Predator Touch HMI v11 – Reference Manual

Creating easy to use manufacturing HMI screens for tablets and touch screens

Document Version 11.0.26

Overview

Predator Touch HMI supports creating easy to use big button manufacturing shop floor interfaces for data collection, process or shop floor automation. Clicking or touching a big button will trigger one or more actions. Often, Predator Touch HMIs replace bar code readers and QR code readers. This Windows based software is licensed per site. An unlimited number of HMIs can be created and installed on Windows based PCs, CNCs, CMMs, test stands and other shop floor equipment. Predator Touch HMI is designed for today's security requirements, with most functions running on the server via Predator DNC, MDC or PDM. For example, email messages are sent from a central Predator DNC server and not from individual shop floor PCs running Predator Touch HMI.

Predator Touch HMIs are created by copying the source ptouchHMI.exe and its matching ptouchHMI.ini from the following folder…

> c:\predator software\touch HMI 11.0\

to become a new HMI. For example:

> copy ptouchHMI.exe to LightTower.exe
> copy ptouchHMI.ini to LightTower.ini

Edit LightTower.ini to configure the number of rows, columns, buttons, colors and functions. Typically, LightTower.exe and its matching INI file would be copied into the Windows startup folder for day-to-day operation. Another option is to create a shortcut in the Windows startup folder to LightTower.exe, which is installed on a server.

Group Policy may prevent your Predator Touch HMI .exe files from running outside of the c:\program files (x86)\ folder. When this is the case, create the following folder manually:

> c:\program files (x86)\predator software\Touch HMIs\

Then copy both the .exe(s) and the matching .ini(s) into the above folder. The downside to the above situation is Microsoft Windows may cache .ini files and prevent changes from being utilized when edits are made to the .ini directly within the Touch HMIs folder. When this occurs, the cached .ini can be deleted manually from the following folder:

> c:\users\user\AppData\profile\VirtualStore\program files (x86)\predator software\Touch HMIs\

NOTE: The user and profile in the above path will vary.

Operating System Support

Predator Touch HMI v11.0 supports the following client operating systems:

Windows 10	Windows XP
Windows 8 and 8.1	Windows ME
Windows 7	Windows 98
Windows Vista	Windows 95

NOTE: Windows 95 PCs may have to install Winsock 2 support via ws2setup.exe.

Predator Touch HMI v11.0 supports the following server operating systems:

Windows 2016 Server	Windows 2003 Server
Windows 2012 Server	Windows 2000 Server
Windows 2008 Server	Windows NT v4.0 Server

NOTE: Support for all editions and service packs are included.

Often, a wide range of Windows operating systems will be found on shop floor PCs, CNCs, CMMs, test stands and other shop floor equipment. A list of Windows based CNCs and CMMs is provided at the end of this document.

Deliverables

Predator Touch HMI is a single exe called PTOUCHHMI.exe which requires no additional DLLs, ActiveX components, registry entries, runtime libraries, .NET requirements, dependencies or pre-requisites. Optional startup values for PTOUCHHMI.exe can be specified via command line arguments.

Installation Best Practices

Predator Touch HMI v11 can be installed on a local drive at each CNC, robot, CMM, test stand or other shop floor equipment. However, it is best practice to run Predator Touch HMIs via a shortcut to a network share. Step through the following:

1. Create a shortcut to the appropriate .exe in the startup all users folder (Refer to the following folder locations)

2. Within the shortcut properties, add a –p command line argument with the appropriate port number (Refer to the following command line arguments)

NOTE: Predator Touch HMI v11 does not include a typical Windows installation or MSI file, since that would add additional requirements to the Windows based CNCs, robots, CMMs, test stands and other shop floor equipment.

The startup all users folder can vary depending on the version of Windows that is running. Refer to the following defaults:

Windows 2016, 2012, 2008 & 2003 Server
Windows 10, 8, 7 and Vista
C:\ProgramData\Microsoft\Windows\Start Menu\Programs\StartUp

Windows 2000 Server, Windows XP, ME, 98 and 95
C:\Documents and Settings\All Users\Start Menu\Programs\StartUp

Windows NT

C:\WinNT\Profiles\All Users\Start Menu\Programs\StartUp

Windows ME, 98 and 95

C:\Windows\Start Menu\Programs\StartUp

NOTE: Should Predator Touch HMI be installed in a locked down VLAN, the appropriate Ethernet ports must be opened up to allow Predator Touch HMIs to properly function.

Do not install Predator Touch HMI applications in a local c:\program files\ or c:\program files (x86)\ folder or sub folders. These folders are reserved for applications that require a proper install via a .MSI or setup.exe process. When local "installation" of Predator Touch HMI applications is desired, use one of the following two recommendations:

c:\predator\
c:\predator software\HMIs\

Operation

Predator Touch HMIs operate as a standard 32-bit Windows application. Support for resize, minimize, maximize and multiple instances are all supported.

Clicking or touching a big button will start the defined automation actions. Button animation shows when they are clicked. When using a mouse, an automatic tool tip will report when the button was last clicked or touched.

Command Line Operation

Optionally, Predator Touch HMIs can be run with one or more command line options. Predator Touch HMI supports the following command line arguments:

-i   IP Address
-p   Ethernet Port Number
-sp Serial Port
-t   Title
-A1 Argument Variable One
-A2 Argument Variable Two
-A3 Argument Variable Three
-A4 Argument Variable Four
-A5 Argument Variable Five
-A6 Argument Variable Six
-A7 Argument Variable Seven
-A8 Argument Variable Eight
-A9 Argument Variable Nine

The –i option allows the Ethernet IP address to be specified, for example:

    ptouchHMI.exe –i 10.2.0.104

The above IP address has to match the IP address of the PC running Predator DNC. Typically, this is only necessary if multiple instances of Predator DNC are active, then the appropriate IP address must be specified via the following command line:

The –p option allows the Ethernet port number to be specified, for example:

ptouchHMI.exe –p 11001

Command line arguments can be combined for specific applications, for example:

ptouchHMI.exe –i 10.2.0.104 –p 11001

The –sp option allows the Serial port number to be specified, for example:

ptouchHMI.exe –sp COM5

The –t option allows the title to be specified, for example:

ptouchHMI.exe –t Okuma1-PC
ptouchHMI.exe –t "Fadal VMC 4020"

NOTE: If titles require spaces, then double quote the entire title.

