

EXgarde Toolkit

User Guide

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Foreword

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Cautions and Notes

The following symbols are used in this guide:



CAUTION! This indicates an important operating instruction that should be followed to avoid any potential damage to hardware or property, loss of data, or personal injury.



NOTE. This indicates important information to help you make the best use of this product.

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1. Introduction

TDSi has produced a toolkit of engineer software applications to help, install and communications (comms) troubleshooting TDSi ACUs (access control units) and equipment.



CAUTION! THESE ARE VERY CAPABLE ENGINEERING TOOLS THAT CAN TOTALLY ALTER YOUR EQUIPMENT.

Xkdx	Emulates the programming EXkeypad used with EXpert, but can also be used for EXcel and MG (MICROgarde) controllers.
Xset38 and Xset96	Forces the baud rate of an EX-series controller to either 38,400 or 9600
Xsearch	Log-on test, to confirm ACUs are communicating (serial and local TCP/IP connections). Also allows IP addresses to be set in Lantronix adaptors and in Expert I/P, MICROgarde I/P and EXcel ⁴ controllers.
Xinstall	Application used to upload new firmware to an ACU
Xchat	A multi functional application which all other EXtoolkit apps derived from. Particular useful for searching across Networks, LAN and WAN.
Xcustom	Used to set custom persistent parameters within EX and MG series Controllers for the customisation of reader parameters and formats.

EX Series Documentation CD

Each of these applications is provided on your EX Series Documentation CD within the **extras** folder. This is not automatically installed but you can copy the file onto your PC into any convenient location.

EXgarde Software Installation

If you have installed EXgarde software then the **extras** folder containing the toolkit is also installed into the TDSi folder along with the EXgarde software. So the default location is:

C:/Program Files/TDSi/extras

Each of the independent applications can be installed separately, and can be run from any folder or even the desktop. Occasionally on some PCs the applications have not been able to be opened where the route path is too great, in which case create a folder directly under the C: drive.

1.1 “EXE” and “ini” Files

Many of the applications comprise of a pair of files that work together.

1. **EXE file (xxxxx.exe)** is the executable for the application. It needs to be given the correct configuration which is done by editing the initialisation “ini” file.
2. **INI file (xxxxx.ini)** the initialisation file for the application. This can be edited in any text editor such as Notepad (see Figure 1).



NOTE. To edit this file, ensure that a *Read Only* attribute has not been applied by your computer’s operating system when copying across from the CD (right-click on the file, select **Properties** and then clear the *Read Only* tick if enabled).

```

;
; XKDX ini file
; All these settings have default values
; which will be used if a key is not present
; or if the ini file is missing

[X]
;;; COMMS PORT SETTINGS
; Comms Port to use
; note that this may be overridden by a command line value if required.
; set this to 0 if using IP
; Default 1
; Comm_Port=1

; ; comms rate
; Default 38400
; Comm_Rate=38400

; ; ; ;;;; IP SETTINGS
; IP address of unit
; A Comm_Port entry !=0 will take precedence over this entry
; default empty
; IP_Address=10.0.0.209

; ; IP Port - meaningless unless IP_Address is specified.
; default 0
; IP_Port=10001

; ; ; ;;;; ADDITIONAL SETTINGS
; number of retries for commands
; default 1
; Comm_Retries=1

; ; Additional timeout in mseconds, added to any internal program timeouts
; Used mainly when using IP links
; Default 0
; Suggested value for IP links, 5000 (5 seconds)
; Comm_Timeout=0

```

Figure 1 Example showing the default XKDX.INI file opened in Notepad

1.2 Editing the Configuration INI file

Within an INI file:

- Where a semi-colon is in front of the text command line then this line is DISABLED.
- Where there is no semi-colon in front then the command line is ENABLED. Active items are shown in bold font in the following examples.



NOTE. By default, the values for TCP/IP communications are commented out – if you wish to use TCP/IP then remove the semi-colon and set the required values. You must also set **Comm_Port=0** for TCP/IP comms.

The following pages explain how to edit an INI file using XKDX.INI as an example. The purpose in this case is to configure the file to set up communications with an ACU on a I/P network with TCP/IP address 10.0.5.11. The first example is a commented with the changes required shown in *italics*. The second example shows the file with all the necessary changes in place.

Example of an INI file

This is the default **xkdx.ini** file:

```
;
; XKDX ini file
; All these settings have default values
; Which will be used if a key is not present
; or if the ini file is missing

[X]
;;; COMMS PORT SETTINGS
; Comms Port to use
; note that this may be overridden by a command line value if required.
; set this to 0 if using IP
; Default 2
Comm_Port=1      to use TCP/IP and not serial, change this line to read
Comm_Port=0.
                    Comm_Port=1 in this example means the serial communications
                    port 1 on your PC

; comms rate
; Default 38400
Comm_Rate=38400  this is the default BAUD rate for all EX and MG controllers

;;; IP SETTINGS
; IP address of unit
; A Comm_Port entry !=0 will take precedence over this entry
; default empty
;IP_Address=10.0.0.209 for the correct address alter to IP_Address=10.0.5.11
and remove the semi colon

; IP Port - meaningless unless IP_Address is specified.
; default 0
;IP_Port=10001   to use TCP/IP remove the semi colon IP_Port=10001 (this is
the recommended I/P port TDSi has recommended but some customers may have used
1002 etc instead

;;; ADDITIONAL SETTINGS
; number of retries for commands
; default 1
Comm_Retries=1  this can be left as 1

; Additional timeout in mseconds, added to any internal program timeouts
; Used mainly when using IP links
; Default 0;
; Suggested value for IP links, 5000 (5 seconds)
Comm_Timeout=0 this can be left as 0
```

Edited example of .ini file

This is an edited version of XKDX.INI with modifications for IP communications via 10.0.5.11

```

;
; XKDX ini file
; All these settings have default values
; Which will be used if a key is not present
; or if the ini file is missing

[X]
;;; COMMS PORT SETTINGS
; Comms Port to use
; note that this may be overridden by a command line value if required.
; set this to 0 if using IP
; Default 2
Comm_Port=0

; comms rate
; Default 38400
Comm_Rate=38400

;;; IP SETTINGS
; IP address of unit
; A Comm_Port entry !=0 will take precedence over this entry
; default empty
IP_Address=10.0.5.11

; IP Port - meaningless unless IP_Address is specified.
; default 0
IP_Port=10001

;;; ADDITIONAL SETTINGS
; number of retries for commands
; default 1
Comm_Retries=1

; Additional timeout in mseconds, added to any internal program timeouts
; Used mainly when using IP links
; Default 0;
; Suggested value for IP links, 5000 (5 seconds)
Comm_Timeout=0

```



NOTE. After editing an INI file be sure to save and close the file. The INI file should be located in the same folder as its corresponding .exe file

XKDX emulates the programming keypad used with EXpert controllers – but can also be used with EXcel and MICROgarde controllers.

The application can be used on any computer that has one or more controllers connected to a serial port, directly or via RS485. It can also be used on any computer that is on the same TCP/IP network with one or more controllers. Controllers that are connected via RS485 and in turn connected via a TCP/IP converter and network can also be addressed by this application. XKDX does not work across WAN routers.

To use XKDX:

1. Copy XKDX.EXE and XKDX.INI to the same folder on your PC.
2. Edit XKDX.INI to set the required parameters for communicating to the ACU (see page 3).
3. Run XKDX.EXE (by double-clicking on the file from Windows Explorer, for example).

2.1 Operation and Use



NOTE. EXgarde communications must be closed in order to allow execution of this program.

When started, XKDX will check for any EX-series units assigned numbers 0-9, and display the KDX for the numerically lowest found. If none are found, XKDX prompts to enter a unit number in the range 0-1021

- Press N to display the next unit in the range 0-9 (if there is one). If there is only one unit in the range 0-9, that will continue to be displayed.
- Press # to display the unit number prompt.

2.2 KDX Navigation

The following keys are used for KDX navigation:

- 0-9
- Enter (equivalent to the * on the KDX keypad)
- Escape (equivalent to the # on the KDX keypad)
- Cursor control keys

For full details on using the KDX and the EX series Menu Map refer to the EXpert User Manual.

3. Xset38 and Xset96

Xset38.exe and **Xset96.exe** are provided in separate folders within the *Extras* folder.

