USER GUIDE

GU_CF200_V1_08EN

Medium Voltage Fuse Controller

CF200

CAUTION: Read this manual before using the device

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MODIFICATION'S DIRECTORY

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1.07	Update first page	L. ZOMERO 2019, oct
1.08	Update password §7.3.2	T HUBERT 2025, Nov

This manual is important for your safety. Read it carefully in its entirety before using the device, and keep it for future reference.

SUMMARY

This document is the CF200 User's Guide. It describes the implementation of the device, as well as the different modes of operation to facilitate its use.

1.SAFETY INFORMATION

1.1.Safety recommendations

Please read this guide carefully before unpacking, configuring or using this equipment. Note all indications of danger and other warnings. Failing to observe these recommendations could result in serious injury to the operator or could damage the equipment. To ensure that the protection provided by this equipment is appropriate, do not use or install it other than in accordance with the conditions indicated in this manual.
Dismantling the cases is forbidden. This operation is limited exclusively to personnel qualified by MADE.

1.2.Following the safety recommendations

DANGER: Indicates a dangerous or potentially dangerous situation which, if not avoided, could cause serious or deadly injuries.

WARNING: Indicates a potentially dangerous situation which could cause superficial to moderate injuries.

Remark*:* Information requiring particular attention.

1.3.Warning labels

Read all labels and wordings shown on the instrument. Injuries or equipment damage could occur if these instructions are not respected.

	Symbol requiring reference to the instruction manual for instructions concerning operation or safety recommendations.
IP66/IP53	IP standard – Protection against dust and water
IK 03	IK standard – protection against shocks
	Do not throw away with household waste

2.PRESENTATION

The MADE fuse controller allows you to quickly and easily check the status of a medium-voltage fuse, indicating whether it is **Correct**, **Damaged** (at least one of the conductors is broken), or **Blown**.

2.1.Composition

① : Measuring clamps
② : Self-test reference plate
③ : Fuse holder
④ : Display
⑤: Keypad
⑥ : Battery and USB access
⑦ : USB cable
⑧ : USB key including PC operating software
⑨ : 9V Lithium batteries

2.2.Operating Principle

The MADE fuse controller measures the resistance of the fuse. This measurement is based on the principle of the 4-wire method, including automatic compensation of the influence of the temperature on the measurement.
The fuse measurement is operated in 4 steps:
• Power on (with self-test at startup)
• Connecting the measuring clamps to the fuse
• Selecting the fuse type using the selection menu or direct measurement.
• Measurement of fuse resistance and immediate reading of the result

The main menu has 3 sub-menus (or modes):

- "**Select fuse**": Normal operating mode. Selects a fuse in the database and proceeds with the measurement. (It requires that the fuse characteristics are already known and recorded in the data base)

Fuse selection is made by navigating through the embedded database by selecting the following characteristics:
• voltage
• Current range
• Brand
• Reference

This database is generated and handled using a PC management software application. It can be updated and downloaded to the tester via a USB connection.

- "**Resistance value**": this mode can be used when a fuse is not recorded yet in the database, but its resistance value is known.

- "**MilliOhmeter**": Simple Milliohmeter mode. It can be used to characterize a fuse (deemed to be correct) by measuring its resistance, or compare a fuse to another one.

3.OPERATION

3.1.Getting started

Step	Action	Result
1	Make sur the clamps ① are properly tightened over the self-test plate ②	The clamps must be firmly tightened over the plate without dirt particles between the jaws of the clamps and the contacts of the plate.
2	Press Power-On ⏻	MADE-SA – TF 200 R_V602 T : V 16 09 04 Firmware version : R_Vxxx Embedded database version : T : V xx xx xx
3	Wait for the self-test to execute :	• **Jump to main menu**: the whole measurement chain is correct, the tester is ready to use • **Fail**: the self-test failed. Check the batteries, connection cables or the installation of the clamps on the self-test board

3.2.Install the fuse

Place the fuse to be tested on the holder built onto the case ③
Put the two measuring clamps in place at the ends of the fuse:

Placement of the clamp on the fuse

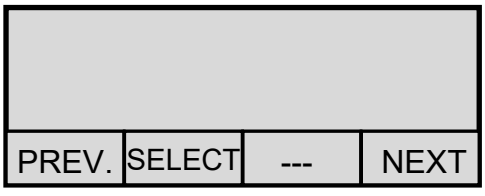
Placement of the fuse on the case

Important: Medium Voltage fuses having high thermal inertia, it is imperative to test the fuse at its place of storage / installation so as not to modify the ambient environment. The tester is equipped with a low inertia temperature sensor, it is therefore recommended to move the fuse controller near the fuse, and not the other way around.

