



Basic Module V2.2

Installation Manual

Document No.	e1116c
Edition	06.98
Supersedes	e1116b
Manual	Software Installation
Section	1

Table of contents

1 Before you begin	1
2 Introduction	2
3 Installation requirements	3
3.1 Hardware required	3
3.2 Software requirements	4
3.3 Memory requirements	4
3.3.1 Hard disk	4
3.3.2 RAM memory	4
3.3.3 Virtual disk	5
3.3.4 Optional devices	5
4 How to install LMS	6
4.1 How to proceed	6
4.2 Running the installation program	9
4.3 Hardware key installation	13
4.4 System startup	14
5 Upgrading from previous version	15
6 How to remove LMS	16
7 Serial printer installation	17
8 Glossary	19
9 ANNEX A - List of directories	21
10 ANNEX B - LMS installation changes on configuration files	22
10.1 What the installation procedure does not do ...	22
10.2 ... and what it does	23
10.3 CONFIG.SYS	23
10.4 AUTOEXEC.BAT	24
10.5 WIN.INI	25
10.6 SYSTEM.INI	26
10.7 PROGMAN.INI	26
11 Index	27

Document changes in Version 2.2

Topic	Comments
Installation requirements	New Pc hardware
Upgrading from previous versions	New notes for CS11
How to remove LMS	New note about file renaming
Annex B - LMS installation changes on configuration files	New modifications of CONFIG.SYS

1 Before you begin

Before you install the LMSmodular into your personal computer, there are three important facts that you should understand.

1. The LMSmodular program takes over your PC.

This means that no other program can run on your computer after you have installed LMSmodular. The only exceptions are the Windows applications that were configured in LMS. The program does not allow the user to exit the LMSmodular environment. The usual escape, pause, and interrupt sequences (such as **Control-C**) are blocked. Likewise, a system reset - either by turning the machine off and on, pressing the **reset** button or pressing **Ctrl-Alt-Del** - will not allow you to bypass LMSmodular. The installation program prepares the PC to automatically launch LMSmodular whenever the system is reset, modifying the AUTOEXEC.BAT file.

It is true that high-level users have the option to exit to DOS or CNF (configuration) environments. However, this option is not intended for frequent use. LMSmodular cannot monitor the safety environment if it is not active: the program should run **continuously**, with as few interruptions as possible. This option is described in the LMSmodular User Manual.

2. LMSmodular can run only with the hardware key connected to the PC parallel port.

If the LMSmodular starts with no hardware key connected, it will run only in demo mode and the program will not communicate with the devices installed. If you disconnect the hardware key while LMSmodular is running, it will abort. The key and the associated PAK contains the configuration parameters about the maximum number of subsystems that could be connected and the workstation's functions available. These values cannot be altered by the user. Please refer to Par. 4.3 for a description of how to install the hardware key.

3. Disclaim of responsibilities

LMSmodular is a complex program composed by a number of modules, some of which are distributed by Cerberus under licence. Although the user can make backup copies of the program diskettes, he cannot distribute them to third parties by any means including networking, timesharing or computer service business.

You cannot modify, adulterate, disassemble, translate, reverse engineer or create any derivative work based on LMSmodular software.

The LMSmodular software and accompanying written material (including instruction for use) are provided "as is" without any kind of warranty, implicit or explicit. Cerberus Dati does not warrant, guarantee or make any representations regarding the use, or the results of the use, of the software or written materials in terms of correctness, accuracy, reliability, currentness or otherwise. Neither Cerberus Dati nor anyone else involved in the creation, production or delivery of product shall be liable for any direct, indirect, consequential or incidental damages (including damages for loss of business profits, business interruption, loss of business information, and the like) arising out of the use of or inability to use such a product.

2 Introduction

This manual contains all of the information required to successfully install the LMSmodular. The installation process is simple and straightforward.

Be sure to read the three warnings on page one, **Before You Begin**. They explain the way in which LMSmodular takes exclusive control of the PC, the nature of LMSmodular copy protection based on the hardware protection key and on the associated Product Authorization Key (PAK).

Next, consult the Installation Requirements to be sure that your PC is ready to receive the LMSmodular program. In addition to the hardware requirements, your hard disk must be properly formatted. If not, you can format it by using the instructions supplied with your computer and in the DOS manuals.

Once your PC meets the installation requirements, the next section, **How to install LMS** describes the process of installation in detail.

Note that this manual presents the installation of LMSmodular Basic module. Additional modules (e.g.: Access Control, Guard Tour) can be added, please refer to the correspondent manuals.

If you need more information on LMSmodular, please refer to:

- LMSmodular Configuration Guide e1109
- LMSmodular Configuration Reference e1252
- LMSmodular User manual e1108
- LMSmodular Access Control Installation Manual e1357
- LMSmodular Access Control Configuration Manual e1529
- LMSmodular Access Control User Manual e1530
- LMSmodular Guard Tour Installation and Configuration manual e1310
- LMSmodular Graphic Station Installation manual e1266
- LMSmodular System description e1429
- LMSmodular Software Product description e1428
- LMSmodular Application Examples e1430

3 Installation requirements

3.1 Hardware required

LMSmodular can be installed on a personal computer (PC) that is 100% IBM compatible.

