

Getting to Know Control Studio

v1.0 build 4 sp 1



ControlStudio™

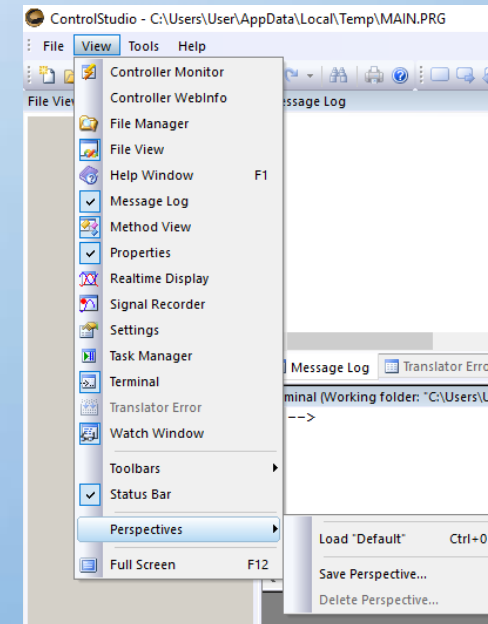
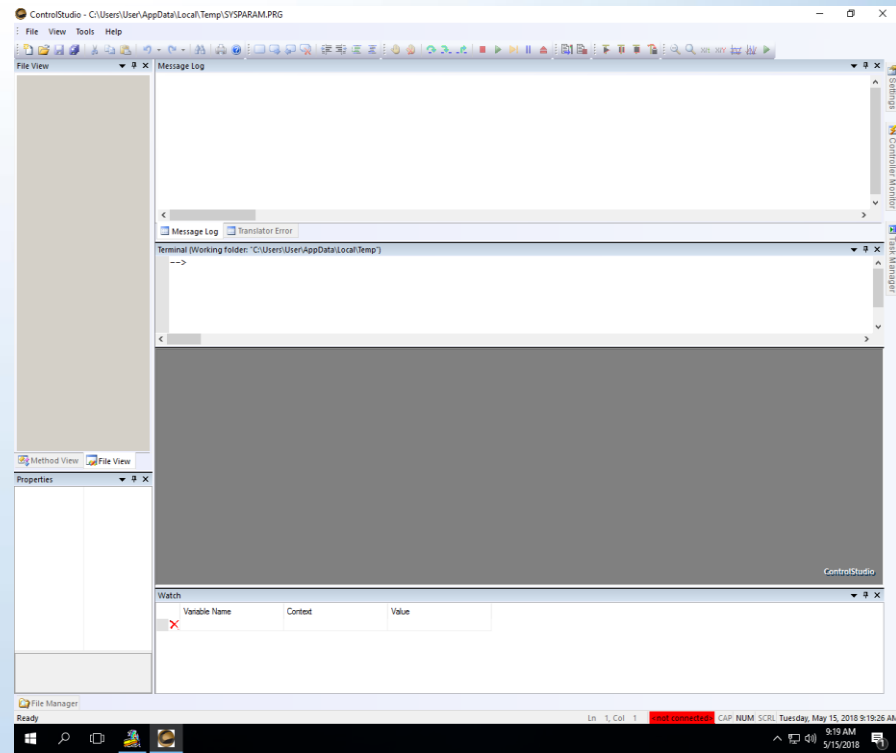
Getting to know Control Studio

- Control Studio is the integrated development environment for the softMC
- Used to write programs (tasks), debug tasks, record data
- Graphical User Interface
- Provides a command line interface (terminal) to the softMC