3.3.Testing the fuse

3.3.1.Using the keypad and display

The function of the keypad keys ⑤ is indicated on the display, above each of the keys. Depending on the need, the same key can take on different functions, or have no function:



The information to be selected is presented in rotating fields which can be modified using the “SELECT" key. The validation of the information is done pressing the "NEXT” key.

List of available functions :

Key	Function
SELECT	Change the current selection in the scrolling menu
NEXT	Validate current selection and display next page
PREV.	Return to previous page
MEAS.	Perform measurement
MENU	Return to main menu
SAVE	Save last measurement
DEL.	Delete all recorded measurements
INC.	Increment value pointed at by the cursor from 0 to 9 in roll mode.
MOVE	Move the cursor to the right

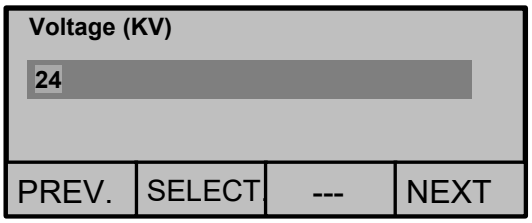
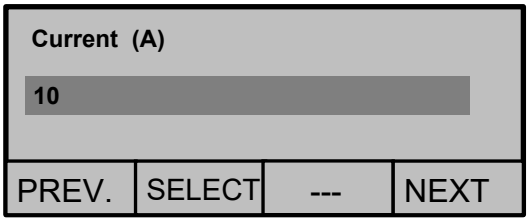
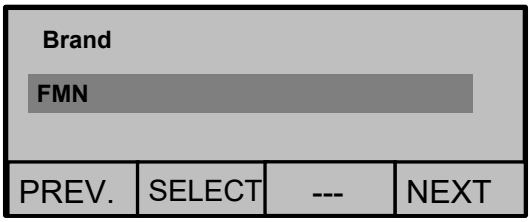
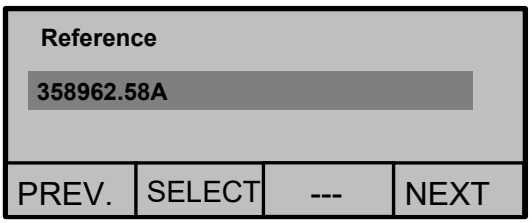
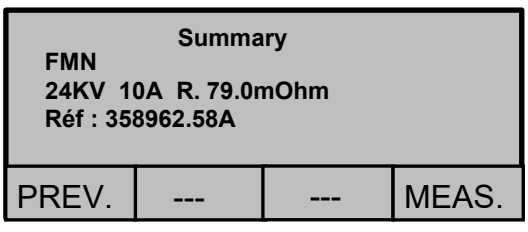
3.3.2.Main menu

As explained above, the main menu allows to choose between 3 measurement modes:

- By choosing the characteristics of the fuse to be tested in the database embedded in the fuse controller
- By entering the theoretical value of the fuse to be tested
- By directly measuring the resistance value of the fuse (to compare it to that of a new fuse)

3.3.3.Menu « SELECT FUSE »

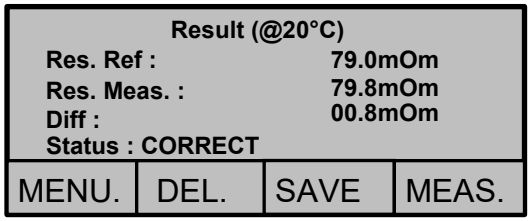
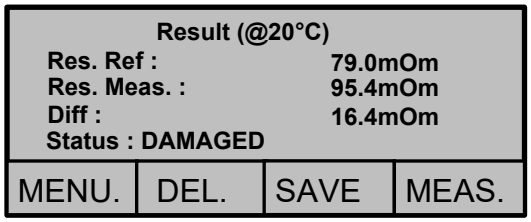
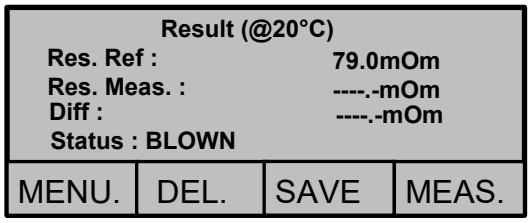
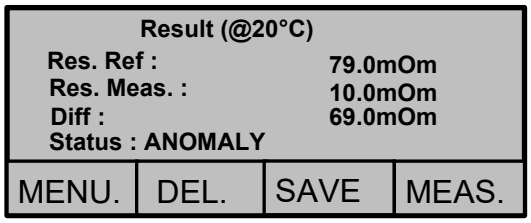
This module allows to select a fuse in the embedded database.

