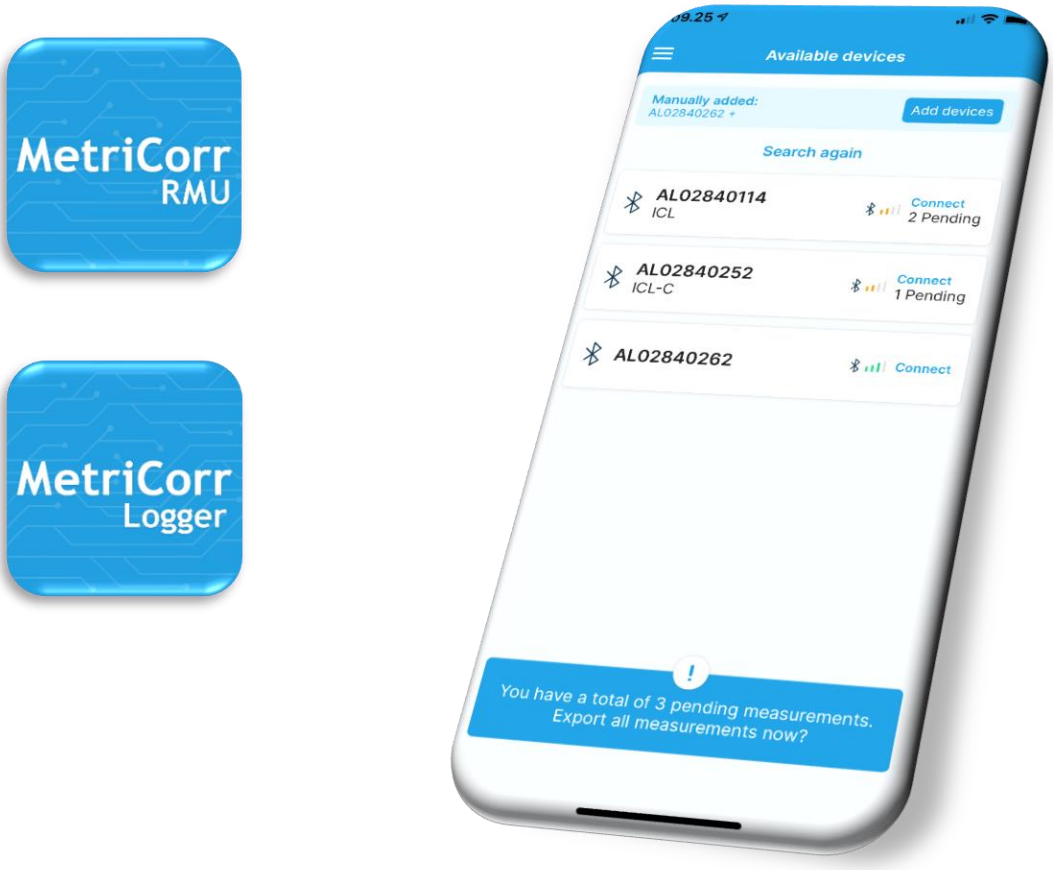
MetriCorr

App Operation Manual



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Contents

Revision	Date	Comments	Prepared	Review	Approval
101	2021-07-26	Second release	RCH	LBT	LBT
100	2020-11-19	First release	LBT	RCH	
R001	2020-11-18	First release for review	LBT	RCH	

1 Introduction

This document is a guide for collecting measurement data from MetriCorr's series of dataloggers using the two available MetriCorr apps. A step-by-step procedure is described to show how measurement data is collected, transferred, and converted to standard .ACE file format to be imported into Excel or any other data processing tool. (Comma Separated data file)

MetriCorr's datalogger devices:

ICL (Slimline datalogger, 2 x ER probes, 1 x Voltage input)

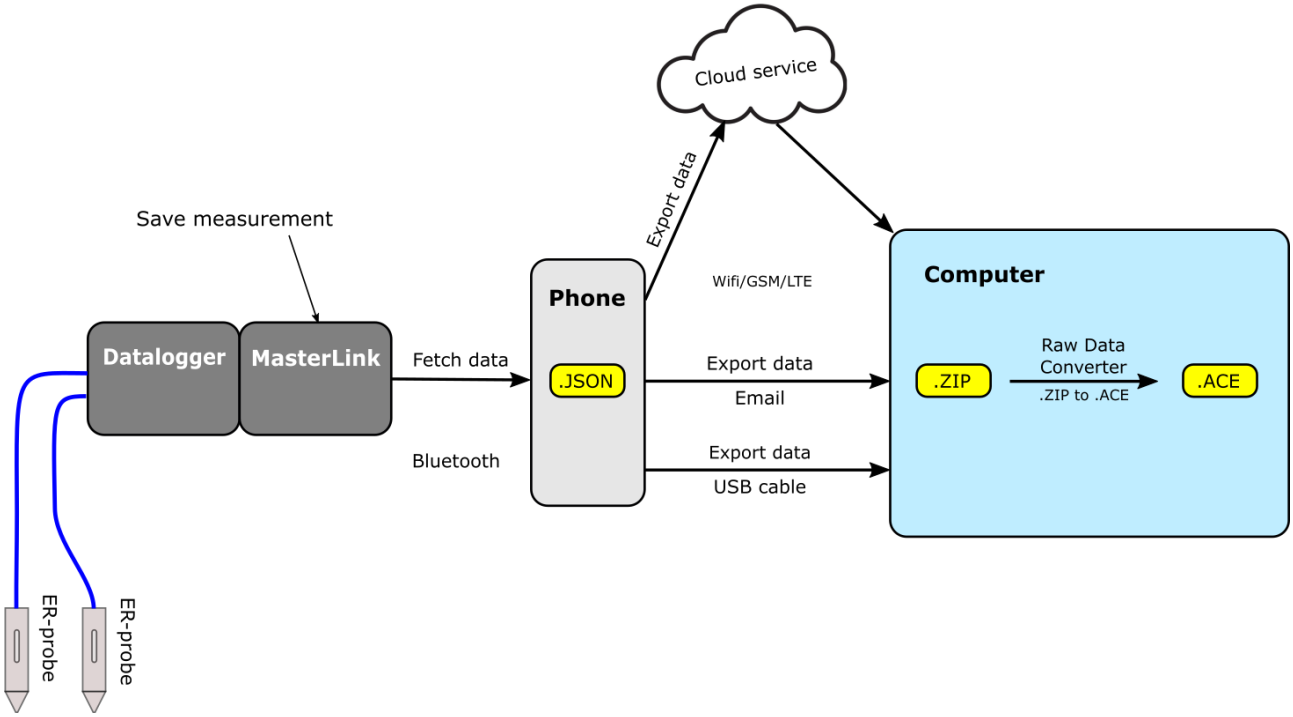
ICL-C (Slimline datalogger, 1 x ER probe, 1 x Voltage input, 1 x Line current input)

VL100 (Slimline datalogger, 1 x Voltage input)

TR Monitor

Hereafter referred to as "devices" or "MetriCorr devices". All MetriCorr devices contain a MasterLink module with a given serial number (example: AL02878459), which handles all data communication via GSM/LTE network or Bluetooth.

Data flow using MetriCorr's app:



1.1 App description & purpose

"MetriCorr RMU app" - for devices with WEBservice account

For any online MetriCorr device with a standard WEBservice subscription, measurement data can be transferred manually via Bluetooth to a smartphone/tablet on location using the "MetriCorr RMU app". This app can also set the device to "offline" to avoid data transfer via GSM/LTE network or satellite communication.

"MetriCorr Logger app" - for devices with no WEBservice account

All MetriCorr devices can be purchased without subscription to WEBservice and are per definition always "offline". Here, the measurement data must be collected on site using the "MetriCorr Logger app".

"Offline" pros and cons:

Pros:	- Large amount of data collection possible at no extra cost. - I.e. for intensive measurement campaigns. - Possible to integrate in 3rd party data analysis systems
Cons:	- Offline mode requires onsite connection via Bluetooth. - No online monitoring possible. - No alert/alarm to call for immediate action.

1.2 Bluetooth connection & limitations

- Use only one phone/tablet to connect to a MetriCorr device at a time.
- Before switching phone/tablet, make sure to close any running MetriCorr app on your current phone/tablet.
- MetriCorr devices to be accessed via MetriCorr apps must have firmware version 1.2.1 or newer.
- If you cannot connect to a MetriCorr device, please contact MetriCorr to update its firmware. Make sure that your device has access to webservice and is connected to a power supply.

MetriCorr support: Email: support@metricorr.com Phone: +45 92 44 80 80

1.3 App guide - quick overview

Here is a short description of how the two MetriCorr apps work for comparison:

App:

MetriCorr RMU

1. Open app and login to WEBservice with your username and password to access your dataloggers
2. Connect to MetriCorr device on site via bluetooth
3. Fetch data from MetriCorr device to smartphone
4. Sync data with WEBservice via internet (WiFi or mobile connection)

App:

MetriCorr Logger

1. Open app. Press “Add device”. Import access file holding information of all your MetriCorr devices, or type in serial numbers for each of your devices.
2. Connect to MetriCorr device on site via Bluetooth.
3. Fetch data from MetriCorr device to smartphone/tablet/other
4. Send data (.JSON file) from your smartphone/tablet to other device. (Cloud storage, PC, etc.)
5. Download MetriCorr RAW converter to convert data from .JSON files to .CSV files

1.4 New customers

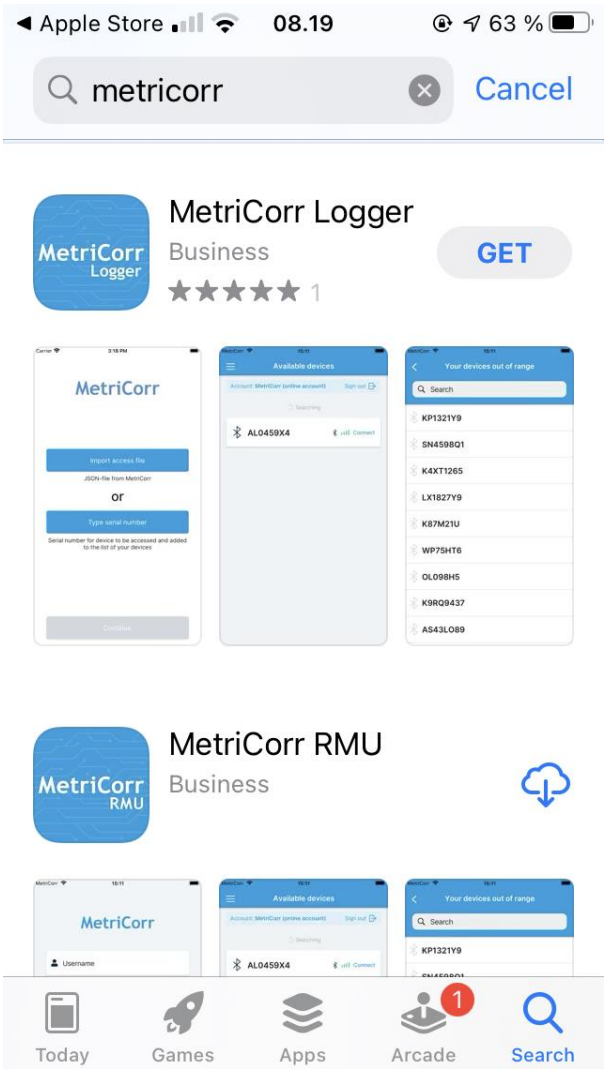
Please provide Metricorr with the information for your primary contact person for data & administration communication with MetriCorr: Name & title/position, email address & telephone number.

Email: info@metricorr.com or call +45 92 44 80 80

2 App installation

Both apps from MetriCorr are available for both Android and IOS (Iphone) platforms:

Android	**IOS**
1. Open the Google Play store app. 2. Search for “MetriCorr” 3. The two MetriCorr app icons will show. 4. Download & install your preferred app. It is possible to have both apps installed.	1. Open the Apple App Store app. 2. Search for “MetriCorr” 3. The two MetriCorr app icons will show. 4. Download & install your preferred app. It is possible to have both apps installed.



3 Metricorr RMU app

MetriCorr devices sold with WEBservice subscription are linked to the customer's account in WEBservice. Normally data is transmitted from the MasterLink via GSM/LTE network. However, it is possible to transfer data from the MasterLink on-site using the MetriCorr RMU app.

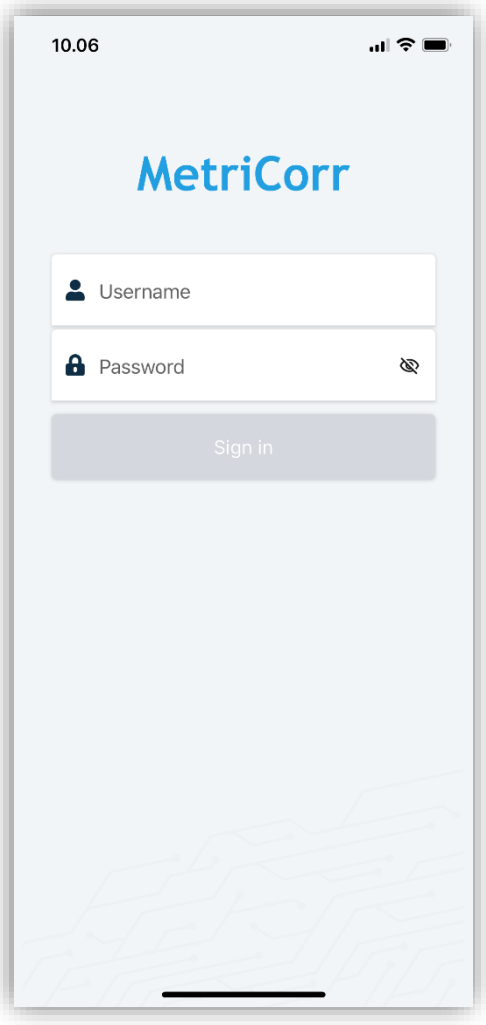
For your customer account, you need a Login and password to access your MetriCorr device. Please contact MetriCorr:

Email info@metricorr.com or call +45 92 44 80 80

3.1 Login

Open the MetriCorr RMU App.
Type in your username and password.
Press "Sign in"

The front page "Available devices" will be shown.
See next page.



3.2 Front page (Available devices)

The front page is entitled "**Available devices**" and show all MetriCorr devices within Bluetooth range.

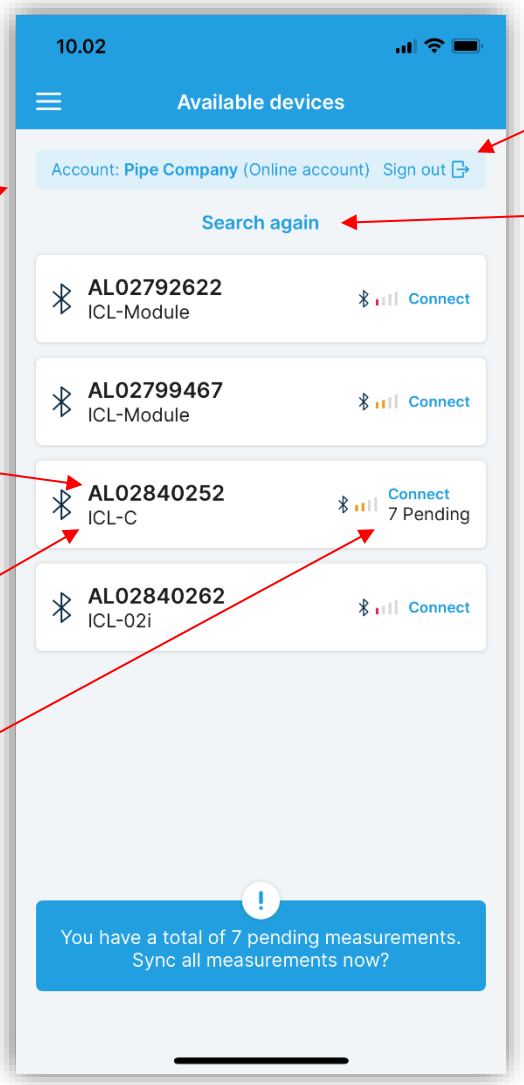
Menu (blue):
Click here to open the menu shown on the next page.

