



**ADVANCED WORKHOLDING PUMP
MACHINE INTERFACE CONTROL ETHERNET
AWP THINC® APP OPERATIONS MANUAL
OKUMA OSP-P200 & OSP-P300 CONTROL SYSTEMS**

**VEKTEK LLC
1334 EAST 6th AVENUE
EMPORIA, KS 66801
1-800-992-0236
www.vektek.com**



PL5595-MCE-Okuma, REV. F, I.A.W. ECN 5249
PAGE 1 of 100

VektorFlo® is a registered trademark of Vektek LLC

Vektek LLC reserves the right to change specifications without notice in an ongoing product improvement process.

THINC® is a registered trademark of Okuma America Corporation.

Vektek LLC
1334 East Sixth Street
Emporia, KS 66801
1-800-992-0236
sales@vektek.com
www.vektek.com

PUMP MODEL No. _____

PUMP SERIAL NO. _____

IN SERVICE DATE _____

TABLE OF CONTENTS

Introduction (Section I)	
1.0 Overview	
2.0 Configuration and Function	
3.0 Requirements	
4.0 Part Program Library	
5.0 References	
Preliminary and Safety Information (Section II)	
Application Installation (Section III)	
1.0 Okuma Scout	
2.0 Okuma THINC-API	
3.0 Okuma THINC Startup Service (TSS)	
4.0 Vektek AWP THINC App	
5.0 Internet Explorer Browser Update to Google Chrome Browser	
6.0 Okuma V-Function Keys	
7.0 AWP Part Program Library (.LIB)	
8.0 Registration of AWP Part Program Library (*.LIB)	
9.0 Test Programs (.MIN)	
10.0 Emergency Stop Installation	
Application Operations (Section IV)	
1.0 Home	
2.0 Back	
3.0 General Status	
3.1 Valve Status	
3.2 Component Status	
4.0 Valve Operation	
5.0 Component Operation	
6.0 Docs About	
7.0 Main Pressure	
8.0 Alarm Reset	
9.0 Fault Logs	
10.0 Unit Setup	
11.0 Valve Setup	
12.0 Component Setup	
13.0 1 st IO Module Setup	
14.0 2 nd IO Module Setup	
15.0 PLC Setup and Status	
16.0 VFD Setup and Status	
Trouble Shooting (Section V)	
IO Module Configuration (Section VI)	
Glossary (Section VII)	

SECTION I

INTRODUCTION

- 1.0 Overview - The Vektek AWP THINC APP is specifically developed for use with the Vektek Advance Workholding Pump (AWP) and the Okuma OSP-P200 and OSP-P300 CNC Control Systems. This application provides a seamless integration and communication interface between the Vektek AWP workholding pump and Okuma CNC mill. Built into the Vektek AWP THINC APP is a custom Web Server App (WSA) that provides a complete and intuitive user interface to the Vektek AWP for setup and control of all hydraulic workholding functions. All the required functions for hydraulic workholding are controlled and monitored inside the Vektek AWP PLC, allowing for significant simplification of Okuma part programming requirements to achieve a high level of automation control and monitoring.
- 2.0 Configuration and Function – The Vektek AWP THINC APP is easily configured for the PLC address Hostname and Port to be compatible with the Okuma CNC mill local network IP address. In addition, the Common Variable Start point can be set in the APP so it does not conflict with existing Common Variables that are in use. The Machine Door Close IO can also be enabled for added safety and protection. The mapping of all required Vektek AWP PLC parameters to Okuma CNC Common Variables has been pre-engineered so no additional programming is necessary. Finally, a Log Program is recording all communications between the two systems and saving to a viewable log file for easy access.
- 1.0 Requirements – The Okuma CNC mill should have the latest THINC-API version installed for optimal performance. This must be done by a qualified Okuma Technical Support. In addition, the THINC Startup Service must be installed and running to allow for automatic startup of the Vektek AWP THINC APP during machine power up. *Important: It is highly recommended to install and use the correct version of Google Chrome browser for the CNC machine Windows version installed for the display of Vektek AWP Web Visualization screens. See Section III 5.0 for details. In browser settings, turn off “Show bookmarks bar” to prevent screen scaling and display issues.*
- 2.0 Part Program Library – Vektek Part Program Library files have been provided for easy installation and registration into the Okuma CNC mill. This will allow for immediate part programming of AWP hydraulic valve clamping functions, hydraulic pressure switch monitoring of each circuit, and auxiliary devices such as part presence valves and part blow off valves. All available control and monitoring devices from Vektek have been pre-programmed into the library for use by the operator as required.
- 3.0 References – As listed below
 - 3.1 Installation Manual for Okuma THINC-API (Included in installation folder)
 - 3.2 Installation Manual for Okuma THINC Startup Service (Included in installation folder)
 - 3.3 Manual/Parts List for Vektek Advance Workholding Pump (Included with AWP)
 - 3.3.1 PL5595
 - 3.3.2 PL5596
 - 3.3.3 MPLV4595
 - 3.4 Vektek Part Program Library (Includes all necessary Vektek AWP subroutines)
 - 3.5 Okuma Pocket Manual (Included with Okuma OSP -P200 & P300 system)

SECTION II

PRELIMINARY AND SAFETY INFORMATION

FAILURE TO HEED THE FOLLOWING INFORMATION WILL VOID WARRANTY

Preliminary Information

1. Most malfunctions in new equipment are the result of improper set-up and operation. Please read and fully understand the entire enclosed information before proceeding with installation and operation. Order of installation should be followed as stated to insure a complete and safe equipment function.
2. Visually inspect all components for shipping damage and correct configuration. Report any damage found to the carrier or factory immediately.
3. Qualified personnel may connect the AWP enclosure to the power source according to wiring diagram in AWP Manual/Parts list, Section V. Power supply must be of the same electrical rating or equipment damage may occur.
4. Do not connect AWP to Okuma CNC machine via Ethernet cable until after all application installations are complete. Then Ethernet connections can be made, and final setup of applications can be completed

SECTION III

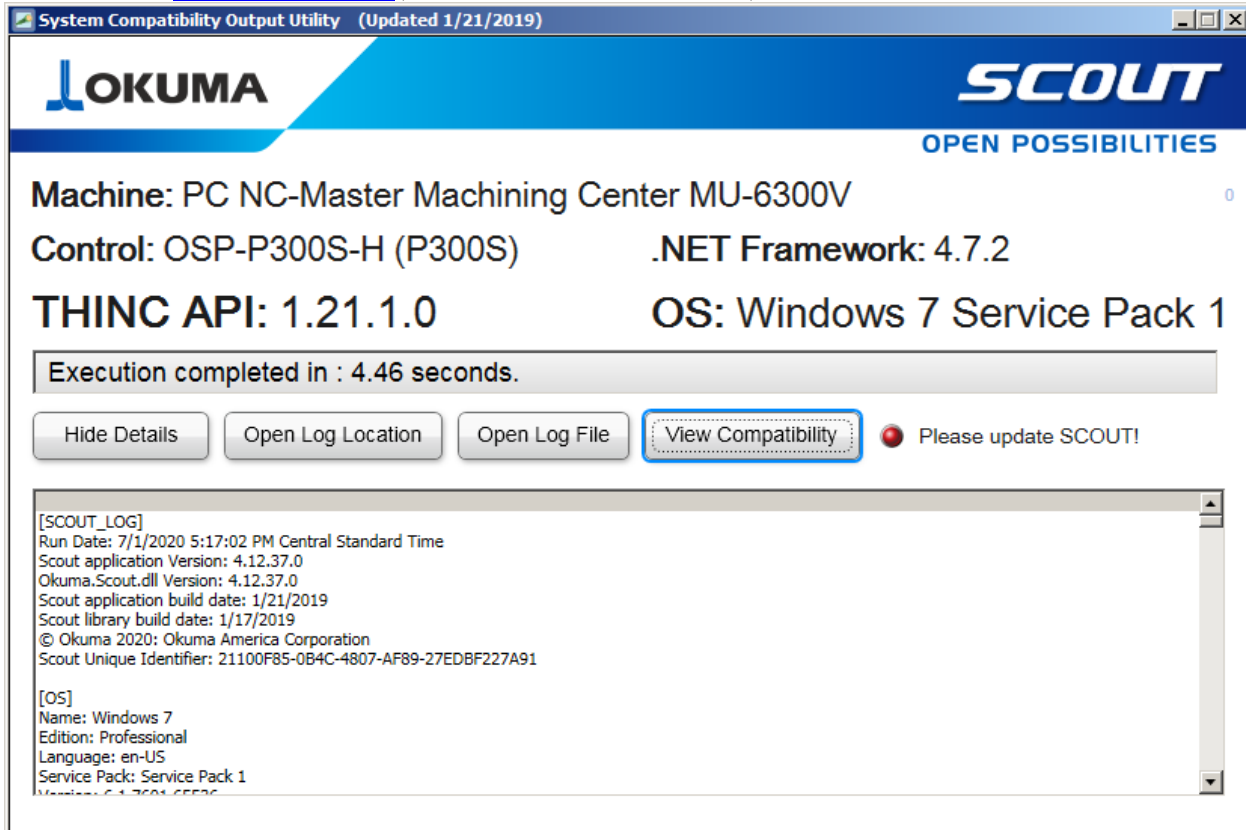
APPLICATION INSTALLATION

1.0 Okuma Scout is an Okuma THINC APP used to determine machine system and control details and their compatibility with other Okuma THINC APPs. Register and download this application at the following address:

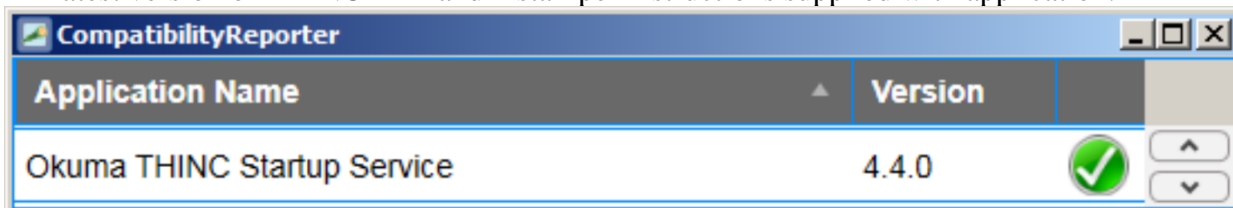
1.1 <https://www.myokuma.com/scout>

1.2 Copy or move this file to the Okuma CNC machine CPU root directory and run.

1.2.1 [Scout_v12.1.exe](#) (or later version if available)



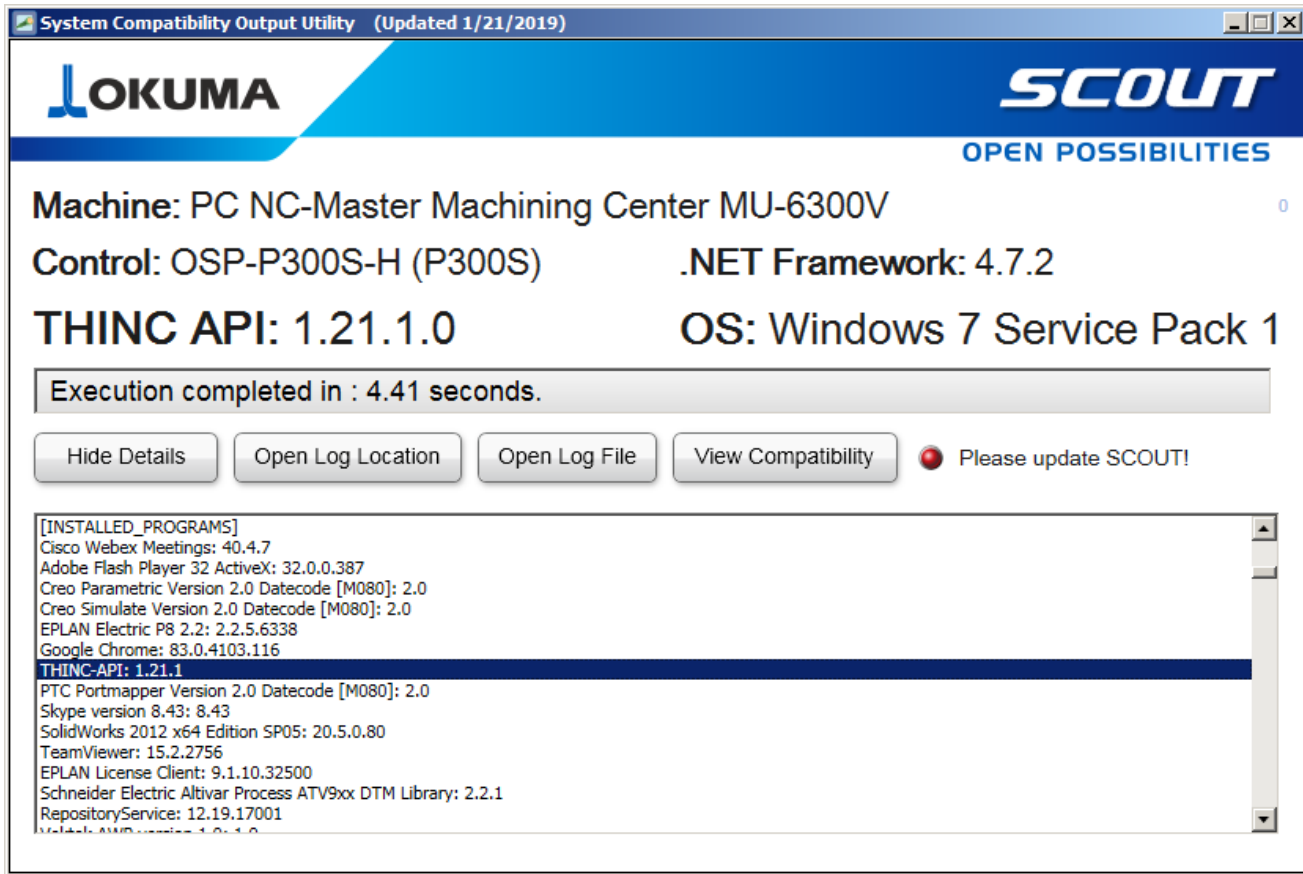
1.3 Select View Compatibility to determine if the installed THINC APPs version is compatible. If so, proceed without upgrade of THINC APP version listed as green. In not, download the latest version of THINC APP and install per instructions supplied with application.



2.0 Okuma THINC-API (Application Programming Interface) is the software application running in the CPU background that allows other applications to interact with the Okuma CNC machine API. It provides the means to read and write common variables, load part programs, etc. The latest Okuma THINC-API version 1.21.1.0 is shown in window below. If a previous version of Okuma THINC-API is installed, request the latest upgrade from Okuma America Corporation or your local Okuma Distributor. Download is not available from Okuma website. **Important:** It is recommended to install the latest THINC-API version available for your Okuma CNC machine.