Step	Action	Display
4	Select the fuse voltage using the key « SELECT » then validate using the key « NEXT »	
5	Select the fuse current range using the key « SELECT » then validate using the key « NEXT »	
6	Select the fuse brand using the key « SELECT » then validate using the key « NEXT »	
7	Select the fuse reference using the key « SELECT » then validate using the key « NEXT »	
8	A summary of the characteristics of the fuse to be tested is displayed. Press « MEAS. » to perform the measurement.	

3.3.4.Measurement

Fuse measurement lasts less than 2 seconds, then the result is displayed

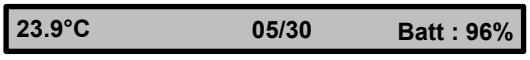
Result interpretation :

Step	Result	Display
9.1	Case of a fuse in good condition	
9.2	Case of a damaged fuse (at least one filament is cut off)	
9.3	Case of a fuse for which the measurement indicates all filaments are cut off or the impedance is greater than 2.5 Ohm	
9.4	Case of a fuse for which the resistance measurement is lower than the theoretical value (possible error when selecting the fuse)	

3.3.5.Management of measurement records

Up to 30 measurements can be stored in the unit so that they can be retrieved via the operating system for archiving and printing.

In steps 9.1 to 9.4, the function "SAVE" saves the current measurement. The number of measurements recorded in the device is indicated in the center of the status bar at the top of the display:

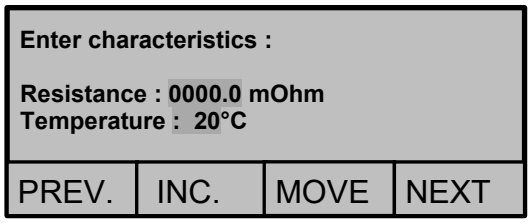


When the memory is full (30 records), the “DEL.” Key allows you to erase it. The display then shows "00/30".

4.MENU « RESISTANCE VALUE »

This module makes it possible to enter a known fuse value, either read in an abacus or read directly on the fuse body, for comparison purpose after the measurement has been made.

It is also necessary to enter the reference temperature of the fuse value (generally 20 ° C or 35 ° C).



Enter the resistance value as a reference, and the temperature related to it:

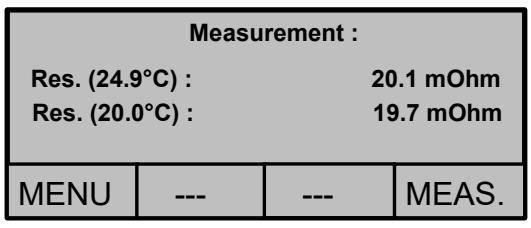
« INC. » : increment the value pointed at by the cursor.

« MOVE » : move from one digit to the other

« NEXT » : validate & perform measurement.

5.MENU « MILLIOHMETER »

This module makes it possible to directly measure a fuse. The report will then indicate the value measured at ambient temperature, and the value corrected related to 20 ° C:



6.TECHNICAL CHARACTERISTICS

Accuracy	2.5% @ 5 mΩ
Precision	0.1 mΩ
Tolerance	12.5% (detection of 1 cut wire out of 8)
Maximum number of fuses in memory (Data base)	Up to 3000
Test current	200 mA
Weight	2.6 Kg
Dimensions	304 x 270 x 144 mm
Operating Temperature	-20°C à +55°C
Power supply	2 batteries - 9V 6LR61 Lithium or alkaline
Measurement autonomy	2700 measures
Safety category	IEC-1010-1, CAT I 3V
Water protection	IP66 with lid closed, IP53 when open
Mechanical protection	IK07 with lid closed, IK03 when open

