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INTRODUCTION

General features

The remote control software ADX SW, for ADX soft starters, described in this manual is used to connect an ADX starter with a personal computer by means of serial interface ports. In this way, the following information is available to the user:

- Status display of all the variables monitored by the ADX starter (current, torque and so on) in real time
- Access to all front panel functions, with graphic display, and possibility of pushing the buttons
- Possibility to read and set all the setup parameters (basic setup / advanced setup / functions setup). These parameters can be consulted, modified, saved on disk and subsequently reloaded. The access to parameters is protected by password (access code)
- Display of the last 255 stored events, each with date and time entry
- Remote access supervision through standard modem or GSM modem
- Auto-call capability in alarm conditions
- Possibility to configure the program in multilanguage

Hardware requirements

Minimum requirements of the personal computer
- Pentium 100Mhz or faster processor
- At least 16Mb of free RAM
- About 4Mb of free hard disk memory
- Graphic card having at least 800x600 resolution
- One free serial interface port
- Windows 95/98 operating system
- CD-ROM drive

Installation

To proceed with the installation, the personal computer must have the operative system correctly installed and working and the CD drive for the program setup. It is also necessary to have some experience using the personal computer and Windows commands.

Conduct the following operations in sequence:

1) Close all applications.
2) Insert the CD in the CD-ROM drive and wait a few seconds.
3) Start the setup program by double clicking on *setup.exe*.
4) A dialog box will appear asking for the directory where to install the program. State the new name, if any, in the space.
5) Follow the given instructions. In case the PC indicates that more recent files are already installed, maintain the existing ones, that is answer *YES* or *KEEP*.

At the end of installation, a menu is automatically added to the desktop to execute the program. At this point, using the start menu (usually Start-Programs-Adx) can launch the program. It is recommended to connect the ADX to the PC (personal computer), using the standard-supplied cable, before executing the program. The very first time the program is executed, it asks to state which serial port has to be used (1 to 4) and the language for the program menus and messages. Both can however be changed later.

Activation of the PC-ADX connection

To operate the remote control program, it is essential the PC and ADX can communicate by serial interface. The user can make the serial interface connection in various ways depending on the distance between the PC and the ADX and the modes required. In any case, a serial port is required on the PC.

The first step is to make sure the PC has one free RS-232 serial communications interface port. Serial ports are normally indicated by the *COM* reference. They are usually numbered *COM1:* to *COM4:* although the majority of the brands on the market have only two available ports, *COM1:* and *COM2:*, identifiable by the 9-pin D-type male connector. Secondly, it is important to choose the PC port bearing in mind that one serial port is already used for the mouse in some cases.

The software must be configured to use the selected serial port; this can be done during the installation phase or thereafter through the View-Options-Dialog menu (see the relative section in this manual).

Direct connection via RS-232

This type is the simplest and includes the direct connection between the PC serial port and the ADX (6-pin RJ connector) using the Lovato cable 51C2.

This is a connection to exclusively use during the installation, setup or ADX maintenance only. It is not suitable for permanent connection since the RS-232 interface is inadequate for long distances owing to its sensitivity to industrial ambient disturbances. In case of problems or additional information, see Appendix A.

Connection via RS-485

This connection can be used for the permanent link according to industrial RS-485 standards, with the possibility of multipoint connection of up to 32 ADX units, linked to one personal computer. To complete this type of connection, each station must have a RS-232/RS-485 converter, that is one converter for the PC and one for each ADX. Refer to the drawings, given in Appendix A, for the relative connection.

This solution provides a reliable and permanent connection, suitable for any industrial ambient for distances up to 1 km.

Connection via standard modem

When there is a long distance between PC and ADX, a remote control can be established using a set of two modems. In this case, the PC must be connected to the modem with the cable supplied with the modem itself, while the ADX to the modem using the Lovato cable 51C5.

This type of connection requires an experienced installer, since some modem programming is required depending on the type of modem, telephone line, etc. See Appendix A for additional information.

Connection via GSM modem

The remote control software contemplates the use of GSM modem connected to the ADX. This equipment comprises a modem and a cellular telephone in one, permitting data transmission also from places without traditional telephone lines. This unit can carry out normal modem functions and provide the possibility of sending SMS messages (Short Message Service) as well, to other GSM cellular phones, an innovative technique for alarm indication. Messages can be sent in E-mail format too, by means of SMS service extension; both ADX and remote control software are predisposed with this feature.

The installation of this type of system calls requires a certain experience with modems as in the previous case.

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MAIN WINDOW

The main window comprises all the information related to the ADX operating status in addition to the various menus and commands for access to all starter functions opened through the PC keypad. All the details present in the main window are requested by the PC to the ADX through the serial line and then displayed. This operation is periodically repeated (Online mode) so the readings are up dated at a rate which the PC communications speed accepts and is programmed. It is obvious that none of these details can be displayed if the serial communication is not operating, Offline mode, i.e. the main window will show all the frames blank or disabled.

The system runs the Offline mode when either the user explicitly requires it or there is communication owing to communications problems (cables not connected, PC and ADX communication parameters not the same).

The toolbar includes the most commonly used functions.

The virtual image of the ADX front panel is the exact reproduction of the actual front panel with regards to the LED's and the LCD 2x16 display. By operating on the buttons with the mouse, the information on the front panel can be scrolled in the same way as if operating directly on the actual front panel.

The status of the control inputs and relay outputs are displayed in this frame. The descriptions of the programmable I/O's indicate the selected function during the setup.

The main readouts (line voltage, current and torque) are displayed in both numerical and graph formats; graph intended as vertical bar graph.

The Thermal Status frame indicates the value of the motor thermal status and the internal ADX temperature, given in degrees Centigrade. Both readouts are displayed in both numerical and graph formats; graph intended as vertical bar graph and relative scale.

The status line receives some important information about the program status.

Main menu

The main menu has the following structure:

- **Communication**
  - Online   Enables the serial communication.
  - Offline   Disables the serial communication.
  - Serial address   Permits to choose the ADX address to be connected.
  - Modem
    - Execute a call   Opens a dialog box to call an ADX equipped with modem.
    - Wait for a call   Waits for an incoming call from an ADX equipped with modem.
    - Hang up   Terminates the phone call.
  - Exit   Closes the program.