2.1 DISK1 Okuma Thinc API Upgrade (provided with Installation Manual)

2.2 Copy or move this file to the Okuma CNC machine CPU root directory and run Setup.exe



3.0 Okuma THINC Startup Service (TSS) is used to launch other applications after the Okuma OSP Control System has fully booted and the Okuma THINC API is running. Register and download this application at the following address:

3.1 <https://www.myokuma.com/>

3.2 Copy or move this file to the Okuma CNC machine CPU root directory and run.

3.2.1 [Setup_TSS_v4.4.0.exe](#) (or later version if available)

3.3 Select Next to start the installation process.



3.4 Select Next> to install in default location on D:\.



3.5 Select Install to begin installation process.



3.6 The progress of the installation will be displayed on the left side of the box.

3.7 Select Finish to Complete the installation process.

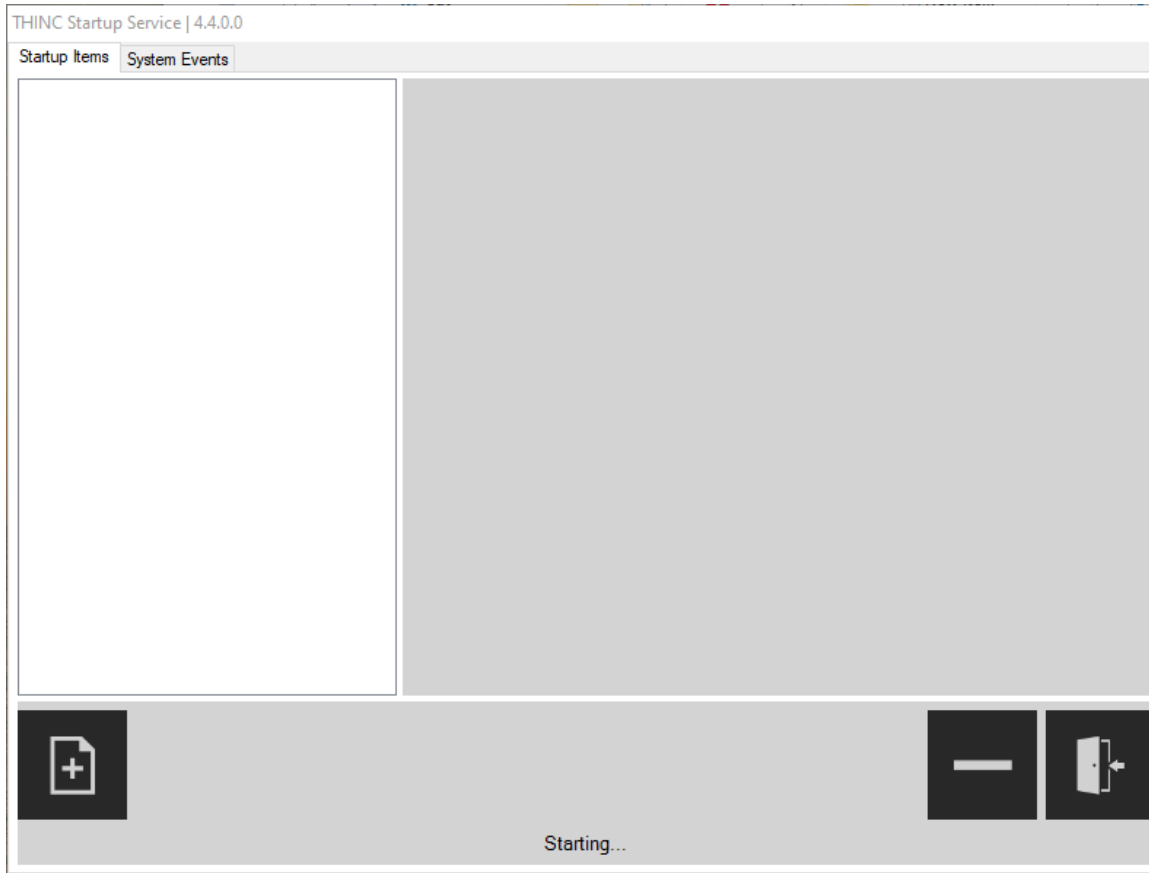


3.8 Follow the Okuma THINC Startup Service Installation and User Manual to add startup services for processes as required. **Important:** *Must be completed after Vektek AWP Installation in Section 4.0.*

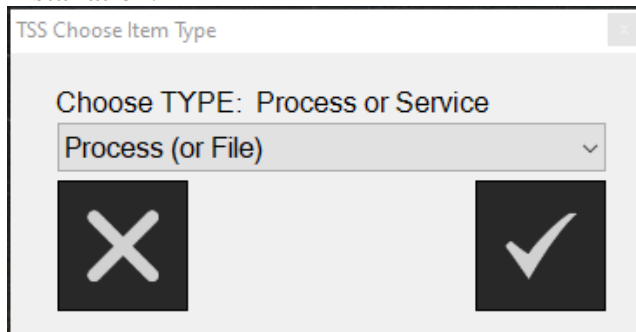
3.8.1 Select from Windows Start Menu as follows:

3.8.1.1 **All Programs > Okuma > THINC Startup Service > Startup Settings**

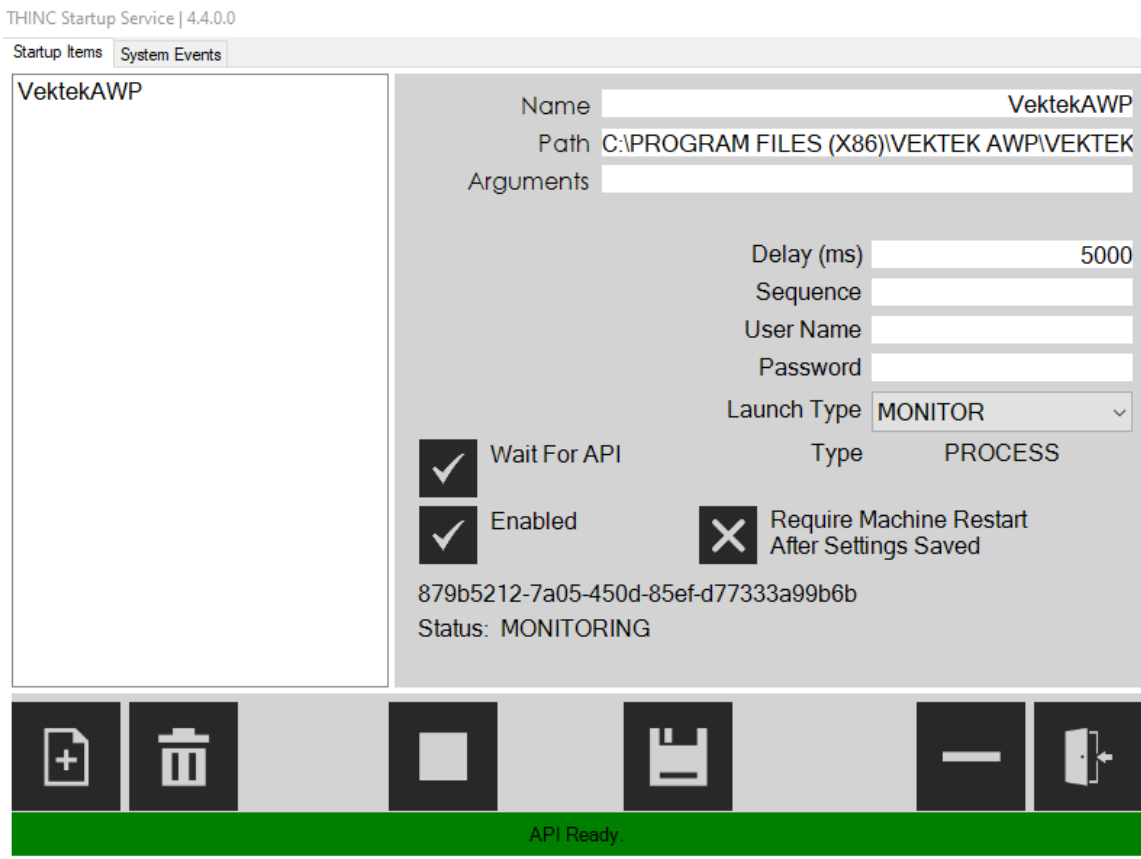
3.8.2 Select + button in lower left corner of Thinc Startup Service box.



3.8.3 Choose Item Type drop down menu and set to Process. Select check mark to continue installation.



- 3.8.4 Browse for Process and select VektekAWP.exe to add App to the Startup Services.
- 3.8.5 This will set Path to [C:\Program Files \(x86\)\Vektek AWP\VektekAWP.exe](C:\Program Files (x86)\Vektek AWP\VektekAWP.exe)
- 3.8.6 Set Delay (MS) to 5000
- 3.8.7 Set Launch Type to MONITOR
- 3.8.8 Check Wait For API
- 3.8.9 Check Enabled
- 3.8.10 Uncheck Required Machine Restart After Settings Saved
- 3.8.11 Select Save (disk symbol button)
- 3.8.12 Select Exit (-- button)



- 3.8.13 Power Okuma control system Off and back On to exit Window Only Mode and start Okuma control system and Vektek AWP THINC App.
- 3.8.14 Select the Vektek AWP THINC App in the Windows task bar or tray and select “Configuration” from pop-up box to confirm it is running properly.

4.0 The Vektek AWP-APP5500 THINC App can be installed from the USB thumb drive that is provided with this manual.

4.1 Power up the Okuma CNC machine and Select Start from the Okuma OSP control system on the main console.

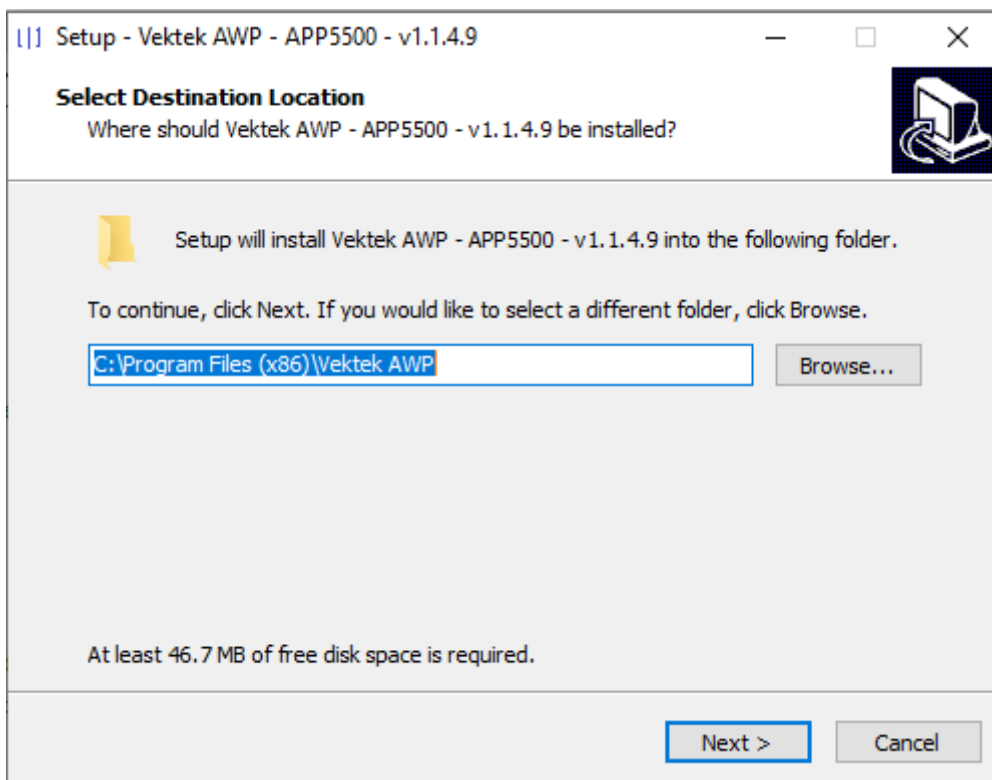
4.1.1 OSP-P200 - Immediately after Windows is started, select the Ctrl and /// (Cancel) buttons on the keypad to stop the OSP from loading and keep the Windows interface active on screen.

4.1.2 OSP-P300 - Immediately after Windows is started, select the button to stop OSP on the second boot screen from loading and keep the Windows interface active on screen.

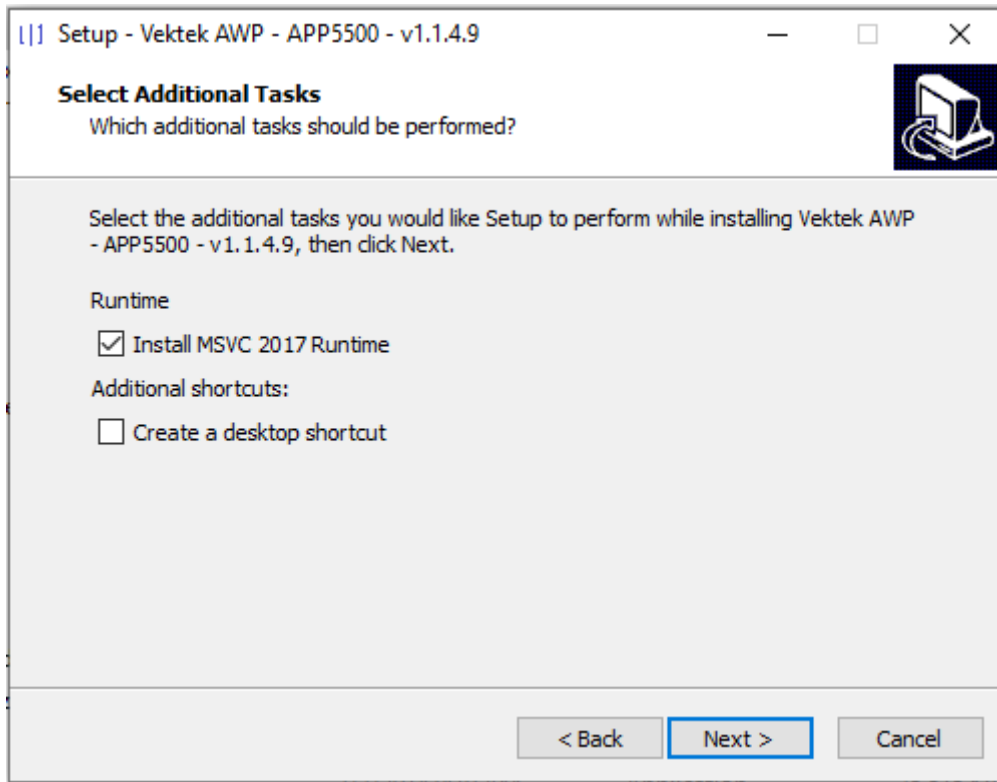
4.2 Open Windows Explorer and locate Removable drive.

4.3 Select Setup_AWP.exe file and simultaneously press Shift + Ctrl + Enter Keys on panel to “Run as Administrator”. *Important: Failure to install with Administrator privileges could result in the Vektek AWP APP5500 THINC APP unable to connect to the CNC machine, AWP, or both. This could also result in the Log files not able to write into the Log folder.*

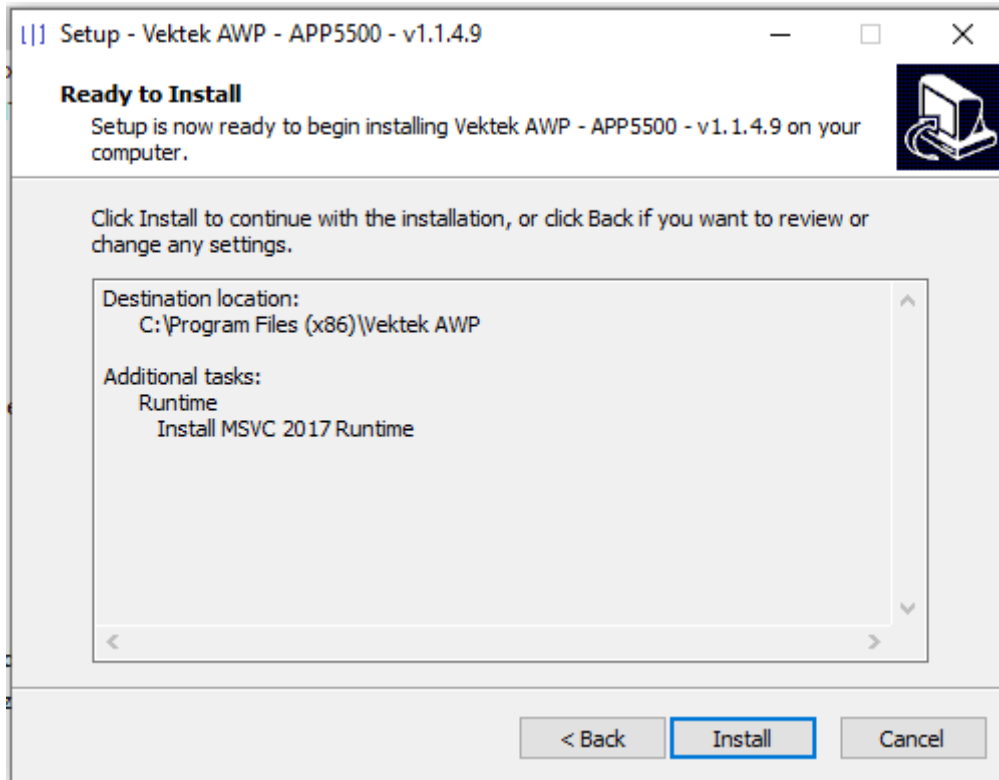
4.4 Select Next> to install in default folder location as shown.