The -A1 though -A9 command line arguments are optional and provide a method to pass runtime values into a Predator Touch HMI .INI configuration. For example:

ptouchHMI.exe -A1 "Jim Abbassian" -A2 "jima"

Launching the above application would provide two variables, \A1 and \A2 for use within the ptouchHMI.ini file. By running the above application, Jim Abbassian and jima will be available when running the application. For example:

[Form]
Title = Current User Login is: \A1

[Button1]
Text = Check In
ProgramWait=c:\program files (x86)\predator software\tracker 11.0\ptracker.exe
Arguments=-user \A2 -checkin

[Button2]
Text = Check Out
ProgramWait=c:\program files (x86)\predator software\tracker 11.0\ptracker.exe
Arguments=-user \A2 -checkout

 [Button3]
Text = Log off \A1
Program=.\Logon.exe
Exit=Silent

NOTE: Within the .INI file, the \A1 through \A9 variables can be used as many times as needed. The above examples use each argument variable twice. Should a \A1 through \A9 variable not be defined when the application is launched, the variable will return a null value.

Whenever possible, try to use the default IP address, Ethernet port, serial port and title properties that are specified within the .INI file. Command line arguments and multiple shortcuts are used to override the values within the .INI file.

NOTE: All command line options should be specified in the shortcut's properties.

Application.ini

Predator Touch HMIs are configured by setting different values within the Application.ini file. The Application.ini file is organized into two sections:

[Form]
[Button#]

Comments

Within the .INI file, it is often desired to comment out a line when testing a new .INI file. Typing a semi colon character at the beginning of a line will comment out that line. In other words, that line will be ignored by Predator Touch HMI. For example:

;Color = 255,255,255
Color = 0,0,0

In the above example, the first Color line will be ignored, and the second Color line will be honored.

NOTE: If the Application.ini file is read only, Predator Touch HMI will not update the .INI file with the latest window size and position when the application exists.

[Form] Section

The [Form] section includes the following property methods:

Left
Top
Width
Height
State
Auto Center
Monitor
IP Address
Port
Rows
Columns
Timeout
Color
Stay on Top
Minimize
Maximize
Exit
Title
Serial Port
Baud Rate
Parity
Data Bits
Stop Bits
RFID Protocol

RFID IP Address

RFID Port

NOTE: If the Application.ini file is read only, then Predator Touch HMI will not update the Left, Top, Width, Height, State and Monitor variables automatically. Often, this is desired to force the application to always start in a known monitor, location, size and state.

Left

The Left property is used to define the left position of the HMI window. For example:

Left = 100

Top

The Top property is used to define the top position of the HMI window. For example:

Top = 100

Width

The Width property is used to define the width of the HMI window. For example:

Width = 1200

Height

The Height property is used to define the height of the HMI window. For example:

Height = 750

State

The State property is used to define the window state of the HMI window. For example:

State = 0
State = 1

Auto Center

When enabled the Auto Center property is used to override the Left and Top property to automatically center the HMI within the appropriate monitor. This option is not enabled or false by default. For example:

Auto Center = False
Auto Center = True

Monitor

The Monitor property is used to define the monitor number for PCs with multiple monitors. By default, the monitor number is 1. Should a secondary monitor not be available upon HMI startup the HMI will appear on the first monitor. For example:

Monitor = 1
Monitor = 2
Monitor = 3

NOTE: The Left, Top, Width, Height, State and Monitor variables are automatically updated whenever the Predator Touch HMI windows is resized, maximized or moved.

Although they can be changed within the .INI, it is not recommended.

IP Address
The IP Address property is used to define the IP Address of the Predator server. In addition to an IP Address, you can also specify the server name. For example:

IP Address = 127.0.0.1
IP Address = pserver1

NOTE: The above property can be overridden by specifying the –i command line argument.

Port
The Port property is used to define the Ethernet Port used to connect to the Predator DNC server. Within the Predator DNC Server terminator, the port number must match for successful operation. For example:

Port = 11001

NOTE: The above property can be overridden by specifying the –p command line argument. In addition, the Ethernet Port can be specified via a command line argument variable. For example:

Port = \A1

Rows
The Rows property is used to define the number of button rows within the HMI. The minimum value is 1 and the maximum value depends on the screen resolution.

Columns
The Columns property is used to define the number of button columns within the HMI. The minimum value is 1 and the maximum value depends on the screen resolution.

Timeout
The timeout property is used to define an optional timeout of the HMI which will automatically close the HMI. This option can be handy when an HMI runs another HMI. The default value is zero which means the HMI does not timeout. The timeout property is defined in seconds. For example:

Timeout = 20

With the above definition, the form will automatically timeout or exit after 20 seconds. Every button push will extend the timeout another 20 seconds. If a button has an exit function, it will override the timeout property when the button is pushed.

Color
The color property is used to define the background color of the application. The default value is 255, 255, 255 for white. The color property is defined by three RGB values. For example:

Color = 255, 128, 0

With the above definition the Red value is 255. The Green value is 128. The Blue value is 0. The minimum RGB value is 0 and the maximum RGB value is 255. At the end of this document is a comprehensive list of common colors and their RGB values.

Stay On Top

The Stay On Top property is used to define the HMI's on top behavior. If it is set to True, then the HMI will stay on top of all other windows. If it is set to False, then it will behave like standard Windows applications. For example:

Stay On Top = True
Stay On Top = False

NOTE: By default, this property is false.

Minimize

The Minimize property is used to define the display and use of the minimize button in the HMI's upper right-hand corner. If it is set to True, then the HMI will include a minimize button. If it is set to False, then it will not have a minimize button. For example:

Minimize = True
Minimize = False

NOTE: By default, this property is true.

Maximize

The Maximize property is used to define the display and use of the maximize button in the HMI's upper right-hand corner. If it is set to True, then the HMI will include a maximize button. If it is set to False, then it will not have a maximize button. For example:

Maximize = True
Maximize = False

NOTE: By default, this property is true.

