



Megalink V23.20 ML2000 Display Unit User Manual

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General Information

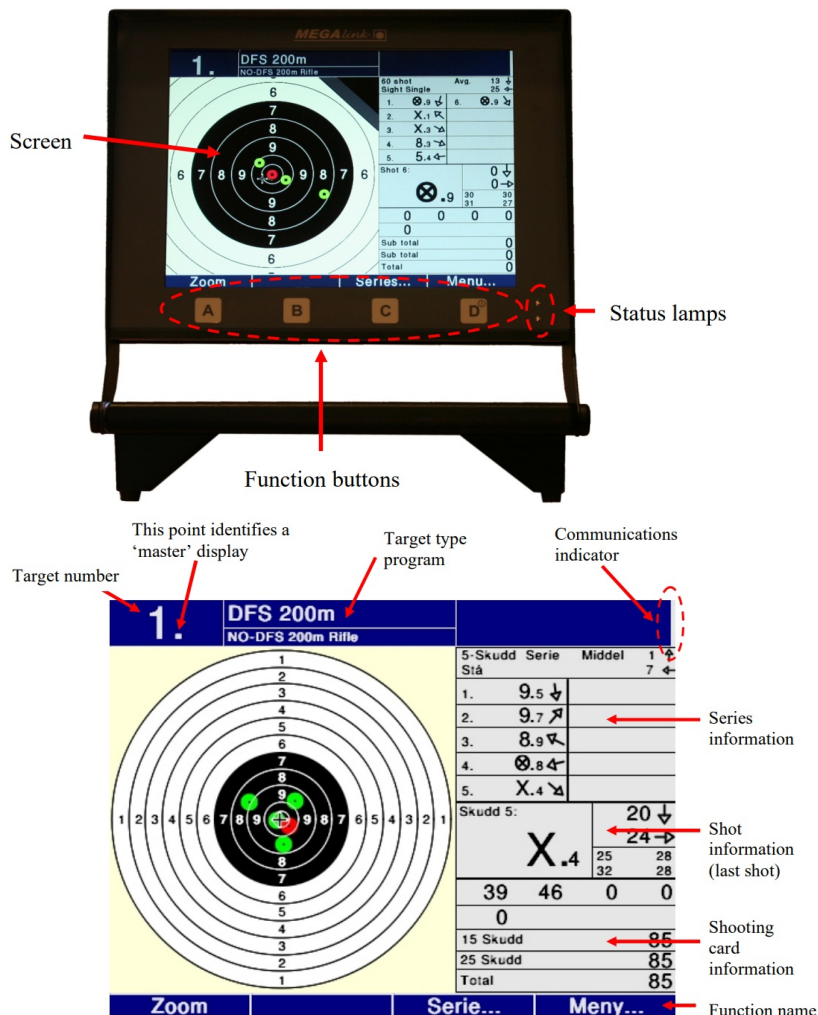
About Megalinks Display Unit

This monitor is specially designed for use at shooting ranges. It is constructed around a 10.4" color LCD screen and is built to withstand hot and cold climate conditions. The monitor contains all the circuitry and software needed to communicate with the target and to register and display the position of each hit. The monitor controls are comprised of four (4) buttons mounted under the screen on the front panel which controls the displayed menu. The monitor requires only a single cable (carries both power and data) which is connected to a receptacle located at the firing position. Monitors may be serially connected to form a chain of two or more units (this is called a segment).

The monitor has been constructed in such a way as to be freely placed on the ground or on a stand. When the monitor is folded to a closed position the LCD screen is well protected.

The monitor requires a 12 volt power supply and each unit consumes a maximum of 0.7 amperes with full background lighting. The power needs of the unit make it very easy to run the whole firing position system with a 12V car battery if a fixed power source is not available.