- **Xset38.exe** sets the equipment to 38,400 baud rate.
- **Xset96.exe** sets the equipment to 9,600 baud rate.

These two applications do not use INI files.

When EX-Series controllers are used with EXgarde software, the baud rate used is normally 38,400. This prevents EX-Series and S-Series controllers being mixed on the same communication line, as S-Series controllers can only work at 9600 baud.

However, from version 2.4 firmware and above, EX-series ACUs will automatically detect the baud rate and if this has been set in EXgarde to 9600 to allow S-Series units then the EX-series units will automatically set themselves to the correct baud rate.

Prior to version 2.4, the solution is to use **Xset96.exe** to force any EX-series controllers to 9600 baud.

3.1 Operation

The files can be placed in any location on the local PC.

When run, (by, for example double clicking on the filename in Windows Explorer), the application performs a search across all local com ports on the PC and will automatically set all devices and ACUs to the appropriate baud rate (9,600 or 38,400).

If you want to set the baud rate on only a single communication port, so as not to interfere with other devices on other comm. ports:

1. Create a shortcut to the executable.
2. Right-click on the Shortcut and select **Properties**.
3. Modify the *Target* field by adding a space followed by the number of the communication port.
4. Click on the **Save** button.

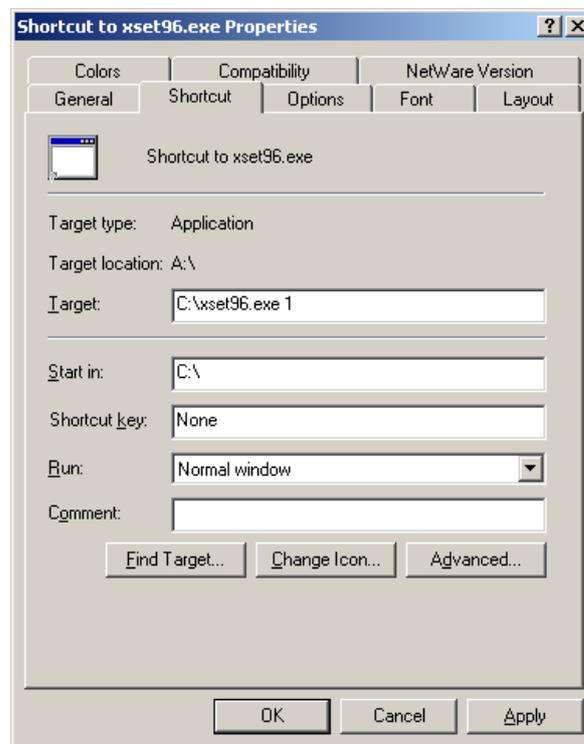


Figure 2 Forcing Xset96.exe to search for ACUs on Com Port 1 only

4. Xsearch

Xsearch performs a log-on test, to confirm that ACUs are communicating correctly both on serial and local TCP/IP connections. It also allows IP addresses to be set in Lantronix adaptors and ACUs with XPort TCP/IP modules such as EXcel 4 and EXpert 2 I/P.

Xsearch allows you to:

- Change any IP addresses.
- Search each comm. port at selectable baud rates.
- Verifies communication with ACUs, giving primary details of the ACU.
- Create ACU configuration files with further details on each ACU.
- Access an XKDX or EXKeypad application.

It will operate on all Operating systems used by EXgarde.

A copy of **xsearch.exe** can be installed anywhere on your PC. It does not require an INI file.

4.1 Running Xsearch

EXgarde communications **must be closed** in order to allow execution of this program. In addition, any other application that addresses a communication port should be closed.

Start the application by, for example, double-clicking on its filename from Windows Explorer.

Xsearch automatically searches for all com ports on the PC, including any virtual comm. ports for TCP/IP re-direction and then displays a list as shown in Figure 3 under the *Communications channels* header.



NOTE. If you have a networked system, Xsearch only finds Com Ports on the local PC.

```

c:\ XSearch V1.1_4 (11:48:46 Feb 3 2009) -- TDSIWKS013
User interface
Options:-
Select Lantronix adaptor using cursor keys, Enter to Edit
R to rescan for adaptors
Escape for no change and select channel

Communications channels -- 2 COM, 20 IP
COM1
COM5
Xport 00:20:4a:a1:32:a6 10.0.5.2 38400 None 10001 5-000-000-285
Xport 00:20:4a:87:78:90 10.0.0.225 38400 None 10001 1-001-102-417
Xport 00:20:4a:af:52:7f 10.0.5.14 38400 None 10001 4-004-002-379
Xport 00:20:4a:8d:bf:cb 10.0.5.13 38400 None 10001 4-004-001-332
Xport 00:20:4a:a7:2c:37 10.0.5.12 9600 None 10001 4-004-002-447
UDS10 00:20:4a:c1:a7:61 10.0.5.3 9600 None 10001 RS485 4 wire
Xport 00:20:4a:bc:25:64 10.0.1.226 38400 None 10001
Xport 00:20:4a:b8:33:36 10.0.5.11 9600 None 10001
Xport 00:20:4a:80:2a:6b 10.0.0.209 9600 None 10001 4-004-000-128
Xport 00:20:4a:a1:a6:ff 10.0.5.1 38400 None 10001 5-000-000-285
Xport 00:20:4a:9a:25:08 10.0.0.219 38400 None 10001 No UID
Xport 00:20:4a:bf:f3:3d 10.0.100.100 38400 None 10001
Xport 00:20:4a:9a:7c:3a 10.0.0.231 38400 None 10001 No UID
Xport 00:20:4a:b8:2e:bd 10.0.1.224 38400 None 10001
UDS10 00:20:4a:9c:d3:f2 10.0.0.222 38400 None 10001 RS485 4 wire
UDS10 00:20:4a:34:45:0d 10.0.0.215 115200 None 10001 RS485 4 wire
UDS10 00:20:4a:34:30:37 10.0.0.208 38400 None 10001 RS232
UDS10 00:20:4a:64:05:82 10.0.0.202 38400 None 10001 RS232
UDS10 00:20:4a:34:30:4f 10.0.0.210 9600 None 10001 RS485 4 wire
UDS10 00:20:4a:05:88:dc 10.0.0.223 38400 None 10001 RS232

Progress....
Searching for COM ports
2 COM ports found
Searching for Lantronix adaptors
I/F 0, IP 10.0.2.30
I/F 1, IP 127.0.0.1
20 Lantronix adaptors found

```

Figure 3 Xsearch.exe: communication channels list

4.2 Operation

1. Select a port using the up and down arrow keys.
2. Press the Enter key to edit the selected comm.port, Lantronix port or IP port.
3. If IP Modules are found, press ESC once to scroll through the IP addresses.
4. Use the options and commands displayed at the top of the screen.

If at any time you are unable to select a channel, press the Escape key once or twice (depending on the screen you are in) to bring you back to the list of main options.

```

XSearch V1.1_4 (11:48:46 Feb 3 2009) -- TDSIWKS013
User interface
Options:-
  Cursor keys + Enter - scan one channel
  A - scan all channels
  I - scan all IP channels
  T - select Unit/UID scan
  U - select UID type
  L - scan all COM channels
  S - select scan type
  B - select base unit/UID <0>
  N - select number of units <100>

Current options:-
  ACUs 0 to 99 @ Channel

Communications channels -- 2 COM, 20 IP
COM1
COM5
Xport 00:20:4a:a1:32:a6 10.0.5.2 38400 None 10001 5-000-000-285
Xport 00:20:4a:87:78:90 10.0.0.225 38400 None 10001 1-001-102-417
Xport 00:20:4a:af:52:7f 10.0.5.14 38400 None 10001 4-004-002-379
Xport 00:20:4a:8d:bf:cb 10.0.5.13 38400 None 10001 4-004-001-332
Xport 00:20:4a:a7:2c:37 10.0.5.12 9600 None 10001 4-004-002-447
UDS10 00:20:4a:c1:a7:61 10.0.5.3 9600 None 10001 RS485 4 wire
Xport 00:20:4a:bc:25:64 10.0.1.226 38400 None 10001
Xport 00:20:4a:b8:33:36 10.0.5.11 9600 None 10001
Xport 00:20:4a:80:2a:6b 10.0.0.209 9600 None 10001 4-004-000-128
Xport 00:20:4a:a1:a6:ff 10.0.5.1 38400 None 10001 5-000-000-285
Xport 00:20:4a:9a:25:08 10.0.0.219 38400 None 10001 No UID
Xport 00:20:4a:bf:f3:3d 10.0.100.100 38400 None 10001
Xport 00:20:4a:9a:7c:3a 10.0.0.231 38400 None 10001 No UID
Xport 00:20:4a:b8:2e:bd 10.0.1.224 38400 None 10001
UDS10 00:20:4a:9c:d3:f2 10.0.0.222 38400 None 10001 RS485 4 wire
UDS10 00:20:4a:34:45:0d 10.0.0.215 115200 None 10001 RS485 4 wire
UDS10 00:20:4a:34:30:37 10.0.0.208 38400 None 10001 RS232
UDS10 00:20:4a:64:05:82 10.0.0.202 38400 None 10001 RS232
UDS10 00:20:4a:34:30:4f 10.0.0.210 9600 None 10001 RS485 4 wire
UDS10 00:20:4a:05:08:dc 10.0.0.223 38400 None 10001 RS232

Progress...
Searching for COM ports
2 COM ports found
Searching for Lantronix adaptors
I/F 0, IP 10.0.2.30
I/F 1, IP 127.0.0.1
20 Lantronix adaptors found
  