Exit

The Exit property is used to define the display and use of the exit button in the HMI's upper right-hand corner. If it is set to True, then the HMI will include an exit button. If it is set to False, then it will disable the exit button. For example:

Exit = True
Exit = False

NOTE: By default, this property is true. A Disabled exit button is still visible but will not function if clicked.

Title

The Title property is optionally used to further describe the HMI's purpose to end users within the titlebar of the window.

The title property is optional and is not required. For example:

Title = Okuma 1 Shop PC
Title = Haas 2 Shop PC

NOTE: The title property can be overridden with a –t command line argument. If the –t command line argument is used and spaces are required, then enclose the title in double quotes. However, within the INI file, the Title property can be defined with spaces and double quotes are not needed.

Serial Port

The Serial Port property is used to define the serial port used to connect to the Predator DNC server. Support for up to 34 COM Ports are supported by Predator Touch HMI. For example:

Serial Port = COM1
Serial Port = COM2
Serial Port = COM3
Serial Port = COM4

NOTE: By default, this property is COM1.

Baud Rate

The Baud Rate property is used to define the serial port's baud rate used to connect to the Predator DNC server. Support for a wide range of baud rates is supported by Predator Touch HMI. For example:

Baud Rate = 110
Baud Rate = 300
Baud Rate = 600
Baud Rate = 1200
Baud Rate = 2400
Baud Rate = 4800
Baud Rate = 9600
Baud Rate = 14400
Baud Rate = 19200
Baud Rate = 38400
Baud Rate = 56000
Baud Rate = 57600
Baud Rate = 115200
Baud Rate = 128000
Baud Rate = 256000

NOTE: By default, this property is set at 9600 baud.

Parity

The Parity property is used to define the serial port's parity used to connect to the Predator DNC server. Support for the following parities is supported by Predator Touch HMI. For example:

Parity = None
Parity = Even
Parity = Odd
Parity = Mark
Parity = Space

NOTE: By default, this property is set to None.

Data Bits

The Data Bits property is used to define the serial port's number of data bits used to connect to the Predator DNC server. Support for the following data bits is supported by

Predator Touch HMI. For example:

Data Bits = 8
Data Bits = 7
Data Bits = 6
Data Bits = 5

NOTE: By default, this property is set to 8.

Stop Bits
The Stop Bits property is used to define the serial port's number of data bits used to connect to the Predator DNC server. Support for the following data bits is supported by Predator Touch HMI. For example:

Data Bits = 1
Data Bits = 1.5
Data Bits = 2

NOTE: By default, this property is set to 1.

RFID Protocol
The RFID Protocol allows for different RFID manufacturers to be supported. Currently, only Balluff Ethernet style controllers are supported. For example:

RFID Protocol = Balluff

NOTE: By default, this property is set to Balluff. Since this is the only RFID protocol at the moment, this setting is currently optional.

RFID IP Address
The RFID IP Address property is used to define the IP Address of the RFID Controller. For example:

IP Address = 127.0.0.1
IP Address = 172.16.30.31

RFID Port
The RFID Port property is used to define the Ethernet Port used to connect to the RFID controller. For example:

Port = 10001

NOTE: The above property value of 10001 is the default and for Balluff RFID readers would be optional.

[Button#] Section
The second section of the .INI file is dedicated to the individual buttons. Simple buttons will perform only one action. Advanced buttons can perform multiple actions. An example of an advanced button would be the following:

1. Log off the previous part number and operation within MDC
2. Log on the new part number, operation number, start setup time within MDC
3. Run a CAM system's post processor
4. Read a RFID tag and trigger a task based on the contents of the tag

5. DNC the CNC program and offsets to a CNC machine
6. Display the work instructions within PDM
7. Send an email message
8. Update a Microsoft Excel spreadsheet to record the transaction
9. Enable a light on the machine's Light tower

All of the above could occur in the background by the different Predator applications triggered by a single button click within Predator Touch HMI. Review the following simple examples:

[Button1]
Row = 1
Column = 1
Text = Line Down
Color = 185,51,37
Ethernet = MSLD

[Button2]
Row = 1
Column = 2
Text = Restarted Line
Color = 166,166,166
Ethernet = ME

[Button3]
Row = 2
Column = 1
Text = Send Queued
Color = 231, 0, 51
Serial = LOAD

[Button4]
Row = 2
Column = 2
Text = Send Tool Offsets\13\10to CNC
Color = 231, 0, 51
RFID=1
Ethernet = LOAD \RFID1.offset

The above simple MDC and DNC examples are common applications for the Predator Touch HMI. All button configuration is done within the appropriate INI. Sometimes it is easier to reference button numbers by their column and row. For example, [Button0203] could define the button on column two and row three. Review the following button properties:

Row
The Row property is used to define the button's row position. The minimum value is 1 and the maximum value depends on the screen resolution. If the button's row value is greater than the form's number of rows, then the button will not be displayed. For example:

Row = 1

Column

The Column property is used to define the button's column position. The minimum value is 1 and the maximum value depends on the screen resolution. If the button's column value is greater than the form's number of columns, then the button will not be displayed.

Column = 1

Text

The Text property is used to define the text that appears on the button. Multiple lines of text can be specified by using \13\10 within the text. For example:

Text = Line Down
Text = Tool Change\13\10or Tool Adjustments
Text = Manufacturing && Quality Hold

NOTE: If the & character is desired to be displayed within the button text, then specify it twice within the .INI file.

Color

The color property is used to define the foreground color of the button. The color property is defined by three RGB values. For example:

Color = 255, 128, 0

With the above definition, the Red value is 255, the Green value is 128, and the Blue value is 0. The minimum RGB value is 0 and the maximum RGB value is 255. At the end of this document is a comprehensive list of common colors and their RGB values.