Account:
Displays your company name. Always an online account.

MasterLink serial number
(AL02840252)

Datalogger type (ICL-C)

Pending measurements
Indicates devices holding measurement data waiting to be exported.



Sign out:
Press this button to sign out of your account.

Search again
Press this button to search for devices within Bluetooth range.

Connect
Click on the device (serial number) you want to connect to launch the MetriCorr Device menu (Logger app) for the chosen device.

.

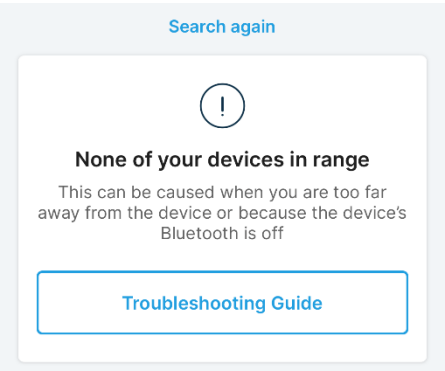
Sync measurements

Press this button to sync all measurement data stored in your phone/tablet. One file holding all the data can be sent by email or synced via 3rd party software such as Dropbox, OneDrive, etc.
Warning! Hereafter, all data in your phone/tablet will be deleted. (See 3.5.6)

None of your devices in range

If none of your devices can be reached via Bluetooth, this message will show. If you have problems establishing Bluetooth connection to your device, try the following:

1. Press "Search again"
2. Check that your device's MasterLink S/N appears on the "All device" page. If not, you don't have access to that device, please contact MetriCorr.
3. Press the physical power button on the MetriCorr device.
   Press "Troubleshooting Guide" for help, which is a part of this manual, (See Appendix A).



3.3 Menu (blue)

Press the menu icon on the front page (available devices) to open the “blue” menu, which provides quick access to manuals, contact information, etc.

All devices
Press this button to access the “All devices” page shown on the next page.

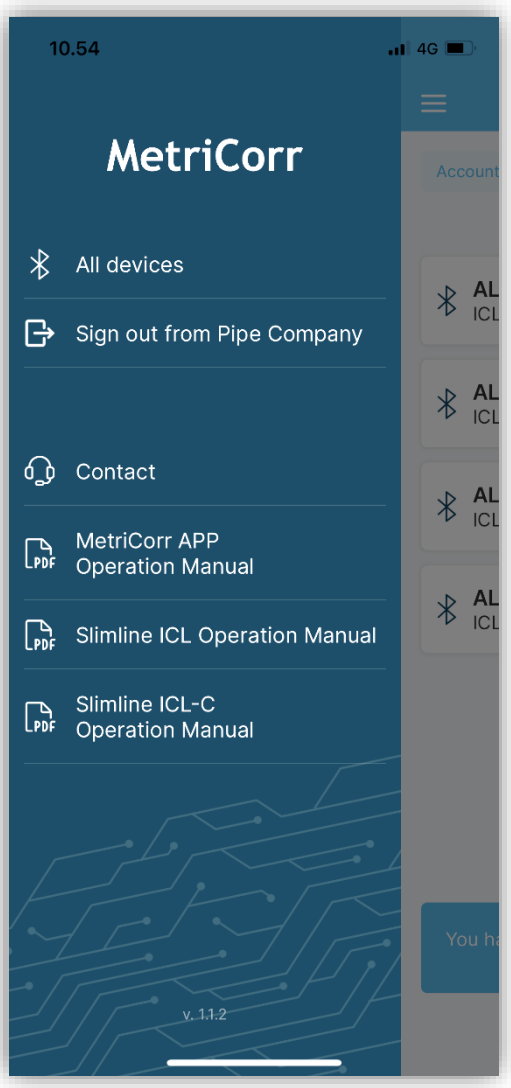
Sign out from Pipe Company
Press this button to sign out of your account.

Contact
Open a contact form to MetriCorr support

MetriCorr App Operation Manual
(This manual)
Click to view/download

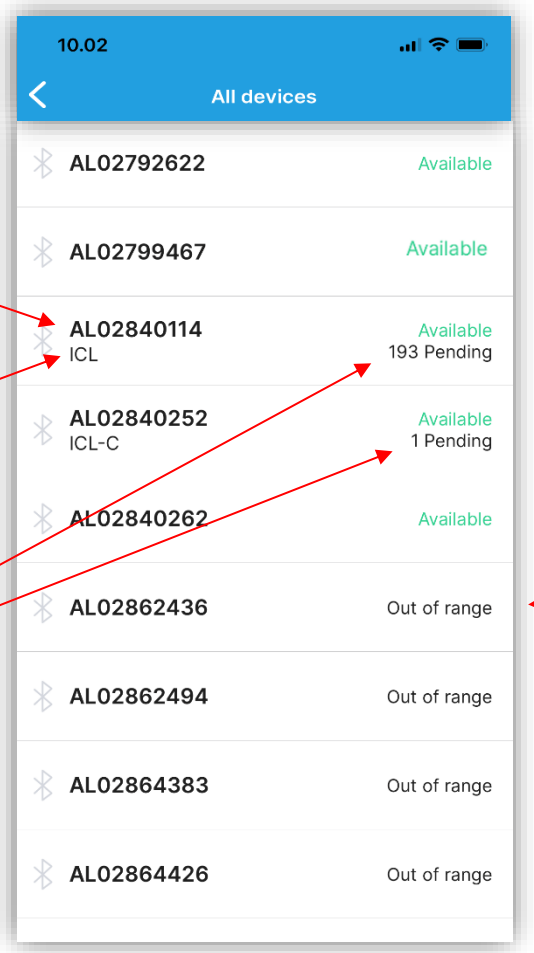
Slimline ICL Operation Manual
Click to view/download the operation manual for the specific type of datalogger “ICL”.

Slimline ICL-C Operation Manual
Click to view/download the operation manual for the specific type of datalogger: “ICL-C”.



3.4 All devices (RMU app)

This page is a complete list of all your devices you've gained access to and gives you an overview of datalogger type, Bluetooth status (availability) and pending measurements. Devices can also be deleted from this page.



MasterLink serial number
(AL02840252)

Datalogger type (ICL)

Pending measurements
Indicates devices holding measurement data waiting to be exported.

Available
Indicates device is within bluetooth range.

Out of range
Indicates device is out of bluetooth range.

3.5 MetriCorr Device Menu (RMU app)

The MetriCorr Device Menu gives access to all operations possible for the chosen device (MasterLink S/N).

System info
Press the information icon to view the "**System info**" page. (See next page, 3.5.1)

Network connection
Network host and signal strength.

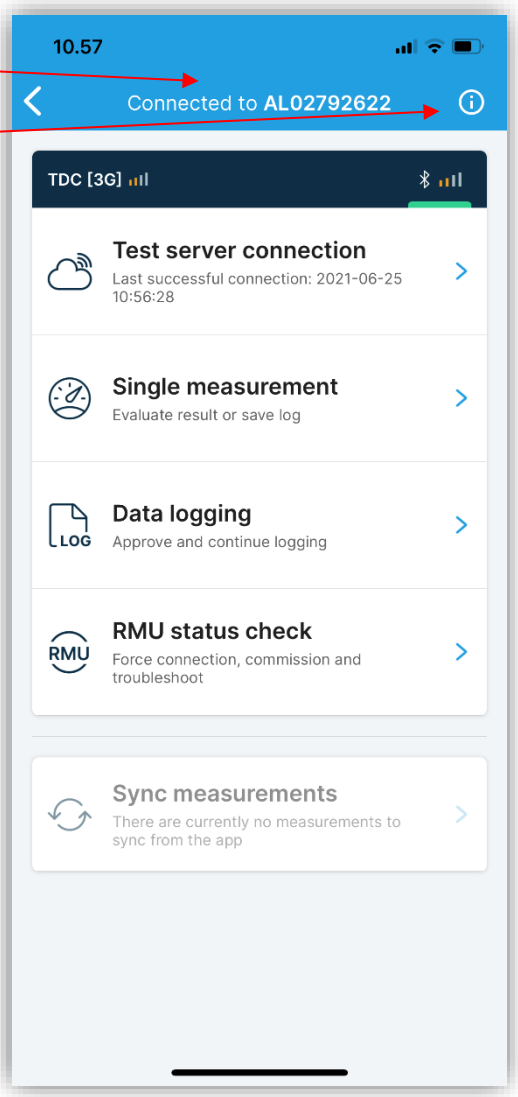
Test Server connection
(See 3.5.2)

Single measurement
(See 3.5.3)

Data logging
(See 3.5.4)

RMU status check
(See 3.5.5)

Sync measurements
Before you've fetched data from any MetriCorr device, there will be no data to sync and the field is greyed out.
(See 3.5.6)



3.5.1 System Info (RMU app)

Press the back arrow to return to the Device menu.

MasterLink serial number

Datalogger type and serial number

Probe and sensor serial numbers
(ICL-C datalogger used for this example)

UTC time

Temperature (Celsius)

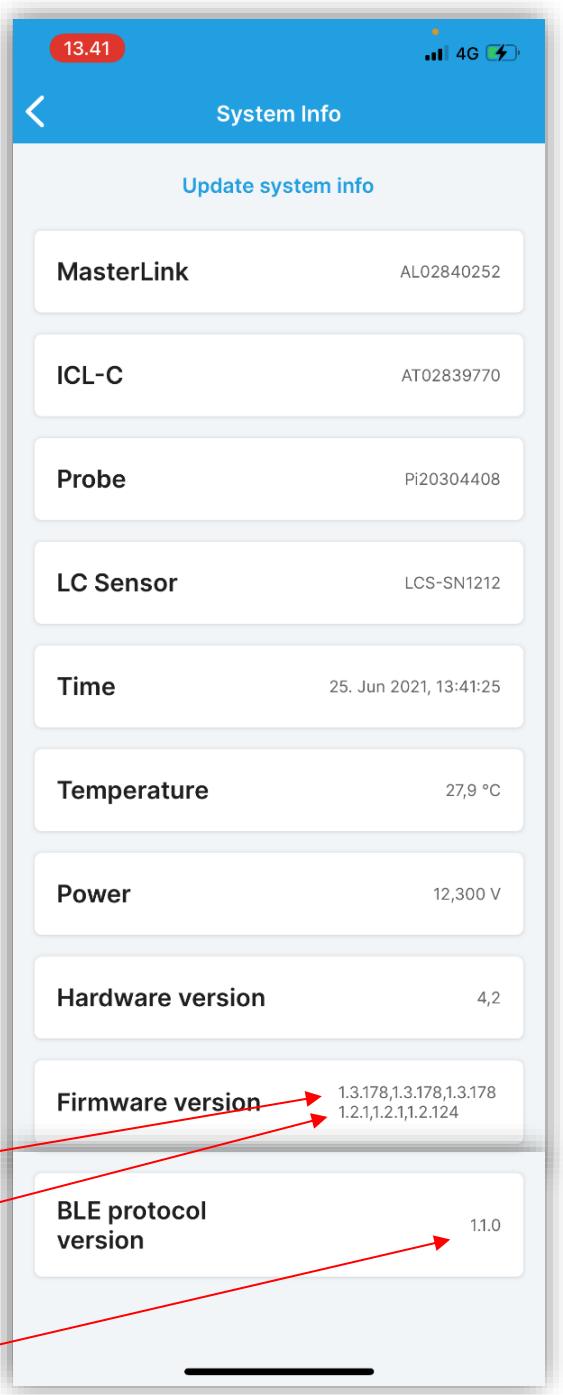
Power supply voltage level

Hardware version
(MasterLink, Datalogger/Monitor)

Current Firmware version
(MasterLink, Bluetooth, datalogger/monitor)

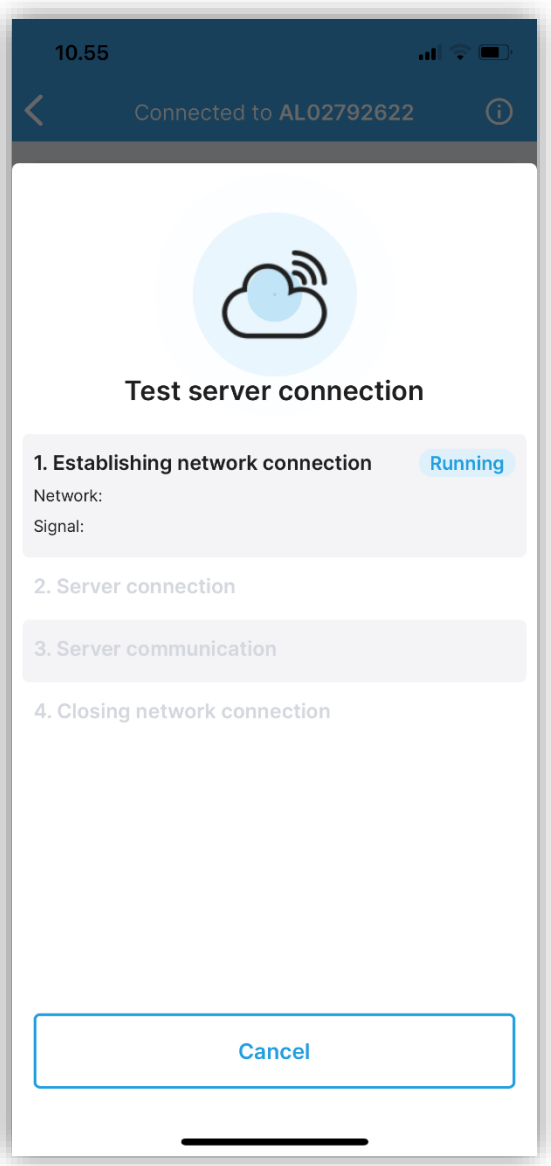
Previous Firmware version
(MasterLink, Bluetooth, datalogger/monitor)

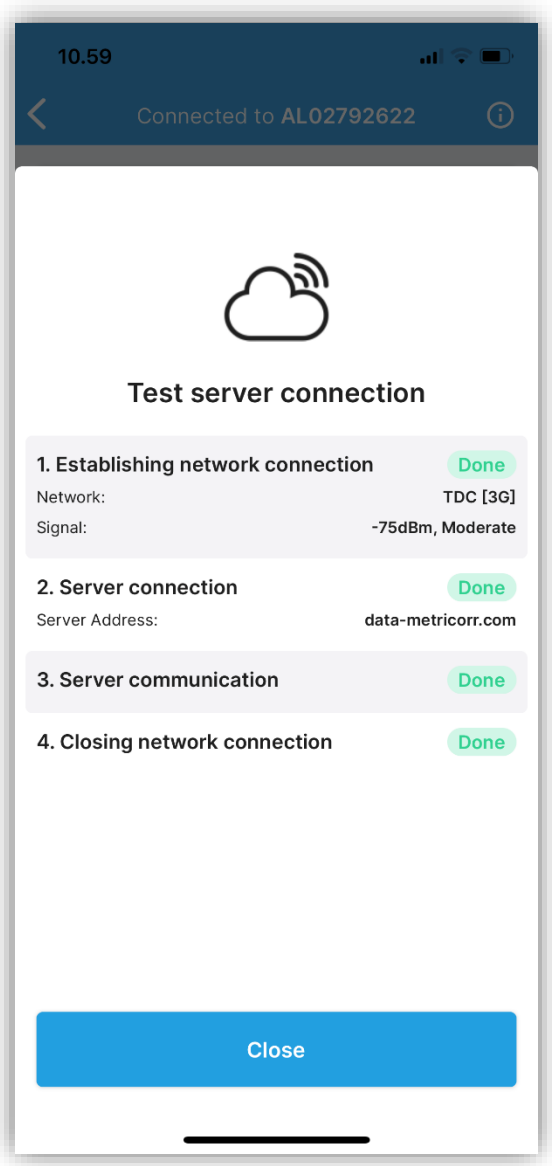
Bluetooth protocol version



3.5.2 Test server connection

This function performs a network (GSM/LTE) data connection test to WEBservice.
In the MetriCorr device menu, press "**Test server connection**"
to perform the test. The results are shown below.