```

Figure 4 Xsearch.exe: searching COM port for ACU units

4.2.1 Options

Examples of Xsearch command options are shown in Figure 5.

```

C:\> XSearch V1.1_4 (11:48:46 Feb 3 2009) -- TDSIWKS013
User interface
Options:-
Cursor keys + Enter - scan one channel
A - scan all channels          L - scan all COM channels
I - scan all IP channels       S - select scan type
T - select Unit/UID scan      B - select base unit/UID <0>
U - select UID type           N - select number of units <100>

Current options:-
ACUs 0 to 99 @ Channel
  
```

Figure 5 Xsearch.exe command options

Note that the selections are accumulative so pressing for e.g. T, B, N will search on UID + UID start number + number total to search on.

A	Scans every channel
I	Scans every IP channel
T	Selects the 100 units in "Unit number" to search on. Press T again to select 100 in UID numbers and so T toggles you from Unit to UID options.
U	Selects the specific unit type where 1 = EXpert and Expanders; 3 = EXcel2; 4 = EXcel 4; MGII and 6 = MGI
L	Scans every Comm Channels and not IP ports
S	Change scan type for either 38400 baud or 9600 & 38400 baud
B	Press B then enter the first Unit number to start scanning on i.e. type 200 and it will scan from unit number 200-299 units. If you select T option this will change the scan to be in UID numbers, so with B type in the first UID number to scan on i.e. type 003-100-300 and it will scan from this specific UID number for 100 units. Pressing N will change the number of units it scans for.
N	Selects the number of units it scans for

4.3 Searching for a Port

1. First start **Xsearch**, to get the screen with all communication channels listed.
2. Press Esc, then use the up and down arrows to select a port channel.
3. Press Enter when the required port is highlighted.

The application polls the selected channel looking for ACUs in the range 1-99. The default baud rate is usually 38400 baud, but auto selects the best rate.

```

c:\ XSearch V1.1_4 (11:48:46 Feb 3 2009) -- TDSIWKS013
User interface
Scanning for ACUs on selected channels at Channel

Select :-
Q to quit
R to restart scanning selected channel(s)
U to view ACU file
ESC to return to channel display
P to create an ACU file, <TDSIWKS013.ACU>

COM8 @ 38400, 000 to 099
070 *****

U001 1-001-109-745 expert 24(24-28)
U002 5-000-011-147 Mg2 32(31-32)

Progress...
packet some sort of error

```

Figure 6 Searching for a port

- The unit Number, UID and ACU type will be displayed if the ACU is on-line.
- The numbers to the right e.g. 24(24-28) are response times in milliseconds - The first figure is the latest time seen, the figures in parentheses are min-max figures.
- Options Q, R V, Esc and P are available.
- A Remote KDX box will appear after a short time. By highlighting the online unit you can press K to go the KDX function to display the actual ACU. Press Q to quit the KDX screen.
- The main screen displays all ACU types on line, but does not show any Expert Slaves or Expanders on line.
- At the foot of the screen the search provides constant progress and useful information if problems occur.

4.4 The ACU file

When running the search, select option **P** to create an ACU file. When it is complete, the message “file created” will be displayed above the search screen. To view this file press **V**. The top section of this report gives general descriptions. Below is an example of the actual ACUs found in CSV format.

Example

```
COM8,38400
1,0,28,3,2,0,5-000-011-147,4,2,5,2,0,128,1,20,34
2,0,22,3,3,0,1-001-109-745,2,2,9,5,0,256,1,23,76
1,1,20,2,6,0,2-002-010-285,2,2,9,5,0,0,0,0,0
2,2,20,2,6,0,2-002-010-695,2,2,9,5,0,0,0,0,0
25,0,22,2,4,4,1-000-000-051,2,2,9,5,0,256,1
```

The order of terms in the CSV file is shown in Table 1.

Table 1 Order of terms in an ACU CSV file

Term	Use
1	Unit number of the ACU (25 in the example)
2	Sub unit number 0 for master, or 1 for slave unit 1, 2 for slave 2, 3 for slave unit number 3 etc
3	Unit type 9=S2, 12=S1, 15=S4, 20=EXpander, 22=EXpert, 23=Loader, 24=eXcel2, 25=eXcel4 27=MG1, 28=MG2, 29=Mloader
4	Version
5	Issue
6	Fluxstate
7	ACU's UID number (1-000-000-051 in the example). Note that S-series ACUs will have no UID number.
8	Readers
9	Doors
10	Inputs
11	Outputs
12	I/O IOB coding for S series is 0=none, 1=Normal IOB, 2=Supervised IOB; IOB coding for EX series is 0=none, 1=32In+16Out, 2=32Out, 3=32In; IOB coding for M series is 0=none, 1=IOB
13	RAM
14	Flashable: 1 is flash downloadable, 0 for not
15	Min-response in milliseconds
16	Max-response. in milliseconds

5. Xinstall

Xinstall is an executable that can be used to upload new firmware to an ACU. Once the process is started, the controller will lose all information and will not operate until a refresh of the data from the Access control software has been completed.

Xinstall.exe is used in association with the **Xinstall.ini** file, which tells it how to connect to the ACU, and thus automatically send down the Firmware Data to the ACU.

To upload new firmware to an ACU, Access Control Software Communications must be stopped before doing so.

You need 3 files:

- Xinstall.exe
- Xinstall.ini
- The Firmware File “xxxx.s2” or “xxxx.abs”

Place all three files in the same location or folder.

For this explanation, version 3.03 firmware, **eX2_303.s2** for an EXpert Controller is being used as an example. Firmware names vary, most end with extension **.s2** but some older firmware had extension **xxxx.abs** e.g. **eX2MF206.abs**, so just enter the correct name used.

1. Place a copy of the Xinstall.exe and Xinstall.ini, along with a copy of the firmware.s2 file into a folder on your PC or simply copy them onto your desktop. Make sure no other .ini files are present in this same location.
2. Double click on **XINSTALL.INI** and open it in Notepad, (for a full explanation on this file and editing refer to page 3 of this manual).
3. Go to the **[XINSTALL.ini]** section and modify the name of the firmware:
Code_File_Name= eX2_303.s2
4. Go to the **COMMS PORT SETTINGS** and change the port number and the Comm_Rate to the one you are using.

If you are using IP use a crossover cable to connect the computer to the ACU. Although the procedure can be done over a network, use extreme caution when downloading the file and ensure it goes to the correct ACU.

For I/P setting changes:

1. Go to the **COMMS PORT SETTINGS** change the port number to 0:
Comm_Port=0
2. Go to the **IP SETTINGS**, set the IP address you want and the IP port to 10001:
IP_Port=10001
3. Save the file and close it.

5.1 Versions of Xinstall

There are two versions of Xinstall::

- Xinstall version 1 (Fast X CODE INSTALLER)
- Xinstall version 2

5.1.1 Xinstall version 1 (Fast X CODE INSTALLER)

This was the first version and is only suitable for uploading version 1 and 2 firmware to the appropriate version 1 and 2 ACU hardware.