Often, it is a good idea to make the color of the buttons match a Predator application or our corporate blue. Refer to the following list:

Predator CNC Editor = 234, 113, 37
Predator DNC = 231, 0, 51
Predator MDC = 75, 16, 111
Predator PDM = 73, 133, 42
Predator RCM = 137, 122, 26
Predator Software = 73, 104, 146
Predator Tracker = 156, 19, 46
Predator Travelers = 255, 200, 46
Predator Virtual CNC = 0, 48, 140

Often, it is a good idea to make the color of the buttons match Predator MDC's default colors. Refer to the following list:

Cycle Time = 0, 176, 80
Planned Downtime = 160, 32, 240
UnPlanned Downtime = 185, 51, 37
Setup Time = 255, 204, 0
Teardown Time = 247, 150, 70
Idle Time = 85, 142, 213
Good Parts = 119, 147, 60

Scrapped Parts = 148, 55, 63
Finished Cycles = 70, 40, 209
UnFinished Cycles = 238, 250, 5
Machine Hours = 255, 99, 71
Scheduled Hours = 160, 32, 240
Production Hours = 0, 255, 0
Utilization = 0, 192, 0
Quality = 128, 0, 128
Scheduled Production = 0, 128, 128
Performance Efficiency = 255, 128, 64
OEE = 0, 0, 255

Ethernet

The Ethernet property is used to define an action to send an Ethernet text message to the IP Address and Port as defined in the Form section of the .INI file. An Ethernet text message is typically a Predator DNC or MDC command. For a list of default Predator DNC and MDC commands, review the Default Command section of this document. Multiple lines can be specified by using \13\10 within the Ethernet property. For example:

Ethernet = SS
Ethernet = CE\13\10SE

In the first example, the MDC command SS is sent to IP Address and Port for Setup Start. In the second example, the MDC commands CE and SE are sent to the IP Address and Port with CR and LF characters sent in between, for Cycle End and Setup End.

NOTE: Multiple Ethernet actions per button are supported. Combinations of Ethernet, Program, Serial and Exit actions per button are supported.

Serial

The Serial property is used to define an action to send a Serial or RS232 text message via the COM port. The serial text message is typically a Predator DNC or MDC command. For a list of default Predator DNC and MDC commands, review the Default Command section of this document. Multiple lines can be specified by using \13\10 within the Serial property. For example:

Serial = SS
Serial = CE\13\10SE

In the first example, the MDC command SS is sent via the PC's Serial Port for Setup Start. In the second example, the MDC commands CE and SE are sent via the PC's Serial Port with CR and LF characters sent in between for Cycle End and Setup End.

NOTE: Multiple Serial actions per button are supported. Combinations of Ethernet, Program, Serial and Exit actions per button are supported. Serial support is included when it is preferred or when Ethernet is not available. In general, most HMI applications should use Ethernet and not Serial actions.

RFID

The RFID property is used to define an action to read the contents of an RFID chip when the button is pushed. The value indicates which reader head to use. For most

applications, there is only one reader head. For example:

RFID = 1
RFID = 2

After a RFID tag has been successfully read, the following variables will contain the contents of the RFID tag.

\RFID1
\RFID2
\RFID3
\RFID4
\RFID5
\RFID6

The above variables are line based. \RFID1 is the contents of the first line within the tag contents and \RFID2 is the contents of the second line. RFID tags can be blank and can contain less than six lines. When this is the case, the \RFID1 through \RFID6 variables will return an empty string. Should there be an error reading a RFID tag, the \RFID1 through \RFID6 variables will return an empty string.

NOTE: If Predator Touch HMI cannot find the RFID controller or a tag is not in range of the reader, then an error dialog will be displayed, the button will stop processing and commands after RFID = x will be ignored. \RFID1 through \RFID6 variables are typically used within an Ethernet, Serial, Program or ProgramWait actions.

Program
The program property is used to define an action to launch an application when the button is pushed. For example:

Program = c:\program files (x86)\predator software\mdc 11.0\pmdc.exe

The Program property is used in combination with the Arguments property.

NOTE: If Predator Touch HMI cannot find the program, then a warning Program Not Found will be displayed on the button instead of the button text.

The program property can be used to call other Predator Touch HMIs. For example, the main Predator Touch HMI could have a button for each machine. In addition, machine specific HMIs could be used for a series of functions per machine. When this is desired, we recommend that all the HMIs be in the same folder and the program property should look like one of the following:

Program = .\machine1.exe
Program = .\machine2.exe

NOTE: The difference between the Program and the ProgramWait property is that the Program property can run multiple instances of the application at the same time. The ProgramWait property limits the application to a single instance at a time.

ProgramWait
The ProgramWait property is used to define an action to launch an application when the button is pushed. For example:

ProgramWait = c:\program files (x86)\predator software\mdc 11.0\pmdc.exe

The ProgramWait property is used in combination with the Arguments property.

NOTE: If Predator Touch HMI can't find the program than a warning Program Not Found will be displayed on the button instead of the button text.

The ProgramWait property can be used to call other Predator Touch HMIs. For example, the main Predator Touch HMI could have a button for each machine. In addition, machine specific HMIs could be used for a series of functions per machine. When this is desired, we recommend that all of the HMIs be in the same the folder and the program property would look like one of the following:

ProgramWait = .\machine1.exe
ProgramWait = .\machine2.exe

NOTE: The difference between the Program and the ProgramWait property is the Program property can run multiple instances of the application at the same time. The ProgramWait property limits the application to a single instance at a time.

Arguments

The arguments property is used to define command line arguments used when the program action is run. For example:

Arguments = -newevents
Arguments = -p 11005

The arguments property is used in combination with the Program property. Specific arguments may or may not be available depending on the program itself. Refer to the program's online help or documentation for specific command line arguments. In the above example, the PMDC.exe has a –events command line argument that can be used. However, PMDC.exe does not support a –p command line argument.

Sometimes, an argument should be specified by the HMI operator prior to launching the application. When this is the case, Predator Touch HMI provides three different prompting options. Review the Prompts section of this document for further details.

Window

The window property is used to define the way the command program is launched when the button is pushed. Predator Touch HMI supports four different Window types. For example:

Window = Normal
Window = Minimized
Window = Maximized
Window = Hidden

The Normal style launches the program with the last window size and position. The Minimized style launches the program in a minimized state. The Maximized style launches the program full screen. The Hidden style launches the program in the background hidden from the end user.

Exit

The Exit property is used to define the way the Predator Touch HMI exits. This can be done via a dedicated "Close" button or at the end of an advanced button. Predator Touch HMI supports two different styles of exiting. For example:

Exit = Silent
Exit = Confirm

The Silent style closes Predator Touch HMI immediately. The Confirm style prompts the user for confirmation prior to closing Predator Touch HMI.

