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Part Number : 07-00572-00
Part Name : Micro-Link® 3 Service Tool “MST”



It is important to read the instructions prior and perform each step:


- [Step 1 - Software Downloading to PC:](#)
- [Step 2 - USB Stick Preparation:](#)
- [Step 3 - Loading Software on USB stick from the PC](#)
- [Step 4 - Service Tool Initialization and Updates](#)
- [Step 5 - Uploading operational software or Downloading data](#)
- [\(Optional\) Step 6 - Utility software](#)

Step 1 - Software Downloading to PC:

The following software needs to be downloaded to your PC from the Carrier Container TransCentral Information Center at <http://www.container.carrier.com>. Access to the site requires an ID / password. To access the latest version of software after signing into TransCentral, navigate to Service / View Container Info / Software.

1. scr153XX.ml3 (Software to be uploaded)
2. recp51XX.ml3 (Software to be uploaded)
3. co2_57XX.ml3 (Software to be uploaded)
4. cfXXXXXX.CF3 (latest model Configuration required)
5. menuXXXX.ml3 (latest Menu required)
6. read0513.ml3 or newer (latest Databank required)

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Step 2 - USB Stick Preparation:

To prepare the USB stick:

1. A USB 2.0 stick is required, for software upload and for data download. Functionality of a 3.0 stick is not recommended or guaranteed.
2. Plug the USB stick into computer USB port.
3. Open Windows Explorer
4. Right click on Removable Disk (USB stick) and then click on Properties
5. Verify File system is FAT or FAT32. (see Figure 1)

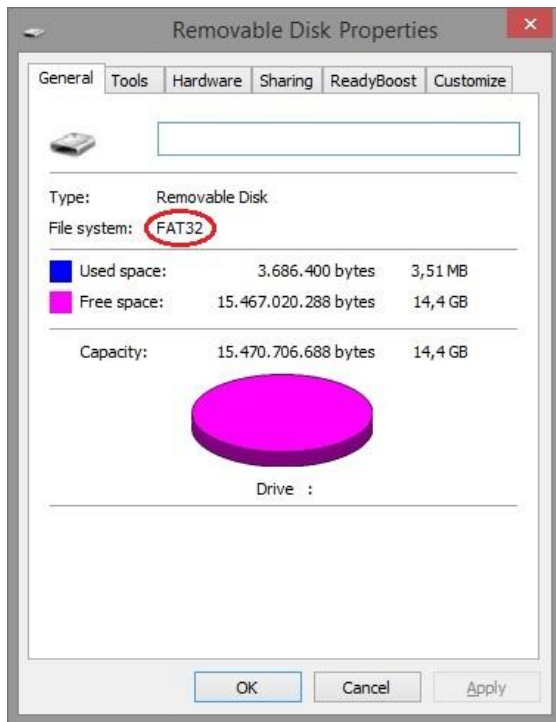


Figure 1 - File system

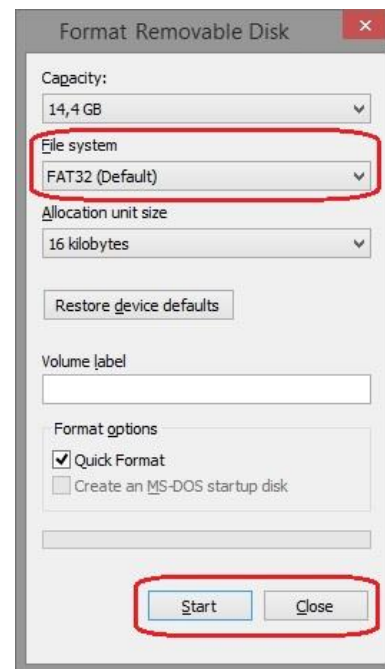



Figure 2 – Format the USB Stick to FAT

Note: If file system is not FAT or FAT32, reformat the USB stick to FAT or FAT32.

To format a USB Stick to a FAT or FAT32 File system:

- Open Windows Explorer;
- Right click on Removable Disk (USB stick), and then click on Format;
- Verify File system is FAT or FAT32 (Default);
- Click on Start (see Figure 2);
- After formatting the USB stick, close all windows.

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Step 3 - Loading Software on USB stick from the PC

To load the USB stick:

1. Create main folder named “CARRIER”. (Not case sensitive)
2. Create all subfolders under “CARRIER”. These subfolders are named “Upload”, “Read”, “Firmware”, and “Utility”. (Not case sensitive.) The “Download” subfolder is created automatically after downloading data.

Note: A dedicated download or upload service tool can be initialized by creating only one of the two subfolders (“Upload” or “Read”) on the USB stick.