To run **Xinstall.exe version 1**:

1. Double click on the xinstall.exe.
2. A DOS window similar to that shown in Figure 7 is displayed.

```

Fast X CODE INSTALLER
XINSTALL for Win95/98/NT/WIN2000/XP 01.04 11:53:16 Nov 15 2002
Author : Allenby

This program takes an ini file xinstall.ini
Filename and comms port may be overridden from the command line using
xinstall <code_file_name> <comms_port>

Where <code_file_name> is name of file in current directory (default xm.abs)
And <comms_port> is COM1,COM2,COMn (default COM2)

File: ex2_303.s2
Com Port: COM8 Rate: 38400
IP_address: IP_port: 0
Retries: 5 Timeout: 5000(msec)
Which unit ? (Q to quit)
  
```

Figure 7 Xinstall version 1(Fast X CODE INSTALLER)

3. At the “Which unit?” prompt, type in the number of the unit and press Enter.

The utility starts loading the firmware to that unit:

- It will erase the current firmware first (note it will detect the current version firmware and in some cases you may get an *unknown* message).
- Xinstall then downloads the new firmware and displays “Sending data”. You will see about 16 dots appear one at a time in a line (see image below).
- The process takes about 1-5 minutes.
- You are then prompted to upgrade another unit. If you type “Y”, Xinstall prompts you for another unit number. This must be on the same Communications Port as specified in the .ini file.

```

C:\> Fast X CODE INSTALLER

Where <code_file_name> is name of file in current directory (default xm.abs)
And <comms_port> is COM1,COM2,COMn (default COM2)

File: eX2MF206.abs
Com Port:                               Rate: 38400
IP_address:                             IP_port: 10001
Retries: 5 Timeout: 5000(msec)
Which unit ? (Q to quit) 1

Testing unit 1 . XM V2.06_00 found
Erasing unit 1 . erased
Testing unit 1 . LOADER V2.02_00 found
Start time is 08:58:01
Reading file eX2MF206.abs ..... file ok
Sending data .....
End time is 09:00:06
programmed ok
Enabling unit 1 . enabled
Restarting unit 1
.
Testing unit 1 . XM V2.06_00 found

Another unit (N/Y)?

```

Figure 8 Upgrading firmware using Xinstall version 1 (Fast X CODE INSTALLER)

5.1.2 Xinstall version 2

Use this version to Flash Upgrade Expert V3 Firmware and Expander V3 Flash Firmware (see page 26 for identification of these types of ACU).

This Xinstall.exe V2 version supports the ability to flash upgrade all versions V1,V2 & V3 firmware, to the appropriate Versions 1, 2 and 3 Hardware of EX series ACUs, and so supersedes the old Xinstall.exe.

The old Xinstall version 1 (fast x code installer) will not Flash upgrade V3 firmware units.

Xinstall.ini version 2

This Xinstall.ini file will have an additional text line :

```

[X]
;;; CODE FILE
; Name of code file
; note that this may be overridden by a command line value if
required.
; this is in the ini file directory.
Code_File_Name=ex2_304.s2
Code_File_Slave_Name=exp_304.s2

```

This text line allows you add and name the Expander firmware:

Code_File_Slave_Name=exp_304.s2

as well as the master firmware:

Code_File_Name=ex2_304.s2



NOTE. The Xinstall.ini for version 2 has the title **[X]** rather than **[Xinstall]** – it is this that distinguishes the Xinstall.ini as suitable for use with the version 2 of X Install.exe.

Xinstall.exe Version 1 must use a Xinstall.ini version 1 to function and Xinstall.exe Version 2 must use a Xinstall.ini version 2 to function

Thus:

Changing an Xinstall.ini version 1 to read **[X]** title and adding in the additional line **Code_File_Slave_Name=**

Converts it to a version 2 Xinstall.ini.

Once you have edited the ini configuration file, save and close the file.

Running Xinstall.exe

1. Run Xinstall.exe by, for example, double clicking on the filename from Windows Explorer.
2. A pop up DOS window similar to that shown in Figure 9 is displayed.

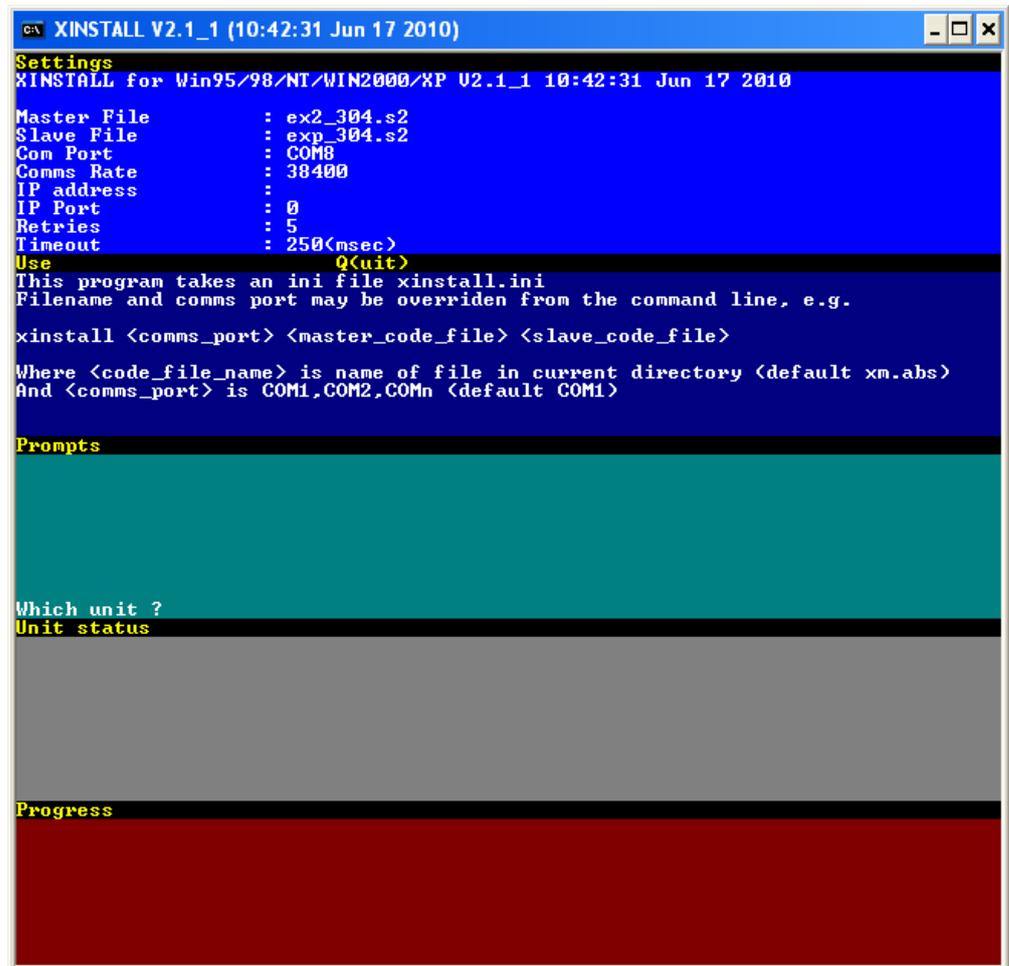


Figure 9 Xinstall version 2

3. The blue **Settings** section shows:

- If you have both EXpert and Expander firmware present in the same folder as the Xinstall application. If the Expert or Expander firmware is missing then you will get a missing indication (see Figure 10).

You would still be able to upload the firmware for the EXpert Master only if the slave file was missing, and similarly if the Master file was missing you would be able to upload the Slave Expander firmware only.

- The *Com Port* in use.

```
Master File      : ex2_302.s2
Slave File      : xs.abs
Com Port        : COM8
Comms Rate      : 38400
IP address      :
```

Figure 10 Missing firmware indication

4. The green **Prompts** section displays the question: “Which unit?”. Enter the unit number of the Master Expert.
5. Xinstall then requests: “Which subunit?” (The sub unit refers to 0 for the master but 1,2,3,4, etc for the slaves).
 - If you want to upgrade the Master Expert, press “0” and Enter.
 - If you want to upgrade an Expander Slave then press the slave unit number e.g. “3” and Enter.

