  0 | | |
| FU-06  0.22A | | |

| | |
|---|---|
| **Note** | In the Short List and Long List menu, press [icon] Loc/Rem key to select the parameter to be displayed in Big Digits and Meter menus. Selecting Row1/Row2/Row3 will add three parameters to display in Big Digits. For example: add FU-04 to Meter, add FU-01 to Row1, add FU-04 add to Row2, add FU-06 to Row3. Selecting Meter will add this parameter to display in Meter. |

➢   Big Digits

Figure 3-16 below shows how to access the *Big Digits* display.

Figure 3-16 How to access *Big Digits* display

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|
| ST |
| **User View** |
| Short List |
| Long List |
| Big Digits |
| Meter |
| Auto Show |
| Load |
| Save |

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|
| ST |
| **Big Digits** |
| 10100     Logic information |
| 556.7V    Bus voltage |
| 0.22A     Output current |
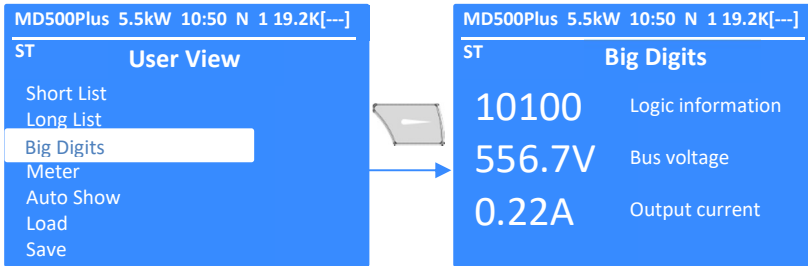
➢   Meter

Figure 3-17 below shows how to access the *Meter* display.

Figure 3-17 How to access *Meter* display

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|
| ST |
| **Main Menu** |
| Parameter by Group |
| Parameter by List |
| Authority |
| Parameters Backup |
| Parameters Restore |
| User View |
| Setting |

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|
| ST |
| **User View** |
| Short List |
| Long List |
| Big Digits |
| Meter |
| Auto Show |
| Load |
| Save |

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|
| ST |
| **Bus voltage** |
| 0.0V          650.0V |
| 556.4V |

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|
| ST |
| **Meter** |
| FU-00  -> Bus voltage |
| Show Meter |
| Min ->   0.0V |
| Max -> 650.0V |

➢ Auto Show

Figure 3-18 below shows how to set the *Auto Show* display.

Figure 3-18 How to set *Auto Show* display

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] | MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|---|
| ST        **User View** | ST    **User View AutoShow** |
| Short List | No Data to Show |
| Long List | View 1-> MD500Plus |
| Big Digits | View 2->free |
| Meter | View 3->free |
| Auto Show | View 4->free |
| Load | View 5->free |
| Save | View 6->free |

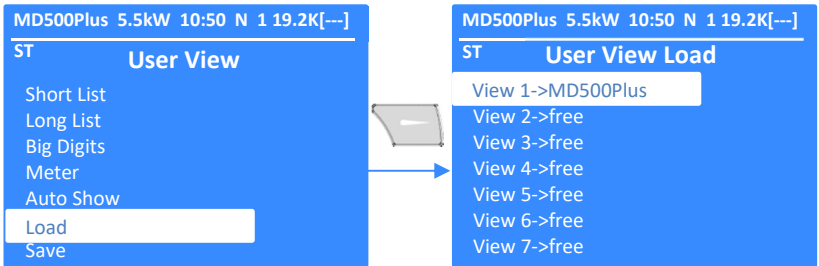| MD500Plus 5.5kW 10:50 N 1 19.2K[---] | MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|---|
| ST      **User View** | ST    **User View AutoShow** |
| | No Data to Show |
| View | View 1->MD500Plus |
| | View 2->free |
| Write OK | View 3->free |
| | View 4->free |
| | View 5->free |
| | View 6->free |

After selecting a used User View (i.e. MD500Plus) entry, press [   ] key to set it for AutoShow in order to be shown at the power up.

| **Note** | Please first save the user view configure parameters before using Auto Show and Load function! |
|---|---|

➢ Load

Figure 3-19 below shows how to operate the *Load* function.

