VM Service

Installer & User

Installer & user manual
VM Service

9UMENX512-1200
Release: 210707

VM Service

1. Package installation

1.1. Introduction

The VM Service package is a PC ®Windows application to manage the VMX5 System.

FEATURES (USER login)

- Full or partial BackUp/Restore of the system parameters
- In the case of spare parts it allows reloading of the original parameter configuration onto the function card
- Twin system parameterization for repetitive installations
- Raw parameter visualization (memory data format only)

FEATURES (SUPERVISOR login)

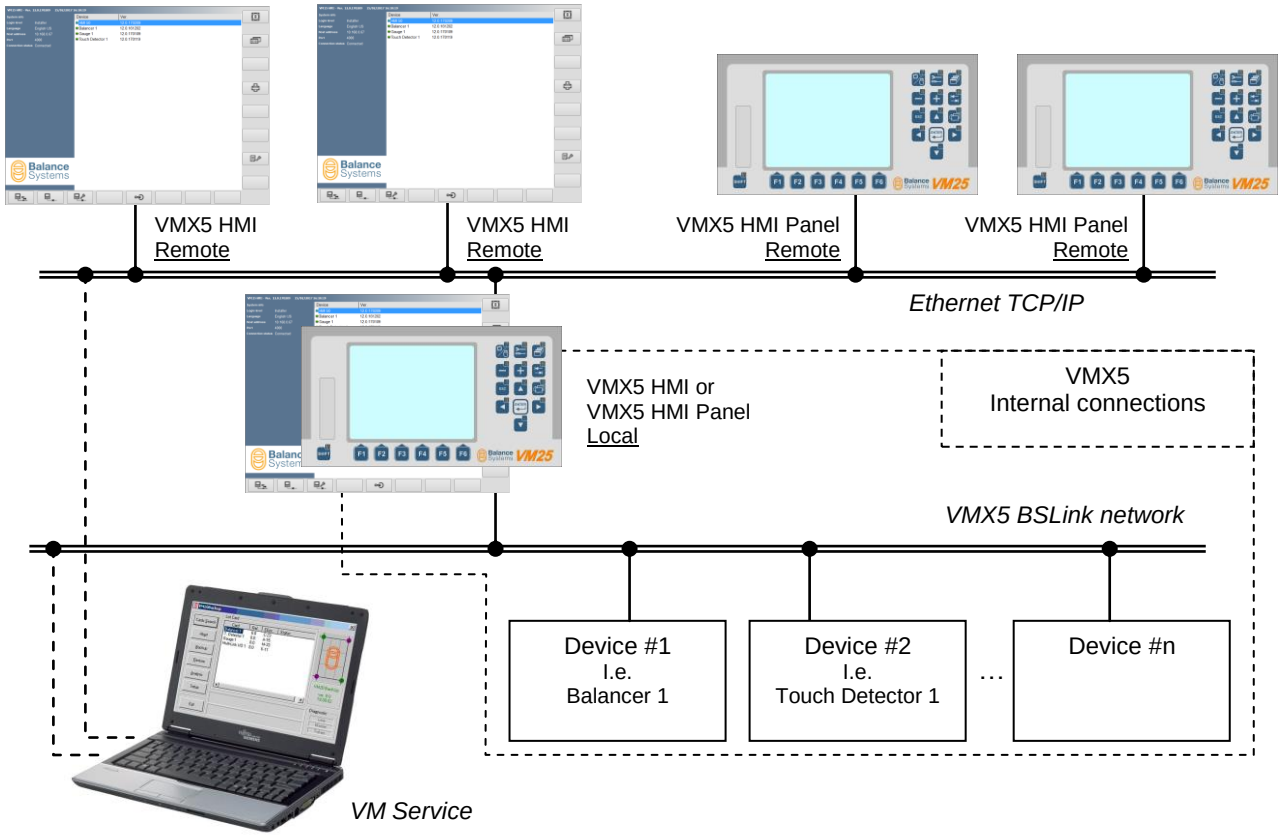
- All of the above, plus…
- Selective Restore: OPTIONS & CALIBRATIONS
- Software Up-Grade and Down-Grade (with rules and limitations)

The application performes backup and restore of the complete set of the VMX5 system's parameters with the following limtations:

- *With USER login it is only possible to execute the **RESTORE** operation using a data file created from an equivalent device with the same software version installed.*

This document is related to VM Service installation and use starting from version 12.0

1.2. VMX5 System architecture



1.3. Installation package

The VM Service is available with the following part number:

- 9SRVMX5xxUSWP0 – VM Service package with USB 2.0 interface

xx = indicates the software version

The kit supplied includes:

- Pen drive containing VM Service software, documentation
- USB/RS-485 serial converter with drivers

The cable for connecting the VMX5 system to the control PC is supplied separately, depending on the required length.

1.4. System requirements

Minimum requirements of the host PC:

- Pentium III - 1 GHz processor or equivalent
- 128 MB Ram (256 MB recommended)
- 50 MB Hard Disk free
- VGA graphic card with minimum resolution 640x480 (SVGA 1024x768 recommended)
- USB port
- Operating system
    - XP SP2
    - Vista
    - Windows 7, 8.x, 10
- Additional operating system requirements:
    - Windows Installer 3.1
- Other requirements may be necessary on dedicated platforms

1.5. Installation

1.5.1. Installation of the USB/RS-485 serial converter driver

The USB-BSLink serial converter comes with a kit including:

- USB-BSLink hardware converter p/n 9CSUSB23003000
- USB extension cable
- Pen drive containing drivers and multi-language documentation

To install the driver:

- Insert the pen drive
- Put the converter inside the USB port of the PC
- Wait for the device to be recognised and follow the instructions of Windows

Note: refer to the provided documentation for detailed information

1.5.2. VM Service installation on a stand-alone PC

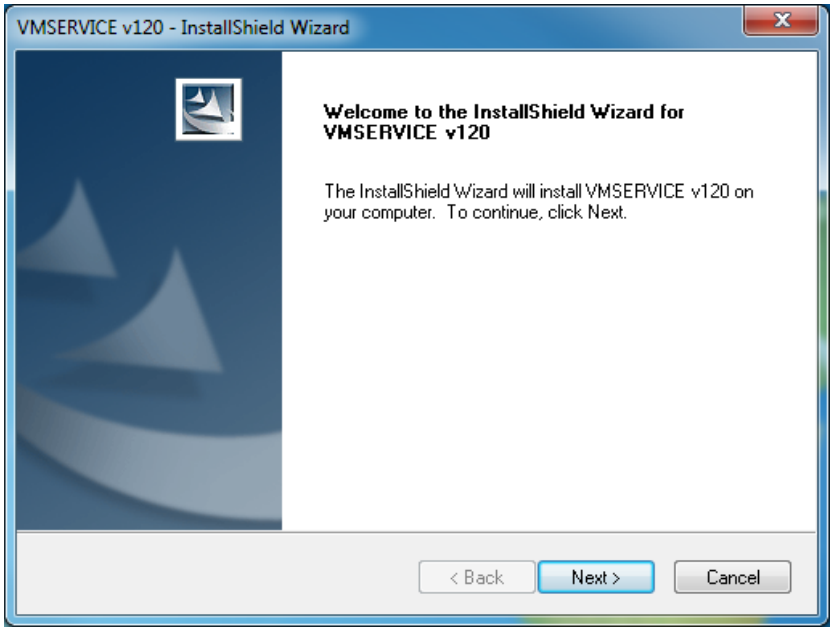
The procedure will install the following components:

- VM Service application
- Auxiliary Windows components (if necessary)

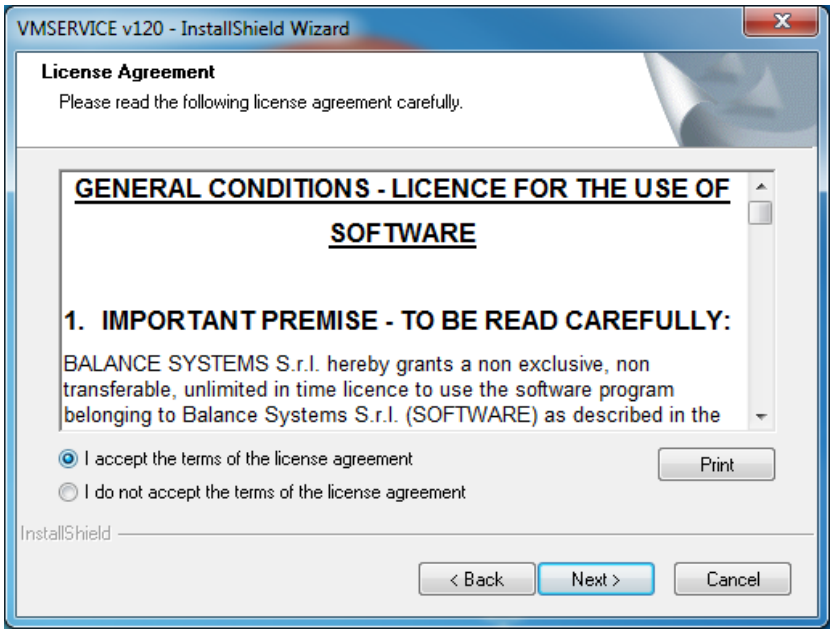
1.5.2.1. Procedure

To install the VM Service package:

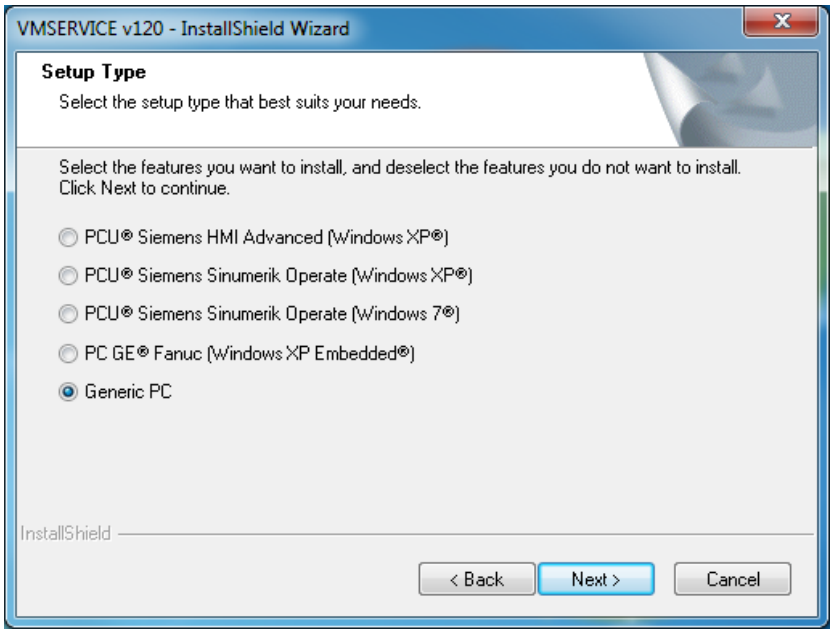
- Click on *Start* in Windows, select **Run…**
- Enter **<E>:\VMX5Service\Setup\Setup.exe** (where: <E> is the USB drive).
- Select “VM Service”
- Continue by following the instructions



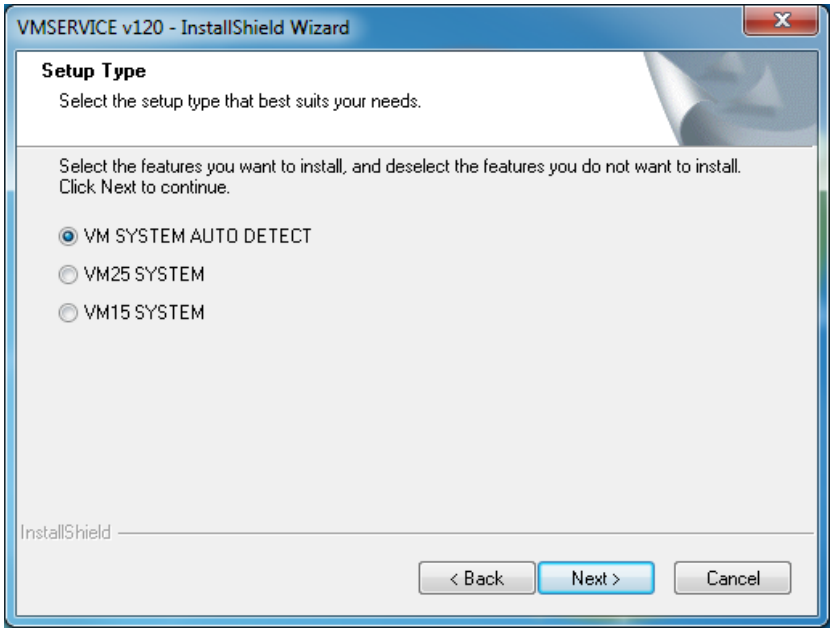
- Read carefully and accept the conditions of the licence agreement.



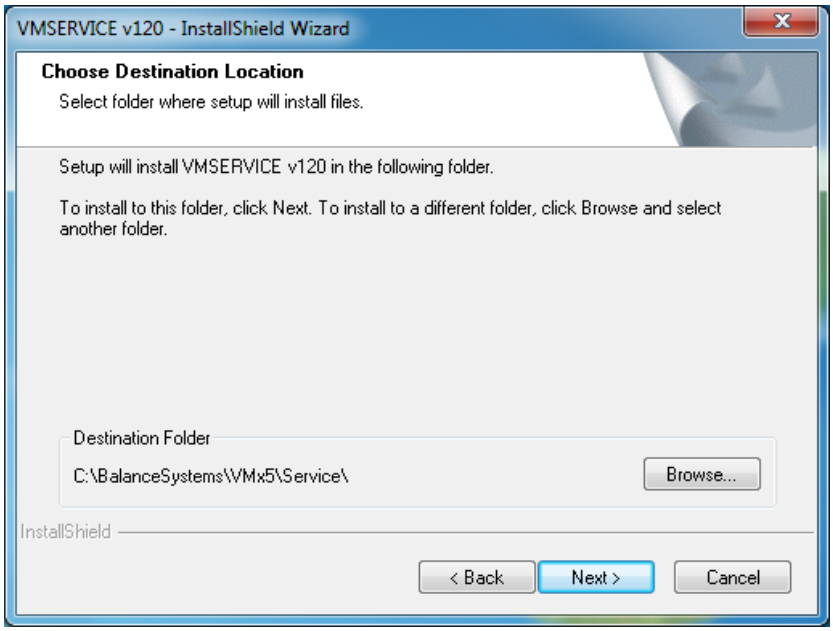
- Select the target of installation. To install on a generic stand alone PC unit (i.e. notebook), select “PC Generic” option.



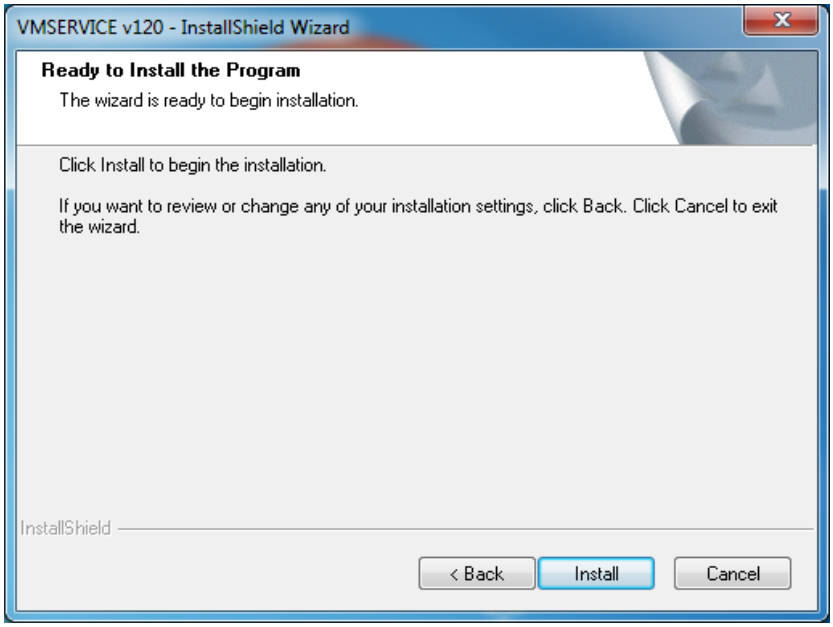
- Choose the features to install (VM25, VM15, VM SYSTEM AUTO DETECT)



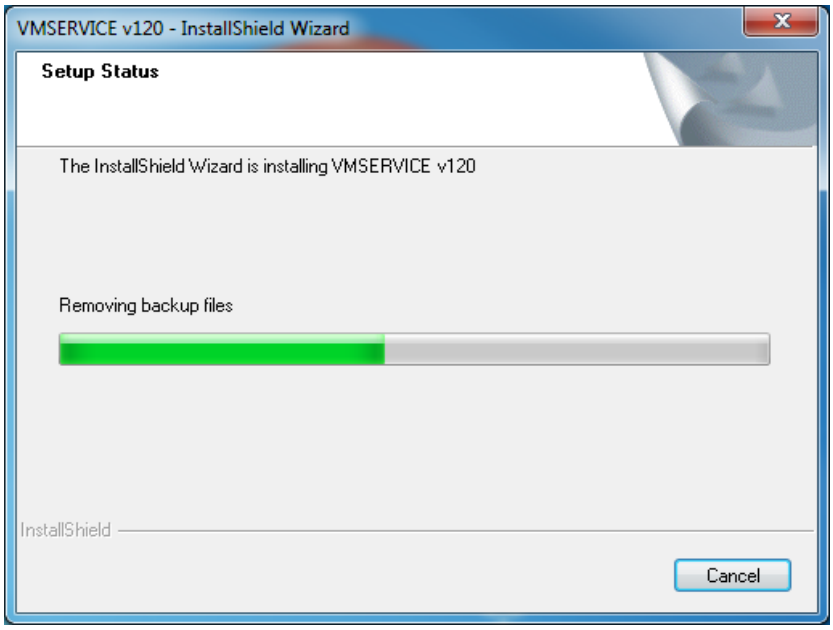
- Choose the destination folder: (default) C:\BalanceSystems\VMX5\Service\

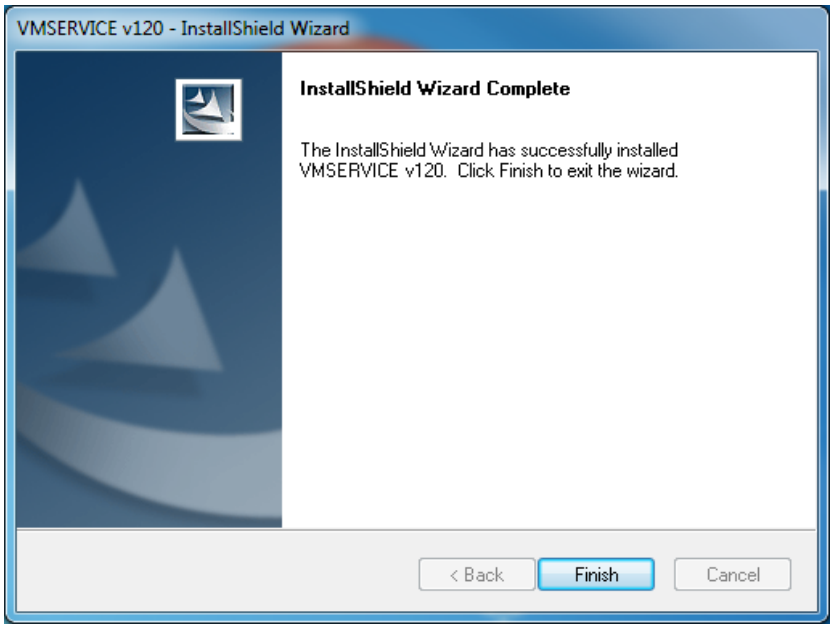


- Click install to continue.



- Wait for the complete installation of the components.



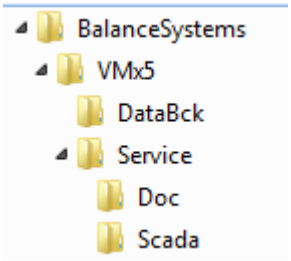


NOTE:

Previous version of the VM Service package will be removed automatically while the configuration files are maintained.

1.5.2.2. Folders diagram

Structure of the folders after installing in "C:\"



where:

Folder	Description
BalanceSystems	Main folder
VMX5	VMX5 applications folder
Service	VM Service application folder
Scada	Communication layer and dll
Doc	Documentation folder
DataBck	Backup file storage folder

1.5.3. VM Service installation on machine control ®Siemens PCU

The procedure will install the following components:

- VM Service application
- Auxiliary Windows components (if necessary)

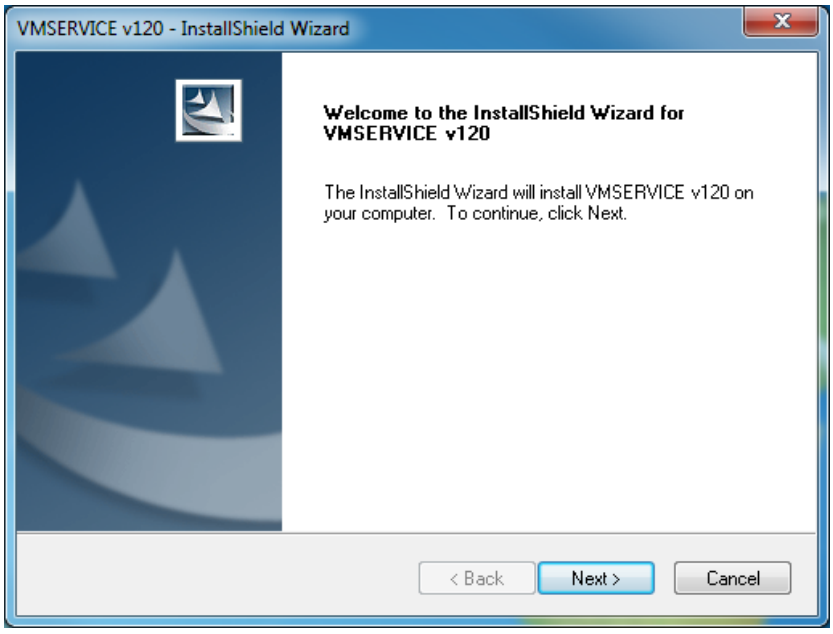
1.5.3.1. Procedure

Start the ®Siemens PCU in WINDOWS mode:

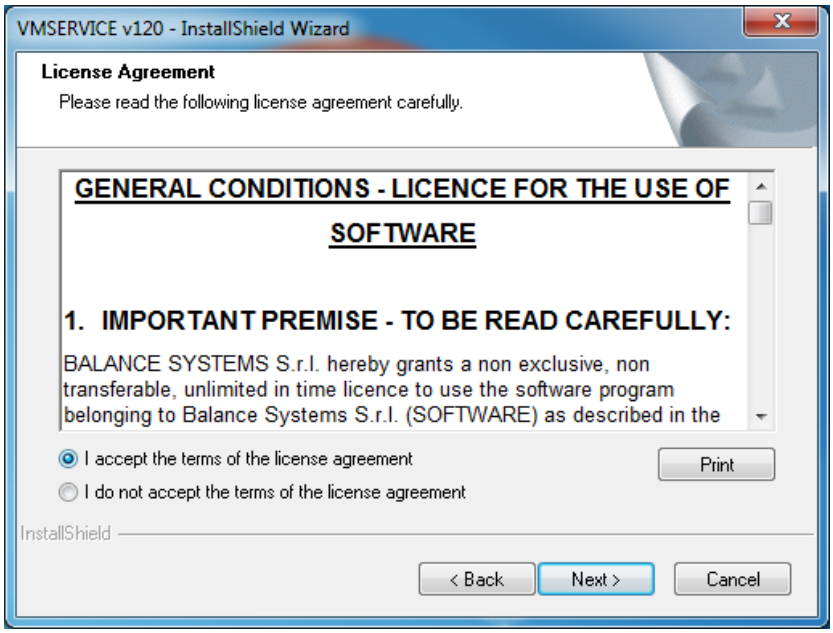
- Turn on the PCU
- During the start phase, press "3" as soon as the white screen with the version indicated in the lower right-hand corner appears
- Enter user ID: “auduser”
- Enter the manufacturer’s password
- Press Enter

To install the VM Service:

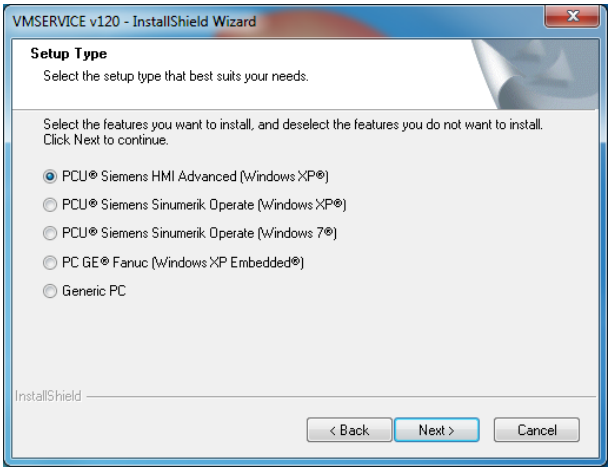
- Click on *Start* in Windows, select **Run…**
- Enter **<Drive>:\Setup\Setup.exe** (where: <Drive> is the usb pen drive)
- Continue by following the instructions…

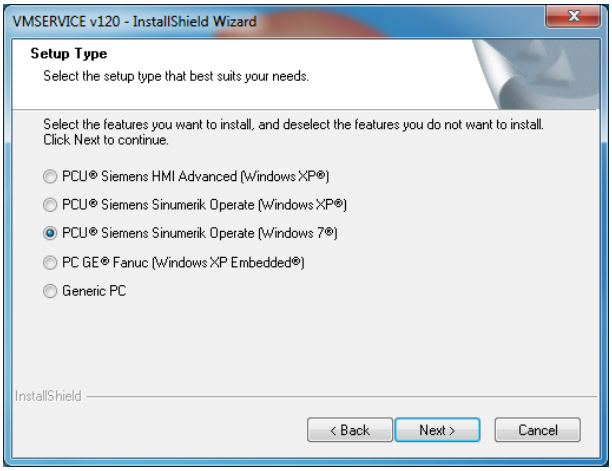


- Read carefully and accept the conditions of the licence agreement.