7.DATABASE MANAGER

The database manager allows the user to create his fuse database and download it to the device

7.1.Software installation

The executable file "CF200-T_BDD_x.xx_setup.exe" is delivered on a USB key. The fuse controller connects to a PC through a USB link located under the battery door:

If the drivers are not installed, the required files are in: "USBKey": \ made-sa \ CF200-T \ Driver \ USB FTDI. It is possible to install the software on a PC by copying the directory "keyUSB": \ made-sa \ CF200-T on the hard disk.

7.2. Running the software

Connect the fuse controller to the PC via the USB connection and switch it on by pressing the right button.

Run the software:

- Either using the menu shortcut « start »
- Or directly using the executable: "CF200_BDD_Vx.xx.exe"

7.3. Software functions

The software offers two modes, user mode and administrator mode.

7.3.1. User mode

This is the mode in which the software runs initially. In this mode the user can open a database and transfer it to the device. It can also update the firmware of the fuse controller.

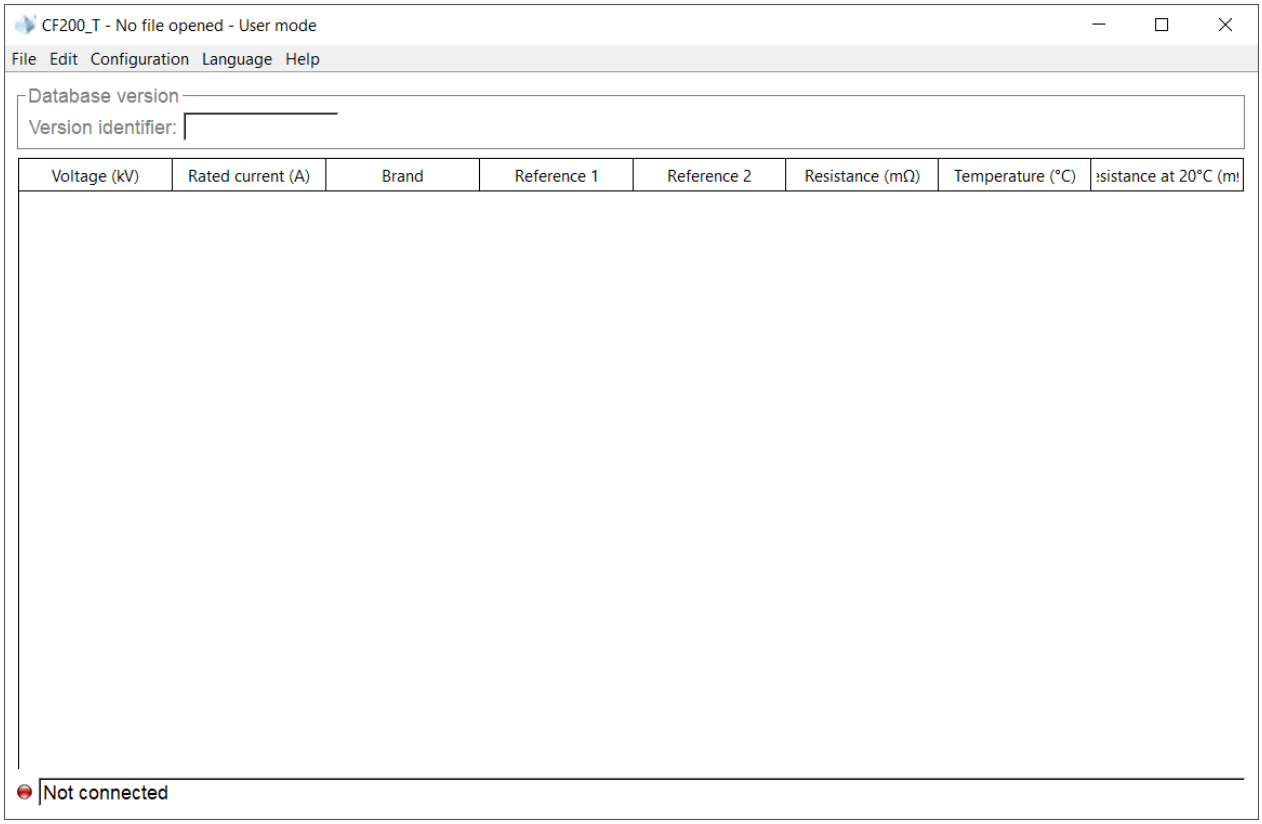
7.3.2. Administrator mode

The administrator mode includes the features of the user mode and allows, in addition, the editing of fuse databases. In this mode the user can create a new database or modify an existing one. He can also change his password.