- **Parameters**
  - Password   Allows password entry for parameters access.
  - Basic setup   Opens the parameters dialog box of the basic setup
  - Advanced setup   Opens the parameters dialog box of the advanced setup.
  - Functions setup   Opens the parameters dialog box of the functions setup.
  - Load from disk   Reads a parameters file and saves it on the ADX.
  - Save on disk   Reads the ADX parameters and saves them on the PC disk.
  - Print   Prints the ADX setup parameters.
  - Clock setting   Shows and set the ADX clock calendar.
  - ADX modem parameters   Opens a dialog box with the ADX-modem parameters.

- **View**
  - Graphics   Opens the frame where one can trace strip charts.
  - Command menu   Opens the ADX command menu.
  - Events log   Opens the ADX events log.
  - Options   Allows to customise which software options to use.

- **Help**
  - Contents   Opens the program manual index dialog box.
  - Information   Opens an information dialog box with program version.

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Toolbar

The toolbar comprises a set of buttons, which allow quick access to the most common function tasks. Each button represents a "short cut" to conduct the selected command from the main menu. The following list gives a description of the button functions:

Online
(Communication - Online)
Activates the serial communication, between the PC and ADX, by opening Online mode. When the system is connected to Online mode, all the readings are taken and displayed at regular intervals. If the PC-ADX linkup is not possible because of connection or configuration problems, the system automatically goes to Offline mode.

Offline
(Communication - Offline)
De-activates the communication between the ADX and PC by opening Offline mode. In this manner, the program is put on hold and all the readouts will be disabled.

Outgoing modem calls
(Communication – Modem-Outgoing call)
Viewed only if the program is configured to communicate through a modem. A dialog box can be opened by which the PC can call an ADX, fitted with modem.

Attend incoming modem calls
(Communication – Modem-Attend call)
Displayed only when the program is configured for communication through a modem. It puts the program on hold for incoming calls via the PC modem. It also opens a dialog box indicating a calls list.

Hang up
(Communication – Modem-Hang up)
Displayed only when the program is configured for communication through a modem. It terminates the telephone call and cuts off the connection via modem with the remote ADX.

Password
(Parameters – Password)
Opens a dialog box for password entry, which then consents to setup parameter modifications. When the program is opened, various parameter values can only be displayed but not adjusted. With the correct password entry, the possibility to change and store parameters is also enabled. After the first program installation, the default password is *lovato*.

Basic setup
(Parameters – Basic setup)
Opens a dialog box with the basic setup parameters. The contents of the box duplicate the basic ADX menu and can therefore be adjusted according to the ADX software revision. The parameters can be adjusted only after having confirmed the password.

Advanced setup
(Parameters – Advanced setup)
It is the same as per previous function but referred to the dialog box with the advanced setup parameters.

Functions setup
(Parameters – Functions setup)
It is the same as the previous function but referred to the dialog box with the functions setup parameters.

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Clock calendar setup
(Parameters – Clock calendar)
The ADX clock calendar can be set and is available only after having confirmed the password entry.

Load from disk file
(Parameters – Load from disk)
Downloads the parameter values (setup) in disk recipe format and saves them on the ADX.

Save on disk file
(Parameters – Save on disk)
Reads the ADX parameters and saves them in ASCII format file. These files can be loaded later and retransfered to the ADX.

Parameters print
(Paramters – Print)
Printing of a list of setup parameter values.

Graphics display
(View – Graphics)
A dialog box is opened where the readout of current, torque, etc., can be consulted in strip chart format. See the Graphics section below for a description of the dialog box commands and functions.

Command menu
(View – Command menu)
A dialog box is opened where the functions of the ADX command menu can be operated.

Events log
(View – Events log)
Displays the contents of the events logged by the ADX.

Start the motor
Transmits the start the motor command to the ADX. This is possible only if the ADX control terminal block has been connected to the 3-wire start and stop command and if all the starting requirements are fulfilled.

Stop the motor
Transmits the stop the motor command to the ADX.

Toolbar
The toolbar comprises various information concerning the status of the program operation and the ADX; these are summarised in the following illustration:

The ADX status is displayed in this position, that is the operating phase in which it founds itself.

Communication status:
Online = active
Offline = not active

Refresh speed; that is the update number of the main window each second.

ADX firmware-size and revision number.

| NO POWER LINE | | ONLINE | 3,3 | ADX 85 Rev.05 |

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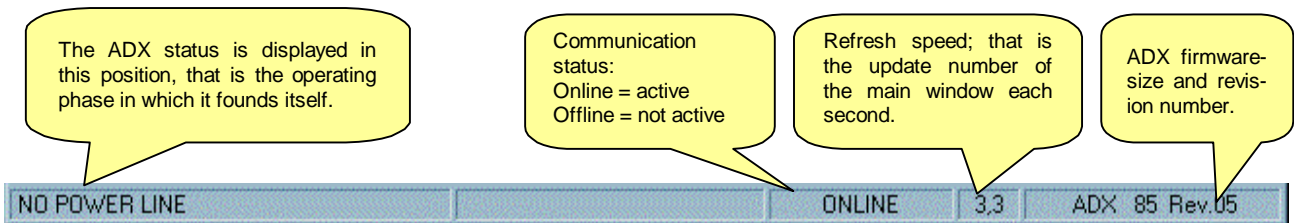
Communication menu

Communication - Online

The dialog between the personal computer and the ADX is accomplished through this option of the Communication menu. When the program is opened, it automatically enables the communication. The communication can be manually put on hold (disabled), using the Offline option (see ahead) or automatically by the program each time a communication error takes place (e.g. the ADX does not answer or answers incorrectly twice). When the Online indication is shown on the main window headline, this means the dialog is active.

Communication - Offline

By choosing Offline at the Communication menu, the serial communication is cut off. This state is highlighted by the Offline indication on the toolbar and the disabling of all the readouts on the main window. As already stated, the program automatically enters Offline mode when there are continuous communication errors. The purpose of putting the system in offline is to allow for the change of some communication parameters, such as the serial port used or the ADX unit address to be interrogated (this in the case of multistations); this is not possible when the connection is active.