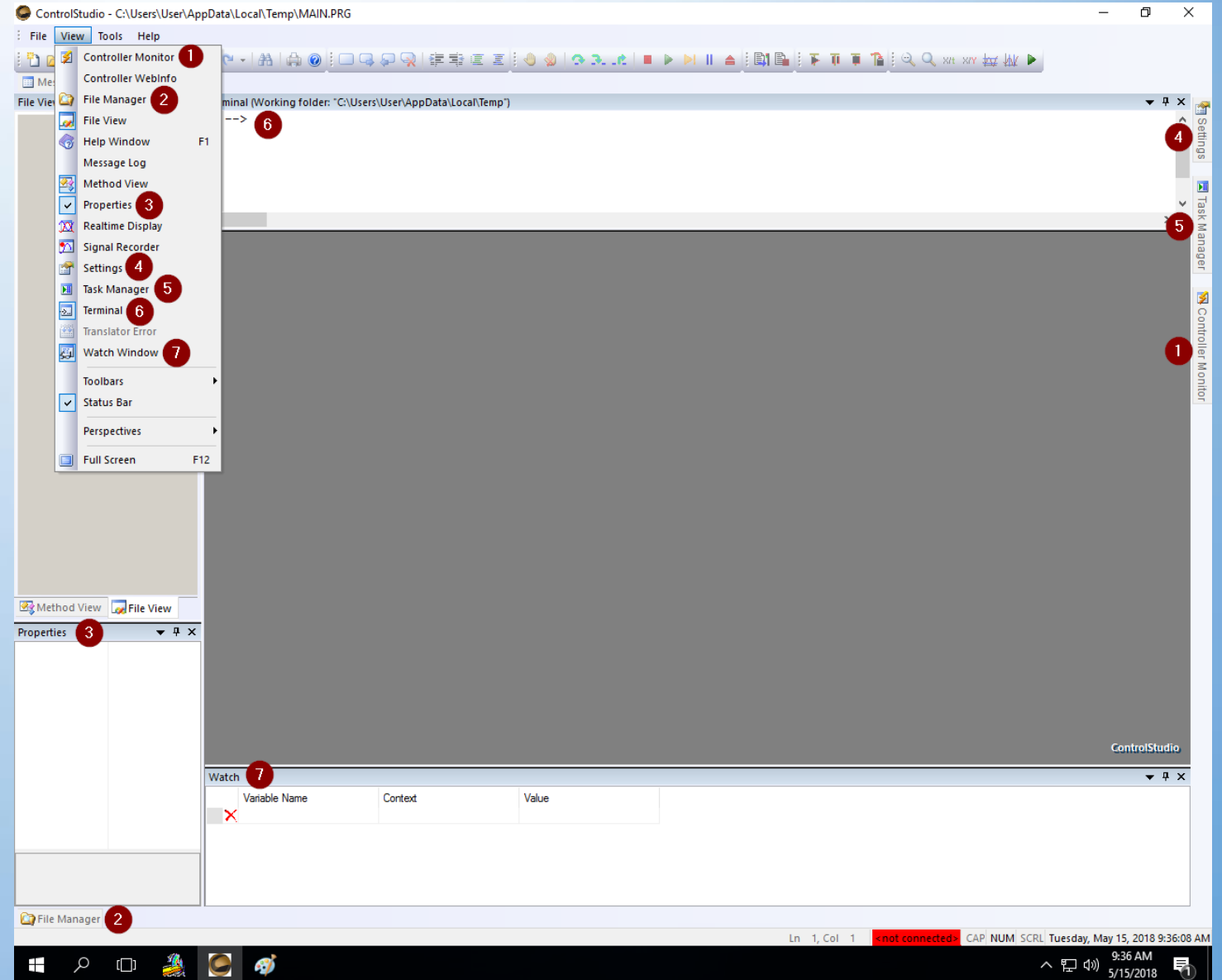
Getting to know Control Studio

- This is the default view in Control Studio
- If your view does not look like this or if you want to go back to the default view, select View from the toolbar menu, then perspectives, then Load “Default”



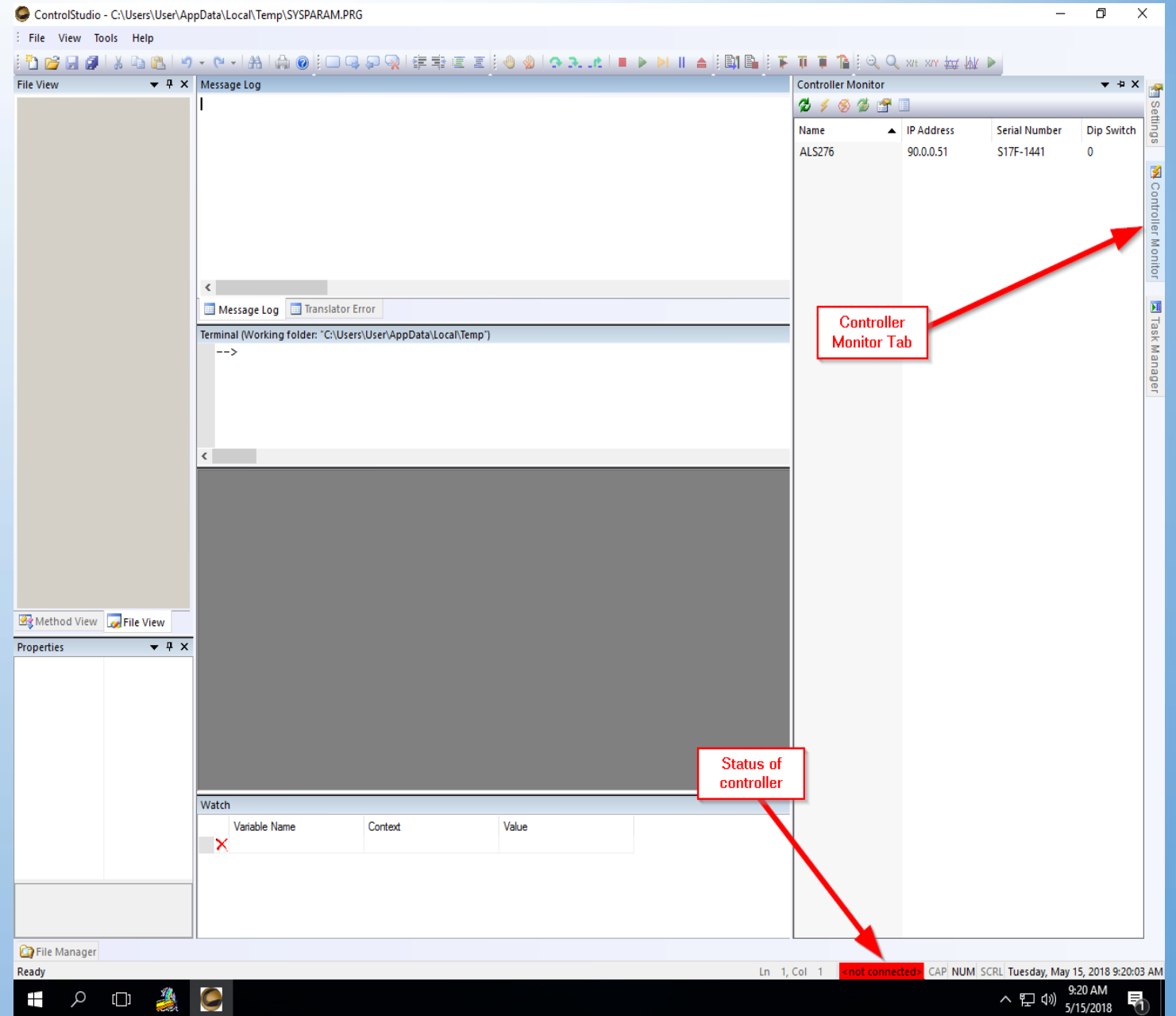
Getting to know Control Studio

- The most common windows are preloaded with the default settings.
- If you happen to close one, they can be recovered.
- Here is a numbered list of the most common windows.