Commands – v12 Reserved List
Predator Touch HMI v12 adds a number of new commands. The following quick reference provides a reference list:

Delay

Button Examples
Predator Touch HMIs can contain as many buttons as one likes. Refer to the following button examples:

[Button1]
Row = 1
Column = 1
Text = Setup Start
Color = 185,51,37
Ethernet = SS

[Button2]
Row = 1
Column = 2
Text = Setup End
Color = 185,51,37
Ethernet = SE

[Button3]
Row = 2
Column = 1
Text = MDC Events
Color = 185,51,37
Program = c:\program files (x86)\predator software\mdc 11.0\pmdc.exe
Arguments = -newevents

[Button4]
Row = 2
Column = 1
Text = View OEE
Color = 185,51,37
ProgramWait = c:\program files (x86)\predator software\mdc 11.0\pmdc.exe
Arguments = -oeestatus

[Button5]

Row = 2
Column = 2
Text = View Machines
Color = 185,51,37
Program = c:\program files (x86)\predator software\mdc 11.0\pmdc.exe
Arguments = -machinestatus

[Button6]
Row = 3
Column = 1
Text = Check In Tooling
Color = 185,51,37
Program = c:\program files (x86)\predator software\tracker 11.0\ptracker.exe
Arguments = -checkin

[Button7]
Row = 3
Column = 2
Text = Check Out Tooling
Color = 185,51,37
Program = c:\program files (x86)\predator software\tracker 11.0\ptracker.exe
Arguments = -checkout

[Button8]
Row = 4
Column = 1
Text = LOAD PART123
Color = 185,51,37
Ethernet = LOAD \\server1\c\predator software\cnc programs\machine1\part123.left
Ethernet = LOAD \\server1\c\predator software\cnc programs\machine1\part123.right
Exit = Silent

[Button9]
Row = 4
Column = 2
Text = LOAD PART456 OP20
Color = 185,51,37
Ethernet = PS PART456\13\10OS 20\13\10SS
Serial = LOAD \\server1\c\predator software\cnc programs\machine1\part456.nc
Serial = LOAD \\server1\c\predator software\cnc programs\machine1\part456.offsets
Exit = Silent

[Button10]
Row = 5
Column = 1
Text = Read RFID
Color = 185,51,37
RFID = 1
Ethernet = PS \RFID1\13\10OS \RFID2\13\10SS

Ethernet = LOAD \RFID1_\RFID2.nc
Ethernet = LOAD \RFID1_\RFID2.offsets
Exit = Silent

[Button11]
Row = 5
Column = 2
Text = Close
Color = 185,51,37
Exit = Confirm

Prompts

Predator Touch HMIs can optionally prompt for simple input such as machine numbers, tool numbers and filenames prior to executing the button. This advanced feature can reduce the number of buttons by relying on the HMI operator for simple input. Predator Touch HMI supports the following six case sensitive prompt functions:

\Prompt("prompt message",optional default value)
\FileNameOpen("titlebar message",optional default folder*.ext)
\FileOpen("titlebar message",optional default folder*.ext)
\FileNameSave("titlebar message",optional default folder*.ext)
\FileSave("titlebar message",optional default folder*.ext)
\Folder("titlebar message",optional default folder*.ext)

\FileNameOpen and \FileNameSave only return the filename. \FileOpen and \FileSave return the complete pathname. \Folder returns the selected folder. The *.ext at the end of the optional default folder can be set to *.* to display all files within the dialog.

All six prompts can be used within an INI and multiple prompts can be added to a single button. Refer to the following example:

[Button1]
Row=1
Column=1
Text=Send to CNC
Color=210,105,30
Program=c:\program files (x86)\predator software\dnc 11.0\premote.exe
Arguments=-i 127.0.0.1 -p 11001 -s "LOAD \Prompt("Type or scan a filename",)"

Prior to executing the premote application, Predator Touch HMI will display a simple prompt dialog. Clicking the Ok button on the prompt dialog will run the premote application. Clicking the Cancel button on the prompt dialog will cancel the current action and any remaining button actions. The above button can be simplified by using the Ethernet command.

[Button1]
Row=1
Column=1
Text=Send to CNC

Color=210,105,30
Ethernet=LOAD \Prompt("Type or scan a filename",)

In the above two examples the default folder within Predator DNC but be defined. When the machine operator needs to navigate sub folders use the \FileOpen variable instead of the \Prompt variable. Refer to the following example:

[Button1]
Row=1
Column=1
Text=Send to CNC
Color=210,105,30
Ethernet=LOAD \FileOpen(Select a file to send to the CNC,\\server1\predator*.NC)

In the following example, the Window's Save dialog is displayed. This dialog will vary slightly depending on which version of Windows is installed.

[Button2]
Row=1
Column=2
Text=SAVE
Color=64,128,128
Ethernet=SAVE \FileSave(Select a file to SAVE,D:\MD1*.MIN)

In the following example, a Folder dialog picker is displayed.

[Button3]
Row=1
Column=3
Text=Send Folder to Machine
Color=64,128,64
Ethernet=LOAD \Folder(Select a folder to send,c:\predator\parts*.cnc)

Sometimes, the results of one of the six prompt variables needs to be used a second or third time. When this is the case, use the following case sensitive prompt functions:

\LastPrompt
\LastFileOpen
\LastFileSave

Refer to the following example:

[Button4]
Row=2
Column=2
Text=SAVE
Color=64,128,128
Ethernet=LOAD \Prompt("Type or scan a part number",)
Ethernet=PS \LastPrompt
Ethernet=SS

All prompt functions can be used within the following button actions:

Arguments=
Ethernet=
Serial=

Prompting provides a lot of flexibility. Common uses would be for selecting filenames for DNC, specifying an O number on a CNC, specifying a tool number for tool break restarts or prompting for a bar code scan. When multiple prompts per command are specified, they are processed in order from left to right.

NOTE: Should the Last style prompt variables be used prior to prompt variables, they will be empty. When multiple prompt variables are used, the last style variables only contain the last prompt values.

