Fusion4 LAD

Installation & Operation Manual

MN06308 (August 2025)

Contents

1 General

1.1 LAD Overview

The Fusion4 devices (SSC-A, SSC-B, MSC-A, and MSC-L) utilizes Local Access Device (LAD) for interfacing, local commissioning, configuration, calibration, troubleshooting, and data exchange, using the Secure Digital (SD) card.

1.2 Target Audience for this Manual

This manual is intended for service technicians who are assigned to install, commission, service, or operate the Fusion4 devices.

2 Safety

2.1 Safety Conventions

2.1.1 Warnings

The following warning formatting used in the manual recommends your attention to prevent personal injuries or dangerous situations.

> WARNING: General warning. It is always explained by text.

2.1.2 Cautions

The following caution formatting and symbols used in the manual recommends your attention to prevent damages to the equipment.

> CAUTION: General caution information.

> CAUTION: Electrostatic discharge (ESD) sensitive device.

2.2 Safety Instructions for the LAD

Figure 2-1: Local Access Device (LAD)

> **WARNING:** You must strictly follow all the safety instructions mentioned in this manual and the safety instructions shipped with the Fusion4 devices during installation, commissioning, operation, and maintenance for the safe operation of the device.

The LAD may be used in hazardous areas as follows:

USA (FM) and Canada (CSA)		Canada (CSA)		Rest of the World (ATEX / IECEx)	
Safety level	Remarks	Safety Level	Remarks	Safety level	Remarks
Class 1, Division 1	WARNING: Substitution of components may impair intrinsic safety.	Class 1, Division 1 resp. Zone 1	WARNING: Substitution of components may impair intrinsic safety.	Zone 1	-
Class 1, Division 2	WARNING: Substitution of components may impair intrinsic safety.	Class 1, Division 2 resp. Zone 2	WARNING: Substitution of components may impair intrinsic safety.	Zone 2	-
Safe Area	-	Safe Zone	-	Safe Zone	-

2.2.1 General

The LAD is a hand-held controller used for interfacing with the SSC-A, SSC-B, MSC-A, and MSC-L devices.

The device facilitates two-way data communication between a parent device and the LAD. It allows rapid transfer of transaction data, configuration files and calibration records, and also upgrading the firmware in the field.

WARNING: Only use the instrument for its intended purpose.

2.2.1.1 EC declaration of conformity (for EU)

Refer to the EC declaration of conformity and ATEX certificate(s), shipped with the device for EC declarations.

2.2.1.1.1 Control Drawings for FM & CSA

Refer to the control drawings shipped with the Fusion4 Devices.

2.2.2 Explosion Safety

Approval	Certificate no.	Type of protection identification		
ATEX	KEMA 10ATEX0152	(Ex) II 2 G	Ex ia IIB T4 Gb	Ta = -20 °C ... +65 °C (-4 °F ... +149 °F)
IECEx	IECEx KEM 10.0070	Zone 1		
FM	3041202	Class I, Division 1	group C, D T4	
CSA	11.2395571	Class I, Division 1	group C, D T4	
		Zone 1	Ex ia IIB T4	

> **WARNING:** This is an intrinsically safe device and may only be connected to devices with compatible intrinsically safe parameters, such as the MSC-L, MSC-A, SSC- A, and SSC-B.
>
> Connection of non-intrinsically safe signals invalidates the approval. The electrical data of the intrinsically safe circuits is to be taken from the certificate.

2.2.3 Commissioning

The LAD and the Fusion4 devices must be commissioned using this controller trained by Guidant. The service technician must have knowledge of the national, local and company requirements for electrical equipment in hazardous areas.

2.2.4 Operation

After connecting to a Fusion4 device, the LAD can be used for its intended purpose.

2.2.5 Maintenance and Troubleshooting

The LAD hardware is non-servicable, in case of damage contact Guidant for replacement.

2.2.6 Additional Information

For additional information about Guidant's solutions, see the back cover of this manual to contact Guidant or its representative.

2.2.7 Environmental Conditions

The environmental conditions regarding the allowable operating temperature is -20 °C to +65 °C (-4 °F to +149 °F), relative humidity is RH 5 to 95%, non-condensing, and operating pressure is atmospheric.

2.2.8 The LAD Labels

Figure 2-2: Identification labels with safety note on the LAD

Honeywell Enraf
Honeywell Enraf Americas Inc.
2000 Northfield Court
Roswell, GA 30076

Fusion4 LAD

| Serial nr. : 392-xx-xxx | Ui=15.8V Ii=1.7A Pi=2.5W |
| Test date : 2009-xx-xx | Ci=72nF Li= 0μH |

CSA
I.S. Class I, Division 1, Group C&D. T4
Zone1 Ex ia IIB T4

Ta: -20°C to +65°C
NEMA 3R, IP54
Certificate No: CSA11.2395571

2074236-D0

Connect and use per control drawing 135-1392001.

Warning - Substitution of components may impair intrinsic safety

> **NOTE:** For FM label: Ta = -4°F to +149°F.

Honeywell Enraf
Honeywell Enraf Americas Inc.
2000 Northfield Court
Roswell, GA 30152

Fusion4 LAD

| Serial nr. : 392-xx-xxx | Ui=15.8V Ii=1.7A Pi=2.5W |
| Test date : 2009-xx-xx | Ci=72nF Li= 0μH |

FM APPROVED
I.S. Class I, Division 1, Group C&D. T4

Ta: -20°C to +65°C
NEMA 3R

2074235-D0

Connect and use per control drawing 135-1392001-4

Warning - Substitution of components may impair intrinsic safety

2.3 Liability

The information in this installation manual is the copyright property of Guidant Corporation. Guidant disclaims any responsibility for personal injury or damage to the equipment caused by the following:

- Deviation from any of the prescribed procedures.

- Execution of activities that are not prescribed.

- Neglecting the safety regulations for handling tools and use of electricity.

The contents, descriptions, and specifications in this manual are subject to change without notice. Guidant accepts no responsibility for any errors that may appear in this manual.

> WARNING: Only certified technicians are authorized to make changes to the Fusion4 device configuration. All modifications must be in accordance with the guidelines as set forth by Guidant. Modifications not authorized by Guidant invalidates the approval certificates.

3 Installation

3.1 Connecting a LAD to the SSC-A / SSC-B device

The SSC-A and SSC-B devices have an Intrinsically safe interface connector for the LAD. Connect the female connector on the LAD to the male connector on the SSC-A or SSC-B device, and then fasten the connection (see figure below).

Figure 3-1: Connecting a LAD to the SSC-A / SSC-B device

3.2 Connecting a LAD to the MSC-A / MSC-L device

The MSC-A and MSC-L devices have an Intrinsically safe interface connector for the LAD. Connect the female connector on the LAD to the male connector on the MSC-A or MSC-L device, and then fasten the connection (see figure below).

Figure 3-2: Connecting a LAD to the MSC-A / MSC-L device

4 Operation

4.1 General

4.1.1 Introduction

This chapter provides the commissioning information for the Fusion4 devices.

Commissioning the Fusion4 devices is accomplished by configuring entities (or parameters) to the required values. This is performed using the menu options of the Fusion4 devices. See Section 4.4: Menu and Navigation, for more information.

Text Conventions

In contrast with the explanatory text, all instructions are preceded by a (>).

All [Entity] and <entity-related> texts are in a recognizable format.

For example, the Entity is in the format [Units of additive volume] and the entity-related text is in the format <Milliliter>.

4.2 Menu-based Control

By using an external control device, (through an Ex d/ Ex i connector) based Local Access Device (LAD), the Fusion4 devices can be fully controlled through its integrated menu based interface. It is possible to navigate the menus, change settings (commissioning), initiate a calibration, and diagnose problems.

4.3 Service Tool

4.3.1 Fusion4 Local Access Device

4.3.1.1 General

The Local Access Device (LAD) is a hand-held controller used for interfacing with the Fusion4 product family, allowing tasks such as parameter adjustment, alarm resetting, and calibration.

The device facilitates two-way data communication between a parent device and LAD.

The functions supported by LAD are as follows:

1. Rapid transfer of transaction data, configuration of files and cali- bration of records.

2. Upgrade the firmware in the field.

Figure 4-1: LAD and its system overview

4.3.1.2 General LAD Application Overview

Figure 4-2: General LAD Application Overview

Program device
Configuration
- from SD card
- per board

Capture device
configuration
- stored on SD card
- per device

Capture device
recipe
- stored on SD card

Device menu/screen
navigation
- configuration
- calibration
- diagnostics
- execute special function "F"

Program device
recipe
- from SD card

User feedback
- LAD status
- Device data transfer
- Device I/O test

Program device
language
pack
- from SD card

PC data exchange
- read and write data from SD card

Capture device
transactions
- stored on SD card

FP-LAD firmware upgrade
- firmware located on SD card

Capture device
calibration
records
- stored on SD card

Device firmware upgrade
- per micro controller
- Device must be unsealed first

■ = Basic setup
■■ = Advanced setup

Capture device
event logs records
- debug log
- W&M log
- alarm log
- stored on SD card

W&M (MID) sealing
- function enabled by embedded
  license key
- LAD for notified body and
  accredited service engineer

Device interface
- comms
- power

4.3.2 Navigation with Fusion4 LAD

4.3.2.1 Basic Navigation (Fusion4 LAD)

See the following figure for the basic navigation of the Fusion4 LAD.

Table 4-1: Basic navigation (Fusion4 LAD)

Fusion4 LAD
^ = Up
v = Down
< = Left
> = Right
OK = Select
ESC = Back

4.3.2.2 LEDs (Fusion4 LAD)

Fusion4 LAD

Button	Description
status (dual-color)	• green = OK • red = Fault
data (amber)	ON = data transfer NOTE: Do NOT disconnect during data transfer.
test (dual-color)	• green = mapped I/O function has good health and is active. • red = mapped I/O is inactive. • red (blinking) = mapped I/O has bad health. • off = no I/O mapping exists.