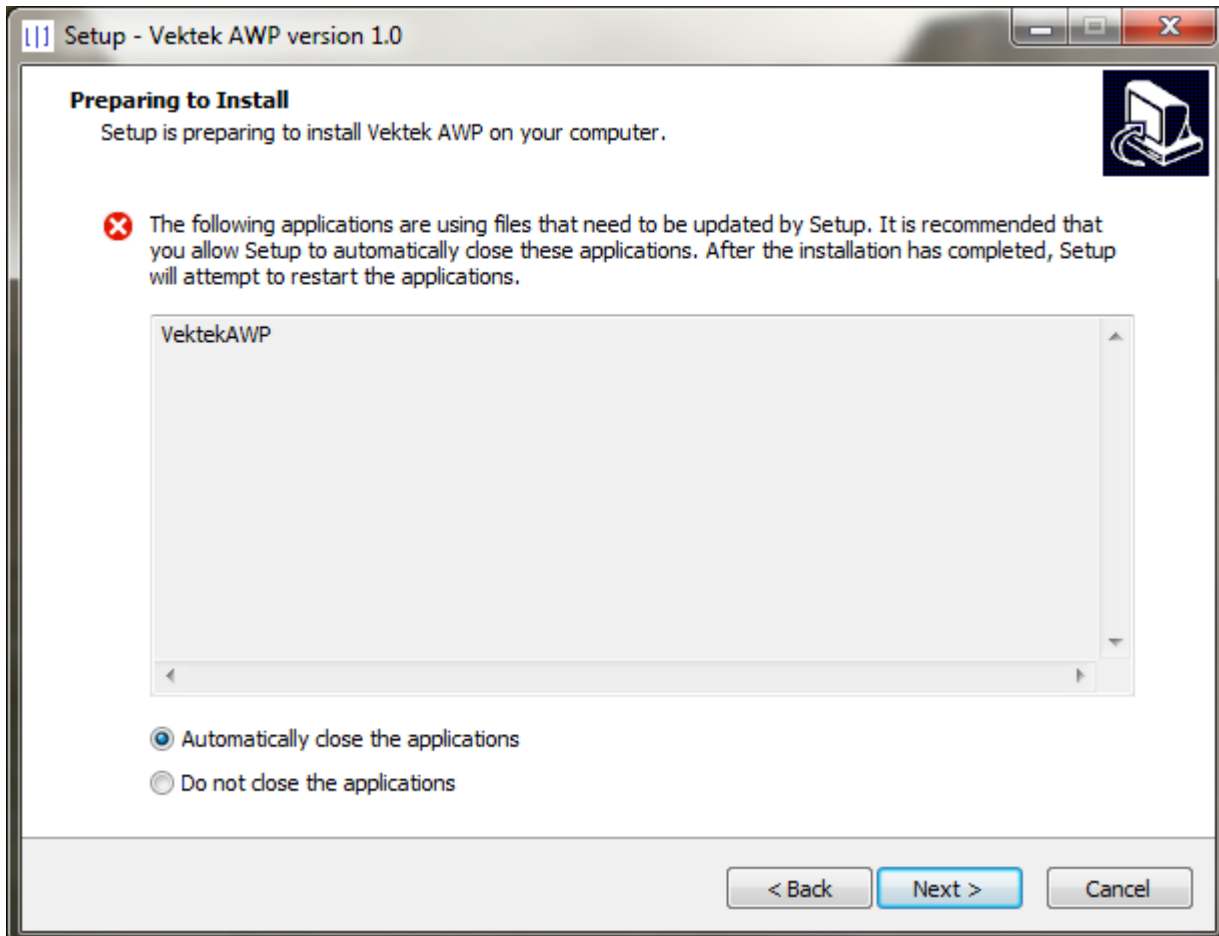
4.5 Select Next>.



4.6 Select Install



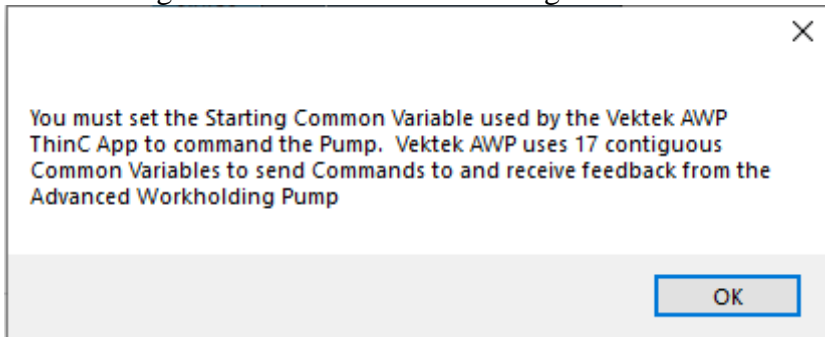
4.7 Optional if required, select Next> if re-installing application.



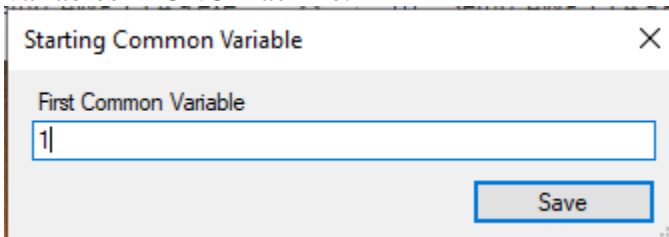
4.8 Select Finish to complete the Vektek AWP-APP5500 setup and run the application.



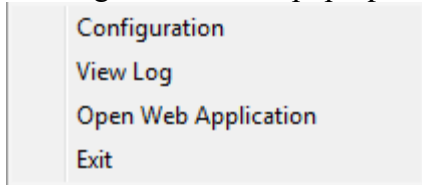
4.9 Read message and determine CNC Starting Common Variable before proceeding.



4.10 Enter correct Starting Common Variable that does not interfere with existing common variables in CNC machine.



4.11 Right click on Vektek AWP-APP5500 THINC APP in Windows task bar or tray and select “Configuration” from pop-up box.



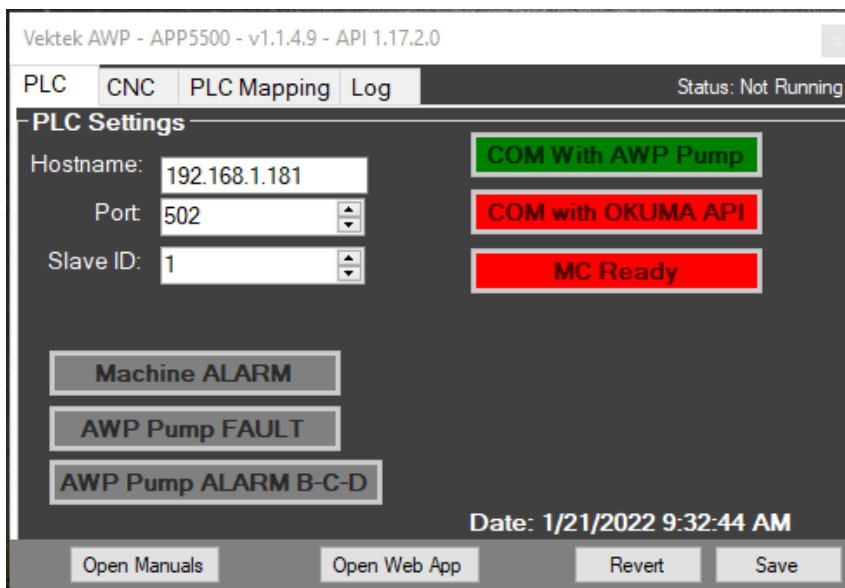
4.12 Vektek AWP-APP5500 box will appear with the PLC tab showing the default IP address
Hostname: 192.168.1.181, Port: 502, and Slave ID: 1

4.12.1 Edit the new AWP IP Address to values compatible with the CNC machine. This is the IP Address of the TM4ES4 internal network switch on the AWP.

4.12.1.1 IP Address: www.xxx.yyy.zzz (Set Octet 1, 2, 3 to the same values as the CNC and set Octet 4 to any value between 1-255 that does not conflict with other machine IP Addresses on the network)

4.12.2 Port: 502 and Slave ID: 1 should not be changed.

4.12.3 Select “Save” to keep any changes made or “Revert” to keep originally saved values.



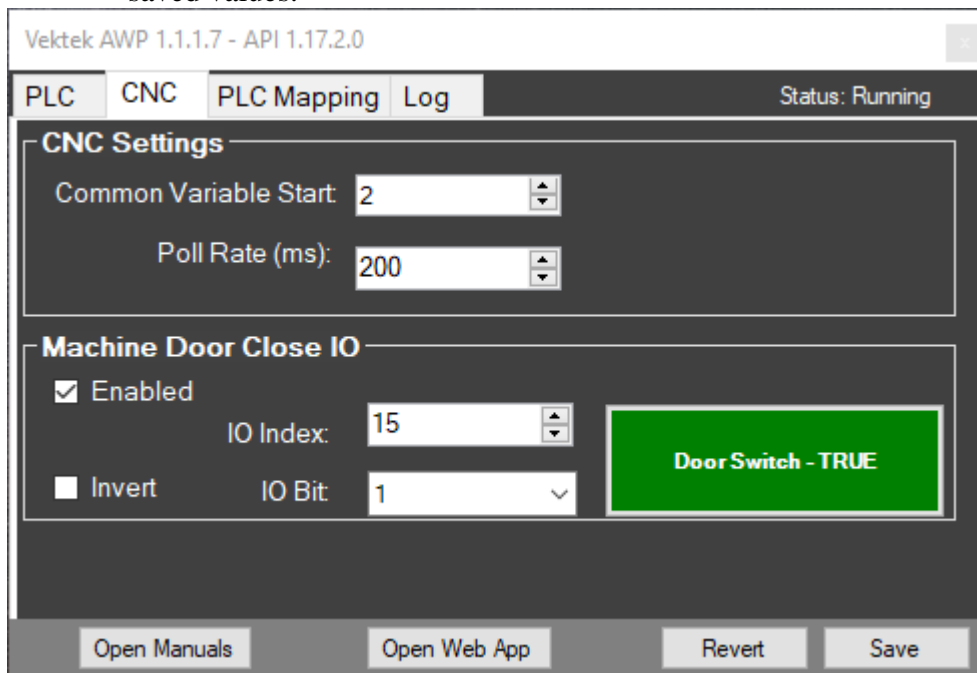
4.13 Select the CNC tab as shown below.

4.13.1 CNC Settings

4.13.1.1 Common Variable Start value defines the starting point for using and mapping the Common Variables in the Okuma CNC mill to the AWP PLC. *Important: The Vektek AWP THINC APP requires 17 consecutive Common Variables to be allocated for its use.* Verify the last Common Variable in use on the Okuma CNC Mill control system and enter the next available number below, provide it allows for 17 consecutive numbers not in use. Example: If Common Variables 1-10 are in use and 11-27 are available then the Common Variable Start point entered is 11. *Important:* See Section 3.3 to edit PUSD value in OAWP.LIB program.

4.13.1.2 Poll Rate is set at the default value of 200 ms and should be left at this value unless another polling response time is needed to optimize communications with the CNC API. Minimum Poll Rate value is 100 ms and maximum poll rate value is 1000 ms.

4.13.1.3 Select “Save” to keep any changes made or “Revert” to keep originally saved values.



4.13.2 Machine Door Close IO allows for enabling of the Door Close safety feature for the control of the AWP functions.

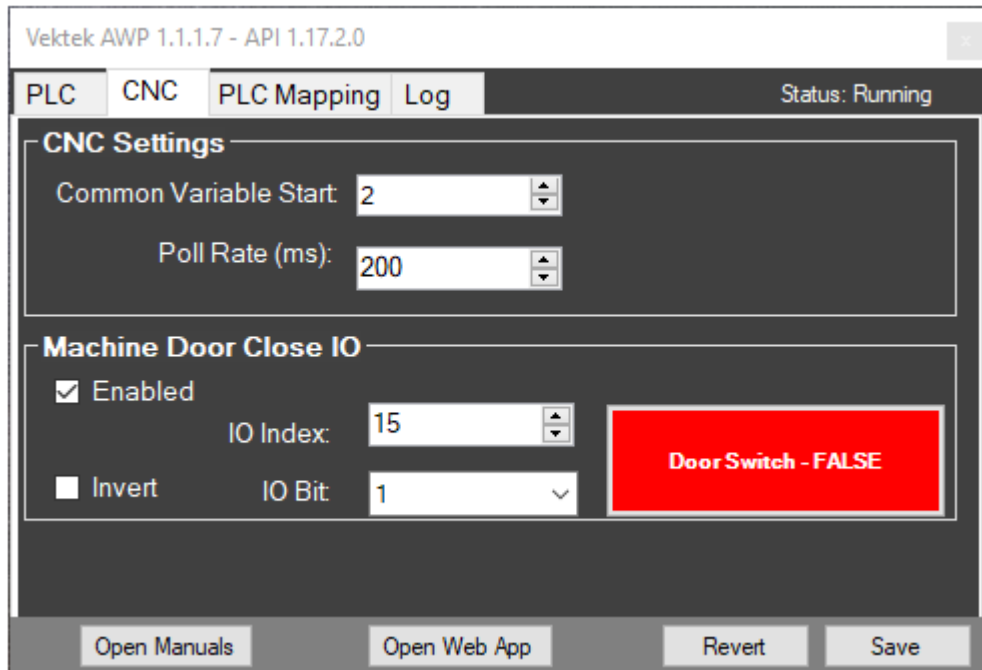
4.13.2.1 Enabled must be checked to initiate this feature which would require the CNC door to be closed during AWP valve clamping functions.

4.13.2.2 Invert must be checked to flip the logic from True to False according to door switch functionality. Default value is to leave Invert unchecked.

4.13.2.3 IO Index value must be changed to the same value as defined in the Okuma OSP IO Monitor. (IO Index = 15)

4.13.2.4 IO Bit value must be changed to the same value as defined in the Okuma OSP IO Monitor. (IO Bit = 1)

4.13.2.5 Select “Save” to keep any changes made or “Revert” to keep originally saved values.



4.13.2.6 Valve function for each Door Close IO Status is described in the table below.

4.13.2.6.1 VALVES ENABLED means the valves **can** be shifted by CNC or Manual command.

4.13.2.6.2 VALVES LOCKED means the valves **cannot** be shifted by CNC or Manual command. Their position remains unchanged.

DOOR CLOSE IO STATUS	DOOR SWITCH STATUS	SYSTEM OPERATION AUTO	SYSTEM OPERATION MANUAL
NOT ENABLED	FALSE OPEN	VALVES ENABLED	VALVES ENABLED
NOT ENABLED	TRUE CLOSED	VALVES ENABLED	VALVES ENABLED
ENABLED	FALSE OPEN	VALVES LOCKED	VALVES ENABLED
ENABLED	TRUE CLOSED	VALVES ENABLED	VALVES ENABLED

4.14 Select the PLC Mapping tab as shown below to confirm the Macro Index (Common Variable Index number) and PLC Bit (Common Variable Bit) values after any changes to the Common Variable Start point. No values can be edited directly in this table or saved.