Overview



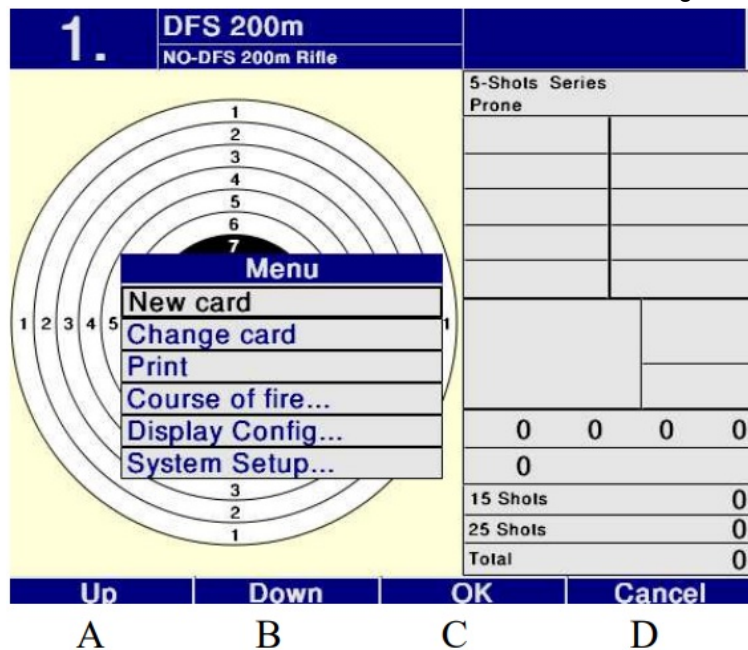
Buttons and Menus

Directly over each button on the front panel (marked A, B, C, D) are the screen function names. These names will change as different views are displayed on the screen.

For example:

Pressing button D in the screen opens the main menu. See picture

Buttons A and B can then be used to navigate up and down in the displayed menu. Button C is then used to make a selection from the menu. Button D can then be used again to close the menu and return to the main display.



Using the monitor

Training

Select the course of fire or target type Select Menu → Course of fire.

1. DFS 200m	
NO-DFS 200m Rifle	
Course of fire	
DFS 200m	
Target	
NO-DFS 200m Rifle	
Caliber	
Big	
Motor frequency	
60	
Motor length	
10 mm	
Actual distance	
200 m	
Simulated distance	
200 m	
Prepare time	
15 sec.	
Mark delay	
3 sec.	
Marking auto	
Yes	
Up Down Edit Finished	

In this menu you can change the following options:

- **Course of fire:** Shooting program to be used
- **Target:** Target type to be used.
- **Caliber:** Caliber type.
- **Motor frequency:** How many shots before the band is advanced. (Only for targets with automated band

advance)

- **Motor length:** How far to advance the band. (Only for targets with automated band advance)
- **Actual distance:** Displays the actual range to the target.
- **Simulated distance:** Displays the simulated range to target. Hit points and values are calculated using this simulated distance.
- **Prepare time:** Time in seconds between the selection of Series Start until firing can commence.
- **Mark delay:** Number of seconds between the displaying of each shot.
- **Marking auto:** Yes / No. Selects whether the display should follow the course of fire or whether the shots are to be displayed continuously.

Fire on command

Select **Series** → **Start**.

Start Marking

Select Series → Mark # – #.

Show series details

Select Series → Series details.

Change series

For the next series select Series → Next ser.

For the previous series select Series → Prev. ser.

Create a new shooting card

Select Menu → New card

Select a previous shooting card

Select Menu → Change card

Printing a shooting card

Select Menu → Print

The monitor must be connected to a PC where the **MLRange** application is running in order to print a shooting card.

Manually run target lift

Select Menu → System setup... → Lift....

The lift can be driven to the positions Prone, Kneeling, Standing and Park independently of selected course of fire.

Configuration

Display settings

Select Menu → Display Config.

- **Brightness:** Background lighting – 0 (min) to 9 (max).
- **Language:** Change system language.
- **Screen style:** Change color scheme.

- **Power save on:** Specify how many minutes of monitor inactivity should pass before the backlighting is shut off. This function helps to conserve power if you are operating the system from a car battery.

NOTE: Backlighting is automatically turned back on when a new shot is registered. A value of zero (0) turns this function off.

Communication Settings

Select Menu → System Settings... → Comm. Config...

- **Master:** Yes / No. Specify a monitor as the 'master'. There can be one (and only one) monitor designated as the master in a serially connected chain (one per serial segment). A small square point displayed after the lane number indicates that a monitor is specified as the master monitor.
- **Lane:** Specify which lane is connected to the monitor.
- **First Lane:** Specify which lane is the first lane in a serial segment. (applicable only if a monitor is specified as the master)
- **Last Lane:** Specify which lane is the last lane in a serial segment. (applicable only if a monitor is specified as the master)

Target Lift Adjustment

Select Menu → System Settings... → Lift adjust

This menu is used for adjusting and storing target lift positions. From a single monitor all target lift positions can be freely adjusted.