Figure 3-19 How to operate the *Load* function

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] | MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|---|
| ST      **User View** | ST    **User View Load** |
| Short List | View 1->MD500Plus |
| Long List | View 2->free |
| Big Digits | View 3->free |
| Meter | View 4->free |
| Auto Show | View 5->free |
| Load | View 6->free |
| Save | View 7->free |

After selecting a User View, press [   ] key to load and display it.

| **Note** | Please first save the user view configure parameters before using Auto Show and Load function! |
|---|---|

➢ Save

Figure 3-20 below shows how to operate the *Save* function.

Figure 3-20 How to operate the *Save* function

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|
| ST            User View |
| Short List |
| Long List |
| Big Digits |
| Meter |
| Auto Show |
| Load |
| Save |

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|
| ST         User View Save |
| View 1->free |
| View 2->free |
| View 3->free |
| View 4->free |
| View 5->free |
| View 6->free |
| View 7->free |

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|
| ST            User View |
| Short List |
| Long List |
| Big Digits |
| Meter |
| Auto Show |
| Load |
| Save |

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|
| ST            User View |
| |
| Write 1 |
| |
| OK |

| MD500Plus 5.5kW 10:50 N 1 19.2K[---] |
|---|
| ST         User View Save |
| View 1->MD500Plus |
| View 2->free |
| View 3->free |
| View 4->free |
| View 5->free |
| View 6->free |
| View 7->free |

After selecting one User View number, press ⬜ key to save, so it can be loaded and used again.

| **Note** | Please first save the user view configure parameters before used Auto Show and Load function |
|---|---|

## 3.8  Connecting to the PC

When the MDKE9 keypad is connected to the PC via a USB cable, it behaves as an USB data storage device or USB serial adapter. It is not possible to operate the MDKE9 keypad when it is connected to a PC.

Connecting steps:

1) Use the corresponding end of the USB cable to plug into the MDKE9 keypad USB interface, and connect the other end to the PC's USB interface.



2) After connected successfully, the MDKE9 keypad will display as below.



In the USB data storage mode, the new removable disk in the PC shows the content of the SD card, which can be read and written.

In the USB serial adapter mode, which can be as the keypad/commissioning port adapter to connect PC-Software for parameter backup and download function etc.

### 3.8.1  Firmware Update

The MDKE9 keypad firmware update procedure is very simple, as follows. Use the USB cable to connect to the PC, and select the MDKE9 as the USB data storage mode, then delete all files in the SD card, and copy the firmware to SD card (after decompressing the zip file). After power on again, the MDKE9 keypad will automatically finish the firmware update.
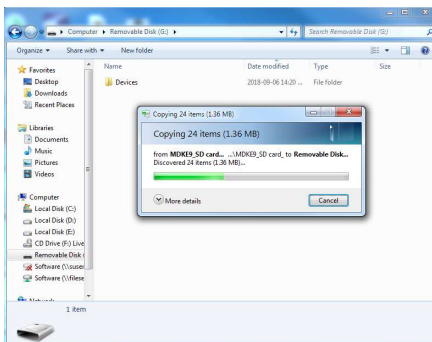
The operation steps are shown below:

- Connect MDKE9 keypad to PC, PC will be recognized a new removable disk



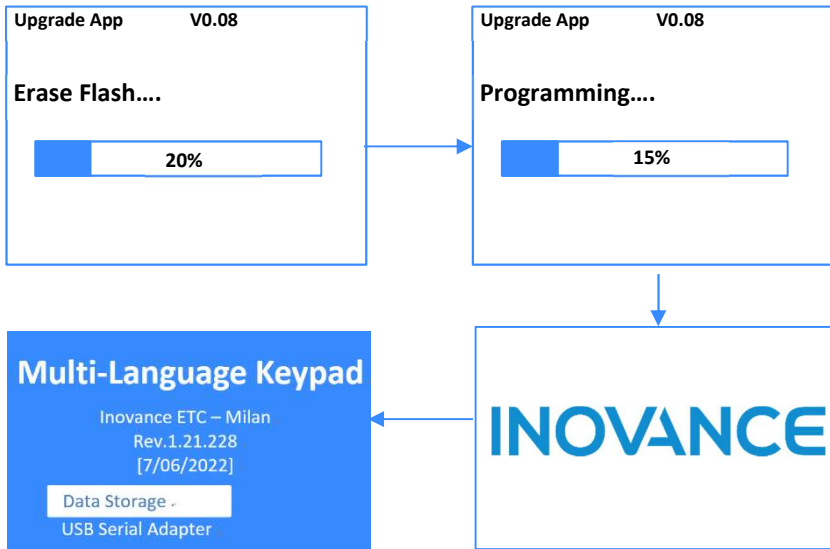- Open the new removable disk in PC, delete all files
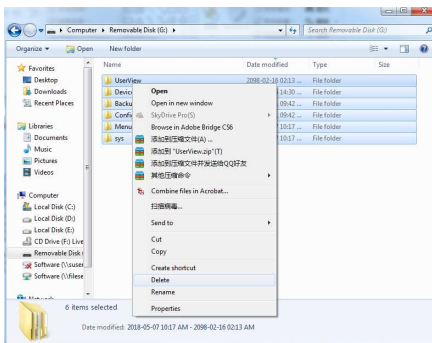


- Copy the firmware to SD card root directory after decompressing the zip file



- Remove the disk and disconnect the MDKE9 keypad from PC
- Connect the MDKE9 keypad to PC again, after MDKE9 keypad power on, it will automatically finish the firmware update, as shown in figure 3-18.

Figure 3-18 Firmware update process



### 3.8.2 USB Serial Adapter for commissioning port

➢ Installation of the MDKE9 keypad USB driver.

In order to be able to be able to use the MDKE9 keypad as USB to TTL adapter, first we have to install the serial driver by running the executable file "STM32-VirtualCOM-Dvr-64bit.exe". This executable file is contained in the folder "Windows Drivers". The folder structure of the MDKE9 keypad SD card is as shown in the figure below.

| Nome | Ultima modifica | Tipo |
|---|---|---|
| Backups | 10/05/2018 20.42 | Cartella di file |
| Config | 10/05/2018 20.42 | Cartella di file |
| Devices | 03/05/2022 12.28 | Cartella di file |
| Menus | 13/12/2021 05.30 | Cartella di file |
| sys | 13/12/2021 05.30 | Cartella di file |
| UserView | 15/02/2098 16.13 | Cartella di file |
| WindowDrivers | 27/01/2022 20.42 | Cartella di file |