The **Unit Status** grey section lists details of your Expert and all the Expanders on line, letting you know which Units are flash upgradeable.

```

XINSTALL V2.0_02
Settings
XINSTALL for Win95/98/NT/WIN2000/XP U2.0_02 10:52:41 Dec  5 2008
Master File      : ex2_302.s2
Slave File      : ex2_213.s2
Com Port        : COM8
Comms Rate      : 38400
IP address      :
IP Port         : 0
Retries         : 5
Timeout         : 250(msec)
Use             : Q(uit)
This program takes an ini file xinstall.ini
Filename and comms port may be overridden from the command line, e.g.
xinstall <comms_port> <master_code_file> <slave_code_file>
Where <code_file_name> is name of file in current directory <default xm.abs>
And <comms_port> is COM1,COM2,COMn <default COM2>

Prompts

Which unit ? 1
eXpert U3.02.00 found
Choose sub-unit for application upload - 0(eX2)- - -3- - -
Which subunit ? 3
Unit status
eXpert      U3.02.00 UID 1-001-109-745 Flashable
expander    1    U2.06.00 UID 2-002-010-695
expander    2    U2.06.00 UID 2-002-010-285
expander    3    U3.03.01 UID 2-000-000-000 Flashable

Progress

Testing unit 1

```

Figure 11 Unit prompts and status

6. Xinstall uploads the data; this may take several minutes.

If after 10 minutes the “*Sending data*” message in the **Prompts** section is only followed by a few dots, there may be a problem with the Xinstall.ini file, firmware version or Xinstall version you are using.

Generally, the firmware upgrade will be complete in about 10 minutes and there will be 16 to 27 dots appear after the “*Sending data*” message in the **Prompts** section (see Figure 12).

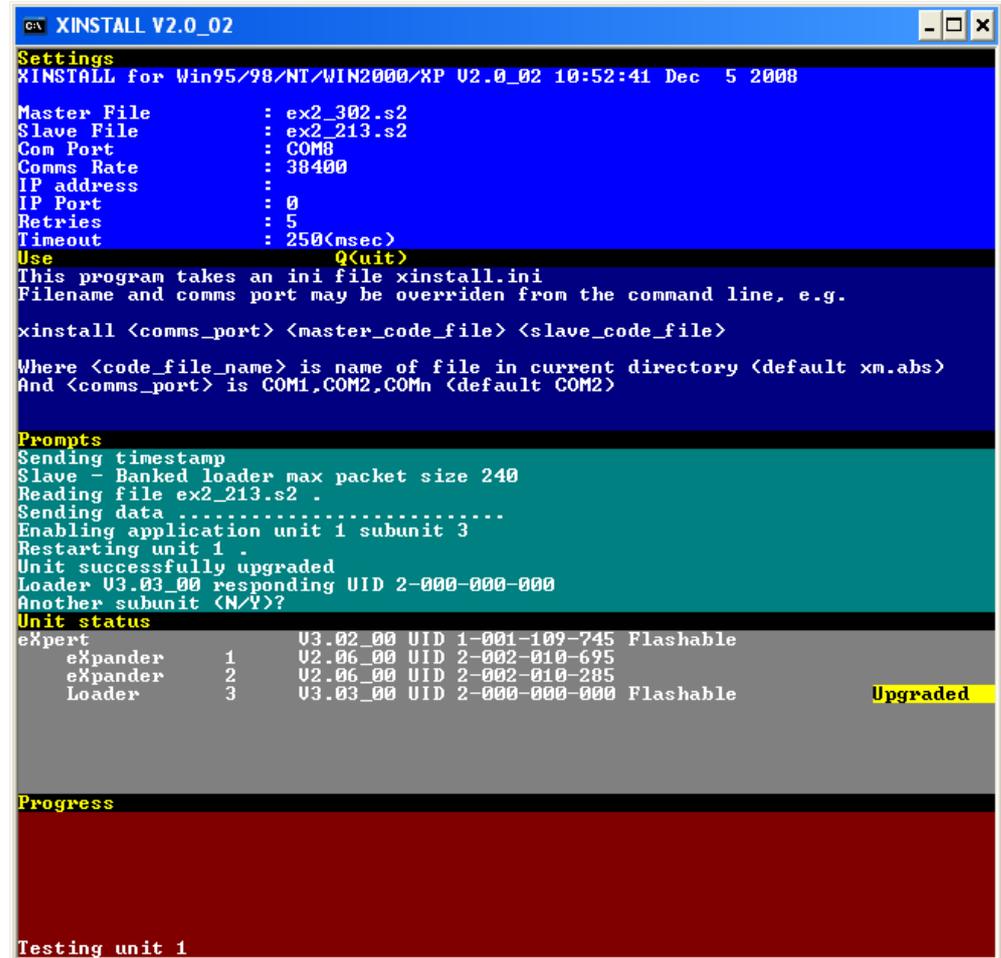


Figure 12 Uploading and upgrading in progress

7. When the process is complete, you will be prompted to upload firmware to another sub unit. Press **Y** to repeat the procedure for other sub-units. Otherwise, press **N** if you have completed upgrading sub-units.
8. You will then be prompted to upload firmware to another Unit (Master). Press **Y** to repeat the procedure for other units. Otherwise, press **N** if you have completed upgrading Master units.

Completion of Firmware Upgrade after Xinstall

Once you have completed your firmware upgrade, the unit(s) will need to be updated and refreshed with all card and program data. Typically restart your TDSi access control software explorer and communications, and reset the ACU(s).

Check that the system works correctly by presenting a card to one or more readers.



NOTE. Some firmware downloads from the TDSi web site or from TDSi Support will typically be a ZIP file with a pre-defined *Xinstall.ini* and *Xinstall.exe* combined, along with the *xxxx.s2* file. These files are not linked together and as long as you have a copy of *Xinstall.exe* and only one copy of the *Xinstall.ini* located in a folder or on the desktop then the *xxxx.s2* (firmware) file can be moved into this same location. It is the *Xinstall.ini* that points to which communications port and which firmware files you are using.

Remember some firmware files are *xxxx.s2* and others have been called *xxxx.abs* extension.

5.1.3 Flash Installer

Some firmware downloads from TDSi may contain an executable and ini file only, and this comprises of a set of files contained within a “Flash Installer”.

1. Run the flash installer by, for example, double clicking on its filename from Windows Explorer. The Welcome screen is displayed (see Figure 13).



Figure 13 TDSi Flash Installer Welcome screen

- To continue, click on the **Next** button. The installer displays version information for the new firmware.

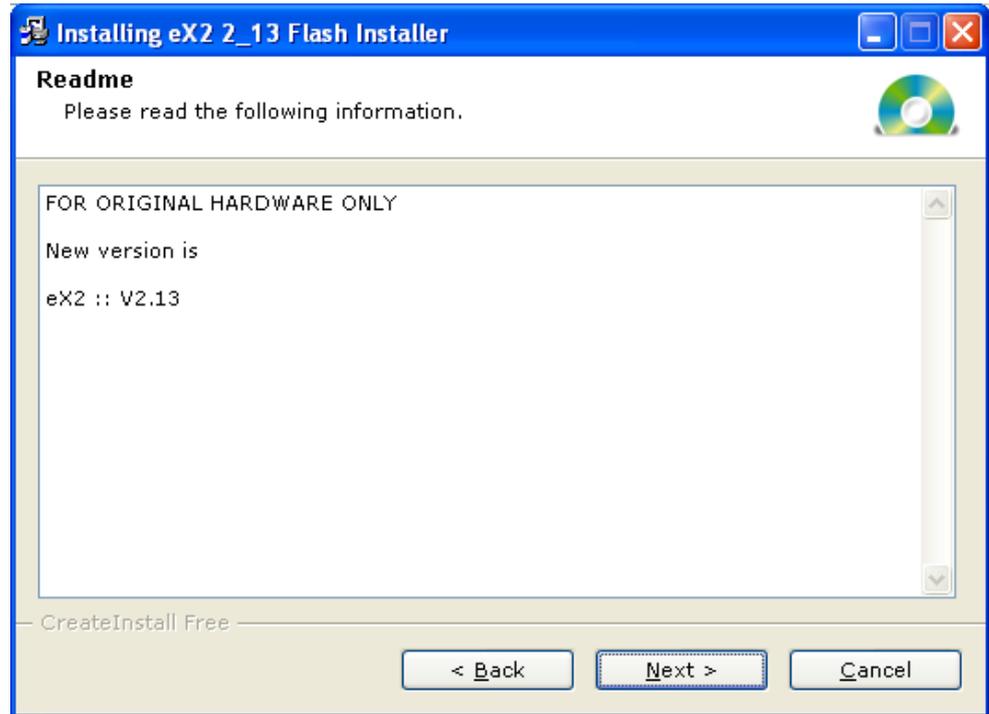


Figure 14 Version information

- To continue, click on the **Next** button. The installer shows the location it will use for the installation. If you want to choose a different location, click on the **Browse** button. By default, the Flash Installer runs immediately after installation. Clear the **Launch ...now** check box if you just want to install the Flash Installer and would prefer to run it at a later time.