The computer **must** have the following attributes:

- 1) CPU: see Table 3.1
- 2) keyboard
- 3) 640 kilobyte (640K) RAM; at least 600 KB should be available for program loading
- 4) VGA with 256 color or more adapter and monitor - 1024 byte of memory
- 5) high density floppy disk drive configured as A: (3.5" 1.44 MB) - 2.88 MB floppy disks are not supported
- 6) serial interface (COM1:)
- 7) hard disk drive C: minimum 100 MB
- 8) RAM: see Table 3.1

LMS versions	486 33 MHz 8 MB RAM	486 66 MHz 8 MB RAM	486 100 MHz 16 MB RAM	Pentium 75 MHz 16 MB RAM	Pentium 90 MHz 16 MB RAM	Pentium 133 MHz 32 MB RAM	Pentium 200 MHz 32 MB RAM
V. 2.1	(1)	(2)					
V. 2.2 without CS11 subsystems		(1)	(2)				
V. 2.2 with CS11 subsystems			(1)	(2)			
V. 2.2 networked with Graphic Station				(1)	(2)		
V. 2.2 with Access Control ACW				(1)		(2)	
(V. 2.3)					(1)	(2)	
(V. 2.3 with Access Control ACW)						(1)	(2)
(V. 3)							(1)

Table 3.1

(1) Minimum

(2) Suggested

Notes:

1. Guard Tour module does not affect the hardware requirements.
2. RAM memory indicated can provide support for up to **10.000** points. Above that limit, **you should add 2 MB every 10.000 points.**
3. Values indicated for future versions are preliminary.

3.2 Software requirements

The hard disk drive has to be properly formatted. If you have not already formatted it, you must do so now following the instruction supplied in the DOS manual that comes along with the PC.

LMSmodular can run with operating system MS-DOS versions 5.x or 6.x. It requires also that either Windows 3.1x or Windows for Workgroups 3.1x is installed.

DO NOT USE MS-DOS OR WINDOWS VERSIONS DIFFERENT FROM THOSE INDICATED

LMSmodular has been extensively tested under indicated DOS and WINDOWS versions. Installations with any other release may result unsuccessful. You can use the DOS and WINDOWS national versions you prefer.

LMSmodular uses some DOS procedures that are usually located in the root or in the \DOS directory and some Windows procedures that are usually located in the C:\WINDOWS directory. Be sure that in the AUTOEXEC.BAT file there is a PATH command pointing to the directories in which the DOS and WINDOWS files reside.

3.3 Memory requirements

LMSmodular uses the PC memory to store programs and data. To use properly LMSmodular, you must have

1. Hard disk memory
2. RAM free
3. A properly dimensioned virtual disk

3.3.1 Hard disk

The hard disk drive (C:) must have a minimum capacity of 100 MB. At least 51 MB should be free to install the LMSmodular package.

3.3.2 RAM memory

LMSmodular needs memory to work fast and efficiently. Your computer must have 640 KB of RAM base memory. At least 600 Kbytes of this RAM must be free. This means that installer should have to remove all of both drivers and resident programs but those used by LMSmodular. We suggest to load the mouse and other driver in the high memory (using the LOADHIGH command - refer to the DOS documentation).

If you do not respect this constraint, LMSmodular can generate unpredictable problems because of memory lack.

To check that your PC has enough memory available for program loading, please use the DOS program MEM; the value returned for the "memory available for the largest program" should be at least 614.000 bytes (600 KB).

Moreover, LMS uses the RAM memory that exceeds 1024 KB to store data. The so called "upper memory" - i.e. memory beyond 1 MB - must be defined as **extended memory**.

The actual amount of RAM memory (extended + traditional) to install depends on the dimension of the points database (See notes of Table 3.1).

You can install also an Expanded Memory Manager. LMSmodular will not use EMS but it is compatible with it.

3.3.3 Virtual disk

A virtual disk is a RAM portion used as if it were a hard disk. A virtual disk is by far faster than a hard disk and its use improves dramatically LMSmodular performance. For these reasons the virtual disk installation is strongly suggested. Refer to your DOS manual about how to install it.

If you do not install a virtual RAM disk, LMSmodular will use a part of the hard disk to emulate it. In the same way, if you configure a virtual disk too small to contain all the configuration data needed for your installation, LMSmodular will use the hard disk issuing some warning messages during the start up. In both cases the performances will be affected.

The dimensions of the virtual disk can easily be computed using the following formula:

$$\begin{array}{rcll} \text{Fixed space occupation} & & = & 512 \text{ KB} & + \\ \text{Number of pages x 10 KB} & & = & & + \\ \hline \text{Virtual disk dimensions} & = & & & \text{KB} \end{array}$$

Here there are some hint for typical plants:

small system	about 1 MB
medium system	about 2 MB
large system	about 5 MB

To use the virtual disk, you have to insert in the CONFIG.SYS file the following line:

```
DEVICEHIGH = C:\path\RAMDRIVE.SYS size 512 512 /E
```

where

size = virtual disk dimensions in KB (see above)

path = directory with the full path that contains the RAMDRIVE.SYS file (usually \DOS or \WINDOWS)

3.3.4 Optional devices

In addition to the requirements listed above, we also recommend the following hardware:

- parallel printer connected to any free parallel port (LPT1:, LPT2: or LPT3:). The parallel printer must be IBM compatible (IBM PC character set) and support EPSON ESC/P control commands.

LMSmodular can also support:

- Serial printer connected to a free COM port (COM2: or COM3:) - The serial port COM1: is reserved to gateway connection and cannot be used for the serial printer
- Graphic printer connected to any free parallel port (LPT1:, LPT2:, LPT3:)
- External horn connected to any free parallel port (LPT1:, LPT2:, LPT3:)
- CCTV Video board MM-VIDEO[®] by UCM Ltd, UK . You must insert this board into a free 16 bit slot. Please note that the CCTV board requires a VGA board with the feature connector.

[®]Epson is a trademark of EPSON.

[®]MM-VIDEO is a trademark of UCM Ltd. UK. The video board must be ordered to Cerberus Dati.

4 How to install LMS

If you have not already done so, read the warnings on page 1. Remember that once LMSmodular is installed, your computer will be dedicated to LMS, and you will not be able to use it for other purposes. As a matter of fact, LMSmodular will control the PC and it will let you do only what was configured by the LMS system manager.