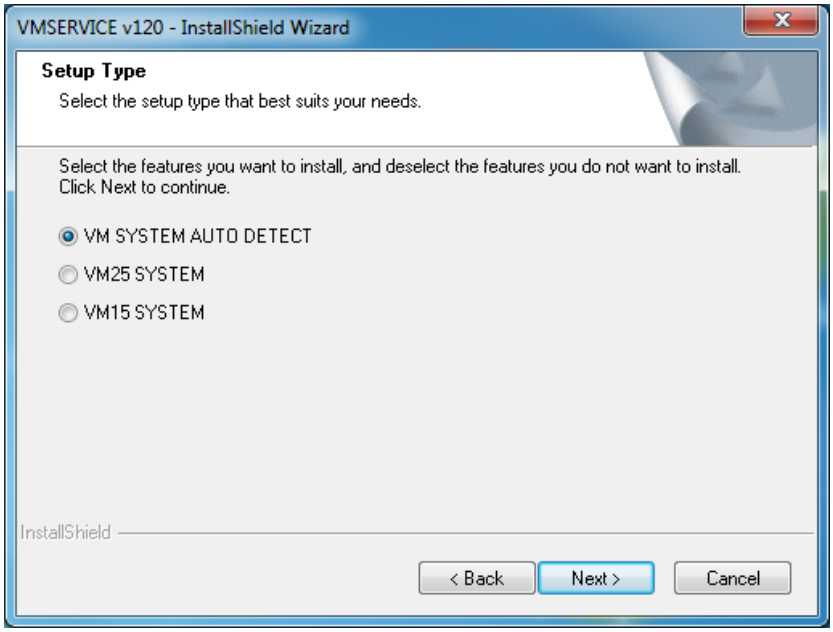


- Select the target of installation: “PC Siemens HMI Advanced” for Windows XP® or “PC Siemens Sinumerik Operate” for Windows XP® or Windows 7® option.

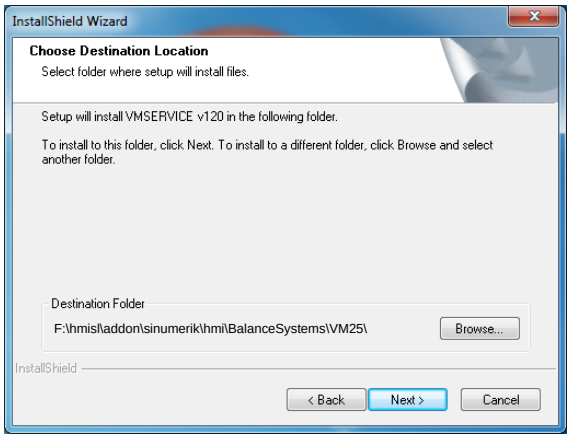


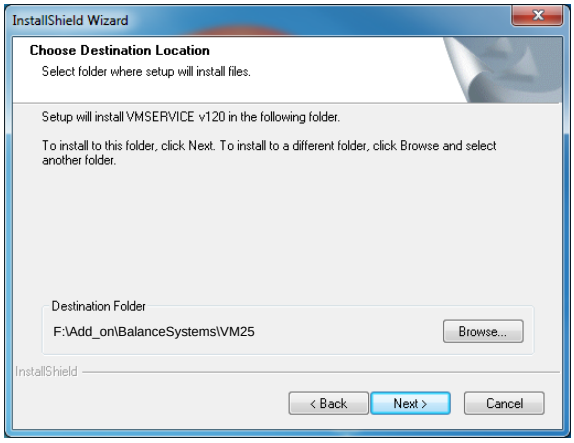


- Choose the features to install (VM25, VM15, VM SYSTEM AUTO DETECT)

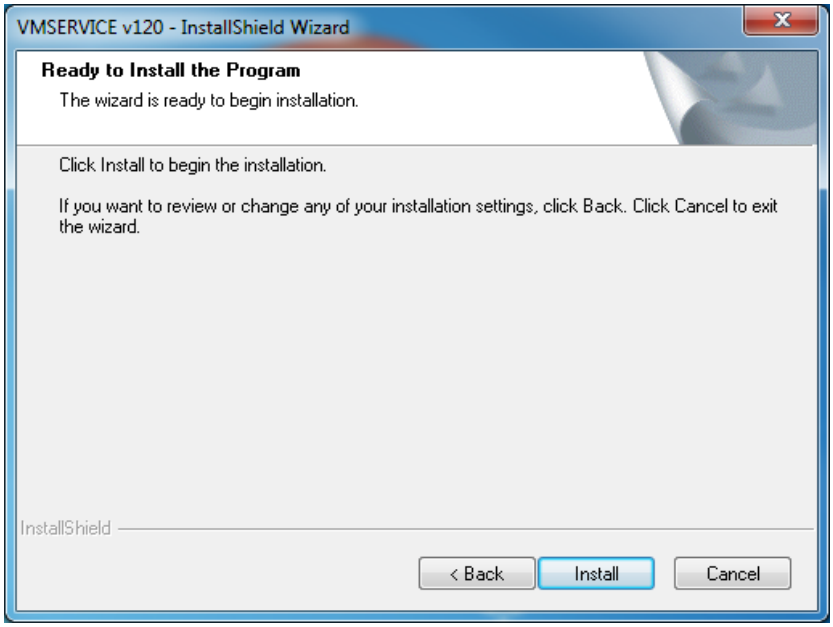


- Choose the destination folder: (default) F:\hmisl\addon\sinumerik\hmi\BalanceSystems\VMX5\ or (default) F:\Add_on\BalanceSystems\VMX5.

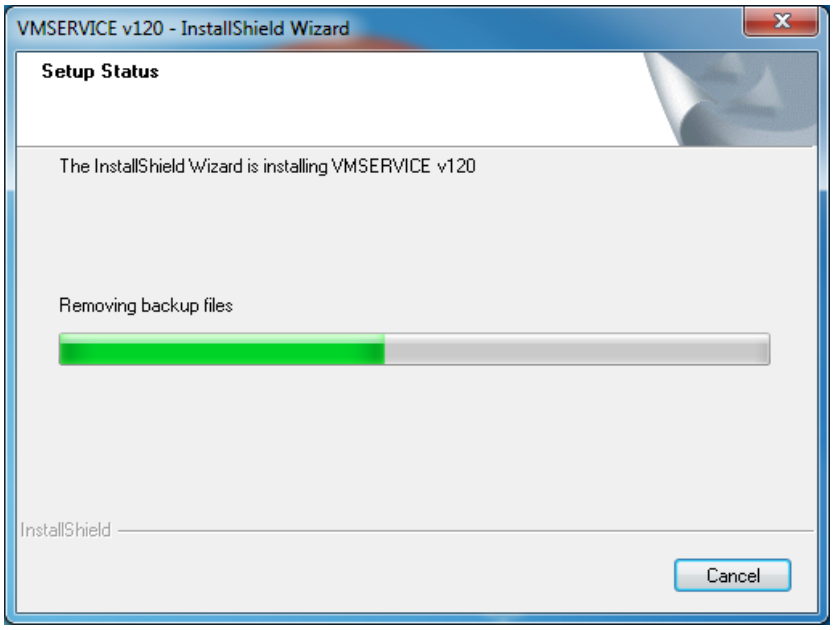


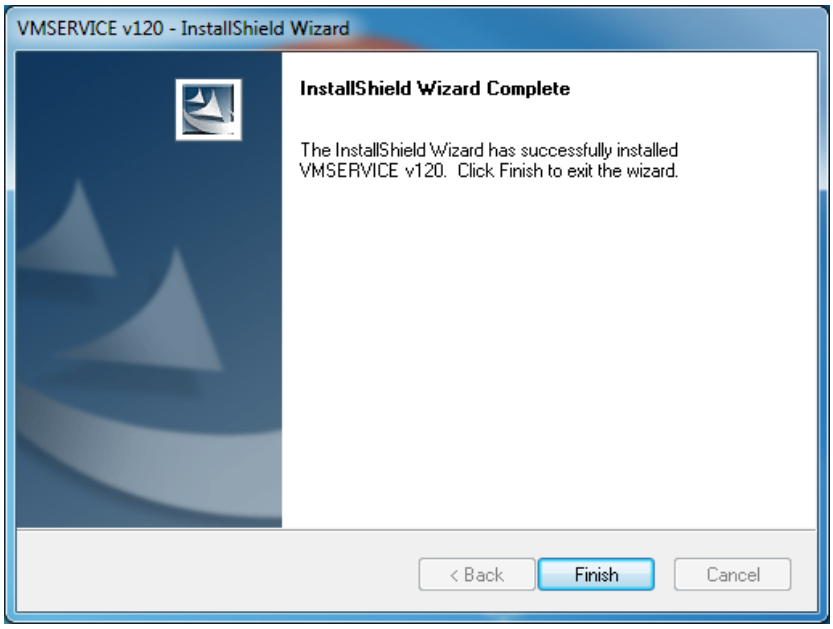


- Click install to continue.



- Wait for the complete installation of the components.



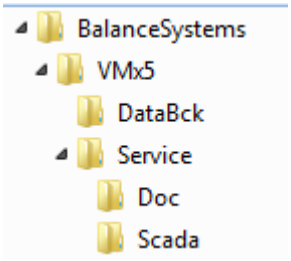


NOTE:

Previous version of the VM Service package will be removed automatically while the configuration files are maintained.

1.5.3.2. Folders diagram

Structure of the folders after installing in "F:\...\BalanceSystems\..."



where:

Folder	Description
BalanceSystems	Main folder
VMX5	VMX5 applications folder
Service	VM Service application folder
Scada	Communication layer and dll
Doc	Documentation folder
DataBck	Backup file storage folder

1.5.4. VM Service installation on machine control ®Fanuc PC

The procedure will install the following components:

- VM Service application
- Auxiliary Windows components (if necessary)

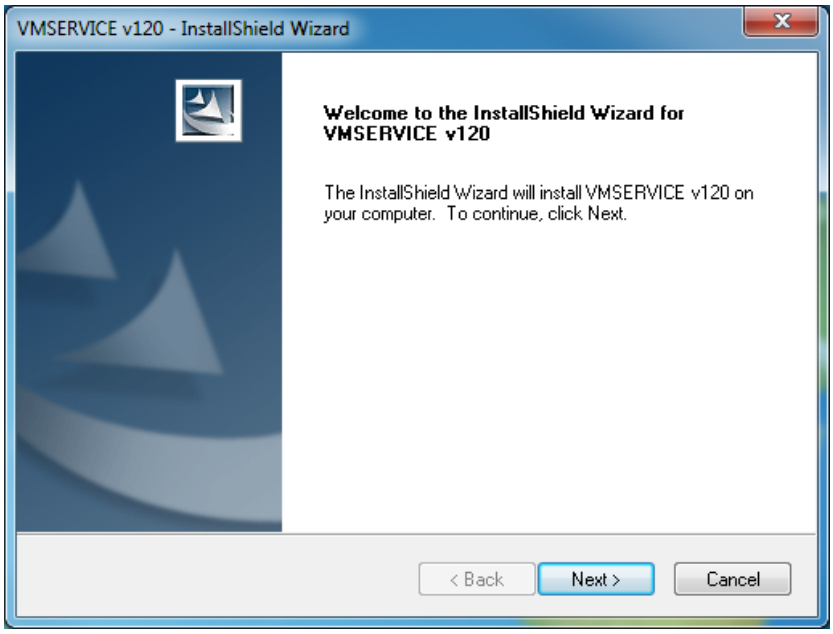
1.5.4.1. Procedure

To install the package on Machine Control ®GE Fanuc with O.S. ®Microsoft Windows XP Embedded, it is required the utility Framework .NET 2.0 in full format. To proceed with the correct installation, follow the procedure (read additional information in <Drive>:\Utility\NET Fw Cleanup Tool\User Guide.htm)

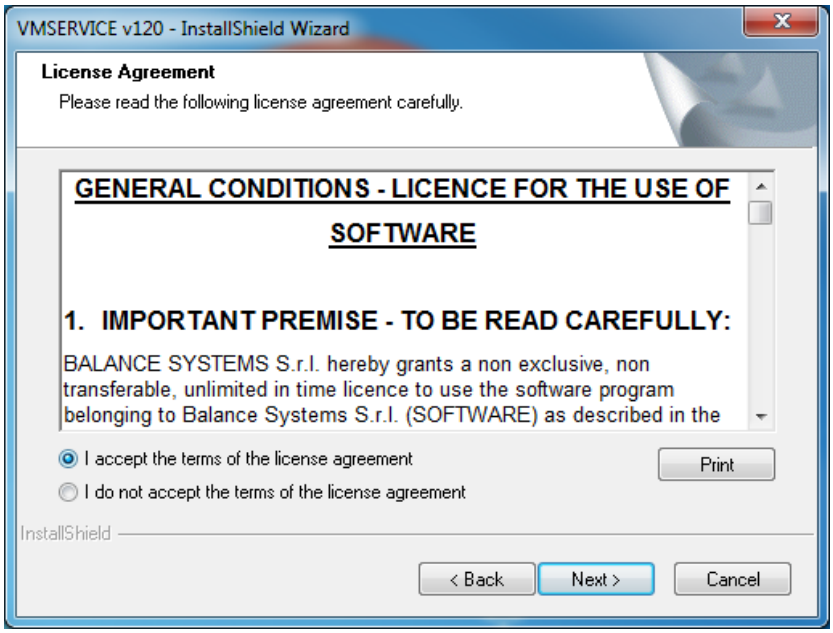
- Launch the tool **<Drive>:\Utility\NET Fw Cleanup Tool\cleanup_tool.exe**
- Follow the procedure below

To install the VM Service package:

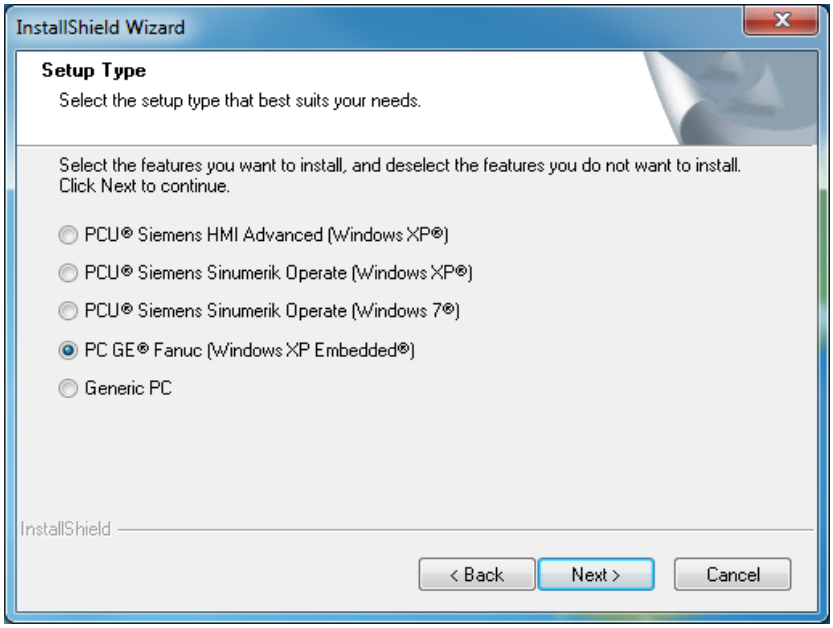
- Click on *Start* in Windows, select **Run…**
- Enter **<Drive>:\Setup\Setup.exe** (where: <Drive> is the usb pen drive)
- Continue by following the instructions.



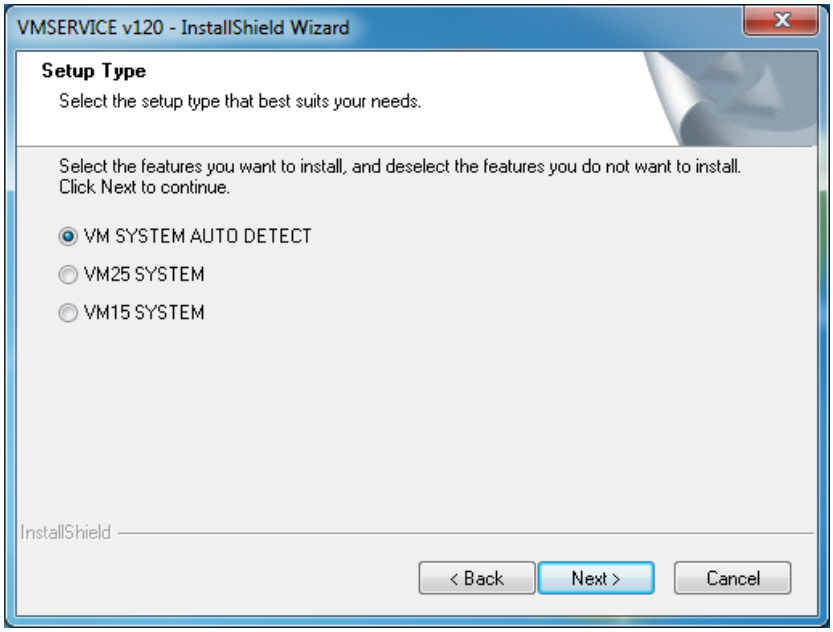
- Read carefully and accept the conditions of the licence agreement.



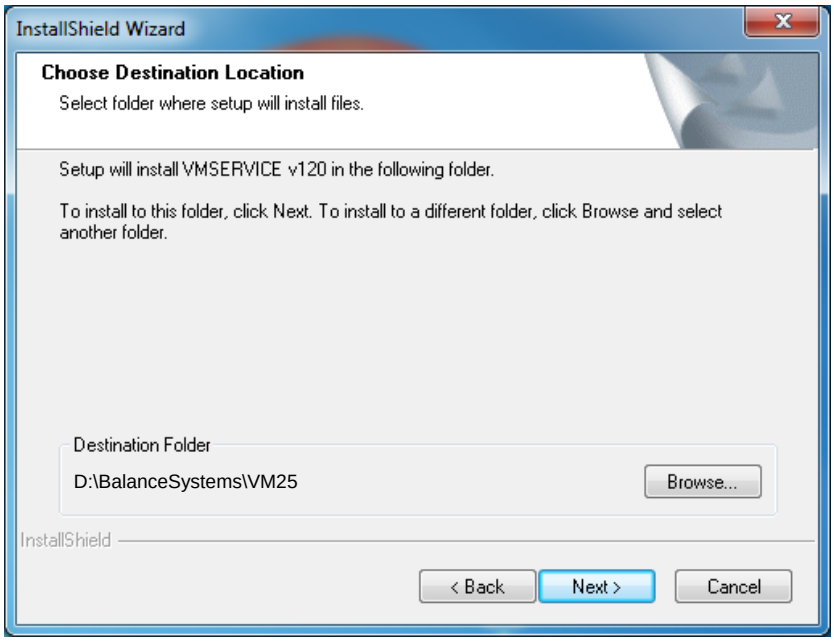
- Select the target of installation: “PC Fanuc” option.



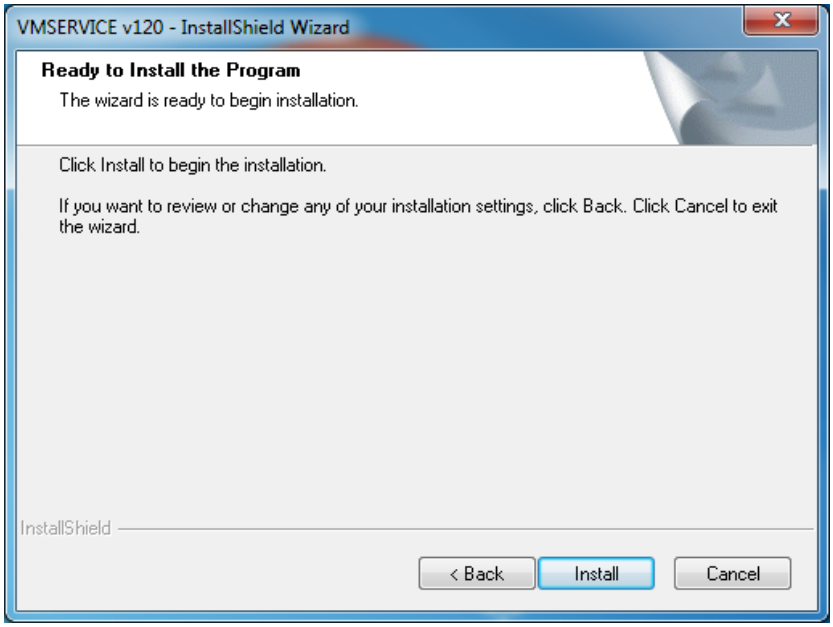
- Choose the features to install (VM25, VM15, VM SYSTEM AUTO DETECT)



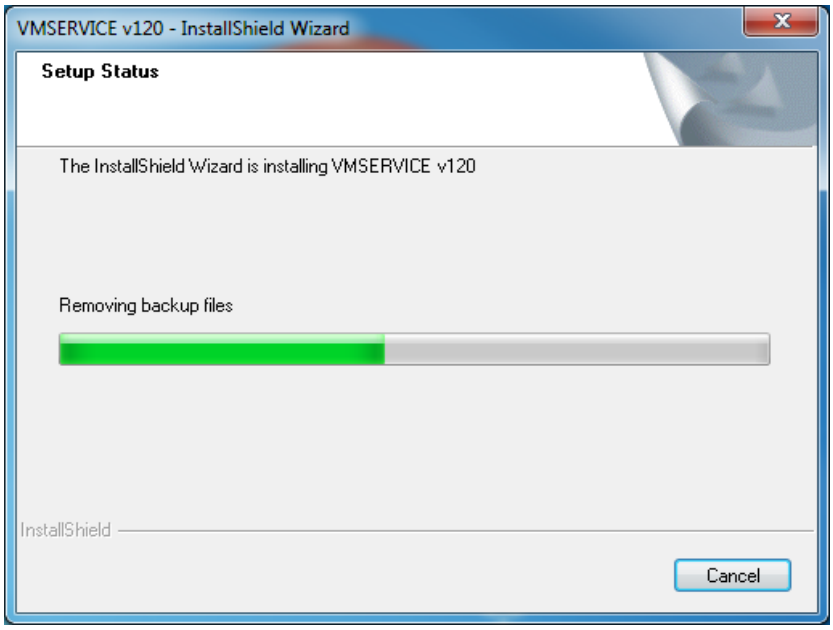
- Choose the destination folder: (default) D:\BalanceSystems\VMX5

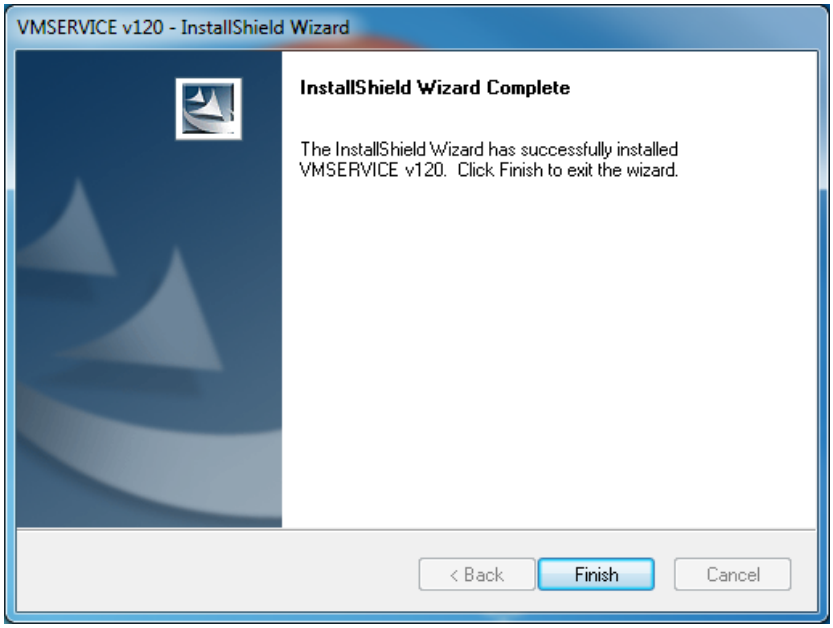


- Click install to continue.