Predator Server Terminator
Predator Touch HMIs often output Ethernet text messages to Predator DNC via the Server Terminator. The Server Terminator is responsible for listening for communication from Predator Touch HMIs on one or more CNCs, robots, CMMs, test stands and other shop floor equipment.

The Predator Server Terminator is typically used within an Other command, and can be combined with any appropriate Predator objects. For example:

Remote Start
    Predator MDC for SQL Server Link
    Remote Request Link
    Server Terminator

The Ethernet port number specified within the Server Terminator must match the Ethernet port number specified within Predator Touch HMI's .INI file or command line argument.

Predator COM Port HSM Terminator
Predator Touch HMIs often output Serial text messages to Predator DNC via the COM Port HSM Terminator. The COM Port HSM Terminator is responsible for listening for RS232 communication from Predator Touch HMIs on one or more CNCs, robots, CMMs, test stands and other shop floor equipment.

The Predator COM Port HSM Terminator is typically used within an Other command, and can be combined with any appropriate Predator objects. For example:

Remote Start
    Predator MDC for SQL Server Link
    Remote Request Link
    COM Port HSM Terminator

The COM port number specified within the COM Port HSM Terminator must physically be connected via Predator Grizzly cable or a similar serial cable to the COM Port specified within Predator Touch HMI's .INI file or command line argument.

Predator Touch HMI's serial functions are compatible with the following software applications:

Predator CNC Editor Express
Predator CNC Editor
Predator CNC Editor Enterprise
Predator DNC Express/x
Predator DNC/x
Predator DNC Enterprise/x
Predator MDC/x
Predator MDC Enterprise/x
Third party applications that support standard RS232 operation

Predator Touch HMI's serial functions are compatible with the following serial hardware:

Predator Express
Predator Flex
Predator Flex/2
Predator Flex/N
Predator Express/W
Predator Flex/W
Third party hardware that supports standard RS232 operation

NOTE: Predator DNC's COM Port STD Terminator, COM Port HSM Terminator and COM Port EVT Terminator can be used with Predator Touch HMI.

Firewalls
All Windows and corporate firewalls need to open the appropriate Ethernet ports for TCP traffic to allow Predator Touch HMI to operate via Ethernet. Predator Touch HMI will display error messages when the ports are blocked.

If Ethernet based serial devices will be used with Predator Touch HMI, then the appropriate Ethernet ports that are required by the serial device drivers need to be opened to allow Predator Touch HMI to communicate with the COM ports.

Upgrading from Version 10 to Version 11
In general, version 10 INI files are upgradable to version 11 with minimal work. All Ethernet or Program buttons should work automatically. The only buttons that won't work are any close or exit buttons. With version 10, each button was assigned a specific type via the type property. In version 11, this was eliminated because every button can run multiple function types. Should a BUTTONS or TYPE property be found, they will automatically be ignored by version 11 of the Predator Touch HMI.

Eliminating the BUTTONS property was done to simplify HMI definition. Eliminating the TYPE property was done to support multiple functions per button. This change prevents existing exit buttons from working. In v10, an exit button could be defined with:

Type = Exit

The direct replacement to close the HMI is:

Exit = Silent

NOTE: It is best practice to remove BUTTONS= and TYPE= lines when upgrading from v10 to v11.

FAQs

1. Can Predator Touch HMIs be installed on a WAN or slow network? Yes.

2. Can Predator Touch HMIs be used in a mix of network domains, work groups and home groups? Yes.

3. Does Predator Touch HMIs work with older version of Windows? Yes, Windows 95 and newer.

4. Where can I download ws2setup.exe for Windows 95? The support folder on our FTP site.

5. Can Predator Touch HMIs be used with older serial hardware? Yes. We only require that they have a working and reliable device driver.

Troubleshooting – Tip 1

Often, CNCs, CMMs, Test stands and other shop floor PCs run within restricted access privileges, typically controlled by group policy. Should this be the case, one might experience the following error:

This program is blocked by group policy. For more information contact your system administrator.

The name of the group policies that can affect operation of Predator Touch HMIs are the following:

Don't run specified Windows applications
Run only allowed Windows applications

Even if the Windows CNC, CMM, Test stand or shop floor PC is no longer on the domain, the current user may still be operating with previously inherited policies. This can be double checked within the Windows Registry. Review the following registry entries:

hklm\software\microsoft\windows\currentversion\policies\explorer\restrictuser
hkcu\software\microsoft\windows\currentversion\policies\explorer\restrictuser
hklm\software\microsoft\windows\currentversion\policies\explorer\disallowrun
hkcu\software\microsoft\windows\currentversion\policies\explorer\disallowrun

In the case of RestrictRun, ptouchHMI.exe needs to be added to the list of registry entries and in the case of DisAllowRun, ptouchHMI.exe needs to not be listed. Basically, RestrictRun is a white list of applications that are allowed to run and DisAllowRun is a black list of applications that cannot be run.

Troubleshooting – Tip 2

Often, CNCs, CMMs, Test stands and other shop floor PCs that run without access to the internet may not be able to verify the digital certificate assigned to Predator Touch HMI. Often, this happens when a shortcut is used to run the HMI from a server. When this happens, either resolve the ability to verify digital certificates, or run the HMI from

the local hard drive of the CNC, CMM, test stand or other shop floor PCs.

CNC Support

The following CNC controls are supported with Predator Touch HMI:

Anca AMC5 CNC
Anilam 6000i CNC
Beckoff TwinCAT CNC TX1270
BendPro CNC
Bosch Rexroth IndraMotion MTX CNC
CamSoft CNC Professional
CamSoft CNC Lite
CamSoft CNC Plus
Centroid M-39 CNC
Centroid M-400 CNC
Cincinnati 2100
CNC2000
CNC 82.00
CNC 84.00
CNCPlusG
CNCPlusH
CNCPlusM
CNCPlusT
CODESYS SoftMotion CNC
Current EDM
D.Electron CNC Z32
Datron HSCpro
Datron Next
Delta Tau Advantage 900
EaziCNC
Eding CNC
Fagor 8060
Fagor 8065
Fagor 8070
Fanuc Open CNC 30i
Fanuc Open CNC 31i
Fanuc Open CNC 32i
Fanuc Open CNC 35i
Ficep CNC
Fidia C10
Fidia C20
Fidia C40
Fidia nC 12R
Fidia nC 15
FlashCut CNC
Foba Laser
Gerber C200MT