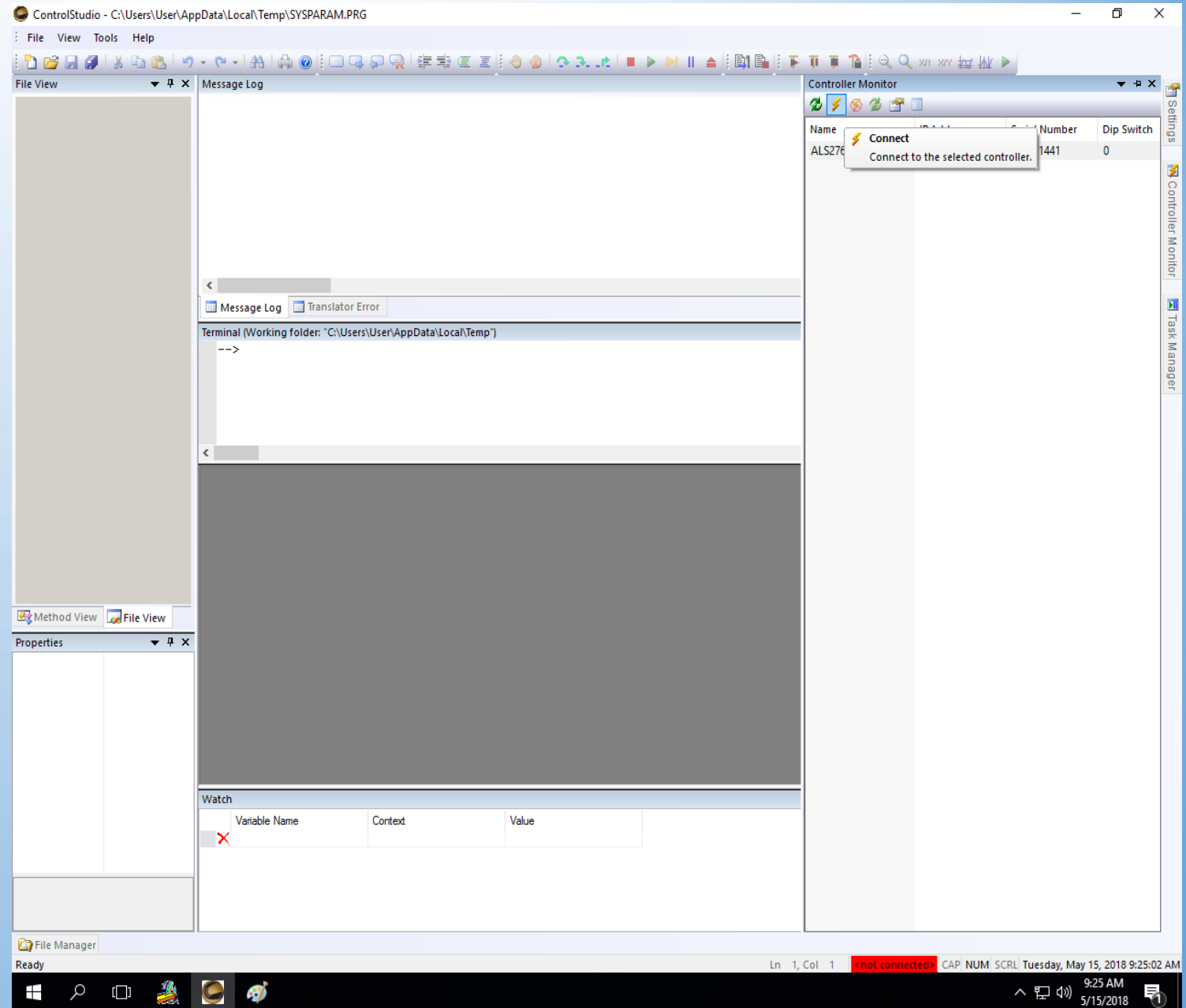
Connecting to a softMC Controller

- When you open Control Studio by default, you are not connected to a controller
- To connect to a controller, open the Controller Monitor Tab on the right.
- This will open the Controller Monitor Window



