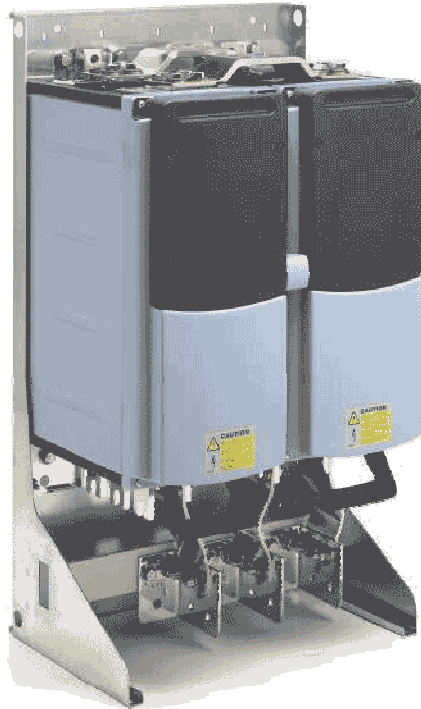




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Eaton LCX9000 Software Training

EATON LCX9000

9000Xload & 9000Xdrive



9000XLoad Software

Used to program firmware.

Firmware is programmed and gives drive its identity

9000XDrive Software

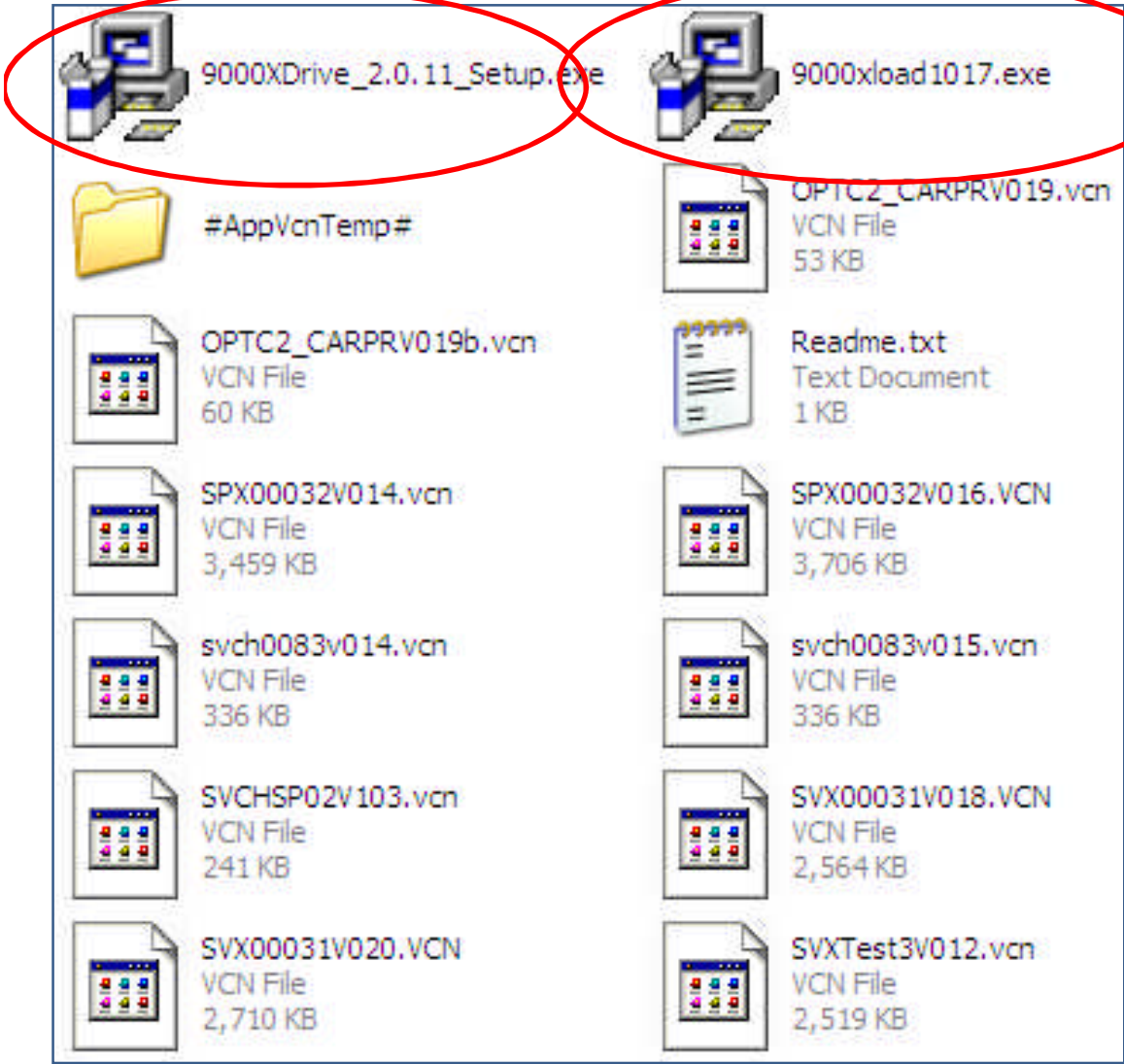
Commissioning tool for setting parameters

Create Service Info file during commissioning

Tool for diagnostic and troubleshooting drive –
trending capabilities

EATON LCX9000

Installing 9000X software



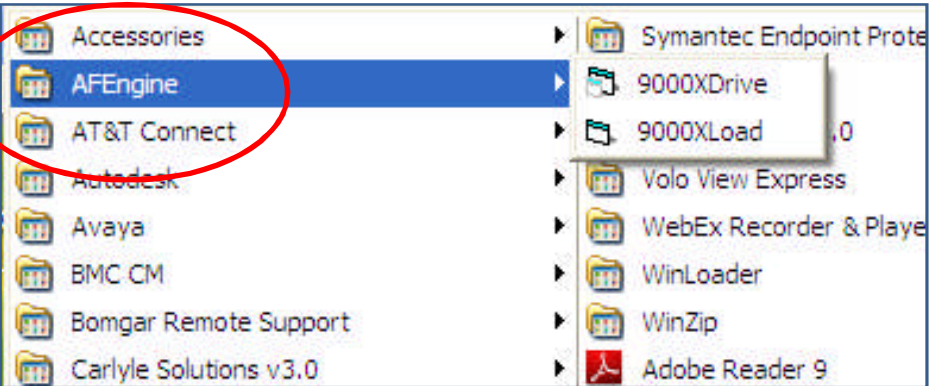
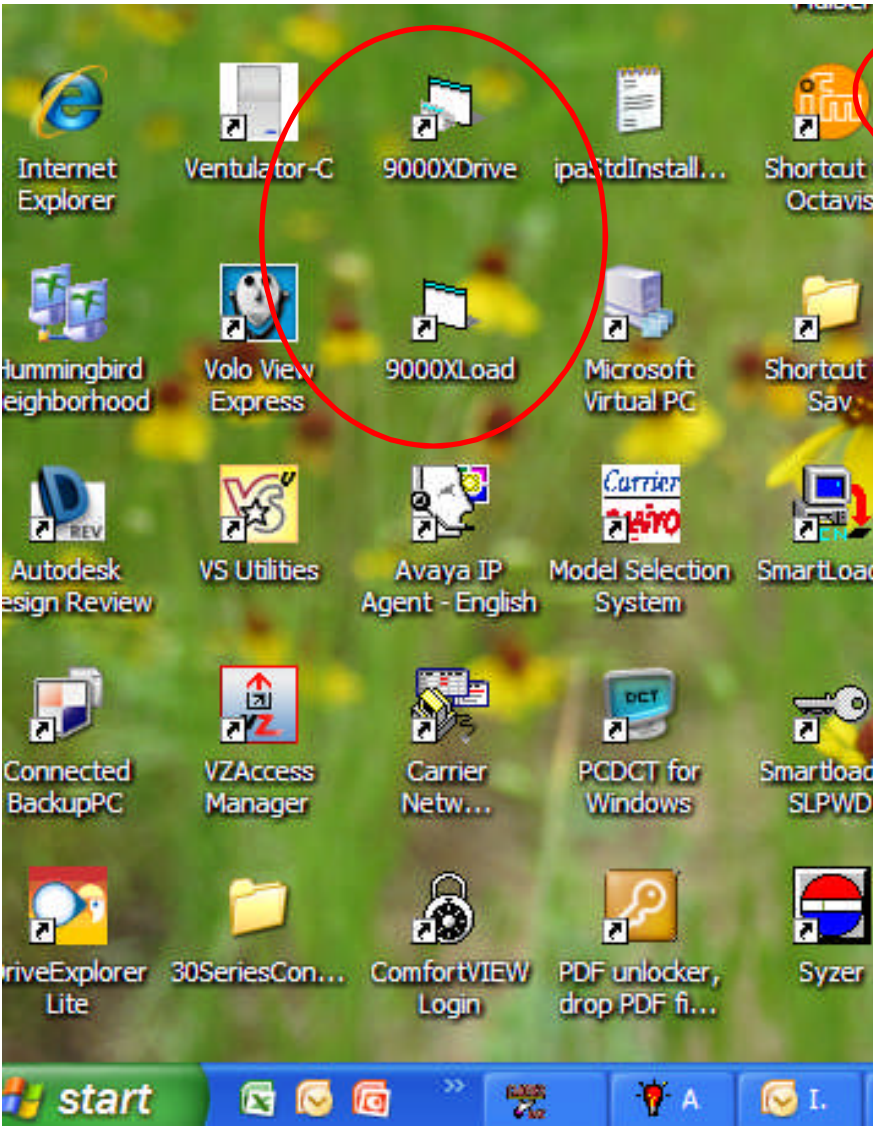
1. Insert CD or USB
2. Go to folder called "C-H Software – SVX VFD Programming"
3. Select 9000xload1017.exe
4. Accept all Default Values
5. After installation is complete, install 9000xDrive_2.0.11_setup.exe
6. Restart your computer when prompted by program



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Installing 9000X software



After successful installation of software, you should see the 9000XLoad and 9000XDrive icon on your desktop

You should also see AF Engine folder created in your under Start→Programs in your windows

EATON LCX9000

Software/Firmware



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Applications are preconfigured parameter that determines function of I/O and relay PCB

Not all applications offer the same operational modes and functions

Types of application/firmware/language

All firmware and application files should be stored under c:\AFEngine\Applications\

OPTC2 Communication Board– need to install language software during replacement

EATON LCX9000

Software/Firmware



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Types of application/firmware/language

SPX – Firmware for Carrier (this is used for Eaton liquid cool drive, frame 10 & above, system program).

This is firmware and language files on control board.