4.1 How to proceed

Follow these steps to install LMSmodular:

a) Prepare your PC

- 1) If required, format your PC's hard disk and install DOS **or**, if you have a previous version of LMS installed, delete it (including all its subdirectories) from the hard disk.
- 2) Install Windows 3.1. You can use any national package. Never try to run LMSmodular under Windows 3.0: your attempt will be unsuccessful !

b) Setup Windows

LMSmodular assumes you setup the parameters detailed below of the Windows environment. Some of these configuration parameters (e.g. keyboard layout, language) are set up during Windows installation procedure, but can be modified using the Control Panel or Setup programs. If you already set them, just proceed to the other installation steps.

1. Control Panel International. Set the following options to the value relevant for your installation:
 - country
 - language
 - keyboard layout
 - date format
 - time format
2. Control Panel Printers

If you have a graphic printer, you must set up it in Windows. Connect the printer to the parallel port you have reserved for it. Remember to set the port number into LMSmodular Software Options database. Run the Printers installation program inside Control Panel and follow its instructions.
3. Virtual Memory Settings

Click on the 386 enhanced icon of Control Panel and Choose virtual memory. LMSmodular needs the following setup:

 - size 8000 KB minimum
 - type permanent
 - no 32 bit disk access

if your settings do not satisfy these requirements, setup your environment to comply with them following the instructions in the Windows guide.
4. Control Panel mouse, keyboard, date & time, network, drivers.

These configuration parameters are not relevant for LMSmodular and you are free to set them as required by your installation.
5. Control Panel desktop

LMSmodular is compatible with the screen savers built-in Windows. When nothing is occurring in the site LMS controls, the screen saver can take control of the

screen. The control returns to LMS when an event arises or the operator touches the mouse or the keyboard

6. Sound/Multimedia drivers

The LMSmodular is not multimedia aware, and it just uses the default beep to alert the operator. You can however install and use a sound board to convert the default beep into a special message or sound.

7. Windows Setup, display adapter

Configure the VGA board in such a way to use all its capabilities. For instance, if you have a 16 million color board set it up using Windows or OEM supplied drivers.

Do not use however other resolutions than 640 x 480, because LMSmodular works only at 640 x 480.

c) Check the AUTOEXEC.BAT and CONFIG.SYS files

These files must be Windows compatible. Do not add any device driver or TSR (Terminate and Stay Resident) program that is not Windows compatible. For instance, special networks not supported by Windows.

Set these system files as simple as possible. Very complex configurations (e.g. DOS 6.x multi-setup files) are not managed by the installation program and can lead to errors (see Annex B).

In some special cases the installation program can decide not to modify your files, when the files are too complex to manage. Should this happen, the installation program supplies you with sample files that show what is required by LMSmodular to operate properly, leaving up to you to perform the needed modifications.

d) Make a boot disk

Create a bootable disk and copy on it the following files

- CONFIG.SYS
- AUTOEXEC.BAT
- any file with the .INI extension in the Windows directory

In case of trouble you can use this disk and the files copied on it to revert to the original PC settings.

e) Install the LMSmodular package

Run Windows and follow the instructions supplied by the installation program - see details in Par. 4.2.

f) Check the system files

When the installation is complete check your system files. Verify that they were modified in the expected way (please refer to Annex B for a list of modifications)

g) Configure your installation

Using the LMSmodular Configuration package (see the LMSmodular Configuration Manual) configure your installation. This operation lets you model the field installed device inside LMS and to define the behavior of your system.

h) Test your installation

Exhaustively test the behavior of your LMSmodular, verify that it is able to communicate with the field devices in the proper way and that it answers in the requested mode to messages.

i) Automatic startup of LMSmodular

When you are satisfied with the installation behavior, modify the AUTOEXEC.BAT file uncommenting the following line

- @REM \LMS2\GO

that must become

- @\LMS2\GO

The installation procedure ends here. The PC is now completely controlled by LMSmodular, also in case of reboot.

4.2 Running the installation program

To install LMSmodular package start Windows from the DOS prompt.

The LMSmodular package is distributed on eleven diskettes. From the Windows' Program Manager you must:

- insert the first of distribution disk in the floppy disk drive;
- select File/Run from the Program manager window menu;

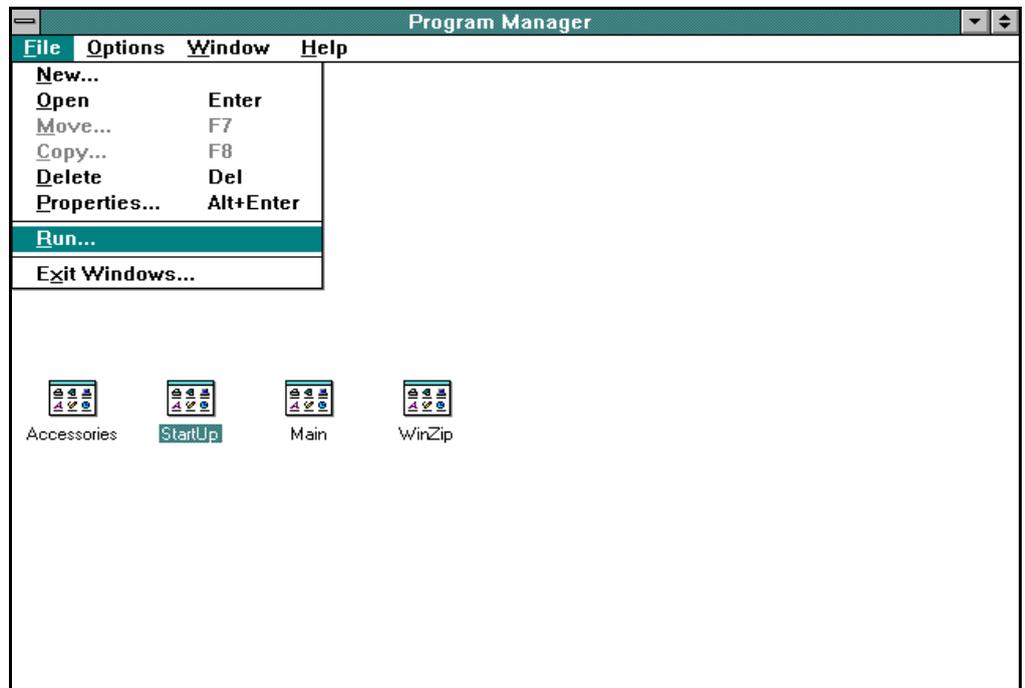


Fig. 4.1

key in A:\INSTALL in the dialog window that appears;