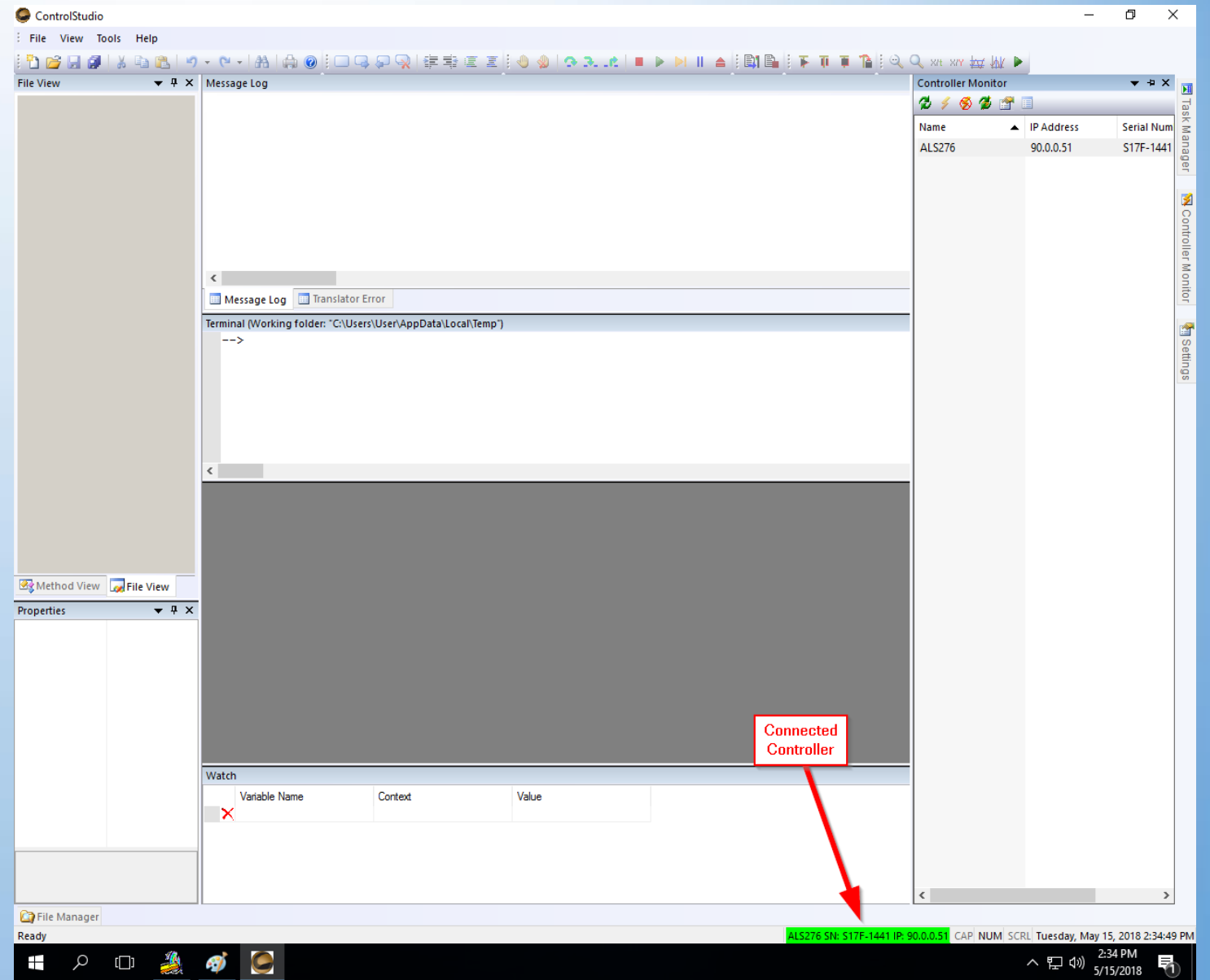
Connecting to a softMC Controller

- To connect to a controller, highlight the controller and then press the yellow lightning bolt 
- You will need to do this each time you open Control Studio



Connecting to a softMC Controller

- Once you are connected to a controller, it will show as being by turning green at the bottom
- It will also show you the serial number and IP address of the controller that you are currently connected to.



Controller Automatic Connection Settings

- To set a controller to Automatically connect, open the settings Tab
- Scroll down to the Controller Monitor section under Settings.
- Change TCP/IP connection to Manual
- Change Auto Connect at startup to True
- Change Auto Connect Serial Number once it auto populates from the controller

The screenshot shows the ControlStudio application window. The main workspace is divided into several panes: File View, Message Log, Terminal, Properties, Watch, and Settings. The Settings pane is open on the right side, and the Controller Monitor section is highlighted in yellow. A red box labeled "Auto Connect Settings" with an arrow points to the Controller Monitor section. The status bar at the bottom indicates "Ready" and "not connected".

ControlStudio - C:\Users\User\AppData\Local\Temp\SYSPARAM.PRG

File View | Message Log | Settings

Source Code Editor

- Font: Courier New(10)
- Use spaces: True
- Tab size: 2
- Outlining: False
- External Text Editor
- External Text Editor Arg...

General

- Autohide animation: True
- Open last solution at sta...: False
- Multi-instances: False
- Webinfo start page
- Help source address: softmc.servotronix.com

Motion bus

- Bus number: 0

Cycle time

- Cycle time dialog: True
- Default cycle time

Watch Window

- Refresh cycle: 2000

Terminal

- Font: Courier New(10)

Translator Error

- Font: Courier New(10)

Message Log

- Show service messages: False
- Maximum Lines: 1000

File Manager

- Show overwrite warnings: True

Controller Monitor

- TCP/IP connection: Manual IP
- Auto connect at startup: True
- Auto connect Serial Nu...: S17F-1441
- Send timeout (ms): 3000
- Receive timeout (ms): 3000

Auto connect Serial Number

Description

Terminal (Working folder: "C:\Users\User\AppData\Local\Temp")

-->

Watch

Variable Name	Context	Value
X		

File Manager

Ready | Ln 1, Col 1 | <not connected> | CAP NUM SCRL Tuesday, May 15, 2018 9:21:37 AM

9:21 AM 5/15/2018

Digital Input Definitions

How to Poll Inputs

Polling inputs is done in the
Terminal Window

Example for polling inputs

```
?sys.din.estop or  
?sys.din.106
```

“?” will poll the input and return
either a 0 or 1

0 = input is low

1= input is high

106 -Estop	E-Stop Detection Input
107 - SawAux	Auxiliary contact on Saw Motor Starter
108 - RemoteEstop	Remote Pendant E-Stop Detection Input
109 - OnOff	Key switch On/Off input
110 - LPS	Lumber Present Sensor - Outside L1
206 - EDS	Lumber Edge Detect Sensor - Inside L1
207 - SI1	Door Safety Interlock
209 - MS3_Aux_Conv	Aux MS3 - Conveyor motor starter
210 - L2LPS	Lumber Present Sensor - Inside L2

```
Terminal (Working folder: "C:\Users\User\AppData\Local\Temp")  
-->?sys.din.onoff  
1  
-->|
```

How to Poll Outputs

- Polling Outputs is done in the Terminal Window
- Example for polling outputs
- `?sys.dout.sawcoil` or
- `?sys.dout.603`
- “?” will poll the output and return either a 0 or 1
- 0= Output is Off
- 1= Output is On

Digital Output Definitions

603 – SawCoil	MS1 - Saw Motor Starter
505 - Sweeper_L	Sweeper
504 - InkJetOut	Inkjet Output
503 - Conveyor	Conveyor Motor Starter
405 - L1_Pusher	Pusher bar solenoid control
404 - L2_Pusher	L2 Pusher bar solenoid control
403 - RedLamp	Red status lamp on HMI
305 - YelLamp	Yel status lamp on HMI
304 - GrnLamp	Grn status lamp on HMI

```
Terminal (Working folder: "C:\Users\User\AppData\Local\Temp")
-->
-->?sys.dout.conveyor
0
-->
```

How to Fire Outputs

- Firing Outputs is done in the Terminal Window
- Example for Firing outputs
- `sys.dout.L1_Pusher=1` or
- `sys.dout.405`
- 0= Output is Off
- 1= Output is On

Digital Output Definitions

603 – SawCoil
505 - Sweeper_L
504 - InkJetOut
503 - Conveyor
405 - L1_Pusher
404 - L2_Pusher
403 - RedLamp
305 - YelLamp
304 - GrnLamp

MS1 - Saw Motor Starter
Sweeper
Inkjet Output
Conveyor Motor Starter
Pusher bar solenoid control
L2 Pusher bar solenoid control
Red status lamp on HMI
Yel status lamp on HMI
Grn status lamp on HMI

```
Terminal (Working folder: "C:\Users\User\AppData\Local\Temp")
-->
-->sys.dout.conveyor=1
-->
```

System Parameters

Use to be DNVRAM

- Polling a System Parameter
- ?sysparam[28]
- How to change a System Parameter
- Sysparam[28]=650