Vekttek AWP 1.1.0.7

PLC CNC PLC Mapping Log Status: Not Running

PLC to Macro

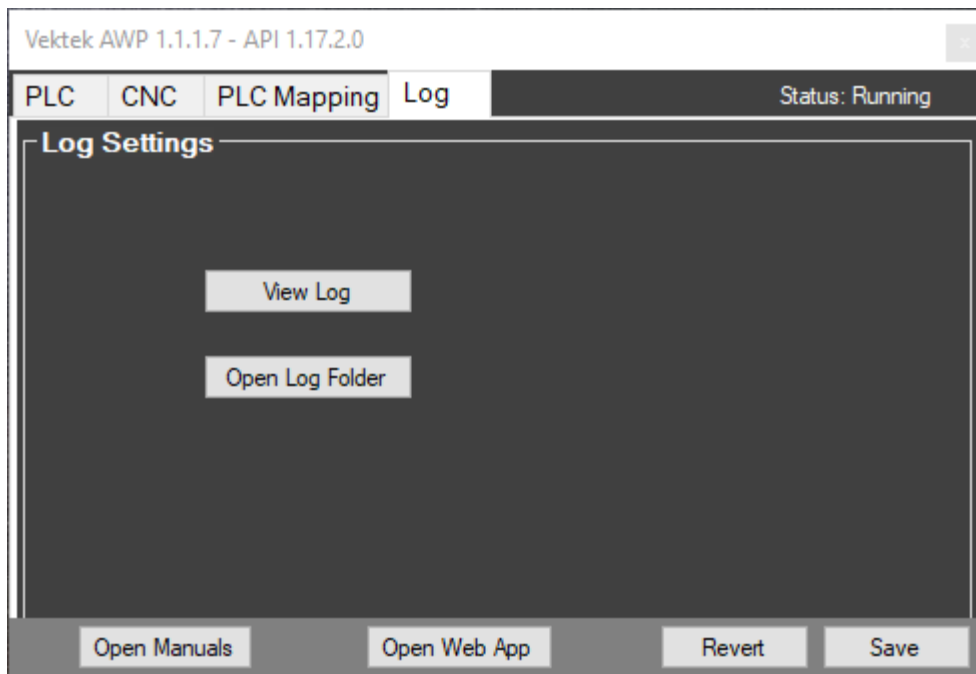
Variable	PLC Index	PLC Bit	Macro Index	Mac
PLC_Alarm_B	100	13		
PLC_Alarm_C	100	14		
PLC_Alarm_D	100	15		
AWP_Ready	100	0	2	0
AWP_FaultActive	100	1	2	1
AWP_ModbusTCP_OK	100	5	2	5
MainSystemPressureOK	100	9	2	9
V1A_ACK	101	0	3	0
V1B_ACK	101	1	3	1
V2A_ACK	101	2	3	2
V2B_ACK	101	3	3	3
V3A_ACK	101	4	3	4
V3B_ACK	101	5	3	5

Macro to PLC

Variable	PLC Index	PLC Bit	Macro Index
AlarmP	0	11	
AlarmA	0	12	
AlarmB	0	13	
AlarmC	0	14	
AlarmD	0	15	
MC_ManualMode	0	1	
MC_MDI_Mode	0	2	
MC_AutoMode	0	3	
MC_Ready	0	0	11
MC_ModbusTCP_OK	0	5	11
MC_Heartbeat	0	6	11
MC_CMD_V1A	1	0	12
MC_CMD_V1B	1	1	12

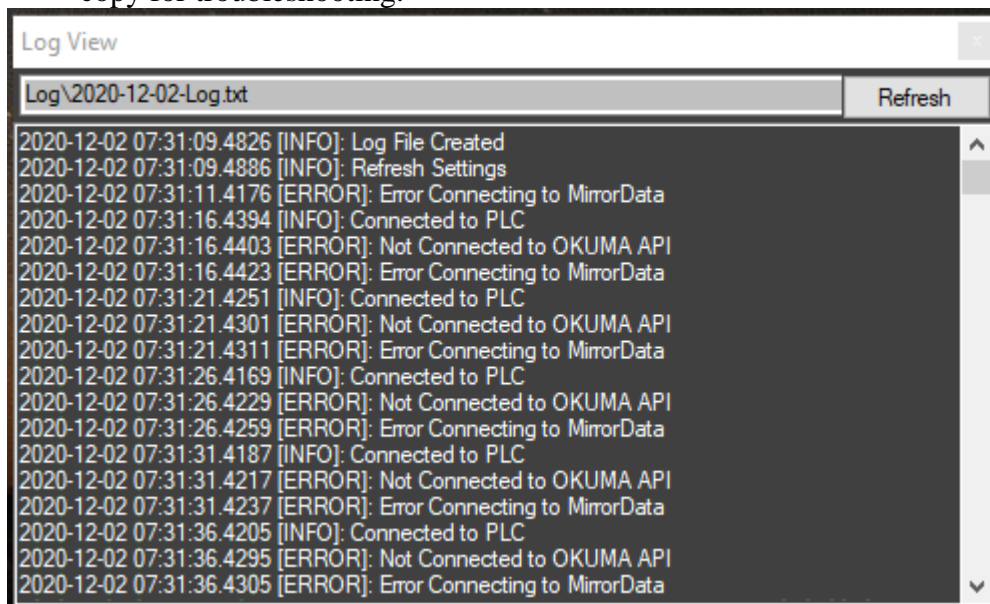
Open Web App Revert Save

4.15 Select Log tab to access the Log Settings.

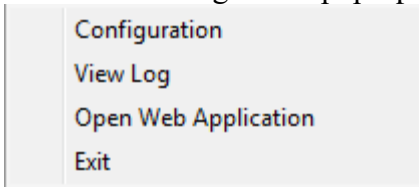


4.15.1 Select View Log to open the selected log for reading and analysis of Vektek AWP THINC APP communications.

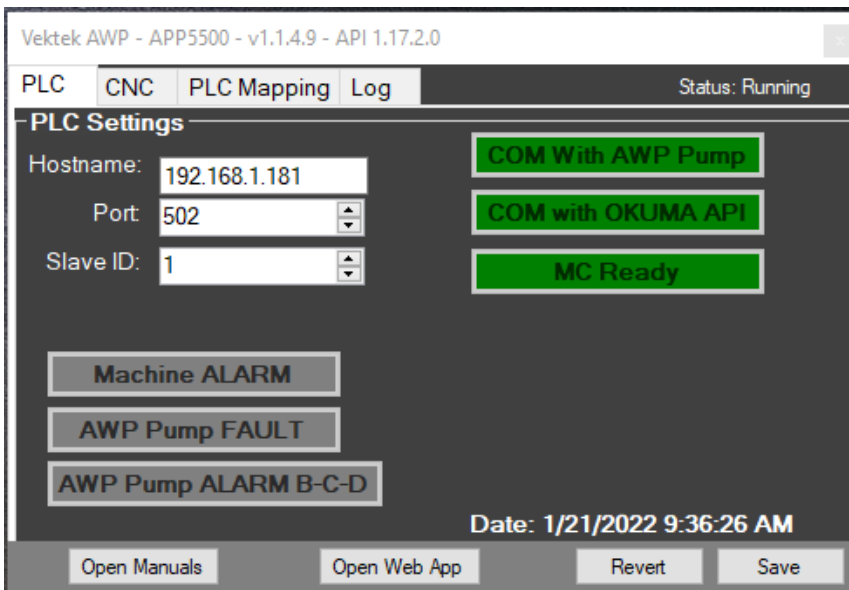
4.15.2 Select the “Open Log Folder” button to access log file for opening in notepad or to copy for troubleshooting.



4.16 Alternate method – Select the Vektek AWP THINC APP in Windows task bar or tray and select “View Log” from pop-up box.

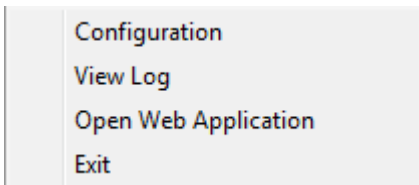


4.17 Vektek AWP THINC APP should now be “Running” as shown in the upper right-hand corner of the application window as shown below. If it is not, “Exit” Vektek AWP THINC APP in the Windows application tray and restart. Vektek AWP will restart automatically if the Okuma Startup Services are set to MONITOR.



4.18 Select the Open Web App button at the bottom of the App window button to open the Vektek AWP WSA Home screen.

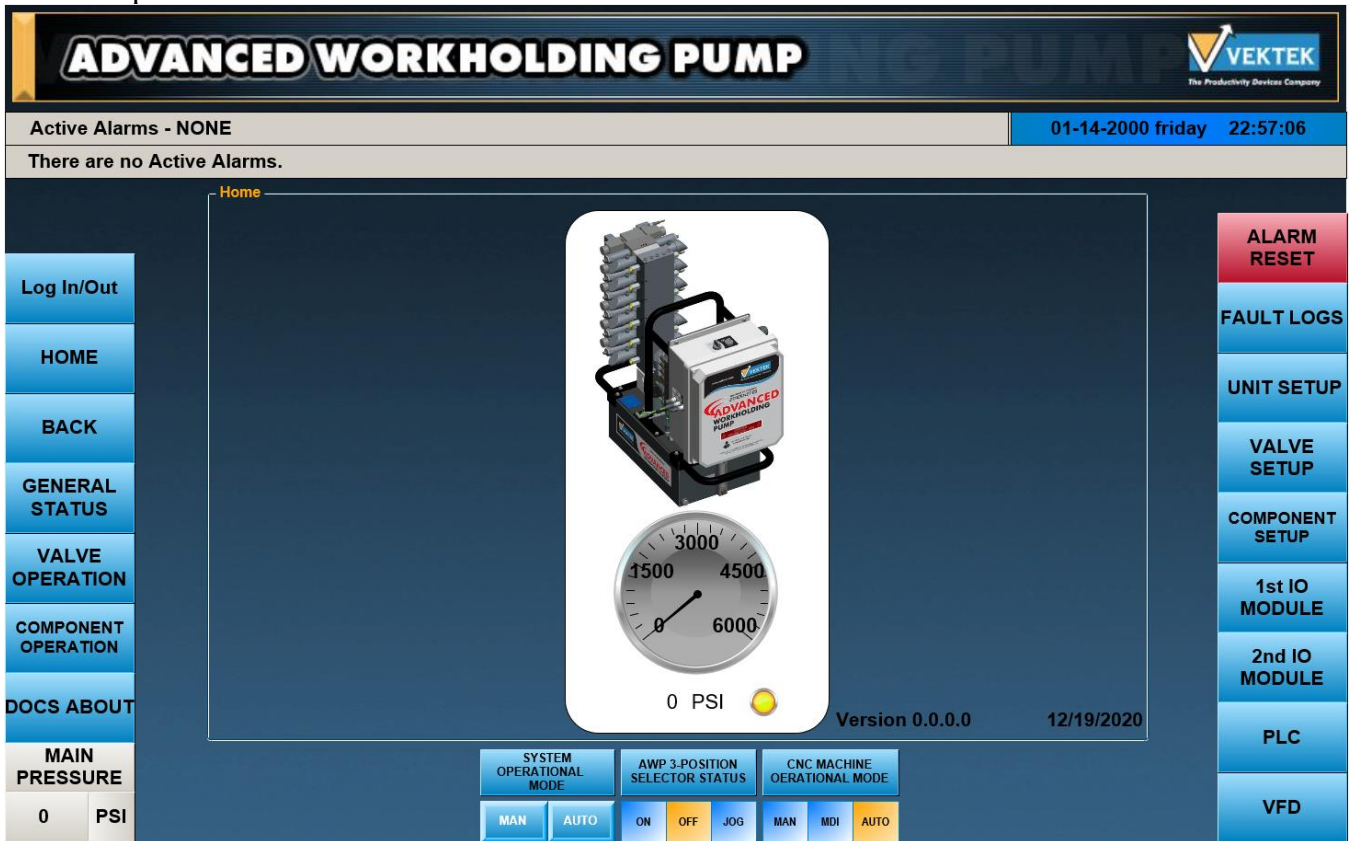
4.19 Alternate method: Select the Vektek AWP THINC APP in Windows task bar or tray and select “Open Web Application” from pop-up box to open the Vektek AWP WSA Home screen.



4.20 Select the Open Manuals button to open file manager to the folder that all AWP Operation manuals and Parts List manuals are stored. Double click on each of these to open the file in a PDF viewer for quick reference.

4.21 Vektek AWP Home Screen is loaded provided AWP is powered ON, Ethernet cable is connected to the Okuma CNC mill network, and Modbus communications are functioning correctly. If it does not load as shown below, “Exit” Vektek AWP THINC APP and restart. Select ALARM RESET button to clear any active alarms.

4.22 **Important:** If Vektek AWP Home Screen does not load, see PLC Section IV, 15.2 for procedure to set the AWP IP Address, Subnet Mask, and Gateway to new values that are compatible with the CNC machine network.



5.0 Windows Internet Explorer browser may not function properly with Vektek AWP Web Visualization Screens. Switching delays and lockups may occur with this IE browser. It is highly recommended to install and use the correct version of Google Chrome browser or Edge browser for the CNC machine Windows version installed for display of these screens.

5.1 The Google Chrome Standalone browser installation files have been provided for you on the USB thumb drive included with this manual.

5.1.1 [ChromeStandaloneSetup32.exe](#)

5.1.2 [ChromeStandaloneSetup64.exe](#)

5.2 If connected to the Internet, use the link below to download and install the latest Google Chrome browser version as required for the CNC machine Windows operating system.

5.2.1 <https://www.google.com/chrome/downloads/>

6.0 Access to the Google Chrome browser window with the Vektek AWP Home screen is greatly enhanced by adding a shortcut to the Okuma Control System V-Function Keys (vertical keys on right side of control panel). Run to add this V-Function Key shortcut using the following steps.

6.1 Turn on power to Okuma CNC Machine control system.

6.2 After Windows mode is started and just before NC mode is starting, press the ESC key on the control panel.



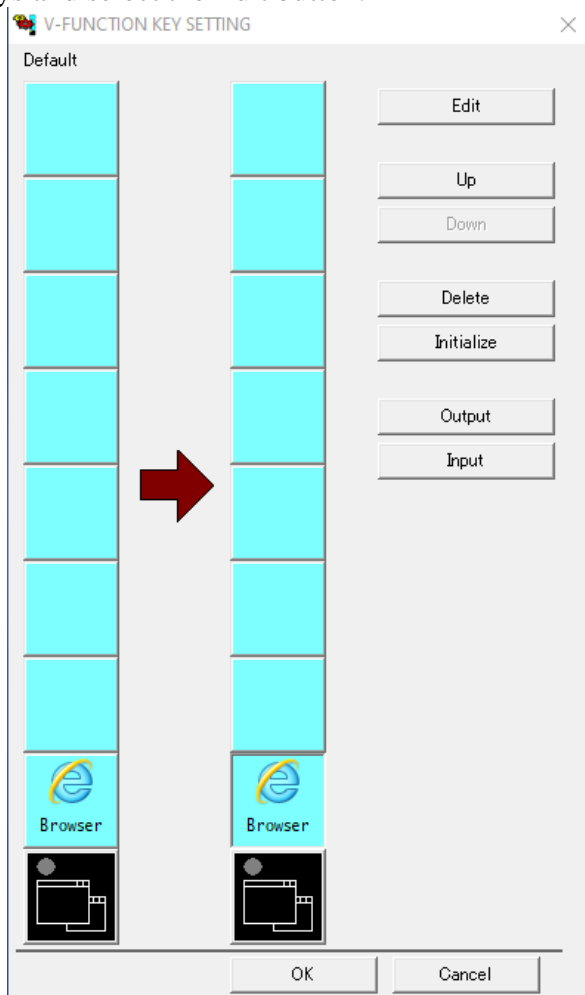
6.2.1 The ESC key looks like this

6.3 The Cancel button will be shown on NC HMI screen and should be selected immediately to stop NC mode from running.

6.4 Select the Ctrl and ESC keys on the control panel simultaneously to display the Windows Start menu on the HMI and start Windows File Manager.

6.5 Browse to **C:\OSP-P\V-FKEY\SVFKA-SET.EXE** and run the executable file.

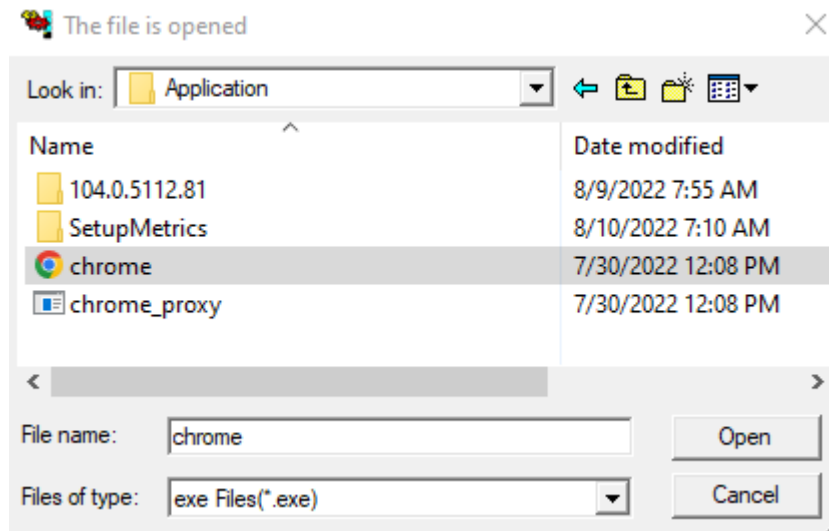
6.6 The V-Function Key Setting box is opened. Select the next available key in the middle vertical set of keys and select the Edit button.