Gerber Paragon
Hurco Winmax
Hypertherm EDGE Pro
Indigen CNC
Isel KAY
Laserdyne System 94P
Laserdyne System 94W
Linatrol Profiler
Linatrol Profiler Plus
Linatrol Infinity CNC
Mach 3
MachineMate eCNC
MachineMate L2
MachineMate LW
MAXNC
Mazak Mazatrol 640M
Mazak Mazatrol 640M Nexas
Mazak Mazatrol 640T
Mazak Mazatrol 640T Nexas
Mazak Mazatrol 640MT Pro
Mazak Mazatrol Fusion
Mazak Mazatrol Matrix
Mazak Mazatrol Matrix 2
Mazak Mazatrol Matrix Nexus
Mazak Mazatrol Matrix Nexus 2
Mazak Mazatrol Nexus
Mazak Smooth
MDSI OpenCNC
Minitech CNC
Mitsubishi M700VW
Mitsubishi M800W
NEXCOM NControl CNC
NUM Flexium+
NUM Flexium
NUM 1020 CNC
NUM 1040 CNC
NUM 1060 CNC
NUM 1080 CNC
NXGEN CNC
Okuma P100
Okuma P200
Okuma P300
Parpas CNC Z32
Planet CNC USB Controller
ProtoTRAK SMX
ProtoTRAK SLX

SaleCNC
Selca S4000
ServoWorks S-100M
ServoWorks S-120M
ServoWorks S-140M
ServoWorks S-100T
ServoWorks S-120T
ShopBot CNC
Siemens 2100
Siemens 840D
Simplex CNC
Sodick LN2
Sodick LQ1W
Sodick LN1W
Star CAM CNC
Techno CNC
TechMoon Waterjet CNC
Thermwood QCore
UTE Navigator CNC
Vickers 2100
Vital CNC
WARDJet Classic
WARDJet XL
Winbro
WinCNC
WinPC-NC
WinPCNC Light
WinPCNC Economy
WinPCNC USB
WinPCNC Professional
Zinser CNC 2030
Zinser CNC 2050
Zinser CNC 4010
and more…

CMM Support
The following CMM controls are supported with Predator Touch HMI:

Aberlink 3D
Cognex VisionPro
Cognex VisionPro ViDi
Delcam PowerInspect
Eley True Measure 4
GEOMET JUNIOR
GEOMET 101
GEOMET 301

HandyPROBE Next PCMM
Hexagon PCDMIS
Hexagon QUINDOS
Keyence XM Series
LK Metrology Altera
Lynx AR Inspection
MetLogix M2
MetLogix M3
MetLogix M3 DC/DXF
Metrosoft QUARTIS
MicroVu InSpec
Mitutoyo MCOSMOS CMM
Nikon CAMIO
Nikon CMM-Manager
Nikon I++/DME Server
OpenDMIS 3D
Perception TouchDMIS
Polyworks Inspector
Renishaw MODUS
SIPCON SipMeas
SIPCON SipMeas 3D
SIPCON IK 5000
Zeiss Calypso
and more…

Color Reference

The following pages detail common reference colors which can be used by Predator Touch HMI.

NOTE: Should color matching to Predator applications be needed, refer to the colors listed in the Button section of this document.

Color	Color Name	R,G,B Values
	Maroon	128,0,0
	Dark Red	139,0,0
	Brown	165,42,42
	Firebrick	178,34,34
	Crimson	220,20,60
	Red	255,0,0
	Tomato	255,99,71
	Coral	255,127,80