SYSPARAM[1] = 21.5	L1 home offset
SYSPARAM[2] = -0.002268	A1 home offset
SYSPARAM[3] = -10.43	T1 home offset
SYSPARAM[4] = -0.016	B1 home offset
SYSPARAM[5] = -2.405342	Z1 home offset
SYSPARAM[6] = -13	L1 retract distance
SYSPARAM[7] = 14	Blade diameter- Not Used
SYSPARAM[8] = 70	Waste eject distance
SYSPARAM[9] = -1.85	Z1 rest position
SYSPARAM[10] = 5.25	Z1 down position
SYSPARAM[11] = 45	Eject piece distance
SYSPARAM[12] = 3	PLS print distance
SYSPARAM[13] = 10	PLS print width – Not Used
SYSPARAM[14] = 15000	Load wait time – Not Used
SYSPARAM[15] = 3.517170	L1 scale factor for RB (SB 3.757686)
SYSPARAM[16] = 3.517170	L2 scale factor for RB (SB 3.757686)
SYSPARAM[17] = -2.2	Z1 safe position – Not Used
SYSPARAM[18] = 36	Rip valley
SYSPARAM[19] = 2	Bevel hardware type – 2 Non Adjustable
SYSPARAM[20] = 1	2 – 10 Amp L1 & L2 Drives
SYSPARAM[21] = 1	1 - Plunge bevel
SYSPARAM[22] = 12000	Sweeper delay time (to open)
SYSPARAM[23] = 2500	Sweeper hold time
SYSPARAM[24] = 1	1 – B1 100 to 1 gearbox
SYSPARAM[25] = 1200	Ink jet dotsize
SYSPARAM[26] = 400	A1 calibration torque
SYSPARAM[27] = 400	B1 calibration torque
SYSPARAM[28] = 550	T1 calibration torque
SYSPARAM[29] = 1050	Z1 calibration torque
SYSPARAM[30] = 0	Automatic infeed system ,value > 0 enables infeed system
SYSPARAM[31] = 1	Bevel pivot x pt calculated
SYSPARAM[32] = 1	Bevel pivot y pt calculated
SYSPARAM[33] = 3.0	Measured x pt in dec in
SYSPARAM[34] = -.625	Measured y pt in dec in
SYSPARAM[60] = 0	Printer orientation 0=upside down (default), 1=normal

Default System Parameter List

```
Terminal (Working folder: "C:\Users\User\AppData\Local\Temp")
-->?sysparam[28]
550
-->sysparam[28]=650
-->?sysparam[28]
650
```

How to Change Print Controller Type

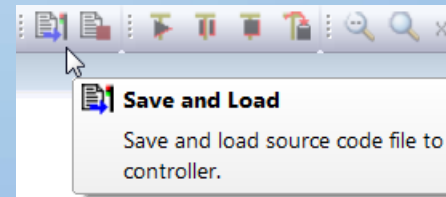
- Open your Autoexec.prg that is running on the controller
- Go to line 103 and you should find the first line for print controller settings.
- Comment and uncomment the appropriate lines for your controller type.
- After you make the changes, use the save and load button on the Toolbar for the changes to take effect

Matthews DOD2002A Controller

```
103 'Open COM2 BaudRate=19200 Parity=0 DataBits=8 StopBit=1 XonOff=0 As #1 'V84i Baurate=19200"
104 Open COM2 BaudRate=9600 Parity=0 DataBits=8 StopBit=1 XonOff=0 As #1 'DOD2002 baurate=9600
105
106 Try
107     Close #1
108     Catch else
109 End Try
110 'Open COM2 BaudRate=19200 Parity=0 DataBits=8 StopBit=1 XonOff=0 As #1 'V84i Baurate=19200"
111 Open COM2 BaudRate=9600 Parity=0 DataBits=8 StopBit=1 XonOff=0 As #1 'DOD2002 baurate=9600
```

Matthews V84i Controller

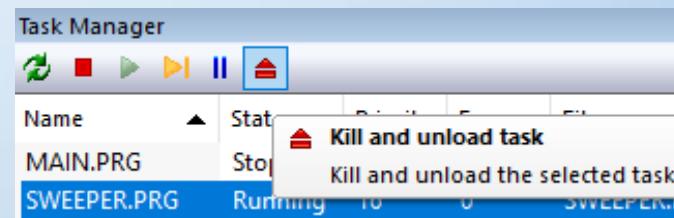
```
103 Open COM2 BaudRate=19200 Parity=0 DataBits=8 StopBit=1 XonOff=0 As #1 'V84i Baurate=19200"
104 'Open COM2 BaudRate=9600 Parity=0 DataBits=8 StopBit=1 XonOff=0 As #1 'DOD2002 baurate=9600
105
106 Try
107     Close #1
108     Catch else
109 End Try
110 Open COM2 BaudRate=19200 Parity=0 DataBits=8 StopBit=1 XonOff=0 As #1 'V84i Baurate=19200"
111 'Open COM2 BaudRate=9600 Parity=0 DataBits=8 StopBit=1 XonOff=0 As #1 'DOD2002 baurate=9600
```



How to warm boot the controller

- In the terminal window, type the following commands
- `sys.en=0`
- `sys.motion=0`
- Go to the task manager, then kill and unload both tasks
- Enter the next string of commands
- `reset all`
- `load autoexec.prg`

```
Terminal (Working folder: "C:\Users\User\AppData\Local\Temp")
-->
-->
-->
-->sys.en=0
-->sys.motion=0
```