Communication – Serial address

This option is useful in RS-485 multidrop applications only. The address of the ADX unit can be selected with which the personal computer must establish a connection; that is when more than one ADX is controlled by one PC. After selecting the address option in the Communication menu, the indicated dialog box will be displayed where one can select the ADX unit. The shaded buttons indicate that the presence of that particular ADX has not been detected at that address. The 'pressed' button indicates the actual address; this means the ADX actually communicating with the PC. To change the ADX unit, press the relative button, only the active ones (not shaded). To conduct a check of all active stations, press the *Detect* button. In this way, a polling cycle among the 32 possible stations is conducted, activating the buttons of the ones, which correctly answer the question, and 'shading' all the others. By clicking the *OK* button, the choice of the address is confirmed and the dialog box closes.
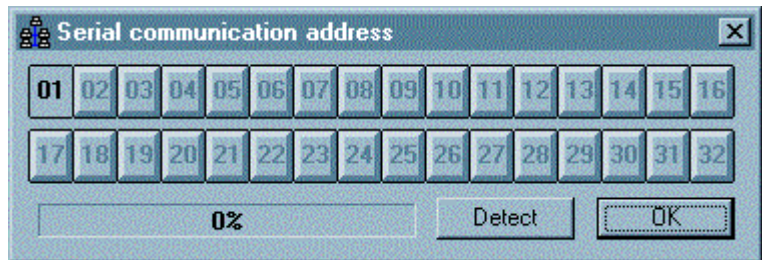
Communication - Modem

This drop-down menu is available only if the PC-ADX connection has been stated to be a set of two modems, in the Options dialog box; see the Display-Options menu section ahead.

Communication - Modem – Outgoing call

With this choice, a dialog box is displayed and where a call from the PC can be placed, through the modem, to one of the points where there is an ADX with its own modem. Once the dialog box is opened, as shown in the side figure, the telephone number to call is inserted in the relative space. If the number has been previously called, by clicking the down button, a drop-down menu with all the numbers is displayed so there is no need of retyping it. When the number is complete, click the *Call* button to begin the connection. At this point, the program instructs the modem to begin dialling. While attending the connection, a blue space bar will run for the
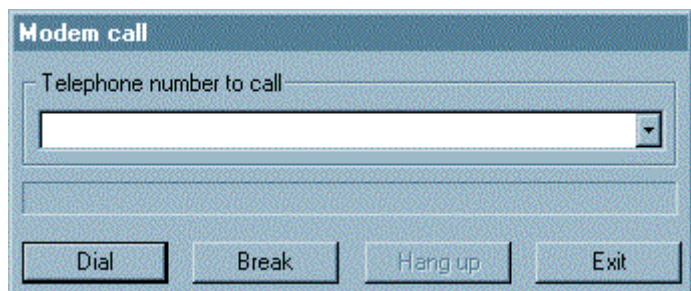
maximum time allowed for the connection. The called modem connects the line and exchanges the normal handshaking messages with the calling modem.

At the end of this procedure, if all has been conducted correctly, a dialog box will be displayed on the PC monitor informing the user of the link and the program will automatically proceed to Online mode. Contrarily, if there are errors, the connections are to be carefully checked and eventually follow the details for troubleshooting given in Appendice A of this manual. Usually, the connection is not vital since the procedures are those commonly used and are absolutely standard. With the *Disconnect* button, the outgoing call can be interrupted while the *Hang up* button disconnects a communication already in course.
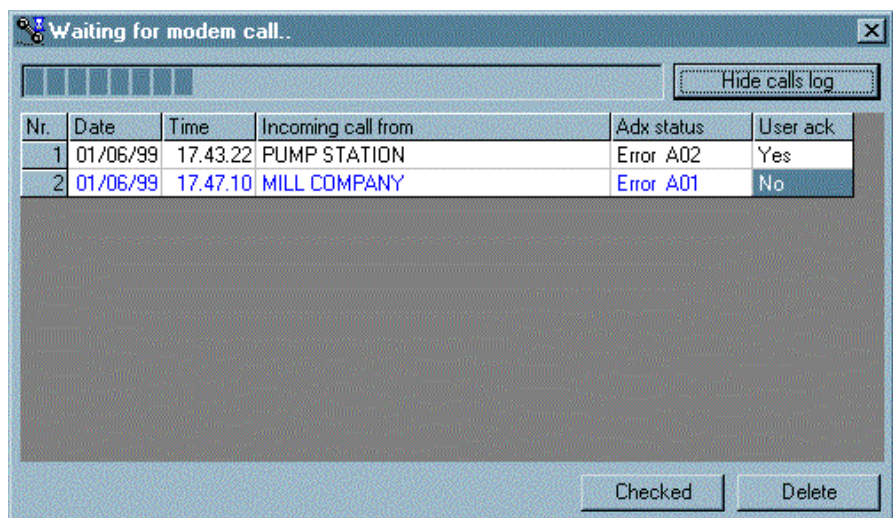
Communication – Modem – Attend call

By clicking on this option, the program enters *Attend call* mode, in which the PC answers incoming calls on the modem. In this case, it is presumed there are one or more ADX units in the field, programmed to independently call the PC in alarm conditions or at periodic intervals (See the section *ADX modem parameters*). When an ADX calls, the PC, in *Attend call* mode, connects itself and logs the time, date and calling identification in a text file, eventually displayed through the *View calls* button.

If the user is present, in front of the PC, when a call comes in, there is the possibility to remain linked with the ADX and check the type of event. Contrarily, if there is no one, the PC will automatically hang up after a few seconds. In this case, the call will be indicated with a highlighted blue colour and the *User ack* field set to No. By selecting one of the recorded call, the user will be able to change its status in the *Checked call* using the *Checked* button or definitively delete the record by means of the *Delete* button.

The list of calls is stored on hard disk in the ASCII file ' Modemcal.txt', in the same directory of the ADX.exe application.

Communication - Modem – Hang up

This function terminates the connection via modem, cutting the telephone line off. This is like hanging up in a normal telephone call. This is automatically done each time the program is closed.

Communication - Exit

Exits the program, closing the communication and any open dialog boxes.