6.7 The Edit window will open and select Target Browse button to navigate to Chrome file location <C:\Program Files\Google\Chrome\Application\Chrome.exe>



6.8 Select [Chrome.exe](chrome.exe) from the file manager window and select Open.

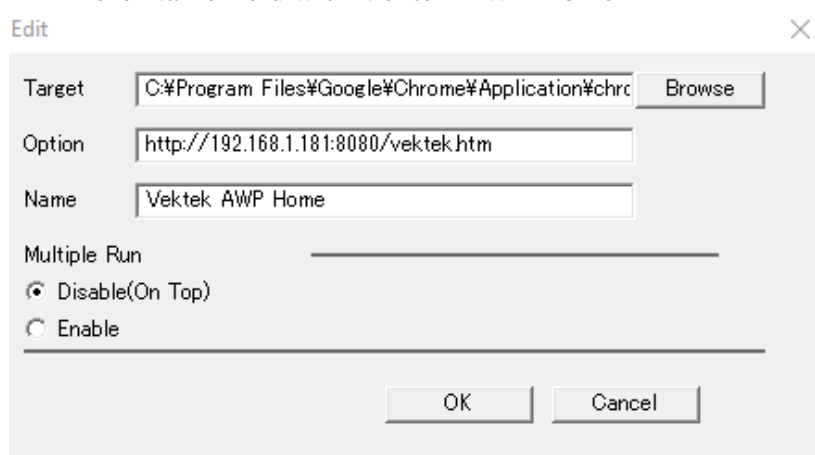


6.9 Fill in the Option field with the following address

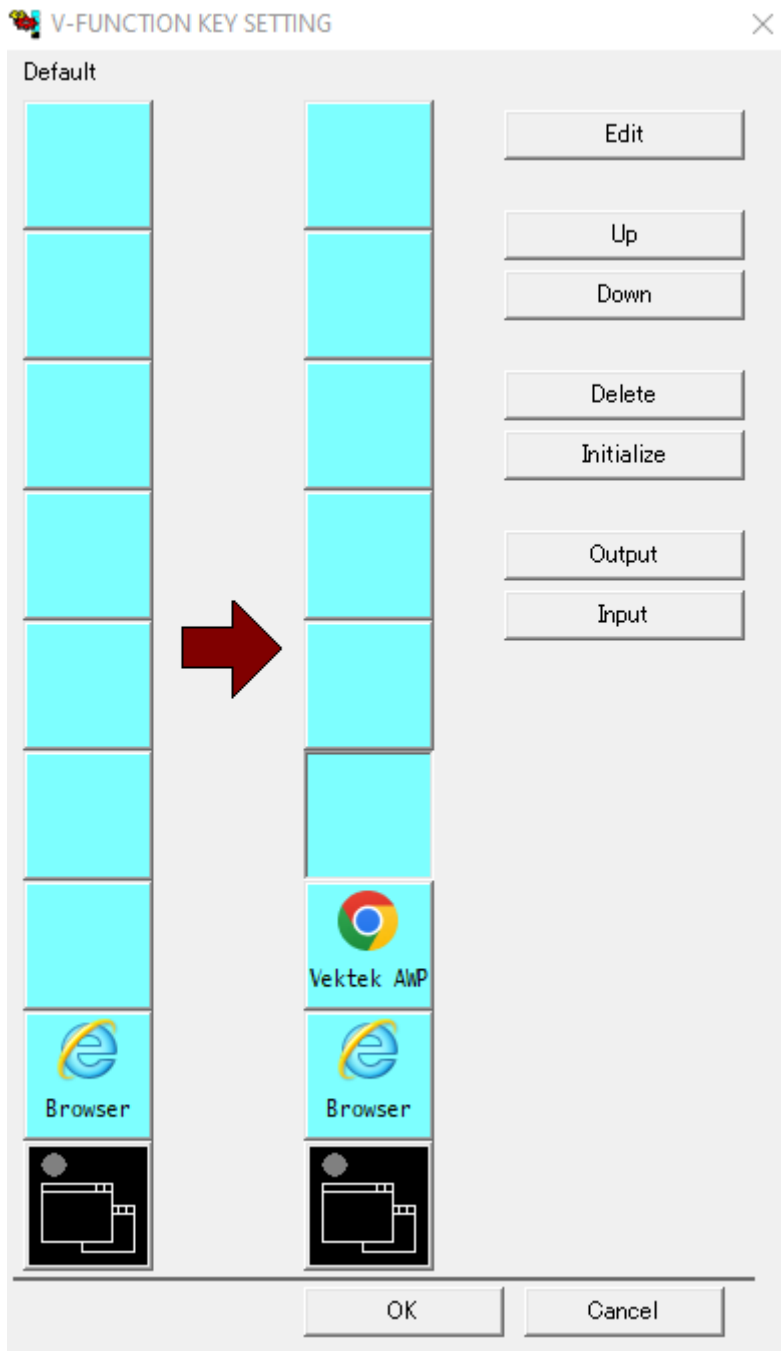
<http://192.168.1.181:8080/vektek.htm>

or the correct Octet 1,2,3,4 values defined during installation

Fill in the Name field with Vektek AWP Home



6.10 The AWP Home button will now show on the middle V-Function Keys. It can be relocated as needed by selecting the Up or Down buttons. Select OK to complete the installation process.



6.11 Power Okuma control system Off and back On to exit Windows only mode and start the Okuma OSP-P control system fully.

6.12 The AWP Home browser page can be easily accessed by selecting the lowest browser window key twice and the Vektek AWP Home button on the right side V-Function Keys.



7.0 AWP Library Programs for Okuma CNC mill will be copied during the Vektek AWP App installation to the **D:\Program Files (x86)\Vektek AWP\AWP Library Programs** folder location. Final installation will need to be performed manually.

Register only those *.LIB files needed. See Section 8.0

7.1 Copy only those .LIB programs needed for your pump configuration directly into folder **D:\MD1**. *Important: Copying all .LIB programs directly into this folder could result in memory buffer overflow, leading to needed \programs not being loaded into memory at CNC machine startup. Increase buffer size until all needed .LIB programs will load into the registry. (start at 100000)*

7.1.1 OAWP.LIB – Evaluates correct output and input bit values to enter into Common Variable (Macro Index) number. This is used in all other LIB subprograms.

7.1.2 OVAB.LIB – Contains all on pump Valve subprograms.

7.1.3 OPAB.LIB – Contains all on pump Pressure Switch subprograms

7.1.4 OVI.LIB - Contains all on pump Valve Intermediate subprograms.

7.1.5 OPI.LIB – Contains all on pump Pressure Switch Intermediate subprograms\

7.1.6 OCAB.LIB – Contains all remote Component subprograms.

7.1.7 OQAB.LIB – Contains all on pump Component Pressure Switch subprograms

7.1.8 OCI.LIB – Contains all remote Component Intermediate subprograms.

7.1.9 OQI.LIB – Contains all on pump Component Intermediate Pressure Switch subprograms.

7.1.10 OVCRS – Contains all valve and Component reset subprograms.

7.2 AWP Library Programs contain all the subprograms necessary to control all Valve and Component options on the AWP. Using these “CALL” commands in the main part program can greatly simplify and speed programming for hydraulic workholding and auxiliary devices. Below is an explanation of each subprogram naming convention and its intended function.

7.2.1 Subprogram Syntax, O1234 (Position of each digit)

7.2.1.1 Position 0 = Program Call Name (Default Okuma standard)

7.2.1.2 Position 1 = V (Valve)

P (Pressure Switch)

VI (Valve Intermediate)

PI (Pressure Switch Intermediate)

C (Component)

Q (Component Pressure Switch)

CI (Component Intermediate)

QI (Component Intermediate Pressure Switch)

RS (Reset)

7.2.1.3 Position 2 = 1,2,3,4,5,6 (Valve number on pump)

1,2,3,4,5,6,7,8 (Component number remote)

7.2.1.4 Position 3 = A (Port)

B (Port)

None (Implied as A port on Intermediate valves)

7.2.1.5 Position 4 = T (True, On)

F (False, Off)

7.2.2 Ex 1: OV1AT = Program Name, Valve, No 1, A Port, True On

7.2.3 Ex 2: OVI2F = Program Name, Valve Intermediate, No 2, False Off

7.2.4 Ex 3: OC3BT = Program Name, Component, No 3, B Port, True On

7.2.5 Ex 4: OCI4F = Program Name, Component Intermediate, No 4, False Off

7.2.6 Table of Available Valve Subprograms contained in OVAB.LIB Program. These valves are located on the pump valve stack.

Program Name	Position 1	Position 2	Position 3	Position 4
OV1AT	VALVE	1	A PORT	TRUE, ON
OVI AF	VALVE	1	A PORT	FALSE, OFF
OV1BT	VALVE	1	B PORT	TRUE, ON
OV1BF	VALVE	1	B PORT	FALSE, OFF
OV2AT	VALVE	2	A PORT	TRUE, ON
OV2AF	VALVE	2	A PORT	FALSE, OFF
OV2BT	VALVE	2	B PORT	TRUE, ON
OV2BF	VALVE	2	B PORT	FALSE, OFF
OV3AT	VALVE	3	A PORT	TRUE, ON
OV3AF	VALVE	3	A PORT	FALSE, OFF
OV3BT	VALVE	3	B PORT	TRUE, ON
OV3BF	VALVE	3	B PORT	FALSE, OFF
OV4AT	VALVE	4	A PORT	TRUE, ON
OV4AF	VALVE	4	A PORT	FALSE, OFF
OV4BT	VALVE	4	B PORT	TRUE, ON
OV4BF	VALVE	4	B PORT	FALSE, OFF
OV5AT	VALVE	5	A PORT	TRUE, ON
OV5AF	VALVE	5	A PORT	FALSE, OFF
OV5BT	VALVE	5	B PORT	TRUE, ON
OV5BF	VALVE	5	B PORT	FALSE, OFF
OV6AT	VALVE	6	A PORT	TRUE, ON
OV6AF	VALVE	6	A PORT	FALSE, OFF
OV6BT	VALVE	6	B PORT	TRUE, ON
OV6BF	VALVE	6	B PORT	FALSE, OFF

7.2.7 Table of Available Pressure Switch Subprograms contained in OPAB.LIB Program. These are pressure switches are associated with valves in Section 7.2.6.

Program Name	Position 1	Position 2	Position 3	Position 4
OP1AT	PRESSURE SWITCH	1	A PORT	TRUE, ON
OPI AF	PRESSURE SWITCH	1	A PORT	FALSE, OFF
OP1BT	PRESSURE SWITCH	1	B PORT	TRUE, ON
OP1BF	PRESSURE SWITCH	1	B PORT	FALSE, OFF
OP2AT	PRESSURE SWITCH	2	A PORT	TRUE, ON
OP2AF	PRESSURE SWITCH	2	A PORT	FALSE, OFF
OP2BT	PRESSURE SWITCH	2	B PORT	TRUE, ON
OP2BF	PRESSURE SWITCH	2	B PORT	FALSE, OFF
OP3AT	PRESSURE SWITCH	3	A PORT	TRUE, ON
OP3AF	PRESSURE SWITCH	3	A PORT	FALSE, OFF
OP3BT	PRESSURE SWITCH	3	B PORT	TRUE, ON
OP3BF	PRESSURE SWITCH	3	B PORT	FALSE, OFF
OP4AT	PRESSURE SWITCH	4	A PORT	TRUE, ON
OP4AF	PRESSURE SWITCH	4	A PORT	FALSE, OFF
OP4BT	PRESSURE SWITCH	4	B PORT	TRUE, ON
OP4BF	PRESSURE SWITCH	4	B PORT	FALSE, OFF
OP5AT	PRESSURE SWITCH	5	A PORT	TRUE, ON
OP5AF	PRESSURE SWITCH	5	A PORT	FALSE, OFF
OP5BT	PRESSURE SWITCH	5	B PORT	TRUE, ON
OP5BF	PRESSURE SWITCH	5	B PORT	FALSE, OFF
OP6AT	PRESSURE SWITCH	6	A PORT	TRUE, ON
OP6AF	PRESSURE SWITCH	6	A PORT	FALSE, OFF
OP6BT	PRESSURE SWITCH	6	B PORT	TRUE, ON
OP6BF	PRESSURE SWITCH	6	B PORT	FALSE, OFF

7.2.8 Table of Available Valve Intermediate Subprograms contained in OVI.LIB Library Program. These are a sandwich type, 2-position / 3-way, pressure reducing valves used to lower the line pressure just before entering the directional control valve. These intermediate valves are associated with the valves in Section 7.2.6. on the pump valve stack.

Program Name	Position 1	Position 2	Implied	Position 4
OVI1T	VALVE INTERMEDIATE	1	A PORT	TRUE, ON
OVI1F	VALVE INTERMEDIATE	1	A PORT	FALSE, OFF
OVI2T	VALVE INTERMEDIATE	2	A PORT	TRUE, ON
OVI2F	VALVE INTERMEDIATE	2	A PORT	FALSE, OFF
OVI3T	VALVE INTERMEDIATE	3	A PORT	TRUE, ON
OVI3F	VALVE INTERMEDIATE	3	A PORT	FALSE, OFF
OVI4T	VALVE INTERMEDIATE	4	A PORT	TRUE, ON
OVI4F	VALVE INTERMEDIATE	4	A PORT	FALSE, OFF
OVI5T	VALVE INTERMEDIATE	5	A PORT	TRUE, ON
OVI5F	VALVE INTERMEDIATE	5	A PORT	FALSE, OFF
OVI6T	VALVE INTERMEDIATE	6	A PORT	TRUE, ON
OVI6F	VALVE INTERMEDIATE	6	A PORT	FALSE, OFF

7.2.9 Table of Available Pressure Switch Intermediate Subprograms contained in OPI.LIB Library Program. These pressure switches are associated with the Valve Intermediate in Section 7.2.8.

Program Name	Position 1	Position 2	Implied	Position 4
OPI1T	PRESSURE SWITCH INTERMEDIATE	1	A PORT	TRUE, ON
OPI1F	PRESSURE SWITCH INTERMEDIATE	1	A PORT	FALSE, OFF
OPI2T	PRESSURE SWITCH INTERMEDIATE	2	A PORT	TRUE, ON
OPI2F	PRESSURE SWITCH INTERMEDIATE	2	A PORT	FALSE, OFF
OPI3T	PRESSURE SWITCH INTERMEDIATE	3	A PORT	TRUE, ON
OPI3F	PRESSURE SWITCH INTERMEDIATE	3	A PORT	FALSE, OFF
OPI4T	PRESSURE SWITCH INTERMEDIATE	4	A PORT	TRUE, ON
OPI4F	PRESSURE SWITCH INTERMEDIATE	4	A PORT	FALSE, OFF
OPI5T	PRESSURE SWITCH INTERMEDIATE	5	A PORT	TRUE, ON
OPI5F	PRESSURE SWITCH INTERMEDIATE	5	A PORT	FALSE, OFF
OPI6T	PRESSURE SWITCH INTERMEDIATE	6	A PORT	TRUE, ON
OVI6F	PRESSURE SWITCH INTERMEDIATE	6	A PORT	FALSE, OFF

7.2.10 Table of Available Component Subprograms contained in OCAB.LIB Program.
 Components are hydraulic or air actuated valves that are remotely located away from the pump and not on its valve stack. They can include pneumatic confirmation valves.