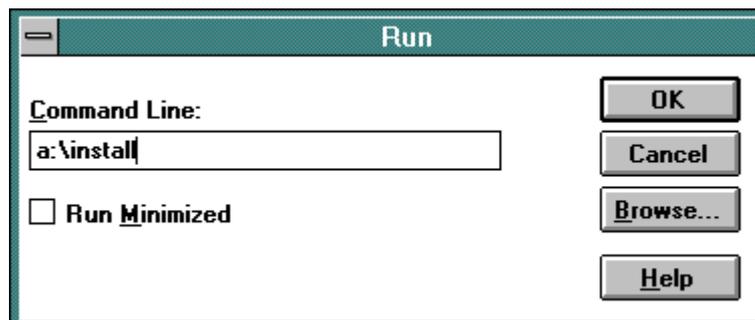


Fig. 4.2

click on the OK button.

The installation procedure starts and a dialog window is displayed:

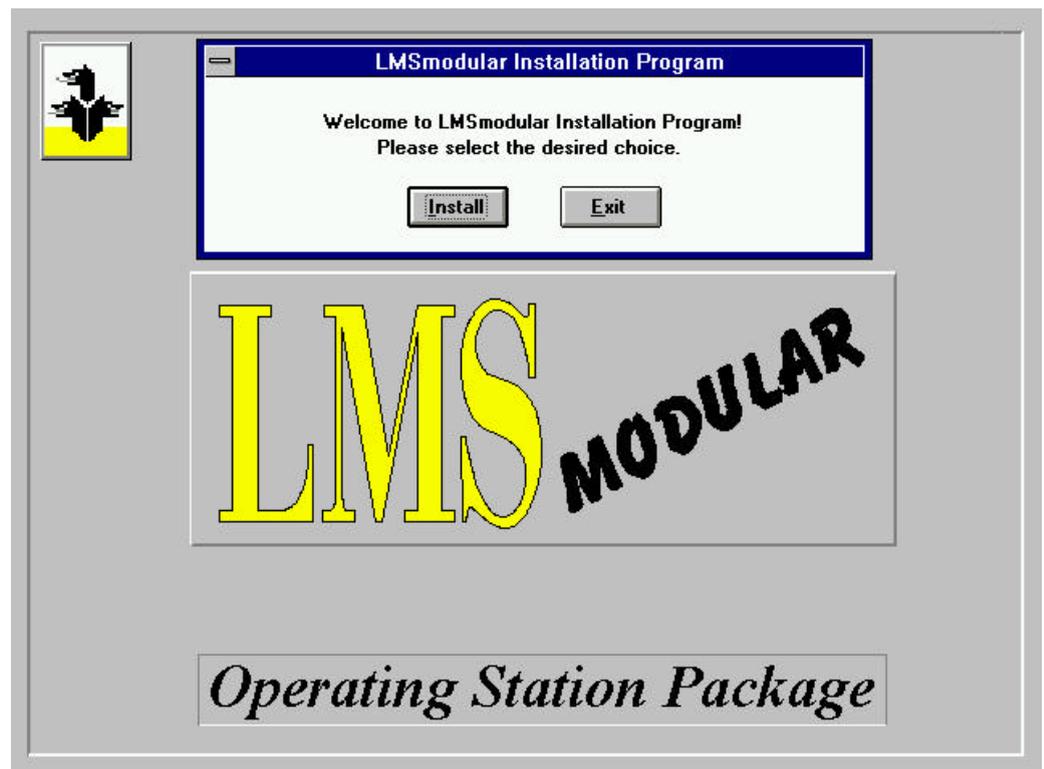


Fig. 4.3

You can stop the installation by clicking on Exit, or you can proceed by selecting Install.

The installation procedure will copy the LMSmodular files on the hard disk, under the directory you specify in the following dialog box.



Fig. 4.4

If there is a previous LMSmodular installation on the disk, you will be prompted to overwrite the existing files. At this point, you can however stop the installation process and exit.

You can stop at any time the installation procedure by clicking on the Cancel button. In such a case the LMSmodular installation on your hard disk will be not complete and you cannot run it. To have a proper installation, **you must delete the LMS files already installed** and repeat the installation procedure from the very beginning.

The PAK manager, a package described in detail in the LMSmodular User manual, is installed together with LMSmodular.

When the installation is completed, two dialog boxes are shown in sequence. The first informs you that the LMSmodular Tools group has been added to the Program Manager or it has been updated, if already existing.



Fig. 4.5

and the second announces the successful completion of the installation procedure. It warns you as well that Windows will be terminated and you will return to DOS.



Fig. 4.6

Before performing the installation, the procedure checks that the conditions stated in Table 4.1 are satisfied.

#	Check description
1	DOS version 5.x or higher.
2	640 KB of base RAM
3	7 MB or more of extended memory
4	CPU 486 or better
5	At least 1 serial port
6	At least 1 parallel port
7	At least one floppy disk drive (3.5" 1.44 MB)
8	Mathematic coprocessor (not compulsory)
9	At least 51 MB of free hard disk space

Table 4.1

4.3 Hardware key installation

The hardware key can be installed on any PC parallel port. To install the hardware key:

- 1) Unscrew any device possibly connected to the PC parallel port
- 2) Insert the key in the PC parallel port; there is only one right position to do so. The key has on one side a female connector and on the opposite side a male connector. Insert the male connector into the female PC port.
- 3) Tighten the key screws; if the key get loose and detaches during LMSmodular execution, the program will immediately stop.
- 4) Connect to the key the parallel printer cable. The key is completely transparent and does not affect neither the peripheral nor the PC operations.