Default password, ex-factory: "admin"

7.4.Getting started

The opening of the software is done on a blank database:



The operating mode is indicated in the title bar. The connection status of the device is specified at the bottom left.

No transfer will be possible if the fuse controller is not connected to the computer. The features described below include those of both modes (user and administrator), some may not be accessible depending on the operating mode.

7.4.1.Accessing the Admnistrator mode

The administrator mode is entered via the "Configuration / Administrator mode" menu. Entering a correct password will allow you to enter the administrator mode.

This mode provides access to the following functions (in addition to the basic functions):

- Creation / modification of fuse database

- Change the administrator password

7.4.2.Opening an existing database

The "File / Open Database" menu opens a database which is then visible on the main page.

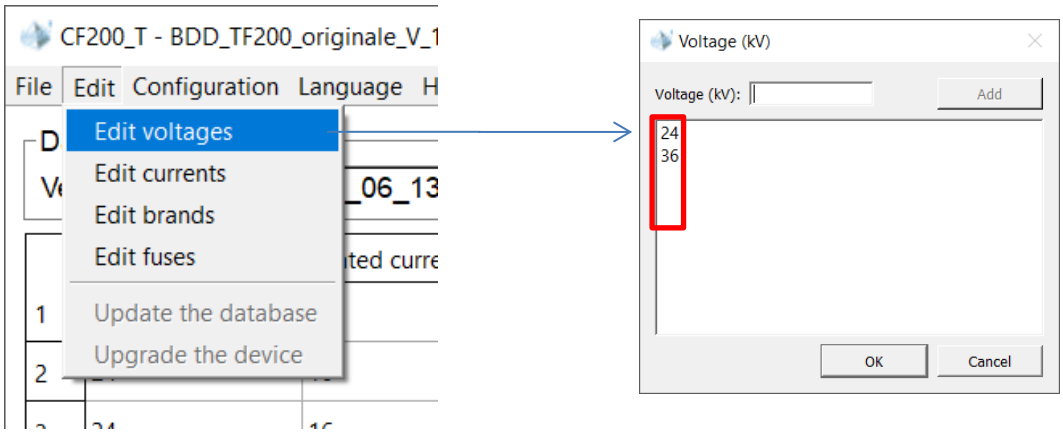
7.4.3.Creating and editing a database

It is possible to create a new database using the menu entry "File / New database":

First you need to create tables containing the possible values for the different fuse characteristics: voltages, ratings, and brands to be able to declare fuses in the base. Access to these tables is done using the "Edit" menu entry:

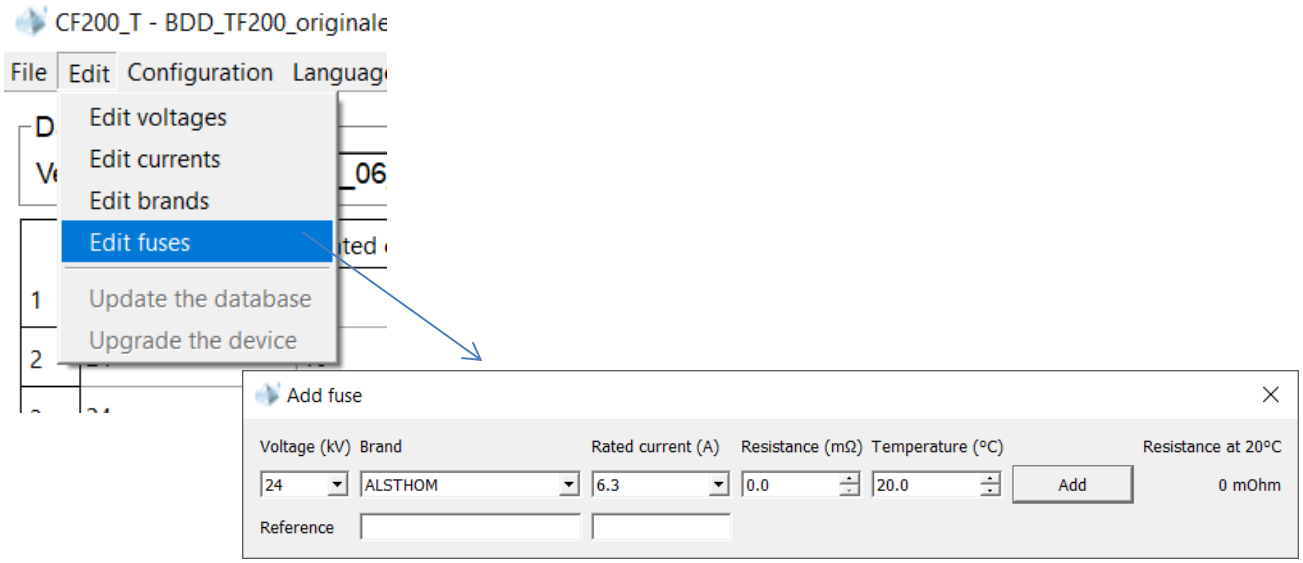
- Voltage table: "Edit / Edit Voltage" menu
- Calibration table: "Edit / Edit calibres" menu
- Table of brands: menu "Edit / Edit brands"

A dialog box allows you to enter the values to add. It is necessary to use the button "Add" for the additions to be taken into account. :

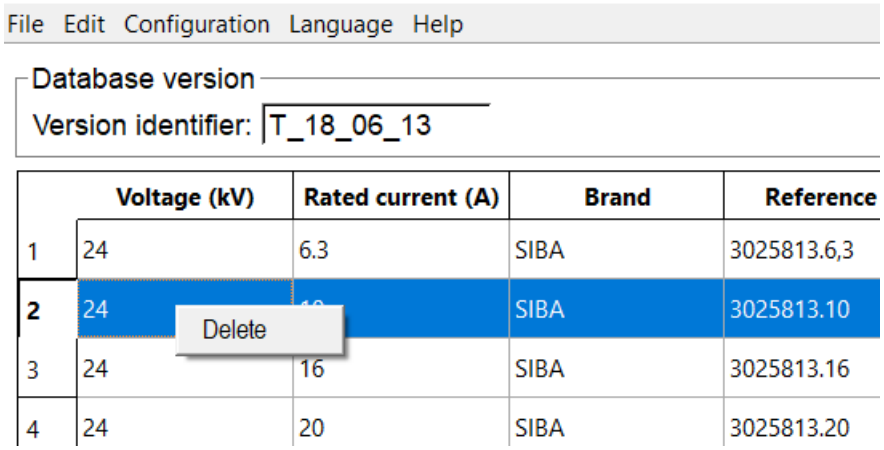


Pressing the "Cancel" button closes the window without taking into account the additions.

Once these tables are filled in, it becomes possible to add fuses in the database: "Edit / Edit fuses" menu. A new window opens, integrating lists of voltages, calibres and brands previously declared. You must then configure the new fuse and add it. All fields must be filled in for the addition to be validated. The fuse added then appears on the main page:



To remove a fuse, position the mouse cursor on the fuse to be deleted in the list and click on the right, a menu allows you to delete:



Deleting a voltage, a brand or a template in the tables is managed in the same way: access the display of the type of data to be deleted, eg "Edit / Edit voltages" to delete a voltage), move to the value to be deleted and right click to access the delete menu.

Important: It is not possible to delete a value (voltage, current or brand) that is used for the description of at least 1 fuse.

NB: Do not forget to save the database to validate the changes permanently.

7.4.4. Save a database

The basic version opened or created is shown in the "Version Indicator" banner below the menu. The format is of the type :

T_aa_mm_ii

aa : year of creation

mm : month of creation

ii : index, incremented when a new base is created

⚠ To access the registration function, the version of the database to be registered mustbe different to the version previously opened (to avoid overwriting databases).

The menu entry "File / Save Database" allows you to save the file that constitutes the database. This file has the extension "xml".