- Wait for the complete installation of the components.



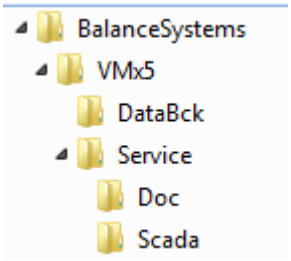


NOTE:

Previous version of the VM Service package will be removed automatically while the configuration files are maintained.

1.5.4.2. Folders diagram

Structure of the folders after installing in "D:\"



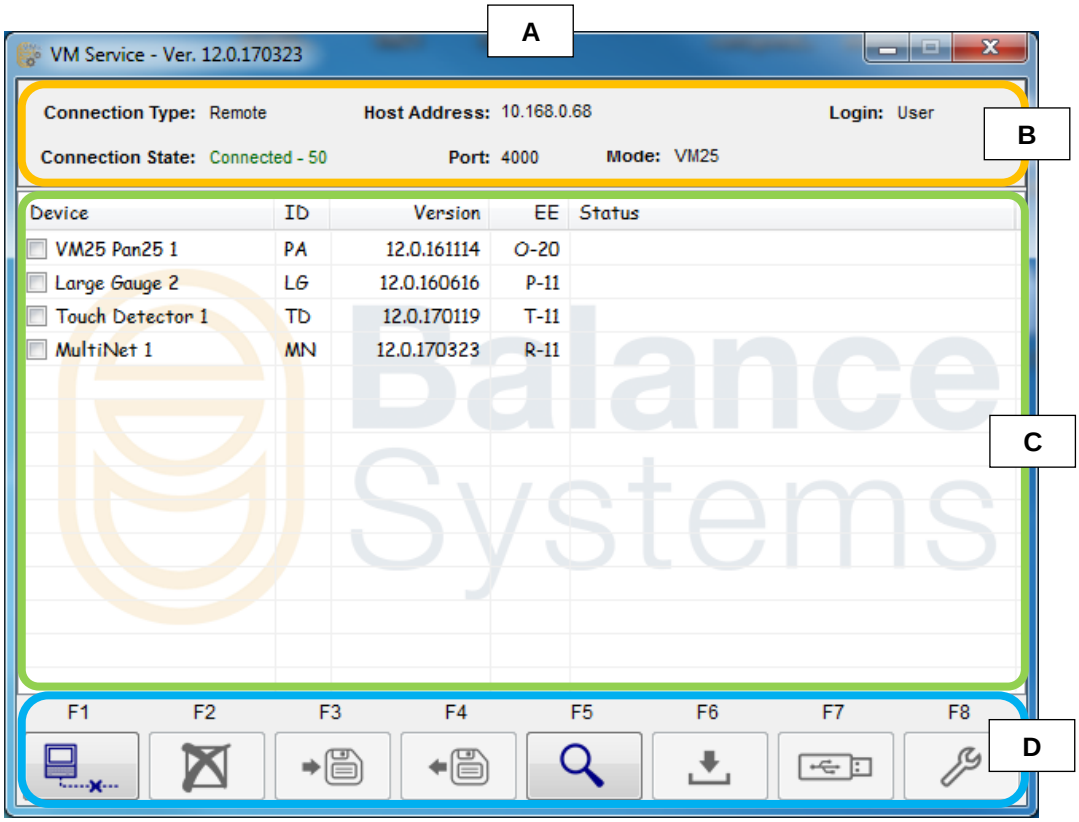
where:

Folder	Description
BalanceSystems	Main folder
VMX5	VMX5 applications folder
Service	VM Service application folder
Scada	Communication layer and dll
Doc	Documentation folder
DataBck	Backup file storage folder

2. Application setup

- Be sure that the VMX5 rack is switched on and the connection with the service PC unit is liked as indicated in the previous paragraphs.
- Launch the VM Service application:

2.1. Page description



The following areas are identified on the screen:

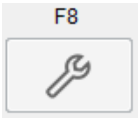
A. Application name and software version
B. System and connections information
C. Devices information area

- Device name
- Device ID symbol
- Software version
- Memory version
- State of the operations – Diagnostic errors

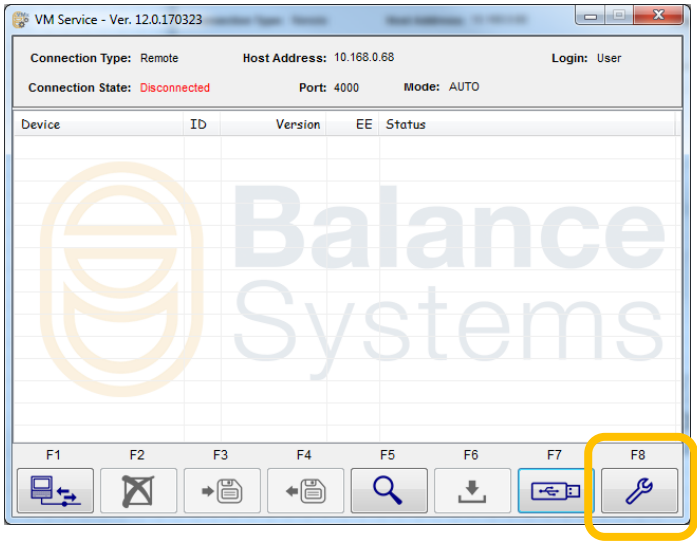
D. Command bar

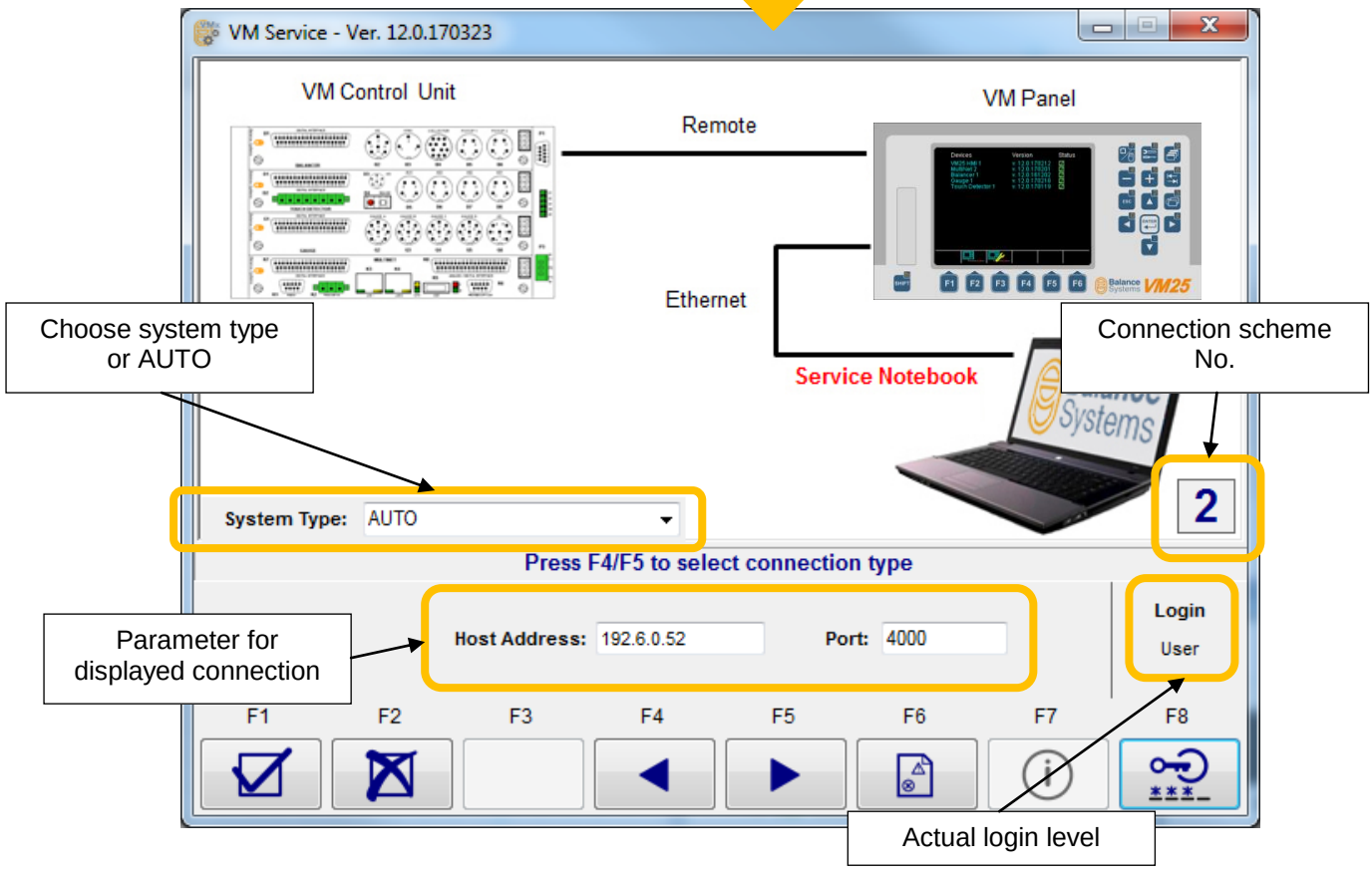
2.2. Setup

At the first start up it is necessary to configure some parameters.

Press the button 

to access the setup menu.

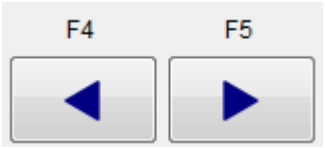




Icon	Command Name	Button	Description
	Confirm	F1	Confirm the setup, save data and exit the setup page
	Cancel	F2	Exit the setup page without any change
	Previous	F4	Previous connection configuration
	Next	F5	Next connection configuration
	Log file	F6	Export log file
	Info	F7	Access to user manual (pdf format)
	Login	F8	Access login levels management

2.2.1. Hardware connection and parameter setup

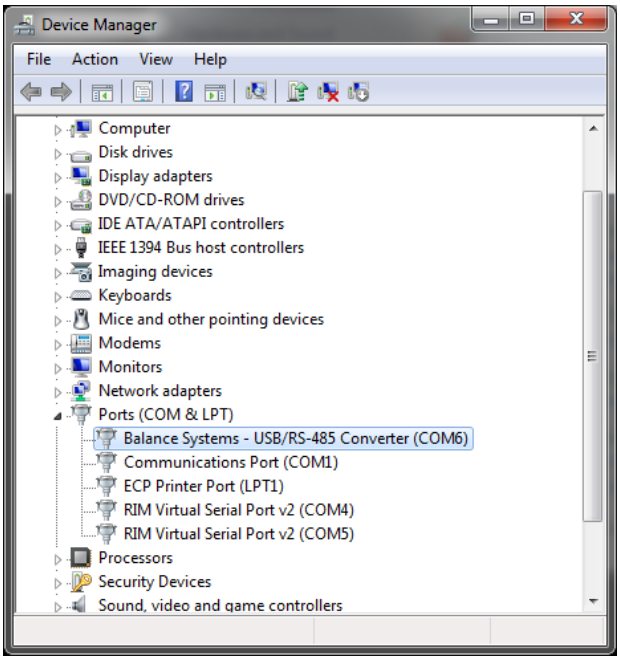
To work with the application it is necessary to connect the rack of the VMX5 system. The possibilities are described below.

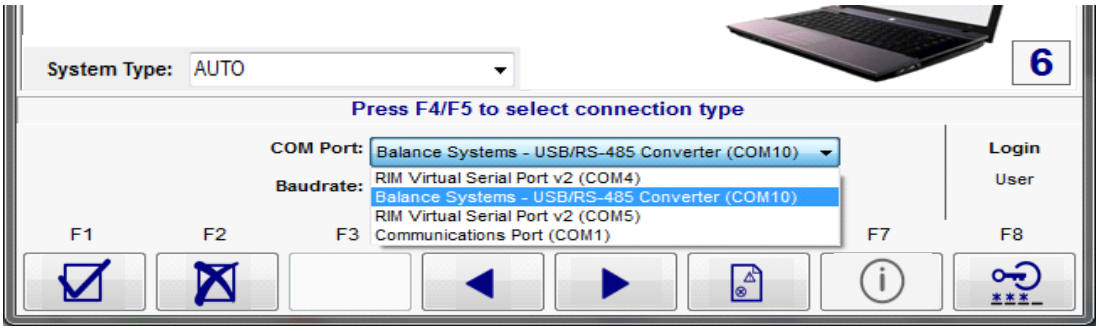
Press the buttons 

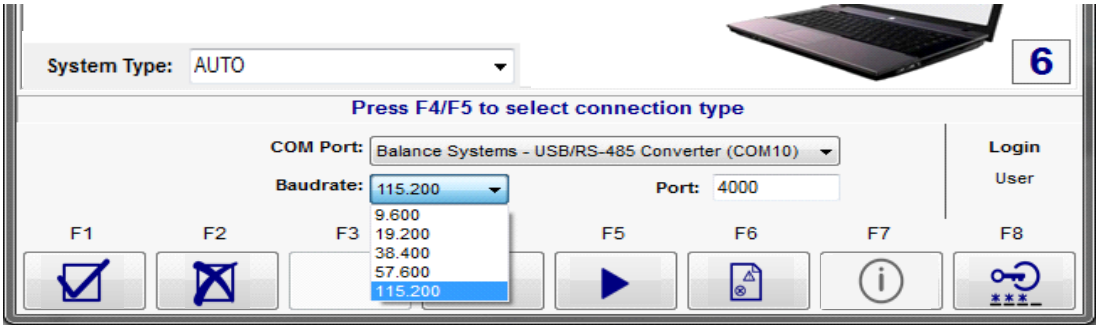
to select the connection type. A number of different choices are available.

2.2.1.1. Connection through USB/RS-485 converter

The parameters to be configured are the following:

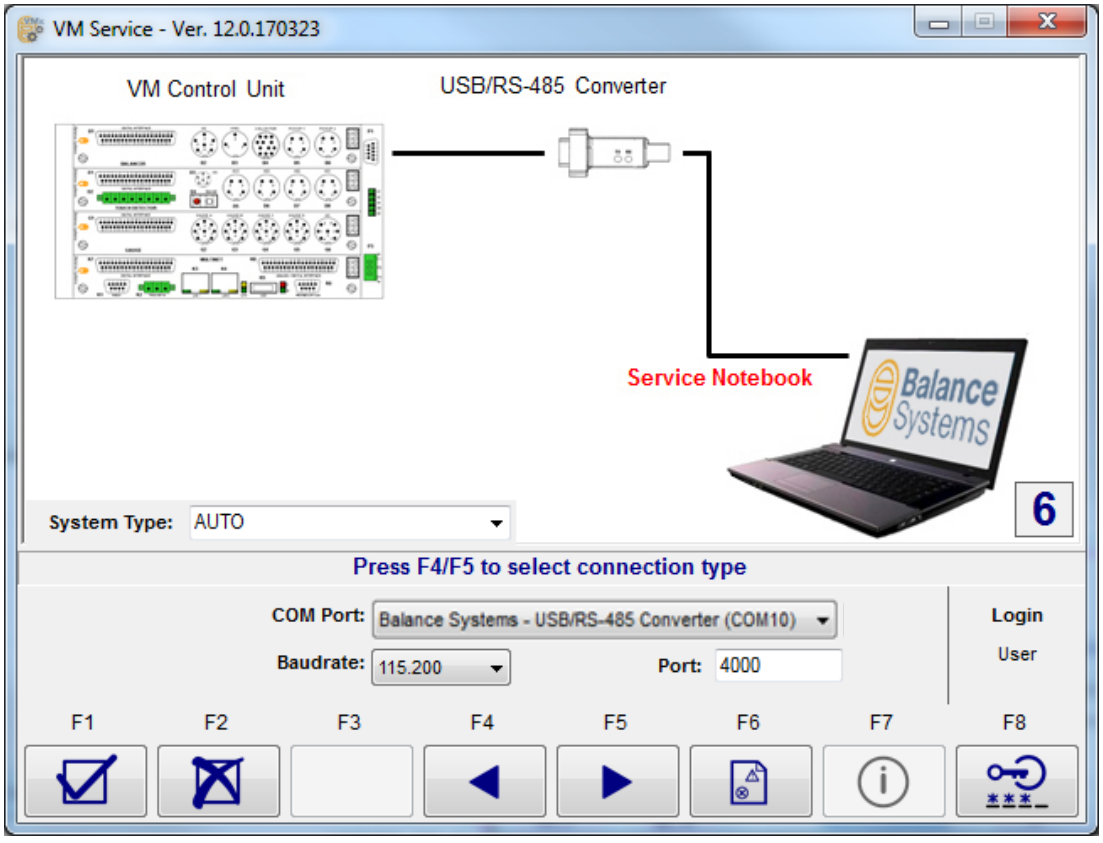
Parameter	Description
COM Port **[COM1]**	Select the com port number COM1, COM2, ..., COM16 To know which COM port is reserved by the operating system, use the MS ®Windows *Control Panel* > *System* > *Device Manager* 
Baudrate [bps] **[115200]**	Com port baudrate 9600, 19200, 38400, 57600, 115200 **115200** raccomended for VMX5 rack equipped with devices with software version 11.0 or higher
Host port **[4000]**	Number of the ethernet TCP/IP port used to connect the communication layer



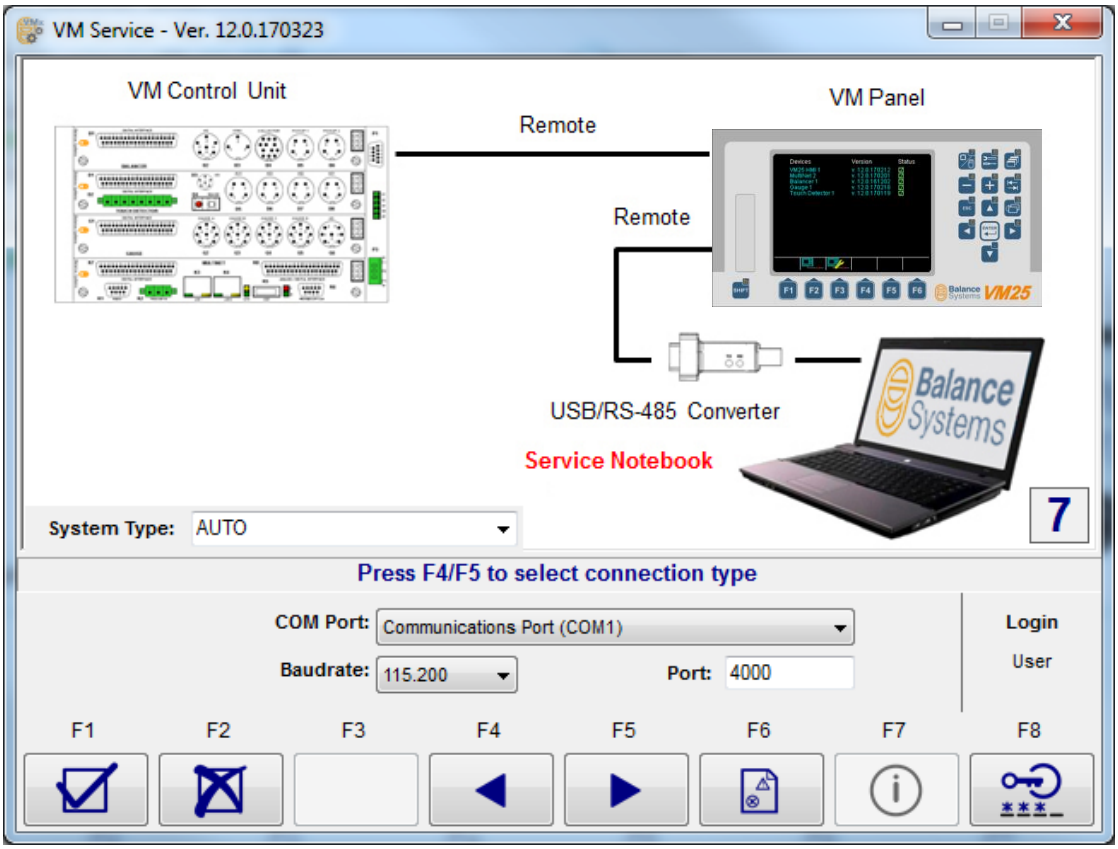


The connection through USB/BSLink adapter can be performed as follow:

SCHEME 6 - Service notebook directly connected to the VMX5 rack



SCHEME 7 - Service notebook connected to the VMX5 remote control panel.