Once the execution of "STM32-VirtualCOM-Dvr-64bit.exe" application is finished, if we connect the MDKE9 keypad to the USB port of the computer and select "USB Serial Adapter", Windows will recognize the MDKE9 device, and can be used as USB to TTL adapter. We can confirm this by checking the Device Manager on the Windows operating system. A virtual COM port is created. At the same time, we can check the number of this virtual port. In the figure below we can see the screenshot of the Device Manager of the Windows operating system, where COM3 virtual port has been created.
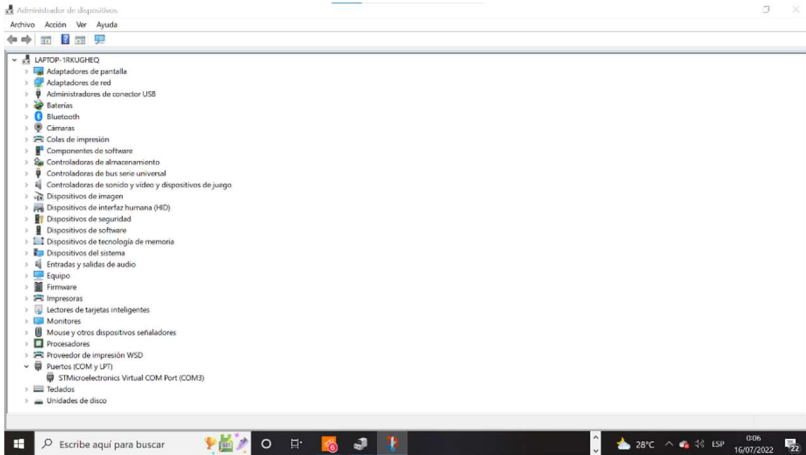
> ➤ Connection of the control board to earth (MD290/MD500/MD500E/MD500-PLUS/CS710)

In case of MD290/MD500/MD500E/MD500-PLUS/CS710), in order to reduce the electrical noise and improve the communication robustness, the control board can be connected to earth. The drive provides a grounding cable to make this connection. By default, this cable is connected to the plastic enclosure i.e. not connected to earth, as shown in the figure below. Therefore, to make the connection to earth, unscrew the terminal at the end of the cable from the enclosure and connect it to the grounding bar provided, which is located close to the control board. This grounding bar is used also for grounding properly the option cards installed in the drive.

Figure 3-20 MD290/MD500/MD500E/MD500-PLUS/CS710 grounding cable of the control board.
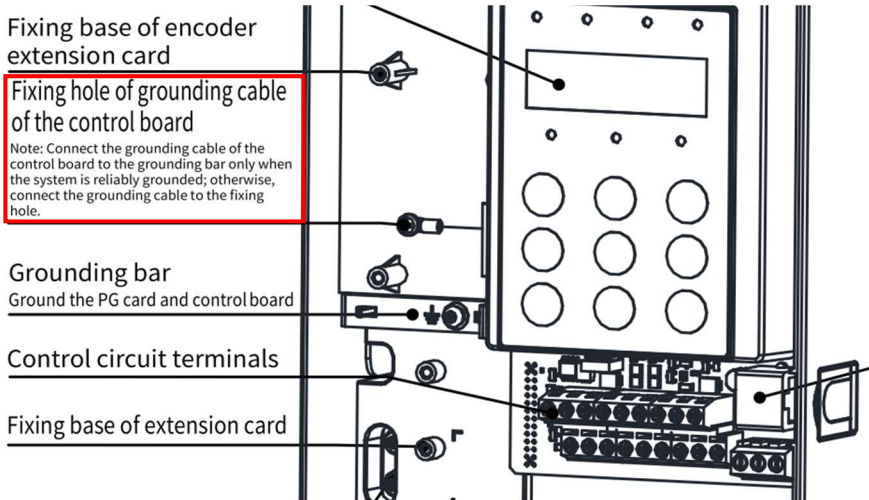
➢ Communication speed.

In all drives except MD500-PLUS the communication speed when using the PC software is fixed, as shown in the table below. In case of MD500-PLUS, the default baud rate is 115200bps, and can be changed by setting parameter FD-07. In order to increase the robustness of the communication, it is recommended to use a lower communication speed like 19200 bps, by setting FD-07=6.

| Model | Default Communication speed (bps) | |
|-------|------------------|------------------|
| MD200 | 19200 | |
| MD500 | 19200 | |
| MD500E | 19200 | |
| MD290 | 19200 | |
| CS710 | 115200 | |
| MD500-Plus | **FD-07** | **Communication speed (bps)** |
| | 0 | 300 |
| | 1 | 600 |
| | 2 | 1200 |
| | 3 | 2400 |
| | 4 | 4800 |
| | 5 | 9600 |
| | 6 | 19200 |
| | 7 | 38400 |
| | 8 | 57600 |
| | 9 | 115200 |

➢ Use of MDKE9 as USB to serial (TTL) adapter.