Some trouble can arise if your printer has both a parallel and a serial input and it allows a software switching between the two. In this case you must be sure that the printer is always set to the parallel port.

If the hardware key is not installed, the LMSmodular starts and let you log in: after a time delay of about 60 seconds, anyway, the following message is displayed:

```
LMS hardware key not found !
system is going to work in demo mode
```

This means that you will be able to run LMSmodular, try and test all its functions but you cannot receive messages and send commands to actual field devices. Any command send will be answer by a control panel emulated by software. The software emulation is at a basic level. It does not reproduce the complex control panel (particularly CZxx panels) behaviour in all its details.

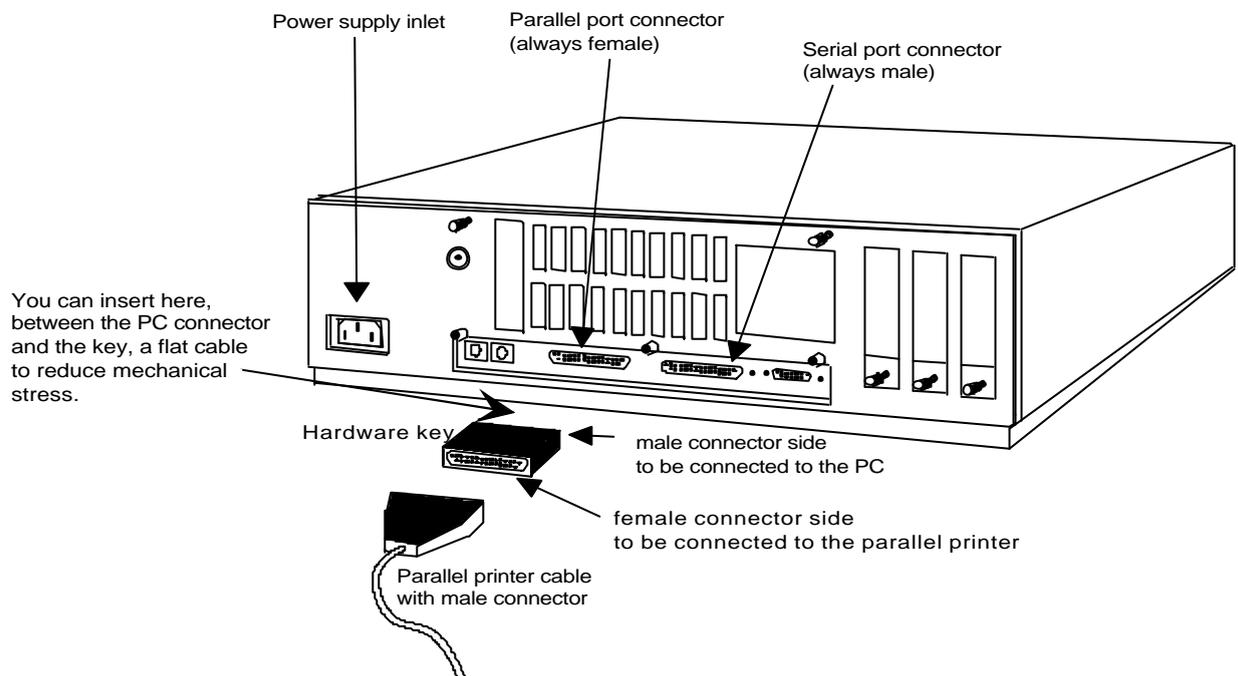


Fig. 4.7

During LMSmodular operation, the hardware key must be constantly connected to the PC, otherwise LMSmodular will abort and stop to execute. The connection/disconnection of the hardware key during LMSmodular operation can generate hardware troubles and must be avoided, whenever possible.

Should compatibility problems occur between the hardware key and the printer, you can install the key on a separate parallel port (e.g. LPT2:).

4.4 System startup

Before running the LMSmodular software, reboot the PC.

The modifications made by the installation procedure will become effective and the LMSmodular will be ready to run. To get LMS active type the following commands:

```
CD\LMS2  
GO
```

5 Upgrading from previous version

In order to avoid problems using LMSmodular 2.x with old installations EACH PREVIOUS DATABASE HAS TO BE CONVERTED.

All LMS files of previous versions must be converted.

In order to convert an existing LMS for DOS v. 2.3 or 2.4x installation or LMSmodular v. 1.x and v. 2.1 installation, the following steps have to be done:

- 1) Make a BACKUP of the historic files of the installation; to do that you should access in LMS v. 2.x for DOS program the HISTORICAL DATA menu option or in LMSmodular v. 1.1/v. 1.2 for Windows the HISTORICS icon in the TOOLS menu. Follow the instructions supplied in the respective User Manuals;
- 2) Execute from the Integrator menu the BACKUP, in order to back up the current version configuration. Make at least two copies of it, i.e. two DATA DISKs;
- 3) Execute a backup of PAK codes on a floppy disk. This operation can be executed in the PAK manager utility in the Windows-based LMS tools;
- 4) Install the LMSmodular 2.x;
- 5) Log into the Configurator program. Insert the data disk that contains the backup data, select from the main menu the RESTORE item. Automatically some batch commands which convert data from older versions to LMSmodular data format are invoked.

The conversion procedure detects automatically the database version, and behaves accordingly. If previous database contains a CS11 subsystem, the metafile will be requested.

- 6) Restore PAK codes.

Do not forget to produce at least a back-up copy of the converted data base, in order to have your new updated DATA DISK installation in the LMSmodular 2.x format.

Note that LMS v. 2.x for DOS historical archives are not compatible with LMSmodular 2.x for Windows archives and therefore you cannot use the old archives with the new software.

6 How to remove LMS

In LMS versions older than 2.42, the copy protection allowed only one installation of LMS from the disk. Now the copy protection is performed jointly by the hardware key and the PAK.