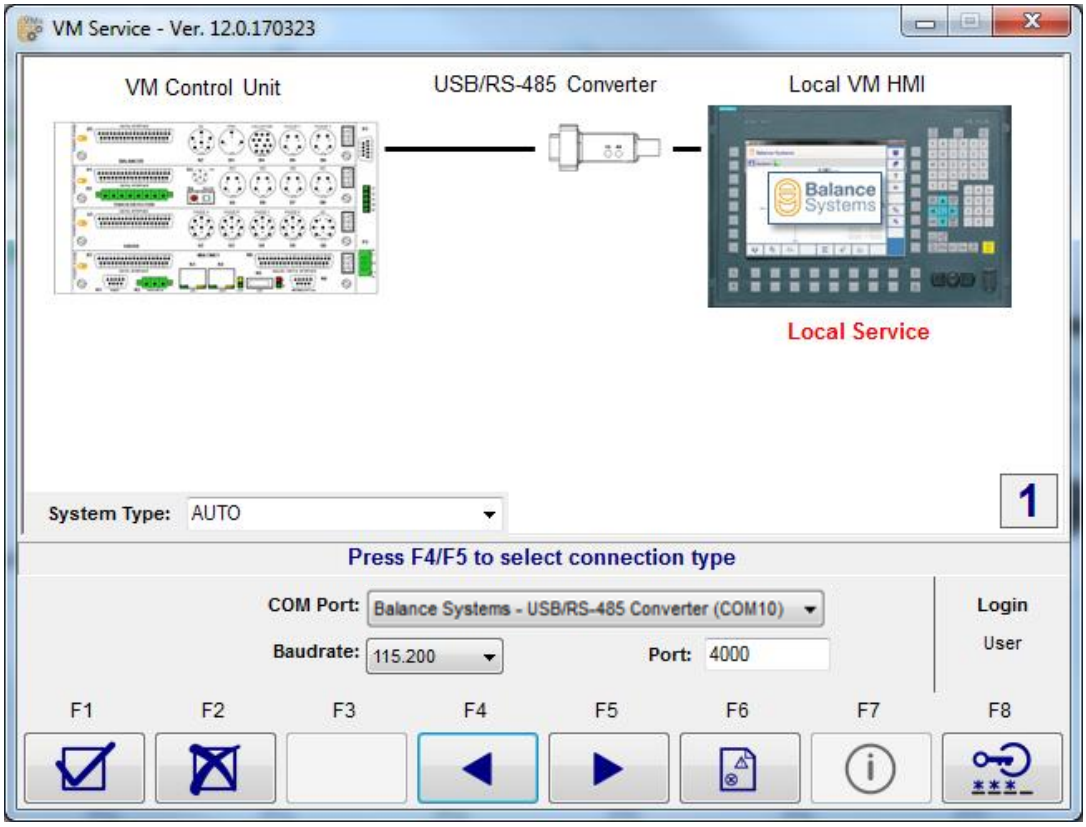


In this case the VMX5 control panel must be switched in “SERVICE” mode as follow:

- Press the button **Change page**  until appears “System” on the screenbox
- Press the command button **Disconnect for Service [F3]** 

NOTE:
with this connection it will not be possible to backup and restore the VMX5 control panel parameters. To do this must be used the connection through ethernet (see below).

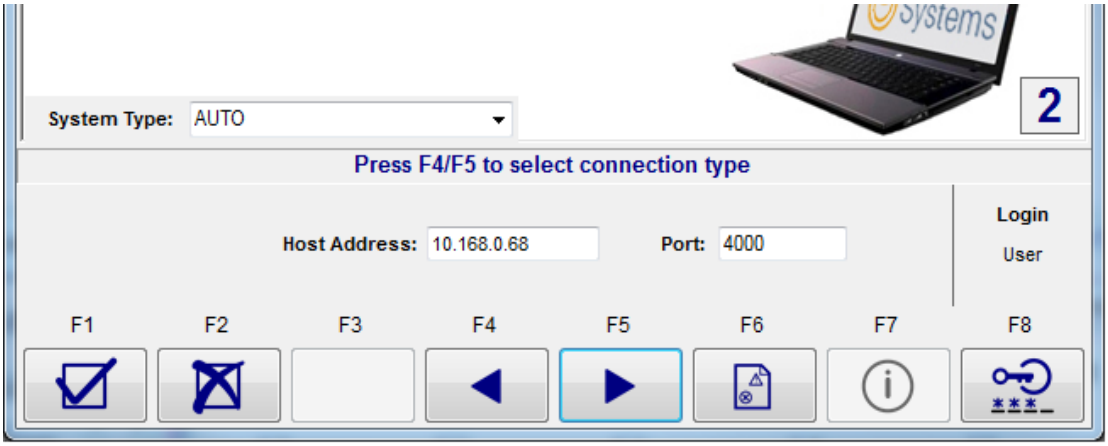
SCHEME 1 - The VM Service application is installed on the local computer where it is also installed the VMX5 HMI application.



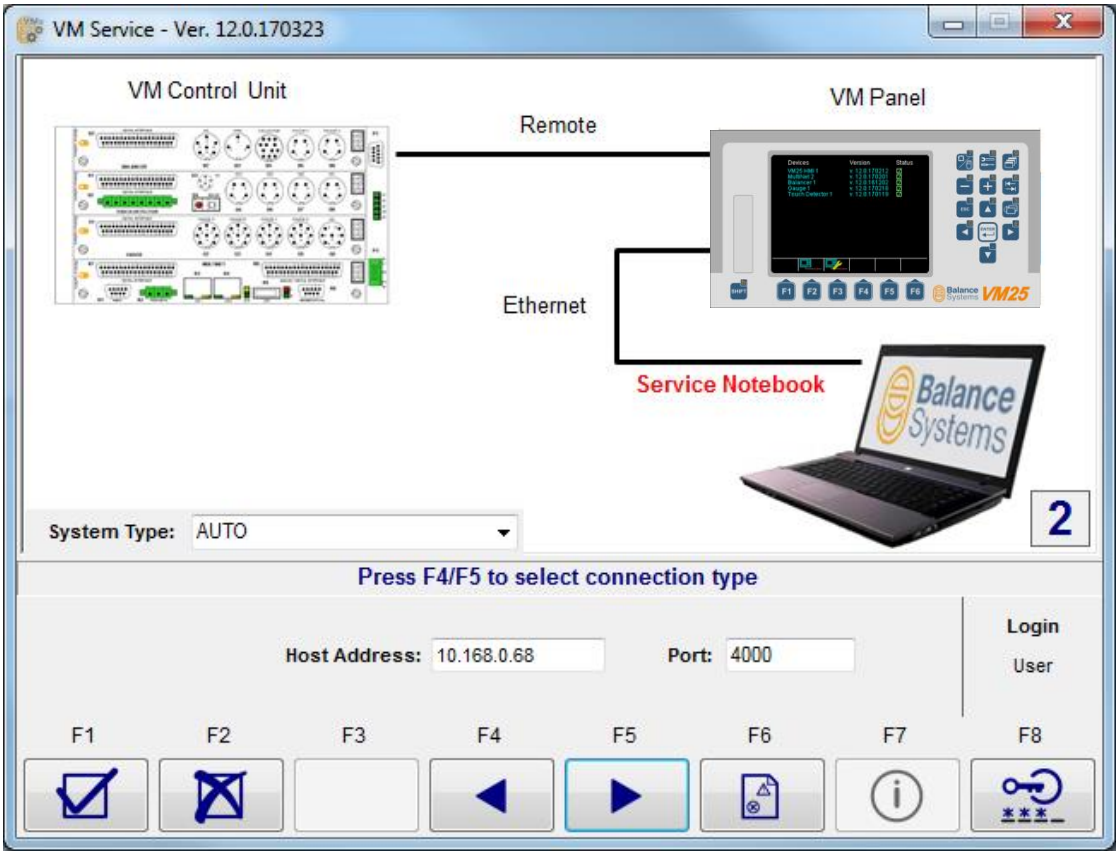
2.2.1.2. Connection through Ethernet TCP/IP

The parameters to be configured are the following:

Parameter	Description
Host Address **[192.168.0.1]**	IP Address of the VMX5 Control Panel or VMX5-HMI host which is physically connected to the VMX5 rack.
Port **[4000]**	Number of the ethernet TCP/IP port used to connect the communication layer

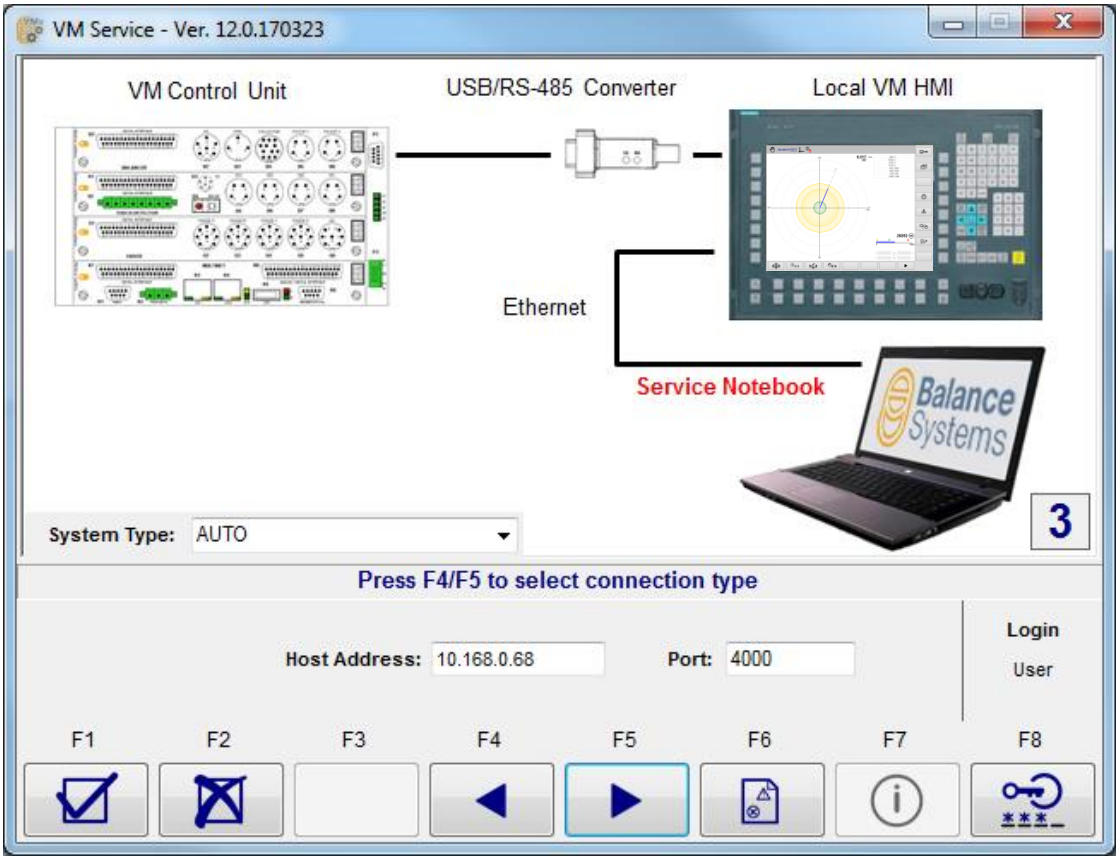


SCHEME 2 - Service notebook connected to the VMX5 remote control panel.



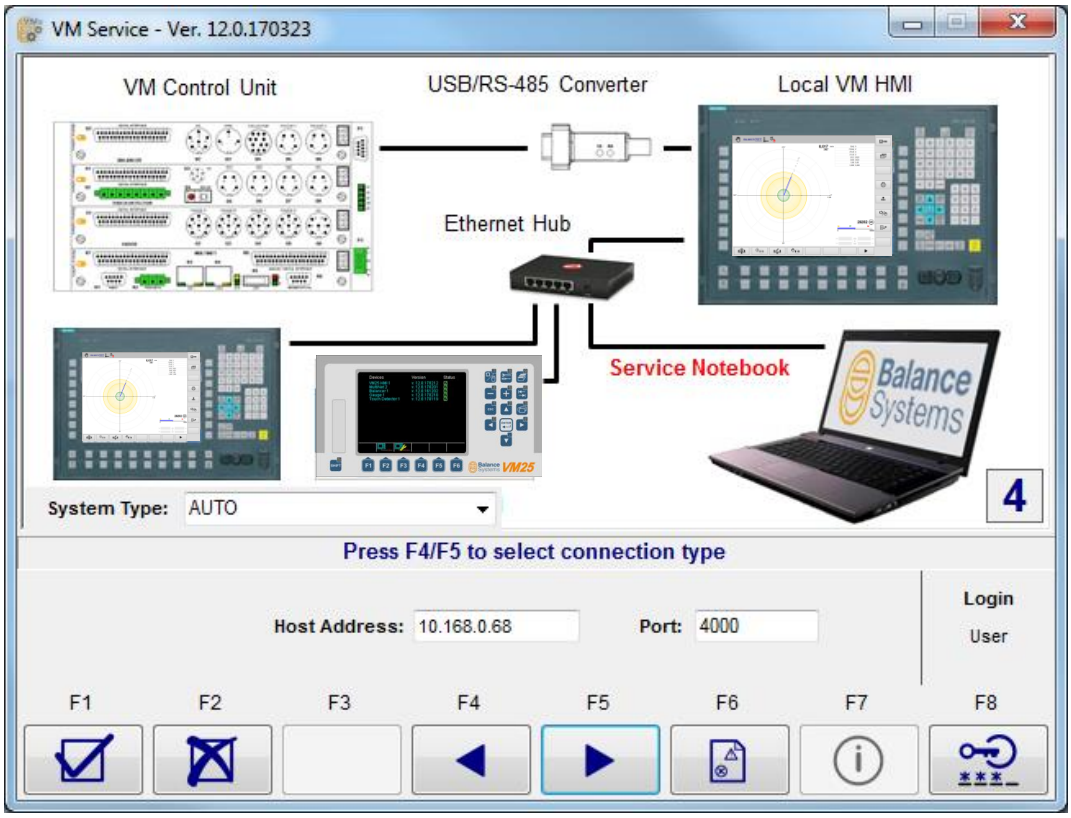
NOTE:
This connection requires an Ethernet RJ45 “patch” cable.

SCHEME 3 - Service notebook connected to the local computer where the VMX5 HMI application is installed.

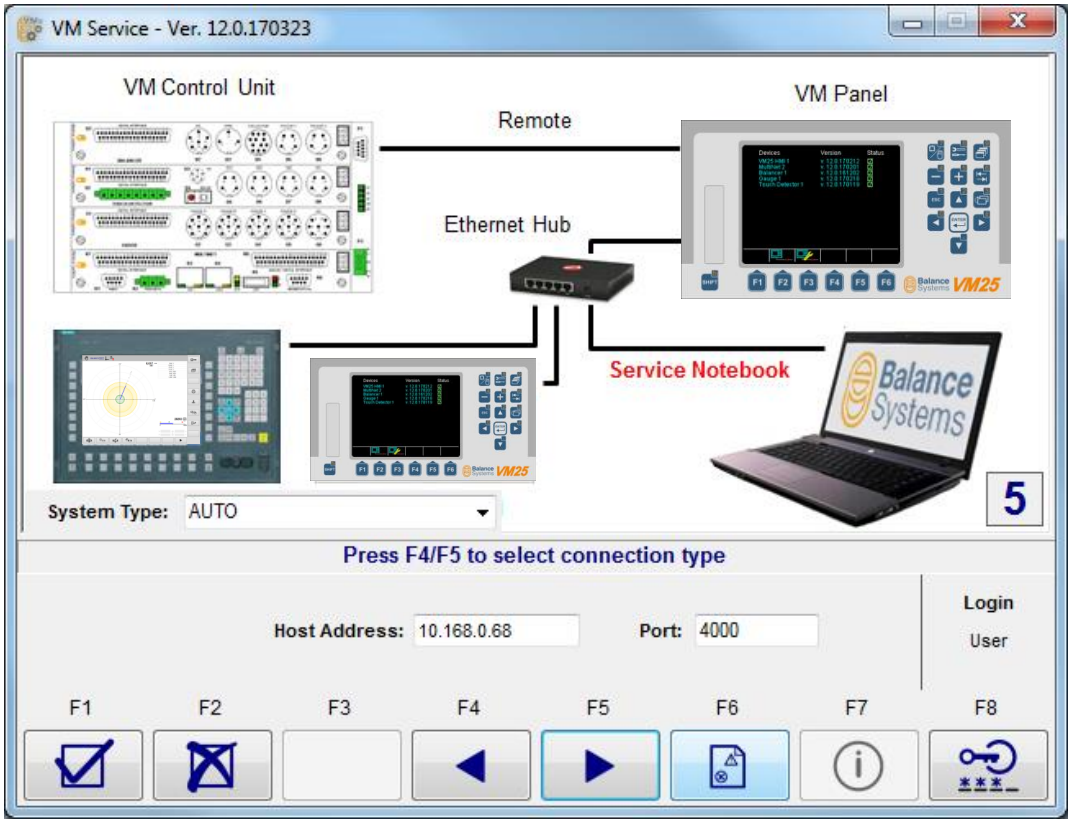


NOTE:
This connection requires an Ethernet RJ45 “patch” cable.

SCHEME 4 - Service notebook connected to a LAN through an hub or switch device.



SCHEME 5 - Service notebook connected to a LAN through an hub or switch device.

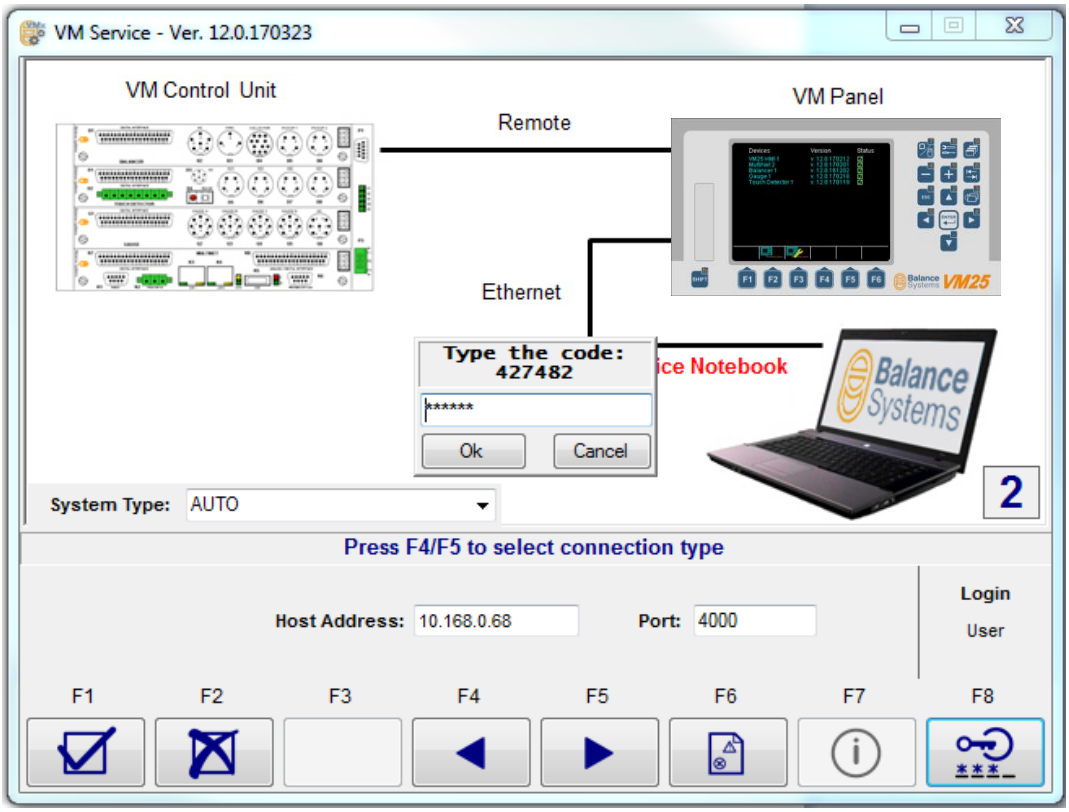


2.2.2. Login mode

The application always starts in “USER” mode:

- Press the button 

to access the login menu.
- Digit the displayed “Code” and press “OK” to activate the “SUPERVISOR” mode.

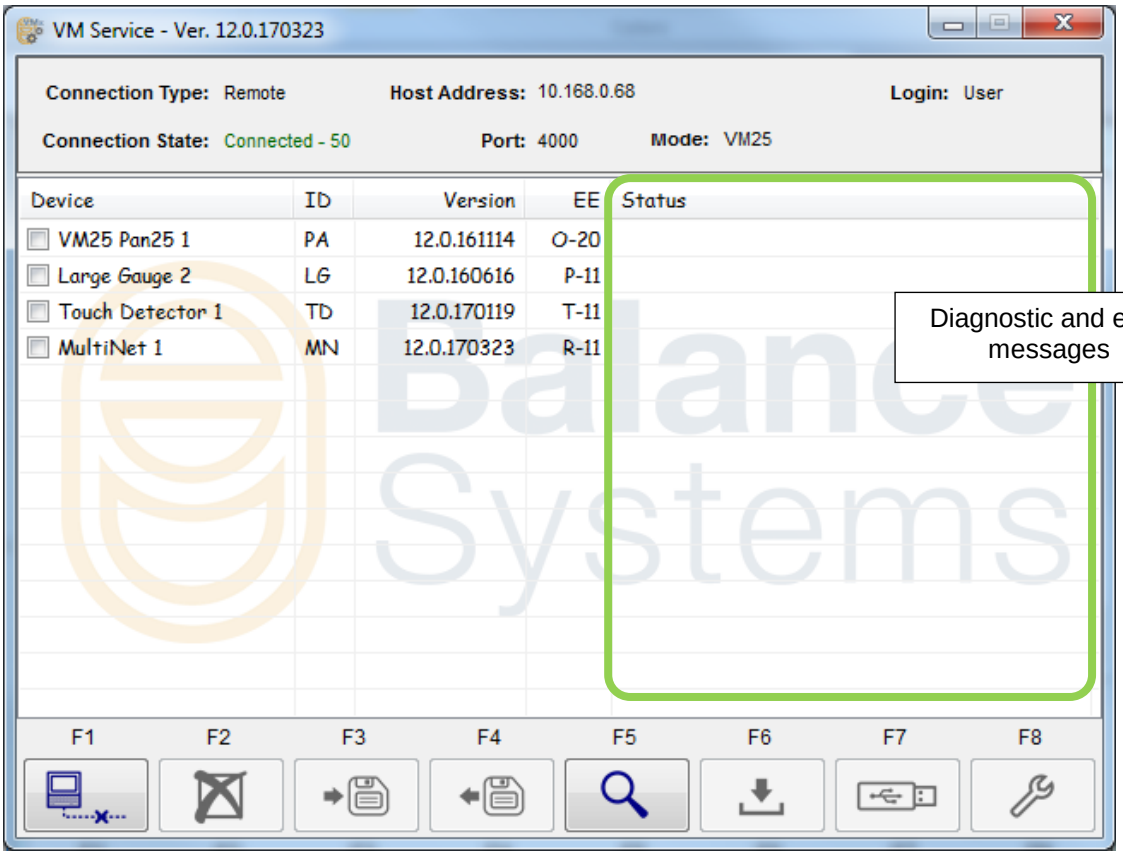


There are two different login mode.

Mode	Description
USER	For normal users, it allows: ▪ backup and restore operations on work and setup parameters. ▪ device software update
SUPERVISOR	For maintainance operations, it allows: ▪ full parameter access for backup and restore, including options and calibration ▪ device software update & backgrade ▪ formatting and preparing the USB pen-drive for maintenance operation on field ***WARNING**: The option and calibration data should be managed carefully. If incorrect values are restored the complete application could be damaged.* **During backup and restore operations which involve options and calibration, ask the support of Balance Systems service personnel.**

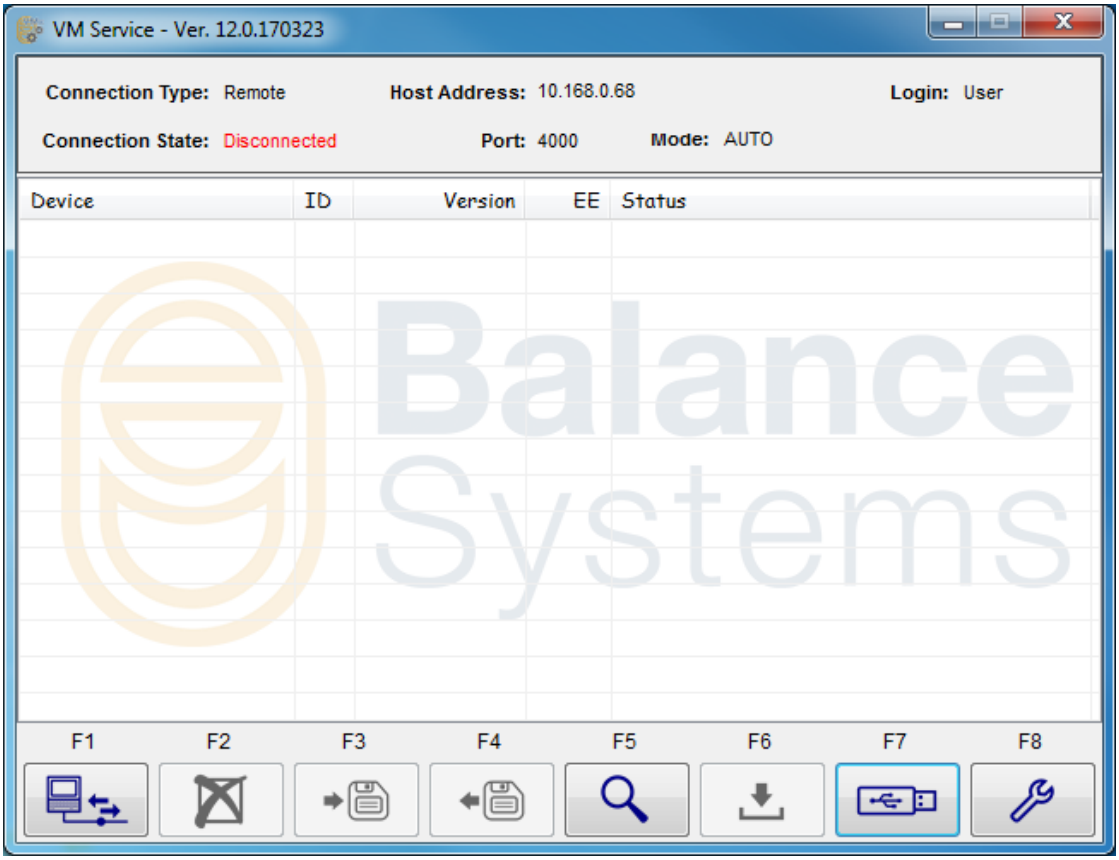
2.3. Diagnostic and error messages

In case of errors which occur during the connection and operation a message with an error code will appear in the area indicated below.