Select Previous or Next to select a target. Select Adjust to move the target up or down. Select Store to store the target position. Actual positions are prone, kneel, stand and park.

NB! Only the master monitor can be used to adjust the lifts.

Advanced Settings

Select Menu → System Settings... → Advanced

A password is required to enter the advanced settings screen. This is to prevent accidental or unauthorized changes to your settings. The password (by default) is the number 3.

Filter Configuration

Select Menu → System Settings... → Advanced → Filter Config....

The filter is used to specify which organization, weapon and shooting distance that the monitor will be used for. For example, if organization is set to ISSF then all courses of fire and target types not related to this organization will be removed from all operating menus.

Target Configuration

Select Menu → System Settings... → Advanced → Target Config

This menu is used to change the parameters for the target connected to the monitor. The first screen shows the related parameters.

- **Sensor:** Specify the sensor type that the target unit is configured to use (Printed on the target).
- **Offset X:** Specify horizontal offset in millimeters (mm).
- **Offset Y:** Specify vertical offset in millimeters (mm).
- **Turned sensor:** Mirrored target. Can be used if the target is positioned the opposite way (back side).
- **Frame sensor:** Specify if the frame sensor is to be used. (applicable only for targets that support frame sensors)
- **External motor:** Specify if the target has a connection to an external motor for band advance. (applicable only for targets that support connection to an external motor)

To change these parameters, select Config.... When you are finished making your changes and have selected Finished, you then need to select Send Data to transfer your changes to the target

Set Target ID

Select Menu → System Settings... → Advanced → Set Target ID

Select Select ID to set the ID for the target.

The master monitor can set target ID for all targets.

IMPORTANT: Make sure that ONLY ONE target is connected when you set the target's ID otherwise all targets will receive the same ID number. They must connected and set one-at-a-time.

Clock

Select Menu → System Settings... → Advanced → Clock

This menu choice is for setting the time and date on the monitor. If you need to set the time and date on several monitors then this may be more easily accomplished using the MLRange application. (From the main menu: Setup/Monitor/Set DU Clock) This will set all connected monitors to the PC's current date and time

Maintenance

System Status

Select Menu → System Settings... → System status

1.	Practice 3x60	
	ISSF 10m Rifle - Big	
System status		
MLShoot		
Version	Ver.15.17 2015.05.01	
Firmware	Ver.03.06	
Hardware	HW=34. (800x600)	
Time/Date	2015.05.05 12:36.02	
Voltage	12.50 V MIN: 12.50 MAX: 12.50	
Target		
Version	SW=15.15 HW=66	
Sensor	4K187	
Info	23.1'C 12.0V	
Shot count	5	
Error count	2	
Refresh		Finished

In the system status screen you see the following information about the monitor and the connected target;

Display

- Version – Current monitor software version.
- Firmware – Current firmware installed on the monitor.
- Hardware – Hardware version and screen resolution.
 - DU3 iX – IMX monitor
 - DU3 aX – AT monitor
- Time/Date.
- Voltage – Current voltage as well as min and max values since startup.

Target

- Version – current software version of the connected target.
- Sensor – Target sensor type.
- Info – Current target temperature and current voltage
- Shot count – Total shots registered on the target.
- Error count – Sum of detected system anomalies.

Upgrading Software

NB: There is an error in the following firmware versions: FW=2.17 and FW=2.19. If you have either of these software versions on your monitor please read section 4.2.1 before upgrading.

Upgrading is accomplished with any standard USB flash drive.

The files needed for upgrading is automatically copied to the USB flash drive using the System administration dialog in MLRange. Please see the document ML2000 Manual 03 – Configuration and Upgrading for details.

NB: The filesystem on the USB flash drive must be FAT or FAT32.

Plug the flash drive in one of the available USB sockets on the rear of the monitor.

If the monitor is not connected to the range computer you can manually start the upgrading procedure by selecting Menu → System Settings... → Advanced → USB Upgrade. (Password value = 3).

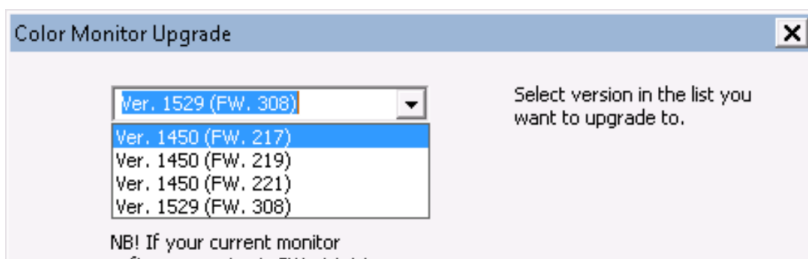
When the monitor restarts the upgrade is complete. This can take several minutes to finish.