Parameters menu

All the options related to the parameters are included nn the second drop-down menu. The parameters allow the installer and/or user to adjust and customise various functions of the ADX to his liking. Each parameter is identified by the letter P followed by a two digit number (consult the ADX manual for more information). The parameters are divided into three main menus called *Setups*:

- Basic setup
- Advanced setup
- Functions setup

By means of the functions of this program, the parameters can be read and modified in a more practical way instead of the traditional way that requires the use of the ADX keypad and display on front. As will be seen in the following sections, it is possible to display many parameters at a time, each with its own code, description in various languages, numeric value and graphic bar for the setting or drop-down select menu.

Now, the meaning of the various captions of the Parameters menu will be described:

Parameters - Password

Selecting this option, a dialog box pops up, asking the user to enter the password for parameter access. When the program initially starts, the parameters can only be read and displayed but not transmitted into the ADX permanent memory, saved or loaded from the disk. After the parameter access password has been correctly entered, a confirm message is shown and the following functions become available:

- Parameters - basic setup change and transmission
- Parameters - advanced setup change and transmission
- Parameters - functions setup change and transmission
- Parameters saving on disk
- Parameters loading from disk
- Clock calendar setting
- Password change to a new one defined by user
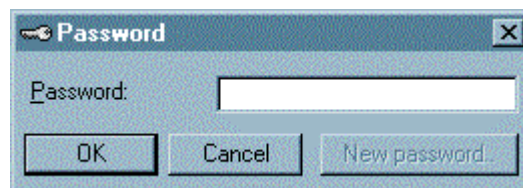
At the first software installation, the customary password is *lovato*. The user can however change it as per his liking, recalling the password dialog box (with the menu or 'button' on the toolbar) and clicking on the *New password* button. A dialog box is opened where the user must type the new password for two consecutive times to be sure to have indicated it correctly. Clicking on the *OK* button saves the new password.

Parameters – Basic setup

Parameters - Advanced setup

Parameters – Functions setup

These three options of the parameters menu can be selected using the three toolbar buttons ⏭B ⏭A ⏭F.
The parameters access is possibly made only in Online mode as the major part of the program functions. When a setup menu (basic, advanced or functions) is opened, a dialog box is displayed, as per the illustration, for consulting and/or change of the setup parameters. The parameter change, including their default resetting, is possible only after the access password entry.
When a page is opened, the parameters are automatically transmitted by the ADX to the PC and displayed; the same operation can be manually repeated with the *Receive* button. The user can thereafter make the required changes.

As soon as a parameter is changed, the wording *changed* is indicated in the headline of the dialog box, meaning a change has been made to the PC memory only and it has not been transmitted to the ADX yet. If the change is confirmed, the *Transmit* button is to be pressed so the parameters are transmitted and stored by the ADX. After this operation is concluded, the dialog box headline will indicate *Identical* confirming the realignment of the PC and ADX memories. If the user wants to cancel the eventual changes made and display the ADX memory status, the *Receive* button is to be used for this purpose.

After a numeric parameter adjustment (e.g. threshold or time value), the PC mouse or up and down buttons can be used to adjust the horizontal control bars, on the right of the display, increasing or decreasing the values as if adjusting a potentiometer. Contrarily, using the PC numerical keypad can make direct adjustment by double clicking on the box of the relative parameter value and proceeding to the adjustment.

The pages where the parameters are divided can be changed using this tag.

When the wording *identical* is indicated here, this means the displayed data is the same as the ADX memory. Instead, the wording *changed* is shown when parameters have been modified but not transmitted yet to the ADX memory by the *Transmit* button.

The parameter value or choice number is indicated in this box: If blank, this signifies that the value corresponds to the factory default setting. Contrarily when coloured, this means the value is different (other than factory setting). The value can be directly adjusted by double clicking on the numerical parameters.

Parameter code and description.

A horizontal control bar is displayed when the parameter has a numerical adjustment range. By shifting it, the relative value is changed.

A drop-down menu is displayed when an option choice of the parameter is possible.

vanced setup menu parameters (Modified)

P10÷P19 | P20÷P29 | P30÷P36

P10	THERMAL PROT	003	class 10
P11	THERMAL PROT RESET LEVEL	120%	
P12	INIT BOOSTER VOLTAGE	OF	
P13	BRAKING TRQ LEVEL	075%	
P14	BRAKING TIME	010s	
P15	PRE-BRAKING TIME	OFF	
P16	ALARM RESET MODE	000	stop open
P17	STOP-IN FUN	000	stop
P18	PROG-IN FUN	001	freewheel stop
P19	RELAY K1 FUN	001	motor powered

Transmit | Receive | Default | Exit

Transmit button to transfer all menu parameters to the ADX. Enabled only after access password entry.

Receive button to transfer all parameters to the ADX from the PC.

Default button to reset all parameters to factory default settings.

Exit button to close the setup dialog box.

For the choice type parameters (e.g. function of programmable relay), the required value must be selected among the drop-down options. In these cases, the box will indicate the choice number selected.

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Parameters – Load from disk

Through this function, a parameters file, previously saved on the disk, can be opened and transmitted to the ADX. Three setups are loaded and stored in sequence. It is a very useful function to duplicate settings between one ADX and another, in case there are a number of soft starters used in the same application. The file also contains the type of ADX from which the data was received. If the connected ADX is different (i.e. size or firmware revision), a confirm request message is displayed to prevent the loading. It is important to bear in mind that the transfer of parameters from one size of ADX to different one should not be made because parameters could be incompatible.

Parameters - Save on disk

This function, complementary to the above mentioned, is used to save the setup (basic, advanced or functions) parameters in an ASCII file so they can be reloaded later. When this operation is completed when a confirm message of complete save is displayed.

Parameters - Print

A printing of the parameter values contained in the ADX is obtained with this menu. The report is printed, complete with date and time entry, of the parameter list of the three menus, each with its relative value.

Parameters – Clock setting

A password entry is required to have access to the ADX clock calendar adjustment setting. This function is then enabled and the date and time setting can be done in manual or automatic mode. With the manual mode, the various values are inserted in the relative spaces and then the *Transmit* button pressed to transfer the data to the ADX. In automatic mode, the *Auto set* button must be pushed and the clock calendar is automatically adjusted with the PC setting.
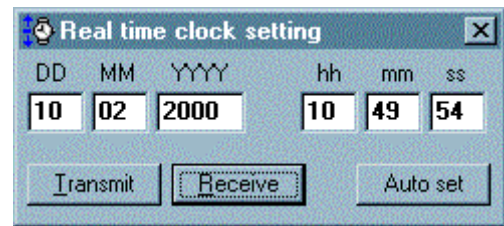
Parameters – ADX Modem

If modems are used to obtain remote control, a few ADX parameters must be programmed to supervise the ADX modem. Owing to their special configuration, these parameters are not available on the ADX display buttonpad and can be adjusted by the PC or remote control software only.