Program Name	Position 1	Position 2	Position 3	Position 4
OC1AT	COMPONENT	1	A PORT	TRUE, ON
OC1AF	COMPONENT	1	A PORT	FALSE, OFF
OC1BT	COMPONENT	1	B PORT	TRUE, ON
OC1BF	COMPONENT	1	B PORT	FALSE, OFF
OC2AT	COMPONENT	2	A PORT	TRUE, ON
OC2AF	COMPONENT	2	A PORT	FALSE, OFF
OC2BT	COMPONENT	2	B PORT	TRUE, ON
OC2BF	COMPONENT	2	B PORT	FALSE, OFF
OC3AT	COMPONENT	3	A PORT	TRUE, ON
OC3AF	COMPONENT	3	A PORT	FALSE, OFF
OC3BT	COMPONENT	3	B PORT	TRUE, ON
OC3BF	COMPONENT	3	B PORT	FALSE, OFF
OC4AT	COMPONENT	4	A PORT	TRUE, ON
OC4AF	COMPONENT	4	A PORT	FALSE, OFF
OC4BT	COMPONENT	4	B PORT	TRUE, ON
OC4BF	COMPONENT	4	B PORT	FALSE, OFF
OC5AT	COMPONENT	5	A PORT	TRUE, ON
OC5AF	COMPONENT	5	A PORT	FALSE, OFF
OC5BT	COMPONENT	5	B PORT	TRUE, ON
OC5BF	COMPONENT	5	B PORT	FALSE, OFF
OC6AT	COMPONENT	6	A PORT	TRUE, ON
OC6AF	COMPONENT	6	A PORT	FALSE, OFF
OC6BT	COMPONENT	6	B PORT	TRUE, ON
OC6BF	COMPONENT	6	B PORT	FALSE, OFF
OC7AT	COMPONENT	7	A PORT	TRUE, ON
OC7AF	COMPONENT	7	A PORT	FALSE, OFF
OC7BT	COMPONENT	7	B PORT	TRUE, ON
OC7BF	COMPONENT	7	B PORT	FALSE, OFF
OC8AT	COMPONENT	8	A PORT	TRUE, ON
OC8AF	COMPONENT	8	A PORT	FALSE, OFF
OC8BT	COMPONENT	8	B PORT	TRUE, ON
OC8BF	COMPONENT	8	B PORT	FALSE, OFF

7.2.11 Table of Available Component Pressure Switch Subprograms contained in OQAB.LIB Program. These pressure switches are associated with the Component valves in Section 7.2.10. They can include air sensing control pressure switches.

Program Name	Position 1	Position 2	Position 3	Position 4
OQ1AT	COMPONENT PRESSURE SWITCH	1	A PORT	TRUE, ON
OQ1AF	COMPONENT PRESSURE SWITCH	1	A PORT	FALSE, OFF
OQ1BT	COMPONENT PRESSURE SWITCH	1	B PORT	TRUE, ON
OQ1BF	COMPONENT PRESSURE SWITCH	1	B PORT	FALSE, OFF
OQ2AT	COMPONENT PRESSURE SWITCH	2	A PORT	TRUE, ON
OQ2AF	COMPONENT PRESSURE SWITCH	2	A PORT	FALSE, OFF
OQ2BT	COMPONENT PRESSURE SWITCH	2	B PORT	TRUE, ON
OQ2BF	COMPONENT PRESSURE SWITCH	2	B PORT	FALSE, OFF
OQ3AT	COMPONENT PRESSURE SWITCH	3	A PORT	TRUE, ON
OQ3AF	COMPONENT PRESSURE SWITCH	3	A PORT	FALSE, OFF
OQ3BT	COMPONENT PRESSURE SWITCH	3	B PORT	TRUE, ON
OQ3BF	COMPONENT PRESSURE SWITCH	3	B PORT	FALSE, OFF
OQ4AT	COMPONENT PRESSURE SWITCH	4	A PORT	TRUE, ON
OQ4AF	COMPONENT PRESSURE SWITCH	4	A PORT	FALSE, OFF
OQ4BT	COMPONENT PRESSURE SWITCH	4	B PORT	TRUE, ON
OQ4BF	COMPONENT PRESSURE SWITCH	4	B PORT	FALSE, OFF
OQ5AT	COMPONENT PRESSURE SWITCH	5	A PORT	TRUE, ON
OQ5AF	COMPONENT PRESSURE SWITCH	5	A PORT	FALSE, OFF
OQ5BT	COMPONENT PRESSURE SWITCH	5	B PORT	TRUE, ON
OQ5BF	COMPONENT PRESSURE SWITCH	5	B PORT	FALSE, OFF
OQ6AT	COMPONENT PRESSURE SWITCH	6	A PORT	TRUE, ON
OQ6AF	COMPONENT PRESSURE SWITCH	6	A PORT	FALSE, OFF
OQ6BT	COMPONENT PRESSURE SWITCH	6	B PORT	TRUE, ON
OQ6BF	COMPONENT PRESSURE SWITCH	6	B PORT	FALSE, OFF
OQ7AT	COMPONENT PRESSURE SWITCH	7	A PORT	TRUE, ON
OQ7AF	COMPONENT PRESSURE SWITCH	7	A PORT	FALSE, OFF
OQ7BT	COMPONENT PRESSURE SWITCH	7	B PORT	TRUE, ON
OQ7BF	COMPONENT PRESSURE SWITCH	7	B PORT	FALSE, OFF
OQ8AT	COMPONENT PRESSURE SWITCH	8	A PORT	TRUE, ON
OQ8AF	COMPONENT PRESSURE SWITCH	8	A PORT	FALSE, OFF
OQ8BT	COMPONENT PRESSURE SWITCH	8	B PORT	TRUE, ON
OQ8BF	COMPONENT PRESSURE SWITCH	8	B PORT	FALSE, OFF

7.2.12 Table of Available Component Intermediate Subprograms contained in OCI.LIB Program. These remotely located, sandwich type, 2-position / 3-way, pressure reducing valves are used to lower the line pressure just before entering the directional control valve. They are associated with the component valves in Section 7.2.10.

Program Name	Position 1	Position 2	Implied	Position 4
OCI1T	COMPONENT INTERMEDIATE	1	A PORT	TRUE, ON
OCI1F	COMPONENT INTERMEDIATE	1	A PORT	FALSE, OFF
OCI2T	COMPONENT INTERMEDIATE	2	A PORT	TRUE, ON
OCI2F	COMPONENT INTERMEDIATE	2	A PORT	FALSE, OFF
OCI3T	COMPONENT INTERMEDIATE	3	A PORT	TRUE, ON
OCI3F	COMPONENT INTERMEDIATE	3	A PORT	FALSE, OFF
OCI4T	COMPONENT INTERMEDIATE	4	A PORT	TRUE, ON
OCI4F	COMPONENT INTERMEDIATE	4	A PORT	FALSE, OFF
OCI5T	COMPONENT INTERMEDIATE	5	A PORT	TRUE, ON
OCI5F	COMPONENT INTERMEDIATE	5	A PORT	FALSE, OFF
OCI6T	COMPONENT INTERMEDIATE	6	A PORT	TRUE, ON
OCI6F	COMPONENT INTERMEDIATE	6	A PORT	FALSE, OFF
OCI7T	COMPONENT INTERMEDIATE	7	A PORT	TRUE, ON
OCI7F	COMPONENT INTERMEDIATE	7	A PORT	FALSE, OFF
OCI8T	COMPONENT INTERMEDIATE	8	A PORT	TRUE, ON
OCI8F	COMPONENT INTERMEDIATE	8	A PORT	FALSE, OFF

7.2.13 Table of Available Component Intermediate Pressure Switch Subprograms contained in OQI.LIB Program. These remotely located pressure switches are associated with the Component Intermediate valves in Section 7.2.12

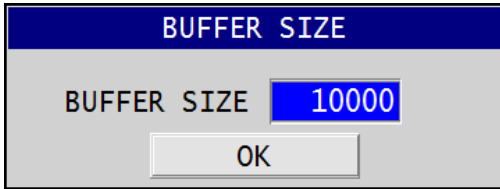
Program Name	Position 1	Position 2	Implied	Position 4
OQI1T	COMP INTER PRESS SWITCH	1	A PORT	TRUE, ON
OQI1F	COMP INTER PRESS SWITCH	1	A PORT	FALSE, OFF
OQI2T	COMP INTER PRESS SWITCH	2	A PORT	TRUE, ON
OQI2F	COMP INTER PRESS SWITCH	2	A PORT	FALSE, OFF
OQI3T	COMP INTER PRESS SWITCH	3	A PORT	TRUE, ON
OQI3F	COMP INTER PRESS SWITCH	3	A PORT	FALSE, OFF
OQI4T	COMP INTER PRESS SWITCH	4	A PORT	TRUE, ON
OQI4F	COMP INTER PRESS SWITCH	4	A PORT	FALSE, OFF
OQI5T	COMP INTER PRESS SWITCH	5	A PORT	TRUE, ON
OQI5F	COMP INTER PRESS SWITCH	5	A PORT	FALSE, OFF
OQI6T	COMP INTER PRESS SWITCH	6	A PORT	TRUE, ON
OQI6F	COMP INTER PRESS SWITCH	6	A PORT	FALSE, OFF
OQI7T	COMP INTER PRESS SWITCH	7	A PORT	TRUE, ON
OQI7F	COMP INTER PRESS SWITCH	7	A PORT	FALSE, OFF
OQI8T	COMP INTER PRESS SWITCH	8	A PORT	TRUE, ON
OQI8F	COMP INTER PRESS SWITCH	8	A PORT	FALSE, OFF

7.2.14 Table of Available Valve and Component Reset Subprograms contained in OVCRS.LIB Library Program. These are used to reset the Common Variable Value to OFF or 0 at the end of an unclamping program sequence or to troubleshoot a program sequence in MDI mode.

Program Name	Position 1	Position 2	Implied	Position 4
OVRS	VALVE	ALL	A&B PORT	RESET OFF
OVIRS	VALVE INTERMEDIATE	ALL	A&B PORT	RESET OFF
OCRS	COMPONENT	ALL	A&B PORT	RESET OFF
OCIRS	COMPONENT INTERMEDIATE	ALL	A&B PORT	RESET OFF

8.0 Register each AWP Library Program to be used for AWP configuration per Okuma Pocket Manual Instructions installed on CNC machine.

8.1 **Important:** Set program Buffer size to a minimum of 10000 to ensure subprograms can be loaded. Select "OK" to save value.

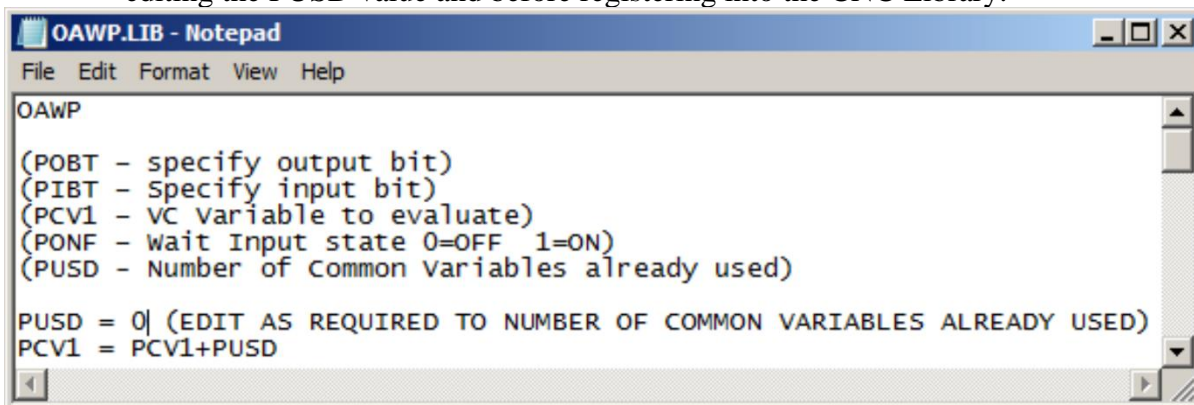


8.2 **Important:** A maximum of 65 subprograms can be registered at one time in the Buffer. Not all subprograms contained in the Library programs may be needed, depending on the AWP valve and component configuration. It may be necessary to edit and edit the unused subprograms from the Library programs in **D:MD1** to satisfy the maximum number of 65 subprograms that can be register at one time in the Buffer. Edit and save the Library programs as needed to satisfy this requirement.

- 8.2.1 OAWP.LIB – Contains 1 subprogram (**Edit PUSD value only**)
- 8.2.2 OVAB.LIB – Contains 24 Valve subprograms.
- 8.2.3 OPAB.LIB – Contains 24 Pressure Switch subprograms.
- 8.2.4 OVI.LIB – Contains 12 Valve Intermediate subprograms
- 8.2.5 OPI.LIB – Contains 12 Pressure Switch Intermediate subprograms
- 8.2.6 OCAB.LIB – Contains 32 Component subprograms.
- 8.2.7 OQAB.LIB – Contains 32 Component Pressure Switch subprograms.
- 8.2.8 OCI.LIB – Contains 16 Component Intermediate subprograms.
- 8.2.9 OQI.LIB – Contains 16 Component Intermediate Pressure Switch subprograms.
- 8.2.10 OVCRS.LIB – Contains 4 Reset subprograms. (**Edit PUSD value only**)

8.3 OAWP.LIB and OVCRS.LIB must be opened and edited before it can be registered. Edit PUSD = value to the number of Common Variables number just before the Common Variable Start point entered in Section 1.9.1.1.

8.3.1 Example: If Common Variables 1-10 are in use and the Common Variable Start point entered is 11, then PUSD = 10. This will adjust the Common Variable index number to enter input/output bit values into the subprogram. Save the library program after editing the PUSD value and before registering into the CNC Library.



8.4 Example of OVAB.LIB after editing for 2 valves and unneeded commands removed.

(VALVE COMMAND LIBRARY)

OV1AT
CALL OAWP POBT=0 PCV1=11 PONF=1
N900 RTS

OV1AF
CALL OAWP POBT=0 PCV1=11 PONF=0
N900 RTS

OV1BT
CALL OAWP POBT=1 PCV1=11 PONF=1
N900 RTS

OV1BF
CALL OAWP POBT=1 PCV1=11 PONF=0
N900 RTS

OV2AT
CALL OAWP POBT=2 PCV1=11 PONF=1
N900 RTS

OV2AF
CALL OAWP POBT=2 PCV1=11 PONF=0
N900 RTS

OV2BT
CALL OAWP POBT=3 PCV1=11 PONF=1
N900 RTS

OV2BF
CALL OAWP POBT=3 PCV1=11 PONF=0
N900 RTS

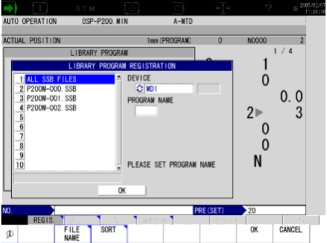
8.5 See Okuma Pocket Manual Instructions to Register AWP Library Program as shown below. Automatic registration of AWP Library Program can be accomplished using the default *.LIB statement provided they do not exceed the buffer size entered and maximum number of 65 subprograms.

Registering a Library Program

The procedure below shows the procedure for registering a library program.

1 Select [F1] (REGIS.) from the pop-up function menu.

The LIBRARY PROGRAM REGISTRATION window is displayed.



LIBRARY PROGRAM REGISTRATION Pop-up Window

ME32094R0101000400001

2 Select a file in the file list and input a program name in the PROGRAM NAME column.

To move the cursor from the file list to the PROGRAM NAME input area or other input area, use the cursor keys.

3 Select [F7] (OK).

1) If you select "ALL SSB FILES", a subprogram is searched in all of the system subprogram files (SSB file) and found subprograms are all registered as a library program.

2) If the entry of a program name is skipped, a subprogram is searched in the selected files and found subprograms are all registered as a library program.

3) Up to 65 subprograms may be registered.

4) A main program cannot be registered as a library program.

9.0 AWP Test Programs for Okuma CNC mill will be copied during the Vektek AWP App installation to the **D:\Program Files (x86)\Vektek AWP\AWP Test Programs** folder location. Final installation will need to be performed manually.

9.1 Test Programs are included for initial setup and testing of workholding devices. These are provided for customer convenience and can be copied and edited in Notepad as needed for the AWP configuration as delivered. Copy and paste directly into the folder **D:\MD1** folder if needed. Edit test programs to include only those commands needed.