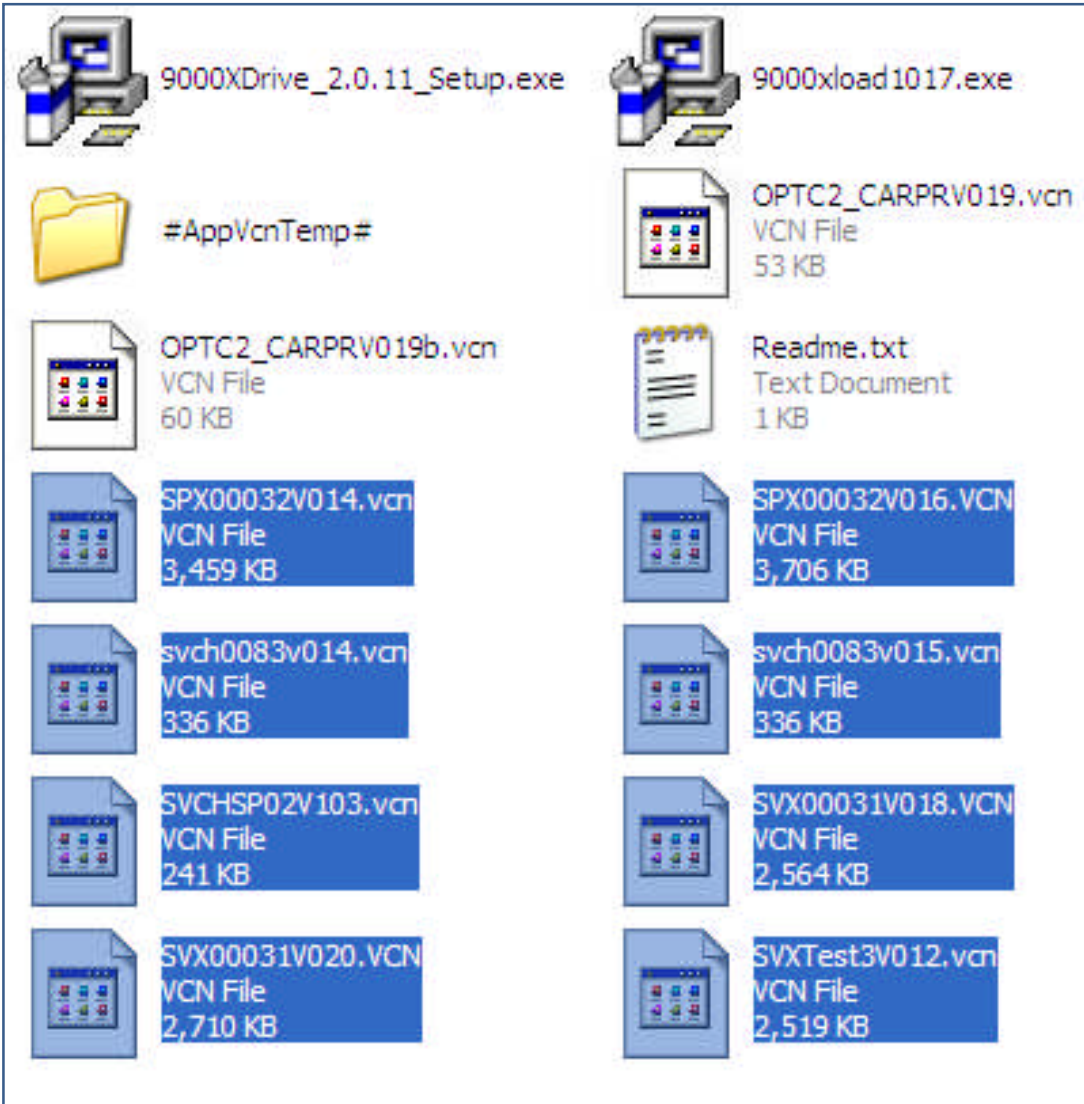
SVCH – Application software for Carrier

OPTC – Option card program

EATON LCX9000



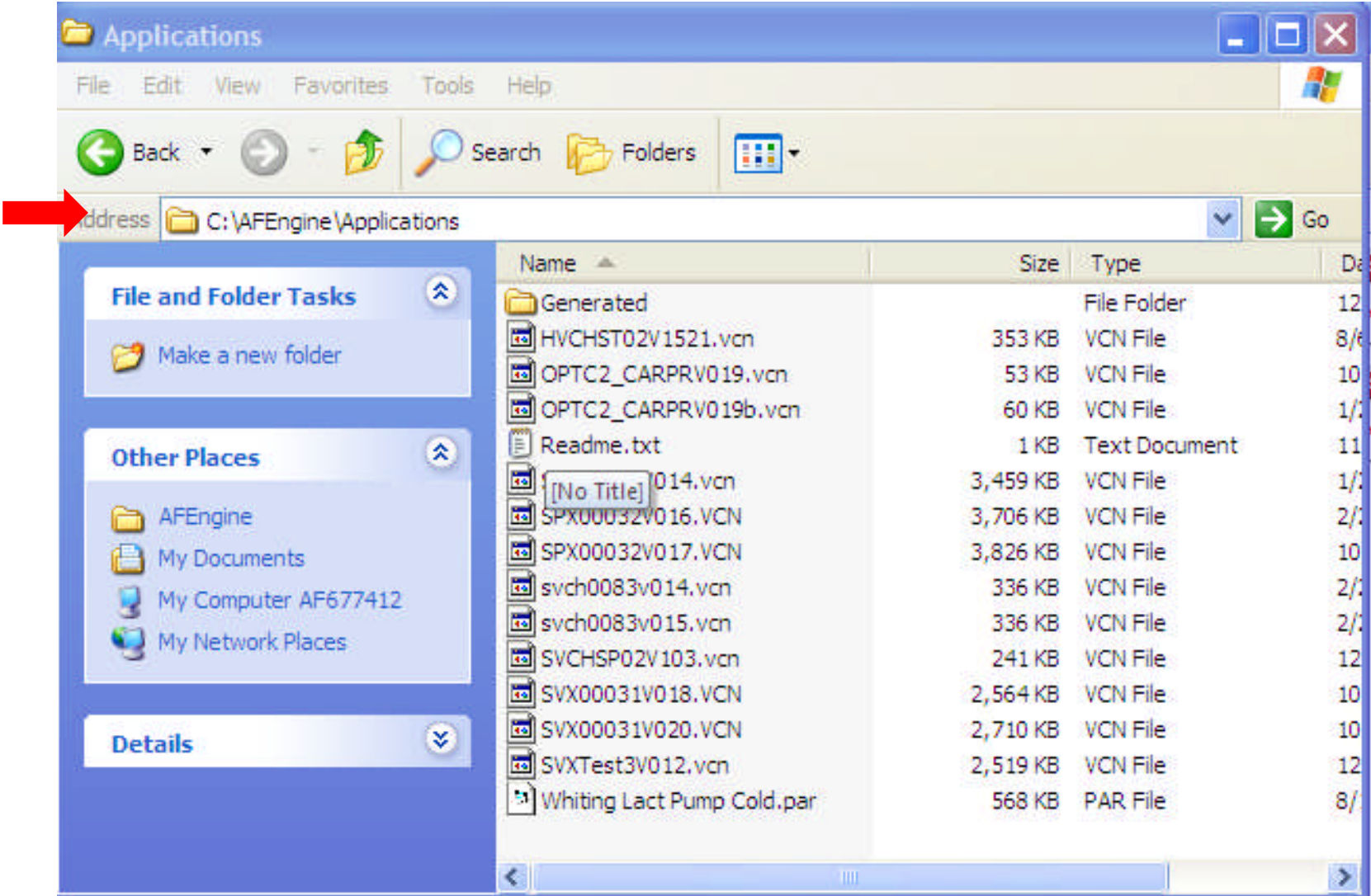
Adding Application files



1. The files highlighted in blue (SPX....vcn)are application files
2. Copy the files
3. Go to C:\AFEngine\Applications
4. Paste these files into applications folder

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Adding Application files



EATON LCX9000

Connecting to Drive



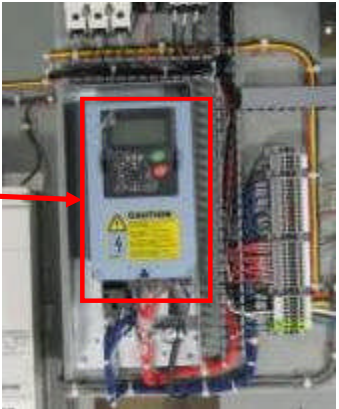
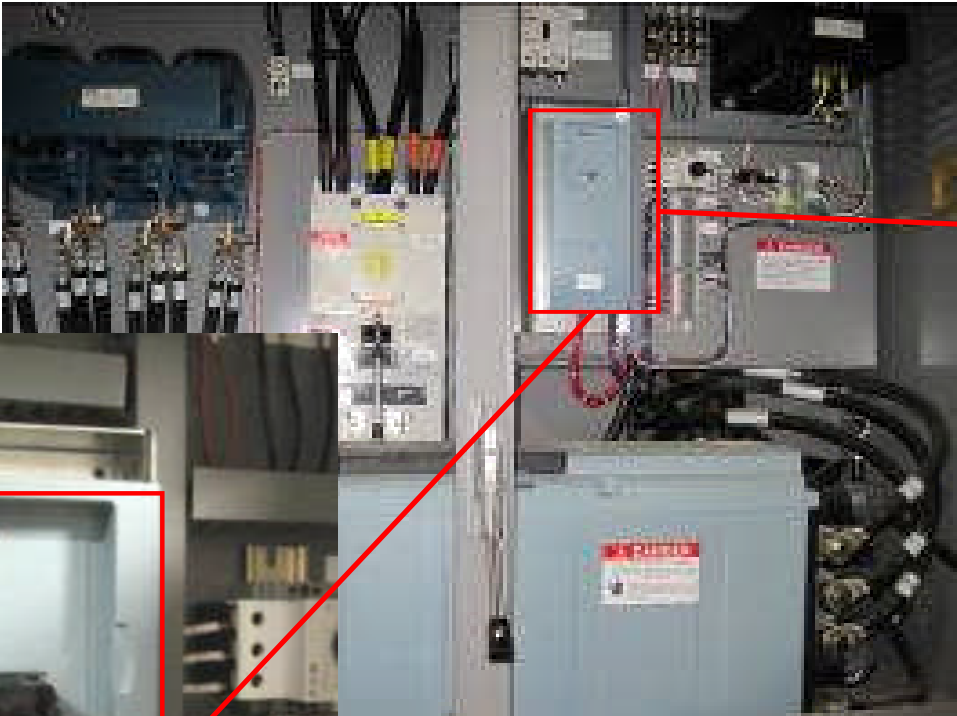
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Connect to Drive



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If there is a keypad module connected to the blue box of your VFD, remove the keypad module to expose serial port.



Use Eaton's RS-232 cable, Eaton Part # "SVDRIVECABLE" to connect between blue box and computer. Connect one end of cable to the serial port on blue box. Connect the other end of cable to computer serial port.

EATON LCX9000

Eaton: SVDRIVECABLE



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Communication with PC

When communicating using 9000X software tools 9000XDrive or 9000XLoad, a cable with three wires and 9-pin D-connectors is used. See Figure C-1.

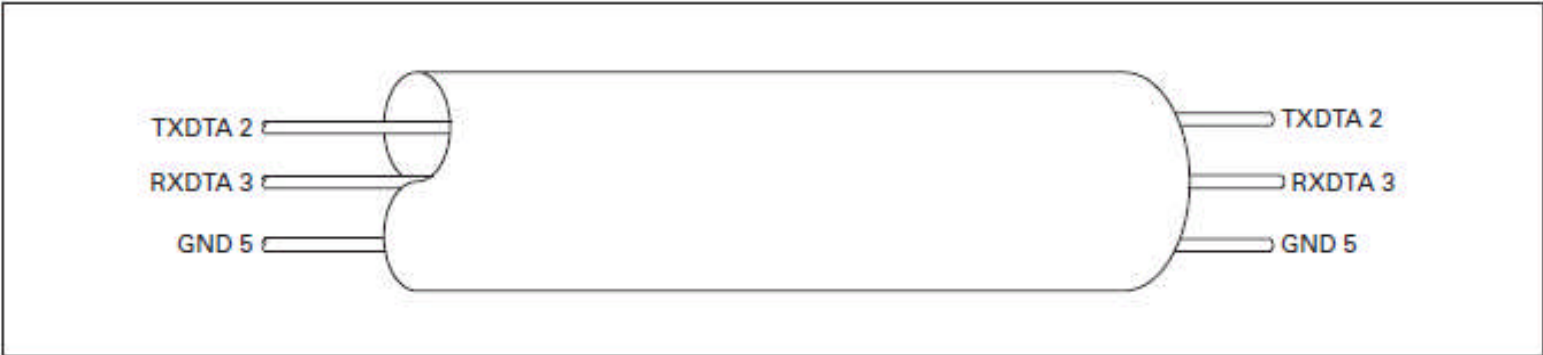


Figure C-1: RS-232 Cable for Parameter Setting or Software Downloading by Using PC

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Eaton: SVDRIVECABLE

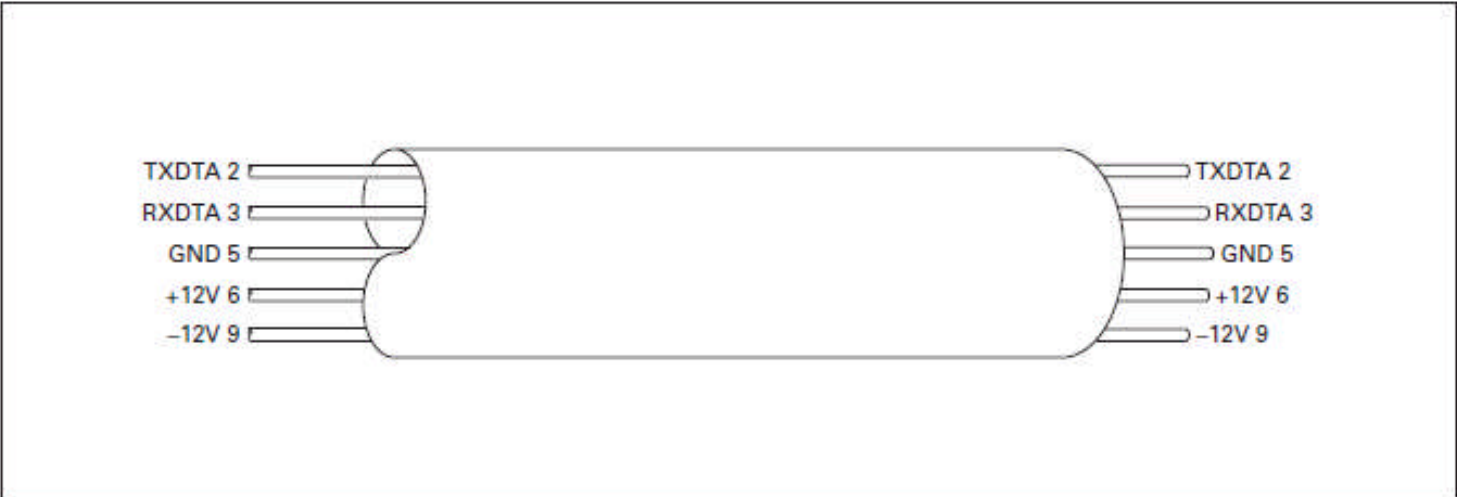


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Remote Assembly of the Control Panel

When units are installed inside the cabinet, the keypad is often preferred mounted on the door of the cabinet to make programming and monitoring possible without opening the door. The keypad remote installation can be done with a similar pin-to-pin connected RS-232 cable as the PC-connection, with two additional wires (+12V, -12V) connected to the pins #6 and #9, feeding power to the keypad.

Note: When using these cables for PC-connection you have to check first whether the +12V / -12V lines can cause problems/damages in RS-232 output of PC/laptop. In some PC outputs, ±12V can generate extra current loops which might cause overheating of the components.