Connect the MDKE9 keypad to the USB port of the computer.

When the keypad has completed the start-up please select "USB Serial Adapter" on the keypad.



After select the "USB Serial Adapter" mode, the keypad will indicate in the screen "USB Serial Adapter". Then connect the keypad to the commissioning port of the AC drive through the RJ45 connectors (on both keypad and drive).

*Note: This function only suitable for MDKE9 firmware version 1.21.228 and above*

# Chapter 4 Maintenance and Repair

## 4.1 Periodical Inspection
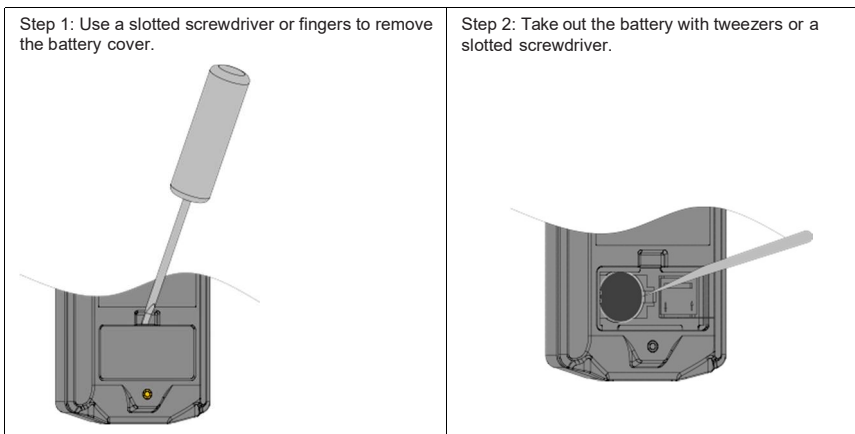
Table 4-1 below describes the periodical inspection items.
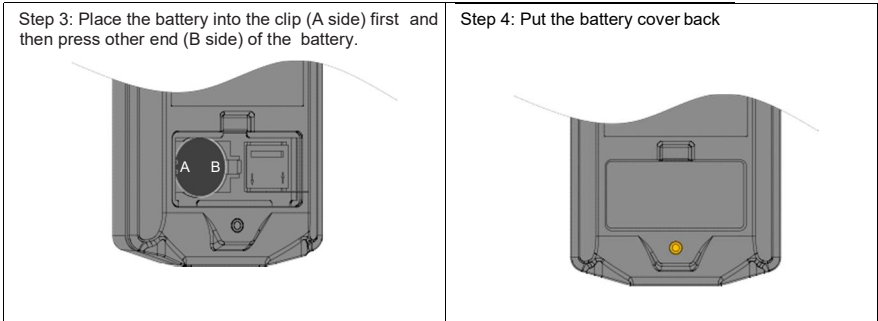
Table 4-1 Periodical Inspection Items.

| Type | Cycle | Inspection Items |
|------|-------|------------------|
| Periodical Inspection | 1 year | Check whether the fastening parts get loose. |
| | | Check whether there is overheat. |
| | | Check whether the USB connector is damaged. |
| | | Check whether the fastening parts of USB connector and RJ45 interface is loose. |
| | | Check whether the SD card is installed properly. |
| | | Check whether the battery is installed properly. |
| Replace Battery | 5 years | Replace the coin battery cell about every 5 years, the battery model is CR2032 which is 3.0V lithium battery coin cell. |