4.3.2.3 Special Function Key on the LAD

- User-defined LAD functions such as transferring transactions to the LAD, display of the diagnostics screen, and calibration wizard process can be mapped to the F key.

- You can configure the special function key through the HMI of the Fusion4 device.

> NOTE: The Fusion4 LAD special function key may not be applicable for all Fusion4 devices.

4.3.2.4 SD Card

> NOTE: Format the SD card before using it for the first time. See Section 4.5.4.1.6: Format SD Card, for more information about formatting the SD card.

The LAD contains an SD card slot, which is located at the top, front face of the LAD. See the following figure.

- The SD card uses a FAT file system to allow interpretability with Microsoft Windows platforms.

- The SD card is used for the storage of the following:

  - LAD firmware
  - LAD license key
  - Generic recipes
  - Configuration templates
  - Device firmware
  - Language packs
  - Transaction data
  - Calibration data
  - Configuration data
  - Recipes
  - Alarm logs
  - Event logs
  - W&M logs (SSC-B only)

4.3.2.4.1 Product Type Selection

The selection of an SD card for the LAD is important. Due to the intrinsically safe design of the LAD, the power drawn by the SD card is strictly limited. For this

reason, commercially available SD cards are NOT recommended, as the specification and construction of these devices change frequently.

The following cards are recommended.

Table 4-2: Recommended SD cards

Manufacturer	Series	Type	Capacity	Part Number
SanDisk	Industrial	SD	2GB	SDSDAA-002G
Swissbit	S-200	SD	1GB	SFSD1024L4BN2SA-E-D1-131-STD
Pretec	Industrial	SD	1GB	SDS001GSBHP
Transcend	Industrial	SDHC	2GB	TS2GSD80I
STEC	Industrial	SD	1GB	SLSD1GBBSIU

You are allowed to use SD cards not included in the above table, but they must conform to the following specifications.

Type	SD or SDHC
Operating temperature	-20 °C to +65 °C [-4 °F to +149 °F]
Maximum current	70 mA

NOTE: Guidant does NOT provide support for any cards not listed in the above table.

NOTE: The miniSD and the microSD cards fitted in an SD adaptor must NOT be used in the LAD.

4.3.2.4.2 Directory Structure and File Organization

Figure 4-4: Generic Directory structure and file organization

4.3.2.4.3 Guidelines

- All files have *.xml-format and -extention (except Firmware and License).
- File name identification (file-ID) are as follows:

- T = Transactions
- C = Calibrations
- A = Alarm logs
- W = W&M logs
- D = Event logs
- R = for Recipes

- File name format for Transactions are as follows:

  - <device-type>-<serial number>-<file-id>-<transaction-id>.xml

  - Example: MSC-L-54639823-T-0123456789.xml

- File name format for Calibrations are as follows:

  - <device-type>-<serial number>-<file-id>-<calibration-id>.xml

  - Example: MSC-L-54639823-C-0123456789.xml

- File name format for Alarm logs are as follows:

  - <device-type>-<serial number>-<file-id>.xml

  - Example: MSC-L-54639823-A.xml

- File name format W&M logs:

  - <device-type>-<serial number>-<file-id>.xml

  - Example: SSC-B-54639823-W.xml

- File name format for Debug logs are as follows:

  - <device-type>-<serial number>-<file-id>.xml

  - Example: MSC-L-54639823-D.xml

- File name format for Recipes are as follows:

  - <device-type>-<file-id>-<recipe-name>.xml

  - Example: MSC-L-R-E20.xml

- File name format for Configurations are as follows:

-

- Example: MY_CONTROLLER_1.xml

> **NOTES:**
>
> 1. Generic files built/edited in a computer envi- ronment can differ from the previous format.
>
> 2. Generic files built/edited in a computer environment MUST BE PLACED in the corresponding "Generic" folders as mentioned previously, otherwise they cannot be selected during the Fusion4 device-LAD interaction.
>
> 3. Firmware files MUST be placed in the corresponding folders for the LAD and the MSC-L, otherwise they cannot be selected during the Fusion4 device-LAD interaction.

4.4 Menu and Navigation

4.4.1 General

The menu-based Human Machine Interface (HMI) on the Fusion4 devices, is intuitive and informative. With the HMI interface you can operate, configure, and service the Fusion4 devices.

The Main Menu consists of colored icons and logically structured submenus.

4.4.2 Key benefits of the HMI on the Main Menu

Following are the key benefits of the menu-based HMI of the MSC-L.

- Clean, intuitive, and informative user interface.

- It is not necessary to memorize parameter codes and enumeration value.

- Wizard-based configuration for meter calibration.

- Flexible I/O configuration.

- Diagnostic screens.

- Record-based approach to transactions, recipes, and calibrations to make reuse possible.

- Interoperable with Fusion4 LAD.

- Graphical user interface for Fusion4 LAD.

4.5 Device Commissioning

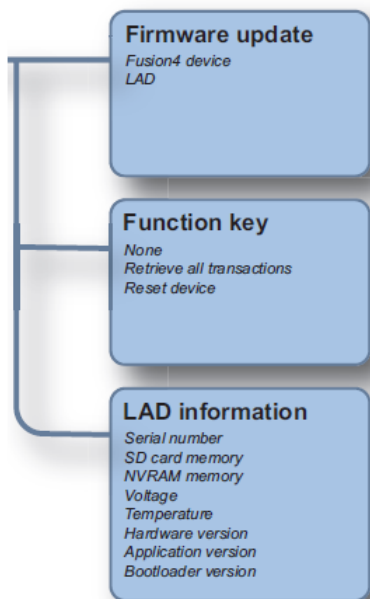## 4.5.1 Using the Menu

4.5.2 LAD Functions of SSC-A and SSC-B

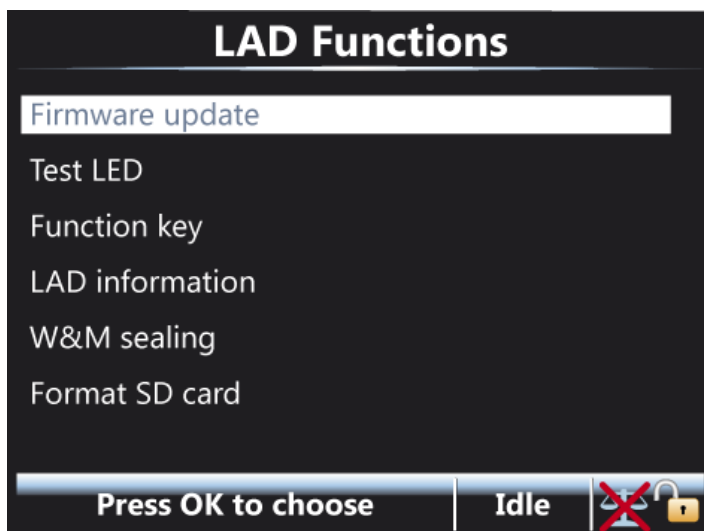> NOTE: Only when the LAD is connected!

- This is the user's interface to the following LAD specific functionality.

  - Firmware download to the SSC and the LAD

  - Configuration of the Test LED

  - Configuration of the LAD's special function key

  - LAD information

- W&M sealing

- Format SD card

Firmware update
Fusion4 device
LAD

Function key
None
Retrieve all transactions
Reset device

LAD information
Serial number
SD card memory
NVRAM memory
Voltage
Temperature
Hardware version
Application version
Bootloader version

4.5.2.1 General

In the LAD Functions menu, various typical LAD functions and activities can be invoked.

4.5.2.1.1 Firmware Upgrade

> NOTE: Remove the old files that are available in this folder from previous upgrades before updating the files.

Perform the following steps to upgrade the device using the LAD.

1. Replace the following updated firmware files received in the \Honeywell\SSC-A\Generic\Firmware\ directory.

   Replace the following updated firmware files received in the \Honeywell\SSC-B\Generic\Firmware\ directory.

   - FS-HMI-ARM-APP_DSP_.bin

   - FS-HMI-FC-APP.mhx

   - FS-STREAM-FC-APP.mhx

   - FS-OPTION-FC-APP.mhx (Optional)

     > NOTE: FS-OPTION-FC-APP.mhx file is only required if the Option card is installed in the device.

2. Plug-in the LAD to the SSC and make sure the SD card is in the LAD before plugging the LAD.

   A green status light on the LAD indicates that the SD card is inserted correctly and a red status light indicates that the SD card is missing.

   > NOTE: Update the firmware only when the device is not being used.
   >
   > Do not insert or remove the SD card when the LAD is connected to the device and do not remove the LAD when an upgrade file is downloading.
   >
   > Do not perform the update procedure when there is a chance of a power outage as this can cause problems and/or make the device unusable.