EATON LCX9000

Eaton: SVDRIVECABLE



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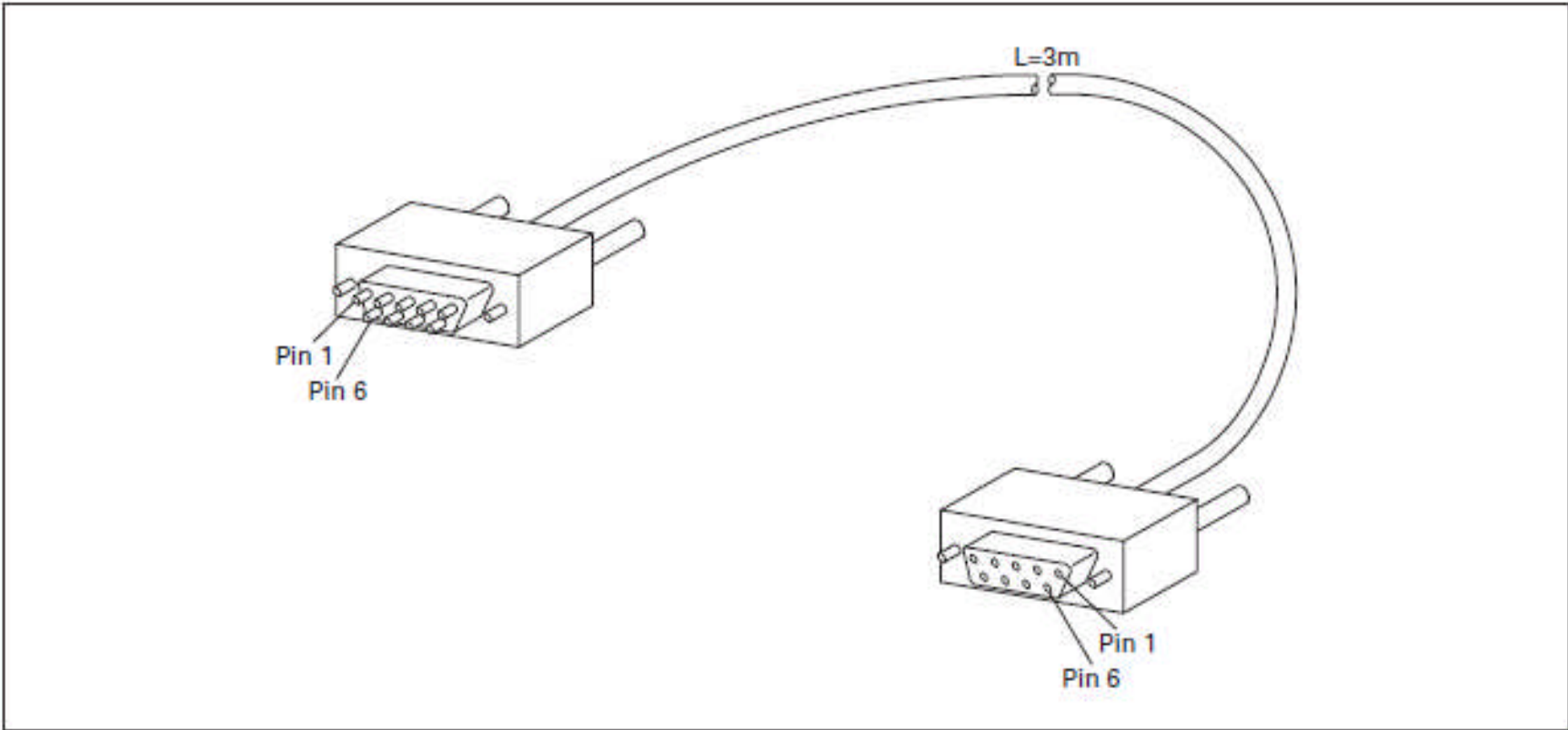


Figure C-3: RS-232 Cable

EATON LCX9000

9000XLoad Software

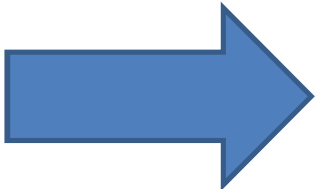


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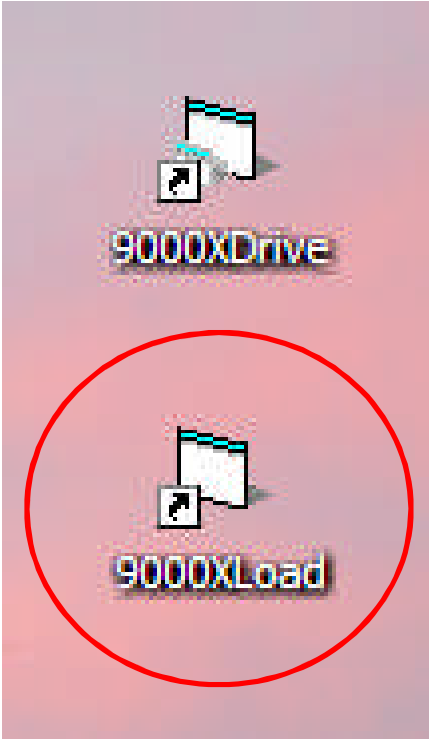
The next section will cover steps on downloading application, system program, option card program, and language files