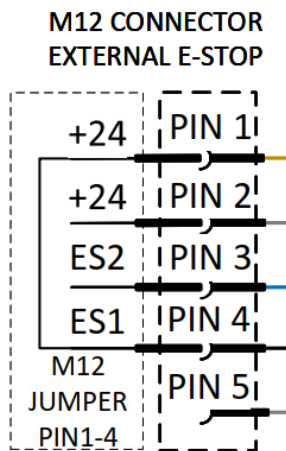
- 9.1.1 TESTV123456VP.MIN - Turn each Valve, True On, wait for Pressure Switch acknowledgement, turn each Valve, False Off
- 9.1.2 TESTV123456AT.MIN - Turn All Valves, A Port, True On
- 9.1.3 TESTV123456AF.MIN - Turn All Valves, A Port, False Off
- 9.1.4 TESTV123456BT.MIN - Turn All Valves, B Port, True On
- 9.1.5 TESTV123456BF.MIN - Turn All Valves, B Port, False Off
- 9.1.6 TESTC123456AT.MIN - Turn All Components, A Port, True On
- 9.1.7 TESTC123456AF.MIN - Turn All Components, A Port, False Off
- 9.1.8 TESTC123456BT.MIN - Turn All Components, B Port, True On)
- 9.1.9 TESTC123456BF.MIN - Turn All Components, B Port, False Off
- 9.1.10 ALARM_GENERATOR.MIN - Configure to test Alarm Class A, B, C, D
- 9.1.11 BLANK.MIN - Contains no subprograms so it can be loaded when editing other programs

9.2 It may be necessary to turn program buffering off before clamping commands and back on after unclamping commands in order to sequence each of the commands. If sequencing is not needed and all can be executed simultaneously, there is no need to add these parameters to the programs.

9.2.1 VOPRB[2]=192 (turn program buffering off)

9.2.2 VOPRB[2]=64 (turn program buffering on)

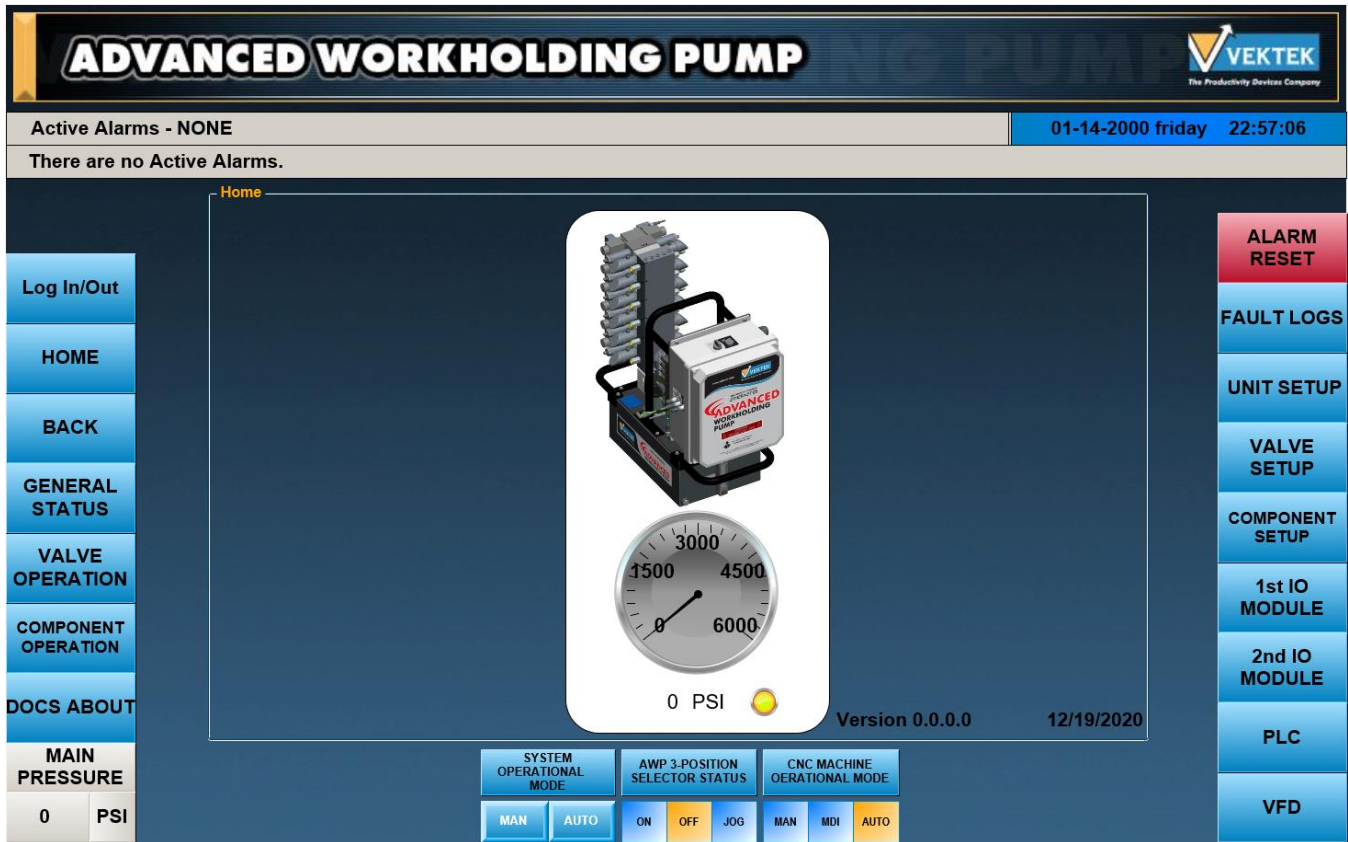
10.0 Emergency Stop installation between the CNC machine and the AWP is accomplished by connecting the M12 cable from the AWP Emergency Stop port on the enclosure to the CNC machine emergency stop relay. By-directional E-Stop communication is possible if both the CNC machine and AWP wire sets are connected. The AWP is shipped with a jumper connector installed on the Emergency Stop M12 port Pin 1 and Pin 4 for CNC machine E-Stop so the AWP will operate by default. Pin 2 and Pin 3 can be connected to send AWP E-Stop signal from the AWP to CNC machine if required.

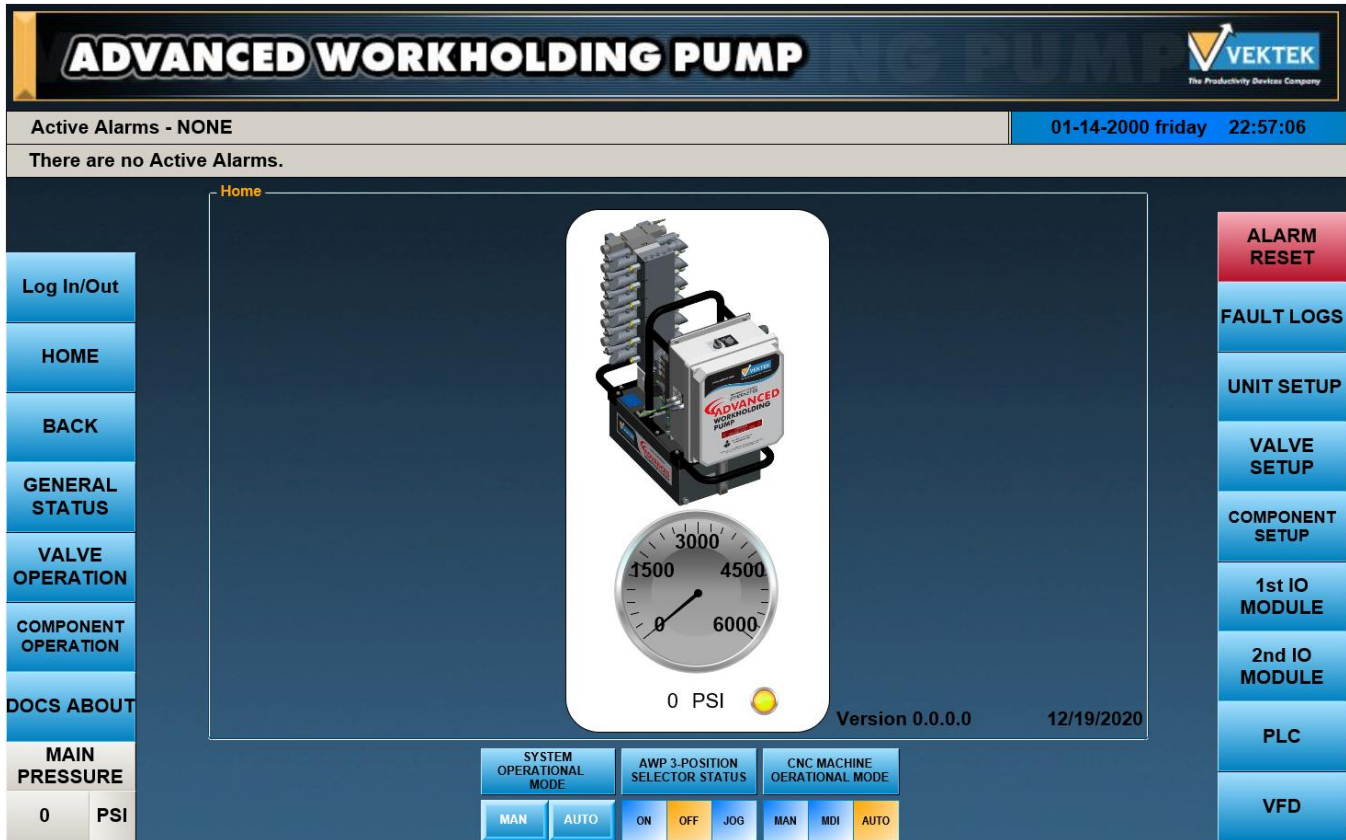


SECTION IV

APPLICATION OPERATIONS

1.0 The AWP Web Server Application (WSA) is accessed via a browser window embedded in the Okuma OSP control system screen. This includes a touch screen interface to allow the operator to navigate the application screens by selecting the vertical column of buttons on the left or the right side the application window. At startup, the application begins at the **HOME** screen as shown below. The Alarms banner is displayed at the top of the screen to show any Active Alarms or NONE and includes a short and long description. This screen also displays the Main System Pressure in both the center gauge and the digital display in the lower left-hand corner.





1.1 The **SYSTEM OPERATIONAL MODE** is located at the bottom left center of the **HOME** screen. Select the mode to activate the system control desired.

1.1.1 **MAN** mode is used for manual control of the valves or components during initial setup of the part fixture or other hydraulic system.

1.1.2 **AUTO** mode is used for automatic control of the valves or components by the CNC machine and will start in this operational mode if the CNC Machine Operation Mode is set to **AUTO**.

1.2 **AWP 3-POSITION SELECTOR STATUS** is located at the bottom center of the Home Screen. This indicates the switch status of **ON**, **OFF**, **JOG** depending on the actual position of the selector switch on top of the AWP enclosure.

1.2.1 Turn switch to **ON** to enable the pump motor to run.

1.2.2 Turn switch to **OFF** to disable the pump motor from running.

1.2.3 Turn and hold the switch to **JOG** to turn the pump motor to prime the pump.

1.3 **CNC MACHINE OPERATIONAL MODE** is located at the bottom right center of the **HOME** screen. This indicates the current mode status of the CNC machine, either **MAN**, **MDI**, or **AUTO**.

2.0 The LOG IN/OUT screen is located just above the HOME screen button. This screen allows for access and control of the setup and diagnostic system of the AWP. There are 3 levels of access to the AWP control systems as described below.

2.1 OPERATOR – No password protection.

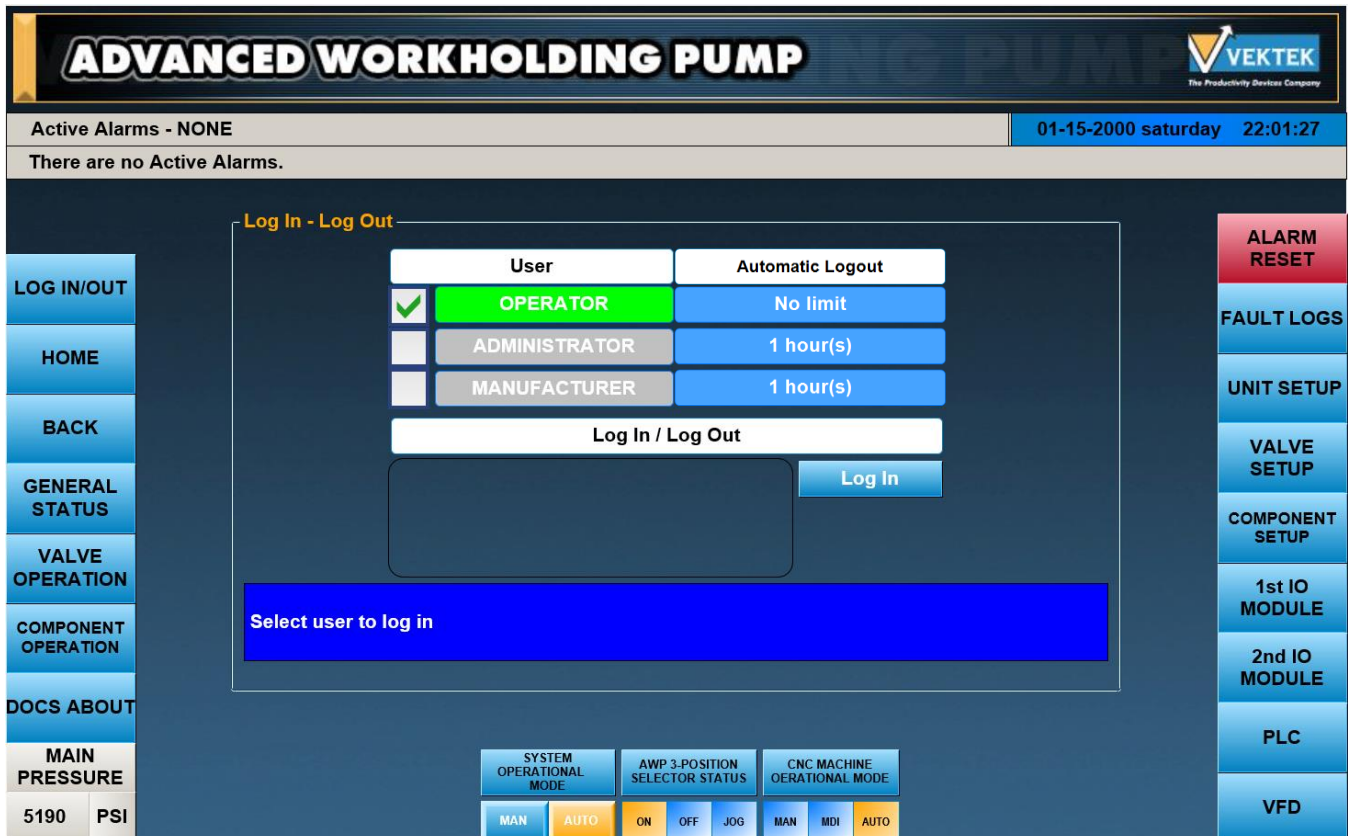
- 2.1.1 The Operator has view and operation control of the application screens that are accessed using the vertical buttons on the left side of the screen.
- 2.1.2 The Operator has view only capability of those setup and diagnostic screens that are accessed using the vertical buttons on the right side of the screen.

2.2 ADMINISTRATOR – User created password protection.

- 2.2.1 The Administrator has full view and operational control of all application screens accessed using the vertical buttons on the left and right side of the screen.
- 2.2.2 Exception: The Administrator does not have setup access to the Drive Type parameter on the VFD screen. This is reserved for the Manufacturer level access.
- 2.2.3 Automatic Logout of the Administrator will occur after the programmable time value shown. This value can be edited after initial login from 1 hour to 9 hours in 1-hour increments depending on the estimated time to complete any changes.

2.3 . MANUFACTURER – Vektek created password protection.

- 2.3.1 The Manufacturer has full view and operational control of all application screens accessed using the vertical buttons on the left and right side of the screen.
- 2.3.2 Automatic Logout of the Manufacturer will occur after the programmable time value shown. This value can be edited after initial login from 1 hour to 9 hours in 1-hour increments depending on the estimated time to complete any changes.