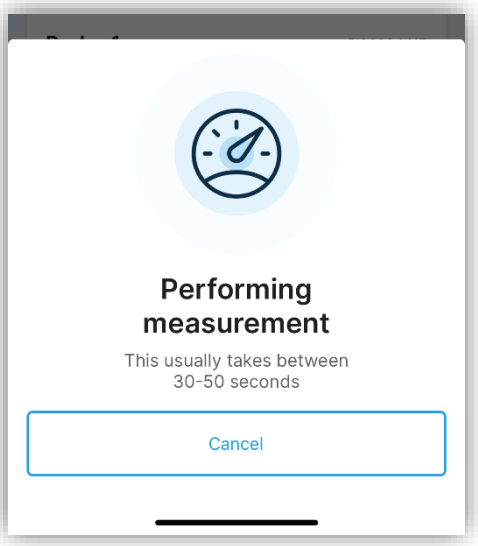


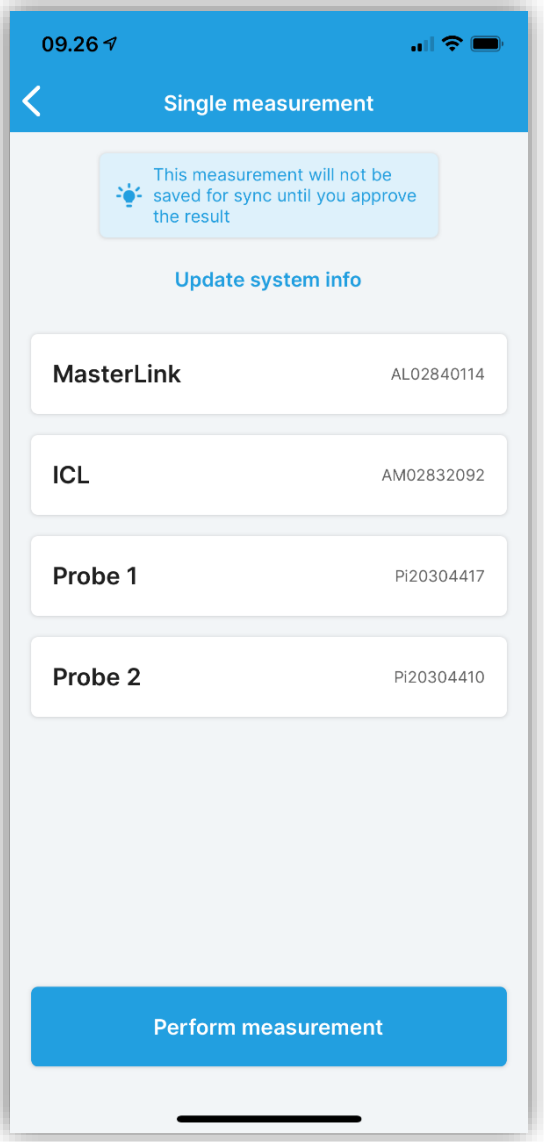


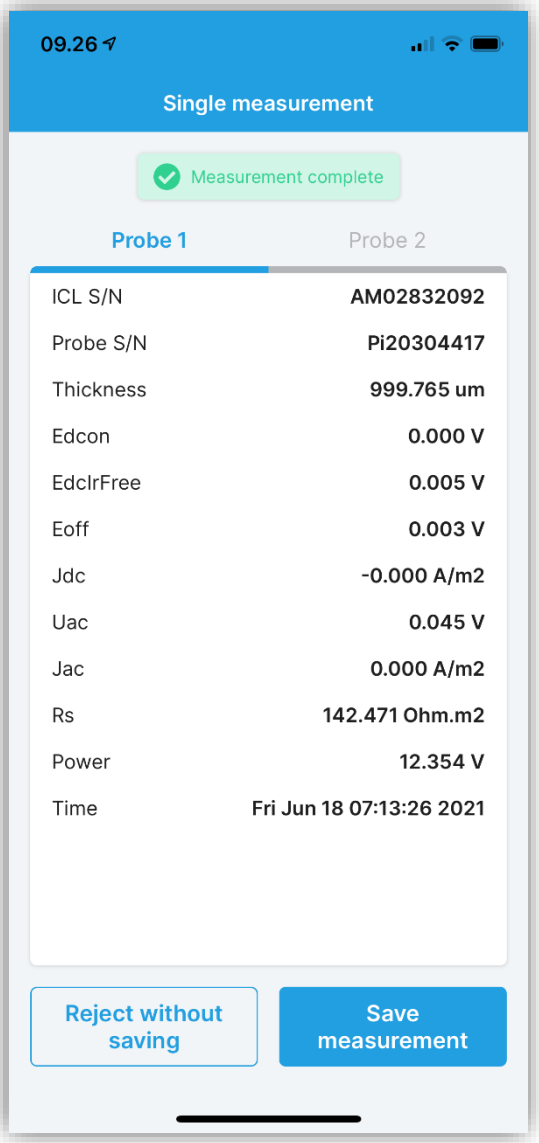
Press “**Cancel**” or "**Close**" to return to the main menu.

3.5.3 Single measurement (RMU app)

1. In the Device menu, press “Single measurement” to enter the page shown below to the left.
2. Press “Perform measurement”. This might take a while as indicated at the screen view to the right.
3. Single measurement result page is shown below to the right. In the example, the results for Probe 1 (blue) for an ICL type datalogger is shown. Click on “Probe 2” to view Probe 2 results.
4. Press “Save measurement” to store data in your phone/tablet.

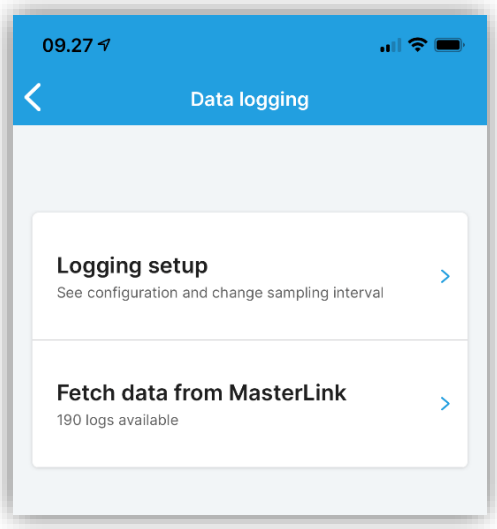






3.5.4 Data logging (RMU app)

In the Device menu, press “Data logging” to enter the page shown to the right.



Logging setup

Press this button to enter the page shown below.

Fetch data from MasterLink

Press this button to fetch stored data from the MetriCorr device (MasterLink) to your phone/tablet. The example “190 logs available” indicates that the device holds 190 measurements waiting to be fetched.

Warning! Measurement data stored in the device will be deleted after the measurements/logs have been fetched to your phone/tablet. It is recommended to export measurement data from your phone frequently.

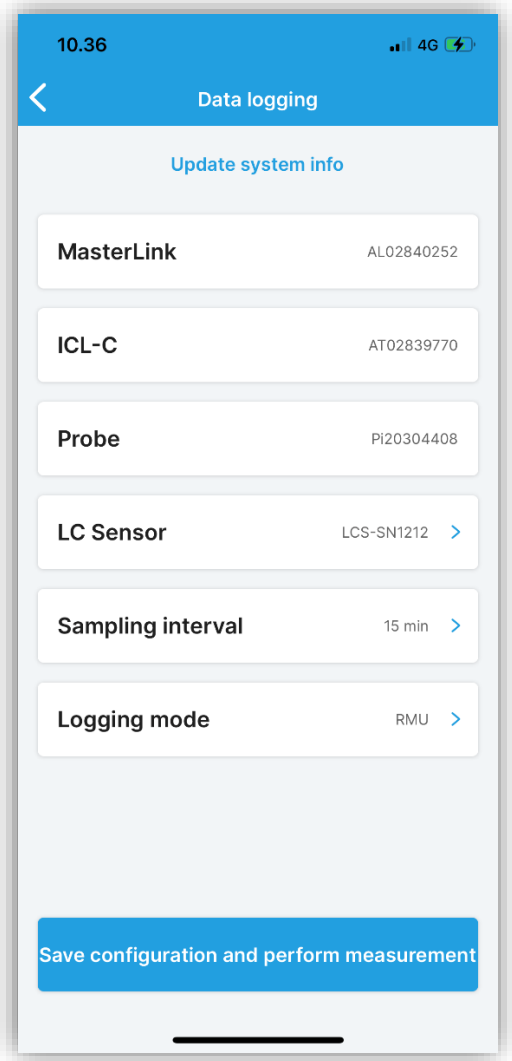
MasterLink serial number

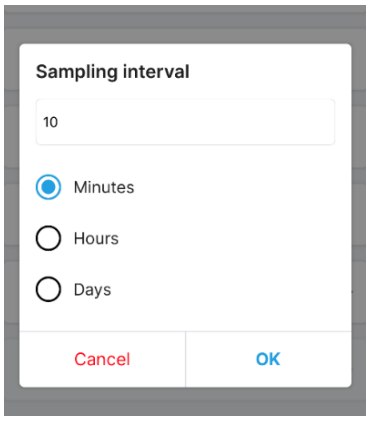
Datalogger type and serial number

Probe 1 serial number

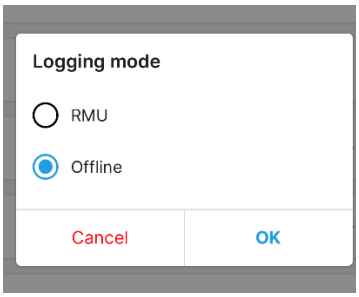
LC Sensor serial number

Sampling interval
Press this button to set sampling interval from 1 min. to 7 days.





Logging mode
By default, MetriCorr’s devices are sold with WEBservice subscription. However, it’s possible to set all MetriCorr devices to “offline” by pressing “Logging mode” and “Offline” as shown below:



Save configuration and Perform measurement
Press this button to save configuration and to perform a set of measurements to be saved to your phone/tablet immediately.

3.5.5 RMU status check

By pressing "**RMU status check**" in the Device menu, both a network test and a single measurement will be done in one step and saved in your phone/tablet.

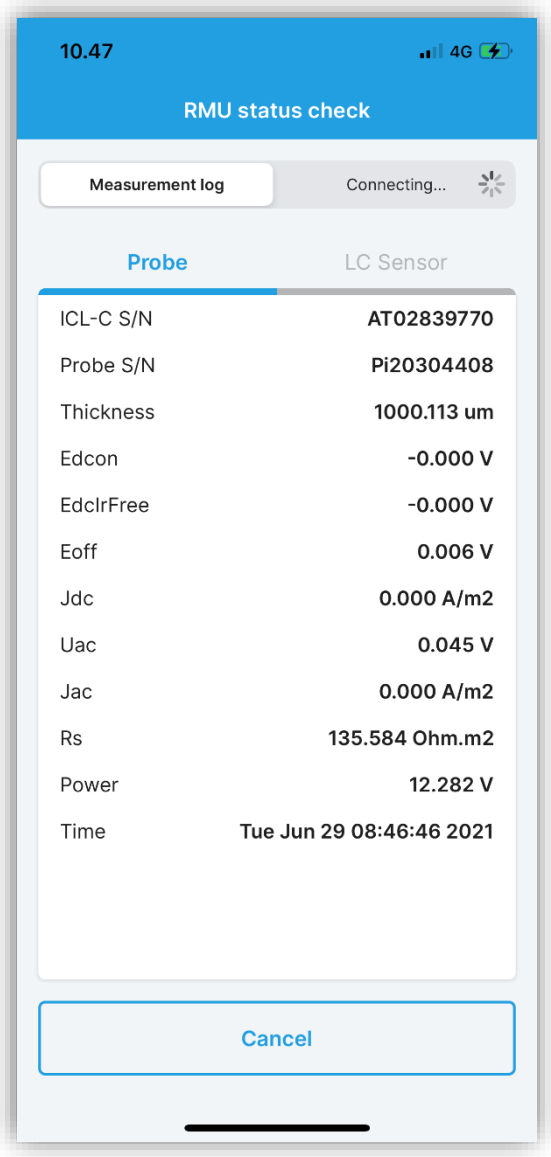
Example

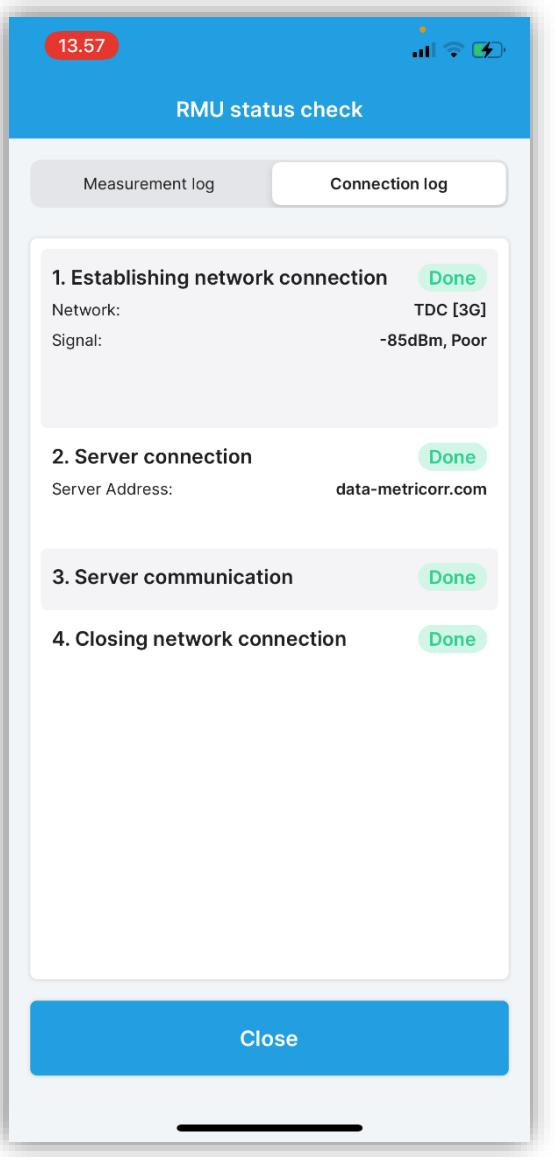
The results below are shown for an ICL-C datalogger.