3. Select <Firmware update> to either update the firmware of the SSC boards or the LAD firmware itself.
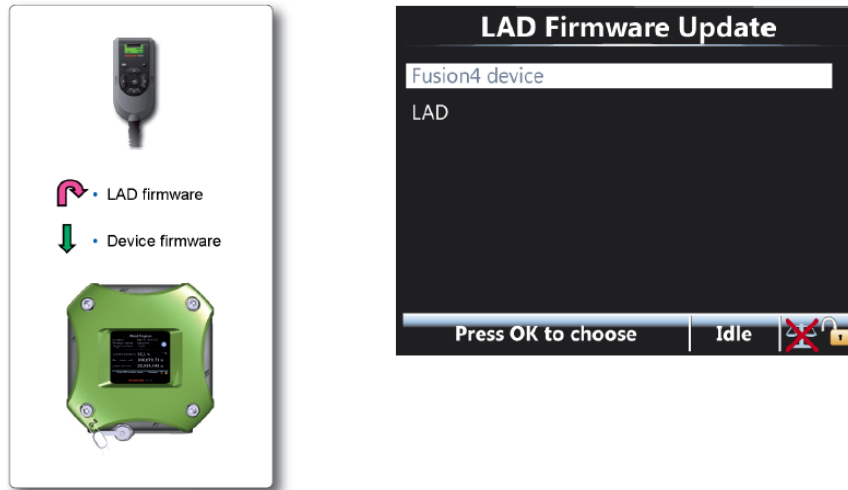
4. Select <Fusion4 device>. The Transfer Select Item screen appears.
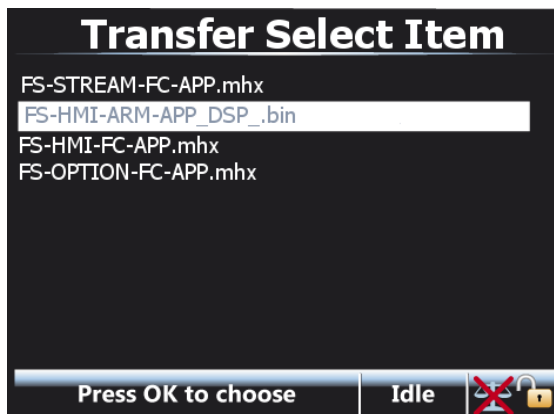
Select the firmware files in the following order to update the files.

1. FS-HMI-ARM-APP_DSP_.bin

   - The total time for the firmware update file is 6 minutes approximately.

   - After the file is updated, remove and plug the LAD again to reinitialize it. If you do not plug the LAD again, then the device may not recognize the SD card when the next file is downloaded.

2. FS-HMI-FC-APP.mhx

- The total time for the firmware update file is 3 minutes approximately.

- After the file is updated, remove and plug the LAD again to reinitialize it. If you do not plug the LAD again, then the device may not recognize the SD card when the next file is downloaded.

3. FS-STREAM-FC-APP.mhx

- The total time for the firmware update file is 9 minutes approximately.

- After the file is updated, acknowledge and reset the alarm by performing the following steps.

   a. Select <Active alarms> from the Diagnostics main menu.

   b. Select <Reset Device> to reset the device.

4. FS-OPTION-FC-APP.mhx (if required)

- The total time for the firmware update file is 6 minutes approximately.

- Update the file only if it is available.

Once the firmware updation is successful, a message is displayed confirming the same.

If one of the following alarms appear, ignore the alarm and re-enable the device once.

- "Stream board missing" when updating the stream board firmware.

   OR

- "Option board missing" when updating the option board firmware.

> NOTE: If the Fusion4 Portal is interfaced with the SSC-A or SSC-B device, make sure that there are no unpro- cessed transactions from the Portal side before starting the firmware updation sequence.

4.5.2.1.1.1 Verify the Firmware Update

Verify the following to make sure that the files are updated.

1. Select <Versions> from the Info main menu to ensure the latest version is available in the column App. ver.

Firmware versions

Board	Boot ver.	App. ver.	App. build
HMI FC	A10020	A2310	1207
HMI ARM	A2310	A2310	1207
STREAM	B10001	A2310	707
OPTION	B10001	A2310	207

| | Idle | |

2. Verify the parameter settings to check if they are the same as they were previously in the old firmware.

3. Select <System health> from the Diagnostic main menu. Select one of the boards and then select <Ok>. The test should display, "Good/No Error".

4.5.2.1.2 Test LED, Function Key, and LAD Information Submenus

In the <Test LED> submenu (see screen below), the following diagnostics or I/O tests can be visualized on the "Test" LED of the LAD.

- HMI board
- Device manager
- Alarm manager
- Transaction manager
- Batch manager
- HMI module
- Display manager
- LAD
- STREAM board
- Comms
- D1 AC 2
- DI DC 1
- DI DC 2
- DO AC 1

- DO AC 2
- PO DC 1
- PO DC 2
- PI
- DI AC1
- DO EMR
- Blend manager
- Additive manager
- STREAM module
- OPTION board
- OPT Comms
- OPT DO EMR
- OPT DI AC 1
- OPT DI AC 2
- OPT DI AC 3
- OPT DI AC 4
- OPT AO DC
- OPT RTD
- OPT DO AC

> NOTE: Test LED functions are inactive while retrieving other records from the LAD.

- In the <Function key> submenu, specific functions can be programmed to the "F key" of the LAD, in order to achieve a much quicker operation of the SSC.

- This configuration is saved on the LAD, so changes made to the function key works with other devices as well.
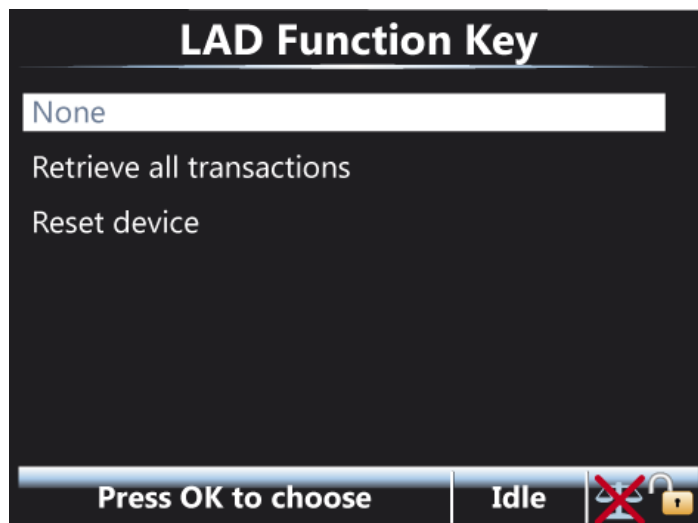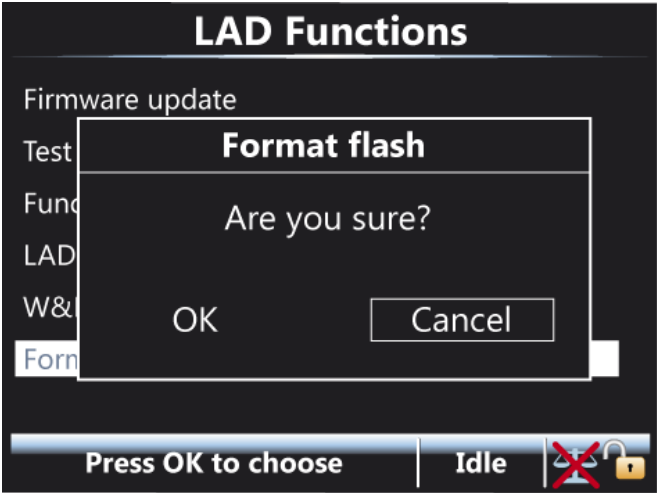
- Select the <LAD information> submenu which provides the following relevant LAD information and diagnostics.

  - Serial number
  - SD card memory
  - NVRAM memory
  - Voltage
  - Temperature
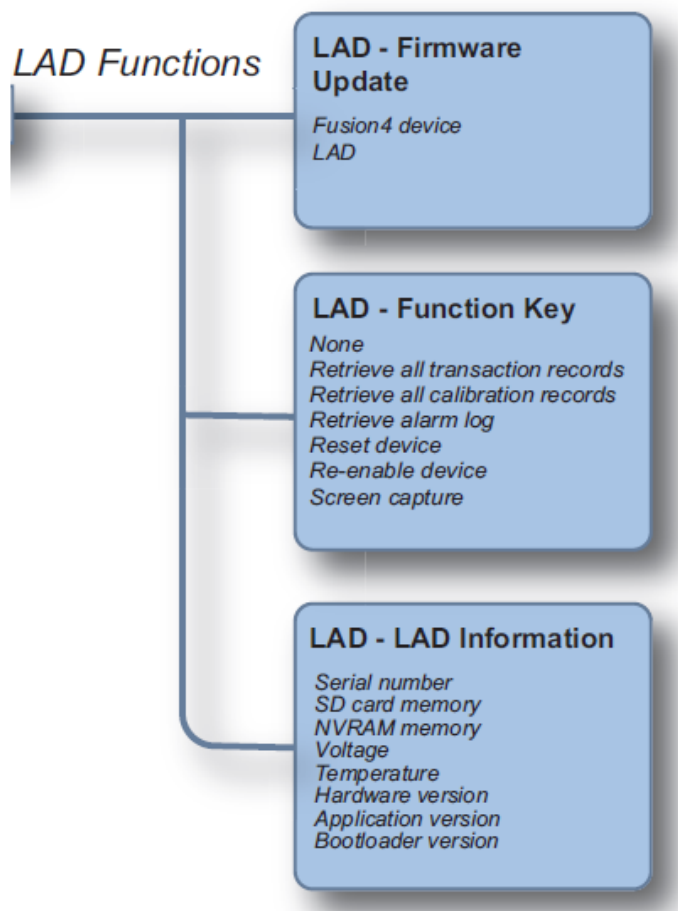 - Hardware version
  - Application version
  - Bootloader version
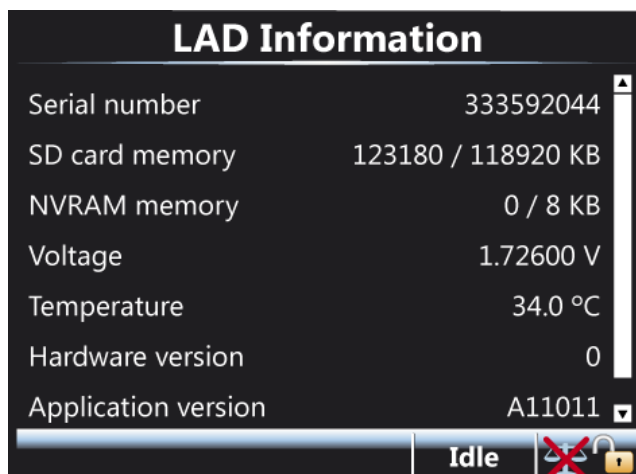
4.5.2.1.3 Format SD Card