	Indian Red	205,92,92
	Light Coral	240,128,128
	Dark Salmon	233,150,122
	Salmon	250,128,114
	Light Salmon	255,160,122
	Orange Red	255,69,0
	Dark Orange	255,140,0
	Orange	255,165,0
	Gold	255,215,0
	Dark Golden Rod	184,134,11
	Golden Rod	218,165,32
	Pale Golden Rod	238,232,170
	Dark Khaki	189,183,107
	Khaki	240,230,140
	Olive	128,128,0
	Yellow	255,255,0
	Yellow Green	154,205,50
	Dark Olive Green	85,107,47
	Olive Drab	107,142,35
	Lawn Green	124,252,0
	Chartreuse	127,255,0
	Green Yellow	173,255,47
	Dark Green	0,100,0
	Green	0,128,0
	Forest Green	34,139,34
	Lime	0,255,0
	Lime Green	50,205,50
	Light Green	144,238,144
	Pale Green	152,251,152
	Dark Sea Green	143,188,143
	Medium Spring Green	0,250,154
	Spring Green	0,255,127
	Sea Green	46,139,87
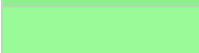
	Medium Aquamarine	102,205,170
	Medium Sea Green	60,179,113
	Light Sea Green	32,178,170
	Dark Slate Gray	47,79,79
	Teal	0,128,128
	Dark Cyan	0,139,139
	Aqua	0,255,255
	Cyan	0,255,255
	Light Cyan	224,255,255
	Dark Turquoise	0,206,209
	Turquoise	64,224,208
	Medium Turquoise	72,209,204
	Pale Turquoise	175,238,238
	Aquamarine	127,255,212
	Powder Blue	176,224,230
	Cadet Blue	95,158,160
	Steel Blue	70,130,180
	Corn Flower Blue	100,149,237
	Deep Sky Blue	0,191,255
	Dodger Blue	30,144,255
	Light Blue	173,216,230
	Sky Blue	135,206,235
	Light Sky Blue	135,206,250
	Midnight Blue	25,25,112
	Navy	0,0,128
	Dark Blue	0,0,139
	Medium Blue	0,0,205
	Blue	0,0,255
	Royal Blue	65,105,225
	Blue Violet	138,43,226
	Indigo	75,0,130
	Dark Slate Blue	72,61,139
	Slate Blue	106,90,205
	Medium Slate Blue	123,104,238
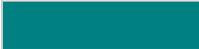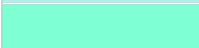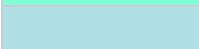
	Medium Purple	147,112,219
	Dark Magenta	139,0,139
	Dark Violet	148,0,211
	Dark Orchid	153,50,204
	Medium Orchid	186,85,211
	Purple	128,0,128
	Thistle	216,191,216
	Plum	221,160,221
	Violet	238,130,238
	Magenta / Fuchsia	255,0,255
	Orchid	218,112,214
	Medium Violet Red	199,21,133
	Pale Violet Red	219,112,147
	Deep Pink	255,20,147
	Hot Pink	255,105,180
	Light Pink	255,182,193
	Pink	255,192,203
	Antique White	250,235,215
	Beige	245,245,220
	Bisque	255,228,196
	Blanched Almond	255,235,205
	Wheat	245,222,179
	Corn Silk	255,248,220
	Lemon Chiffon	255,250,205
	Light Golden Rod Yellow	250,250,210
	Light Yellow	255,255,224
	Saddle Brown	139,69,19
	Sienna	160,82,45
	Chocolate	210,105,30
	Peru	205,133,63
	Sandy Brown	244,164,96
	Burly Wood	222,184,135
	Tan	210,180,140
	Rosy Brown	188,143,143
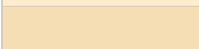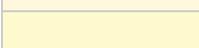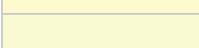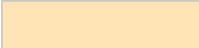
	Moccasin	255,228,181
	Navajo White	255,222,173
	Peach Puff	255,218,185
	Misty Rose	255,228,225
	Lavender Blush	255,240,245
	Linen	250,240,230
	Old Lace	253,245,230
	Papaya Whip	255,239,213
	Sea Shell	255,245,238
	Mint Cream	245,255,250
	Slate Gray	112,128,144
	Light Slate Gray	119,136,153
	Light Steel Blue	176,196,222
	Lavender	230,230,250
	Floral White	255,250,240
	Alice Blue	240,248,255
	Ghost White	248,248,255
	Honeydew	240,255,240
	Ivory	255,255,240
	Azure	240,255,255
	Snow	255,250,250
	Black	0,0,0
	Dim Grey	105,105,105
	Grey	128,128,128
	Dark Grey	169,169,169
	Silver	192,192,192
	Light Grey	211,211,211
	Gainsboro	220,220,220
	White Smoke	245,245,245
	White	255,255,255
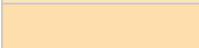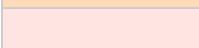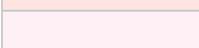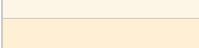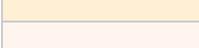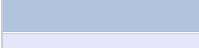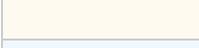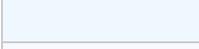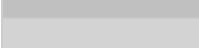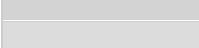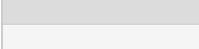
Variables – v11 Reference List

Predator Touch HMI v11 includes a number of variables. The following quick reference

provides a list of each variable:

\A1
\A2
\A3
\A4
\A5
\A6
\A7
\A8
\A9
\10
\13
\FileNameOpen
\FileNameSave
\FileOpen
\FileSave
\Folder
\LastFileOpen
\LastFileSave
\LastPrompt
\Prompt
\RFID1
\RFID2
\RFID3
\RFID4
\RFID5
\RFID6

NOTE: Remember that all variables are case sensitive and start with a backslash
character.

Variables – v12 Reserved List
Predator Touch HMI v12 adds a number of new variables. The following quick
reference provides a reference list:

\FileDir
\PC
\Port
\User
\Title

Default Predator DNC and Predator MDC Command Reference
The following default Predator DNC and Predator MDC commands can be used with
the Serial and Ethernet button definitions within Predator Touch HMI.

Default Predator DNC Commands:
LOAD filename

SAVE filename
LOAD1 filename
LOAD2 filename
SAVE1 filename
SAVE2 filename

NOTE: Within Predator DNC, filenames can optionally include drive letter, folders, partial folders, extensions, etc. Finally, Predator DNC supports DNC commands only and a filename itself is optional.

Default MDC Commands	Descriptions
LS username	Logon Start
LE	Logoff
JS jobnumber	Job Start
JE	Job End
PS partnumber	Part Start
PE	Part End
OS operationnumber	Operation Start
OE	Operation End
CS	Cycle Start
CE	Cycle End
SS	Setup Start
SE	Setup End
TS	Teardown Start
TE	Teardown End
MS downtimenumber	Machine Downtime Start
ME	Machine Downtime End
US downtimenumber	User Downtime Start
UE	User Downtime End
GP quantity	Good Part
SP quantity.scrapreason	Scrap Part with optional scrap reason

Downtime Commands	Descriptions
MSBT	BT = Broken Tool
MSER	ER = Error Response
MSES	ES = Emergency Stop
MSFH	FH = Feed Hold
MSIT	IT = Machine Interrupted
MSMA	MA = Machine Alarm
MSMF	MF = Machine Failure
MSMR	MR = Machine Repair
MSNM	NM = No Response
MSNO	NO = No Operator
MSNR	NR = No Response
MSNT	NT = No Tooling
MSOS	OS = Optional Stop

MSUN	UN = Machine Unavailable
MSWC	WC = Waiting on Crane
MSWF	WF = Waiting on Fixtures
MSWG	WG = Waiting on Gages
MSWL	WL = Waiting on Forklift
MSWM	WM = Waiting on Material
MSWQ	WQ = Waiting on Quality
MSWT	WT = Waiting on Tooling
MSDV	DV = Development
MSNW	NW = No Scheduled Work
MSPM	PM = Preventative Maintenance
USSK	SK = Sick Time
USEP	EP = Employee PTO
USBR	BR = Breaks
USMT	MT = Meetings
USTR	TR = Training
USVC	VC = Vacation

The above lists are defaults and not all of them are implemented with every customer. In addition to the above lists, custom Predator DNC and Predator MDC commands can be used, but these will vary per customer implementation. All Predator DNC and Predator MDC commands used within Predator Touch HMI are triggers and must have matching commands within Predator DNC and Predator MDC to do the actual task or function.

For the latest information on Predator Touch HMI, check our web site at
http://www.predator-software.com