EATON LCX9000

9000XLoad Software



Go To
9000XLoad
Icon and
initialize

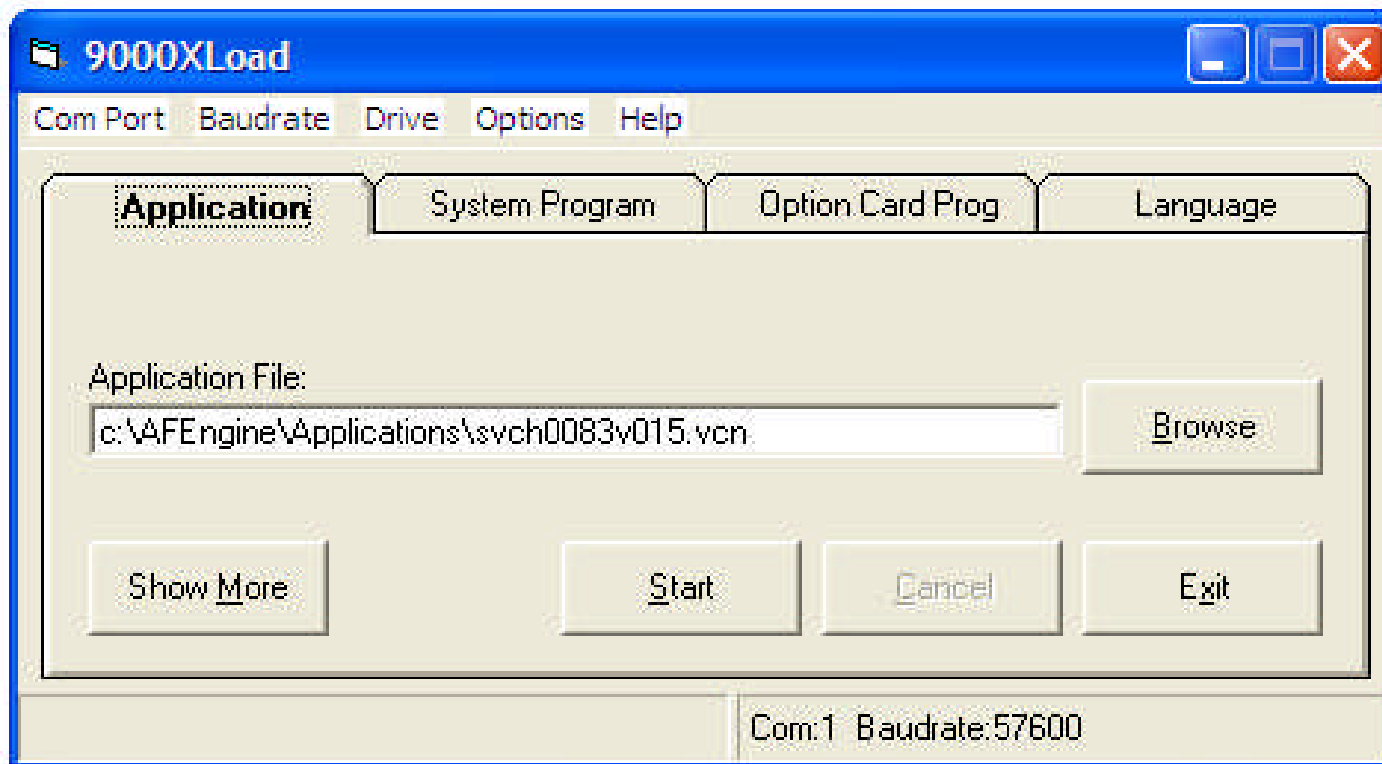


EATON LCX9000

9000XLoad Software



Go To 9000XLoad program started

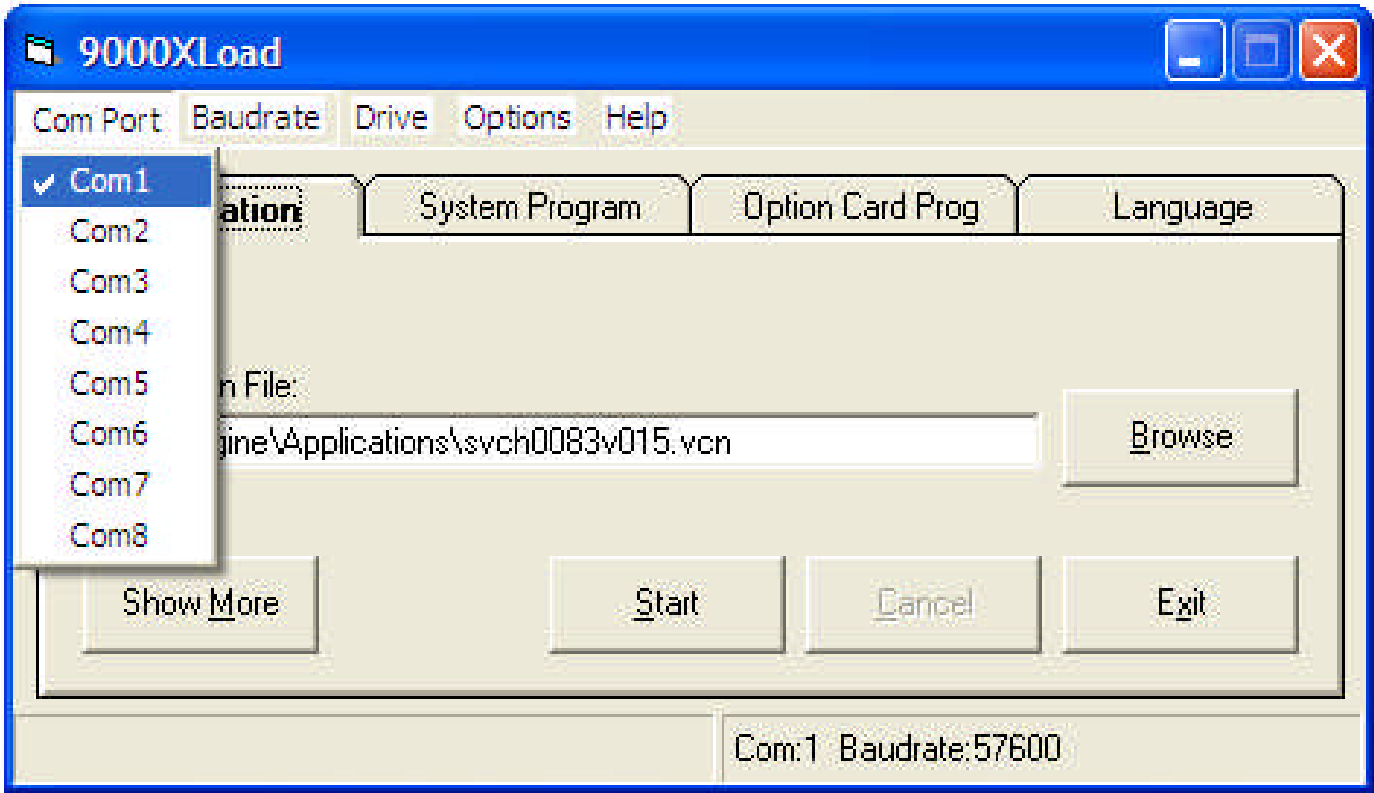


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9000XLoad Software



Check com port setting and make sure that it is set correctly

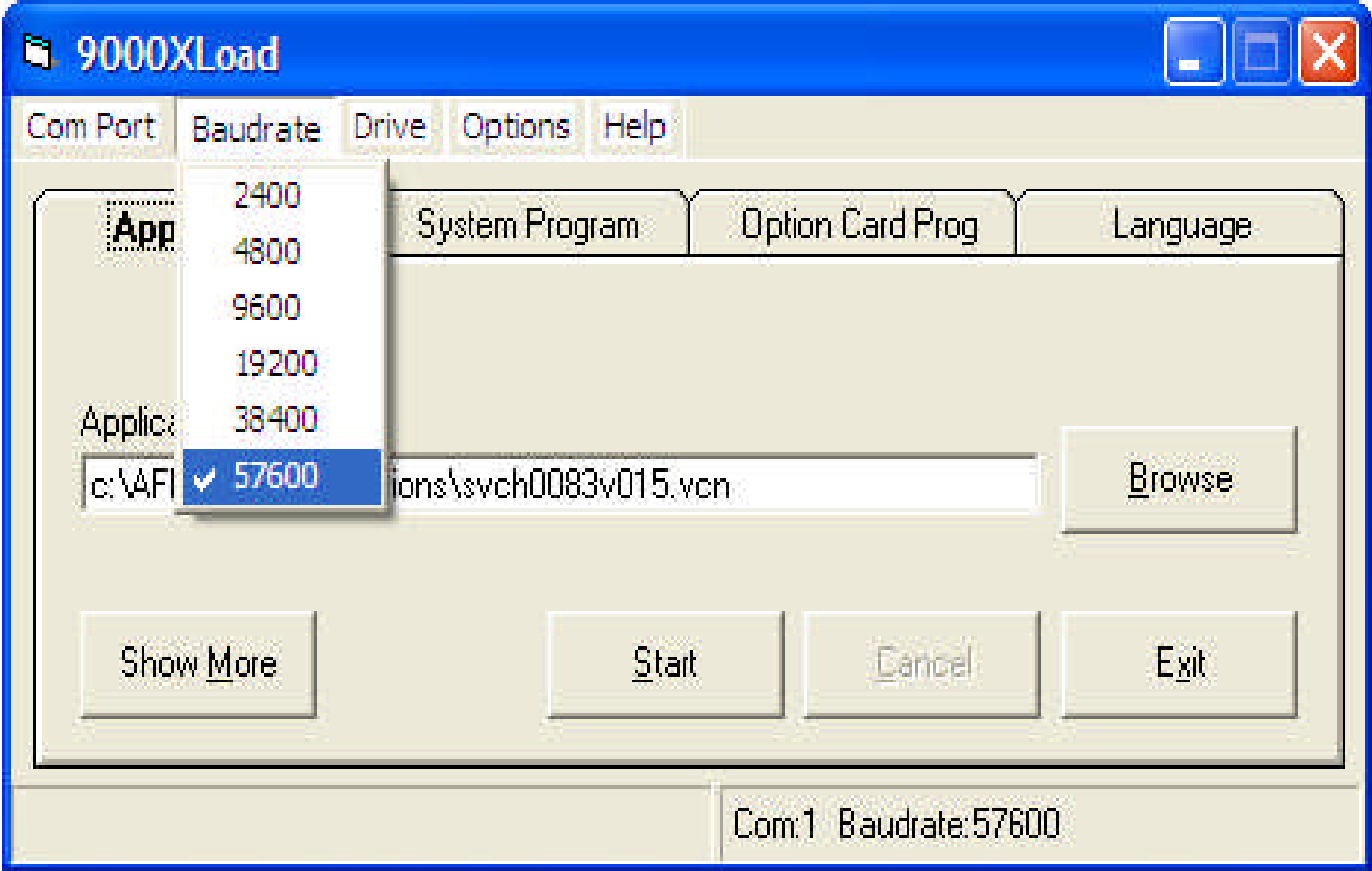


EATON LCX9000

9000XLoad Software



Check Baud Rate setting

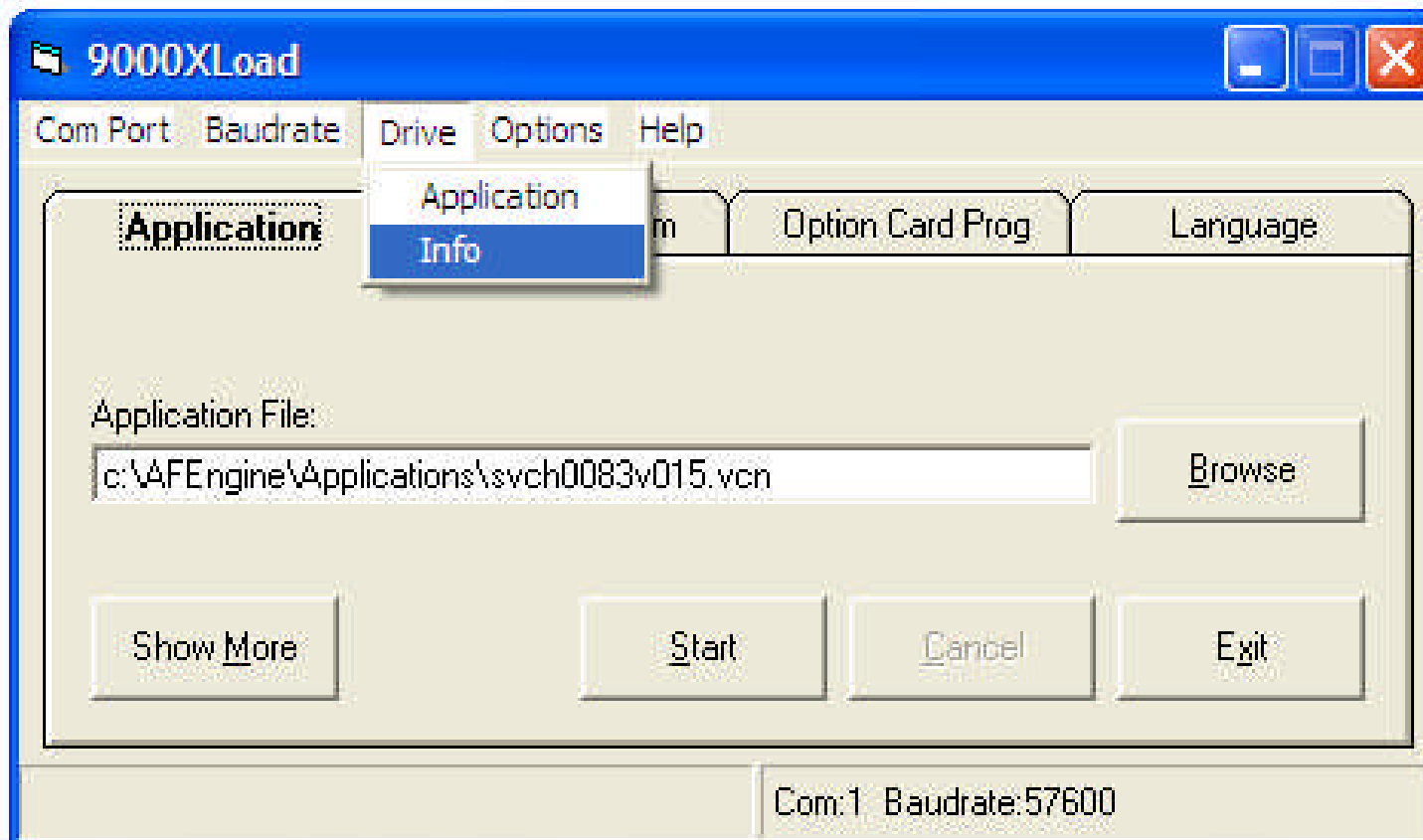


EATON LCX9000

9000XLoad Software



Go to Drive → Info to see drive info



EATON LCX9000

9000XLoad Software



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Drive Info

Info

VCN Name:	SFX00032V016
System Software:	22.30.10124 (03.11.2009)
Firmware Interface:	4.61
Drive Serial Nr:	10901597
Power Unit:	PA000422H1SSS (7.2)
Power Unit Serial Nr:	10901598
Internal Brake Chopper:	Yes
Internal Brake Resistor:	No
Power Card Serial Nr:	308L7205024
Control Unit:	CPAS
Control Unit Serial Nr:	10751279
Control Card Serial Nr:	561H7105241

I/O and expanders

Slot A: NXOPTA9, 283.D, 10001.0
SNr: 283D3310002

Slot B: OPTA2, 273.E, 10002.0
SNr: 273E6080286

Slot C: NXOPTB5, 260.C, 10501.8
SNr: 260C4400074

Slot D: NXOPTB5, 260.C, 10501.8
SNr: 260C4340078

Slot E: NXOPTD3, 261.D, 0.0
SNr: 261D3310024

Applications

	Application	Appld	Version	Revision	FirmIntrf
1	Basic	SVCHST01	1	20	4.60
2	Standard	SVCHST02	1	21	4.60
3	Local/Remote	SVCHST03	1	21	4.60
4	Multi-Step	SVCHST04	1	21	4.60
5	PID-Control	SVCHST05	1	21	4.60
6	MultiPurpose	SVCHST06	1	22	4.60
7	PFC Applicat	SVCHST07	1	21	4.60

Active application is marked with blue colour.

Counters

MWh Counter: 90.49 kWh

Op Day Counter: 153 d

Op Hour Counter: 04:55:04

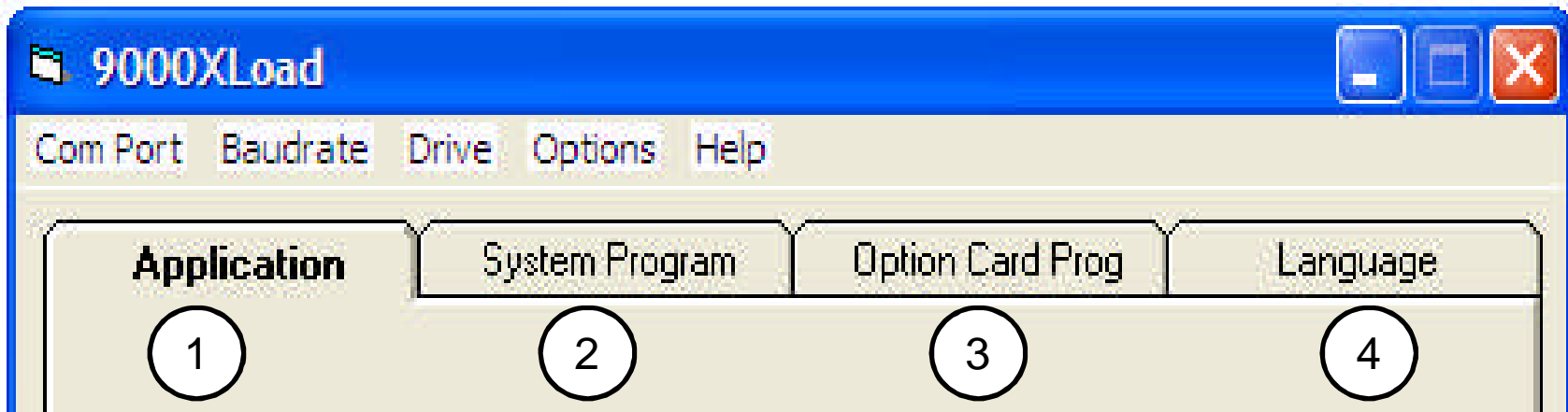
Copy To Clipboard

Close

EATON LCX9000



Downloading application software



There are 4 tabs on software window

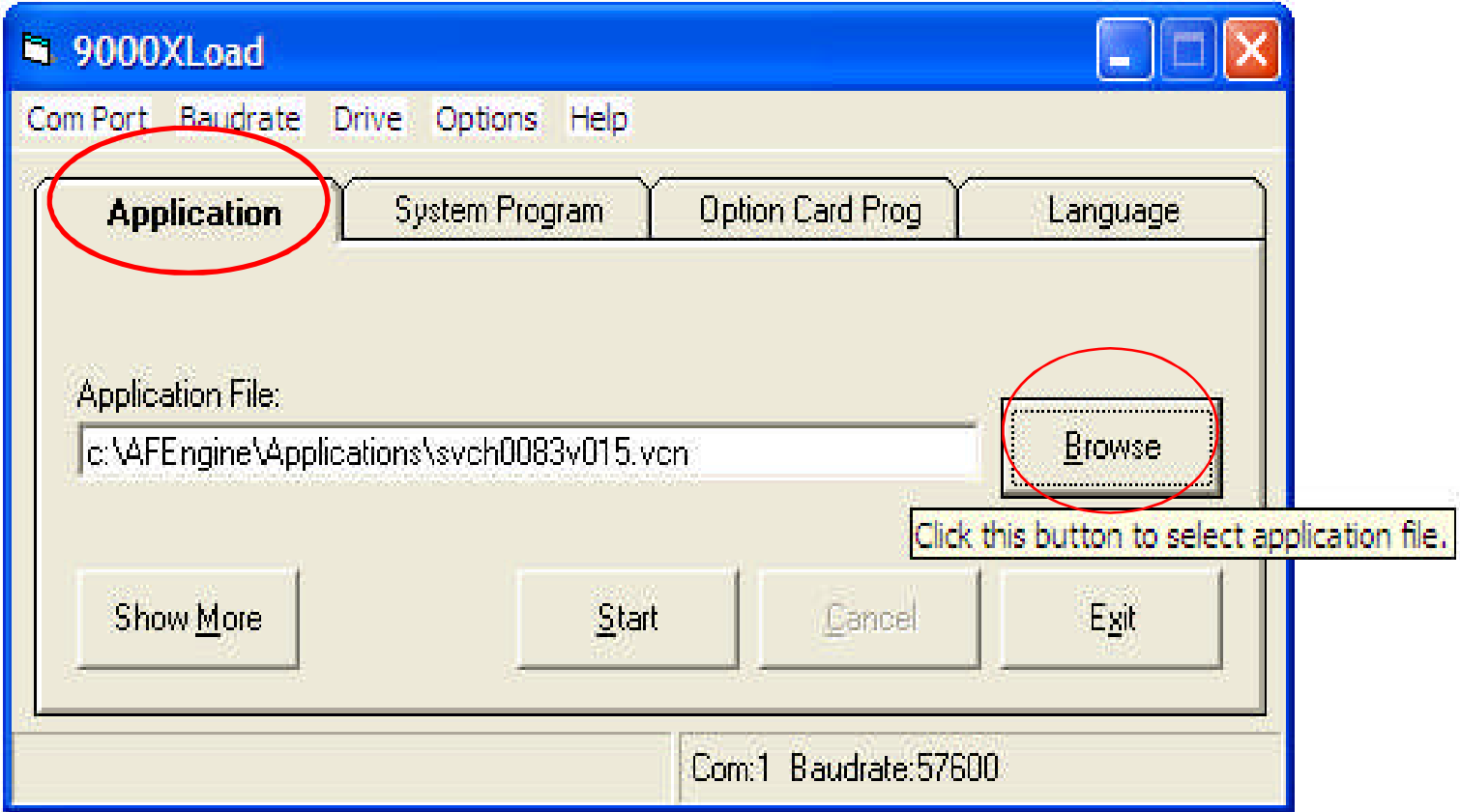
1. Application – Software for control module (SVCH)
2. System Program – Firmware for Carrier (SPX)
3. Option Card Program – Option card software (OPTC)
4. Language – Language for control module (SPX)

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Downloading application software

- To download Application software (SVCH....)
- Select Application Tab
- Select browse to find software



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Downloading application software



Select application(s) to load

Files: Show Compatible Show All

svch0083v014.vcn
svch0083v015.vcn
SVCHSP02V103.vcn

Select software
File

Carrier

AppName	Carrier
Application	svch0083v015
Target	NXP
AppID	SVCH0083
Version	0
Revision	15
FW_ID	4.54
TEXT_ID	1.1