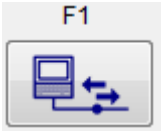
Error code	Description	Action
2	Commands locked by multinet card. The system is under control of the PLC through the multinet card. In this situation is not possible to proceed.	Wait and repeat the operation. If the multinet card does not release the control it is necessary to force the action from PLC side.
3	Manual mode locked by multinet card. The system is under control of the PLC through the multinet card. In this situation is not possible to proceed.	
6	System disconnected or switched off	Check connection to VMX5 and power supply
15	Bad message	Check the VMX5 network setup Check the VM service setup Repeat the operation
22	Communication SCADA-Device timeout	
150	Communication SCADA-Service timeout	
151	Communication SCADA-Service unplugged	
160	Restore file corrupted	Repeat the restore operations. If the error persists, use another restore file.
161	Restore file corrupted	
255	Generic error	Restart VM Service application

3. Service operation

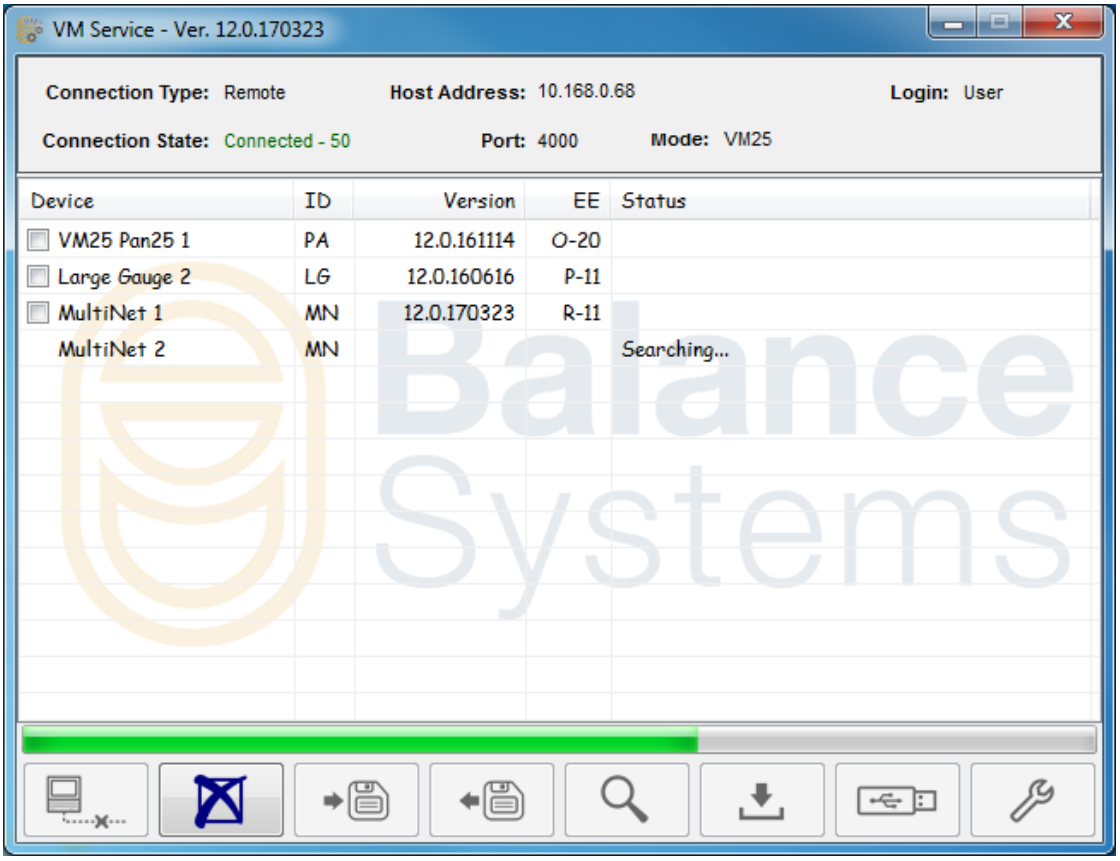


Icon	Command Name	Button	Description
	Connect	F1	VMX5 system configuration recognition
	Disconnect	F1	Disconnect VMX5 service
	Abort	F2	Abort the command in progress
	Backup	F3	Launch the backup function
	Restore	F4	Launch the restore function
	View	F5	Display of the backup file contents
	Upgrade	F6	Firmware upgrade
	USB Pen Drive Init	F7	Init an USB pen-drive for backup, restore and firmware upgrade operations
	Setup	F8	Configuration

3.1. Connection

- Be sure that all the hardware connections are linked.
- Press the button 

to obtain the system configuration
- For each recognized device is displayed:
  - “Device” = device name;
  - “ID” = device identification symbol;
  - “Version” = software revision number;
  - “EE“ = static memory version;
  - “Status” = state of the operation requested or error code (see “Diagnostic” paragraph).

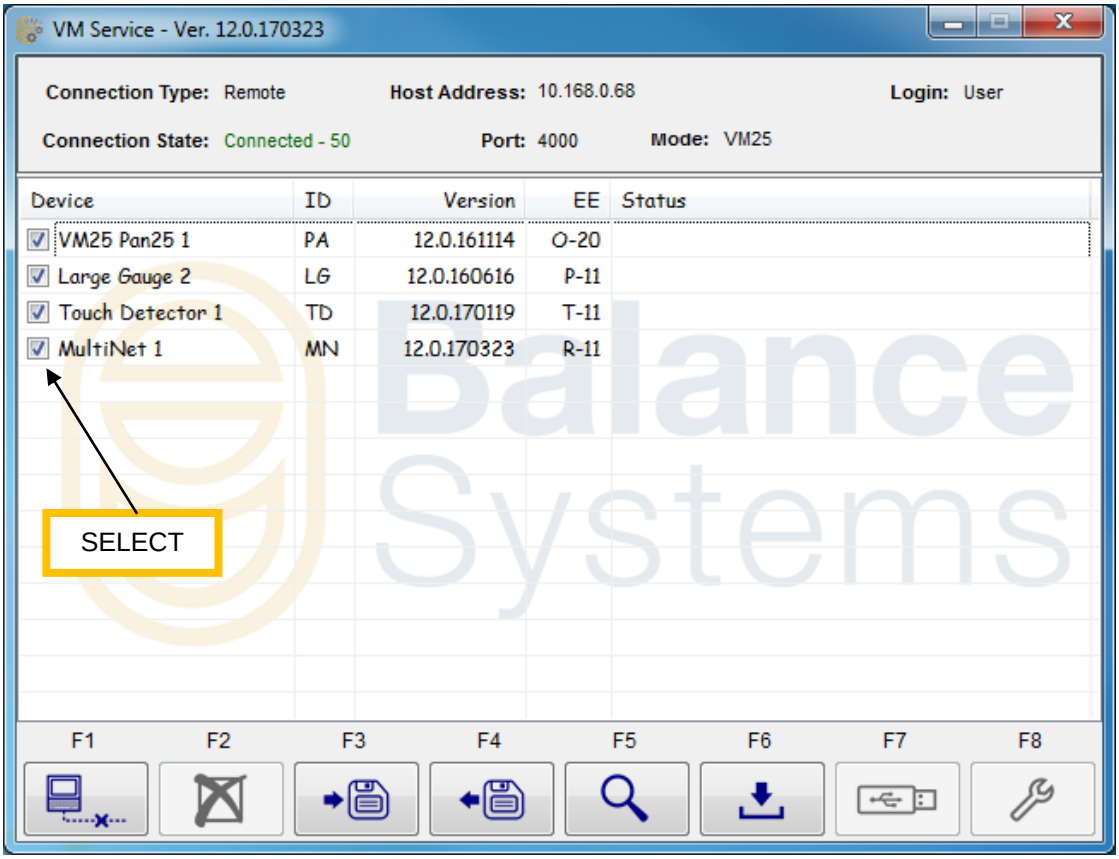


3.2. Backup

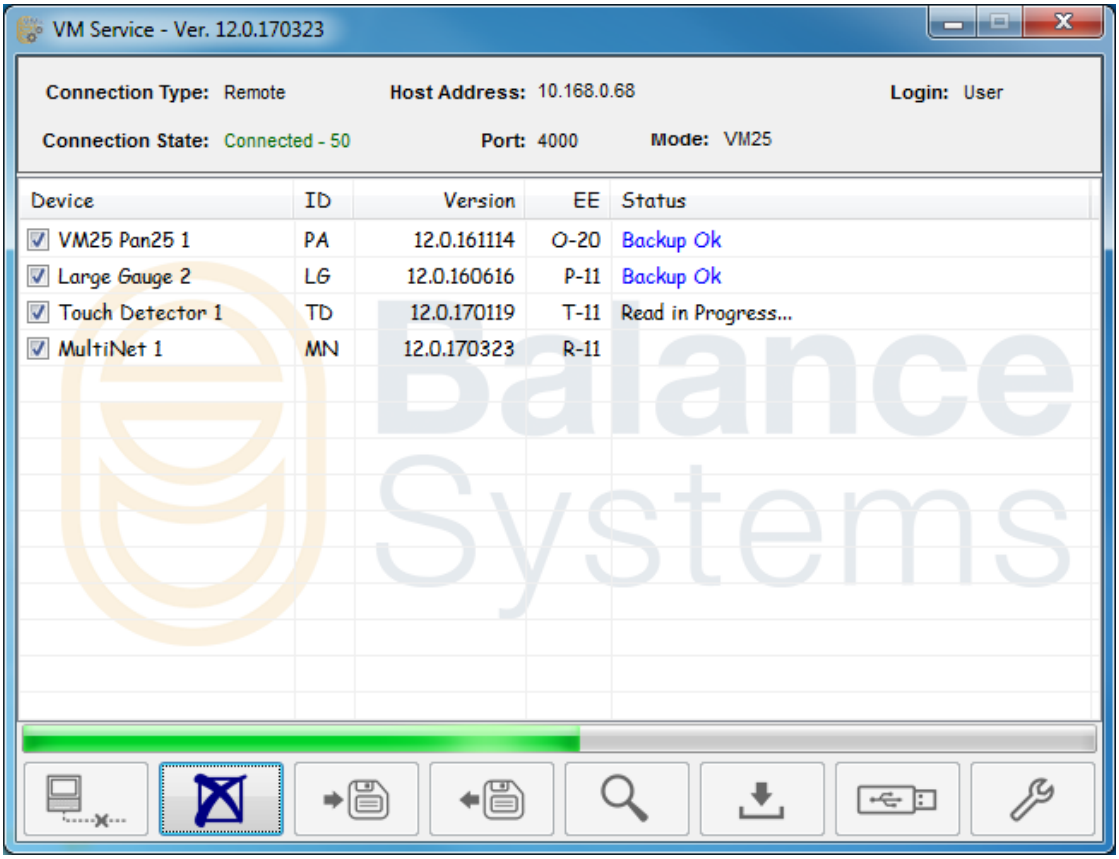
3.2.1. Backup execution

The backup function allows archiving of the configuration parameters of each recognized device.

- Select the devices to be archived using Ctrl + mouse “Click” or alternatively the standard navigation / selection keypad of the PC unit.



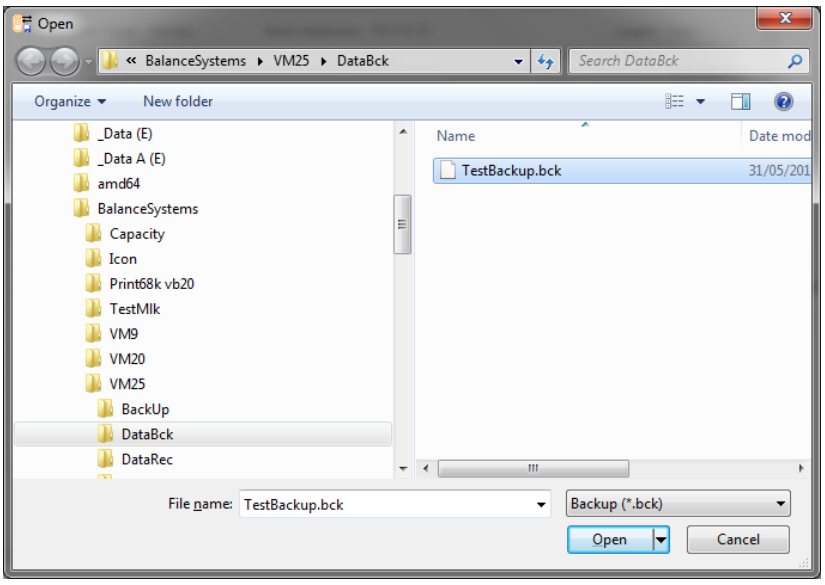
- Press the button 



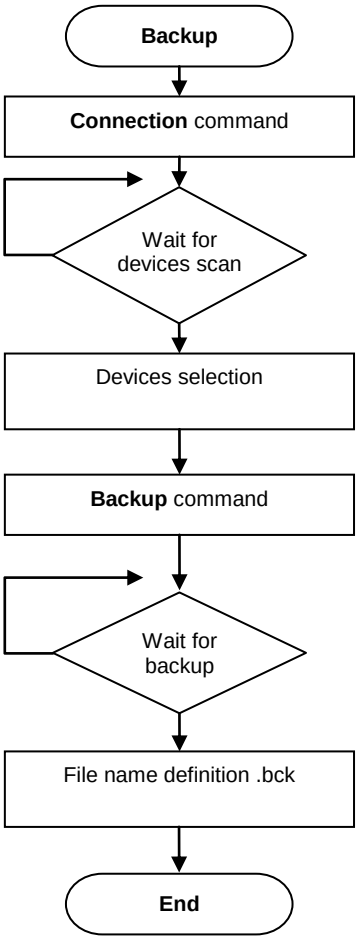
- Choose the archive folder and the filename. The default folder is:

  <Drive:>\BalanceSystems\VMX5\DataBck

  The backup file extension is **".bck15"** or **".bck25"** or **".bck"**



3.2.2. Backup function flow chart

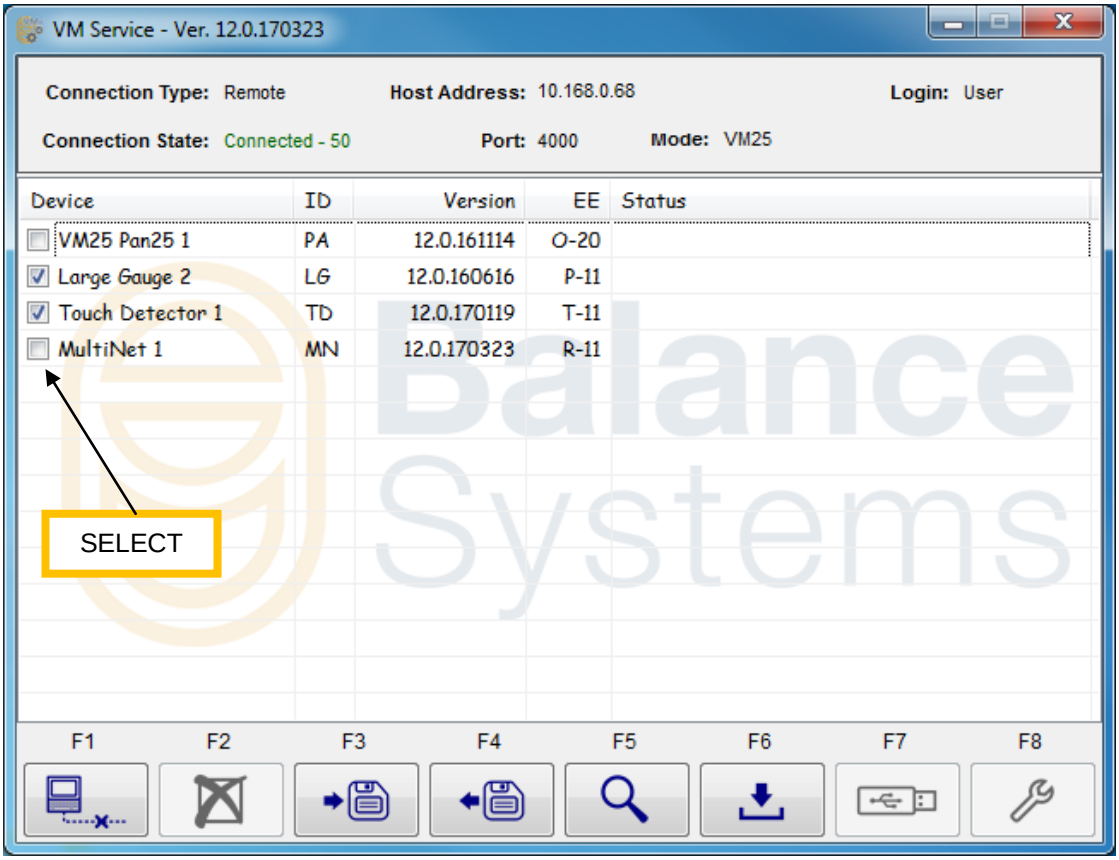


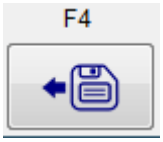
3.3. Restore

3.3.1. Restore execution

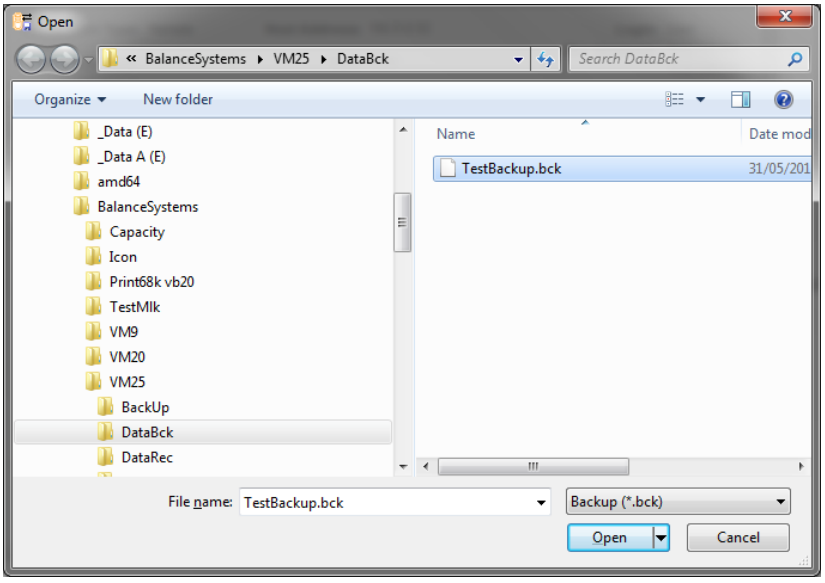
The restore function allows reloading of the configuration parameters of each recognized device.

- Select the devices to be restored using Ctrl + mouse “Click” or alternatively the standard navigation / selection keypad of the PC unit.

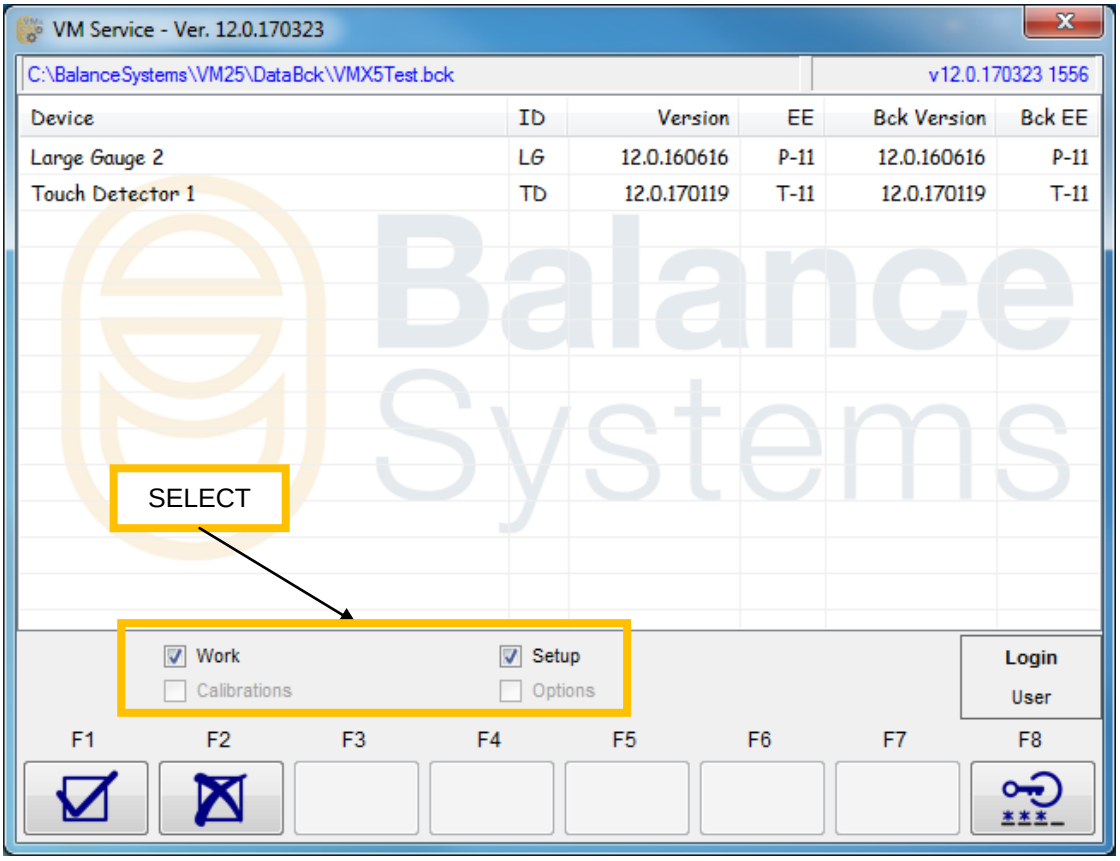


- Press the button 

- Open the data file. The file extension is **“.bck15**” or **“.bck25**” or **“.bck**”;