The default name proposed when this database has just been created is of the form:

Base de fusibles CF200 T_**aa_mm_ii**.xml

The file name can be changed by the user, but the last 10 characters must have enough information about the database version because they are used to identify the database version installed in the fuse controller during its startup.

The file name is then indicated in the title bar of the application.

7.4.5. Archiving a database

The menu entry "File / Save Database As" allows you to archive the open database under a different name and / or location.

7.4.6.Downloading a database

To download a database on the fuse controller, you need to :

- Open a database

- Connect the controller to the computer using the USB cable. **Do not disconnect the cable until the transfer is complete.**

- Switch on the controller (wait a few seconds for the start to take effect)

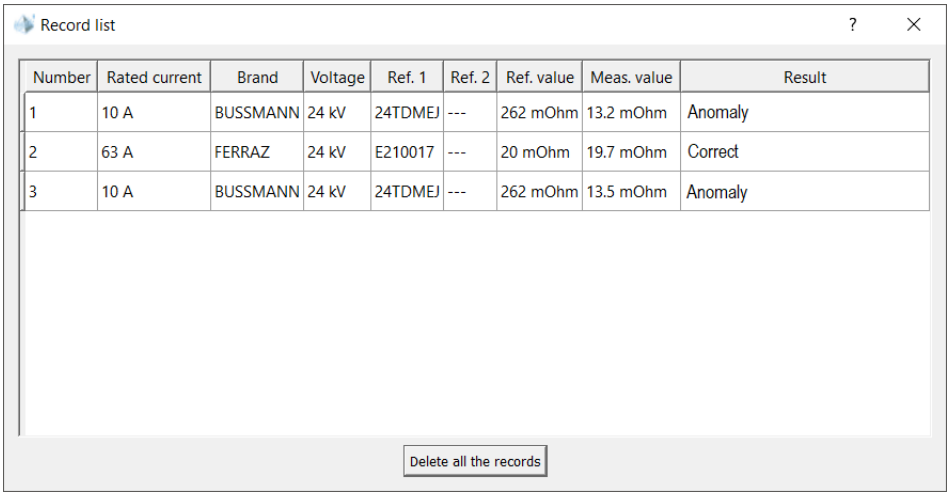
- Click on «Configuration / Connect to the device» (the connection status bar must change and display a green circle with the text «Connected COMxx».)

- Click on "Edit / Update database". The transfer is launched and a window confirms its smooth functionning.

7.4.7.Managing the measurement records

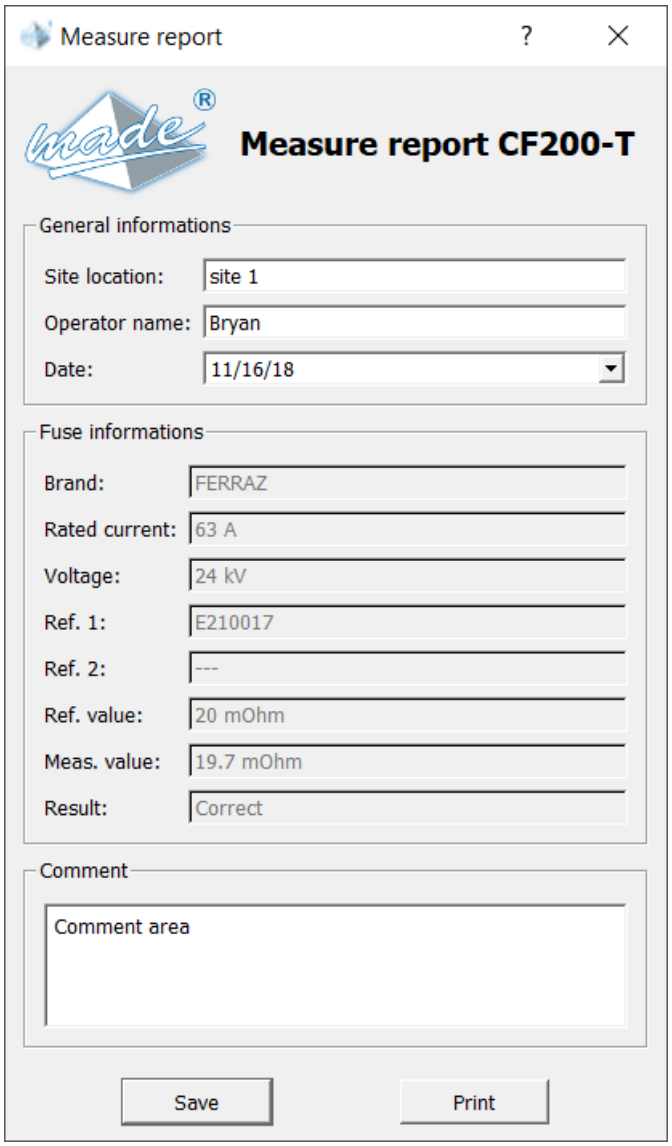
To download recordings of the measurements made with the controller and print them and / or save them on the PC, use the menu entry "File / Download recordings".