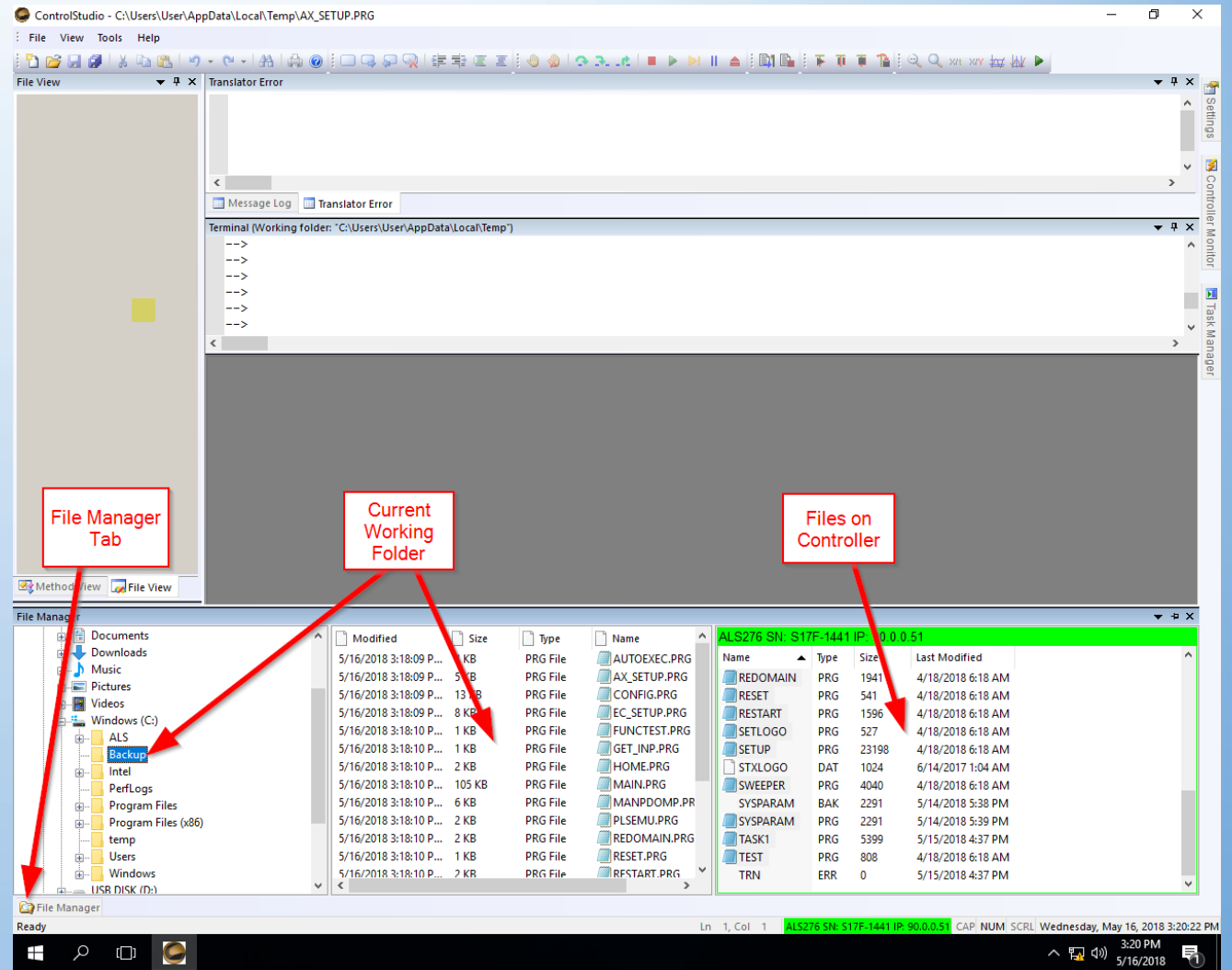
```
Terminal (Working folder: "C:\Users\User\AppData\Local\Temp")
-->
-->sys.en=0
-->sys.motion=0
-->reset all
-->load autoexec.prg
-->
```

The screenshot shows the Windows Task Manager window with a table of running tasks. The table has columns for Name, State, Priority, Error, Filename, State ID, and Source.

Name	State	Priority	Error	Filename	State ID	Source
MAIN.PRG	Running	16	8008	MAIN.PRG	1	396
SWEEPER.PRG	Running	16	0	SWEEPER.PRG	1	19