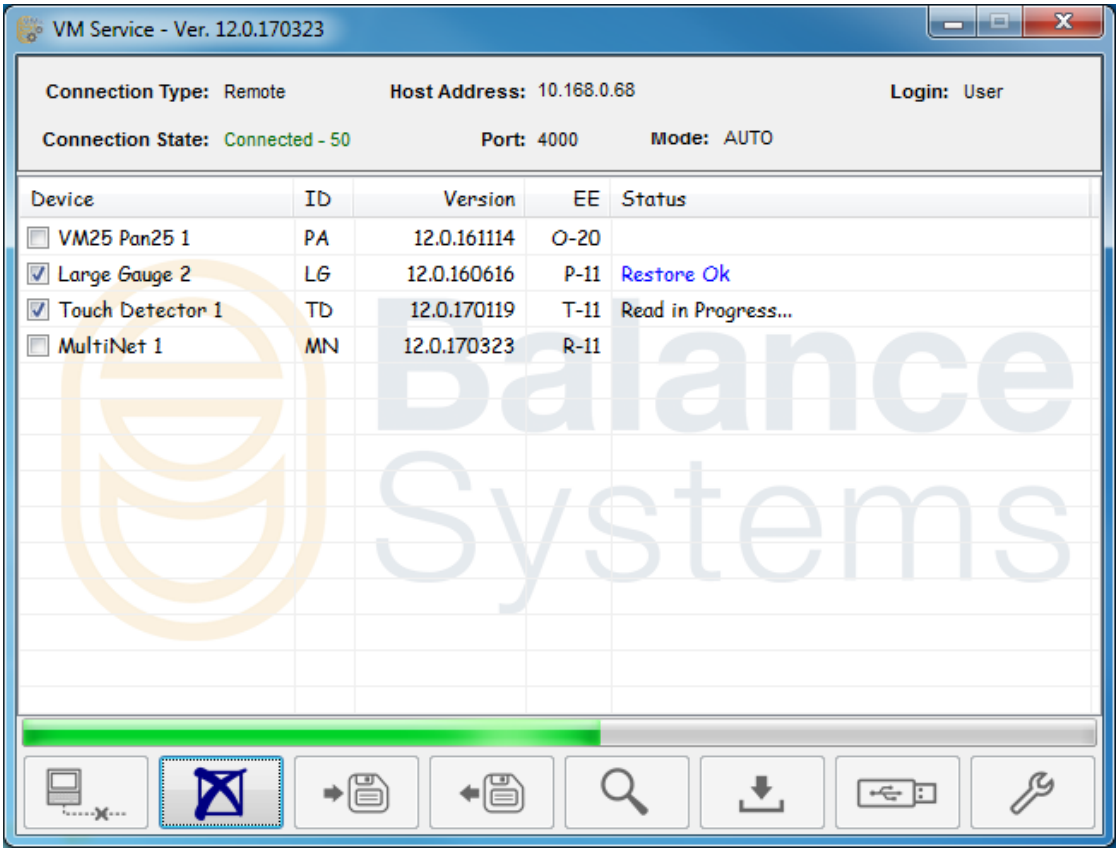
- Select the parameters groups to be restored



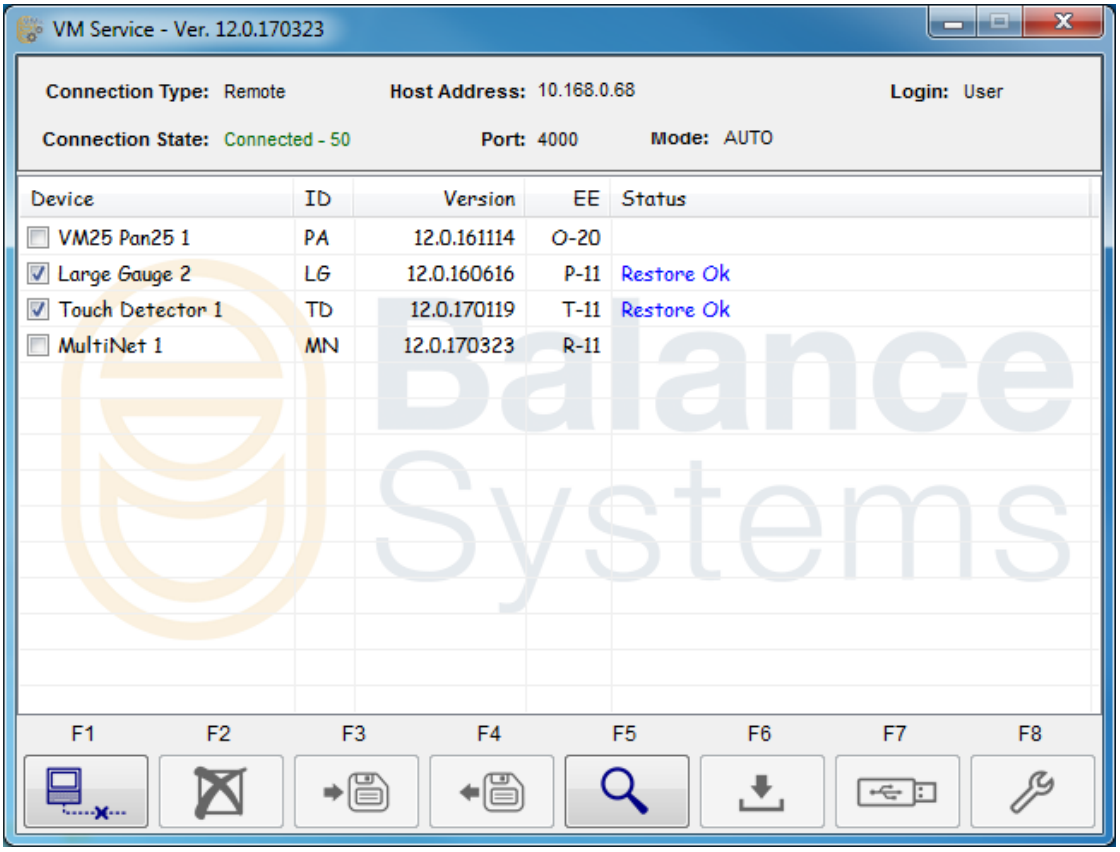
NOTE: to restore calibrations and options parameters, it is necessary to enable the “SUPERVISOR” mode.

- Press the button 

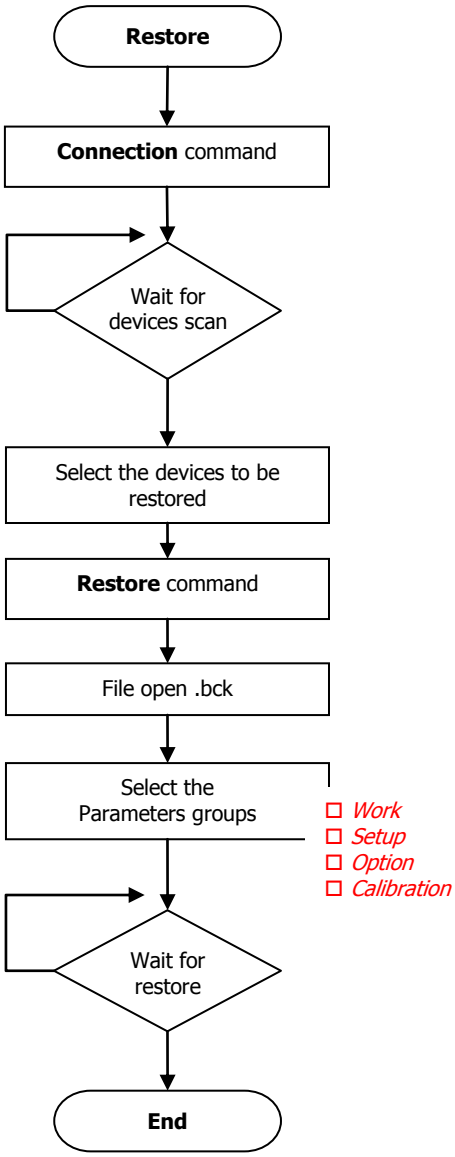
to start the procedure



- Wait for the message “Restore OK”



3.3.2. Restore function flow chart

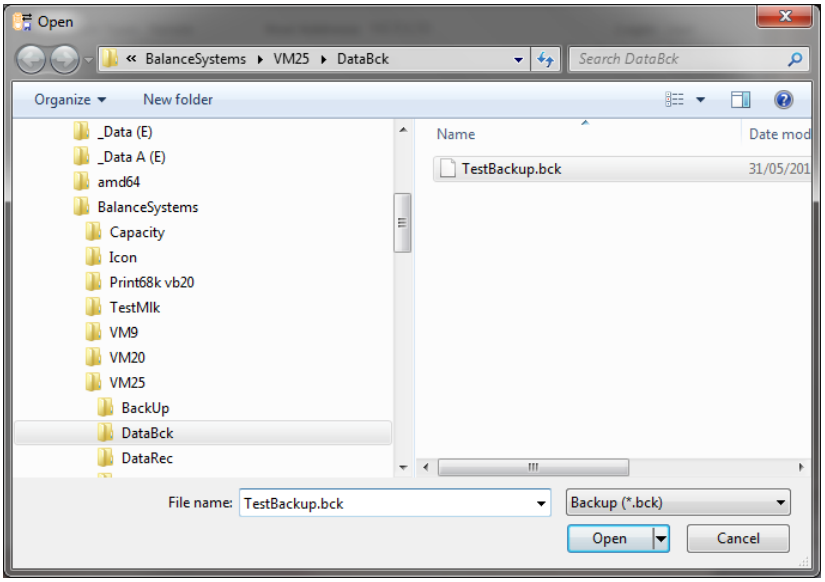


3.4. View

This function allows the display of the backup file content saved previously.

- Press the button 

- Open the data file. The file extension is **“.bck15**” or **“.bck25**” or **“.bck**”



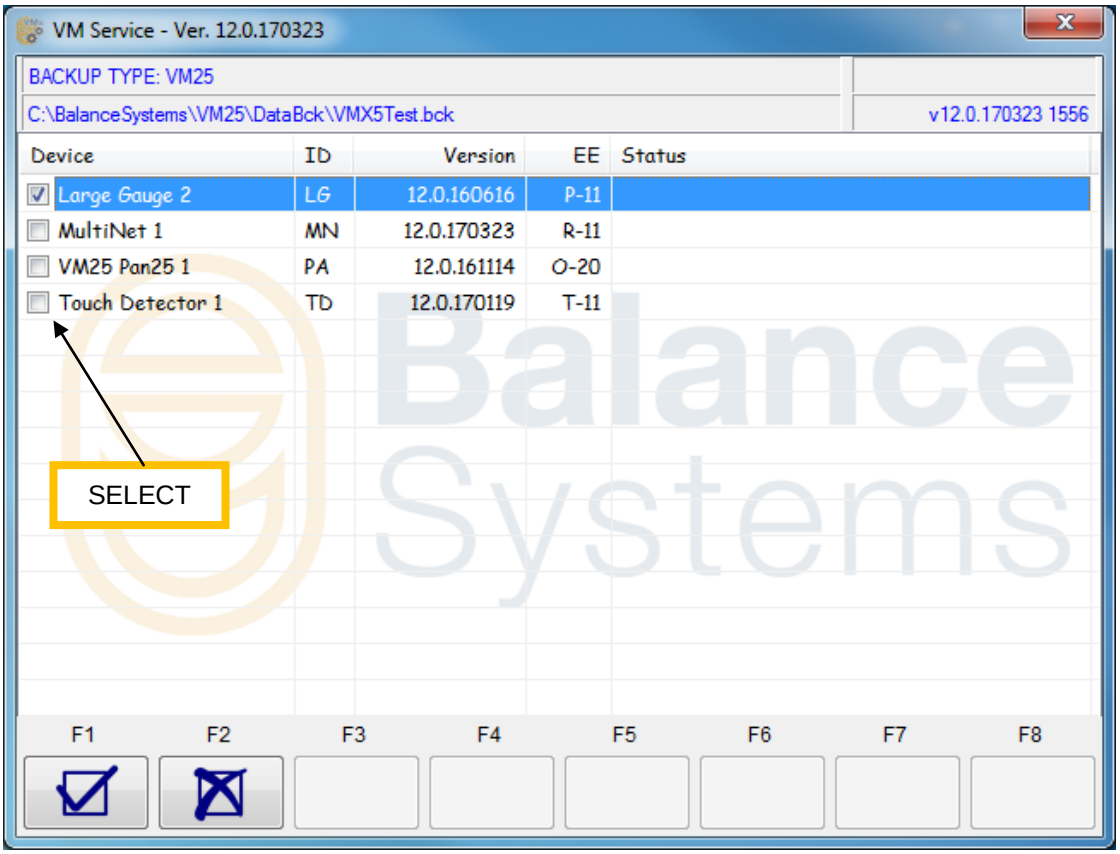
For the selected file the following information is displayed:

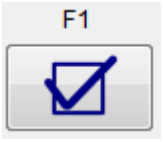
- File name (example C:\BalanceSystems\VMX5\DataBck\VMX5Test.bck)
- List of the devices included in the file

For each device is indicated:

- “Device” = device name
- “ID” = device identification symbol
- “Version” = software revision number
- “EE“ = static memory version

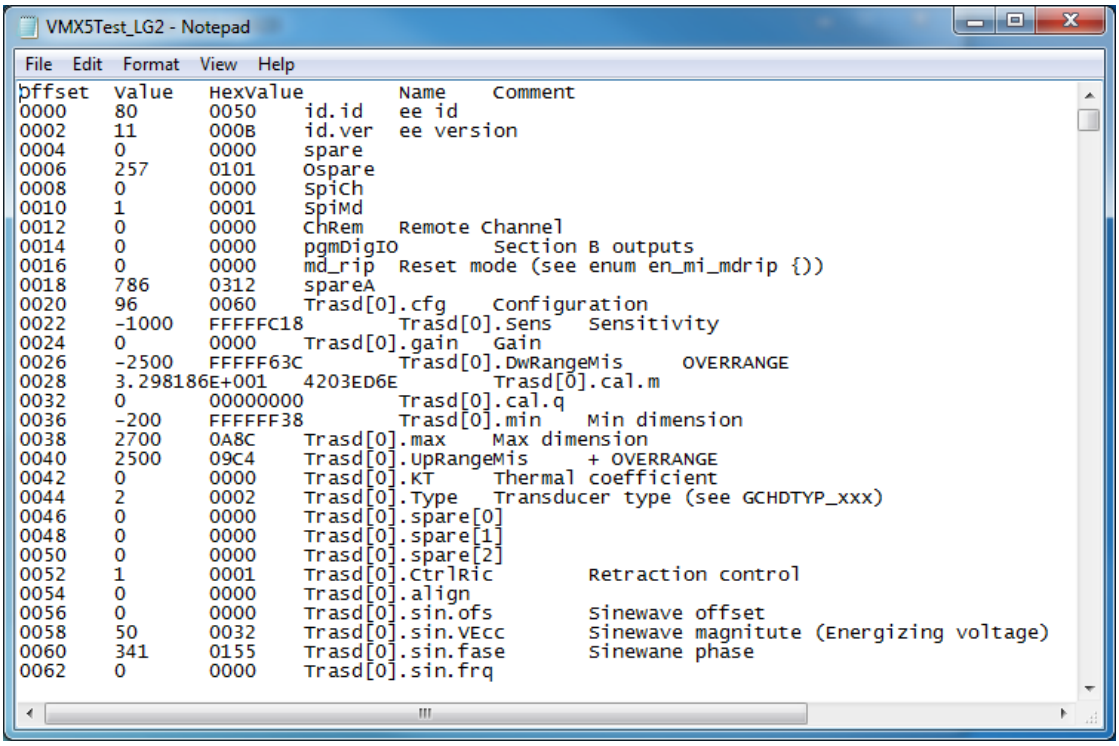
- Select the devices using Ctrl + mouse “Click” or alternatively the standard navigation / selection keypad of the PC unit.



- Press the button 

The application MS ®Windows Notepad will open a text file which displays in raw memory format the parameters of the selected device. The data format is the following:

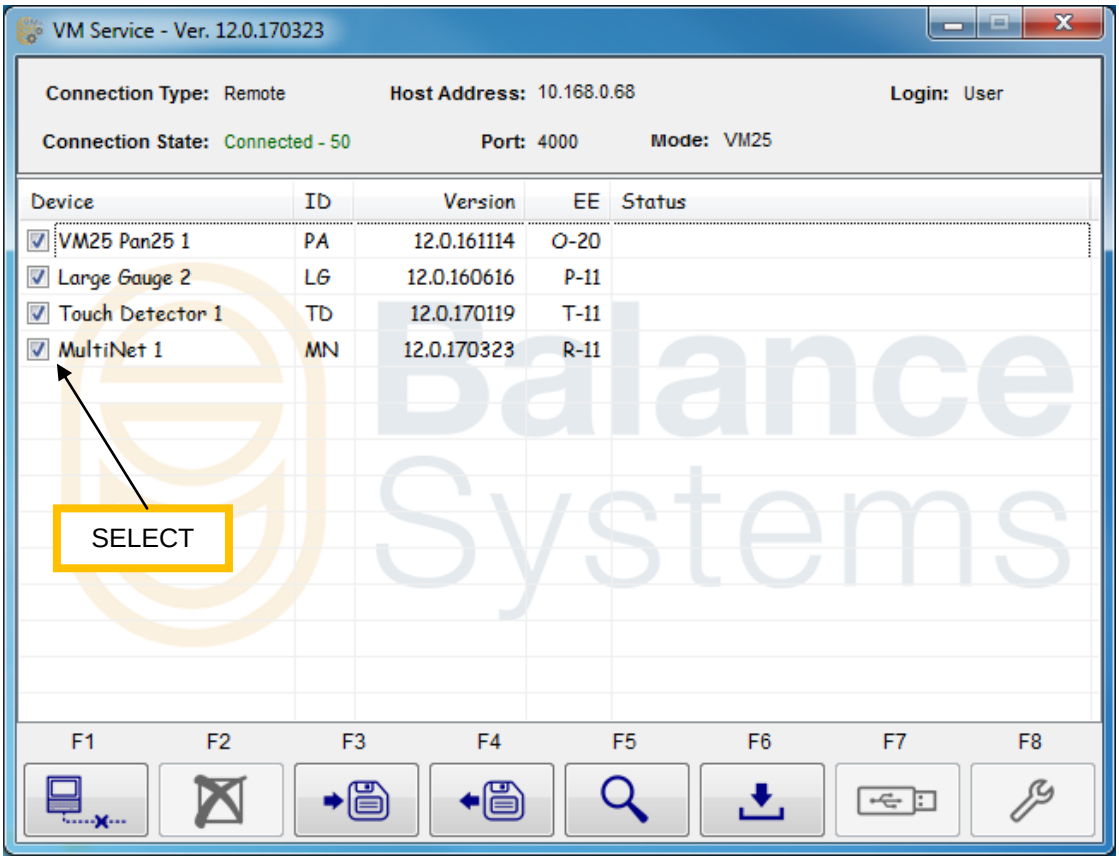
Offset	Value	HexValue	Name	Comment
Position in the memory	Decimal value	Hexadecimal value	Parameter name	Comment or description

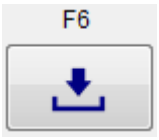

VMX5Test_LG2 - Notepad
File Edit Format View Help
Offset Value HexValue Name Comment
0000 80 0050 id.id ee id
0002 11 000B id.ver ee version
0004 0 0000 spare
0006 257 0101 Ospare
0008 0 0000 SpiCh
0010 1 0001 SpiMd
0012 0 0000 ChRem Remote Channel
0014 0 0000 pgmDigIO Section B outputs
0016 0 0000 md_rip Reset mode (see enum en_mi_mdrip {})
0018 786 0312 spareA
0020 96 0060 Trasd[0].cfg Configuration
0022 -1000 FFFFFC18 Trasd[0].Sens Sensitivity
0024 0 0000 Trasd[0].gain Gain
0026 -2500 FFFFF63C Trasd[0].DwRangeMis OVERRANGE
0028 3.298186E+001 4203ED6E Trasd[0].cal.m
0032 0 00000000 Trasd[0].cal.q
0036 -200 FFFFFF38 Trasd[0].min Min dimension
0038 2700 0A8C Trasd[0].max Max dimension
0040 2500 09C4 Trasd[0].UpRangeMis + OVERRANGE
0042 0 0000 Trasd[0].KT Thermal coefficient
0044 2 0002 Trasd[0].Type Transducer type (see GCHDTYP_xxx)
0046 0 0000 Trasd[0].spare[0]
0048 0 0000 Trasd[0].spare[1]
0050 0 0000 Trasd[0].spare[2]
0052 1 0001 Trasd[0].CtrlRic Retraction control
0054 0 0000 Trasd[0].align
0056 0 0000 Trasd[0].sin.ofs Sinewave offset
0058 50 0032 Trasd[0].sin.VEcc Sinewave magnitute (Energizing voltage)
0060 341 0155 Trasd[0].sin.fase Sinewane phase
0062 0 0000 Trasd[0].sin.frq

3.5. Software up-grade / down-grade

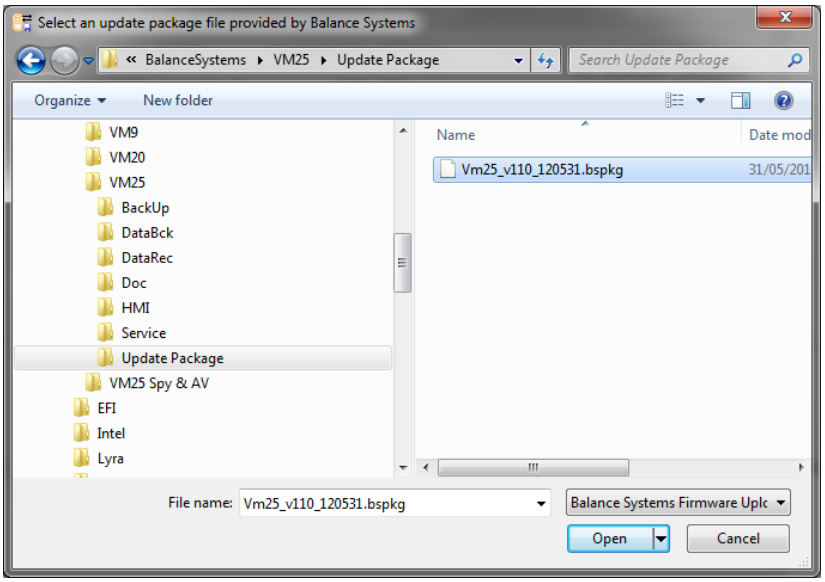
This function allows the software up-grade / down-grade of all the devices included into the VMX5 system.

- Select the devices to be updated using Ctrl + mouse “Click” or alternatively the standard navigation / selection keypad of the PC unit.