1. Measurement log
    a. Probe *(Shown)*
    b. LC sensor *(Not shown)*
2. Connection log

Press "**Cancel**" or "**Close**" to return to the main menu.

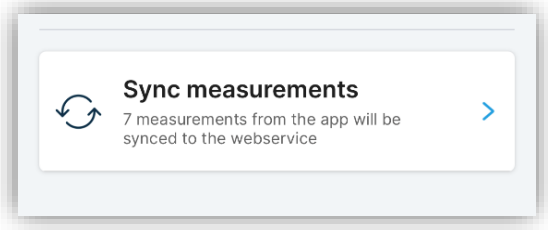
However, if you want to transfer data from previous measurements, you still must press "**Data logging**" in the main menu followed by "**Fetch data**".



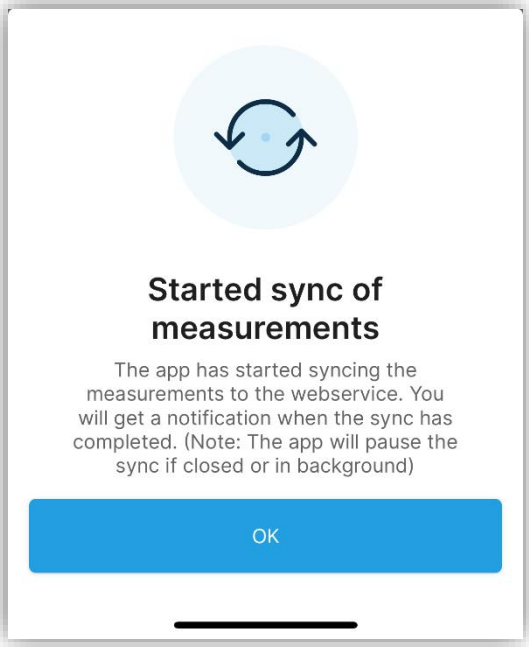


3.5.6 Sync measurements

When you've fetched data from a MetriCorr device, you can press the "Sync measurements" button in the MetriCorr device menu to allow uploading of your measurements to your online WEBservice account. This field also indicates the number of measurements to be synced.

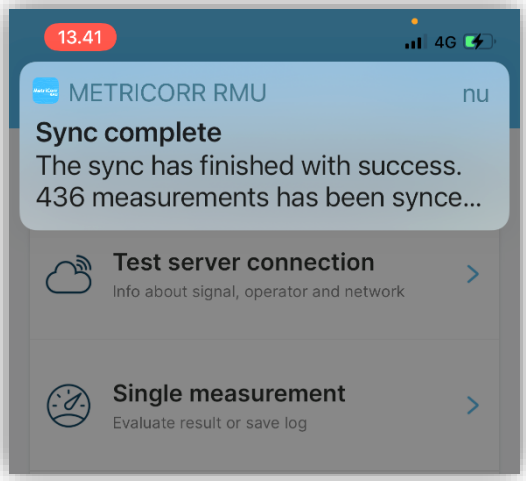


Started sync measurements
Press OK to allow sync of all measurement stored in your phone/tablet.



The measurement data from your phone will automatically be synced to WEBservice when your phone have internet connection via WiFi or any other type of data connection.

Sync complete
When data has been successfully synced, this message will show, which indicates how many measurements that have been synced.



WARNING! After completed sync operation, all measurement data will be deleted from your phone/tablet.

4 Metricorr Logger App

The basic functions of the “Logger” app are similar to the “RMU” app. However, accessing your devices and exporting your collected data is different, which is described in the following section along with all other functionalities.

Open the MetriCorr Logger – app

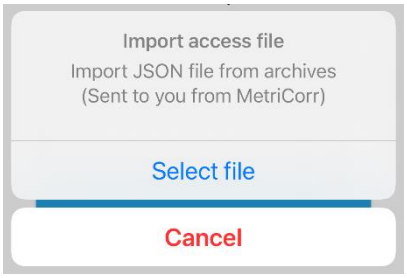
The page “Add devices” will be shown the first time you launch the app.

4.1 Add devices

There’s two ways to access your devices:

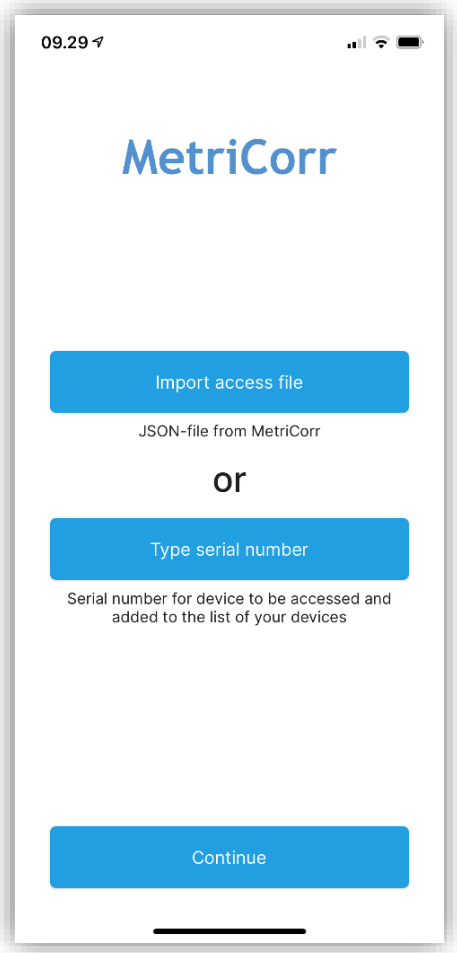
Import access file

Press this button to open the access file sent from MetriCorr of the format .JSON
This is an easy way to access all your devices by opening one file.



If you install more devices later, you can always contact MetriCorr to request an updated access file or you can press “Type serial number” to add new MetriCorr devices manually.

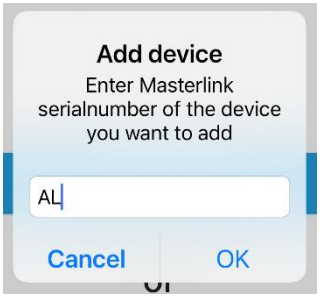
Tip: Send the file attached to an email you can open with your smartphone/tablet and download the .JSON file, which is typically stored in the “Downloads” folder.



Type serial number

Press this button if you want to access your device by typing in its serial number manually.

Example of MasterLink serial number: AL02792622



4.2 Front page (Available devices)

The front page is entitled "**Available devices**" and show all MetriCorr devices within Bluetooth range.

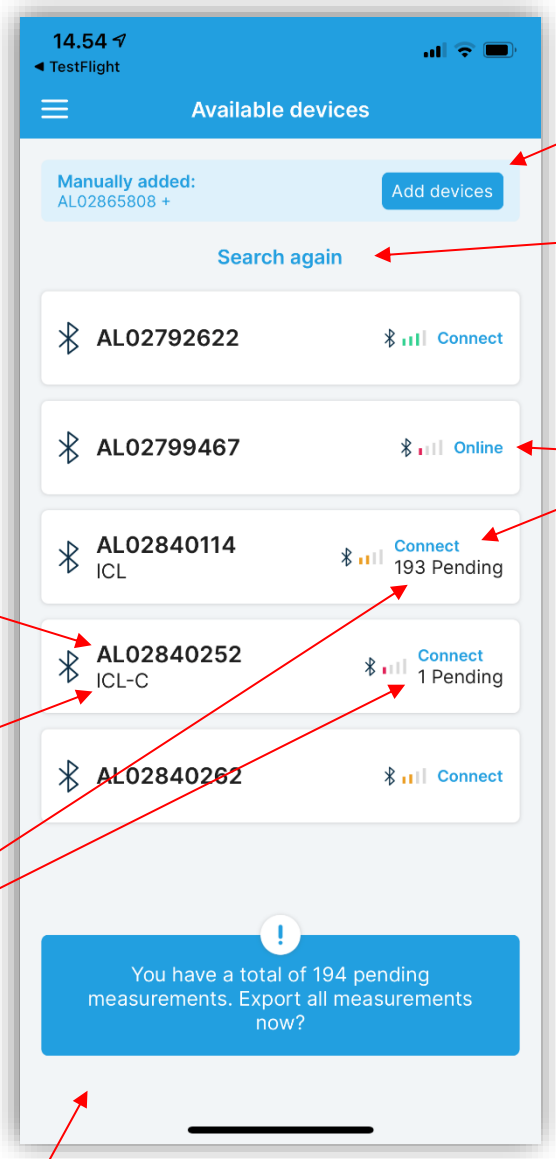
Menu (blue):
Click here to open the menu shown on the next page.

Added devices:
This field indicates whether you've added devices manually or by access file.

MasterLink S/N
(AL02840252)

Datalogger type (ICL-C)

Pending measurements
Indicates devices holding measurement data waiting to be exported.

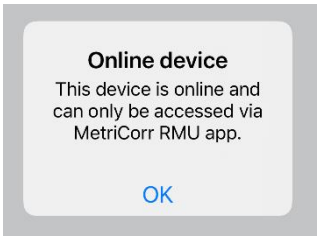


Add devices
Press this button to add more devices to your list.

Search again
Press this button to search for devices within Bluetooth range.

Connect/Online
Press on the MasterLink S/N for the device you want to connect to. The "MetriCorr Device menu" will then show, see 4.5.

Online devices with WEBservice accounts can only be accessed via the RMU app. If you try to access an "Online" device, this message will show:

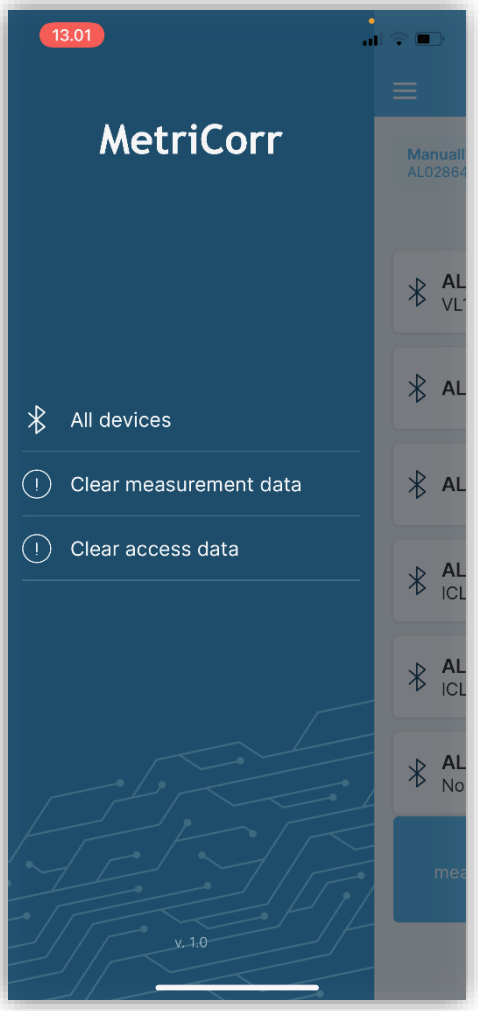


Export measurements

Press this button to export all measurement data stored in your smartphone/tablet/other device. One file holding all the data can be sent by email or synced via 3rd party software such as dropbox, OneDrive, etc. Hereafter, there will no longer be any pending data.

4.3 Menu (blue)

On the front page,
press the menu button
to show the blue menu.



All devices
(See 4.4)

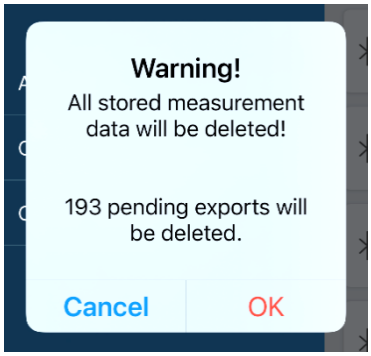
Please visit www.metricorr.com to download manuals. (Online manuals are only readily available with the RMU app)

A troubleshooting guide can be found in Appendix A.

Clear measurement data

Press this button to delete all measurement data stored in you phone/tablet device. Press ok.

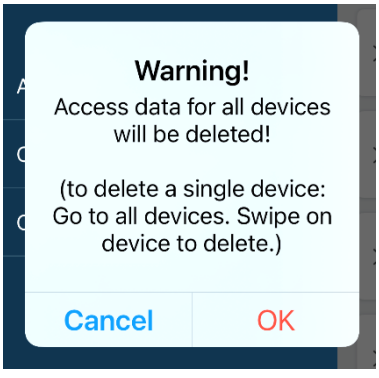
It is recommended to verify that all your measurement data has been exported into your data analysis system before you delete the measurement data.



Clear access data

Press this button to delete all access data stored in your phone/tablet. Press ok.

After this operation, no devices will be shown.



4.4 All devices

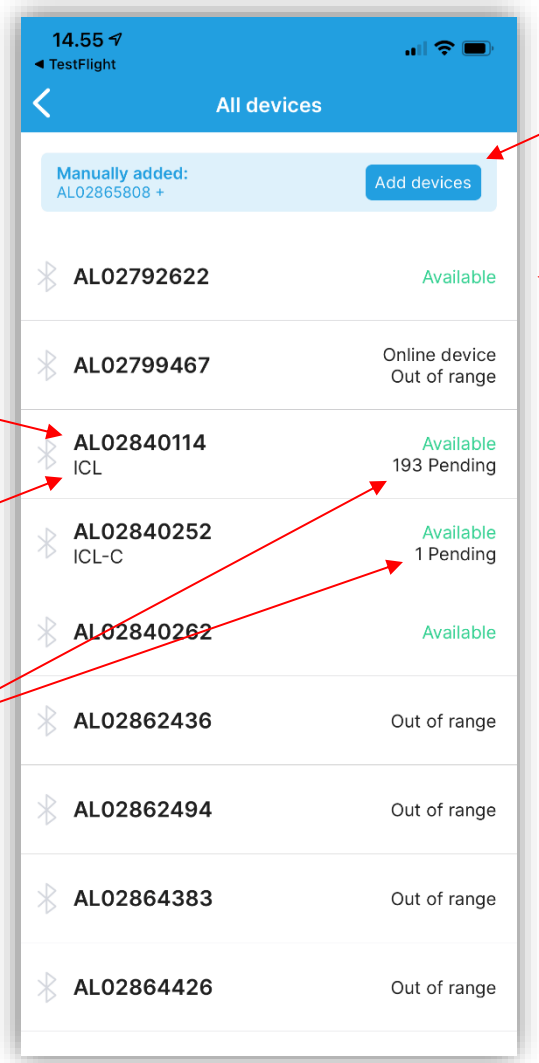
This page is a complete list of all your devices you've gained access to and gives you an overview of datalogger type, Bluetooth status (availability) and pending measurements. Devices can also be deleted from this page.

Added devices:
This field indicates whether you've added devices manually or by access file.

MasterLink serial number
(AL02840252)

Datalogger type (ICL)

Pending measurements
Indicates devices holding measurement data waiting to be exported.



Add devices:
Press this button to add more devices to your list.

Available
Indicates device is within bluetooth range.