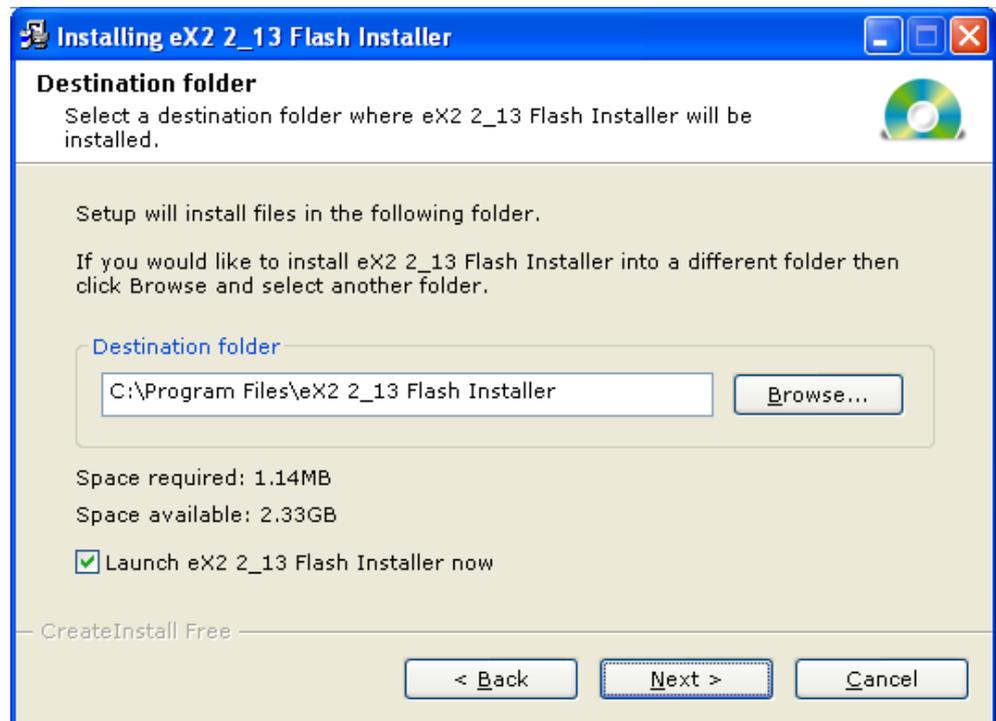


Figure 15 Destination Folder

- To continue, click on the **Next** button. The Flash Installer is installed.

This Flash installer loads a group of files into the installation folder specified in step 3 (the default location is *C:\program files\<firmware folder>*). Typically it may include several firmware files, helpful documents and the *Xinstall.exe* and *Xinstall.ini* file.



Figure 16 Completed installation

- Click on the **Finish** button. The Xinstall application starts immediately unless you have cleared the **Launch...now** check box in step 3.



NOTE. You may still need to edit the **xinstall.ini** file (located in the installation folder specified in step 3) as described on page 3.

5.2 Identification of EXpert², EXPander², EXcel², and EXcel⁴ Version 2 and 3 hardware

Loading of the incorrect version of firmware into an EX series controller will prevent the main firmware application from starting and the unit will remain in its 'Loader' state.

Should the incorrect firmware be inadvertently loaded into a unit, the situation can easily be recovered by reloading the correct version of firmware.

Correctly identify the type of hardware that you have by referring to the figures below. This will reveal which is the correct version of firmware you need to load into the unit.

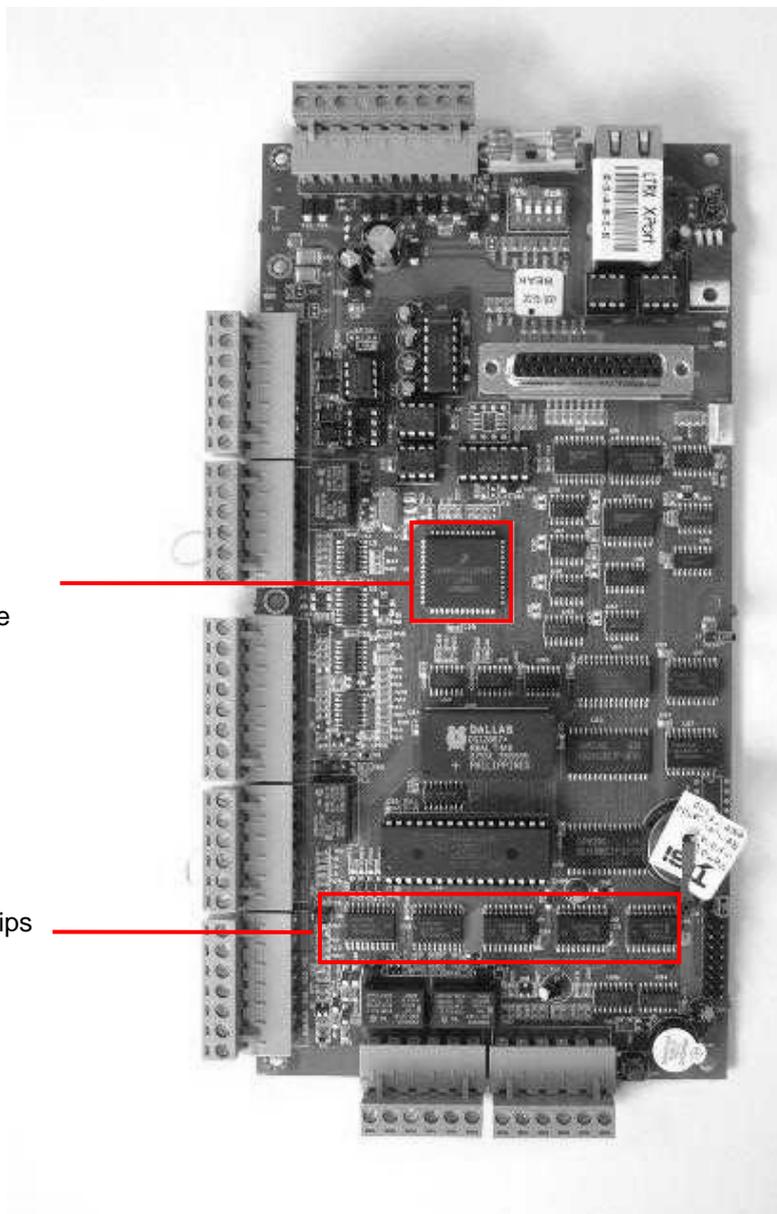
5.2.1 Version 3 Hardware

Version 3 is the latest design for the EXpert², EXcel², EXcel⁴ and MICROgarde products.

This version of hardware can be identified by two main features:

1, Only one 'square' chip in the middle of the board.

2, A row of 5 chips towards the bottom of the board.



For this type of hardware, the firmware uploaded to the unit must be version 3.X. Should firmware other than this be loaded then the unit will not start and Xchat communications terminal program or the EX keypad programming device will show Loader.

The latest version of 3.X firmware can be downloaded from the TDSi website. Go to the Software>Firmware Update area. Alternatively contact our Customer Care team who will send it to you.