With this option the SD card of the LAD can be formatted.
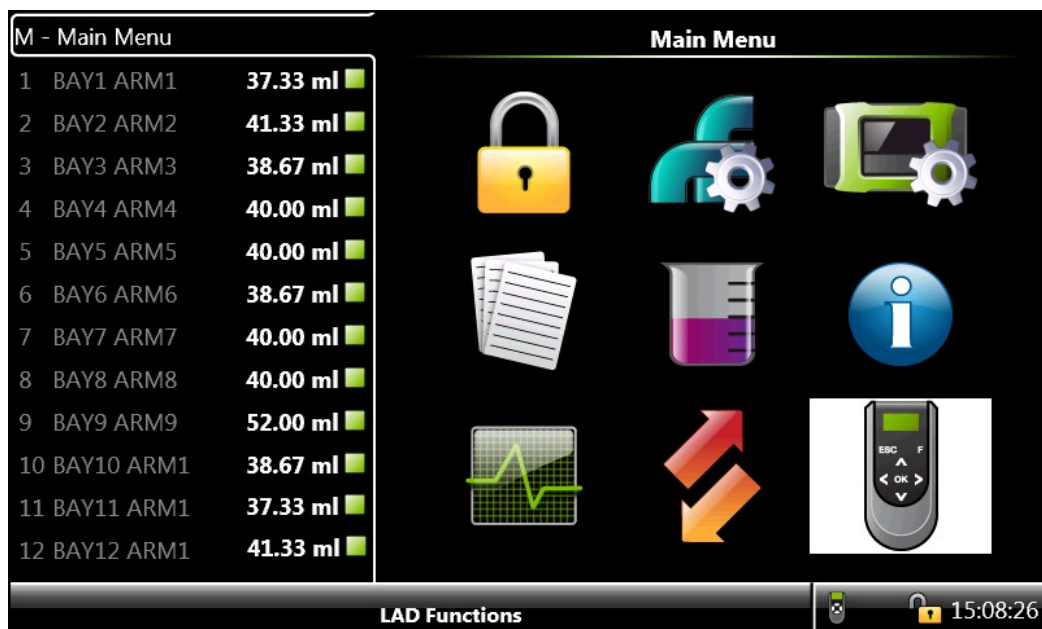
> CAUTION: All content is erased!

4.5.3 LAD Functions of MSC-A

> NOTE: LAD functions are available only when LAD is connected to the MSC-A.

Figure 4-5: LAD icon

LAD functions provide the following LAD functionalities.

- Facility to download the firmware in the MSC-A device and LAD.

- Facility to navigate the screen.

- Configuration of the Test LED.

- Configuration of LAD's special function key.

- Information about LAD.

- Facility to format SD card.

- W&M (MID) sealing.

4.5.3.1 General

From the Main Menu screen, select LAD icon.

The LAD function screen appears, which displays the various LAD functions and their activities.
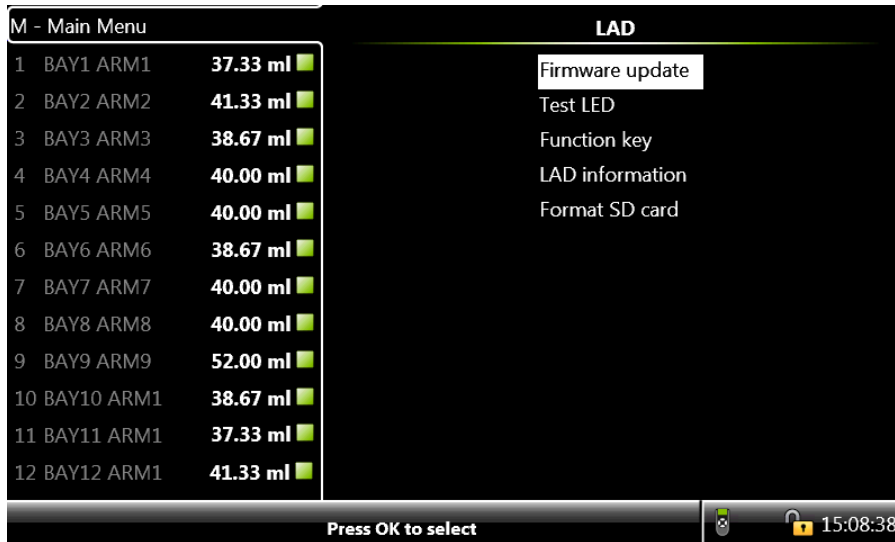
4.5.3.1.1 Firmware Update

> NOTE: Remove the old files that are available in Honeywell\MSC-A\Generic\Firmware\ directory from previous upgrades before updating the files.

To update the firmware using LAD.

1. Replace the following updated firmware files received in the Honeywell\MSC-A\Generic\Firmware\ directory.

   - FM-ARM-FC-APP.bin
   - FM-HMI-FC-APP.bin
   - FM-HMI-FC-FPGA.bin
   - FM-HMI-FC-IMG.bin
   - FM-IN-OUT-APP.bin (optional)

     > NOTE: FM-IN-OUT-APP.bin file is only required if the CAN-IN-OUT-MSC card is installed in the device.

2. Connect LAD to the MSC and make sure the SD card is inserted in LAD before connecting LAD.

   A green status light on LAD indicates that the SD card is inserted correctly and a red status light indicates that the SD card is missing.

> **NOTE:**
>
> - Update the firmware only when the device is not being used.
>
> - Do not insert or remove the SD card when LAD is connected to the device and do not remove LAD when an upgrade file is downloading.
>
> - Do not perform the update procedure when there can be a power outage, as this can cause problems and/or make the device unusable.

3. From the LAD screen, select <Firmware update> to either update the firmware of the MSC boards or LAD firmware itself.

   The LAD - Firmware Upgrade screen appears.
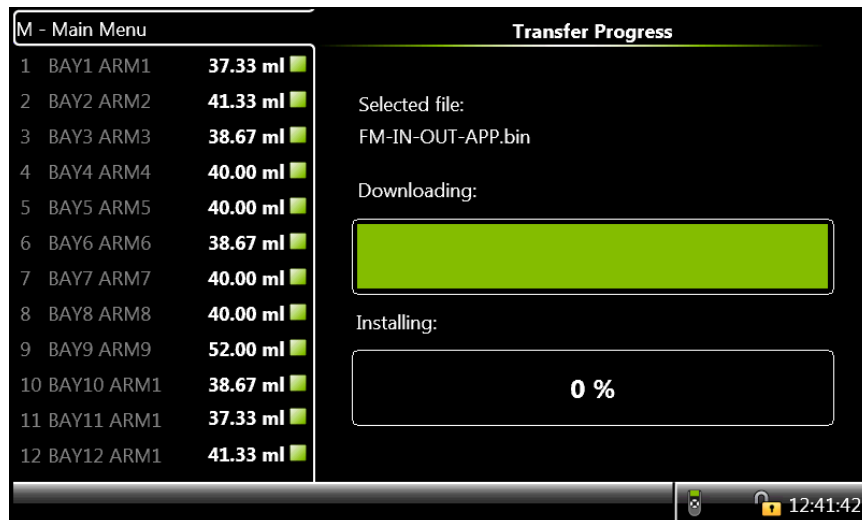

4. Select <Fusion4 device> to update the files. The Select File screen appears.
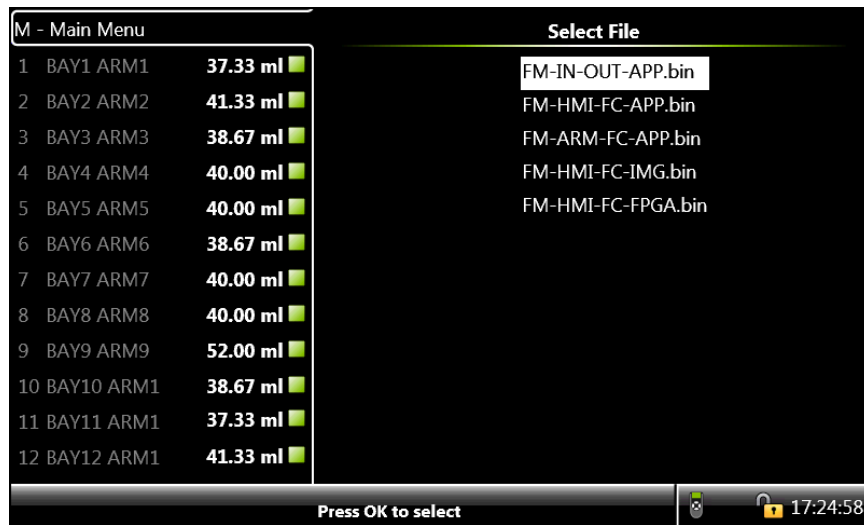
5. From the Select File screen, select the firmware files in the following order to update the files.

   The Transfer Progress screen appears for the particular file selected, displaying the progress of the file download and the status of the installation in LAD.

   a. FM-IN-OUT-APP.bin (if required)

      • The total time for the firmware update file is 35 seconds approximately.

      • If there are more than one CAN-IN-OUT-MSC boards, firmware on all those boards gets updated simultaneously.

      • Update the file only if it is available.

b. FM-ARM-FC-APP.bin

- The total time for the firmware update file is 2 minutes approximately.

- If there are more than one CAN-ARM-MSC boards, firmware on all those boards are updated simultaneously.

c. FM-HMI-FC-FPGA.bin

- The total time for the firmware update file is 3 minutes approximately.

- Update the file only if it is available.

d. FM-HMI-FC-IMG.bin

- The total time for the firmware update file is 3 minutes approximately.

- Update the file only if it is available.

e. FM-HMI-FC-APP.bin

- The total time for the firmware update file is 3.5 minutes approximately.