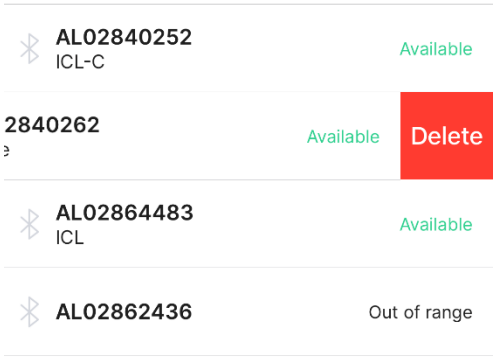
Online device
Online device with WEBservice account. Can only be accessed via the RMU app.

Out of range
Indicates device is out of bluetooth range.

Delete function

Swipe on a device (MasterLink S/N) to delete the device.

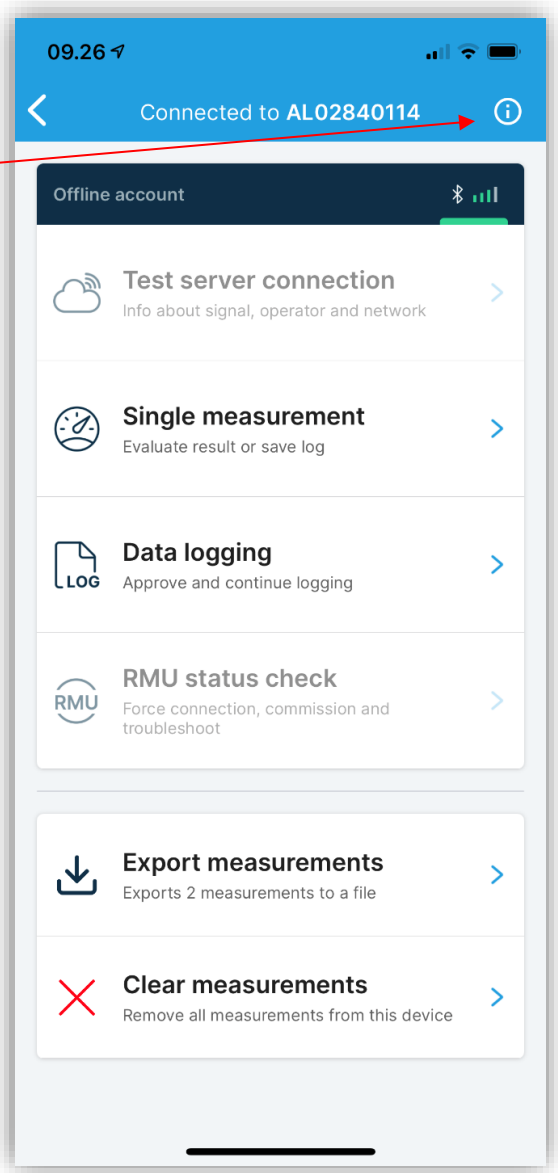
Warning: All pending measurement data will be lost!



4.5 MetriCorr Device menu (Logger app)

The Device Menu gives access to all operations possible for the chosen device (MasterLink S/N).

MetriCorr devices accessed by the logger app are always offline.



System info
Press the information icon to open the "**System info**" page. See

Test Server connection (N/A - RMU app only)

Single measurement (See 4.5.2)

Data logging (See 0)

RMU status check (N/A - RMU app only)

Export measurements

Press this button to export measurement data for the chosen device only. One file will be sent by email or synced via 3rd party software such as dropbox, OneDrive, etc.

Clear measurements

All measurement data from the chosen device will be permanently deleted.

4.5.1 System Info (Logger app)

Press the back arrow to return to the Device menu.

MasterLink serial number

Datalogger type and serial number

Probe and sensor serial numbers
(ICL-C datalogger used for this example)

UTC time

Temperature (Celsius)

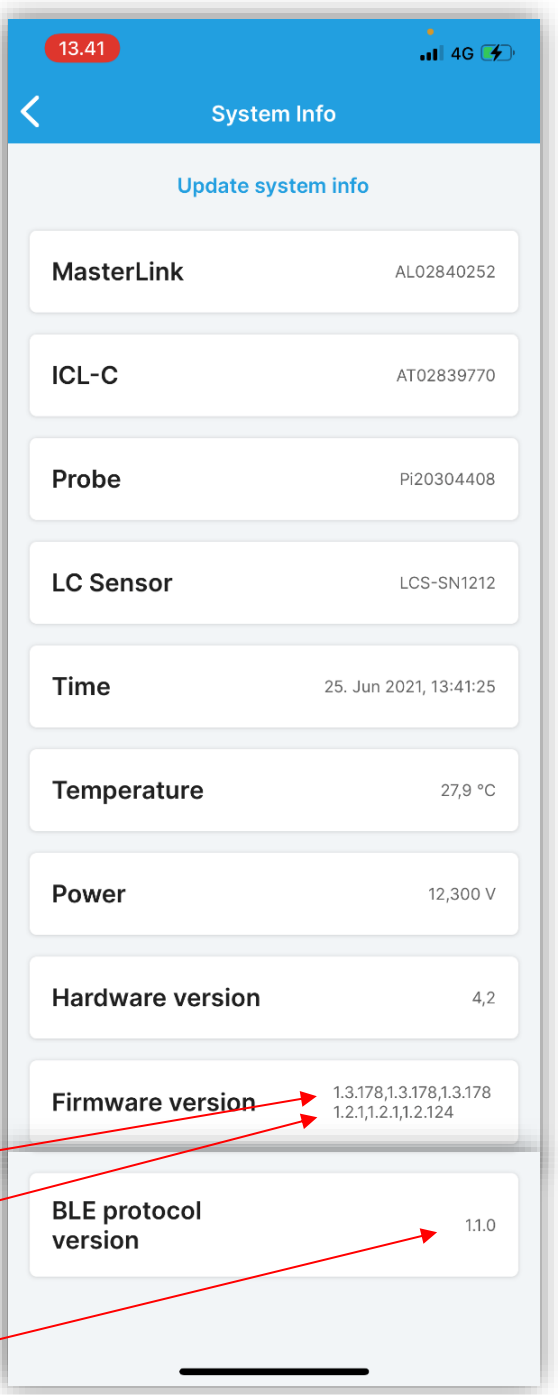
Power supply voltage level

Hardware version
(MasterLink, Datalogger/Monitor)

Current Firmware version
(MasterLink, Bluetooth, datalogger/monitor)

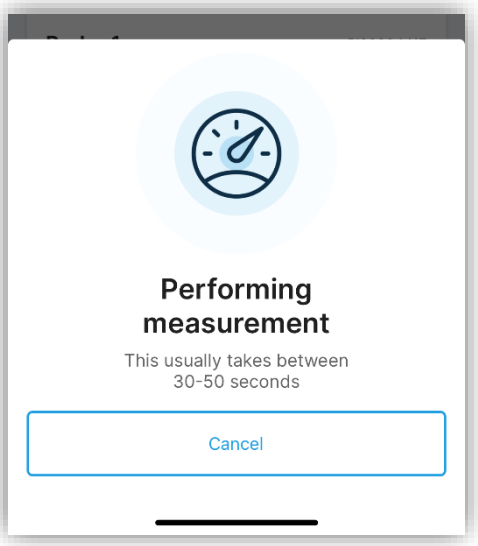
Previous Firmware version
(MasterLink, Bluetooth, datalogger/monitor)

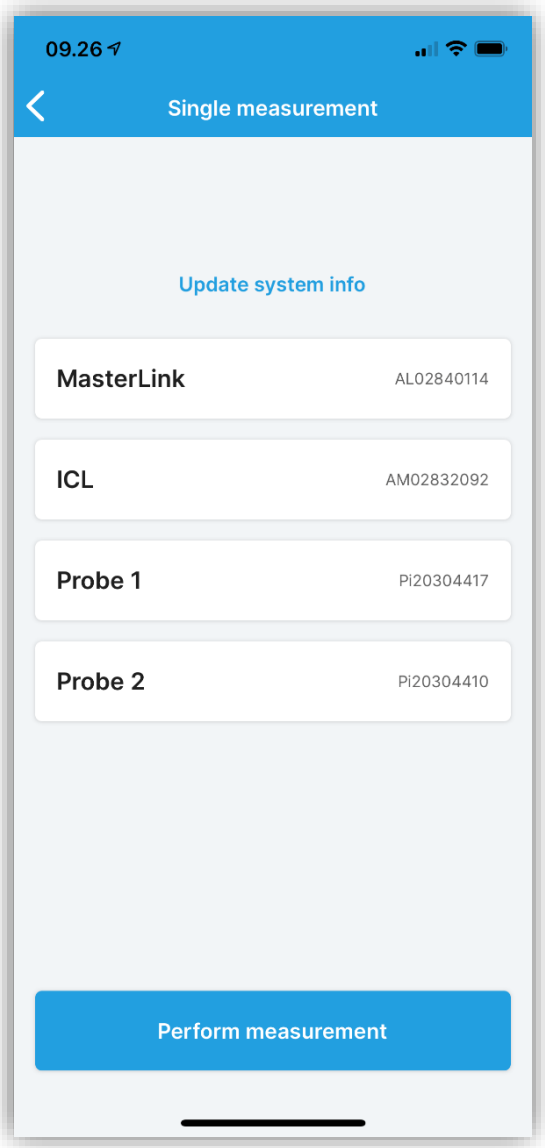
Bluetooth protocol version

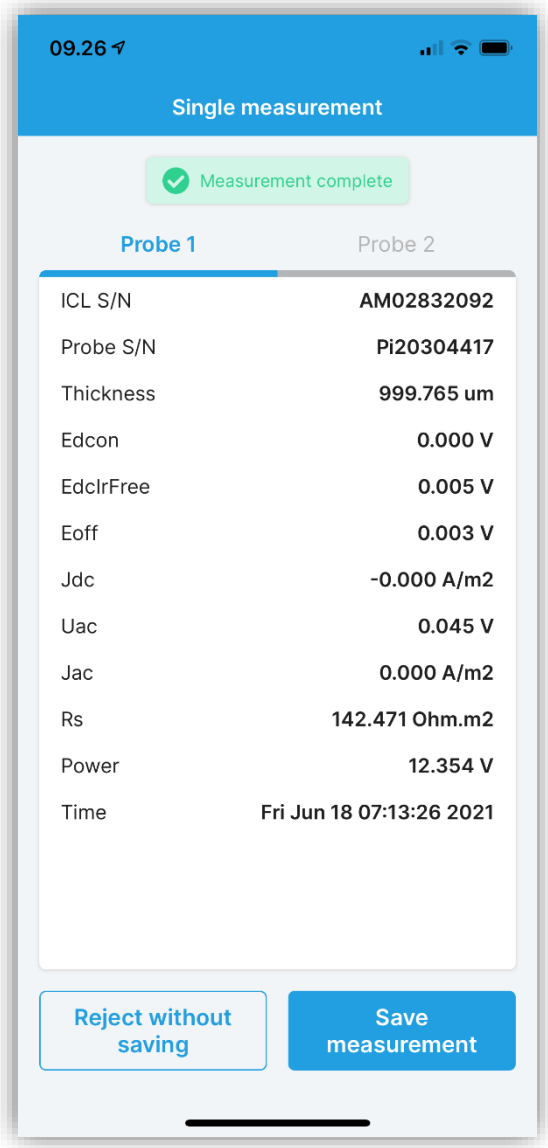


4.5.2 Single measurement (Logger app)

5. In the Device menu, press “Single measurement” to enter the page shown below to the left.
6. Press “Perform measurement”. This might take a while as indicated at the screen view to the right.
7. Single measurement result page is shown below to the right. In the example, the results for Probe 1 (blue) for an ICL type datalogger is shown. Click on “Probe 2”to view Probe 2 results.
8. Press “Save measurement” to store data in your phone/tablet or “Reject without saving”.

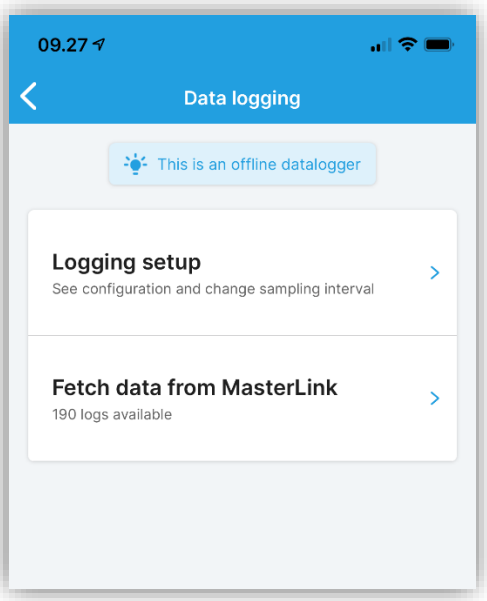






4.5.3 Data logging (Logger app)

In the Device menu, press “Data logging” to enter the page shown to the right.



Logging setup

Press this button to enter the page shown below.

Fetch data from MasterLink

Press this button to fetch stored data from the MetriCorr device (MasterLink) to your phone/tablet. The example “190 logs available” indicates that the device holds 190 measurements waiting to be fetched.

Warning! Measurement data stored in the device will be deleted after the measurements/logs have been fetched to your phone/tablet. It is recommended to export measurement data from your phone frequently.

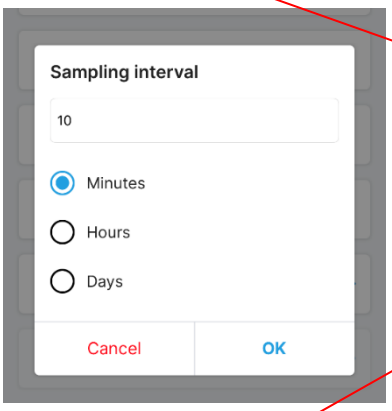
MasterLink serial number

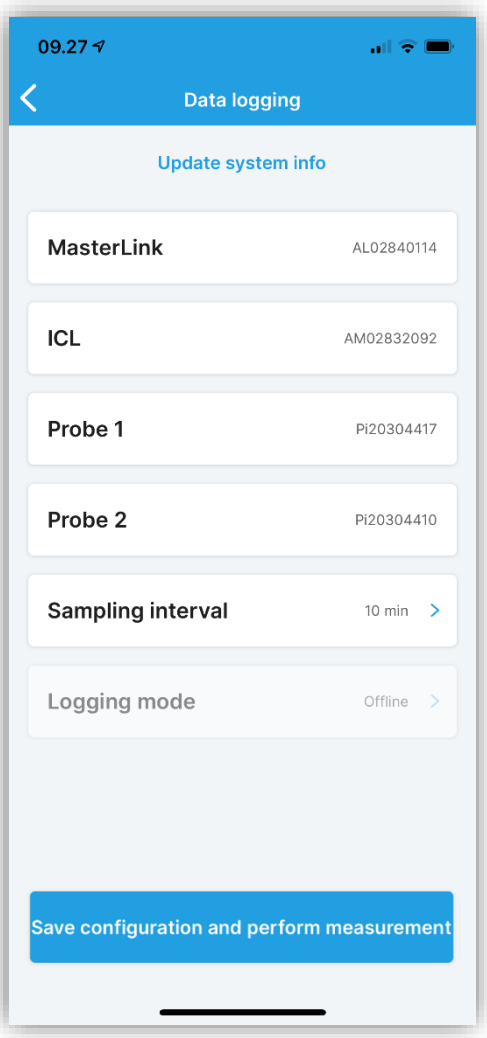
Datalogger type and serial number

Probe 1 serial number

Probe 2 serial number

Sampling interval
Press this button to set sampling interval from 1 min. to 7 days.