You can freely duplicate LMSmodular disks, but remember that you can execute LMS only on a PC to which the hardware key is connected. All the LMSmodular packages running on PC without the hardware key will run in demo mode.

To delete LMSmodular from your hard disk, go through the following steps:

1. Delete all files and subdirectories under the \LMS2 and \COPAVI directories.
2. the following commands to restore the previous versions of the listed files:

C: (Ret)	select the drive C:
CD\ (Ret)	get into the root directory
COPY AUTOEXEC. xxx AUTOEXEC.BAT	restore the previous version of this file (1)
COPY CONFIG. xxx CONFIG.SYS	restore the previous version of this file (1)
CD\WINDOWS	get into the Windows directory
COPY WIN. xxx WIN.INI	restore the previous version of this file (1)
COPY SYSTEM. xxx SYSTEM.INI	restore the previous version of this file (1)
COPY PROGMAN. xxx PROGMAN.INI	restore the previous version of this file (1)

Should you have installed Windows in a directory other than `WINDOWS`, or LMS in a drive other than `C:`, change accordingly the instruction that deals with these parameters.

3. Delete the following files from the directory that contains Windows:

```
LOADBWCC.EXE
DIGITS.FON
VCADD.386
CGA80850.FON
VGA850.FON
```

Notes:

- (1) xxx stands for a 3-digit number from 000 on. In case of multiple installations, LMS renames the file to 000, then 001 and so on in order not to delete any previous file. You should usually select 000, i.e. the file that was installed BEFORE the 1st LMS installation.

7 Serial printer installation

To LMSmodular can be connected a serial printer. The printer can be connected to any COMx: port available using the cable shown in Fig. 5.1.

The only exception is port COM1: that is assigned for the communications with the Gateway.

When the printer DTR signal is not available, you can substitute it using either printer signal Busy if exists or a +12 V signal.

The serial port parameters have to be configured on the PC by inserting in the AUTOEXEC.BAT file the MODE command. This command **is not** automatically appended to AUTOEXEC.BAT by the LMS installation procedure: the installer has to take care of it.

Typical printer settings are the following:

- 4800 bit/sec
- 8 bit/character
- No parity bits
- 2 Stop bits

For these setting, the MODE command has to be as follows:

```
MODE COM2:4800,N,8,2,P
```

In

```
C:\LMS2\GO.BAT
```

comment out the line:

```
URESET/COM2:
```

that should be instead

```
rem URESET/COM2:
```

Please refer to the DOS manual for a detailed description of the MODE command.

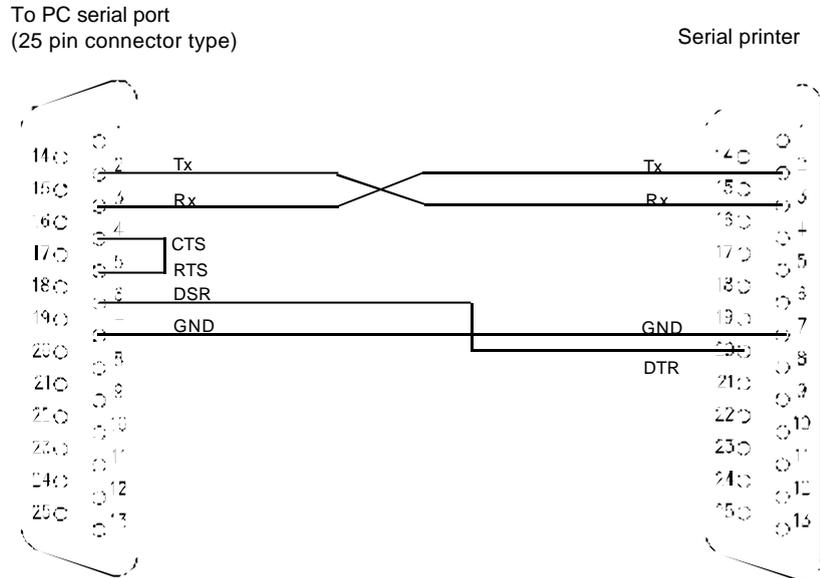


Fig. 7.1

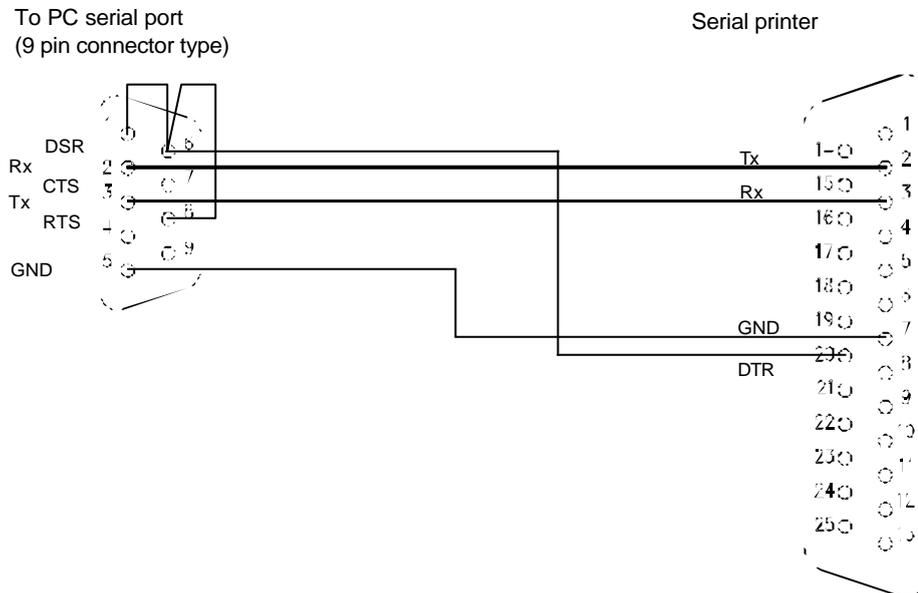


Fig. 7.2

8 Glossary

ACCESS LEVEL

A number assigned to each operator. It is invisible to the operator, but the system matches the ACCESS LEVEL and security level to establish which activities should be available to the operator.