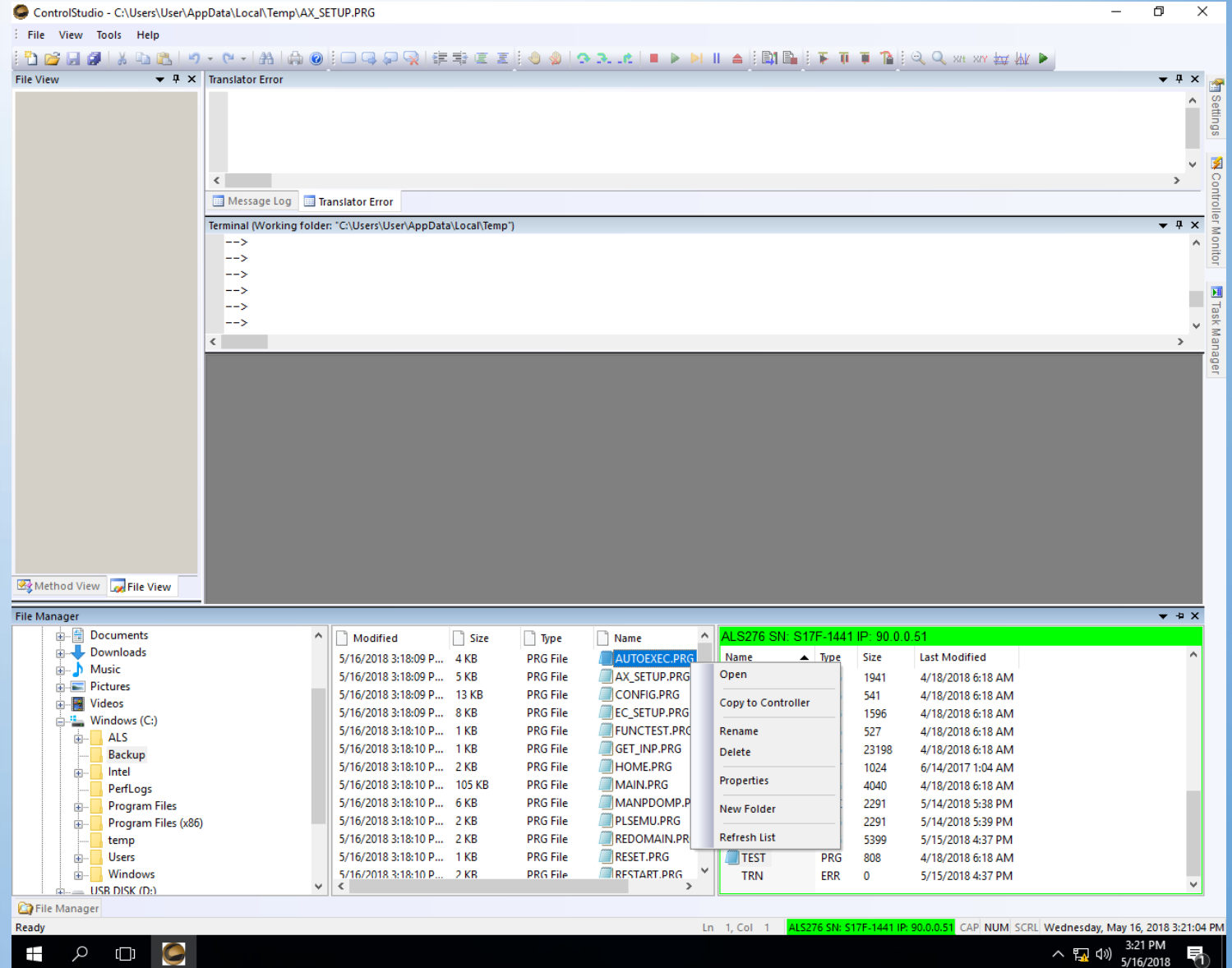
How to Load and Backup Controller

- All functions to backup or load a controller is done through the File Manager
- There are three windows
- First is your Directory Tree
- Next is your Current Working Folder
- Third window is the files that are currently on the controller



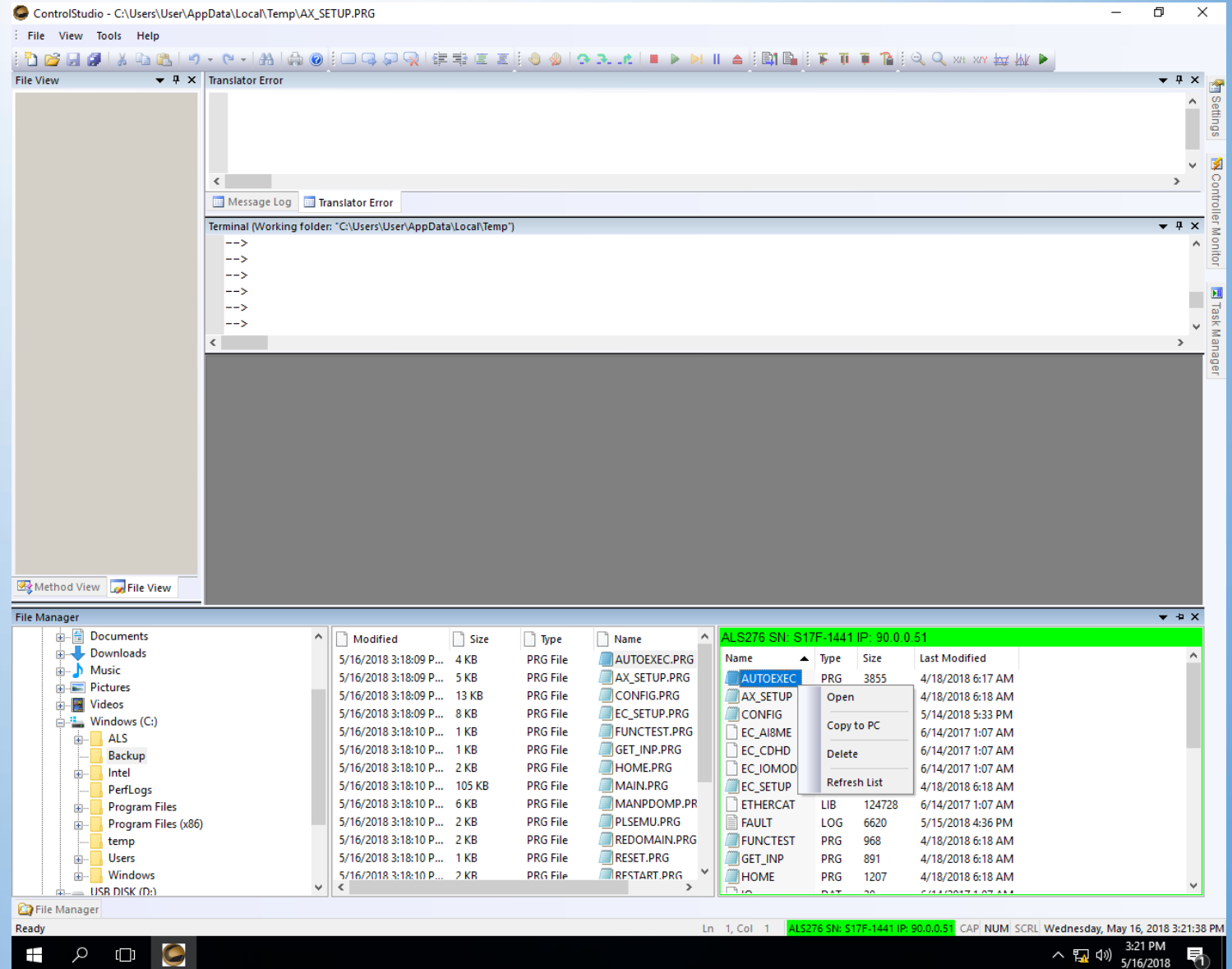
How to load a file to the controller

- Navigate to the file you want to load
- Highlight the file in the current working directory, then right click on it
- Select Copy to Controller
- If the file is in use, you will have to kill the tasks using the file
 - `sys.en=0`
 - `sys.motion=0`