> NOTE: Update the files in above sequence, unless mentioned in the release notes.

4.5.3.1.2 Verify the Firmware Update

Verify the following to make sure that the files are updated.

1. On the Module Info screen, make sure that the latest version is available in the column App. version, as shown in the following screen.

2. Verify the parameter settings to check if they are the same as they were in the previous old firmware.

3. From the Diagnostic screen, select <System health> on any one of the boards and then select <OK> on the IR controller or LAD. The test "Good/No Error" should be displayed on the screen, as illustrated in the following figure.

4.5.3.1.3 Test LED and LAD Information Submenus

From the LAD screen, select <Test LED> to view the diagnostics or the I/ O tests on the "Test" LED of LAD.

The LAD - Test LED screen appears, which displays the I/O tests available on the MSC-A device.
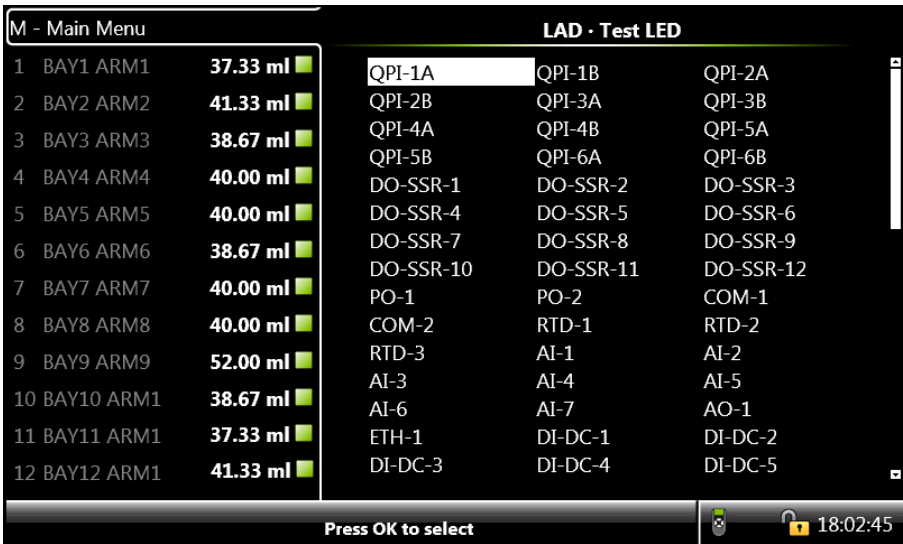
NOTE: The Test LED on the LAD displays the status of the health of the selected I/O.

Select the status of the I/O which is displayed on the Test LED of LAD, and select <OK>. The Test LED is red if the health of the assigned I/O is bad, and is green if the health of the assigned I/O is good.

4.5.3.2 Function Key

From the LAD screen, select <Function key> to specify the functions that can be programmed to the function "F" key on LAD to achieve a quicker operation of the MSC-A.

The LAD - Function Key screen appears, which specifies the functions that can be programmed.

The configuration is saved on LAD. Changes made to the function key works for other Fusion4 devices also.
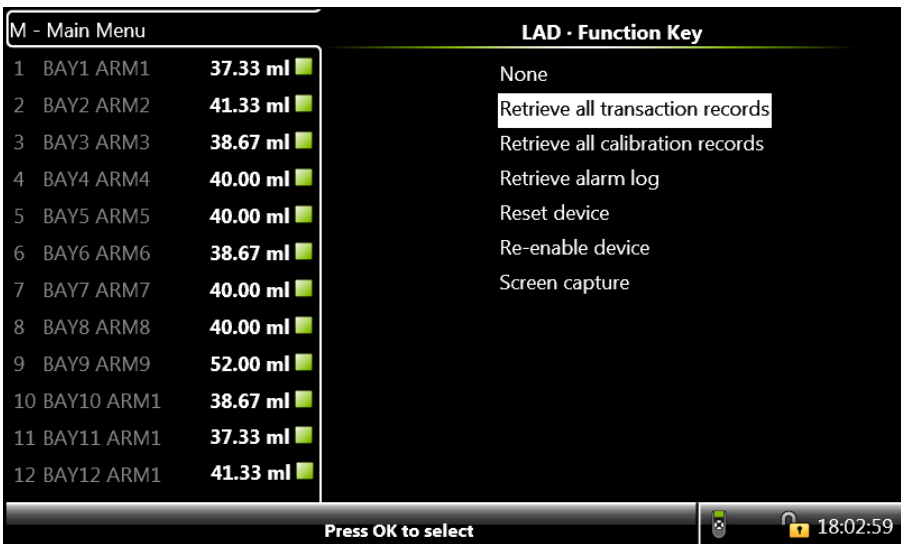
4.5.3.2.1 LAD Information

From the LAD screen, select <LAD information>.

The LAD - LAD Information screen appears which displays the relevant LAD information and diagnostics of LAD.
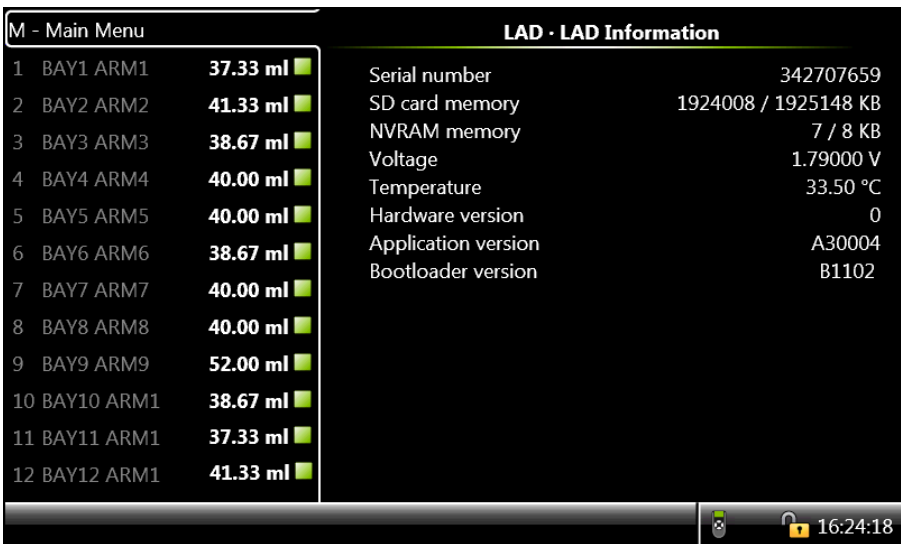
4.5.3.2.2 Format SD Card

From the LAD screen, select <Format SD card> to format the SD card of the LAD. The following dialog box appears.
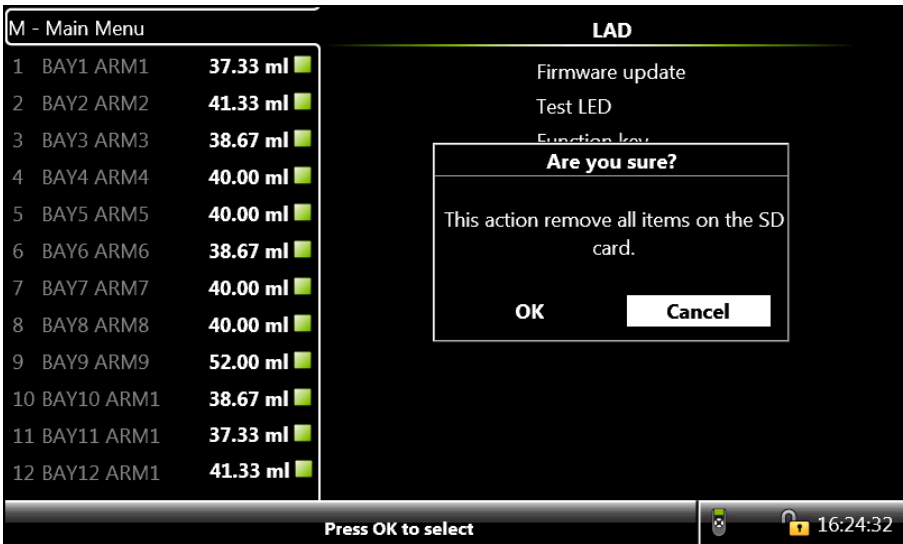
> **CAUTION:** All content is erased if you select OK.

Perform any one of the following.

- Click OK to erase all the content available in the SD card.

  The LAD - Format SD Card screen appears, which provides the status of the format.

  or

- Click Cancel to terminate the operation.

4.5.4 LAD Functions of MSC-L

LAD

LAD - Firmware Upgrade

Fusion4 device
LAD

LAD - Function Key

None
Retrieve last 1000
transaction records
Retrieve all calibration
records
Retrieve alarm log
Reset device
Re-enable device
Screen capture
Long Hold ESC
Long Hold OK

LAD - LAD Information

Serial number
SD card memory
NVRAM memory
Voltage
Temperature
Hardware version
Application version
Bootloader version

> NOTE: The LAD functions are available only when the LAD is connected to the MSC-L.

Figure 4-6: FIGURE 4-7   LAD icon

The LAD functions provide the following functionalities.

- Facility to download the firmware in the MSC-L and the LAD.