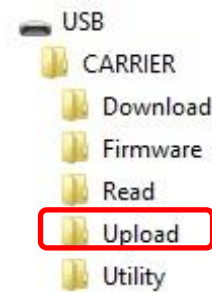
3. Load the following files from the PC to the USB stick under “Upload” for software upload:

Required Files:

- menuXXXX.ml3 (latest Menu required)
- cfXXXXXX.CF3 (latest Configuration required)

Selectable files:

- scr153XX.ml3 (Software to be uploaded)
- recp51XX.ml3 (Software to be uploaded)
- co2_57XX.ml3 (Software to be uploaded)




Note: The total size of stored files in the “Upload” subfolder cannot exceed 4MB.

4. Load the “read0513.ml3” or newer file from the PC to the USB stick under “Read” for data download.

Note: The “read0515.ml3” (or newer) is recommended when using the service tool.

5. Optional subfolders: “Utility” (see Step 6 “Utility software”) / “Firmware” (see Step 4 “Service Tool Initialization and Updates”).

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Step 4 - Service Tool Initialization and Updates

To initialize the service tool and load operational software onto the service tool (from USB stick):

1. Power unit OFF.
2. Inspect the PCMCIA pins of the programming port, using a flashlight, to verify if the pins are not bent.

Note: If there are bent pins do not insert the service tool.

3. Insert the service tool into the programming slot of the controller.
4. Insert a preloaded USB stick into the service tool (see Step 3 “Loading Software on USB”).
5. Power the unit ON with the service tool installed.

Note: If there is newer firmware stored on the USB stick (in the “Firmware” subfolder), the service tool will automatically update to the newer firmware. During the firmware upload a percentage counter is shown on the right side of the display. Wait for the status LED to stop blinking. Do not turn off the unit.



Figure 3 - Position Status LED

6. At start-up “USb LOAD” is shown on the display. Wait until “dnLd dAtA” is shown. Scroll through the menu to select the desired action using the UP/DOWN keys on the keypad and confirm by pressing the ENTER key.


Note: At first start-up or if there is newer software stored on the USB stick (in the “Upload” or “Utility” subfolder), the service tool will update the on-board operational software. During upload of the newer software onto the service tool a percentage counter is shown on the right side of the display.

7. After initialization of the service tool, the following needs to be taken in account:
 - If a download is required, a USB stick must be inserted into the service tool.
 - If only an upload is required, the insertion of a USB stick is optional.

Note: The service tool can be used to upload Operational Software for the ML3 without having a USB stick inserted after initialization.

Note: To initialize a dedicated download or upload service tool, see Step 3 “Loading Software on USB”.

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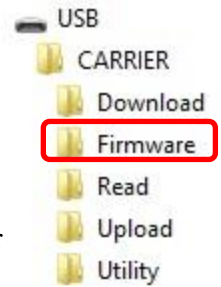
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To update the service tool:

1. Prepare the USB stick by creating the subfolder named “Firmware” under “CARRIER”.

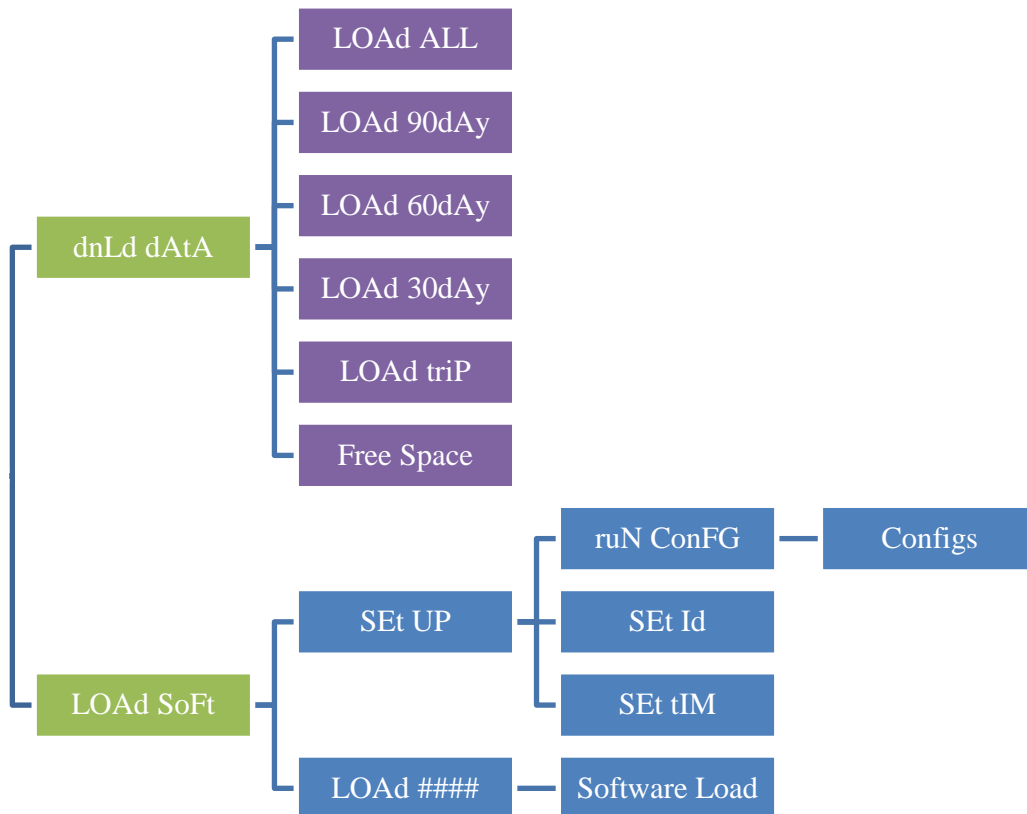
Note: The firmware file needs to be downloaded to your PC from the Carrier Container TransCentral Information Center at <http://www.container.carrier.com>.