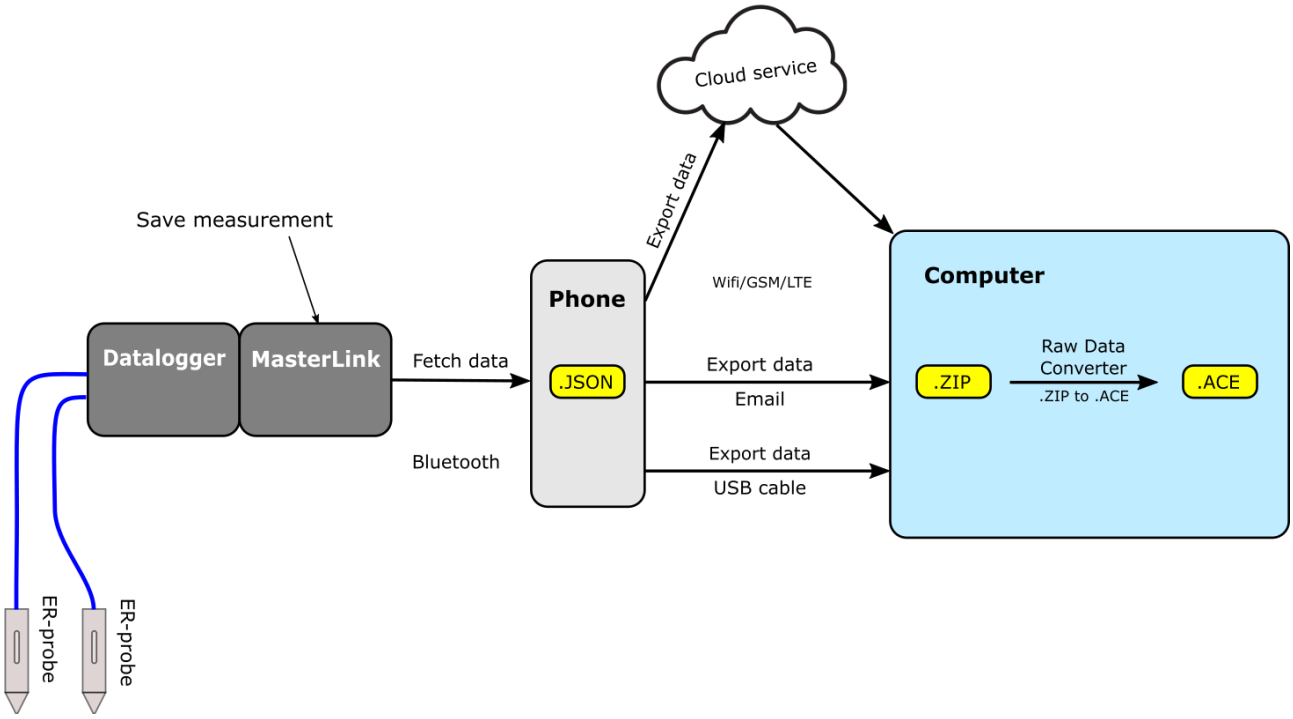
Logging mode is always offline

Save configuration and Perform measurement

Press this button to save configuration and to perform a set of measurements to be saved to your phone/tablet immediately.

5 Data conversion & handling

This section describes how data is collected and processed in your computer to give an overview of the different options you have using one of the two MetriCorr Apps. The data flow with functional descriptions are shown below:



1. The datalogger takes measurements (i.e. once an hour), where the measurement data is stored in the MasterLink.

2. On location, the MasterLink is accessed via Bluetooth and the measurement data is "fetched" to your phone/tablet and stored in your phone's memory in a .JSON file format.

3. Data can be "exported" from your phone/tablet to your computer in one ZIP-file in various ways:
   a. Cloud service (OneDrive, Dropbox, etc.), requires internet connection.
   b. Email (attached ZIP-file), requires internet connection.
   c. USB-cable (Thunderbolt for iphones) to your computer.

4. Download MetriCorr's "RAW data converter" to convert .ZIP files into an .ACE files.
   See Appendix C.

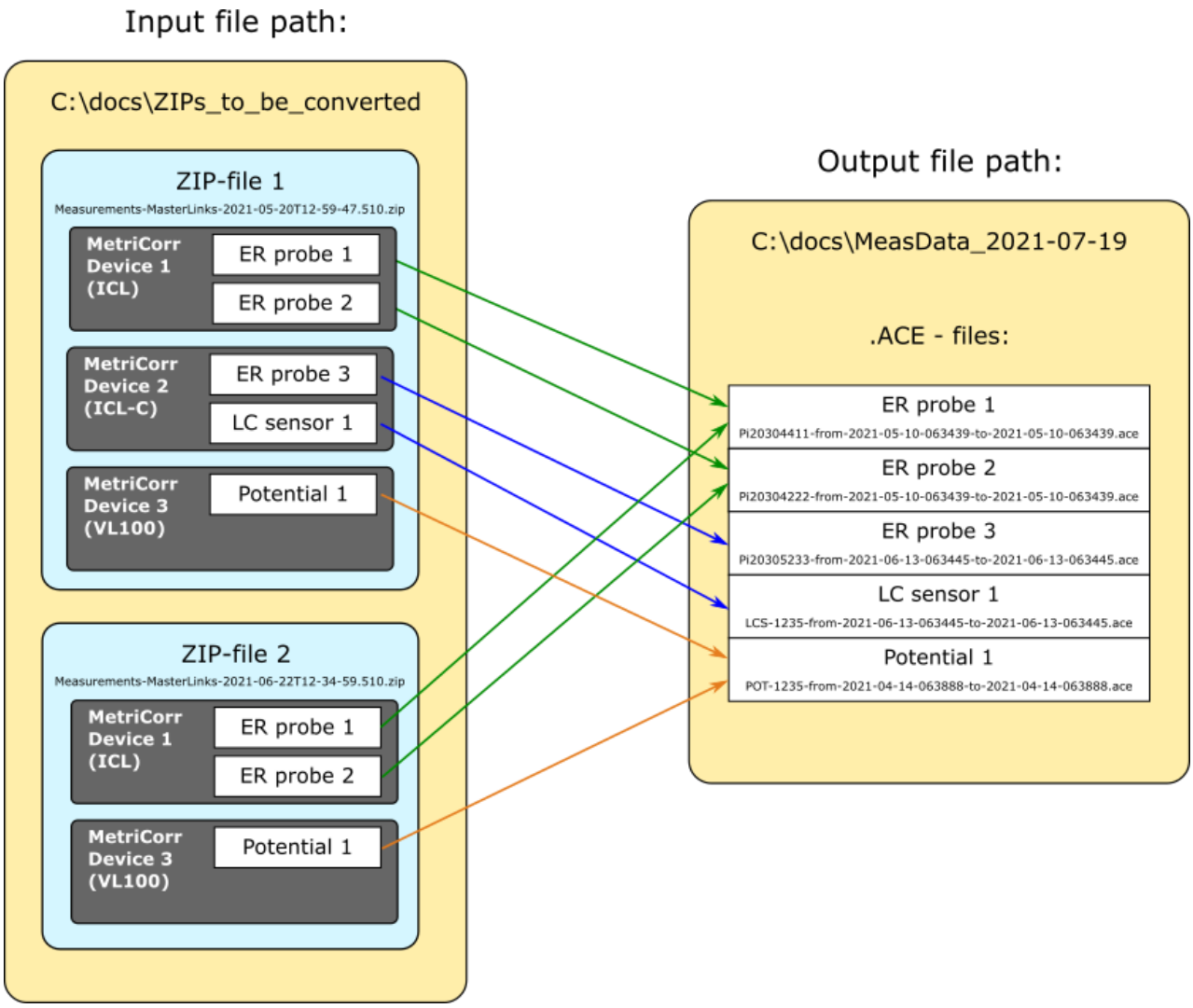
5.1 ZIP – filenames

The ZIP-filename holds information about time (year-month-date-hour-minutes-seconds) and XXX. Please note that the ZIP-filenames depend on operating system: Android or iOS:

iOS format:	"Measurements-MasterLinks-YYYY-MM-DDTHH-MM-SS.XXX.zip"
iOS example:	*"Measurements-MasterLinks-2020-11-16T14-15-14.545.zip"*
Android format:	"Dump_MasterLink_YYYY-MM-DDTXHHMMSS.XXX.zip"
Android example:	*"Dump_MasterLink_2020-11-18T102735.524Z.zip"*

5.2 Convert ".JSON"-files to .ACE files using the "Raw Data Converter"

One ZIP-file can hold data for many MetriCorr devices (one .ACE file for each probe/sensor) and will be converted into multiple .ACE files. The data converter opens multiple ZIP-files at a time and merge measurements from each probe/sensor into one .ACE file per probe/sensor as shown in the example below:



Recommendations:

1. Keep all ZIP-files as backup.
2. Create a new empty output folder and give it a name that indicates content and period.
   Example: MeasData_PipeC_2021-05-01_2021-07-19

5.3 Raw Data Converter - Instructions

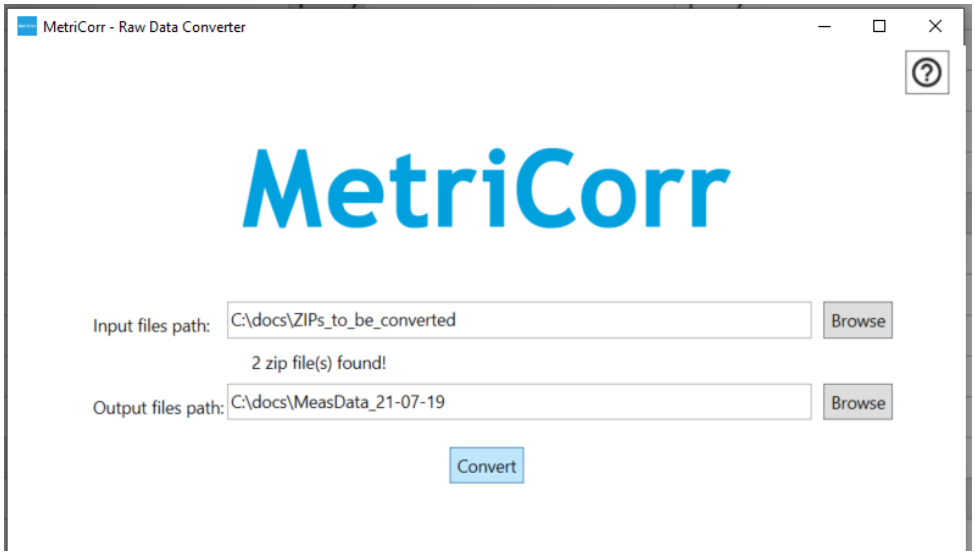
1. Copy the ZIP-files you want to convert into a folder (Input files path)
   Example "C:\docs\ZIPS_to_be_converted

2. Open the installed program "Raw Data Converter" by MetriCorr.

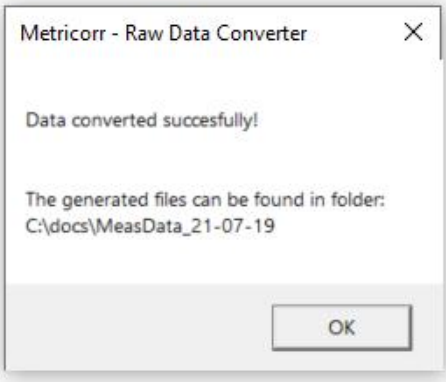
3. Select Input file path:
   Example "C:\docs\ZIPS_to_be_converted

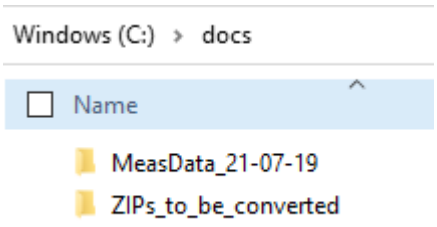
4. Select Output files path:
   Example: "C:\docs\MeasData_21-07-19

5. Press "Convert"



6. If successful, the program will now show where the generated files can be found.
   A folder "MeasData_21-07-19" has been created, which holds all generated .ACE – files.





Note! If you run the Raw Data Converter twice with the same output file path, but with added ZIP-files to the input file folder, a second version of the .ACE files will be generated for each probe/sensor. **Therefore, it is recommended to create a new output folder each time you add more ZIP-files to the input folder.**

Appendix A: Troubleshooting guide (FAQ)

My app keeps searching for MetriCorr devices, but no MasterLink S/N shows up?

- Make sure your MetriCorr device is powered up and within Bluetooth range.
  Log out or close app, restart the app and try again.
- Make sure that you've logged into the right MetriCorr account. The MasterLink S/N you try to access should appear on the "All devices" page.
- It is important that only one app from one device is running at the same time. E.g. If you've tried to access your MetriCorr device with your phone, and then again with your tablet, it is recommended to turn off Bluetooth on your phone.

I can't access my MetriCorr device I bought before the year 2020?

- Your MetriCorr device must have firmware version 1.2.1 or newer. All MetriCorr devices sold before 2020 (Slimline MasterLink dataloggers) are sold with webservice subscription. It is possible to update the firmware via webservice, please contact MetriCorr.

I just purchased a new MetriCorr device with no webservice subscription. Can I add it to my list of MetriCorr devices using the Logger App?

- Yes, even though you've received a .JSON file from MetriCorr holding information about all your MetriCorr devices, you can add a new device manually. See "4.1 Add devices"

Using the Logger app, can I use a MetriCorr device to collect data from older ER-probes that doesn't hold a memory chip with the probe certificate?

- Not at the moment, but we're working on a solution where you can type in the certificate data manually to enable onsite data collection with Logger app.

Appendix B: ICL-C setup with LC sensor

Line Current Sensor

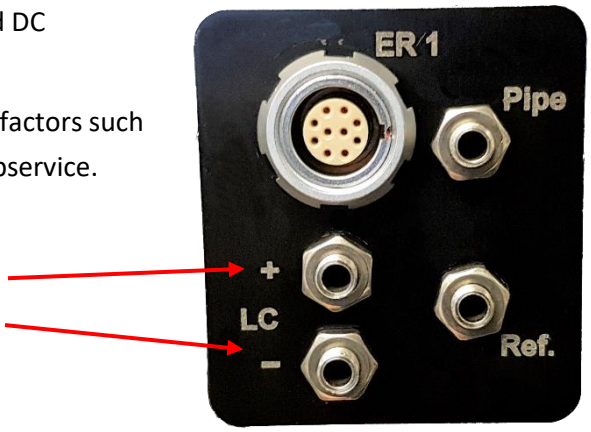
The Line Current (LC) input on the ICL-C is designed to monitor the current flowing in a steel pipe (or other structure), hereafter referred to as “pipe”, by measuring the voltage drop across a certain span of the pipe.

However, it is possible to measure any voltage source connected to the LC input within the maximum limits of ± 1.2 Vdc. Data for both DC and AC voltages are accessible in WebService.