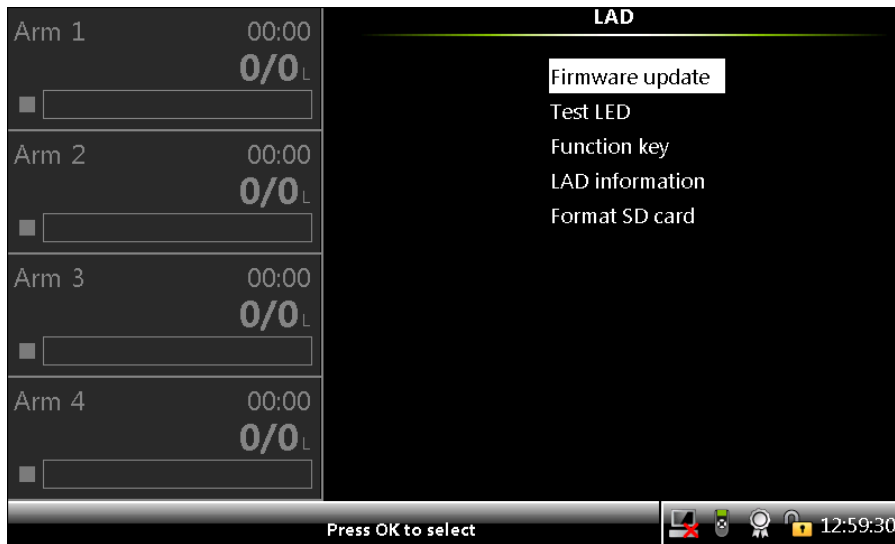- Facility to navigate the screen.

- Configuration of the Test LED.

- Configuration of the LAD's special function key.

- Information about the LAD.

- Facility to format the SD card.

4.5.4.1 General

- On the Main Menu screen, select the LAD icon.

The LAD function screen appears, which displays the various LAD functions and their activities.

Figure 4-7: LAD functions

4.5.4.1.1 Firmware Update

> NOTE: Remove the old files that are available in Honeywell\MSC-L\Generic\Firmware\ directory from previous upgrades before updating the files.

To update the firmware using the LAD

1. Replace the following updated firmware files in the Honeywell\MSC-L\Generic\Firmware\ directory.

   - FM-HMI-FC-FPGA.bin
   - FM-HMI-FC-IMG.bin
   - FM-IN-OUT-APP.bin (optional)
   - FM-ARM-FC-APP.bin
   - FM-HMI-FC-APP.bin

   > NOTE: The FM-IN-OUT-APP.bin file is only required if the CAN-IN-OUT-MSC card is installed in the device.

2. Connect the LAD to the MSC-L and make sure that the SD card is inserted in the LAD before connecting.

   A green status light on LAD indicates that the SD card is inserted correctly and a red status light indicates that the SD card is missing.

> **NOTE:**
>
> - Update the firmware only when the device is not being used.
>
> - Do not insert or remove the SD card when the LAD is connected to the device and do not remove the LAD when an upgrade file is downloading.
>
> - Do not perform the update procedure during a power outage, as this can cause problems and/or make the device unusable.

3. On the LAD screen, select <Firmware update> to either update the firmware of the MSC boards or LAD firmware itself

   The LAD . Firmware Upgrade screen appears.

4. Select <Fusion4 device> to update the files. The Select File screen appears.

5. On the Select File screen, select the firmware files in the following order, to update the files.

    The Transfer Progress screen appears for the particular file selected, displaying the progress of the file download and the status of the installation in the LAD.

    a. FM-IN-OUT-APP.bin (if required)

        • The total time for the firmware update file is 35 seconds approximately.

        • If there are more than one CAN-IN-OUT-MSC boards, firmware on all those boards gets updated simultaneously.

        • Update the file only if it is available.

    b. FM-ARM-FC-APP.bin

        • The total time for the firmware update file is 2 minutes approximately.

        • If there are more than one CAN-ARM-MSC boards, firmware on all those boards are updated simultaneously.

    c. FM-HMI-FC-APP.bin

        • The total time for the firmware update file is 3.5 minutes approximately.

    d. FM-HMI-FC-FPGA.bin

- The total time for the firmware update file is 3 minutes approximately.

- Update the file only if it is available.

e. FM-HMI-FC-IMG.bin

- The total time for the firmware update file is 3 minutes approximately.

- Update the file only if it is available.

> NOTE: Update the files in the above sequence, unless mentioned in the release notes.

4.5.4.1.2 Verify the Firmware Update

Verify the following to make sure that the files are updated.

1. On the Module Info screen, make sure that the latest version is available in the column App. version, as shown on the Device/ Module Info screen.

2. Verify the parameter settings to check if they are the same as they were in the previous old firmware.

3. On the Diagnostic screen, select <System health> on any one of the boards and then select <OK> on the IR controller or the LAD. The test "Good/No Error" must appear on the screen, as shown in the Diagnostic - Module Health screen.
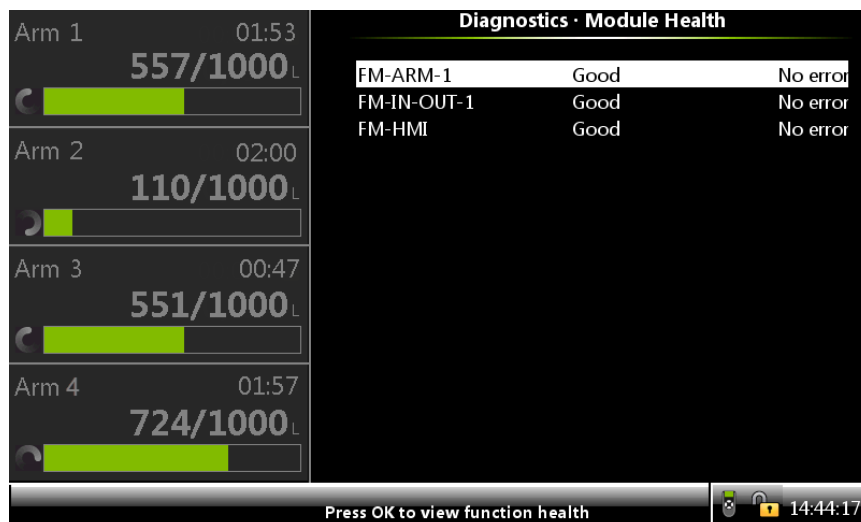
4.5.4.1.3 Test LED and LAD Information Submenus

On the LAD screen, select <Test LED> to view the diagnostics or the I/O tests on the "Test" LED of LAD.

The LAD . Test LED screen appears, which displays the I/O tests available on the MSC-L.

> **NOTE:** The Test LED on the LAD displays the status of the health of the selected I/O.
>
> Select the status of the I/O, which is displayed on the Test LED of LAD, and then select <OK>. The Test LED is red if the health of the assigned I/O is bad, and is green if the health of the assigned I/O is good.

4.5.4.1.4 Function Key

On the LAD screen, select <Function key> to specify the functions that can be programmed to the function "F" key on the LAD. This helps you to achieve a quicker operation of the MSC-L.

The LAD . Function Key screen appears, which specifies the functions that can be programmed.
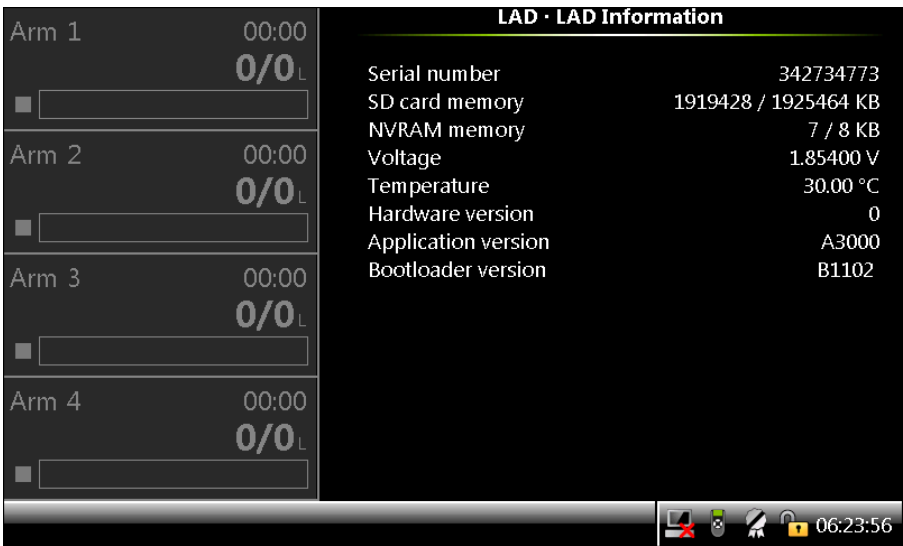
The configuration is saved on the LAD. Changes made to the function key is applicable for other Fusion4 devices also.

4.5.4.1.5 LAD Information
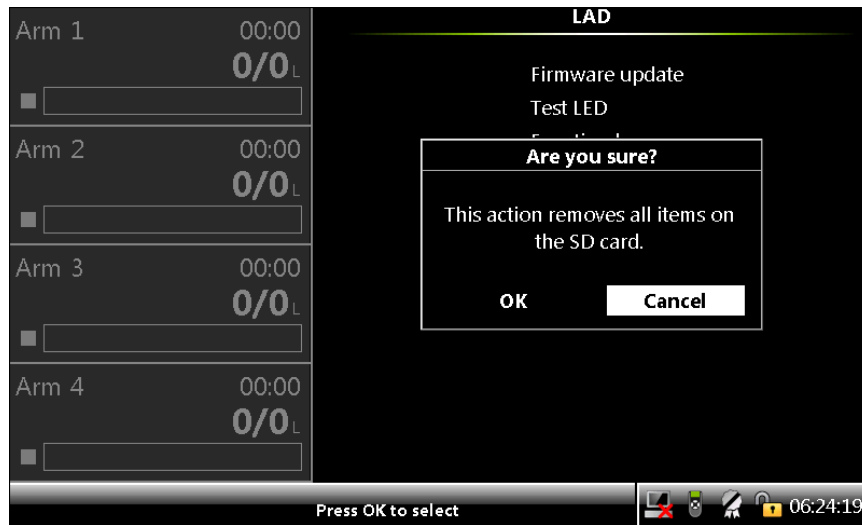
On the LAD screen, select <LAD information>.

The LAD . LAD Information screen appears which displays the relevant LAD information and diagnostics of LAD.