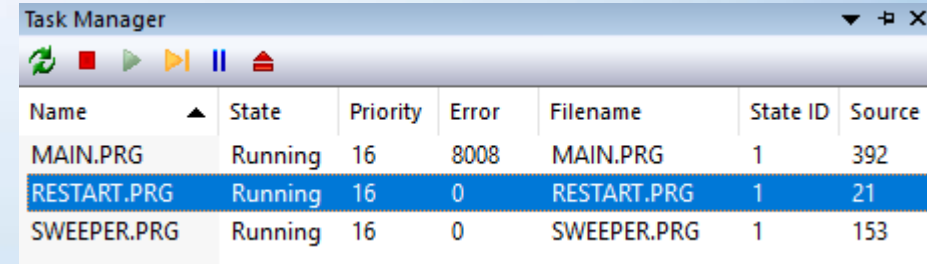


How to backup a file from the controller

- Navigate to the file you want to backup on the controller
- Highlight the file in the controller and select copy to PC
- This will copy the file to where you are navigated in at the working directory

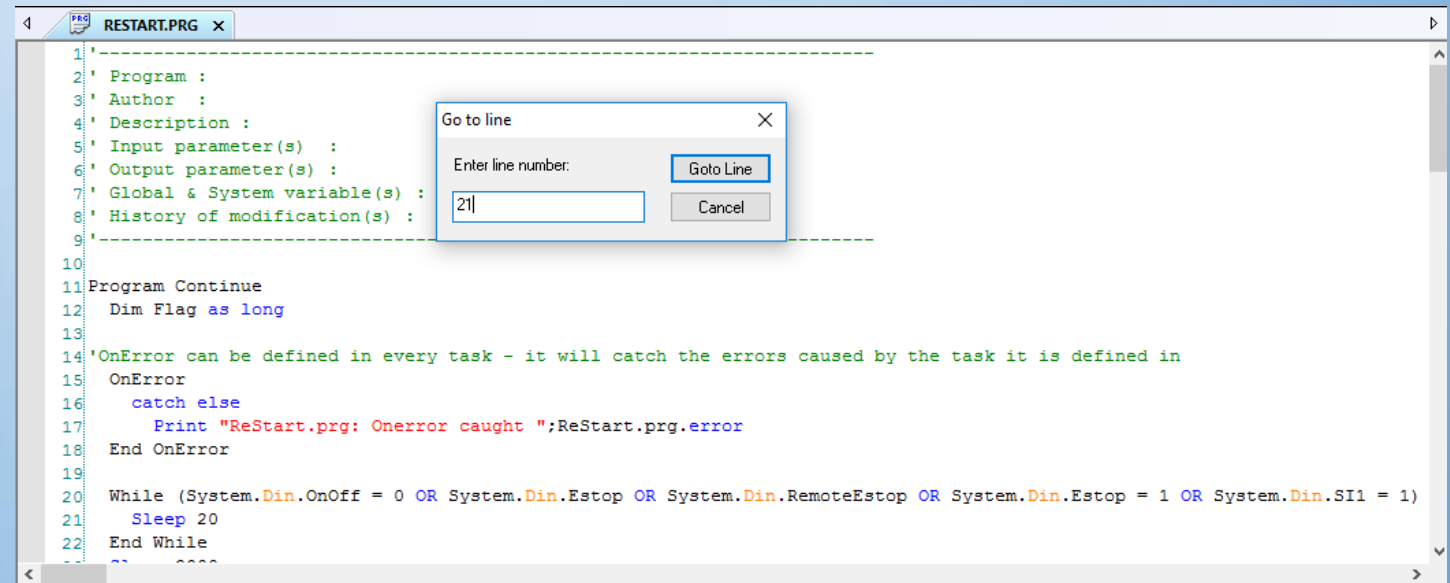


How to find the line a program is stopping on



Name	State	Priority	Error	Filename	State ID	Source
MAIN.PRG	Running	16	8008	MAIN.PRG	1	392
RESTART.PRG	Running	16	0	RESTART.PRG	1	21
SWEEPER.PRG	Running	16	0	SWEEPER.PRG	1	153

- Open the task manager and find the task that is stopping.
- In this case, the restart.prg is stopping on line 21
- Open the restart.prg from the controller using the file manager
- When inside the restart.prg, press Ctrl + G



```
1 '-----'
2 ' Program :
3 ' Author :
4 ' Description :
5 ' Input parameter(s) :
6 ' Output parameter(s) :
7 ' Global & System variable(s) :
8 ' History of modification(s) :
9 '-----'
10
11 Program Continue
12 Dim Flag as long
13
14 'OnError can be defined in every task - it will catch the errors caused by the task it is defined in
15 OnError
16 catch else
17 Print "ReStart.prg: Onerror caught ";ReStart.prg.error
18 End OnError
19
20 While (System.Din.OnOff = 0 OR System.Din.Estop OR System.Din.RemoteEstop OR System.Din.Estop = 1 OR System.Din.SI1 = 1)
21 Sleep 20
22 End While
23
```

How to find the line a program is stopping on

- Line 21 shows the saw is at a sleep state.
- If you look at line 20, you will see the saw thinks it is in an Estop state or the key switch is off.
- Check your Estops and key switch.
- Poll your Estops and key switch inputs.

```
ControlStudio - C:\Users\User\AppData\Local\Temp\RESTART.PRG - [RESTART.PRG]
File Edit Debug View Tools Window Help
File View Transiator Error
Message Log Transiator Error
Terminal (Working folder: "C:\Users\User\AppData\Local\Temp")
-->
-->
-->
-->
-->
RESTART.PRG x
1 -----
2 ' Program :
3 ' Author :
4 ' Description :
5 ' Input parameter(s) :
6 ' Output parameter(s) :
7 ' Global & System variable(s) :
8 ' History of modification(s) :
9 -----
10
11 Program Continue
12 Dim Flag as long
13
14 'OnError can be defined in every task - it will catch the errors caused by the task it is defined in
15 OnError
16   catch else
17     Print "ReStart.prg: Onerror caught ";ReStart.prg.error
18   End OnError
19
20 While (System.Din.OnOff = 0 OR System.Din.Estop OR System.Din.RemoteEstop OR System.Din.Estop = 1 OR System.Din.SI1 = 1)
21   Sleep 20
22 End While
23
Watch
Variable Name Context Value
X
Ln 21, Col 1 ALS276 SH: S17F-1441 IP: 90.0.0.51 CAP NUM SCRL Wednesday, May 16, 2018 3:30:19 PM
3:30 PM
5/16/2018
```

Servotronix online help

<http://softmc.servotronix.com/wiki/Welcome>