The programming is usually done by the direct connection between the PC and ADX with the RS-232 serial cable since these parameters must be programmed *before* using the modem. When a modem is used, the ADX can be configured to answer incoming calls from the PC only or to autonomously call the PC in case of particular events (alarm conditions or at periodic intervals).

In addition, the ADX can be connected to a GSM modem, that is a device comprising a traditional modem and a cellular telephone in one. In this circumstance, the ADX can send SMS messages or electronic mail even from isolated sites, without telephone lines, always after an alarm event or at periodical intervals.

All the parameters needed to carry out the operations described above are indicated in the dialog box given in the figure:

Main modem enabling

Call enable from ADX to PC

Type of ADX modem: normal or GSM

Indication the ADX will use to identify itself when connected to PC.

Call enable in alarm conditions

Call enable at periodic intervals

Connection to PC enable

Send enable of SMS messages (GSM modem only)

Send enable of e-mail messages (GSM modem only)

Command to send to modem for initialisation (optional, depending on type of modem)

Type of telephone line (usually Tone)

ADX modem telephone number

Delay between alarm event and call attempt

Interval for the periodic call

Hour at which to place periodic call

Number of connection attempts to PC

PC telephone number

SMS destination GSM phone number (GSM modem only)

Store all user's settings in ADX memory

Read all ADX stored data and display in dialog box.

E-mail destination address (GSM modem only)

Dialog box contents: Adx-side modem parameters — Enable modem; Enable calls from adx; GSM modem. Adx-Side modem: Initialization string; Tone dialing (DTMF); Pulse dialing. Adx calls: Adx identification string: PUMP STATION. Adx modem phone number. CALL CONDITIONS: In case of alarm, after 00 minutes; Periodically, every 01 days at 12:00 o'clock; Connect to PC; Send SMS; Send E-mail. service center phone number: 035 4282321, attempts 2; 0339 6358455. E-mail address. Buttons: Transmit, Receive, Exit.

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View menu

This drop-down menu includes a set of options to obtain the display of various dialog boxes, which provide data related to the connected ADX status. The following gives a summary of the dialog boxes which can be displayed.

View - Graphics

With this menu, a dialog box can be opened where the analog readings, monitored by the ADX, can be displayed in a strip-chart graph format.

The scale of the horizontal axis (time) can be changed using the two increase-decrease buttons; these represent the horizontal zoom, which varies the scale from a 0.5 seconds minimum per square (segment) to 10 seconds per segment.

At the same time, the vertical axis (amplitude) of the scale can be adjusted for each reading.

The monitored data are summarised in the table below:

READING	COLOUR	SCALE	REF
Current	Green	10 to 70 % In / segment	CUR
Torque	Blue	5 to 25% Tn / segment	TRQ
Line voltage	Yellow	20 to 70 V / segment	VOL
Motor thermal status (t.s.)	Purple	5 to 20% t.s. / segment	MTS
Internal ADX temperature	Red	5 to 15 °C / segment	STS
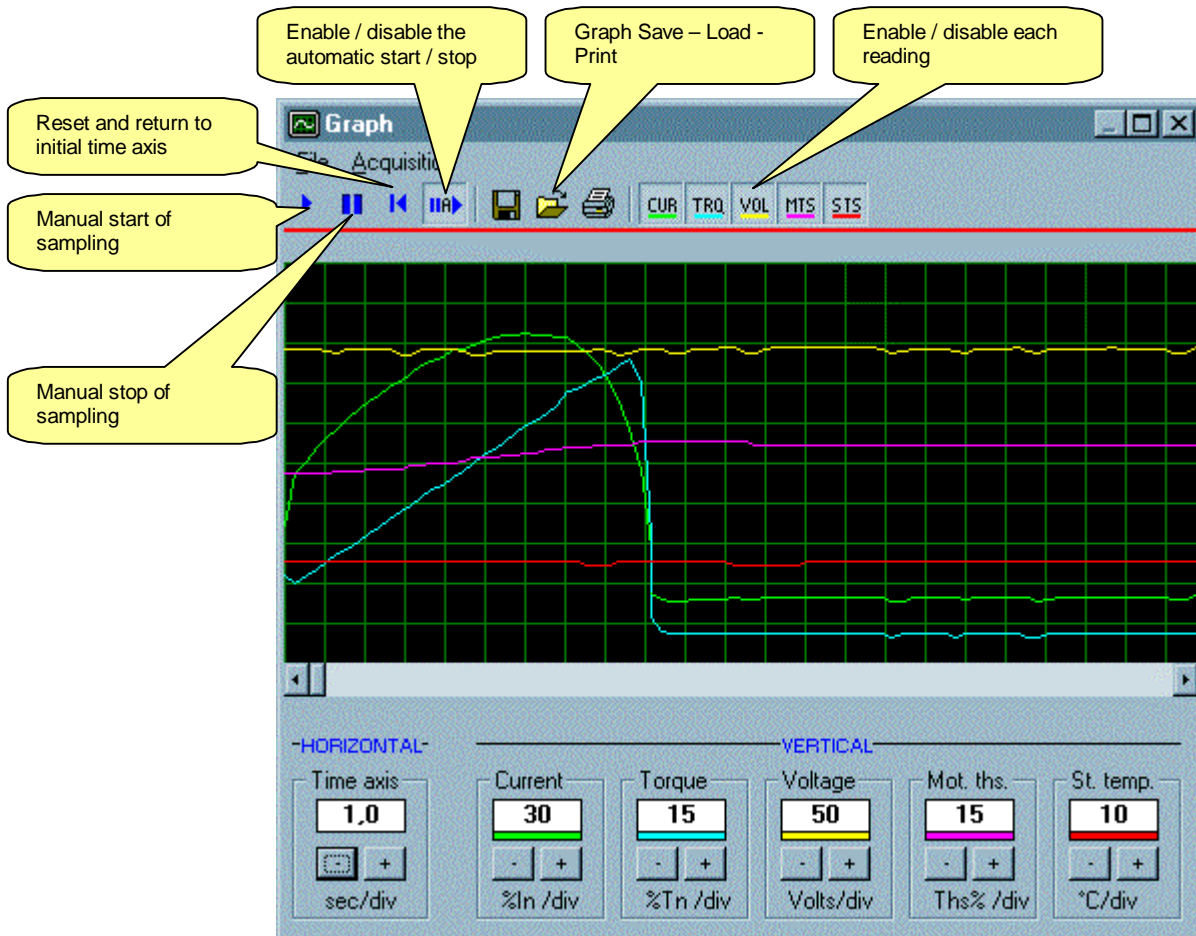
The sampling and the display of each reading can be enabled or disabled individually with the *on-off* buttons of the toolbar. Obviously, the less the readings to sample the faster the sampling speed will be.