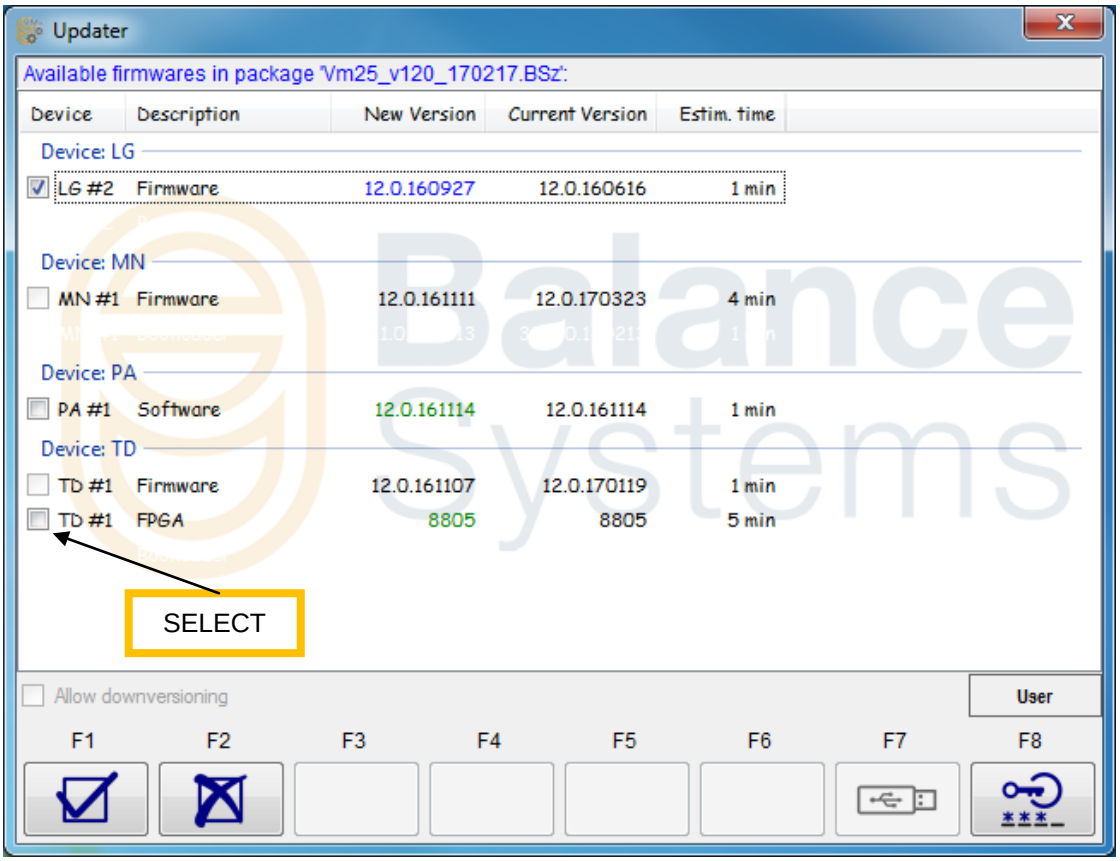
- Press the button 

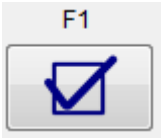
- Select an update package file (file type “ ***.BSz** ”, “ ***.BSz15** ”, “ ***.BSz25** ”) provided by Balance Systems



3.5.1. Operations in user mode (default)

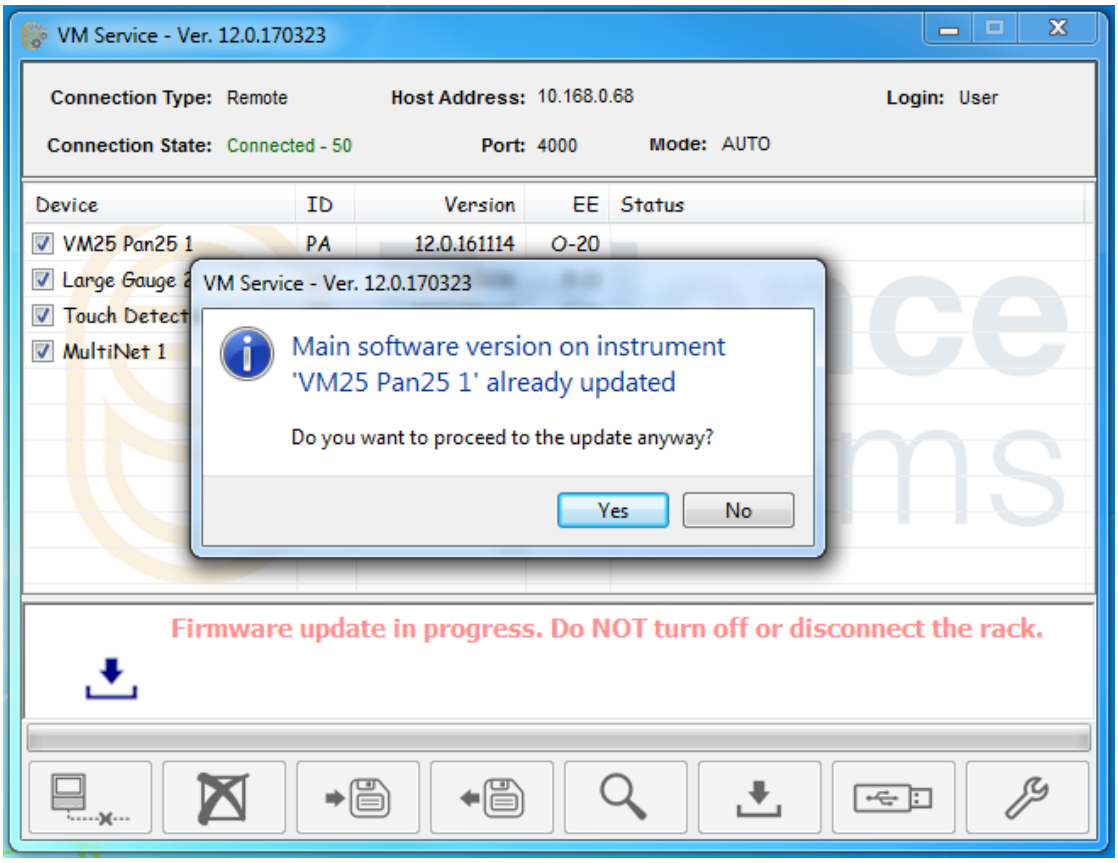
- The contents of the update package file is compared with the configuration of the VMX5 system: For each device included in the update package file is indicated:
  - "Device" = device name
  - "Description" = type of update: firmware or software
  - "New Version" = software revision number contained in the update package file. The status of the new version compared with the current version is highlighted by color:
    - Blue: **11.0.120528** > newer
    - Green: **11.0.120405** > same
    - Black: **11.0.120110** > older
  - "Current Version" = software revision number of the device in the VMX5 system
  - "Estimated time" = required time to update the device



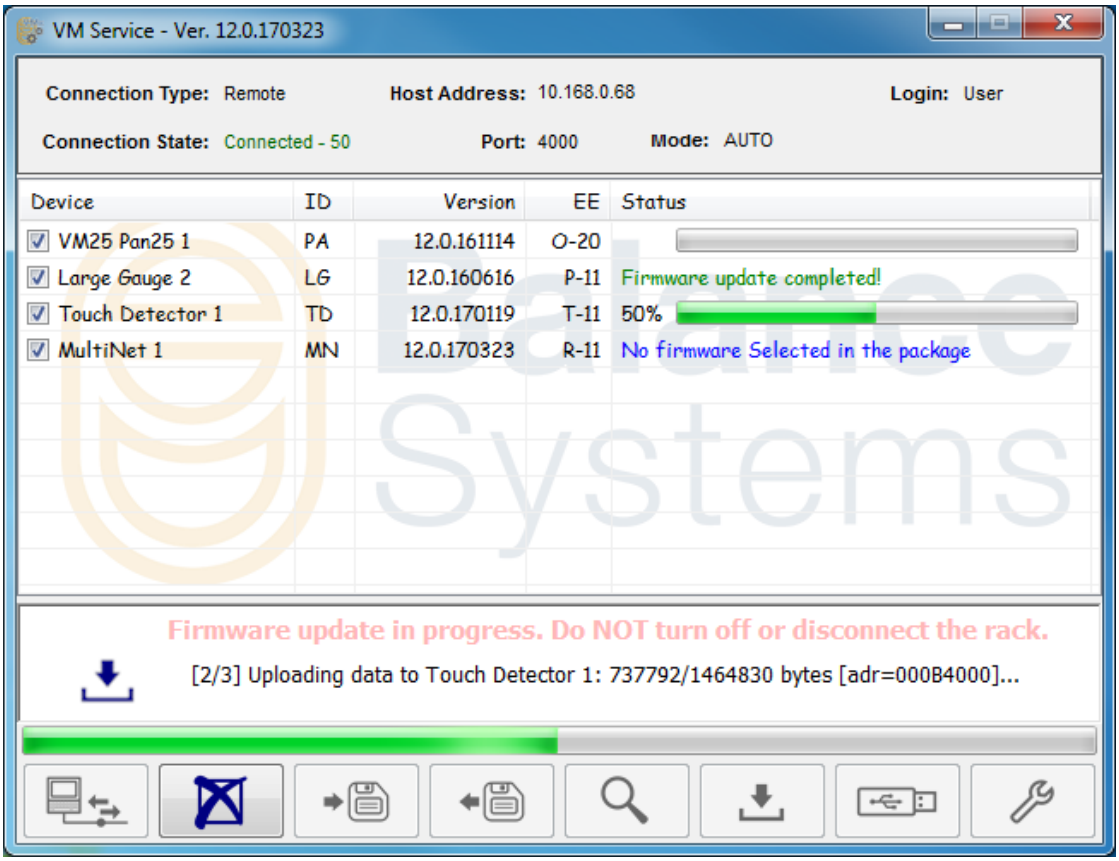
- Select the devices to be updated;
- Press the button 

to start the procedure.

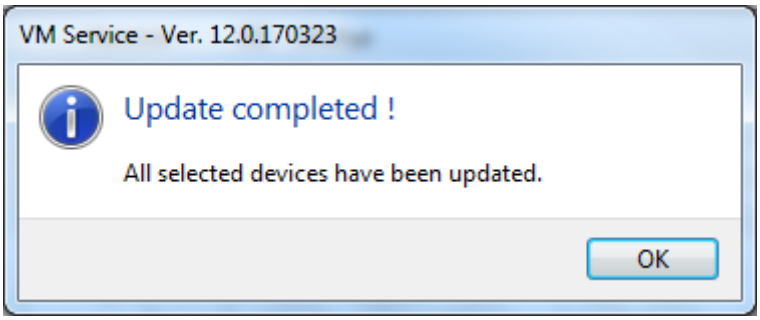
NOTE: Newer version will be updated automatically, same version needs to be confirmed, down-grade not allowed in user mode.



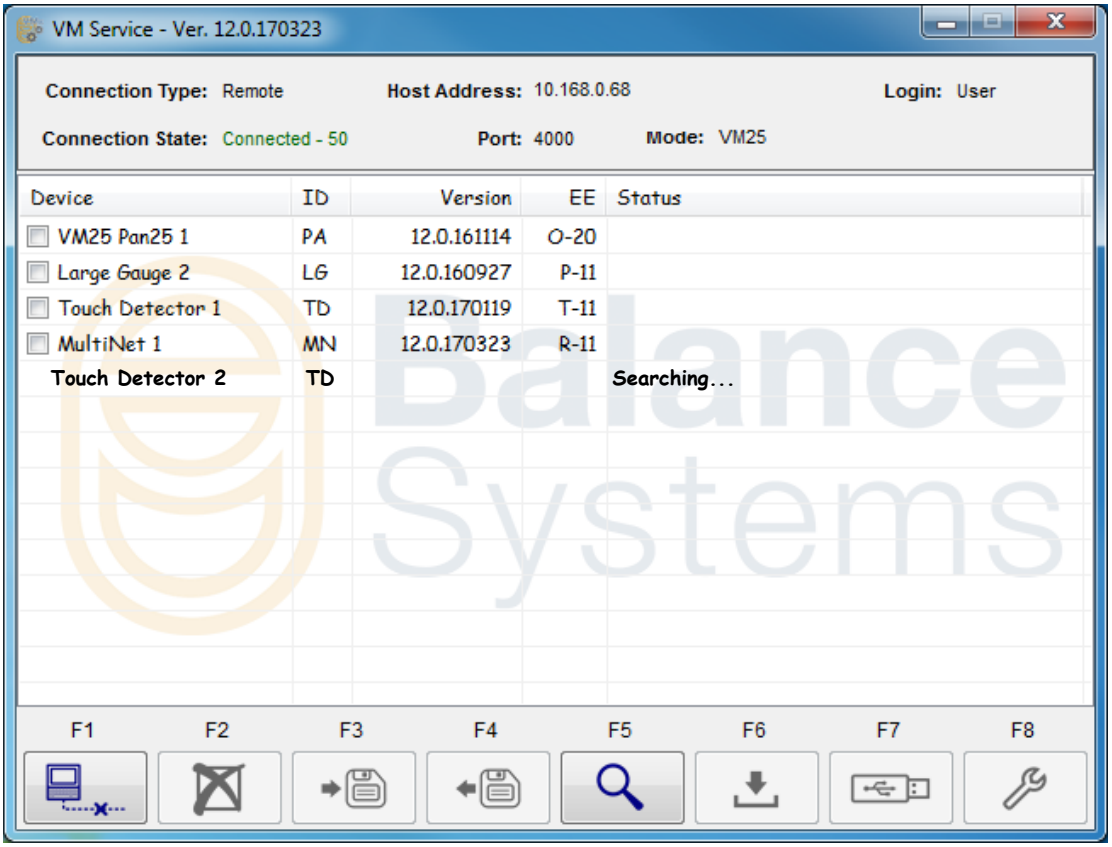
- The progress of the operations is shown as follow



- Wait for the message on screen



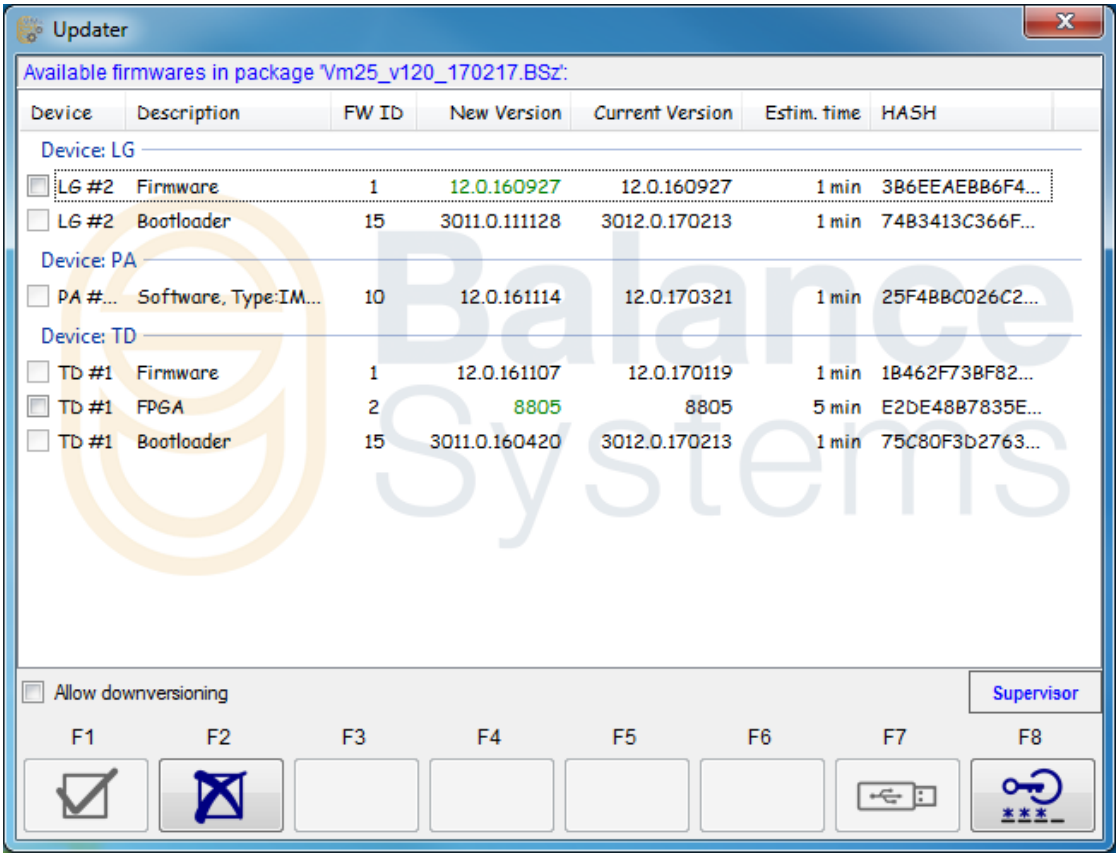
- Press “OK” to finish the operation and restart the connection with the VMX5 system.



NOTE: In case of new parameters managed by the new version installed, these will be initialized at their default value.

3.5.2. Operations in supervisor mode

- In supervisor mode more options are available to manage the up-grade and down-grade too.



- For each device it is possible to select the sub-components of the firmware to be updated. Normally these operations are guided by Balance Systems service personnel.
- In any case the procedure is the same as in user mode.

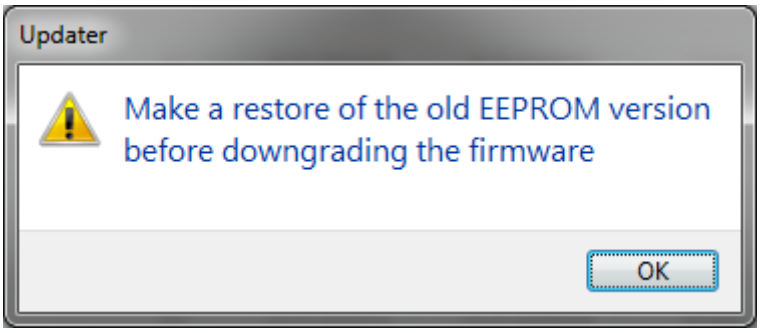
3.5.2.1. Software down-grade

NOTE: Preliminary requirements

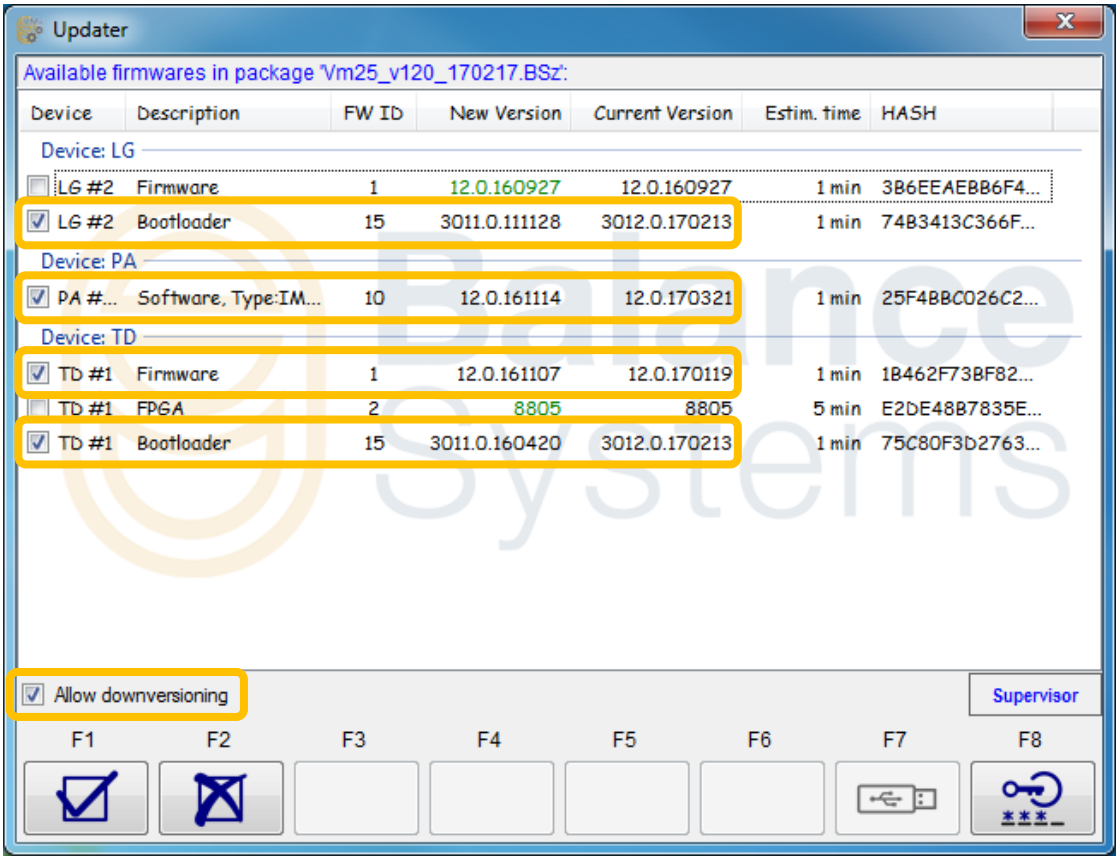
The down-grade operation is possible only if a backup file of the version desired for the target device is available. If not, all the calibration data will be lost. The target device has to be re-initialized (by Balance Systems service).

To proceed with the down-grade operation:

1. Execute a backup of the current configuration (see paragraph 3.2)
2. Execute a "full" (work, setup, options and calibrations parameters) restore using the original backup file of the version desired (see paragraph 3.3)

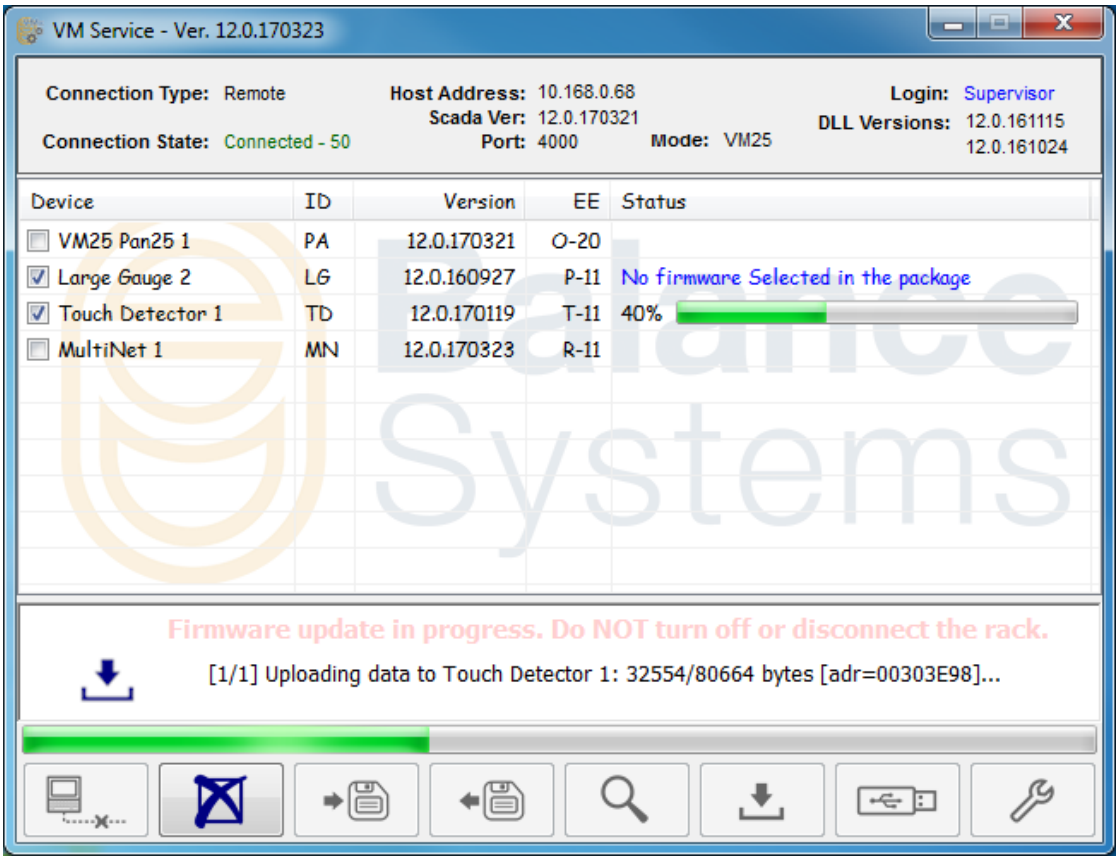


3. Do not switch off the VMX5 system otherwise the operation No.2 has to be repeated
4. Load the update package file (file type " ***.BSz** ", " ***.BSz15** ", " ***.BSz25** " provided by Balance Systems
5. Select the device(s) to be down-graded
6. Check "Allow downversioning" box

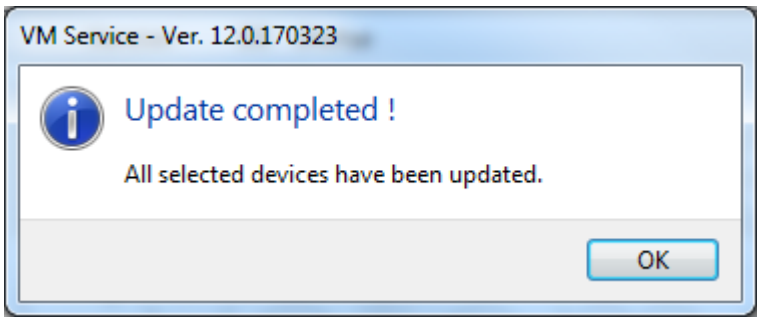


7. Press the button 

to start the procedure.