OK Cancel

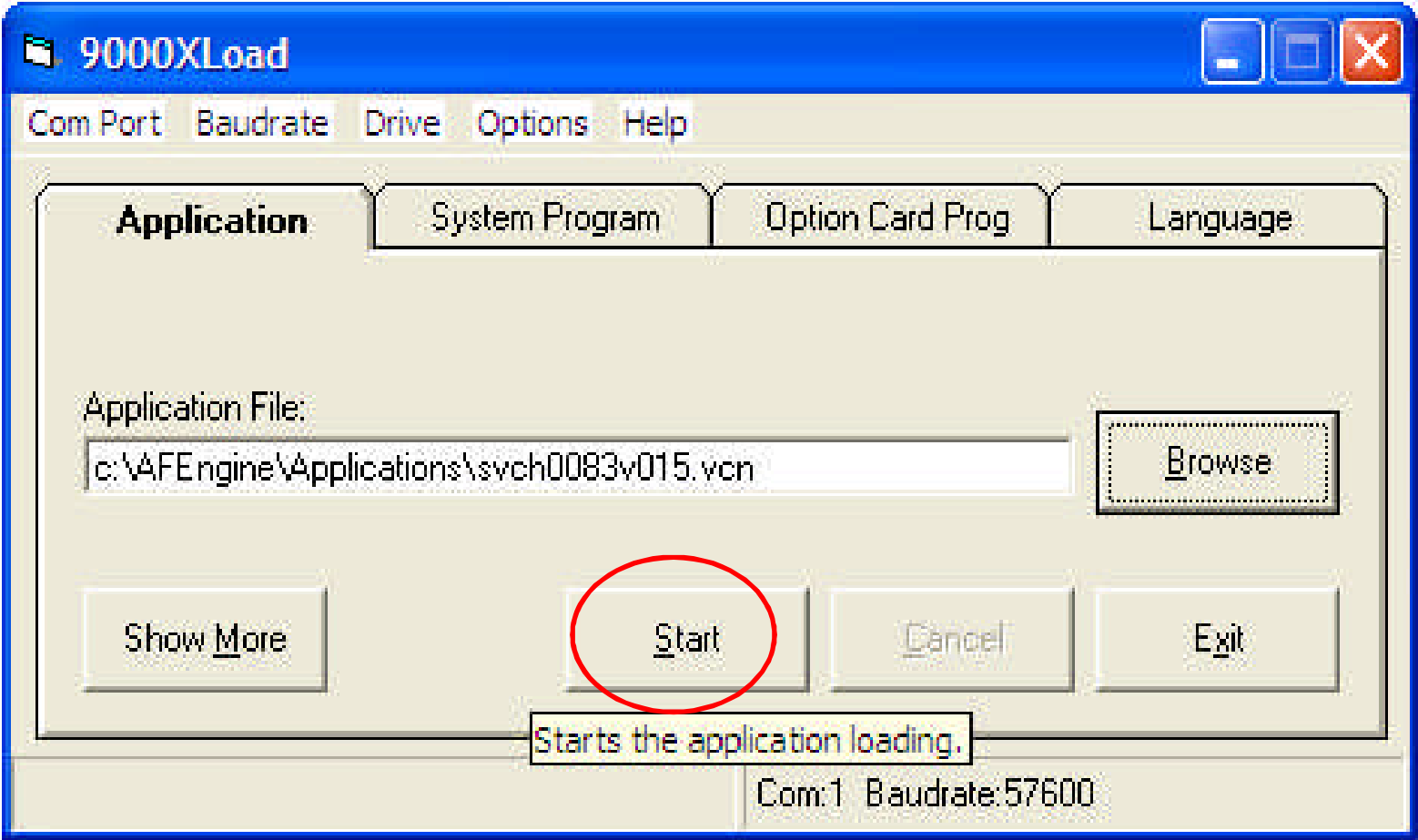
EATON LCX9000



Downloading application software

Start Download

Do not close program until download is complete

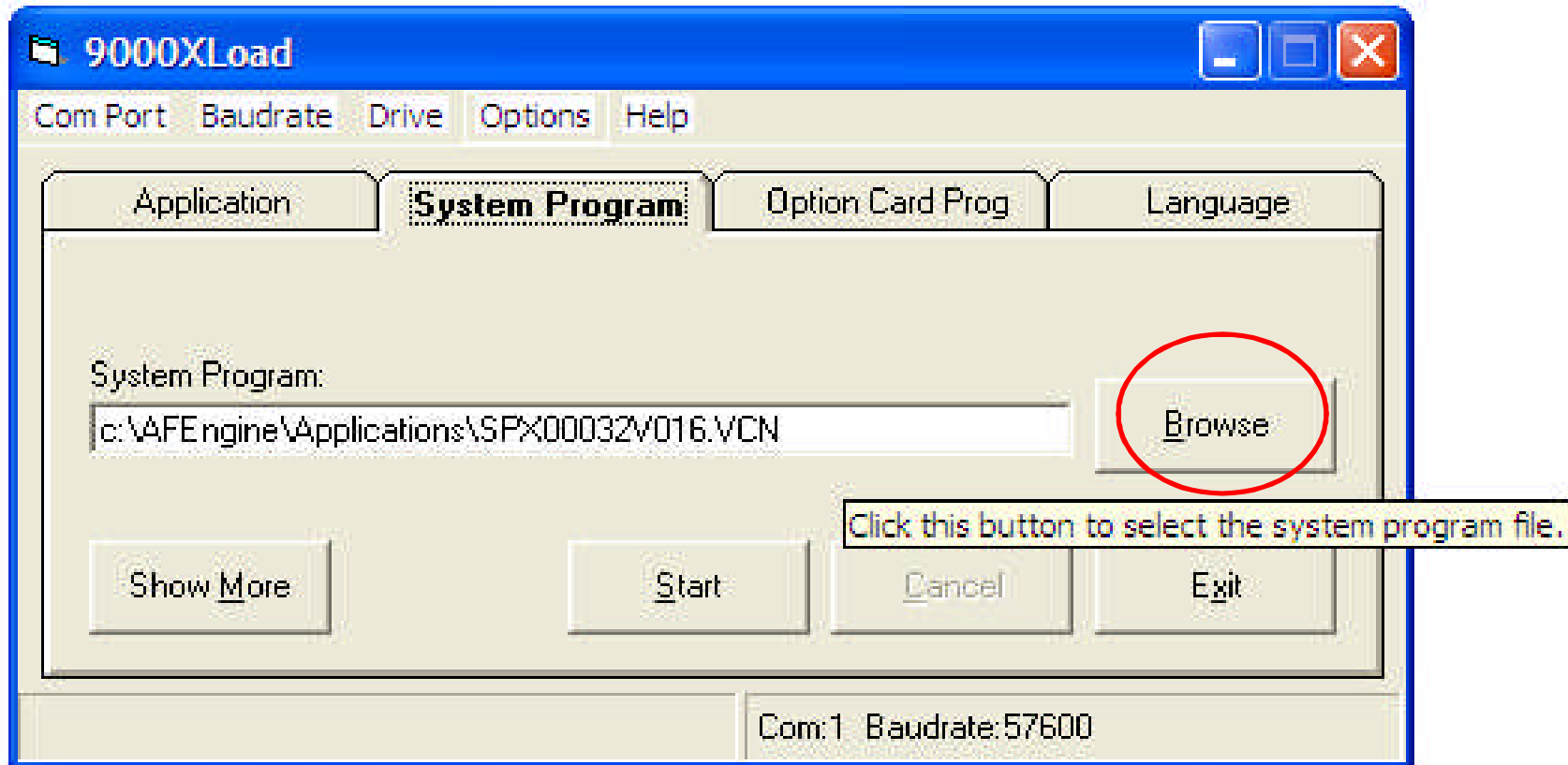


EATON LCX9000



Downloading system firmware

- To download system firmware (SPX.....)
- Select System Program Tab
- Select browse to find software



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Downloading system firmware



Select system program to load

Folders: c:\, AFEEngine, Applications, #AppVcnTemp#

Files: Show Compatible Show All

- SPX00032V014.vcn
- SPX00032V016.VCN**
- SVX00031V018.VCN
- SVX00031V020.VCN
- SVXTest3V012.vcn

Drives: c: [System]

System Software - applications

Target	NXP
Comment	Software for NXP control
FileType	FirmwarePacket
Date	01.03.2010

OK Cancel

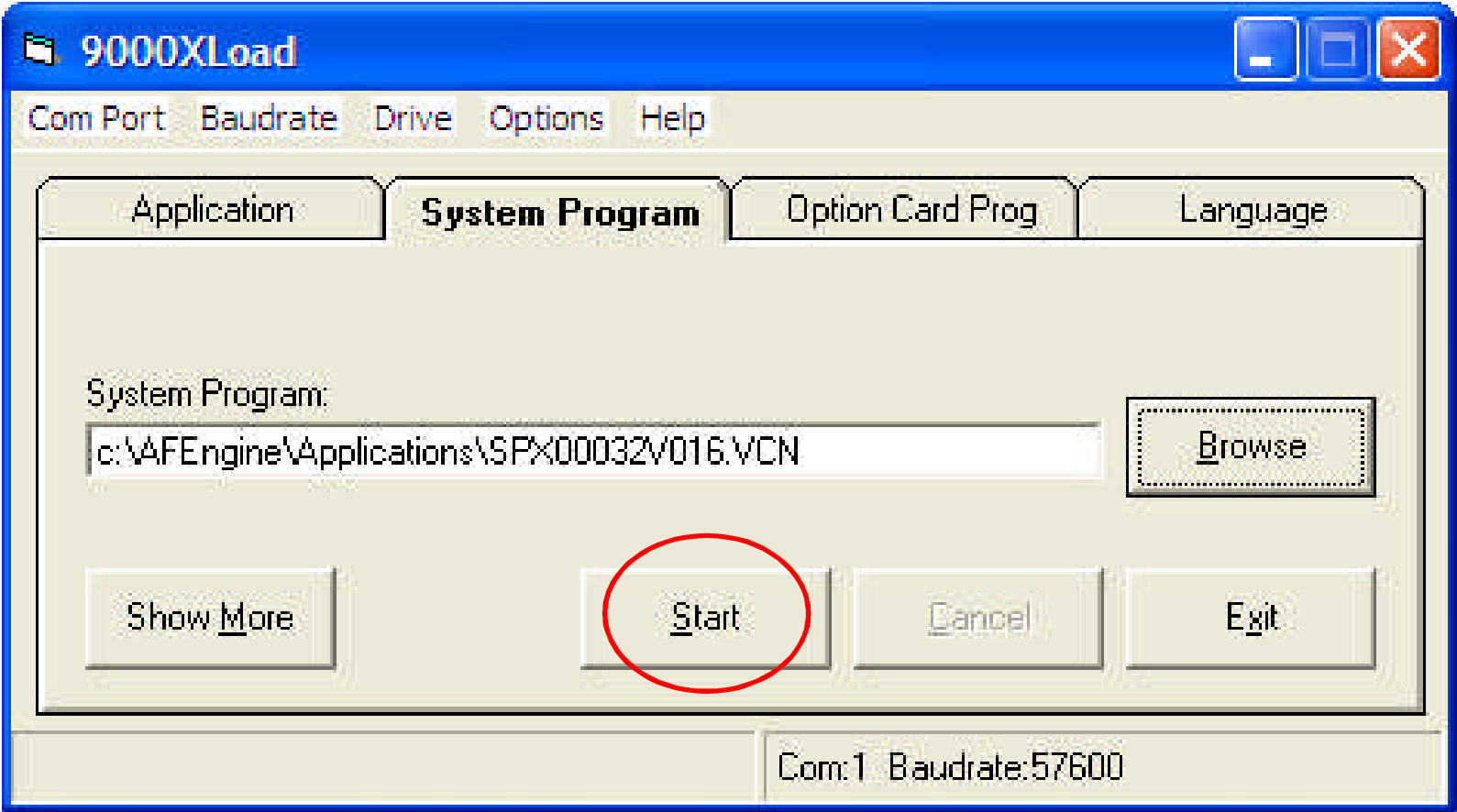
EATON LCX9000



Downloading system firmware

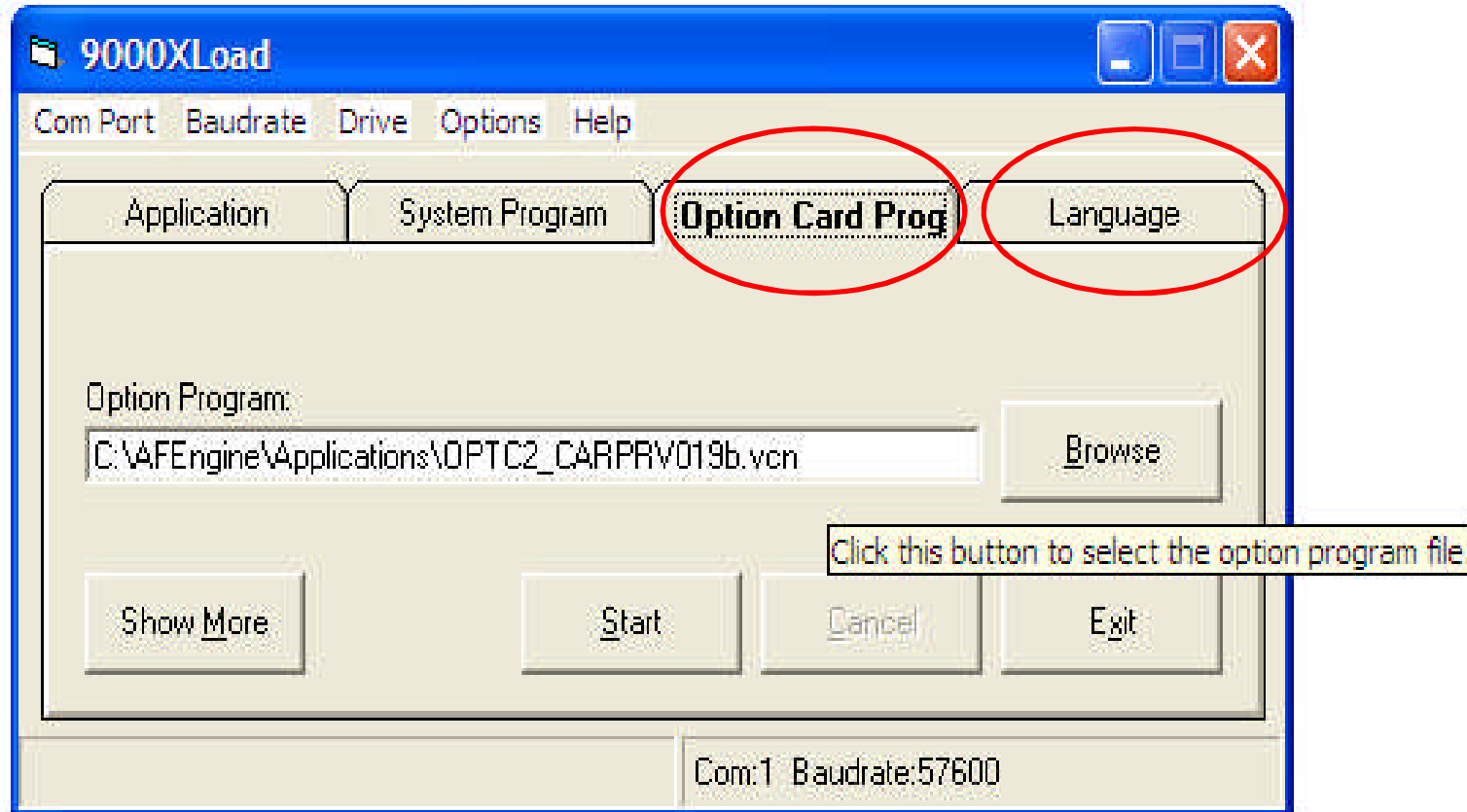
Start Download

Do no close program until download is complete



EATON LCX9000

Downloading Option Card Program & Language



Option card program and language files are downloaded the same way as application software and system program (firmware)