4.5.4.1.6 Format SD Card

1. On the LAD screen, select <Format SD card> to format the SD card of the LAD. The confirmation dialog box appears.

> CAUTION: All content is erased if you select OK.

2. Perform any one of the following.

- Click OK to erase all the content available in the SD card. The LAD . Format SD Card screen appears, which provides the status of the format.

  or

- Click Cancel to terminate the operation.

4.6 Transfer Calibration

4.6.1 Transfer calibration of a SSC-A/SSC-B Device

From the Transfer screen, select <Calibration records> to view the calibration record details.

The Transfer - Calibration Records screen appears, which displays the options to transfer the calibration records.
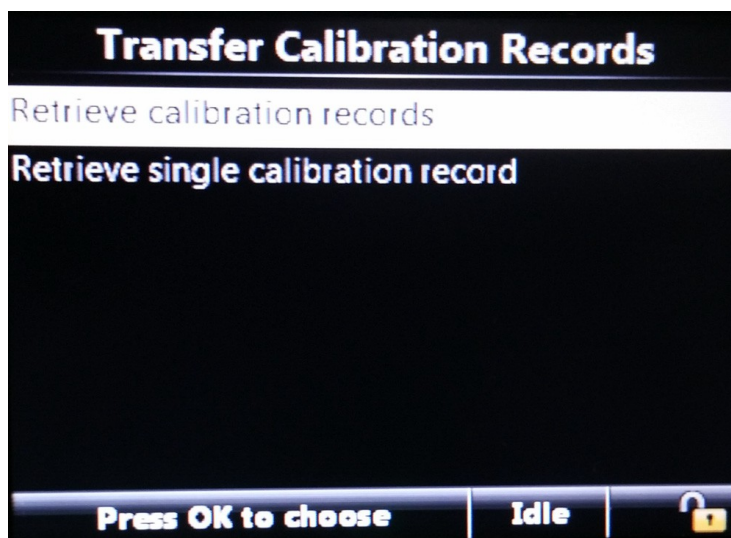
The following entities are available on the Transfer - Calibration Records screen.

- Range of records - This option allows you to select the desired range of calibration records from the available records.

- Single record - This option allows you to retrieve a single record. The calibration record is saved to the SD card on the LAD.

4.6.2 Transfer calibration of a MSC-A/MSC-L Device

From the Transfer screen, select <Calibration records> to view the calibration record details.

The Transfer - Calibration Records screen appears, which displays the options to view the calibration records.

The following entities are available on the Transfer - Calibration Records screen.

- All records - This option retrieves all the calibration records available on the device.

- Range of records - This option allows you to select the desired range of calibration logs from the available records.

- Single record - This option allows you to retrieve a single record. The calibration record is saved to the SD card on the LAD.

4.7 Transfer Configurations

4.7.1 Retrieve SSC-A/SSC-B Device Configuration

- On a SSC-A/SSC-B device, Select <Configurations> from the Transfer main menu, the following screen appears.
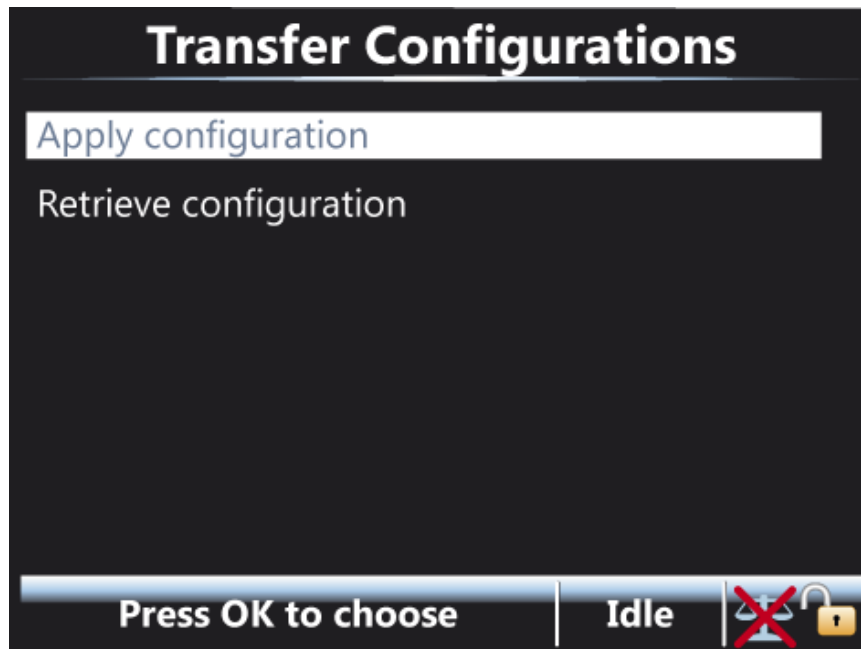
- <Apply configuration> - Select <Apply configuration> to install the configuration present on the SD card.

- <Retrieve configuration> - Select <Retrieve configuration> to save the current configuration on the SD card. The configuration is saved to the SD card on the LAD. Enter the name of the file you want to create on the SD card for the configuration setup and select Confirm.

The process takes approximately 1 minute to complete.

4.7.2 Retrieve MSC-A/ MSC-L Device Configuration

From the Transfer screen, select <Configurations> to install or retrieve the configuration on the SD card.

The Transfer - Configurations screen appears, which displays the options to install and retrieve configuration on the SD card.

The following entities are available on the Transfer - Configurations screen.

- <Install configuration> - Select this option to install the configuration present on the SD card.

- <Retrieve configuration> - Select this option to save the present configu- ration on the SD card. The configuration is saved to the SD card on the LAD. Enter the name of the file you want to create on the SD card for the configuration setup and select Confirm.

4.8 Transfer Transactions

4.8.1 Retrieving transaction records from SSC-A / SSC-B device

The SSC-A/SSC-B provides an interface to read transaction records through FlexConn entities. These entities are used to transfer transactional data to the Fusion4 Portal through a serial link.

From the Transfer screen, select <Transaction records> to transfer transactional data. The following screen appears.
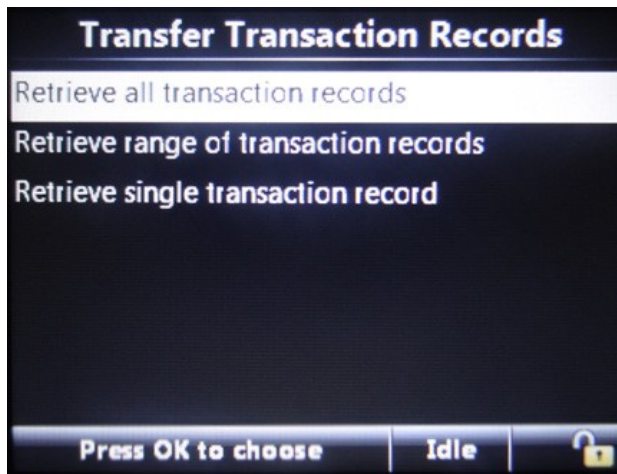
You can retrieve all transaction Records, or records between a selected range, or a single record. The transaction record is saved to the SD card on the LAD.

Using the LAD or Fusion4 Portal, all archived transaction records can be retrieved. The definition of these records extends the definition used by communication.

Each transaction record includes: start date, start time, product volume, blend volume, alarms, percent deviation, and end time.

These parameters are "read only", meaning they cannot be changed by you.

> NOTE: The <Retrieve single transaction record> command cannot be used through Fusion4 Portal. This screen is only used by copying a transaction record to the LAD.

> NOTE: All transactions are overwritten and the transaction cannot be retrieved through the Fusion4 Portal or the LAD. The user must have settled all transactions before the oldest one is automatically deleted and overwritten. Maximum 10.000 un-settled transactions can reside in the transaction memory of the SSC-A/ SSC-B device.

4.8.2 Retrieving transaction records from MSC-A / MSC-L device

The MSC-A/MSC-L device provides an interface to read the transaction records through the FlexConn entities. These entities are used for transferring

transactional data to the Fusion4 Portal through a serial link.

From the Transfer screen, select <Transaction records> to transfer transactional data.

The Transfer - Transaction Records screen appears, which displays the various transaction record activities.
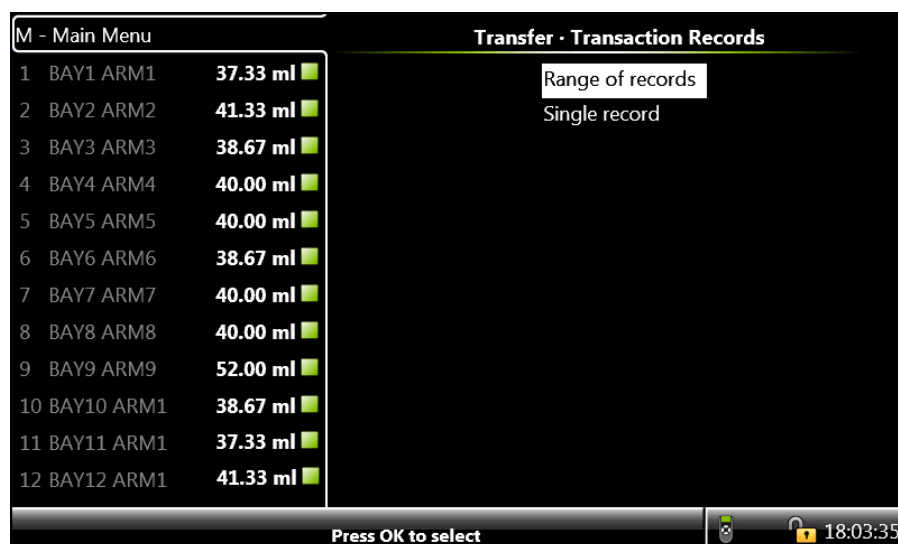
You can retrieve a selective range of records, or a single record. The transaction record is saved to the SD card on the LAD

> NOTE: The <Single record> command cannot be used through Fusion4 Portal. The <Single record> screen is only used by copying a transaction record to LAD.