2. Load the newest firmware file in the subfolder “Firmware”.
3. Power unit OFF.
4. Insert the service tool into the programming slot of the controller.
5. Insert the preloaded USB stick (with firmware) into the service tool.
6. Power the unit ON with the service tool installed.
7. The new firmware will now be automatically loaded. A percentage counter is shown on the right side of the display to show the progress.
8. Wait for “LoAd done” to be shown on the display.
9. The service tool is finished upgrading when ”dnLd dAtA” is shown on the display.




Note: To check the current firmware version on the service tool in the main menu, press the “Alt. Mode” key on the keypad. The version number will be shown on the display as “YYYY-MM-DD” (year, month, day)..

Service Tool Menu Structure



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Step 5 - Uploading operational software or Downloading data

With software loaded on the USB stick, and the service tool initialized, a selection can be made between downloading data or uploading operational software. When having selected to download, or to upload, the standard operation is the same as DataBANK for download and software uploads using an SRAM Card.

Uploading operational software:

1. Power unit OFF, and insert the service tool into the programming slot of the controller.
2. Power unit ON using the start/stop switch. Using the keypad, choose “LOAD SoFt” in the Pre-menu. “InIt” will be shown during initialization.

Note: Screen will go blank for a short period (few seconds) after initialization is done.
Do not turn off the unit.

3. “SEt UP” will be shown on the display after initialization. Load software by selecting the correct software version using the keypad and press ENTER. Press ENTER again to confirm.
4. When the controller displays “Pro donE” **AND** the service tool’s status LED is solid blue, you can power unit OFF and remove the service tool.

Downloading data:

1. Power unit OFF, and insert the service tool into the programming slot of the controller.
2. Power unit ON using the start/stop switch. Using the keypad, choose “dnLd dAtA” in the Pre-menu. “InIt” will be shown during initialization.


Note: Screen will go blank for a short period (few seconds) after initialization is done.
Do not turn off the unit.

3. “dnLd ALL” will be displayed and confirm by pressing ENTER on the keypad. If another download type is preferred, select the preferred data download type using the keypad.
4. When the controller displays “dnLd donE” **AND** service tool’s status LED is solid blue, power unit OFF and remove the service tool.

Note: if “read0513.ml3” is used, please wait a few seconds after “dnLd donE” is shown on the display **AND** wait until the service tool’s status LED is solid blue.

5. Download can now be transferred from the USB stick to your PC for data evaluation using DataLINE.

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(Optional) Step 6 - Utility software

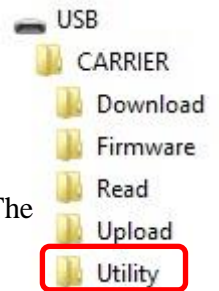
The utility software needs to be downloaded to your PC from the Carrier Container TransCentral Information Center (see Step 1 “Software Downloading to PC”).

To use the utility software, read the available instruction procedures posted on the TransCentral website or contact your local field service manager for assistance.

Loading Utility software on USB stick from the PC:

1. The software file needs to be stored on the USB stick, within the “Utility” subfolder in the “CARRIER” folder.

Note: Only one utility software file may be placed within the “Utility” subfolder. The utility files are not selectable.




2. After the USB stick is loaded with the utility software file, the USB stick is ready to load the software onto the service tool.
3. Make sure the power of the controller is off.
4. Insert the service tool into the programming slot of the controller.
5. Insert the preloaded USB stick into the USB slot of the service tool.
6. Power the unit ON with the service tool installed.
7. At start-up “USb LOAd” is shown on the display. Wait until “dnLd dAtA” is shown. A percentage counter is shown on the right side of the display to show the progress.
8. After initialization of the service tool, the utility software is ready to be used.

Note: The service tool can only be utilized for service in combination with the controller after initialization.

Note: The service utility software will be stored on the service tool for future use. If a different service utility is required, repeat process at step 1.