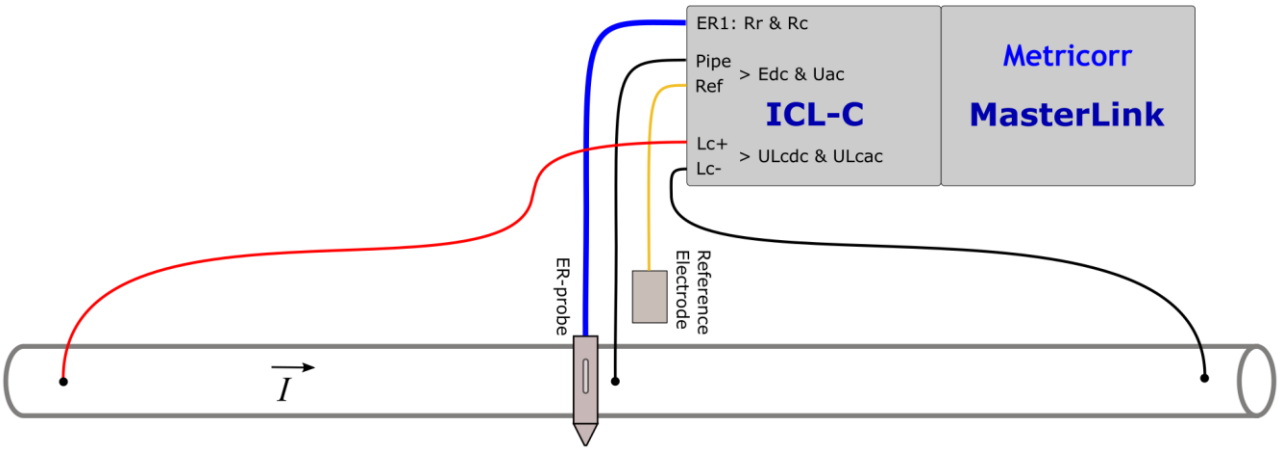
The **DC current** in the pipe is calculated by a user defined DC resistance and displayed in WebService as a graph.

The **AC current** in the pipe depends on many fluctuating factors such as soil moisture level and is per default not shown in webservice.

The LC input consists of the two terminals LC+ and LC-, which are galvanically isolated from all other terminals.



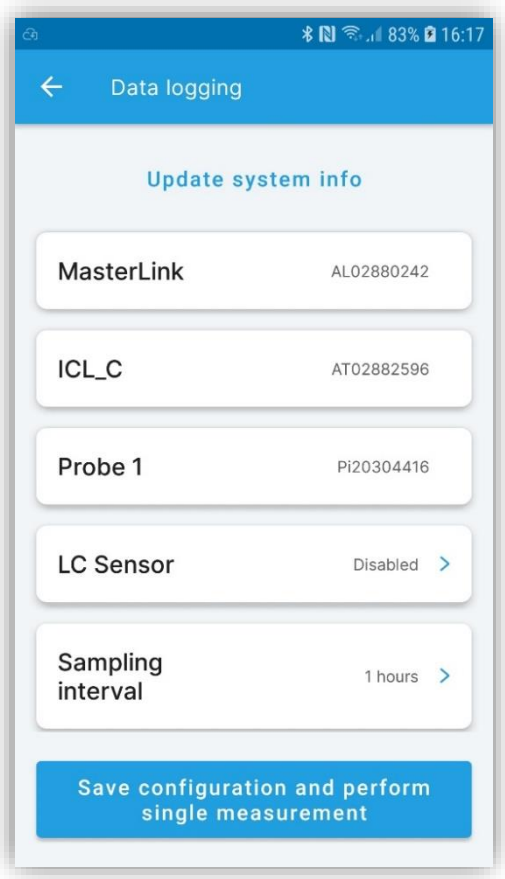
A steel pipe is used for this illustration, where the ICL-C MasterLink is placed in the center between the two line current measuring points (Lc+ and Lc-):



To calculate the DC current flow from the measured Line Current voltage, the DC resistance of the pipe section has to be typed into the app.

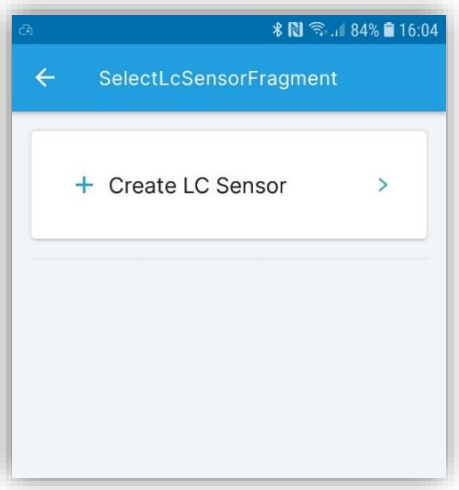
LC Sensor setup

From the MetriCorr Device Menu,
press “Data logging” and “Logging Setup”
to enter the page shown to the right.



Per default, the LC Sensor is “Disabled”

Press “LC Sensor” to enter the page shown below:

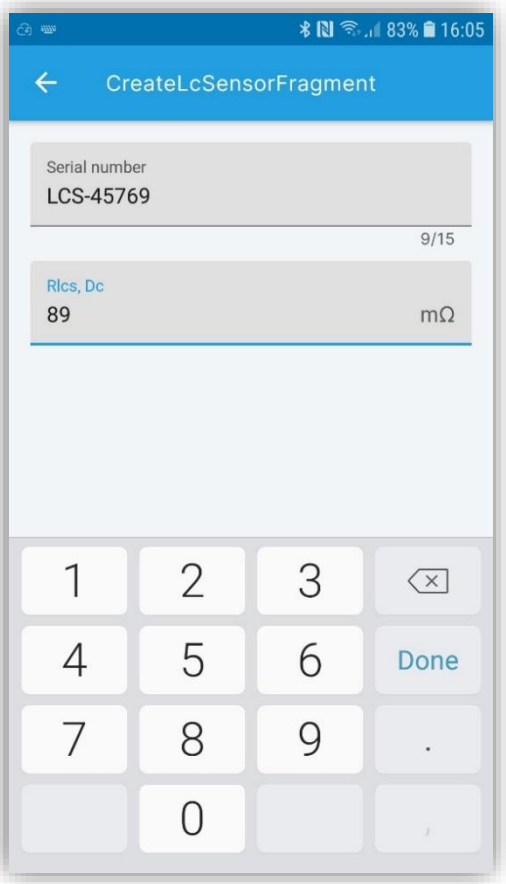


Press “Create LC Sensor” to enter the page shown to the right.

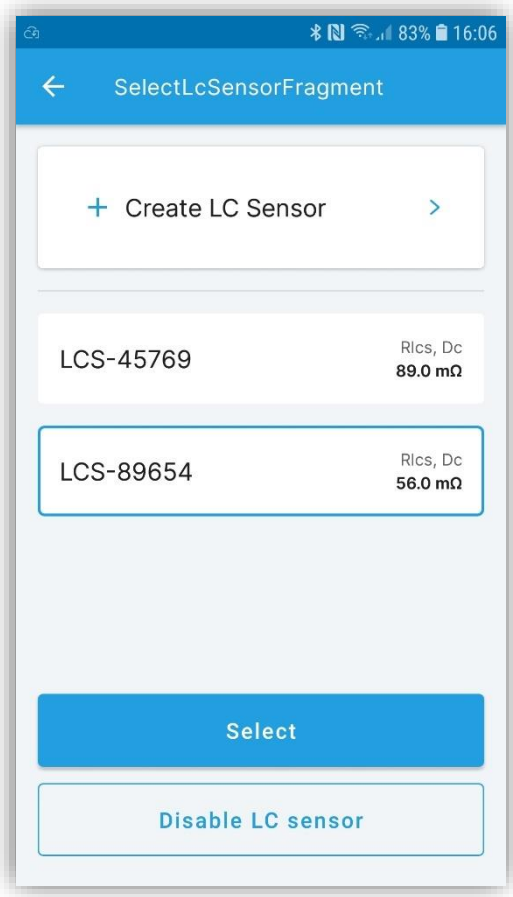
Choose a serial number for the pipe section you want to measure (or other structure) and type it into the upper field.

Type in the DC resistance for the given pipe section (structure) in the lower field. Press “Done” & “Save”.

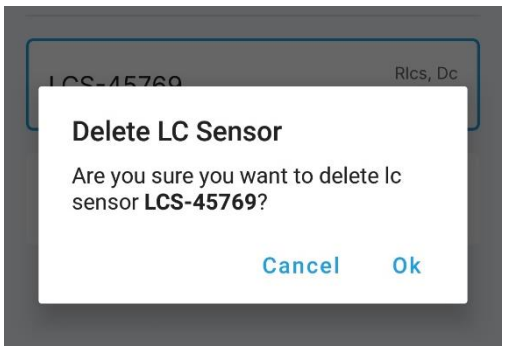
Note! It is possible to type in several LC Sensors. This feature is useful if you’re using the ICL-C datalogger as a handtool to measure several LC Sensors (pipe sections.)



On the page shown to the right, two LC Sensors have been created. Click on the LC Sensor you want to measure and press “Select”.

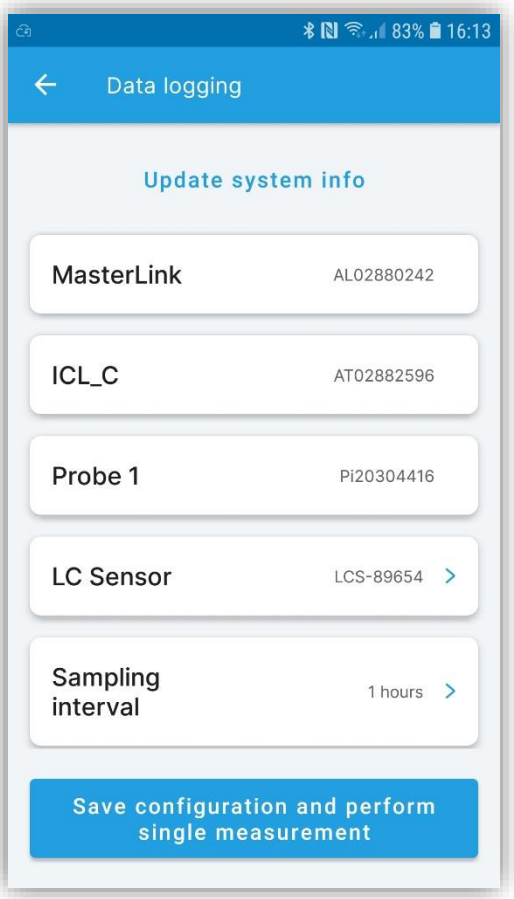


To delete an LC Sensor, press and hold the sensor you want to delete and press Ok.



The chosen LC Sensor will now be shown on the Data logging setup page.

Press “Save configuration and perform single measurement”.



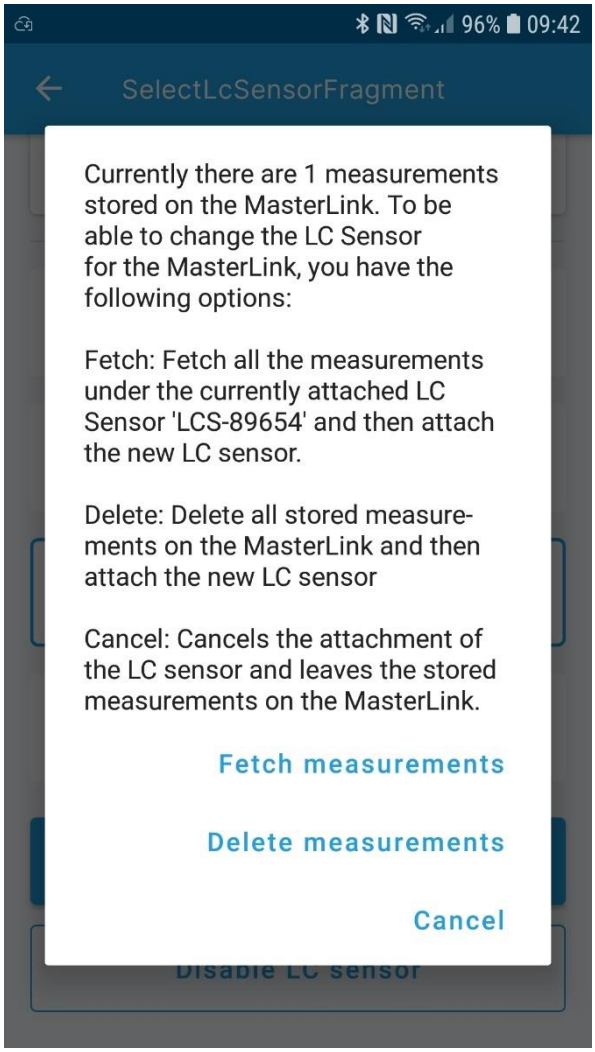
Switching LC Sensor

If you try to select another LC Sensor while there's still data in the MetriCorr device that hasn't been fetched to your phone/tablet, this message will occur.

You can either:

1. Fetch the measurements for the current LC Sensor.

2. Delete the measurements stored in the MetriCorr device.

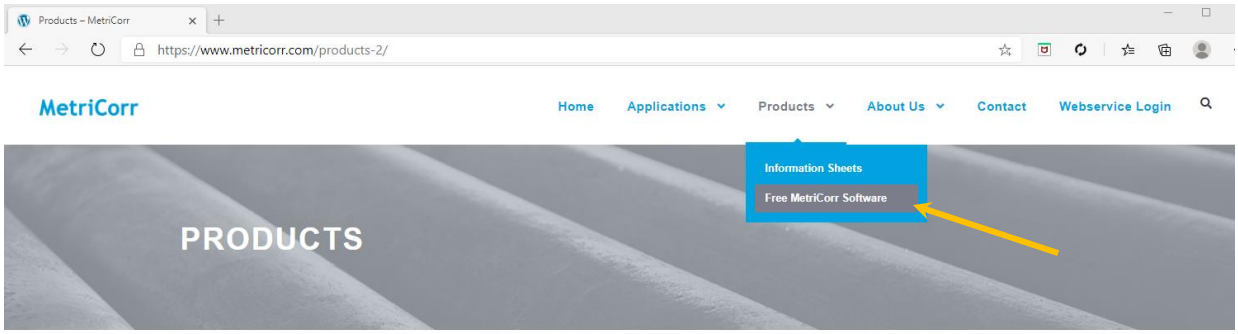


Appendix C: Install Raw Data Converter

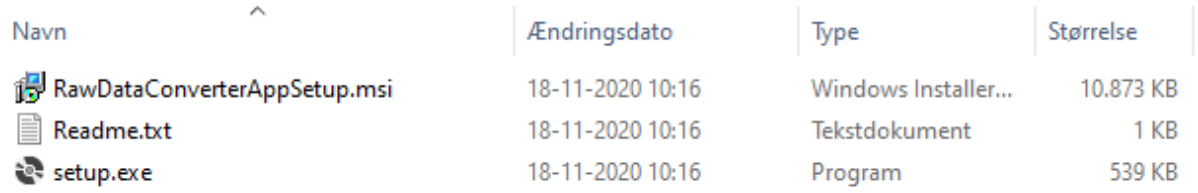
Both MetriCorr apps export collected data via email, etc. in a ZIP-file format. On MetriCorr's website you can download a "RAW data converter", which takes ZIP-files and converts them into .ACE files. (Compressed comma separated data files).