You can upgrade multiple monitors at the same time by using multiple USB flash drives.

Upgrading from firmware versions with error (FW=2.17 and FW=2.19).

Because of an error in the firmware versions FW=2.17 and FW=2.19 special procedure must be followed when upgrading. You must upgrade to software version 14.50 before continuing to the newest software version. Do not attempt to upgrade close to any mayor events. If the upgrade from one of these versions fails, please see section 4.3 Factory reset / software recovery.

1. Check what firmware currently is present in your monitor(s). This can be done by in the system status screen.
2. Delete all content on the monitor. Menu → Select Scorecard → Menu → Delete All
→ OK.
3. Use System administration in MLRange to generate an USB flash drive with the software version 14.50. Make sure to delete all data on, or format, the flash drive first!
 - a. If the current FW present is version 2.17, please select and copy the version 14.50 (FW.2.17) to the USB flash drive.



- b. If the current FW present is version 2.19, please select and copy the version 14.50 (FW.2.19) to the USB flash drive.
4. Plug the flash drive in one of the available USB sockets on the rear of the monitor.
 5. If the monitor is not connected to the range computer you can manually start the upgrading procedure by selecting Menu → System Settings... → Advanced → USB Upgrade. (Password value = 3).
 6. If the monitor has not restarted after five minutes, toggle the power off/on by removing the power cord.
 7. Check the system status screen that version 14.50 with FW=2.17 or FW=2.19 is present. If not, repeat step 3 – 7.
 8. You are now ready to update to the newest version.

Factory reset / software recovery

If the monitor is not responding you will need to factory reset the software. Contact Megalink to get access to a downloadable zip file with recovery data.

There are two different types of Megalink color monitor. The previous type is called AT and the current is called IMX. Monitors purchased before 2016 are probably of type AT.

You can decide what type of monitor you are using:

- IMX have the text DU3-IMX on the serial number label.
- The system status screen will have the line Hardware = DU3 i if type IMX.
- The system status screen will have the line Hardware = DU3 a if type AT. If this information is missing it will be an AT.

Factory reset of monitor type AT

Monitors with software 15.x and newer

- Download the file ML-DU3-USB-RECOVER-XXXX-XXXXXX.zip from www.megalink.no/login.
- Unzip the file and copy the content into a USB flash drive. Remember to use Windows Safe Removal of devices before removing the drive.
- Turn off the power (or remove the power cable).
- Insert the USB drive in the right (seen from front) USB sockets on the rear of the monitor.
- Press and hold the A button while power on the monitor for at least 10 seconds.
- Release the A button and wait for the monitor to copy software from the flash drive.
- The screen will turn green and the monitor will restart when the copying has completed.

Monitors with software 14.x and older (or if section 4.3.1.1 failed)

- Download the file ML-DU3-USB-RECOVER-XXXX-XXXXXX.zip from www.megalink.no/login.
- Unzip the file and copy the content into a FAT formatted SD card (Must be an SD card. Not SDHC/SDXC or similar). Remember to use Windows Safe Removal of devices before removing the card.
- Remove the power cable.
- Open the monitor. See section .
- Insert the SD card in the SD slot. Se section 4.5.
- Power up the monitor. The screen will turn red.
- The screen will turn green when the copying from the SD card has completed.
- Turn off the monitor by removing the power cable.
- Remove the SD card.
- Power up the monitor.