When the reading strip chart reaches the end of the display, the horizontal position is reset automatically and starts over again from the left of the dialog box.

By using the toolbar buttons, the reading sampling can be started and stopped either manually or automatically, i.e. the charts are traced at the start signal and terminate when the motor is stopped.

Bear in mind that the speed, at which the readings are being sampled, greatly affects their plotting trait so the relative pattern displayed must be considered purely as an indication. Above all, they do not exactly correspond to the actual reading tendency when modems are used since these devices critically slow down the communication speed and thereby the sampling rate.

View - Command menu

The ADX command menu groups together a series of functions which the user can conduct in case of need, such as the motor thermal status resetting or default adjustment of one or more setup menus. The same commands, available on the ADX keypad, can be remotely done through the PC with the *Command* dialog box of the *View* menu. A drop-down menu is displayed with all available commands. The user just has to choose as per his liking and click on the *Execute* button and then eventually confirm the command consent.

View – Events log

The ADX has a non-volatile memory where the last 20 events are stored (motor starting, stopping, alarm events, menu access and so on), each with code, description, date and time entry. This memory can be displayed on the PC through the *View – Events log* menu, opening the illustrated dialog box. Using the *Print* and *Save* buttons, the events log can be respectively printed or saved on the disk while the *Refresh* button up dates the events log.

View - Options

This menu is used to open a dialog box where the program can be configured as per the user's likings, conveniently enabling and programming the available options.

Once the options are selected, they are stored in an *adx.ini* file and stored for future program uses. It is evident that access to the dialog box is always possible and the relative options can be changed.

The Options dialog box is divided into frames to group the options dependent on each other:

- Communication   (enabled only with the system in Offline)

Choice of the PC serial port to use for the ADX or modem connection

Enables this option if PC modem is used.

Indicated if the PC modem must be initialised with AT commands.

Choice of comunications speed rate. It must correspond to the value selected on the ADX functions menu, With modems, use 9600 bps rate only.

Type of telephone line

This option enables more safe but slower communications rate.

Options

Communication | Language

Port
- COM1:
- COM2:
- COM3:
- COM4:

PC-Side modem
☑ Enable modem

Initialization string
[   ]

● Tone dialing (DTMF)
○ Pulse dialing

Speed
○ 4800 bps
● 9600 bps
○ 19200 bps

Checksum
☐ Verify message checksum

OK   Cancel

- Language

Click on the flag to select the PC program language.

This button enables the same PC language usage for the ADX.

Options

Communication | Language

Click on the flag to select your language

🇬🇧 English
🇮🇹 Italiano
🇩🇪 Deutsch
🇫🇷 Francais
🇪🇸 Espanol
🇵🇹 Portugues

Set adx language

OK   Cancel

adx

Help Menu

This menu comprises the functions giving information about usage and the software version of the remote control.

Help - Contents

This command opens a dialog box giving the electronic version of this manual. The various subjects can be easily found by clicking on the links (coloured summary texts) or by searching for a certain word.

Help - Information

A dialog box is opened with details about the software revision of the remote control. The Lovato business address, phone and fax numbers, Web site and Internet e-mail mailbox are also displayed.

adx

APPENDIX A – Connections

Direct RS-232 connection

The direct connection PC-ADX with the RS-232 interface is possible using a special cable with adapter, indicated in the drawing with the Lovato order code 51C2. The relative connection can be done while the PC and ADX are switched on. After prompting the program, the communication will be opened Online mode if all is correct.

As alaredy mentioned in this manual, this type of connection is intended <u>temporary</u>, useful for the first ADX setup, during installation, for troubleshooting and maintenance purposes. It is <u>NOT suitable permanent connections in the industrial field.</u>

Troubleshooting

If the connection does not work (trying to enter Online mode, the program emits some beeps and automatically proceeds in Offline mode), carefully check the following points:

1. The PC COM port used for the connection must match the one selected in *Options–Communication* dialog box.

2. The communcations rate set on the PC and ADX must be the same (e.g. 9600 bps for both). On the PC, select the *Options-Communication* dialog box while on the ADX, *Functions* menu.

3. The serial address set on the PC and on ADX must be the same (usually 01 for both). The serial address is positioned in the *Communication-Serial address* menu on the PC while in the *Functions* menu on the ADX.

4. The ADX software revision must be higher than 02; this is displayed when the ADX is switched on.

5. The cable must be securely connected and correctly inserted on both ends. It must be connected to the second connector on the left, RJ 6-pole type, of the ADX.