Procedure to install:

1. Go to MetriCorr website homepage, https://www.metricorr.com
2. Go to "Products" - > "Free MetriCorr Software"

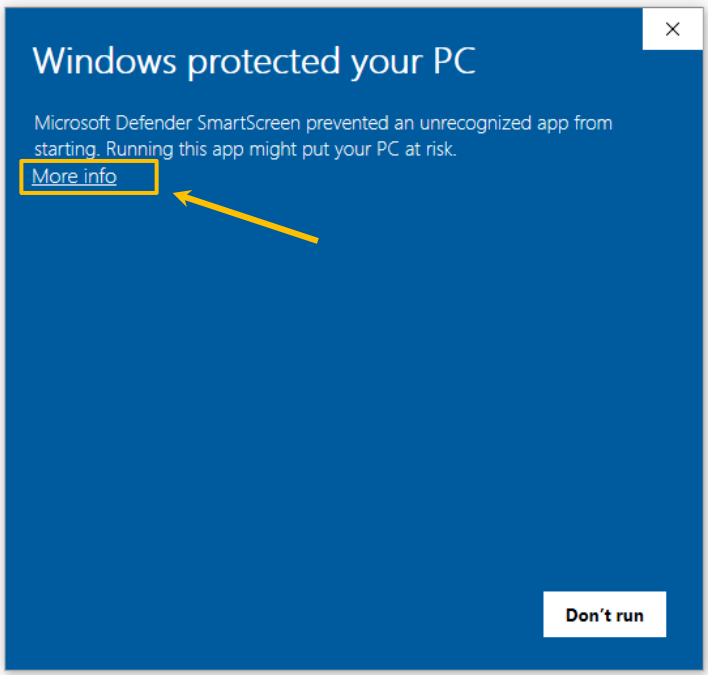


3. Click on "Software Raw Data Converter" to download ZIP-file.
4. Open ZIP-file and double-click on setup.exe to start installation

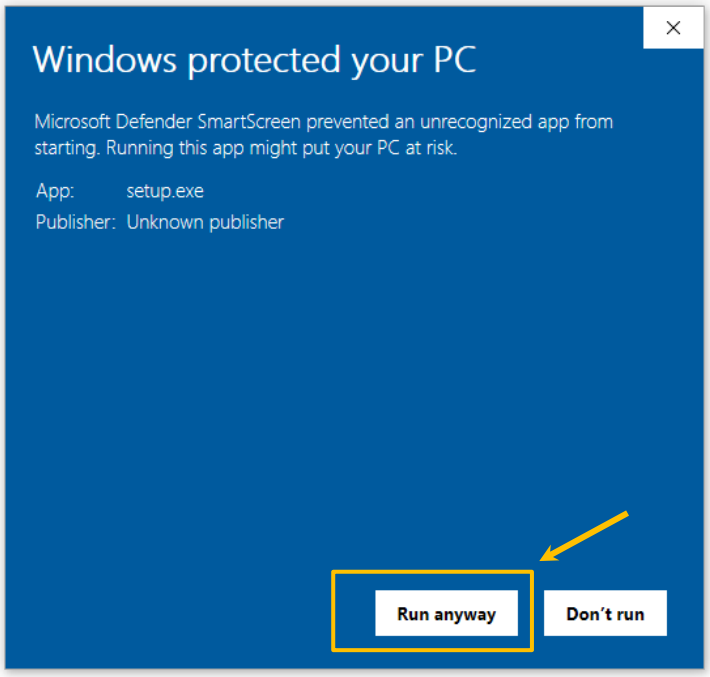


5. During installation, a “Windows protect your PC” can show up

a. Select “More information”

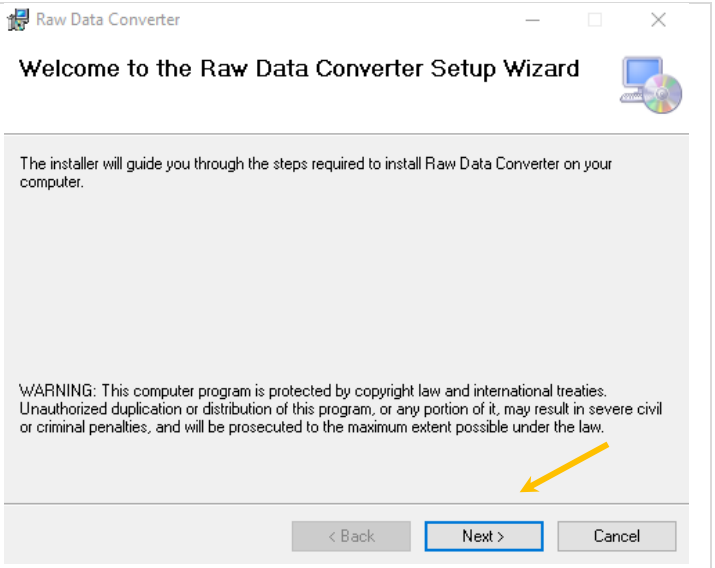


b. Accept and run the installation



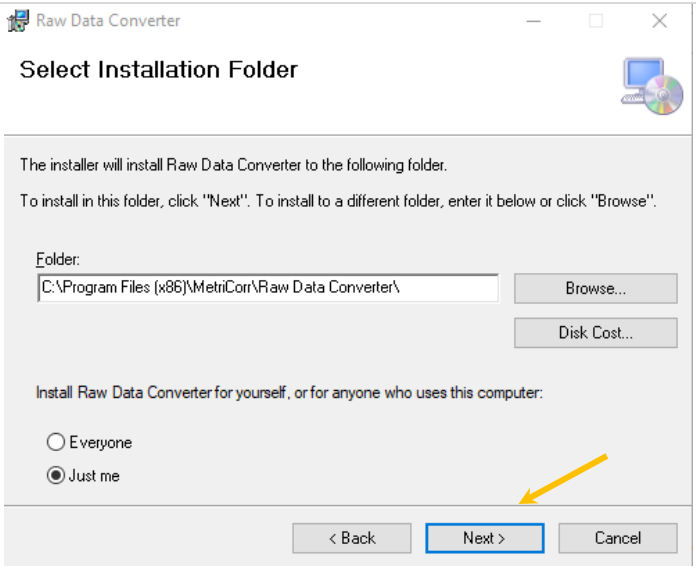
6. Installation of Raw Data Converter will start.

Press “Next > “



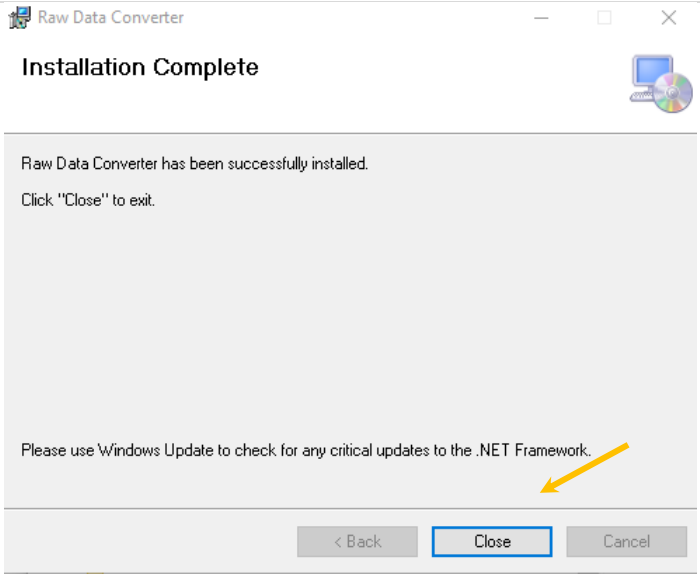
Select a folder for the installation.
Select “Just me”

Press “Next > “



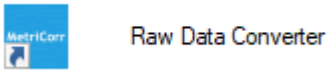
Installation complete

Press “Close”



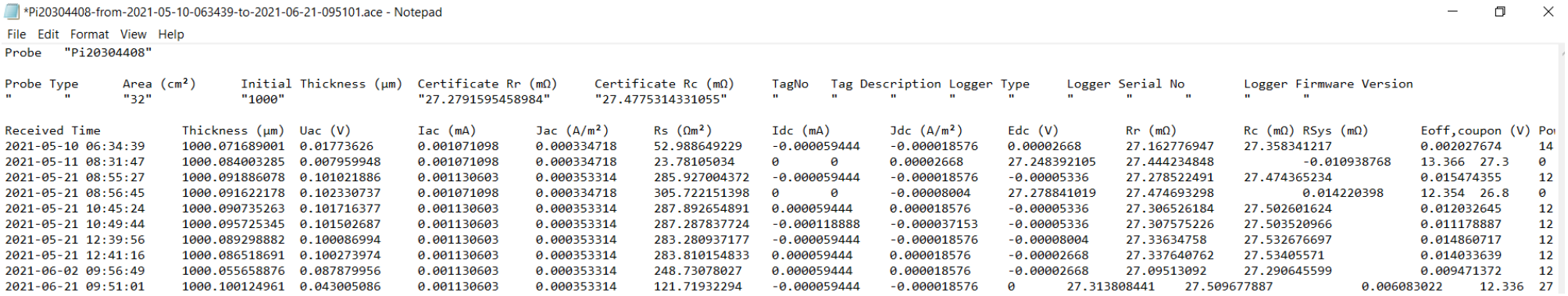
Installation Completed.

“Raw Data Converter” icon will appear on you computer



Appendix D: ".ace" file format

Example of ".ace" file opened in Notepad:



*Pi20304408-from-2021-05-10-063439-to-2021-06-21-095101.ace - Notepad

File Edit Format View Help

```
Probe    "Pi20304408"

Probe Type      Area (cm²)      Initial Thickness (µm)  Certificate Rr (mΩ)     Certificate Rc (mΩ)     TagNo   Tag Description Logger Type     Logger Serial No        Logger Firmware Version
"       "       "32"            "1000"                  "27.2791595458984"      "27.4775314331055"      "       "       "       "       "       "       "       "       "       "       "

Received Time           Thickness (µm)  Uac (V)         Iac (mA)        Jac (A/m²)      Rs (Ωm²)        Idc (mA)        Jdc (A/m²)      Edc (V)         Rr (mΩ)         Rc (mΩ) RSys (mΩ)       Eoff,coupon (V) Po
2021-05-10 06:34:39     1000.071689001  0.01773626      0.001071098     0.000334718     52.988649229    -0.000059444    -0.000018576    0.00002668      27.162776947    27.358341217            0.002027674     14
2021-05-11 08:31:47     1000.084003285  0.007959948     0.001071098     0.000334718     23.78105034     0       0       0.00002668      27.248392105    27.444234848            -0.010938768    13.366  27.3    0
2021-05-21 08:55:27     1000.091886078  0.101021886     0.001130603     0.000353314     285.927004372   -0.000059444    -0.000018576    -0.00005336     27.278522491    27.474365234            0.015474355     12
2021-05-21 08:56:45     1000.091622178  0.102330737     0.001071098     0.000334718     305.722151398   0       0       -0.00008004     27.278841019    27.474693298            0.014220398     12.354  26.8    0
2021-05-21 10:45:24     1000.090735263  0.101716377     0.001130603     0.000353314     287.892654891   0.000059444     0.000018576     -0.00005336     27.306526184    27.502601624            0.012032645     12
2021-05-21 10:49:44     1000.095725345  0.101502687     0.001130603     0.000353314     287.287837724   -0.000118888    -0.000037153    -0.00005336     27.307575226    27.503520966            0.011178887     12
2021-05-21 12:39:56     1000.089298882  0.100086994     0.001130603     0.000353314     283.280937177   -0.000059444    -0.000018576    -0.00008004     27.33634758     27.532676697            0.014860717     12
2021-05-21 12:41:16     1000.086518691  0.100273974     0.001130603     0.000353314     283.810154833   0.000059444     0.000018576     -0.00002668     27.337640762    27.53405571             0.014033639     12
2021-06-02 09:56:49     1000.055658876  0.087879956     0.001130603     0.000353314     248.73078027    0.000059444     0.000018576     -0.00002668     27.09513092     27.290645599            0.009471372     12
2021-06-21 09:51:01     1000.100124961  0.043005086     0.001130603     0.000353314     121.71932294    -0.000059444    -0.000018576    0       27.313808441    27.509677887            0.006083022     12.336  27
```

Example of ".ace" file imported into Excel:

Probe	Pi20304408																	
Probe Type	Area (cm²)	Initial Thickness (µm)	Certificate Rr (mΩ)	Certificate Rc (mΩ)	TagNo	Tag Description	Logger Type	Logger Serial No	Logger Firmware Version									
	32		1000			27.27915955	27.47753143											
Received Time	Thickness (µm)	Uac (V)	Iac (mA)	Jac (A/m²)	Rs (Ωm²)	Idc (mA)	Jdc (A/m²)	Edc (V)	Rr (mΩ)	Rc (mΩ)	RSys (mΩ)	Eoff,coupon (V)	Power (V)	Temperature (C)	Warning	Original Err Code	Source Details	Data Source
10-05-2021 06:34	1000.071689	0.01773626	0.001071098	0.000334718	52.9886492	-0.000059444	-1.8576E-05	0.00002668	27.16277695	27.3583412		0.002027674	14.414	25.5	0	0xC000000	AT02839770, 1	MasterLink
11-05-2021 08:31	1000.084003	0.007959948	0.001071098	0.000334718	23.7810503	0	0	0.00002668	27.24839211	27.4442348		-0.010938768	13.366	27.3	0	0xC000000	AT02839770, 1	MasterLink
21-05-2021 08:55	1000.091886	0.101021886	0.001130603	0.000353314	285.927004	-0.000059444	-1.8576E-05	-0.00005336	27.27852249	27.4743652		0.015474355	12.359	26.7	0	0xC000000	AT02839770, 1	MasterLink
21-05-2021 08:56	1000.091622	0.102330737	0.001071098	0.000334718	305.722151	0	0	-0.00008004	27.27884102	27.4746933		0.014220398	12.354	26.8	0	0xC000000	AT02839770, 1	MasterLink
21-05-2021 10:45	1000.090735	0.101716377	0.001130603	0.000353314	287.892655	0.000059444	0.000018576	-0.00005336	27.30652618	27.5026016		0.012032645	12.377	26.8	0	0xC000000	AT02839770, 1	MasterLink
21-05-2021 10:49	1000.095725	0.101502687	0.001130603	0.000353314	287.287838	-0.000118888	-3.7153E-05	-0.00005336	27.30757523	27.503521		0.011178887	12.341	27.1	0	0xC000000	AT02839770, 1	MasterLink
21-05-2021 12:39	1000.089299	0.100086994	0.001130603	0.000353314	283.280937	-0.000059444	-1.8576E-05	-0.00008004	27.33634758	27.5326767		0.014860717	12.341	28.1	0	0xC000000	AT02839770, 1	MasterLink
21-05-2021 12:41	1000.086519	0.100273974	0.001130603	0.000353314	283.810155	0.000059444	0.000018576	-0.00002668	27.33764076	27.5340557		0.014033639	12.336	28.3	0	0xC000000	AT02839770, 1	MasterLink
02-06-2021 09:56	1000.055659	0.087879956	0.001130603	0.000353314	248.73078	0.000059444	0.000018576	-0.00002668	27.09513092	27.2906456		0.009471372	12.309	22.6	0	0xC000000	AT02839770, 1	MasterLink
21-06-2021 09:51	1000.100125	0.043005086	0.001130603	0.000353314	121.719323	-0.000059444	-1.8576E-05	0	27.31380844	27.5096779		0.006083022	12.336	27.3	0	0xC000000	AT02839770, 1	MasterLink

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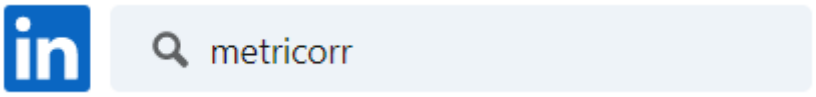

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