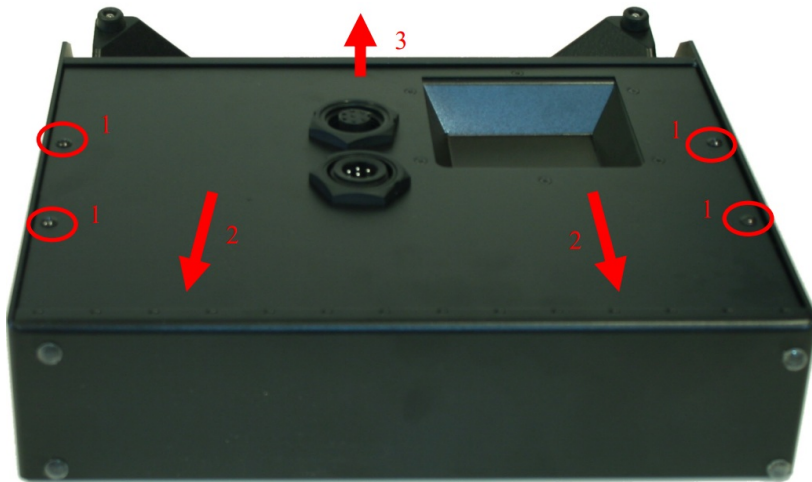
Factory reset of monitor type IMX

- Download the file ML-DU3-SD-XXXX-XXXXXX.img.zip from www.megalink.no/login.
- Unzip the image file.
- Use the program Etcher to flash the image to an SD card. Download Etcher from www.etcher.io.
- Remove the power cable.
- Open the monitor. See section .
- Insert the SD card in the SD slot. Se section 4.5.
- Power up the monitor.
- Wait for the message Upgrade finished on the screen. This may take several minutes.
- Turn off the monitor by removing the power cable.
- Remove the SD card.

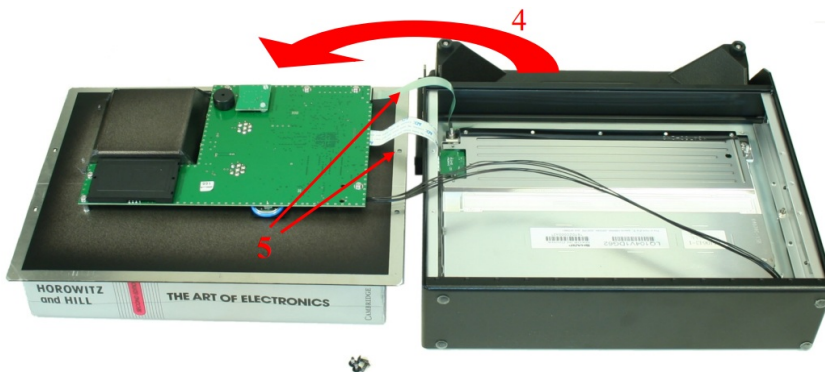
- Power up the monitor.

Opening the Monitor

If you need to open the monitor then it should be done in the following manner:



1. Remove the four screws indicated above.
2. Slide the back cover toward you.
3. Gently lift the back cover up to expose the internals.

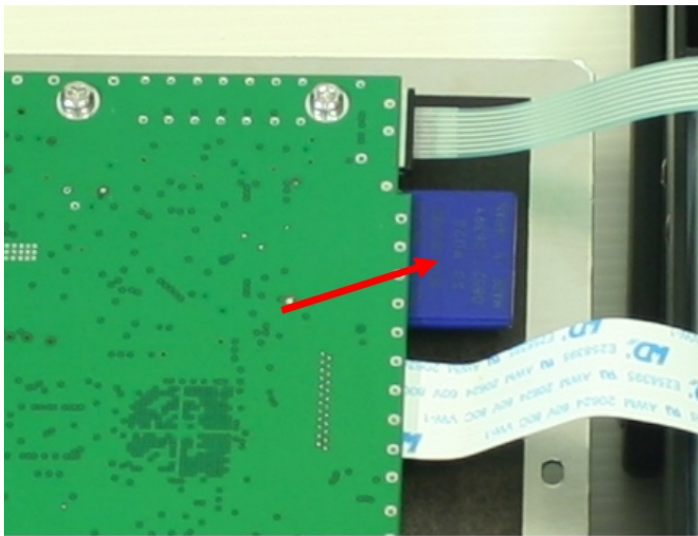


4. Gently lay the back cover over (preferable support by a book to avoid stretching the internal cables).
5. Ensure that the cables are not pinched or stretched in any way.