6. The ADX must be switched on.

Direct RS-485 connection

The connection through the RS-485 interface requires RS-232/RS-485 interface converters, order code 4PX1, at each end. I.e. one converter for the PC and another one for each ADX to be thereby connected a minimum of one to a maximum of 32 ADX's. Use Lovato 51C4 cable to connect the PC to the interface converter while the connection between ADX units and the RS-485 converter, with Lovato cable 51C6. The RS-485 converter outputs are then connected in parallel to the 485 Bus, consisting of a screened twisted-pair cable.
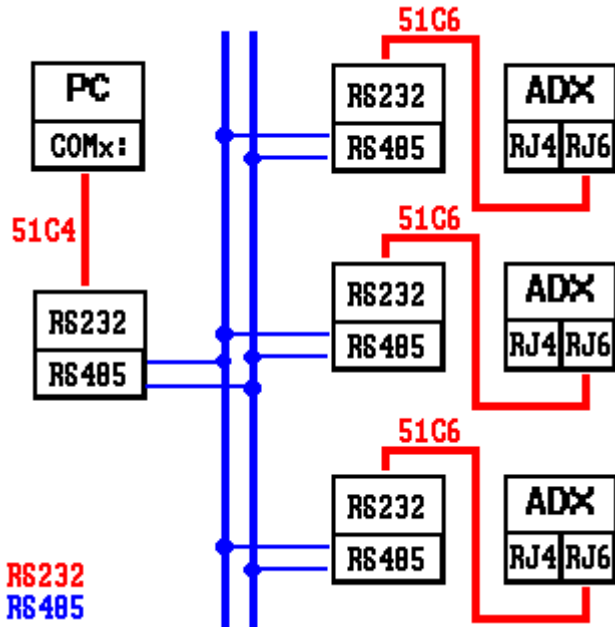

Troubleshooting

If the connection does not work (trying to enter Online mode, the program emits some beeps and automatically proceeds in Offline mode), carefully check the following points:

1. The PC COM port used for the connection must match the one selected in *Communication-Com port* menu. That port must NOT be configured as a serial mouse port on the PC.

2. The communcations rate set on the PC and all ADX must be the same (e.g. 9600 bps for both). On the PC, select the *Options-Communication* dialog box while on the ADX, *Functions* menu.

3. If there are more than one ADX connected, then each must have a serial address different than all the others (e.g. 01, 02, 03, etc.). To set the serial address, program the relative parameter in the *Functions* menu.

4. The serial address set on the PC must match with the one of the ADX addresses. That ADX must be connected and switched on.

5. The converter connection polarity to the RS-485 bus must be correct; all A terminals (marked on the leads), plugged on to one bus connector and the B terminals with the other.

6. The maximum distance between the two most distant units on the RS-485 bus must not exceed 1000 m.

7. The two most distant units must have a 120Ω terminal resistor.

8. The interface converters must be switched on and correctly configured; see the relative technical sheet attached to the devices.

Modem connection

A set of two modems is required to make a remote connection through the telephone system.
Lovato warrants reliable operation using modems of the following type:

- 3-Com U.S. Robotics 56K, model 5630

Although a correct operation can be possibly obtained with other brands of modem, the entire configuration commands (variables which change with each brand) the connections, indicated in this manual, are referred to the above-mentioned type only.

The connection via modem is very simple from a conceptual point of view but implies the user must have at least minimal experience with inconveniences, related to serial communications, modem programming, type of telephone lines and so on. To simplify the configuration procedure, the operations have been divided into the following steps:

1. ***ADX modem configuration***
   The modem of the ADX must be configured before use. The configuration is needed to implement the following functions:
   - Disable the echo.
   - Adjust the communications speed to a fixed 9600-baud rate.
   - Permanently store the two previous settings as default at switch on.

   To make all these configurations, temporarily connect the modem, which will be connected to the ADX, to the PC using its standard cable. Then start the *PM.EXE* program (included with this software) and press the *Modem program* button. That program transmits the following configuration string:

   AT E0 &N6 &U6 &W0 <CR>   (valid commands for the modem model 5630)

   If the user is familiar with terminal emulation programs (Hyperterminal Windows) then he can manually carry out this programming, without the help of that program. In this case, the serial interface must be set at 9600 baud, 8 bits, No parity, 1 stop bit as well as the above-indicated configuration message. After the enter command, attend the confirm message which indicates the programming has been done.
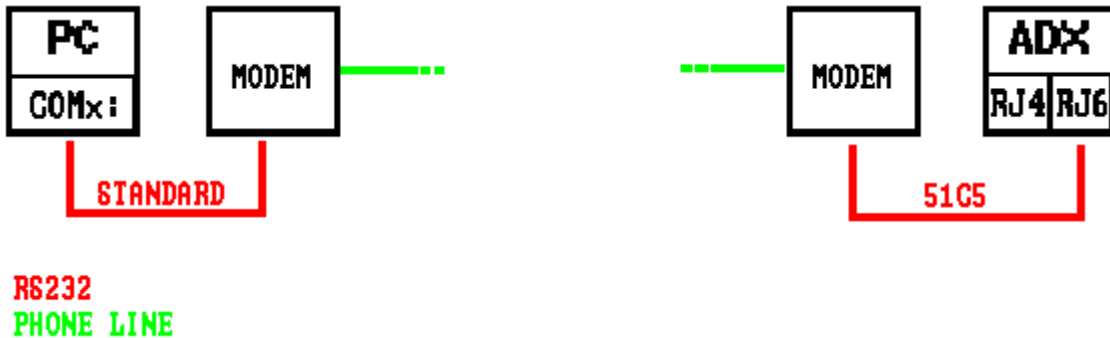
2. ***ADX configuration***
   The soft starter also requires a configuration to dialog with the modem.
   - Connect the PC to the ADX using the direct RS-232 cable.
   - Check that the firmware revision of the ADX unit is equal to or higher than 04 version.
   - Fix the password.
   - In Online mode, select the *ADX modem parameters* (see the description given in the previous pages) in the *Parameters* menu.
   - Confirm the main modem enabling (first option on the top left).
   - If the ADX is required to call the PC autonomously, confirm the *ADX call enable* and *Connect PC* options, typing the PC modem number in the *telephone number* space and programming the conditions which determine a call (alarm conditions and/or periodic intervals).
   - Transmit the setting with the *Transmit* button.
   - Open the ADX *Functions* menu with the *Functions setup parameters* option.
   - Confirm the *On* option for the *Modem communication* parameter.
   - Select the serial communications rate at 9600 in the relative parameter frame.
   - Set the serial address to the same value programmed at the PC (usually *01*).
   - Confirm and store with the *Transmit* button.

3. System connection

- Connect the programmed modem, as per item 1, to the ADX, using the cable 51C5.
- Connect the second modem to the PC using the standard supplied cable.
- Connect both modems to the relative telephone lines. It is advisable during the first tests to use internal office lines so the call process can be kept under control.

4. ADX.exe program configuration

- Start the *ADX.exe* program from the PC.
- Open the *View – Options* dialog box.
- Start the *Enable modem* option.
- Set the speed rate at 9600 baud.
- Press *OK*.