> NOTE: All transactions are overwritten and the transaction cannot be retrieved through the Fusion4 Portal or LAD. You must settle all transactions before the oldest one is automatically deleted and overwritten. Maximum 10.000 unsettled transactions can reside in the transaction memory of the MSC-A/ MSC-L device.

4.9 Transfer MSC-L Load profiles

- On the Main Menu screen, select the Transfer icon. The Transfer screen appears, which displays the various data sets that can be transferred between the MSC-L and the LAD.

- On the Transfer screen, select <Load Profiles> and then select <OK> on the LAD.

  The Transfer Load profiles screen appears, which displays options to transfer records.


  The following transfer options appear on the Transfer - Load Profiles screen.

- All records - This option retrieves all the Load Profiles available on the device.

- Range of records - This option allows you to select the desired range of load profiles from the available records.

- Single record - This option allows you to retrieve a single load profile. Make a selection and the Logs . Load profiles screen appears.
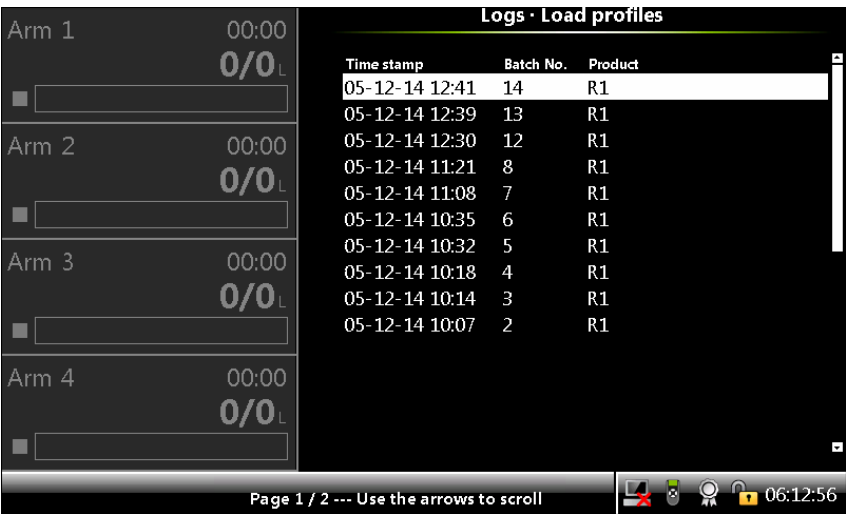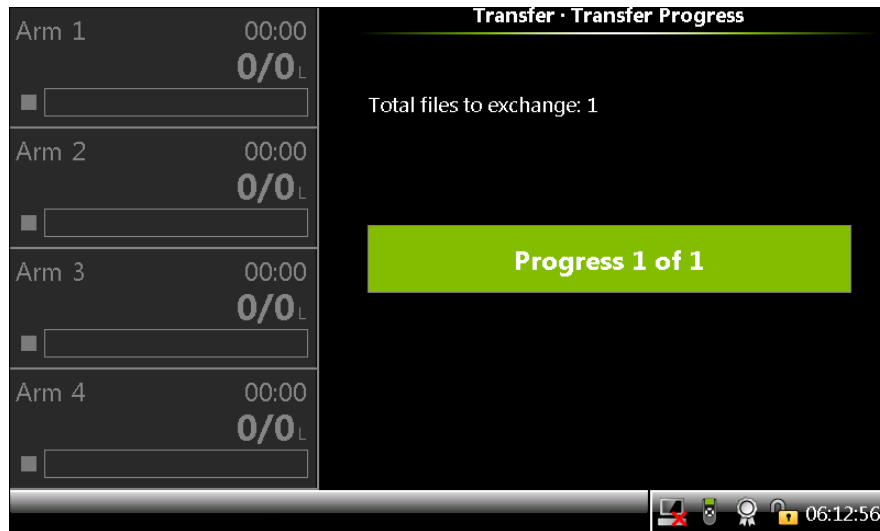
Select a batch from the log and a Logs. Load profile Batch screen appears with a load profile graph.
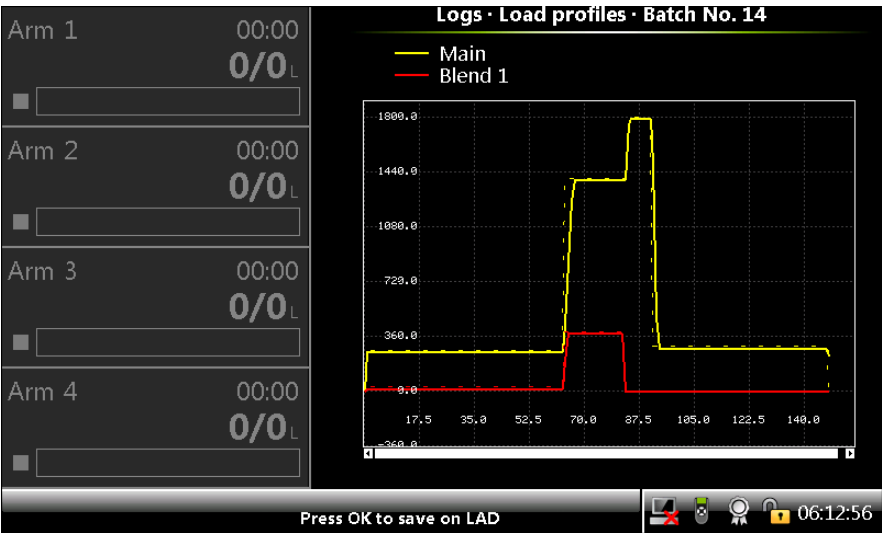
On the LAD device, Press <OK> to transfer the Load profile to the SD card on the LAD.

The Transfer . Transfer Progress screen appears and shows the progress of the transfer.

After the load profile is successfully transferred to the SD card, an 'Action successfully completed' pop-up appears.

4.10 Taking screen-shots on MSC-L

To make screen-shots using the LAD, the LAD function key needs to be programmed as "Screen capture". To do this:

- On the Main Menu screen, select the LAD icon.

  The LAD function screen appears, which displays the various LAD functions and their activities.

  On the LAD screen, select <Function key> to specify the functions that can be programmed to the function "F" key on the LAD. This helps you to achieve a quicker operation of the MSC-L.

- The LAD . Function Key screen appears, which specifies the functions that can be programmed. Navigate and select <Screen Capture>
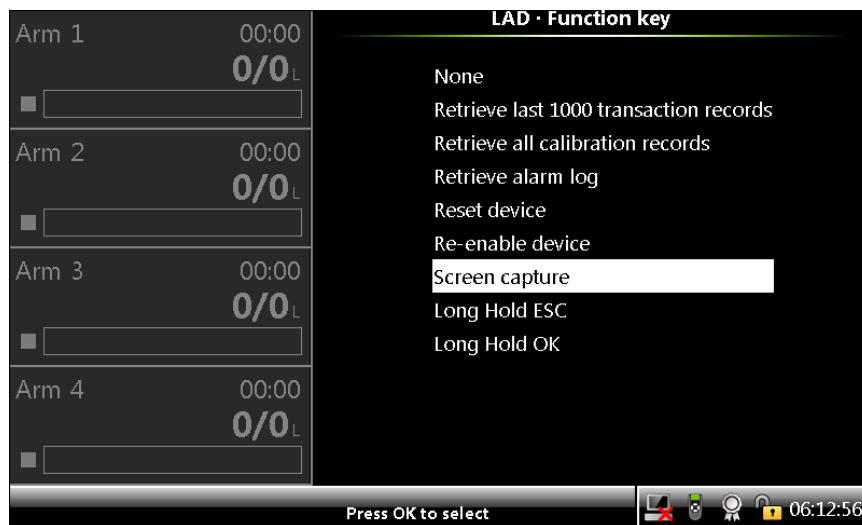
Screen-shots can now be made by pressing the function key. When the function key is pressed the screen freezes for a couple of seconds and after that a progress bar is displayed to indicate the progress.
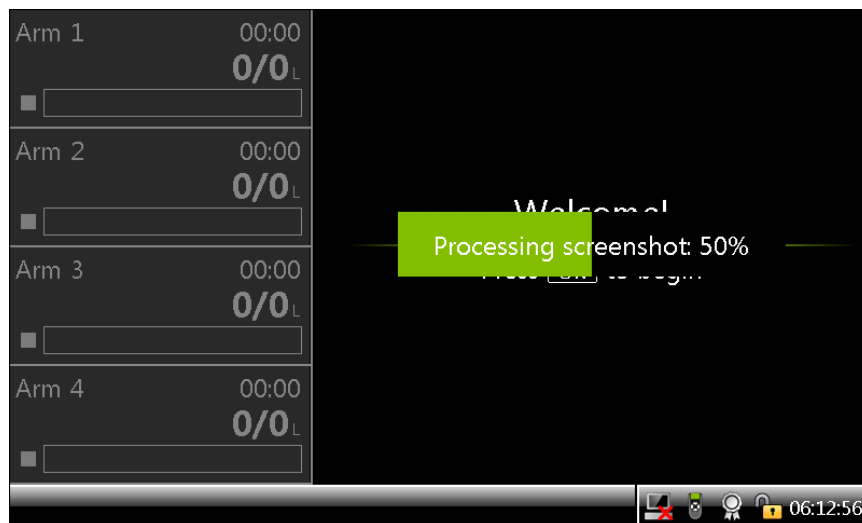
The screenshot is saved on the SD card in the LAD in the directory Honeywell/MSC-L/Specific/MSC-L-<device>/Screenshots.

The name of the screenshot is the timestamp of when it is taken and is in ddmmyyyy_hhmmss.png format (Example 05122014_133359.png)

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MN06308