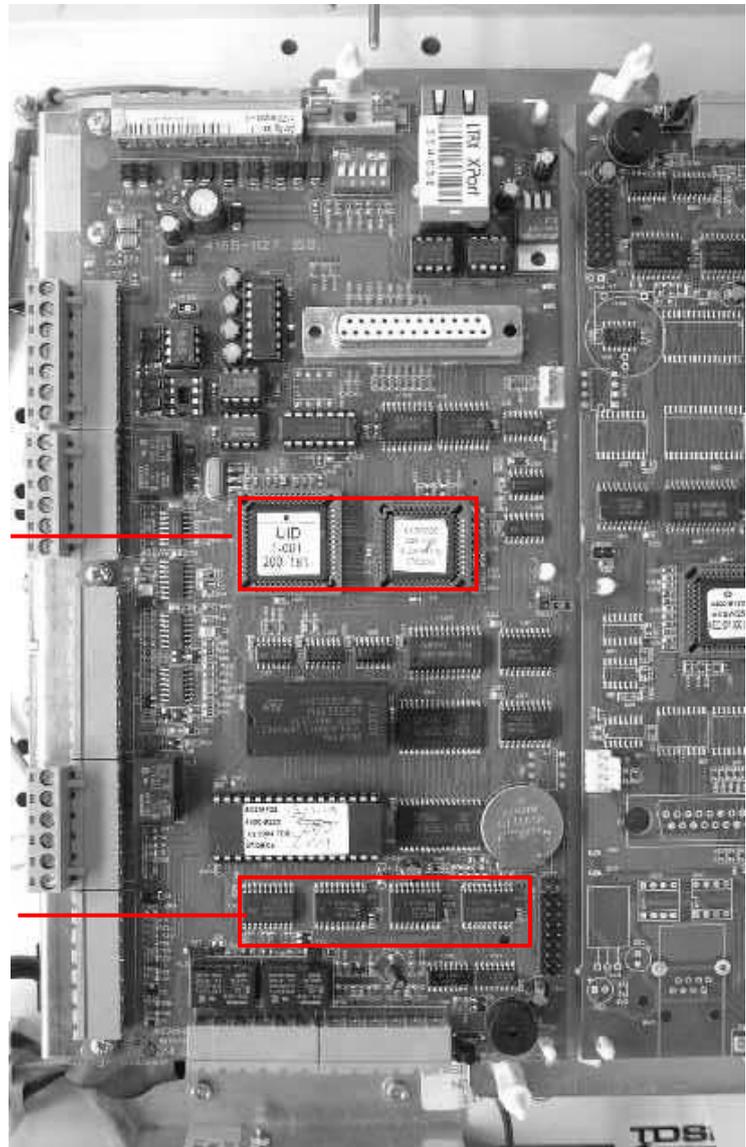
5.2.2 Version 2 Hardware

Version 2 EXpert², EXcel², EXcel⁴ and MICROgarde hardware is no longer in production.

This version of hardware can be identified by two main features:

1. Two 'square' chip in the middle of the board, mounted side-by-side.

2. A row of 4 chips towards the bottom of the board.



For this type of hardware, the firmware uploaded to the unit must be version 2.X.

The last version of 2.X firmware can be downloaded from the TDSi website. Go to the Software>Firmware Update area. Alternatively contact our Customer Care team who will send it to you.

Xchat is an executable which primarily can be used to:

- Search for ACUs across SERIAL communication ports or TCP/IP LAN and WAN communication channels. Search provides the Unit Number, ACU type, Firmware version and UID number
- Provide useful information on all ACU types and another application of KDX
- Give details of all Lantronix Adapters
- Provide event and debug information

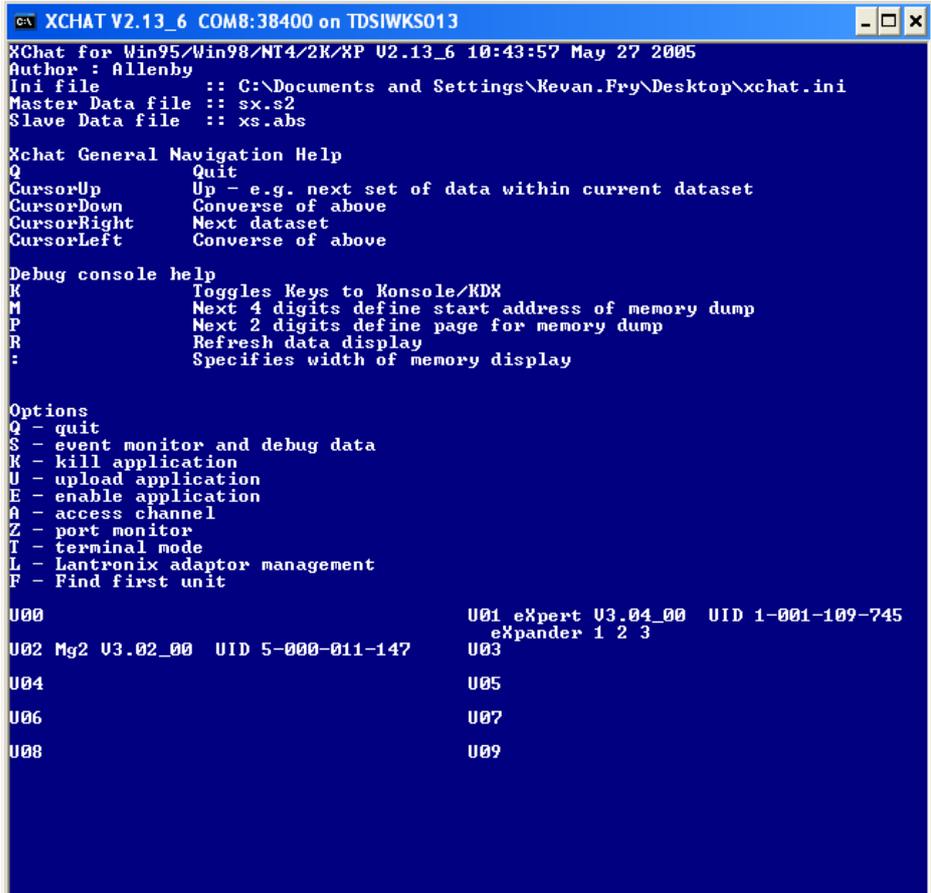
6.1 Running Xchat

To run Xchat, you need to edit the *Xchat.ini* file using Notepad – see page 3 of this manual for editing INI files.

The *xchat.exe* file should be located with the *xchat.ini* in the same folder. Only one copy of the *xchat.ini* file should be present in that folder or location.

Because you can specify the exact IP address of the channel you wish to search on, this allows access to wider networks.

Once you have saved *xchat.ini* then you can run the *Xchat.exe* (see Figure 17)



```

XCHAT V2.13_6 COM8:38400 on TDSIWKS013
XChat for Win95/Win98/NT4/2K/XP V2.13_6 10:43:57 May 27 2005
Author : Allenby
Ini file      :: C:\Documents and Settings\Kevan.Fry\Desktop\xchat.ini
Master Data file :: sx.s2
Slave Data file  :: xs.abs

Xchat General Navigation Help
Q            Quit
CursorUp    Up - e.g. next set of data within current dataset
CursorDown  Converse of above
CursorRight Next dataset
CursorLeft  Converse of above

Debug console help
K            Toggles Keys to Konsole/KDX
M            Next 4 digits define start address of memory dump
P            Next 2 digits define page for memory dump
R            Refresh data display
:            Specifies width of memory display

Options
Q - quit
S - event monitor and debug data
K - kill application
U - upload application
E - enable application
A - access channel
Z - port monitor
T - terminal mode
L - Lantronix adaptor management
F - Find first unit

U00                                U01 eXpert U3.04_00 UID 1-001-109-745
                                eXpander 1 2 3
U02 Mg2 U3.02_00 UID 5-000-011-147 U03
U04                                U05
U06                                U07
U08                                U09
  
```

Figure 17 Xchat

6.2 Navigation

On initial start up, a search at the bottom of the screen of unit numbers 0 to 9 occurs, for the communication port you selected in the configuration .ini file.

Press UP ARROW to search for the next 10 ACU unit numbers 10 to 19. Further presses of the UP ARROW key steps through the ACU units in blocks of ten, up to unit 999. Similarly, press the DOWN ARROW to step down the units in blocks of 10.

With any unit that appears in the search screen, type the number of the unit and this will bring up its Event Monitor and Debug Screen. You also display unit information by pressing S and selecting the unit number.