Go to Option card program/Language

Option card program files (OPTC.....vcn) & Language files (SPX)

EATON LCX9000

9000XDrive Software

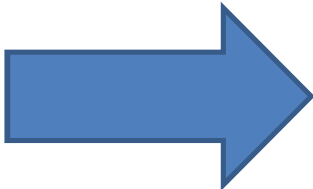


The next section will cover

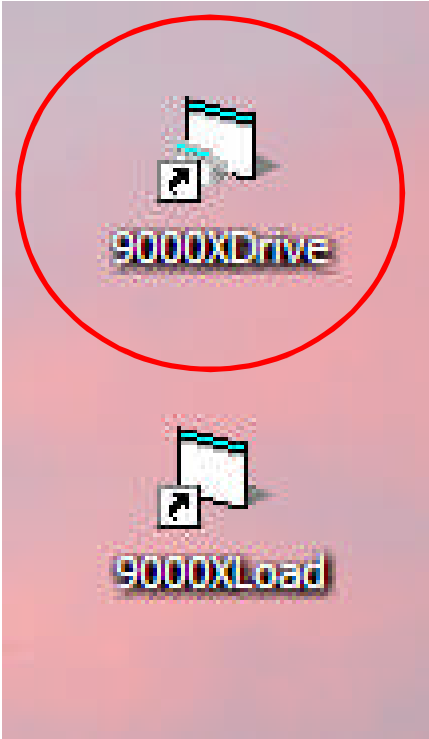
1. Steps on creating "Service Info" file during commissioning
2. Steps on setting up data logger for trending purposes

EATON LCX9000

Initialize software



Go To
9000XDrive
Icon and
initialize

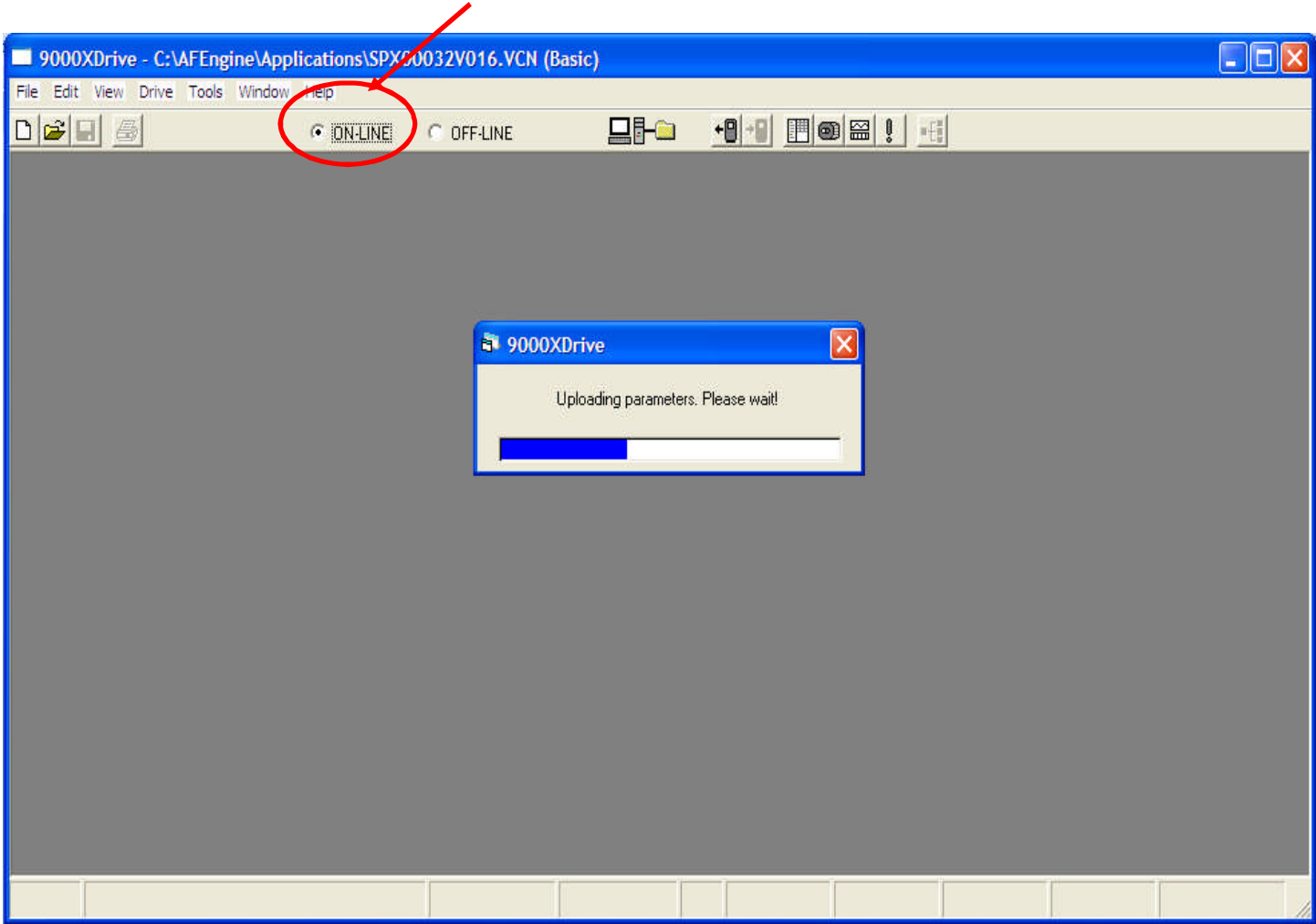


EATON LCX9000

Initialize software



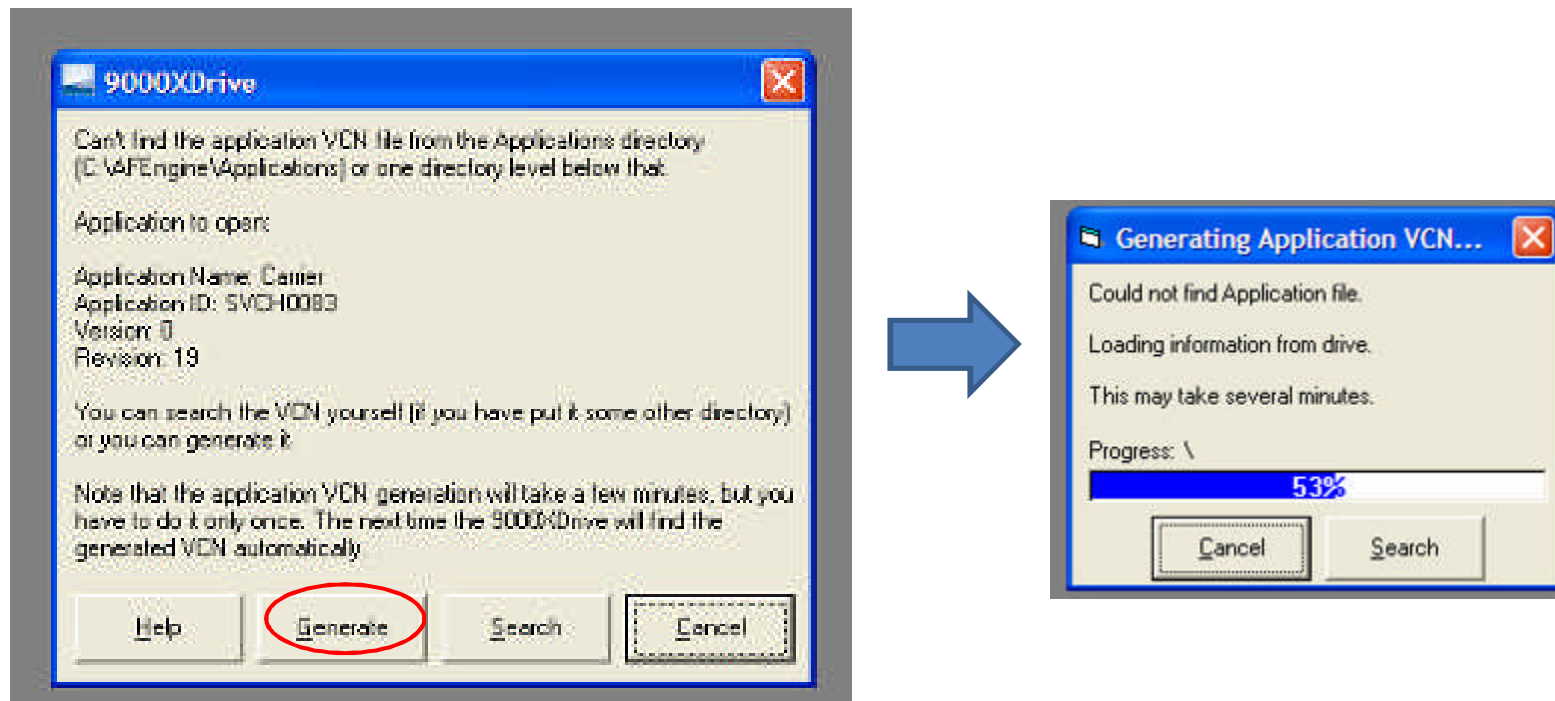
To connect o the drive, simply select “ON-LINE” button on top of 9000XDrive window



EATON LCX9000



Generate Application File



If this is the first time you connect to the drive, a window will pop up with message saying that application VCN file cannot be found.

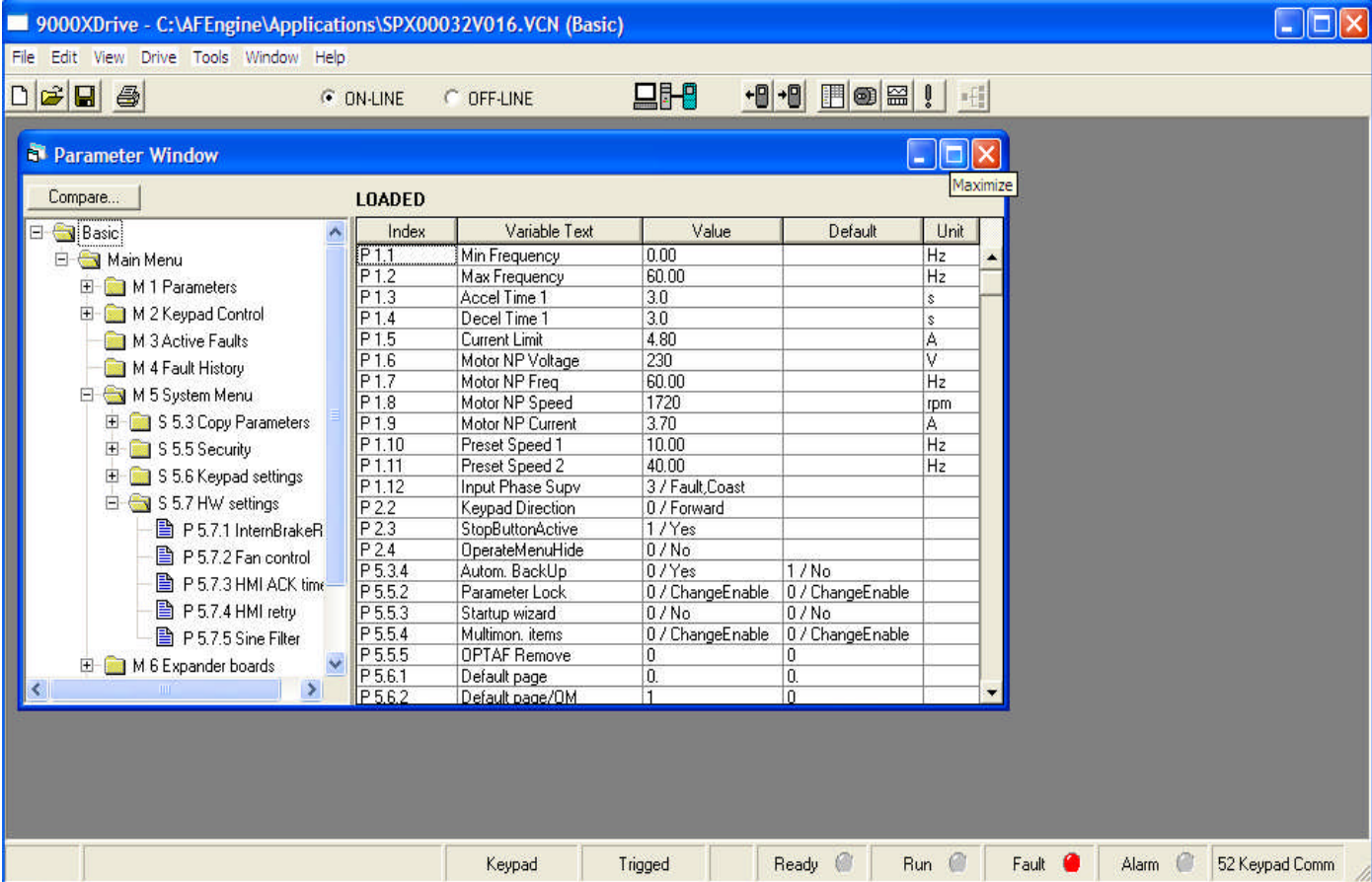
If this happens, select to “GENERATE” the file by clicking on the “GENERATE” button on the window.