8. Wait for the message on screen.

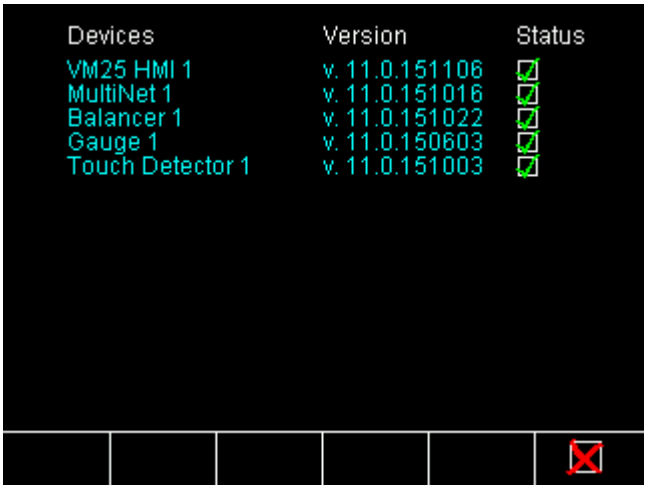


3.6. Firmware auto-update procedure (panel p/n 9PAVMX511CL300)

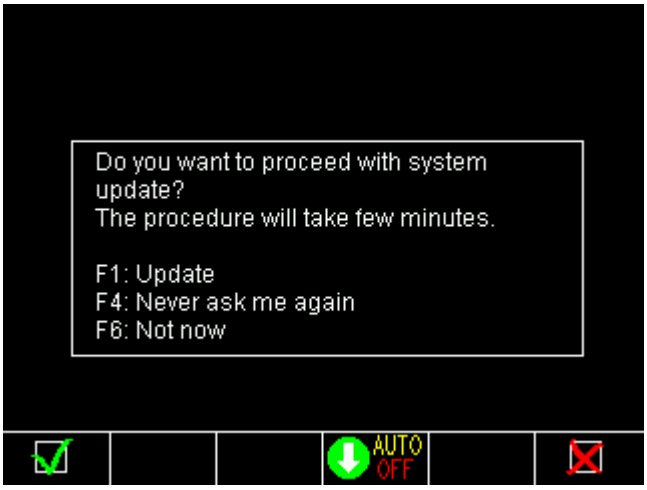
3.6.1. Auto-update

NOTE: this procedure is needed at any panel replacement with the new panel with p/n 9PAVMX511CL300.

- Power on VMX5 system.
- At the end of the loading the system scans the control unit and displays the firmware versions of the recognized devices.



- Then a selection window will appear automatically.



- To start the auto-update procedure, select F1 by pushing the relative button. The system will automatically start to load the new firmware (the procedure will take few minutes).
- Wait until the panel restarts.

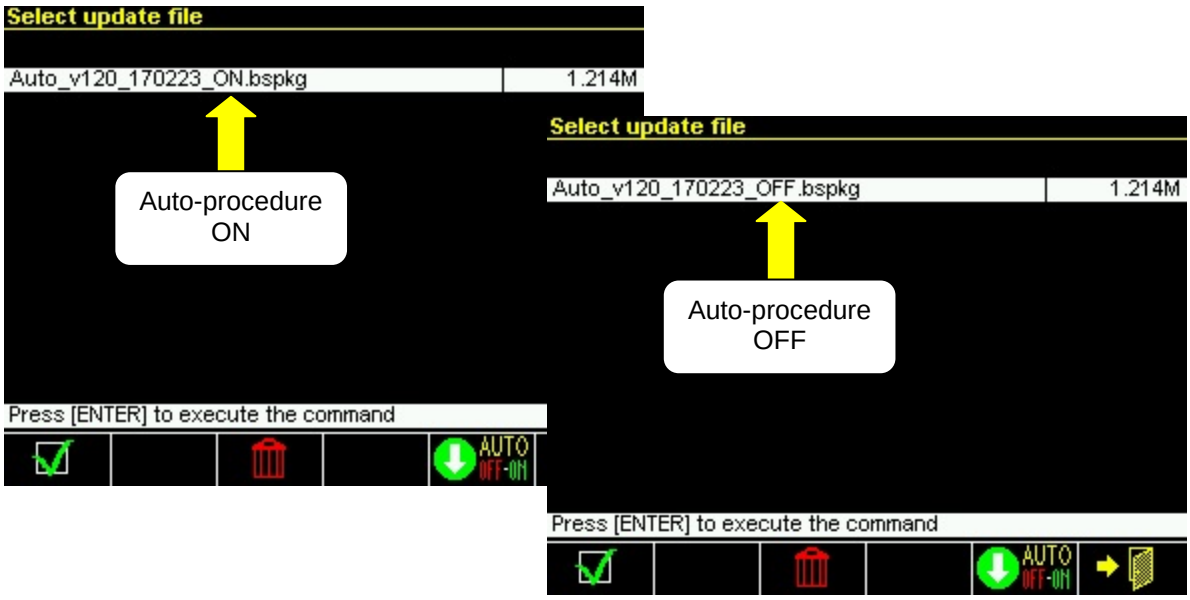
3.6.2. Enable / disable auto-update

The following instructions are useful in case you need to repeat the same upgrade operation on further VMX5 systems.

The auto-update procedure start automatically only if enabled.

Follow the procedure 3.7.2.1 to access the “Select update file” page. With button F5 it is possible to toggle ON / OFF the auto-update feature.

- Auto_v120_yymmdd_ON = Auto-update enabled
- Auto_v120_yymmdd_OFF = Auto-update disabled



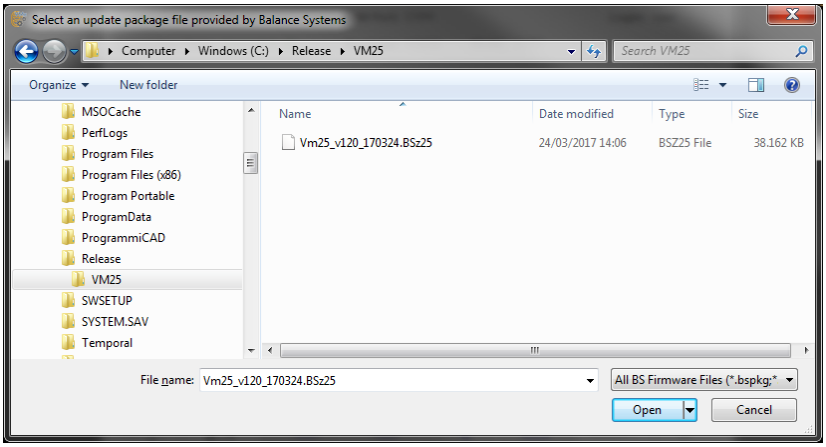
NOTE: after every auto-update procedure, the system will autmatically switch “OFF” the parameter.

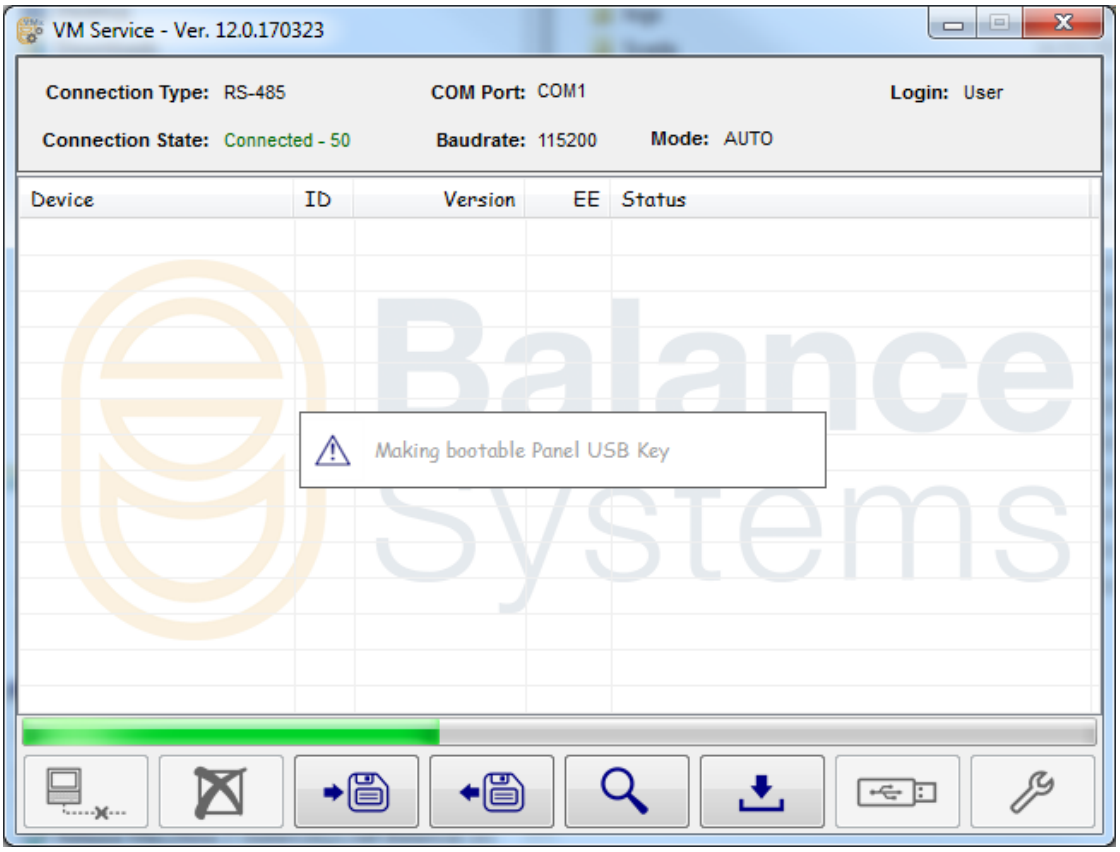
3.7. USB pen-drive for backup, restore and firmware up-grade

3.7.1. USB pen-drive setup

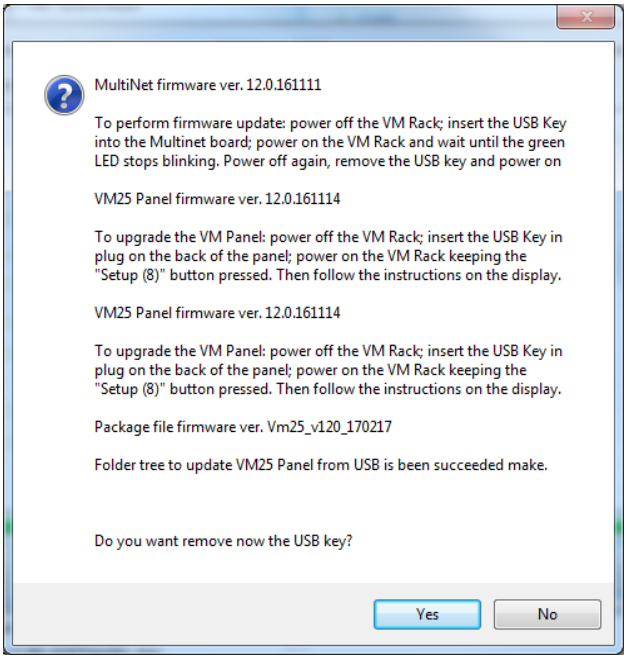
- Insert an USB pen-drive into an USB port of the PC. The pen-drive should be formatted as FAT32. If the pen-drive is not formatted the VMX5 service will do it.
- Press the button 

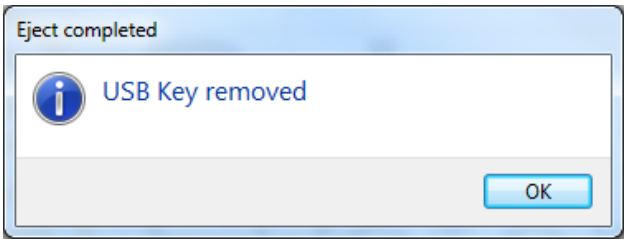
to enter in the procedure
- Select an update package file (file type " ***.BSz** " or " ***.BSz15** " or " ***.BSz25** ") provided by Balance Systems and press "open" to start the creation of the device.



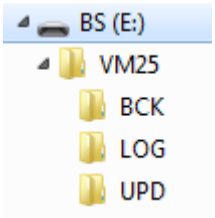


- At the end of the procedure, the following message will appear on screen.





- At the end of the procedure the pen-drive will contain:
  - VMX5 PANEL software update files
  - MULTINET CARD firmware update files
  - Full system update package files
  - Folder structure for log files, backup/restore files

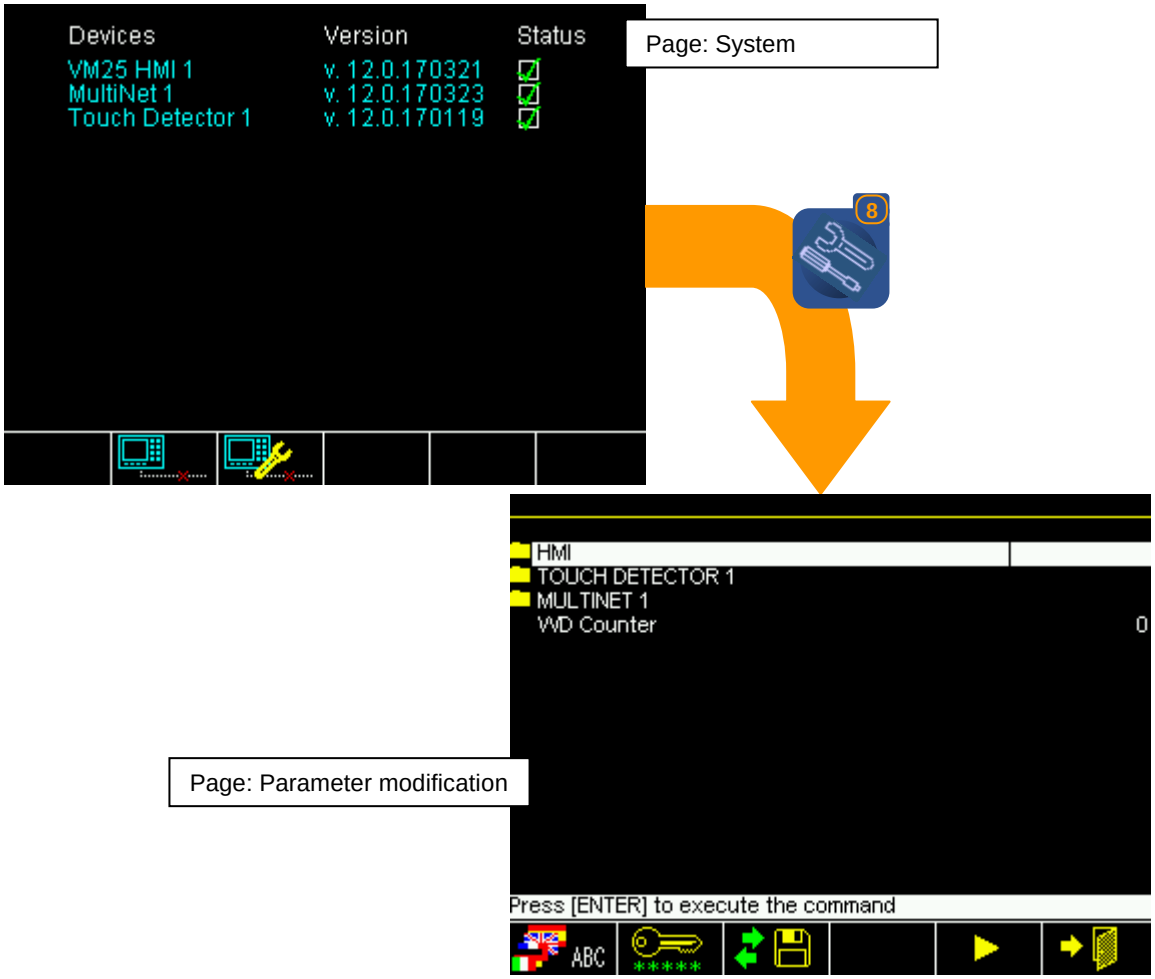


Folder	Description
VMX5	VMX5 applications folder.
BCK	Backup / Restore files folder.
LOG	Data log files. The log files contain all the details of the operation executed.
UPD	*.bspkg files for software / firmware update.

3.7.2. Use of the USB pen-drive

3.7.2.1. Backup, Restore, Software update

- Insert an USB pen-drive, prepared with the procedure described in the previous paragraph, into the USB port (connector H3) on the back side of the control panel.
- The VMX5 system should be switched on.
- Press the button **Change page**  until appears “System” on the screenbox.
- Press the button **Parameters** 



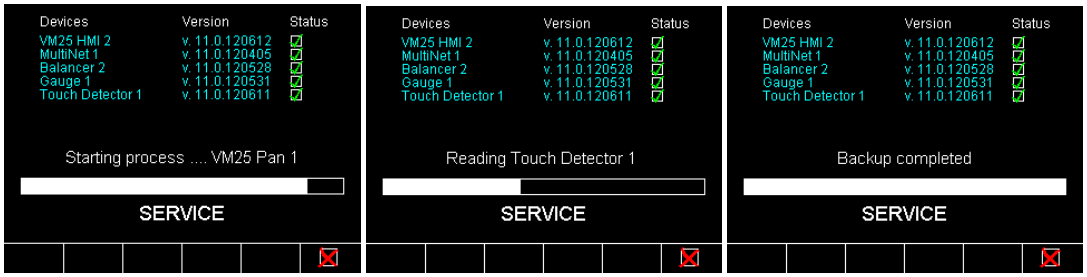
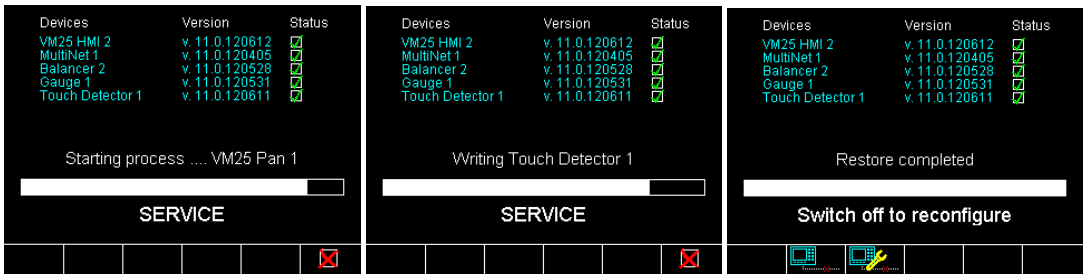
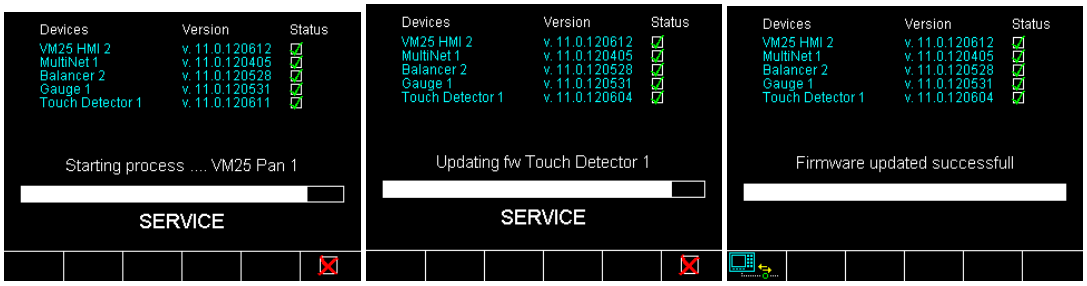
- Press the button  to access the following menu

Icon	Command name	Button	Description
	Previous menu	F1	Previous commands menu
	System Backup	F2	Create a full system backup which can be used to restore the actual system only. The filename will contain info on MAC address of the actual VMX5 panel. The file (filename example) “VMX5_0060350a881d_00.bck” will be saved in the folder “\BCK\” of the USB pen-drive. **NOTE**: In the filename: 0060350a881d = MAC address of the VMX5 panel 00 = progressive number of the backup files
	Master Backup	F3	Create a full system backup which can be used as master to create a twin system. This feature can be used to repeat the configuration of a system on different machines. The file “VMX5_MASTER.bck” will be saved in the folder “\BCK\” of the USB pen-drive.
	Restore	F4	Execute a system parameters restore (work, setup and option parameters). The file “ *.bck ” (system “VMX5_0060350a881d_00.bck” or master “VMX5_MASTER.bck”) must be present in the folder “\BCK\” of the USB pen-drive. The contents of the folder “\BCK\” of the USB pen-drive is shown to allow the file selection.
	Software Upgrade	F5	Execute the software / firmware upgrade of the full VMX5 system (panel and all the connected devices). The file “ *.bspkg ” must be present in the folder “\UPD\” of the USB pen-drive. The contents of the folder folder “\UPD\” of the USB pen-drive is shown to allow the file selection. Example: “VMX5_v120_120531.bspkg” update package file supplied by Balance Systems Service Dept. **NOTE**: In the filename: v120 = software / firmware version 120531 = date of release
	Log viewer	F6	Shows the contents of the log file for diagnostic

Further commands available in the Restore / Software Upgrade procedures

Icon	Command name	Button	Description
	Confirm	F1	Confirm the file selection and start with the restore / upgrade procedure
	Delete	F1	Delete the selected file
	Exit	F6	Exit

- Wait for the procedure complete

Backup	
Restore	
Software Upgrade	

3.7.2.2. Log file viewer for diagnostic

Use the buttons  and  to scroll the file contents. The log file is a text file, stored in the USB pen-drive in the "\LOG\" folder, which can be exported and sent to Balance Systems Service for further analysis.

Icon	Command name	Button	Description
	Delete	F1	Delete the selected file
	Exit	F6	Exit

3.7.2.3. VMX5 Panel software update (init procedure)

The following procedure should be used to re-initialize the bootloader and the software on the VMX5 control panel only.

Preliminary steps:

- Check that the following files are present on the root of the USB pen-drive. Other files can be present or not depending on the software release.
  - `uImage`
  - `uImage-bw.jffs2`
  - `uImage-tft.jffs2`
  - `program.txt`
  - `u-boot_yymmdd.bin`

Procedure:

- Power off the VMX5
- Plug in the USB pen-drive into the USB port (connector H3) on the back side of the control panel
- Power on the VMX5 keeping pressed the setup button 
- Wait for the message "update software ?"
- Release the button 
- Press  to execute the software upgrade or press  to skip the procedure.
- Wait for the complete execution. The process will take some minutes.
- At the end of the process the VMX5 restarts automatically for normal operation.

NOTE: *If during the operation* ***"Bad magic number"*** *message* ***appears on screen****, it means that the USB pen-drive is not recognized correctly. Try to format the USB device or change it with a new one.*

3.7.2.4. Multinet card firmware update (init procedure)

The following procedure should be used to re-initialize the firmware on the Multinet card only.

Preliminary steps:

- Check that the following files are present on the root of the USB pen-drive. Other files can be present or not depending on the software release.
  - `Boot.inf`
  - `MN_01.bin`
  - `Multi.inf`

Procedure:

- Power off the VMX5
- Plug in the USB pen-drive into the USB port (connector K5) on Multinet card front panel
- Power on the VMX5.
- The firmware on Multinet card will be automatically updated to the newer version. Yellow and green led will start to blink.
- At the end of the procedure, yellow led will stop to blink and green led will start to slowly blink.
- Power off and Power on the system.

4. Appendix

4.1. Use with VM20 System

This product cannot be used with VM20, VM21, VM22, VM23, VM24 Systems.

4.2. Use with VM25 system version 10.x

This product cannot be used with VM25 System version 10.x.

The backup and restore operation on VM25 System released in version 10.x is managed with VM25 Service package up to version 11.x.

NOTE: in case of connection by USB/RS-485 converter the baud rate should be programmed to 9600 baud.

4.3. Customer service

Balance Systems s.r.l.
via Ruffilli 8/10
20060 Pessano con Bornago (Milan) - Italy
Tel. +39.02.9504955 - Fax. +39.02.9504977
E-mail : systems.service@balancesystems.it
Web: www.balancesystems.com