6.3 Options

Table 2 Xchat options and commands

Option	Function
Q	Quit key which will take you back to the main screen, or close the program from the main screen
S	Press S (Event Monitor and Debug) and then it asks for the unit number of the ACU, put the unit number you want in then press Enter. You then get the following screen:
K,U and E	Use this key combination to K ill the firmware of the ACU, U ploads new firmware and E nables the firmware. This combination is used to create the Xinstall described on page 17.
A	Access Channel. This is useful for seeing the Firmware version of a Slave or Expander Unit. After pressing A give the Master Expert unit number and then the sub unit number for the Expander.
Z	Port Channel Monitoring.
T	Terminal Mode.
L	Lantronix Adapter Management. Lists all the Lantronix adapters I/P addresses and MAC Addresses. Selecting the device unit gives options for changing the IP address, Baud rate and Port number
F	Press F to find the first unit this will then alter the unit number search. I.e. if you have the lowest unit as 25 then it will start at ACU unit 25 and show the next 9 unit numbers.

6.4 Event Monitor and Debug Screen

Press **S** to display the *Event Monitor and Debug* screen (see Figure 18).

```

c:\ XCHAT V2.13_6 COM8:38400 on TDSIWKS013
KDX
eXpert 00 42
A56330187 A1
Konsole K(DX) Q(uit)
MP

Process data Unit 1:0
BIOS U3.2-0 10:00 R Sep 11 2009 CRC= b178
eXpert U3.4-0 11:00 R Feb 28 2011 CRC= 9365
381 bytes free RAM, OS code free bytes 6, OS ram free bytes 78

process free start load prio process free start load prio
_null 017(000) 096 62 000 main 048(000) 224 04 050
comms 139(000) 320 00 065 input 064(000) 160 02 075
output 106(000) 192 00 080 router 076(000) 192 07 090
ir1 000(000) 000 00 000 ir2 000(000) 000 00 000
dig1 039(000) 276 00 085 dig2 132(000) 276 00 085
kd1 439(000) 832 00 045 execute 101(000) 574 00 100
alarm 108(000) 244 00 035 idmon 085(000) 448 05 010
sn2poll 061(000) 400 08 095 altcomms 134(000) 320 01 065
aphmon 139(000) 160 00 020 counter 095(000) 192 00 105
iomap 232(000) 320 00 070 autodial 175(000) 320 00 060
logger 000(000) 000 00 000 dogwatch 064(000) 256 03 110
000(000) 000 00 000 000(000) 000 00 000
000(000) 000 00 000 000(000) 000 00 000
000(000) 000 00 000 000(000) 000 00 000
000(000) 000 00 000 000(000) 000 00 000

Debug Comms stats BadRX=7285 RX=8036 TX=8025 ReTX=0

R1 Mag card 00064456330187
R1 Mag card 00064456330187
R1 Mag card 00064466485590
R1 Mag card 00064456330187
eXpert 00:41A56330187 A1

Events
00:33:55 01/01/10 01 64 56330187 R7 56330187 Invalid
00:38:00 01/01/10 09 60 00000012 R7 Reader Gone
00:38:06 01/01/10 09 00 00000013 R1 Reader Back
00:38:22 01/01/10 01 04 56330187 R1 56330187 Invalid
00:38:43 01/01/10 01 04 56330187 R1 56330187 Invalid
00:39:09 01/01/10 01 04 66485590 R1 66485590 Invalid
00:39:22 01/01/10 0d 00 00000019 U0 KDX used
00:39:49 01/01/10 00 04 56330187 R1 56330187 Valid

```

Figure 18 Event Monitor and Debug Screen

The screen is divided into three main sections:

- Blue Displays information on the chosen ACU. Using the left/right arrows to scroll for further information, so looking at an Expert Master by pressing the right arrow a couple of times it displays all the Expander (Cluster) information.
- Red Presents debug information i.e. R1 Mag Card and the total card number = reader 1 magnetic type and full 14 digits of this card. (debug info for Expanders does not appear).
- Grey Displays event traffic occurring on the ACU.

6.4.1 The KDX Window

Press **K** to display the KDX screen. The KDX window in the top right corner of the screen is a simulation of the XKDX program (see page 7).

Use the following keys for KDX navigation:

- 0-9
- Enter (equivalent to the * on the KDX keypad)
- Escape (equivalent to the # on the KDX keypad)
- Cursor control keys

For full details on using the KDX and the EX series Menu Map refer to the EXpert User Manual.

Press **Q** to close the *Event Monitor and Debug* screen.

7. Xcustom

Xcustom is an executable which can be used to set custom persistent parameters within EX and MG series for the customisation of reader parameters. This allows the controller to read 3rd party readers with the correct format. These persistent parameters cannot be altered with a Full Reset on the controller.

Xcustom is used in association with the *Xcustom.ini* file, which contains the communication parameters to be used and the values to be set and thus automatically send down the Reader Parameters.

The default INI file name is *XCUSTOM.INI*, but an alternative filename may be specified on the command line.

The items you can set are described, with possible values, in the following sample INI file.

Default Magnetic and Wiegand formats in the *xcustom.ini* file:

```
[MAGNETIC]
MagField = 1
; Possible values : 1-4
MagFrom = "End"
; Possible values : End/Start
MagOffset = 0
; Possible values : 0-63
MagNoOfDigits = 8
; Possible values : 1-8
MagControlReplace = "Off"
; Possible values : Off(ignores control
characters)/On(substitutes for control characters)
MagNoFieldError= "Off"
; Possible values : Off(takes last field if not
enough)/On(read error if field not found)
;
; Special Wiegand decode options
; Up to 64 bits can be captured for a card read.
; any option not defined will have its default applied.
;
[WIEGAND]
WiegBitcount = 26
; Possible values : 1-63      there must be at least one data
bit....
WiegFirstbit = 0
; Possible values : 0-63
;
```

```

; the following 2 options only exist for MG V2 and some eX
firmware
WiegBCD      = 0
; Possible values 0, binary coded, 1 bcd coded
WiegReverse = 0
; Possible values 0, normal, 1 reversed
    
```

7.1 Operation

Enter a unit number and XCustom reads back and displays the current persistent data for that unit. You are then given the option to update the persistent data to the new values as displayed.

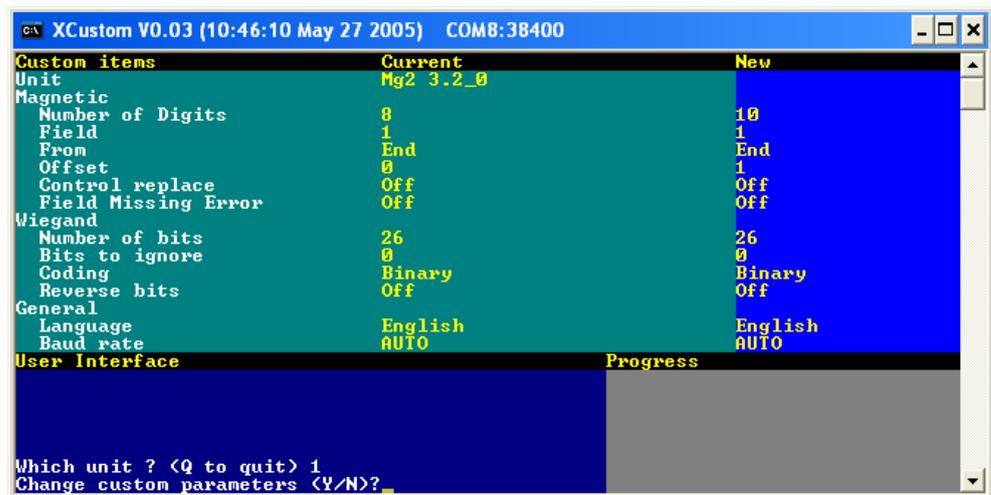


Figure 19 Xcustom

If the baud rate is changed, then XCUSTOM switches to the new baud rate to verify that the new rate has been programmed.

7.2 Baud rate discovery

If XCUSTOM cannot communicate with the unit using the rate specified in the ini file, it will try at all standard rates, starting at 1200 Baud, and will indicate if the unit is found.

This rate will then be used to set the new data, if required.



NOTES. Some items have no meaning or effect, or do not exist in various versions of EX and MG. In particular, in MICROgarde, the Language setting is not relevant, although it is stored for possible future use.

For MG V1.x, eX2 earlier than V2.6_1 and eX4 earlier than V1.6_1, the baud rate of the unit will automatically seek between 9600 and 38400 - i.e. a forced baud rate is not possible on linked systems.

On MG and EX later than the above versions, the rate may be fixed at a specified value, or set to AUTO to recreate the original mode of operation.

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