EATON LCX9000

Initialize software



Turn to the Experts™



Once software uploaded all the information to your computer, the Parameter Window will show up in the 9000XDrive window.

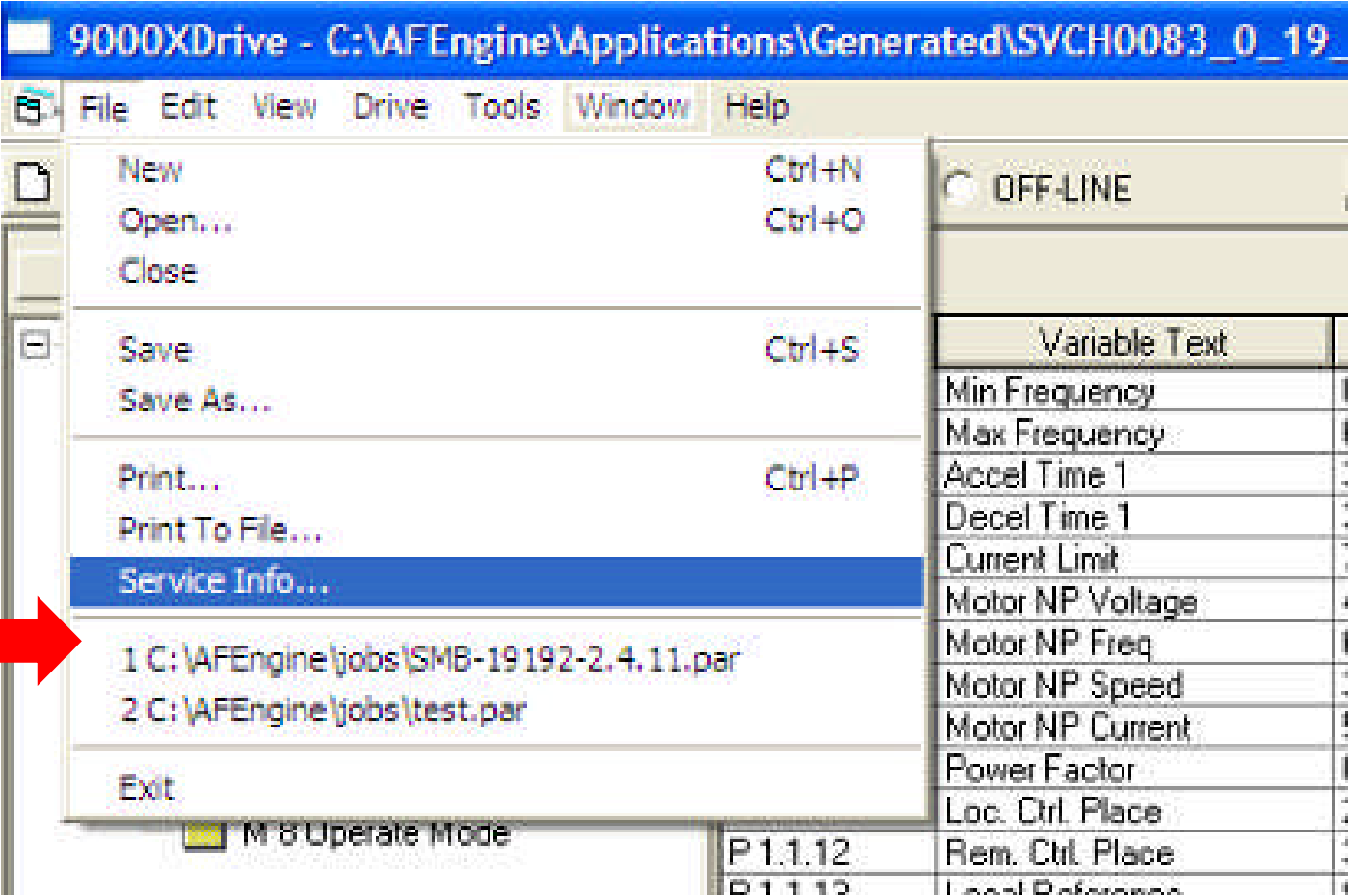
There are 2 sections on the Parameter Window. Left window will list the information of the drive by group, and right window will show the detail of each selected group.³³

EATON LCX9000

Generate Service Info



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Under 9000XDrive Window:
Go to File → Service Info

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Save service info



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Service Info

Print... Save As...

Printed: 2/2/2011 12:44:05 PM
Serialnumber: 10901597
Device: NXP
System software: SPX00032V016 (22.30.10124)
Firmware: 4.61
Application: Basic (SPX00032V016.VCN, SVCHST01 1.20)
Parameter file: C:\AFEngine\jobs\SMB-19192-2.4.11.par

Index	Text	Value	Unit	Min	Max	ID
P 1.1	Min Frequency	0.00	Hz	0.00	60.00	101
P 1.2	Max Frequency	60.00	Hz	0.00	320.00	102
P 1.3	Accel Time 1	3.0	s	0.1	3000.0	103
P 1.4	Decel Time 1	3.0	s	0.1	3000.0	104
P 1.5	Current Limit	4.80	A	0.37	7.40	107
P 1.6	Motor NP Voltage	230	V	180	690	110
P 1.7	Motor NP Freq	60.00	Hz	8.00	320.00	111
P 1.8	Motor NP Speed	1720	rpm	24	20000	112
P 1.9	Motor NP Current	3.70	A	0.37	7.40	113
P 1.10	Preset Speed 1	10.00	Hz	0.00	60.00	105
P 1.11	Preset Speed 2	40.00	Hz	0.00	60.00	106
P 1.12	Input Phase Supv	3 / Fault,Coast		0	3	730
P 2.2	Keypad Direction	0 / Forward		0	1	123
P 2.3	StopButtonActive	1 / Yes		0	1	114
P 2.4	OperateMenuHide	0 / No		0	1	1688
P 5.3.4	Autom. BackUp	0 / Yes		0	1	820
P 5.5.2	Parameter Lock	0 / ChangeEnable		0	1	819
P 5.5.3	Startup wizard	0 / No		0	1	826
P 5.5.4	Multimon. items	0 / ChangeEnable		0	1	822
P 5.5.5	OPTAF Remove	0		0	1	832
P 5.6.1	Default page	0.		0	99.99.99.99.99	
P 5.6.2	Default page/OM	1		0	99	

Service Info screen will show up
Select "Save As"

EATON LCX9000



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Safe file name

Type in the name of the file next to “File name:” box. Use a file name that will allow user to easily identify the file later.

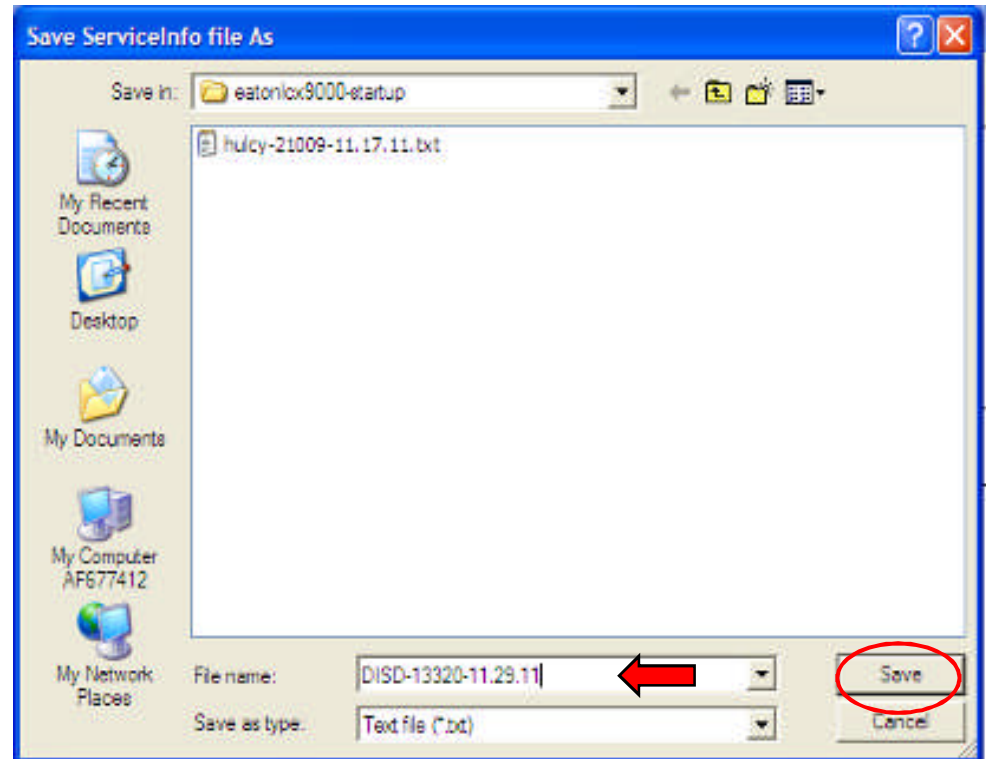
A good file name would include the following info:

1. Abbreviated job name
2. Last 5 digits of serial number
3. Date

Example: **CarterDISD-13320-11.29.11**

Save as type should be “Text File (*.txt)”

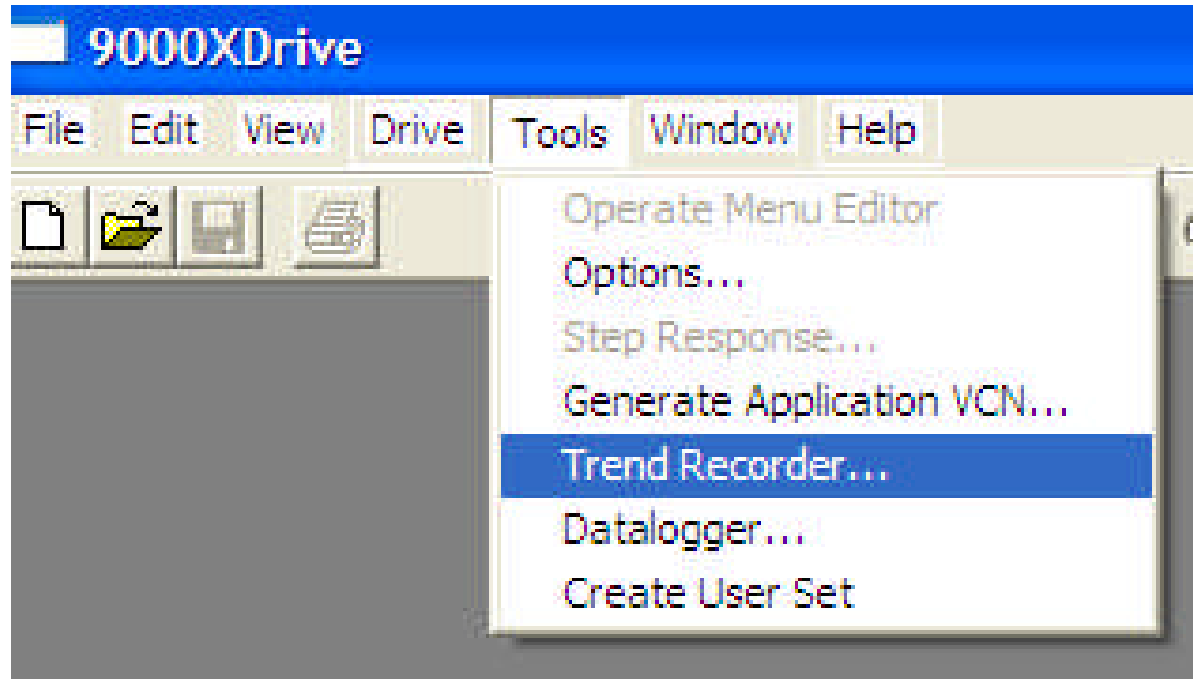
Save the file.



EATON LCX9000



Setting up trend recorder

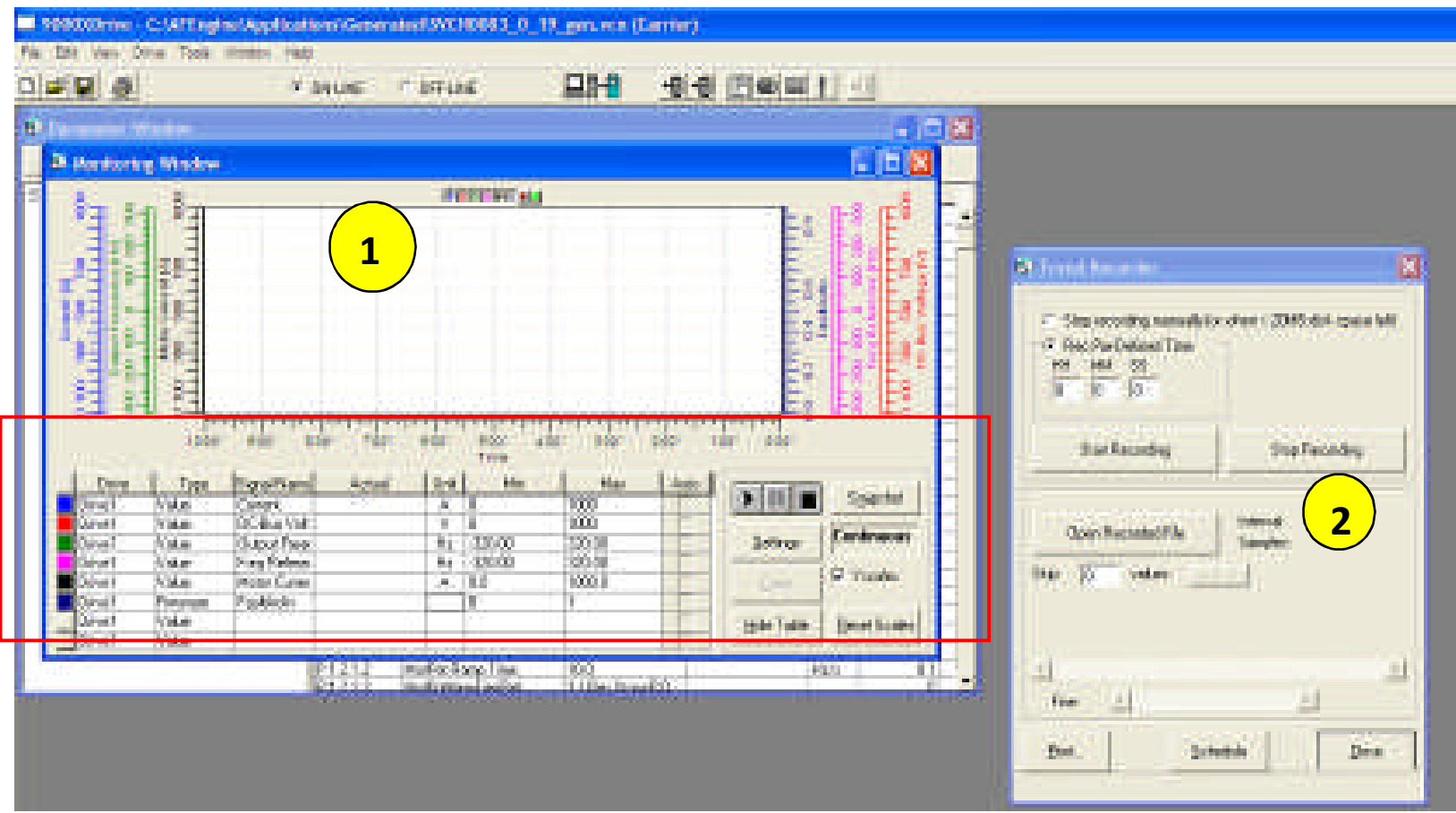


Go to trend recorder function from top of 9000XDrive program screen.
Select "Tools→Trend Recorder"

This will activate the trend recorder.