## 4.2 Battery Replacement

Figure 4-1 shows the battery replacement procedure.
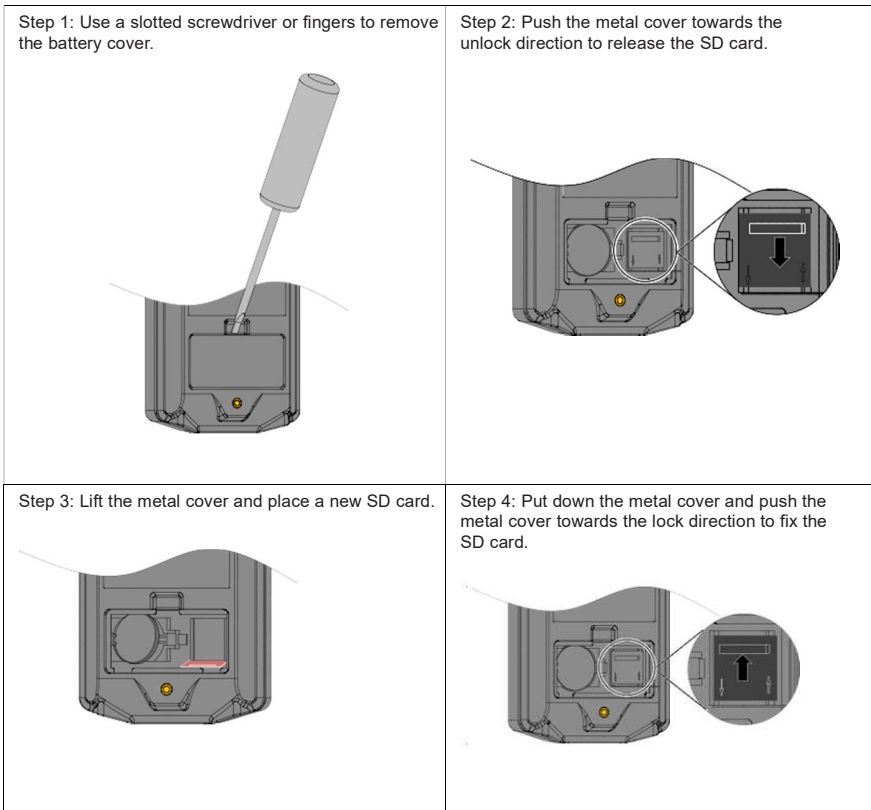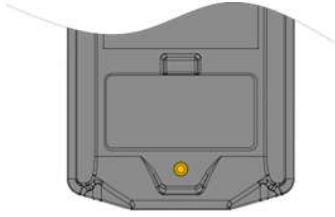
Figure 4-1 Battery replacement procedure

| Step 1: Use a slotted screwdriver or fingers to remove the battery cover. | Step 2: Take out the battery with tweezers or a slotted screwdriver. |
|---|---|
|  |  |

| Step 3: Place the battery into the clip (A side) first and then press other end (B side) of the battery. | Step 4: Put the battery cover back |
|---|---|
|  |  |

## 4.3 SD Card Replacement

Figure 4-2 shows the SD card replacement procedure.

Figure 4-2 SD card replacement procedure

| Step 1: Use a slotted screwdriver or fingers to remove the battery cover. | Step 2: Push the metal cover towards the unlock direction to release the SD card. |
|---|---|
|  |  |
| Step 3: Lift the metal cover and place a new SD card. | Step 4: Put down the metal cover and push the metal cover towards the lock direction to fix the SD card. |
|  |  |

| Step 5: Put the battery cover back | |
|---|---|
|  | |

| **Note** | MDKE9 keypad does not support hot-plug of the SD card, please replace the SD card when the keypad is not powered. |
|---|---|

# Revision History

| Date | Version | Change Description |
|---|---|---|
| January 2020 | B00 | Draft Version. |
| March 2020 | B01 | First Release Version. |
| December 2020 | B02 | Add new products and new languages support with 1.9.2 version firmware. |
| August 2022 | B03 | Add MDKE9 new functions support with 1.21.228 version firmware. |