The records are then presented in a table :



It is possible to erase the recordings from the controller's memory using the "Delete records" button. This function frees the memory before starting a new measurement campaign.

A double click on a measurement allows you to format the information to be able to print and / or save a report:



To open a report, previously archived on the PC, use the menu entry "File / Open Record".

7.4.8.Updating the Firmware

To update the controller's firmware it is necessary to:

- Connect the controller to the computer using the USB cable. **Do not disconnect the cable until the update is complete.**

- Turn on the controller (wait a few seconds for the start to take effect)

- Click on "Configuration / Connect to Device" (the connection status bar should change and show a green circle with the text "Connected COMxx".)

- Click on "Edit / Update software", choose the file corresponding to the update (extension ".bin").

- Click on the "Start update" button. The transfer is launched and a window confirms its smooth running.

7.4.9.Changing the password

Only the administrator can change the password. To do this: use the menu entry "Configuration / Change password". Two entries are necessary to validate the password, if they are identical the change will be validated and the next login in administrator mode will be done with the new password.

The administrator can switch back to user mode at any time by using the "Configuration / User Mode" menu entry.

8.MAINTENANCE RECYCLING AND GARANTEE

8.1.Maintenance

Dismantling systems is forbidden. This operation is limited exclusively to personnel qualified by MADE.

A calibration in our premises, every years, is recommended.

Never use solvent, or a solvent-based product, to clean the system and / or its accessories.

8.2.Changing the batteries

The batteries are located behind the hatch located next to the fuse holder:

Batteries specifications:
Type 9V 6LR61 or PP3 Lithium
or alkaline.

8.3.Recycling

In accordance with the decree n° 2005-829 of July 20, 2005 relating to the waste disposal of electrical equipment and electronic (WEEE), the user ensures and takes responsibility for the collection and the elimination of the WEEE under the conditions of the articles 21 and 22 of this decree.

8.4.Garantee

MADE guarantees this product, to the initial purchaser, against all material or functional failure during a period of one year from the date of delivery, unless otherwise indicated in the product manual. If a defect is discovered during the period of the guarantee, MADE agrees, at its choice, to either repair or replace the deficient part, excluding the expenses of handling and of initial delivery. All parts repaired or replaced under the terms of this agreement will be guaranteed only for the remainder of the period of initial guarantee of the equipment.

8.4.1.Limitations

This guarantee does not cover:

• Damage caused by a "cause beyond control", natural disasters, strikes, wars (declared or not), terrorism, social conflicts or any acts under governmental jurisdiction

• Damage due to misuse, to carelessness, to any accident or an unsuitable application or installation

• Damage caused by a repair or an attempted repair not authorized by MADE

• Any product that is not used in accordance with the instructions provided by MADE

• Cost of transport back to MADE

• Cost of transport by express delivery of parts or products under guarantee

• Cost travel for a repair on site under guarantee

This guarantee constitutes the unique explicit guarantee established by MADE for its products.

All implied guarantees, including, but not limited to, guarantees on the commercial value of the product and its suitability for a particular use are positively rejected.

The present guarantee confers certain rights: the legislation of the country or jurisdiction can grant others.

This guarantee constitutes the final declaration, complete and exclusive, of the terms of the guarantee and nobody is allowed to give other guarantees or promises on MADE’s account.

8.4.2.Claims limitations

Claims having for object repair or replacement are the only allowable claims in case of the breaking of this guarantee. The MADE Company cannot be held responsible, whether on the basis of strict responsibility or any other legal basis, of any incidental or consecutive damage resulting from a violation of the guarantee or from carelessness.

8.5.Copyright

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