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Status LED Reference Chart


USB status is visible through the on-board status LED patterns.

Status LED Patterns	Service Tool Operations
Status LED flashing at the rate of 2 Hz	<i>When</i> Ready to perform operations
Status LED flashing at the rate of 10 Hz	<i>When</i> <ul style="list-style-type: none"> Service tool initialization in progress Data transfer in progress Do not remove until status LED is solid blue
Solid Blue Status LED	<i>When</i> <ul style="list-style-type: none"> Service tool finished with the data download Ready to upload software
Status LED flashing in a S.O.S. pattern (...-...-...)	<i>When</i> <ul style="list-style-type: none"> Hardware or software fault <i>Recommendation</i> <ul style="list-style-type: none"> Re-initialize service tool Replace service tool

Keypad Features

Key	Function
ENTER	Confirm
UP/DOWN	Scroll through menu
CODE SELECT	Return to previous menu item
C/F	Full display test (All LCD segments and LEDs ON)
RETURN / SUPPLY	Blank display test (All LDC segments and LEDs OFF)
ALT. MODE	Firmware version “YYYY-“ “MM-DD”

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Troubleshooting

Service tool does not start.

Make sure the power of the unit/controller is OFF and check if the tool is fully inserted.

When the tool is inserted, power up the unit/controller, and check the status LED for activity (see status LED reference chart).

“USb” ”LOAD” (alternating) message is shown on display.

USB is in use and/or the service tool is updating software onto the service tool. Loading the service tool can take a few minutes. (see Step 4 "Service Tool Initialization and Updates")

“USb LOAD” (not alternating) message is shown on display.

The service tool is starting up for use. This can take up to a few seconds.

Note: If the “USb LOAD” message persists, replace the service tool.

“nO FILE” “USb Err” (alternating) message is shown on display.

USB stick is not present or DataBANK file is not found on the USB stick. Make sure the USB stick is inserted into service tool with the DataBANK file present (see Step 3 “Loading Software on USB stick from the PC”).

“InIt Err” message is shown on display.

Toggle the power of the unit/controller OFF > ON, and the service tool should recover.

“PrOG FAIL” message is shown on display when loading software.

Please repeat the initialization procedure (see Step 4 "Service Tool Initialization and Updates").

Note: If the “PrOG FAIL” message persists, replace the service tool.

“bAd CARD” message is shown on display.

Toggle the power of the unit/controller OFF > ON, and the service tool should recover.

Note: If the “bAd CARD” message persists, replace the service tool.

“Err2” message is shown on display.

Toggle the power of the unit/controller OFF > ON, and the service tool should recover.


Note: If the “Err2” message persists without the service tool installed, use the ERR2 correction software (see Step 6 “Utility software”).

If the “Err2” message persists with the service tool installed, replace the service tool.

Utility software file is present on the USB stick, but the wrong utility is executed.

Check if there is only one file loaded onto the USB stick in the “Utility” subfolder. If there is more than one software file present, remove the other software files (see Step 6 “Utility software”).

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Frequently Asked Questions

Q: How do I position the service tool into the programming port?

A: The enclosure has an orientation arrow located underneath the dust cap. This arrow should be pointed up.

Q: Which Micro-Link controllers can be serviced using the service tool?

A: The service tool is designed to operate with both the yellow and green ML3 controllers.

Q: Is it required to always have the USB stick inserted?

A: No. After initialization the USB is not required for uploading operational software or utility software for the controller.

Q: What files are required on the USB stick for the service tool to operate?

A: Only the Carrier original software files are required (see Step 1 “Software Downloading to PC”).

Q: Is it possible to have a service tool dedicated to either only upload or download?

A: Yes. If the “Download” subfolder is removed, the service tool will function as a dedicated upload tool. If the “Upload” subfolder is removed, the service tool will function as a dedicated download tool.



Q: What is the maximum file size capacity of the service tool for (multiple) operational software files?

A: 4MB. (This is enough to store all current unit type operational software files).

Q: How many downloads can be made?

A: This depends on the storage capacity of the USB stick inserted.

Q: What USB stick types are preferred?

A: The service tool is designed to operate with a USB 2.0 interface.

Q: Where are the downloaded data files located on my USB stick?

A: This is stored within the “Download” subfolder located in the “CARRIER” folder. This subfolder will be automatically created when downloading is completed.

Q: Can the firmware of the service tool be upgraded?

A: Yes, see Step 4 “USB Service Tool Initialization and Updates”

Q: Can I check the current version of the service tool firmware?

A: This can be checked by pressing the “ALT. MODE” key on the keypad while in the menu. The version number will be shown on the display as “YYYY-” “MM-DD”.

Q: How many software files may be stored in the “Utility” subfolder?

A: Only one file may be present in the “Utility” subfolder.

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