AUTOEXEC.BAT

A file that is automatically accessed when the computer is turned on. It sets up the operating environment in a way suitable for the application programs to be run. *See also* CONFIG.SYS.

BATCH FILE

A command file. It always has the suffix ".BAT", and when the name of the file is typed, the commands in the file are executed as if they were typed in from the keyboard.

CONFIG.SYS

A file that is automatically accessed when the computer is turned on. It contains parameters and commands that are used to set up the operating environment in a way suitable for the application programs to be run. *See also* AUTOEXEC.BAT.

CONFIGURATION

The process that allows the operator to introduce the data of the actual plant that the LMS software will monitor.

COUNTRY CODE

A set of three numbers and two letters that refer to the country in which DOS is installed. The operator inserts this code during the use of the SELECT function. An example of a country-code is **351 PO** for Portugal.

DIRECTORY

An entity that exists on a floppy or hard disk that can contain files or other directories.

FREE SPACE ON DISK

The amount of unused computer memory on a hard or floppy disk.

HIGH-LEVEL OPERATOR

An operator with a high access level. An operator at the highest level has access to all the functions, menus, commands, and subsystems in LMS. *See also* access level and Security Level.

HISTORICAL DATA

Historical data are a set of information coming both from the system, such as logins, logouts, changes of operator, operator actions, etc. and from the field, such as abnormal values in the security devices (events), peripheral control unit reaction to operator activity, etc.

INSTALLATION

The procedure of transferring to hard disk the programs and data files of LMS and/or the configuration programs.

LOCAL MONITORING SYSTEM (LMS)

A PC-based supervisory program that manages the security environment of a particular geographical area from a central location.

SECURITY LEVEL

A number assigned to every menu, command, and subsystem in LMS. In order for an operator to enter or use a menu, command, or subsystem, his access level must be equal to or higher than the security level of the menu, command, or subsystem.

9 ANNEX A - List of directories

In this annex, the directories are listed as they appear on the hard disk after LMSmodular installation.

LMS2	LMSmodular directory, with the program itself
LMS2\DAT	this is the work directory; it contains the standard files and the working data
LMS2\DAT\SYMB	LMSmodular symbols, both for foreground and background
LMS2\DAT\PICT	User's pictures
LMS2\HIST	historical program files
LMS2\HIST\DAT	historical data files
LMS2\HIST\BMP	bitmap files used by historical program
LMS2\HIST\OFFLINE	directory that contains the off-line historical data files
LMS2\SUPPORT	contains files used by Cerberus Dati Customer Support when executing remote diagnostics
LMS2\TEMP	LMSmodular directory for temporary files.

READ.ME and INSTALL.EXE are not located in the LMSmodular directory on the floppy disk. When LMSmodular is installed on the hard disk, they are moved to the main directory.

The configurators are arranged in the following directories:

COPAVI	the CNF Integrator Menu and menu functions
COPAVI\DAT	video page data
COPAVI\BAT	video page configuration program
COPAVI\DBM	database configuration program
COPAVI\DBM\DATA	database data
COPAVI\DBM\MENU	database configuration program menus
COPAVI\TMP	database conversion
COPAVI\TUTORIAL	tutorial files
COPAVI\SITES	site configuration backup directory
COPAVI\PAKMAN	PAK manager

10 ANNEX B - LMS installation changes on configuration files

This Annex describes the modifications that the LMSmodular installation procedure makes on the PC systems files. In the following we assume that the DOS files are in the C:\DOS directory, and Windows files are in C:\WINDOWS directory

The installation procedure adds or modifies the following files to get a PC configuration suited to LMSmodular needs:

CONFIG.SYS
AUTOEXEC.BAT
WIN.INI
SYSTEM.INI
PROGMAN.INI

10.1 What the installation procedure does not do ...

The installation procedure adds comments to system files wherever it modifies them. It proceeds in two steps:

- the installation procedure comments all lines that can be dangerous
- it adds the new lines required by LMSmodular

It does not carry out its job when the system files are too complex. Namely, the DOS 6.x multi-setup configuration is NOT SUPPORTED. LMSmodular needs a computer completely dedicated to it and the multi-setup assumes you can run different software packages (requiring different PC settings).

When the installation procedure finds the multi-setup configuration, it renames the current AUTOEXEC.BAT into AUTOEXEC.OLD and CONFIG.SYS into CONFIG.OLD. Then it creates two new system files that satisfy LMSmodular needs.

If you want to have LMSmodular installed on a PC with multi-setup system files you have to take care by yourself of inserting the LMS lines from the "new" system files (those defined by the installation procedure) into the "old" system files (those renamed with the suffix .OLD by the installation procedure). Then you have to rename back to their original names the old system files so modified.

10.2 ... and what it does

The modifications shown below must be used as templates to perform manually modifications that LMSmodular is not able to undertake by itself.