EATON LCX9000

Setting up trend recorder



- 1. Monitoring Window: Trend recorder setup screen and graphs
- 2. Trend recorder control

EATON LCX9000

Setting up trend recorder



Drive	Type	Signal Name	Actual	Unit	Min	Max	Auto
Drive1	Value	Current	1	A	0	1000	
Drive1	Value	DC-Bus Volt	674	V	0	1000	
Drive1	Value	Output Freq	0	Hz	320.00	320.00	
Drive1	Value	Freq Refer	0	Hz	320.00	320.00	
Drive1	Value	Motor Curre	0	A	0.0	1000.0	
Drive1	Firmware	FaultActiv	0		0	1	
Drive1	Value						
Drive1	Value						

Analogue Input 4
Current
DC Voltage
DC-Bus Voltage
DIN1, DIN2, DINE
DIN4, DIN5, DINE

To set up logger, go to the bottom of monitoring window (below graph). Under the column “Signal Name”, there is a scroll bar that allows user to pick the signal they want to monitor. Basic selections should include

1. Current
2. DC Bus Voltage
3. Output Frequency
4. Frequency Reference
5. Motor Current

Check and make sure that min/max values are set to cover the range that the drive will operate

Setting up trend recorder



Monitor Settings

Monitor Settings

Sampling Interval: Continuous
 Trigger

200 ms

Trigger Settings

Post-sampling: = 1000ms Level Trigger ON

Drive	Type	Signal Name	Min	Trig Level	Max

Derivate: /200 ms Derivate Trigger ON

OK Cancel Apply Help

Snapshot

Settings **Continuous**

Clear Yscales

Hide Table Reset Scales

Drive	Value	Frequency	Hz	Set	Set
Drive1	Value	Output Freq	0	Hz	-320.00 320.00
Drive1	Firmware	ActiveFault_	0		255
Drive1	Value	Current	1	A	0 738
Drive1	Value	Motor Speed	0	rpm	-10000 10000
Drive1	Value	Motor Voltage	0	V	0.0 1000.0

Select "Settings" under monitoring window to set the sampling interval and method.

- 1. Sampling interval = 200ms
- 2. Continuous

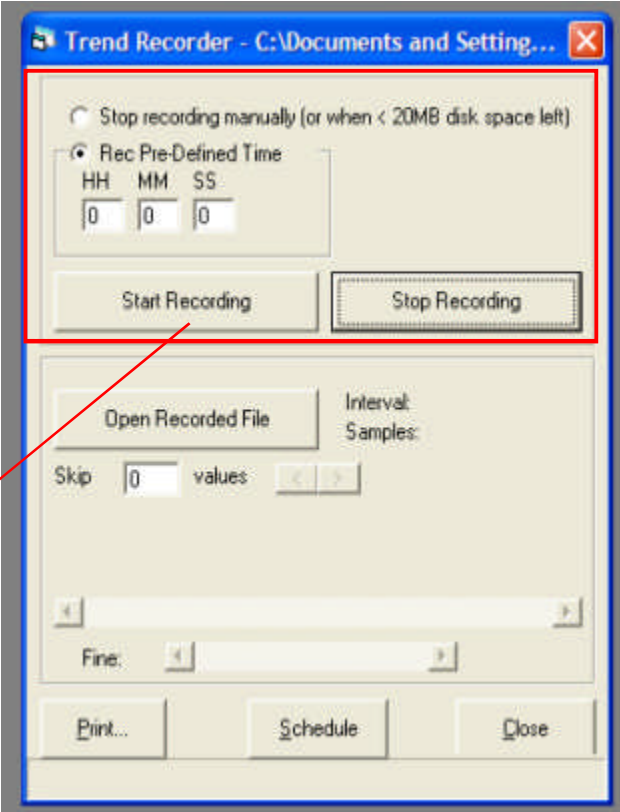
Click "OK" when done.

EATON LCX9000

Setting up trend recorder



To start recording, select “Stop recording Manually...” and press “Start recording” button.

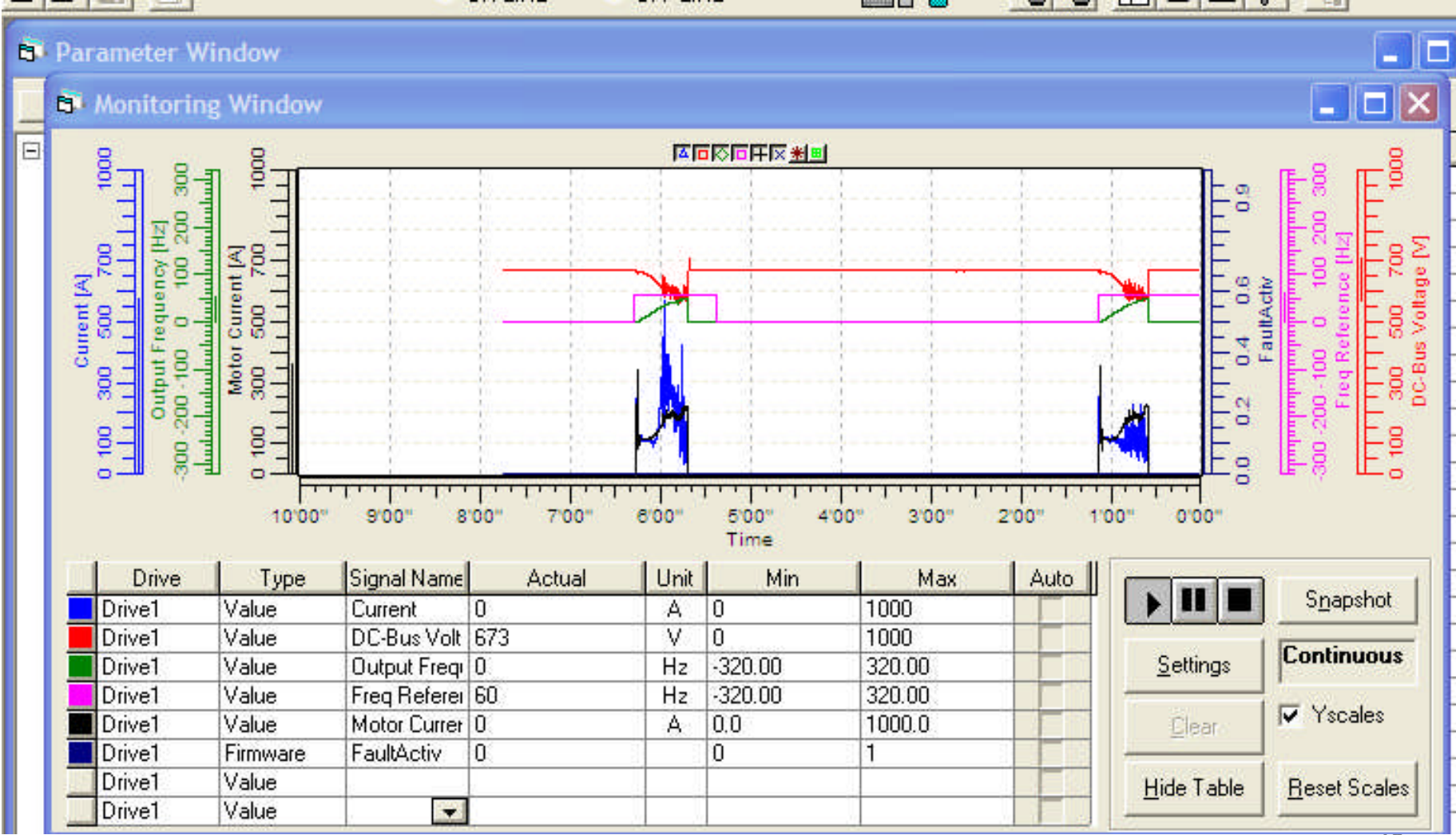


EATON LCX9000

Setting up trend recorder

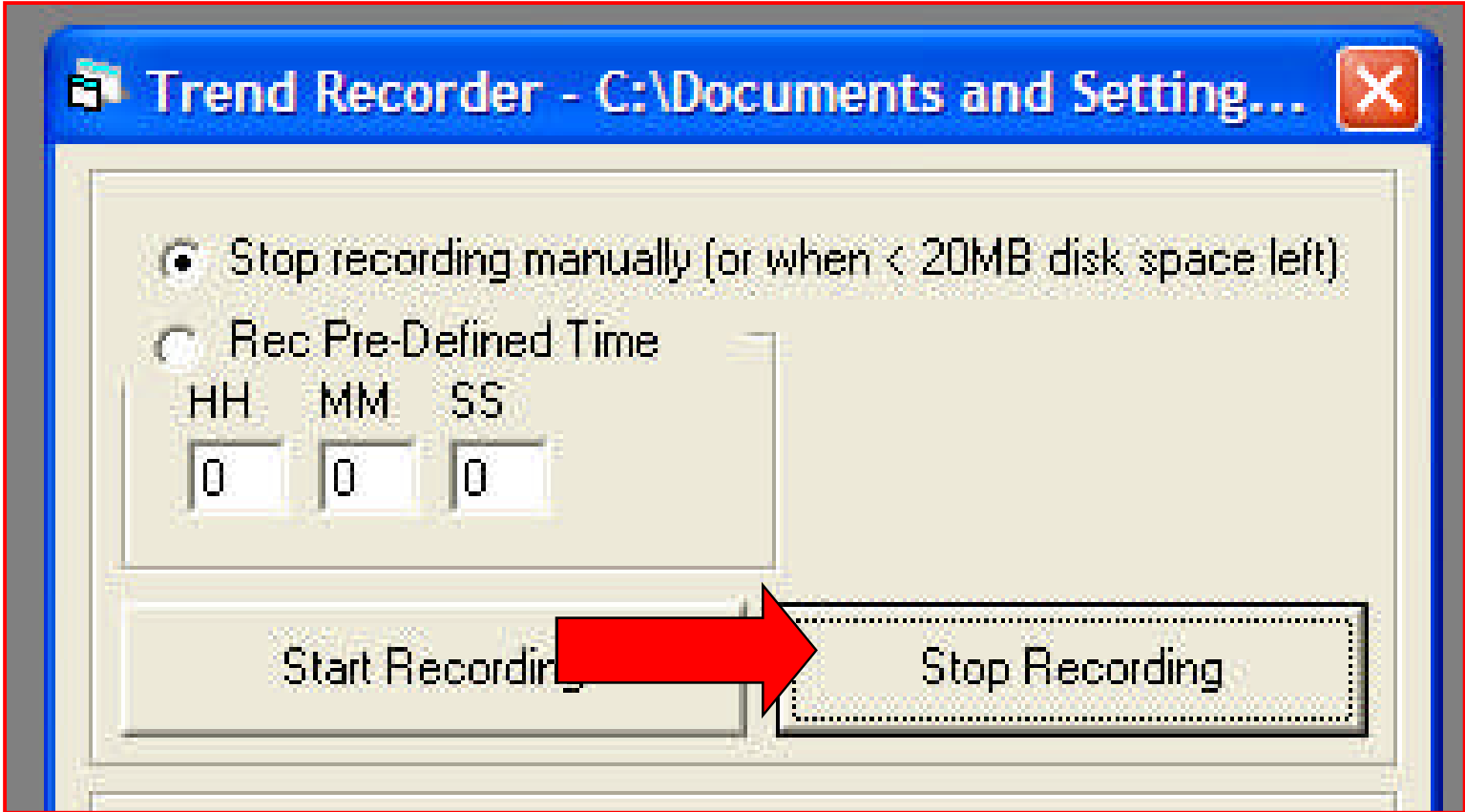


Turn to the Experts™



EATON LCX9000

Setting up trend recorder



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SWI

www.hvacpartners.com

Go to Service tab → Post sale support → standard work instructions

Eaton LCX9000: How to download firmware and system software using 9000Xload

CCS-SOP-7-SWI00439

Eaton LCX9000: How to generate Service Info with 9000XDrive

CCS-SOP-7-SWI00418

Eaton LCX9000: How to setup 9000XLoad & 9000XDrive software

CCS-SOP-7-SWI00438

Eaton LCX9000: How to setup Trend Recorder using 9000XDrive

CCS-SOP-7-SWI00419