5. Online connection

- Select the *Modem call* option in the *Communication* menu.
- Type the telephone number for data transmission of the ADX modem.
- Click on *Dial*.
- Now, the PC modem calls the ADX modem. After a few rings, the ADX modem answers (this is shown by the wording *Modem call* on the ADX display) and the program automatically continues to online mode.
- To suspend the connection, select the *Modem hang up* option in the *Communication* menu.

Troubleshooting

Whenever the ADX modem does not ring during the call attempt, this signifies the call can not reach destination. Consequently, check the following:

- Try dialling the number of the ADX modem directly from a normal telephone. The modem should emit beeps which could be heard on the telephone. If this does not take place, there are problems with the telephone lines and/or exchange.
- If the PC modem is switched on, connected to the PC with its standard cable and connected to the correct serial port (the one selected in the *Options - Communication*).

If the modem, being called, rings continuously but the ADX does not display any message and the connection is not completed (the dialog box indication *Connection OK* is not displayed):

- Check the ADX programming (see previous item 2).
- Control the ADX modem cable 51C5.

If the *Connection OK* indication is displayed but the program then goes in Offline:

- Check that both PC and ADX speed rates are set at 9600 baud.
- Try to directly connect the PC to the ADX with the cable 51C2 and conduct all the controls described in the RS-232 direct connection section.
- Check if the modem is programmed correctly as stated in item 1.

GSM modem connection

To make a remote connection through the GSM cellular system, a GSM modem must be connected to the ADX and a second modem, traditional or GSM type, to the PC.
Lovato warrants reliable operation using GSM modems of the following type:

- Funkanlagen Falcom A-2

This type of modem is very versatile and allows access to functions, which are normally not possible with a traditional modem (SMS, E-mail). However, wireless communications, although conducted with 9600 bps, require longer signal transfer times often troublesome for communications speed.

The connection via GSM modem is very simple from a conceptual point of view but implies the user must have at least minimal experience with inconveniences related to serial communications, modem programming, type of telephone lines and so on. To simplify the configuration procedure, the operations have been divided into the following steps:

1. ***ADX GSM modem configuration***
   The GSM modem of the ADX must be configured before use. The configuration is needed to implement the following functions:
   - Disable the echo.
   - Set the communications speed rate at 9600 bauds.
   - Disable the PIN request after switch on.
   - Confirm the telephone number of the SMS exchange server.
   - Set the SMS mode to *Text.*
   - Permanently store the two previous settings as default at switch on.

   To make all these configurations, temporarily connect the GSM modem, which will be connected to the ADX, to the PC using its standard cable. Then start the *PM.EXE* program (included with this software) and press the *GSM modem program* button. Attend the confirm message and then disconnect the GSM modem from the PC.

   Important:
   The SIM-CARD must be enabled for data transmission when used with GSM modems. A normal SIM-CARD for cellular telephone does not work. Consult any SIM-CARD dealer to obtain this feature.

2. ***ADX configuration***
   The soft starter also requires a configuration to dialog with the modem.
   - Connect the PC to the ADX using the direct RS-232 cable.
   - Check that the firmware revision of the ADX unit is equal to or higher than 04 version.
   - Fix the password.
   - In Online mode, select the *ADX modem parameters* (see the description given in the previous pages) in the *Parameters* menu.
   - Confirm the modem main enabling (first option on the top left).
   - Confirm the *GSM Modem* option.
   - If the ADX is required to call the PC autonomously, confirm the *ADX call enable* and *Connect PC* options, typing the PC modem number in the *telephone number* line and programming the conditions which determine a call (alarm conditions and/or periodic intervals).
   - If the ADX is required to send a SMS message whenever the preset conditions take place, confirm the *Transmit SMS* option and type the cellular telephone number to which the message is to be transmitted.
   - In the same way, if the ADX is to transmit an electronic mail message, confirm the *Transmit E-mail* option and type the receiver mailbox in the relative space.

- Transmit the setting with *Transmit* button.
- Open the ADX *Functions* menu with the *Parameter - Functions setup* option.
- Confirm the *On* option for the *Modem communication* parameter.
- Set the serial speed rate at 9600 with the relative parameter.
- Set the serial address to the same value programmed at the PC (usually *01*).
- Confirm and store with the *Transmit* button.

3. System connection
- Connect the programmed GSM modem, as per item 1, to the ADX using the cable 51C7.
- Connect the second modem to the PC using the standard supplied cable.
- Switch on the GSM modem and wait 30 seconds for the initialisation.

4. ADX.exe program configuration
- Start the *ADX.exe* program from the PC.
- Open the *View – Options* dialog box.
- Start the *Enable modem* option.
- Set the speed rate at 9600 baud.
- Press the *OK* button.

5. Online connection
- Select the *Modem-Call* option in the *Communication* menu.
- Type the telephone number in the relative line for data transmission of the ADX GSM modem.
- Click on *Dial*.
- Now, the PC modem calls the ADX modem. After a few rings, the ADX modem answers (this is shown by the wording *Modem call* on the ADX display) and the program automatically continues to online mode.
- To suspend the connection, select the *Modem hang up* option in the *Communication* menu.

Troubleshooting
Whenever the ADX GSM modem does not ring during the call attempt, this signifies the call can not reach destination. Consequently, check the following:
- If the GSM modem signal is sufficiently loud enough (> 40%). To complete this operation, use the *PM.EXE* program.
- If the PC modem is switched on, connected to the correct PC serial port with its standard cable, (the one selected with *Options-Communication*).

If the modem, being called, rings continuously but the ADX does not display any message and the connection is not completed (the dialog box indicating *Connection OK* is not displayed):

- Check the ADX programming (see previous item 2).
- Control the ADX modem cable 51C5.

If the *Connection OK* indication is displayed but the program then goes in Offline:

- Verify the GSM signal quality.
- Activate the *Checksum* option of the *Options – Communication* dialog box.
- Check that both PC and ADX speed rates are set at 9600 baud.
- Try to directly connect the PC to the ADX, using the cable 51C2, and conduct all the controls described in the RS-232 direct connection section.
- Check if the GSM modem is programmed correctly as stated in item 1 above.