You can easily identify the modifications performed or the warnings issued by LMSmodular looking for the following messages:

REM LMSmodular - Next line NOT modified because existing. Please check it !	This message is put on a line that precedes instructions that are needed by LMSmodular (e.g. HIMEM) and that were already present in the CONFIG or AUTOEXEC file. LMSmodular asks you to verify that the current parameters are compatible with what it needs. See the templates below for further information
REM by LMSmodular ...	This message is put on the same line that contains an instruction LMSmodular needs to disable. For instance, it can be used to disable the DOSKEY command
REM Begin of lines inserted by LMSmodular	Marks the start of the lines inserted by LMSmodular
REM End of lines added by LMSmodular	Marks the end of the lines inserted by LMSmodular

10.3 CONFIG.SYS

DOS 6.x

```

DEVICE = C:\DOS\HIMEM.SYS
DEVICE = C:\DOS\EMM386.EXE NOEMS
DOS = HIGH,UMB
DEVICEHIGH =C:\LMS2\NORESET.BIN
SWITCHES=/F /N
BUFFERS = 10
FILES = 70
DEVICEHIGH = C:\DOS\RAMDRIVE.SYS 1024 512 1024 /E
SHELL = COMMAND.COM /F/P/E:2048
STACKS = 9,256
  
```

DOS 5.x

The settings listed above apply, but with the following differences:

```

DEVICE = C:\WINDOWS\HIMEM.SYS
DEVICE = C:\WINDOWS\EMM386.EXE NOEMS
DEVICEHIGH = C:\WINDOWS\RAMDRIVE.SYS 1024 512 1024 /E
  
```

10.4 AUTOEXEC.BAT

DOS 6.x

```
C:\DOS\SMARTDRV.EXE
@PATH=C:\LMS2;%PATH%
SET LMS_HDD = C:
SET LMS_FDD = A:
SET LMS_VDD = D:
SET LMS_PATH = \LMS2
SET CNF_HDD = C:
SET CNF_PATH = \COPAVI
SET HIST_HDD = C:
SET HIST_DDD = A:
SET HIST_PATH = %LMS_PATH%\HIST
SET TEMP = C:\LMS2\TEMP
SET TMP = C:\LMS2\TEMP
C:\DOS\GRAPHICS
C:\LMS2\VNOR
C:\DOS\SHARE.EXE /L:500 /F:5100
REM @\LMS2\GO
```

If you have a serial printer installed, the following line must be uncommented, with the parameters among brackets [] properly specified:

```
MODE [COMx:] [baud rate] [parity] [data bits] [stop bits] [re-try]
```

DOS 5.x

The settings listed above apply, but with the following differences:

```
C:\WINDOWS\SMARTDRV.EXE
C:\DOS\SHARE.EXE /L:500 /F:5100
```

10.5 WIN.INI

```
[windows]
  spooler = NO
  load = LOADBWCC.EXE
[intl]
  sLanguage = enu
[fonts]
  Terminal (850) (Set #6) = VGA850.FON
  Terminal = CGA850.FON
[colors]
  Background =0 64 128
  AppWorkspace =255 255 255
  Window =255 255 255
  WindowText =0 0 0
  Menu =255 255 255
  MenuText =0 0 0
  ActiveTitle =64 128 128
  InactiveTitle =192 192 192
  TitleText=255 255 255
  ActiveBorder=255 128 64
  InactiveBorder=192 192 192
  WindowFrame =0 0 0
  Scrollbar =192 192 192
  ButtonFace =192 192 192
  ButtonShadow =128 128 128
  ButtonText =0 0 0
  GrayText =128 128 128
  Highlight =0 128 128
  HighlightText =255 255 255
  InactiveTitleText =0 0 0
  ButtonHighlight = 255 255 255
```

End

10.6 SYSTEM.INI

```
:Section  
[386Enh]  
    device = vcadd.386  
    32BitDiskAccess = off
```

If the SYSTEM.INI file contains the following line in the [386Enh] section:

```
device = vshare.386
```

then the installation program deletes it.

10.7 PROGMAN.INI

```
:      Section  
[restrictions]  
    NoRun = 1  
    NoSaveSetting = 1  
End
```

11 Index

3

32 bit disk access _____ 6

A

AUTOEXEC.BAT _____ 1; 4; 7; 8; 15; 17; 20; 22

B

BACKUP _____ 1; 13; 19

C

COM1: _____ 3; 5; 15

COM2: _____ 5

COM3: _____ 5

CONFIG.SYS _____ 5; 7; 17; 20; 21

Control Panel _____ 6; 11

Control-C _____ 1

Country, configuration of _____ 6; 17

Ctrl-Alt-Del _____ 1

D

Database conversion _____ 13

Date format, configuration of _____ 6

Demo mode _____ 1; 11; 14

Desktop, configuration of _____ 6

DOS 5.X _____ 21; 22

DOS 6.X _____ 7; 21; 22

DOS national version _____ 4

DOS procedures _____ 4

E

Expanded memory _____ 4
4; 10

External horn _____ 5

G

Graphic printer _____ 5; 6

Graphic Station Installation manual _____ 2

H

Hard disk _____ 2; 3; 4; 5; 6; 9; 10; 14; 17; 18; 19

Hardware key _____ 1; 11; 14

High-level users _____ 1

historic files _____ 13

I

INSTALL.EXE _____ 19

Installation _____ 9

Installation process _____ 2

Installation requirements _____ 2; 3

K

Keyboard, configuration of _____ 6

L

Language, configuration of _____ 6

LOADHIGH _____ 4

LPT1: _____ 5

LPT2: _____ 5

LPT3: _____ 5

M

Maximum number of subsystems _____ 1

MEM _____ 4

MS-DOS versions _____ 4

Multimedia _____ 7

P

Parallel port _____ 1; 5; 6; 11

Parallel printer _____ 5; 11

PATH _____ 4; 5; 22

PROGMAN.INI _____ 20; 24

R

RAM free _____ 4

RAMDRIVE.SYS _____ 5; 21

READ.ME _____ 19

Remove LMS _____ 14

S

Serial port _____ 5; 15

Serial printer _____ 5; 15; 22

Software Options _____ 6

System files _____ 7; 20

System reset _____ 1

SYSTEM.INI _____ 20; 24

T

Time format, configuration of _____ 6
TSR _____ 7

U

Upgrade from LMS previous versions _____ 13

V

VGA _____ 3; 5; 7

Video board _____ 5
Video display adapter _____ 7
Virtual disk _____ 4; 5
Virtual disk dimensions _____ 5
Virtual memory, configuration of _____ 6

W

WIN.INI _____ 20; 23
Windows 3.0 _____ 6
Windows 3.1 _____ 4; 6
Windows for Workgroups 3.1x _____ 4