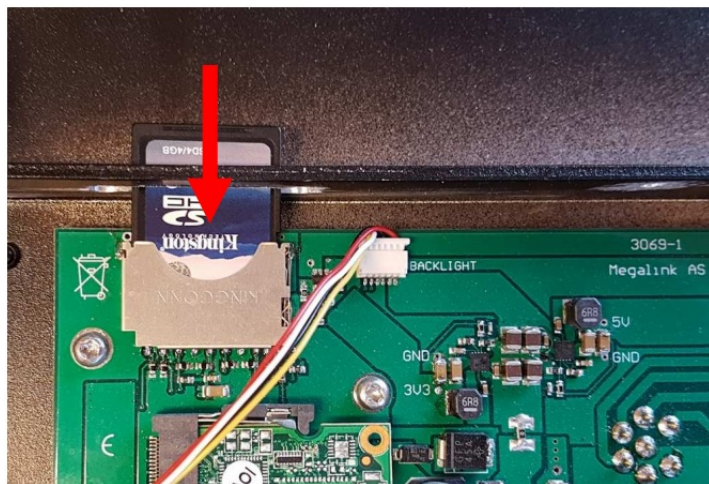
SD Card slot

If you need to insert an SD card the SD slot is located between the cables as shown in the following images

SD Card slot monitor type AT

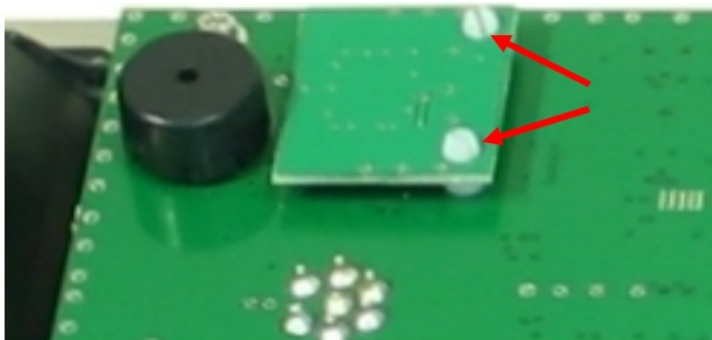


SD Card slot monitor type IMX



Replacing the Communications Circuit

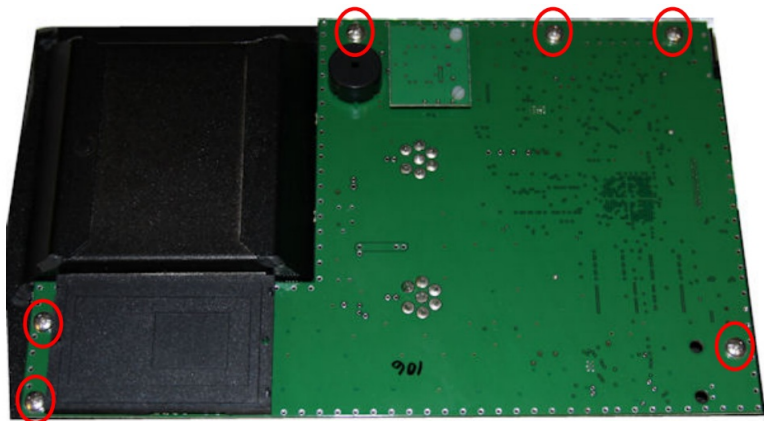
If the communications circuit (Art.nr.5974) is damaged by lightning or other phenomenon it can easily be replaced (no soldering iron required).



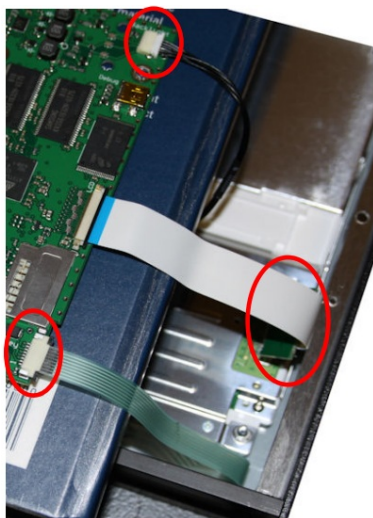
Use fine pliers to gently squeeze the white card holder so that you can lift up the circuit board. Circuit boards should never be thrown in the trash. They are hazardous to the environment and should be disposed of in an appropriate manner.

Replacing the main Circuit

The main circuit can be replaced if a new one is provided by Megalink.



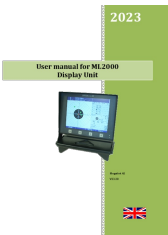
1. Remove the four screws indicated above.



2. Carefully remove these three connections.
3. Replace the new main circuit with the old one.

Circuit boards should never be thrown in the trash. They are hazardous to the environment and should be disposed of in an appropriate manner.



	<p>Megalink V23.20 ML2000 Display Unit [pdf] User Manual</p> <p>V23.20 ML2000 Display Unit, V23.20, ML2000 Display Unit, Display Unit, Unit</p>
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References

- [User Manual](#)