2.4 Administrator user access is granted by selecting the check box to the left of the User ADMINISTRATOR. The user is prompted to select the Enter Password field, edit the ##### with the correct password value, and then select the Log In button.

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Devices Company

Active Alarms - NONE 01-15-2000 saturday 22:03:08

There are no Active Alarms.

LOG IN/OUT

HOME

BACK

GENERAL STATUS

VALVE OPERATION

COMPONENT OPERATION

DOCS ABOUT

MAIN PRESSURE

4998 PSI

Log In - Log Out

User	Automatic Logout
<input type="checkbox"/> OPERATOR	No limit
<input checked="" type="checkbox"/> ADMINISTRATOR	1 hour(s)
<input type="checkbox"/> MANUFACTURER	1 hour(s)

Log In / Log Out

Enter Password

#####

Log In

Type the Administrator password and then, select Log In

ALARM RESET

FAULT LOGS

UNIT SETUP

VALVE SETUP

COMPONENT SETUP

1st IO MODULE

2nd IO MODULE

PLC

VFD

SYSTEM OPERATIONAL MODE	AWP 3-POSITION SELECTOR STATUS	CNC MACHINE OPERATIONAL MODE
MAN AUTO	ON OFF JOG	MAN MDI AUTO

2.5 The default ADMINISTRATOR user password is ADMINISTRATOR as shown below.

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Devices Company

Active Alarms - NONE 01-15-2000 saturday 22:05:16

There are no Active Alarms.

LOG IN/OUT

HOME

BACK

GENERAL STATUS

VALVE OPERATION

COMPONENT OPERATION

DOCS ABOUT

MAIN PRESSURE

4890 PSI

Log In - Log Out

User	Automatic Logout
<input type="checkbox"/> OPERATOR	No limit
<input checked="" type="checkbox"/> ADMINISTRATOR	1 hour(s)
<input type="checkbox"/> MANUFACTURER	1 hour(s)

Log In / Log Out

Enter Password

ADMINISTRATOR

Log In

Type the Administrator password and then, select Log In

ALARM RESET

FAULT LOGS

UNIT SETUP

VALVE SETUP

COMPONENT SETUP

1st IO MODULE

2nd IO MODULE

PLC

VFD

SYSTEM OPERATIONAL MODE	AWP 3-POSITION SELECTOR STATUS	CNC MACHINE OPERATIONAL MODE
MAN AUTO	ON OFF JOG	MAN MDI AUTO

- 2.6 After entering the password ADMINISTRATOR for the first time or after it has been reset, a new password must be entered twice for accuracy.
- 2.7 Select and edit the Enter New Password field with the new password value.



- 2.8 Select and edit the Confirm New Password field ##### with the same value. If the same value is not entered in both fields, the process will not be completed until it is entered correctly.

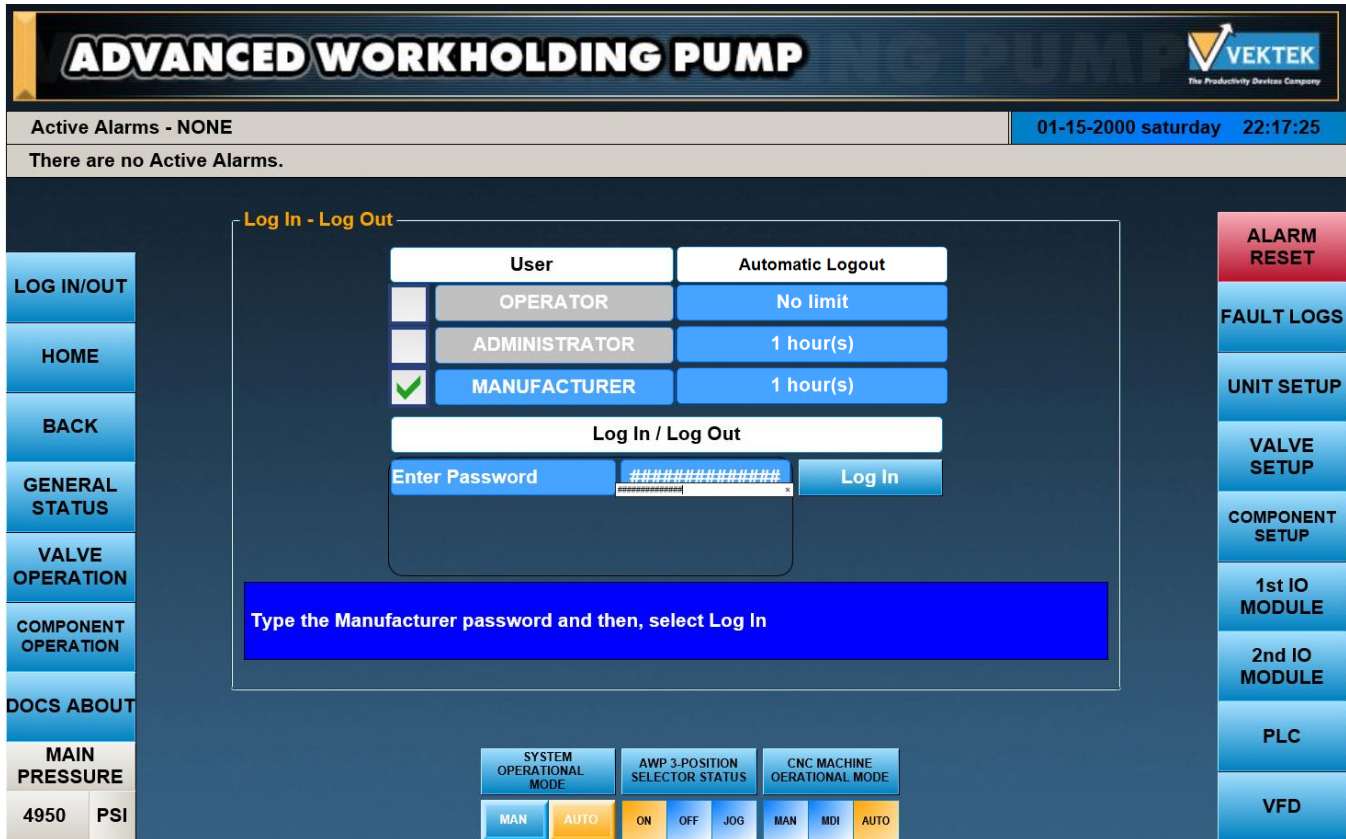


2.9 To complete the login in process, select and edit the Enter Password field #####, enter the new password, and select Log In.



- 2.10 Administrator user access is available for the programmable time value before this access times out. When all setup is complete, the Administrator access can be stopped by selecting the Log Out button on screen.
- 2.11 ***Important:*** Write the new Administrator password down here or keep in a safe place for future reference. _____ (maximum of 14 characters)
- 2.12 The Administrator Password can be reset in the event of it being lost or forgotten. Please contact Vektek Customer Support for assistance in resetting this password.

2.13 Manufacturer user access is granted by selecting the check box to the left of the User MANUFACTURER. After selecting this level, the user is prompted to select the Enter Password field, edit the ##### with the correct password value, and then select the Log In button.



2.14 Manufacturer level access is now available for the programmable time value before this access times out. When all setup is complete, the Manufacturer access can be stopped by selecting the Log Out button on screen.

2.15 **Important:** The Manufacturer level password is protected and can only be used by authorized Vektek personnel. This password will not be disclosed to customer Operators or Administrators under any circumstances.

3.0 **BACK** button can be selected at any time to return to the previous application screen.

4.0 **GENERAL STATUS** button displays 1 of 2 screens depending on which is selected at the lower left of the display. Select the status screen that is applicable for the current pump configuration to monitor valves or components, pressure switches, and intermediate valves or components during normal operation of the CNC machine in **AUTO** mode. LED lights indicate those that have been activated, either manually in the operation screen or automatically by the CNC machine. Acknowledgement pressure switch lights are activated when the hydraulic pressure in the circuit reaches the pressure switch set point SP1 value that has been programmed in the pressure switch parameters. **Important:** Valves are those configure on the pump valve stack mounted to the pump manifold. Components are those configured off the pump on remote manifolds or directly on the part fixture. Alias name for each circuit is displayed on the **GENERAL STATUS** screen and can be configured by the operator in the **VALVE SETUP** and **COMPONENT SETUP** screens as needed. **ALARMS/MESSAGES** will be displayed in the right column for each circuit as they occur.

4.1 **VALVE STATUS** displays all valves, pressure switches, and intermediate valves that have been configured in the **VALVE SETUP** screens for this pump configuration. From 1-6 valve circuits can be displayed as shown below.

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Services Company

Active Alarms - NONE 12-02-2020 wednesday 16:15:09

Hydraulic Valves Status

	ALIAS	POS	TYPE	PS B	VB	V A	PS A	V INT	PS INT	ALARMS/essages
LOG IN/OUT	WORK SUPPORT 6	6	2/3 NC			V6A	PS6A	VINT6	PSINT6	No active faults
HOME	LINK CLAMP 5	5	3/4 CC	PS5B	V5B	V5A	PS5A	VINT5	PSINT5	No active faults
BACK	WORK SUPPORT 4	4	2/3 NC			V4A	PS4A	VINT4	PSINT4	No active faults
GENERAL STATUS	LOW PRESSURE INTERMEDIATE 3	3	2/3 NO-PRV	PS3B	V3B	V3A	PS3A	VINT3	PSINT3	No active faults
VALVE OPERATION	SWING CLAMP 2	2	3/4 CC	PS2B	V2B	V2A	PS2A	VINT2	PSINT2	No active faults
COMPONENT OPERATION	SAFETY DUMP 1	1	2/3 NC SAFETY			V1A	PS1A	VINT1	PSINT1	No active faults

ALARM RESET

FAULT LOGS

UNIT SETUP

VALVE SETUP

COMPONENT SETUP

1st IO MODULE

2nd IO MODULE

PLC

VFD

78 PSI

SWITCH TO VALVE SWITCH TO COMPONENT

SYSTEM OPERATIONAL MODE: MAN AUTO

AWP 3-POSITION SELECTOR STATUS: ON OFF JOG

CNC MACHINE OPERATIONAL MODE: MAN MDI AUTO

4.2 **COMPONENT STATUS** displays all components, pressure switches, and intermediate components that have been configured in the **COMPONENT SETUP** screen for this pump configuration. From 1-8 component circuits can be displayed as shown below.

ADVANCED WORKHOLDING PUMP

No active alarms
11-20-2020 friday 19:35:18

Component Status

	ALIAS	POS	TYPE	ACK B	CMP B	CMP A	ACK A	CMP INT	ACK INT	ALARMS/Messages
LOG IN/OUT	SWING CLAMP 1	1	3/4 CC							No active faults
HOME	SWING CLAMP 2	2	3/4 PBC							No active faults
BACK	LOW PRESSURE INTERMEDIATE 3	3	2/3 NO-PRV							No active faults
GENERAL STATUS	PULL CYLINDER, SA, 4	4	2/3 NO							No active faults
	PUSH CYLINDER, SA, 5	5	2/3 NC							No active faults
VALVE OPERATION	COLLET VISE, DA, 6	6	USER DEFINED							No active faults
COMPONENT OPERATION	AIR BLOW, 7	7	AIR-BLOW							No active faults
DOCS ABOUT		8	NONE							No active faults

MAIN PRESSURE
4998 PSI

SWITCH TO VALVE

SWITCH TO COMPONENT

SYSTEM OPERATIONAL MODE
 MAN AUTO

AWP 3-POSITION SELECTOR STATUS
 ON OFF JOG

CNC MACHINE OPERATIONAL MODE
 MAN MDI AUTO

PLC

VFD

ALARM RESET

FAULT LOGS

UNIT SETUP

VALVE SETUP

COMPONENT SETUP

1st IO MODULE

2nd IO MODULE

5.0 **VALVE OPERATION** screen allows manual control of all valve circuits during part fixture setup or during CNC machine malfunction. Select the **MAN** button at the lower left of the screen to enable manual valve control. Select individual valve solenoid buttons as needed to initiate hydraulic pressure in that circuit. Each button will light up to indicate that it is active when selected. Selecting the button again will de-activate the valve solenoid. Acknowledgement pressure switch lights are activated when the hydraulic pressure in the circuit reaches the pressure switch set point SP1 value that has been programmed in the pressure switch parameters. The lights will de-activate when pressure drops below the set point SP1 value.

Important: Manual valve control is enabled if the **AWP 3-POSITION SELECTOR STATUS** is in the **ON** or **OFF** position. When in the **ON** position, normal valve and circuit pressurization can be achieved. When in the **OFF** position, valves can be activated and de-activated repeatedly to dump all pressure in the valve circuit. Activating and de-activating all valves in the hydraulic system repeatedly will dump all pressure in all valve circuits and the pump manifold as shown on the main pressure switch mounted to the manifold. Power can then be removed from the pump to allow for maintenance and disconnection of components in the hydraulic circuit.

The screenshot displays the 'Unit Valve Manual Operation' screen. At the top, it shows 'Active Alarms - NONE' and the date/time '12-02-2020 wednesday 16:17:28'. The main area contains a table of valve configurations:

ALIAS and COMMENTS	POS	VALVE TYPE	PS B	VB	VA	PS A	V INT	PS INT
WORK SUPPORT 6	6	2/3 NC			V6A	PS6A		
LINK CLAMP 5	5	3/4 CC	PS5B	V5B	V5A	PS5A		
WORK SUPPORT 4	4	2/3 NC			V4A	PS4A		
LOW PRESSURE INTERMEDIATE 3	3	2/3 NO-PRV					VINT3	PSINT3
SWING CLAMP 2	2	3/4 CC	PS2B	V2B	V2A	PS2A		
SAFETY DUMP 1	1	2/3 NC SAFETY			V1A	PS1A		

Below the table is a pressure gauge showing 4656 PSI. At the bottom, there are control buttons for 'SYSTEM OPERATIONAL MODE' (MAN, AUTO), 'AWP 3-POSITION SELECTOR STATUS' (ON, OFF, JOG), and 'CNC MACHINE OPERATIONAL MODE' (MAN, MDI, AUTO). A vertical menu on the right includes options like 'ALARM RESET', 'FAULT LOGS', 'UNIT SETUP', 'VALVE SETUP', 'COMPONENT SETUP', '1st IO MODULE', '2nd IO MODULE', 'PLC', and 'VFD'.

6.0 **COMPONENT OPERATION** screen allows manual control of all component circuits during part fixture setup or during CNC machine malfunction. Select the **MAN** button at the lower left of the screen to enable manual component control. Select individual component solenoid buttons as needed to initiate hydraulic pressure in that circuit. Each button will light up to indicate that it is active when selected. Selecting the button again will de-activate the component solenoid. Acknowledgement pressure switch lights are activated when the hydraulic pressure in the circuit reaches the pressure switch set point SP1 value that has been programmed in the pressure switch parameters. The lights will de-activate when pressure drops below the set point SP1 value.

Important: Manual component control is enabled if the **AWP 3-POSITION SELECTOR STATUS** is in the **ON** or **OFF** position. When in the **ON** position, normal component and circuit pressurization can be achieved. When in the **OFF** position, components can be activated and de-activated repeatedly to dump all pressure in the component circuit. Activating and de-activating all components in the hydraulic system repeatedly will dump all pressure in all component circuits and the pump manifold as shown on the main pressure switch mounted to the manifold. Power can then be removed from the pump to allow for maintenance and disconnection of components in the hydraulic circuit.

Component Manual Operation

ALIAS and COMMENTS	POS	COMPONENT TYPE	PSC B	C B	C A	PSC A	C INT	PSC INT
SWING CLAMP 1	1	3/4 CC		C1B	C1A			
SWING CLAMP 2	2	3/4 PBC		C2B	C2A			
LOW PRESSURE INTERMEDIATE 3	3	2/3 NO-PRV					CINT3	
PULL CYLINDER, SA, 4	4	2/3 NO			C4A			
PUSH CYLINDER, SA, 5	5	2/3 NC			C5A			
COLLET VISE, DA, 6	6	USER DEFINED		C6B	C6A			
AIR BLOW, 7	7	AIR-BLOW			C7A			
	8	NONE						

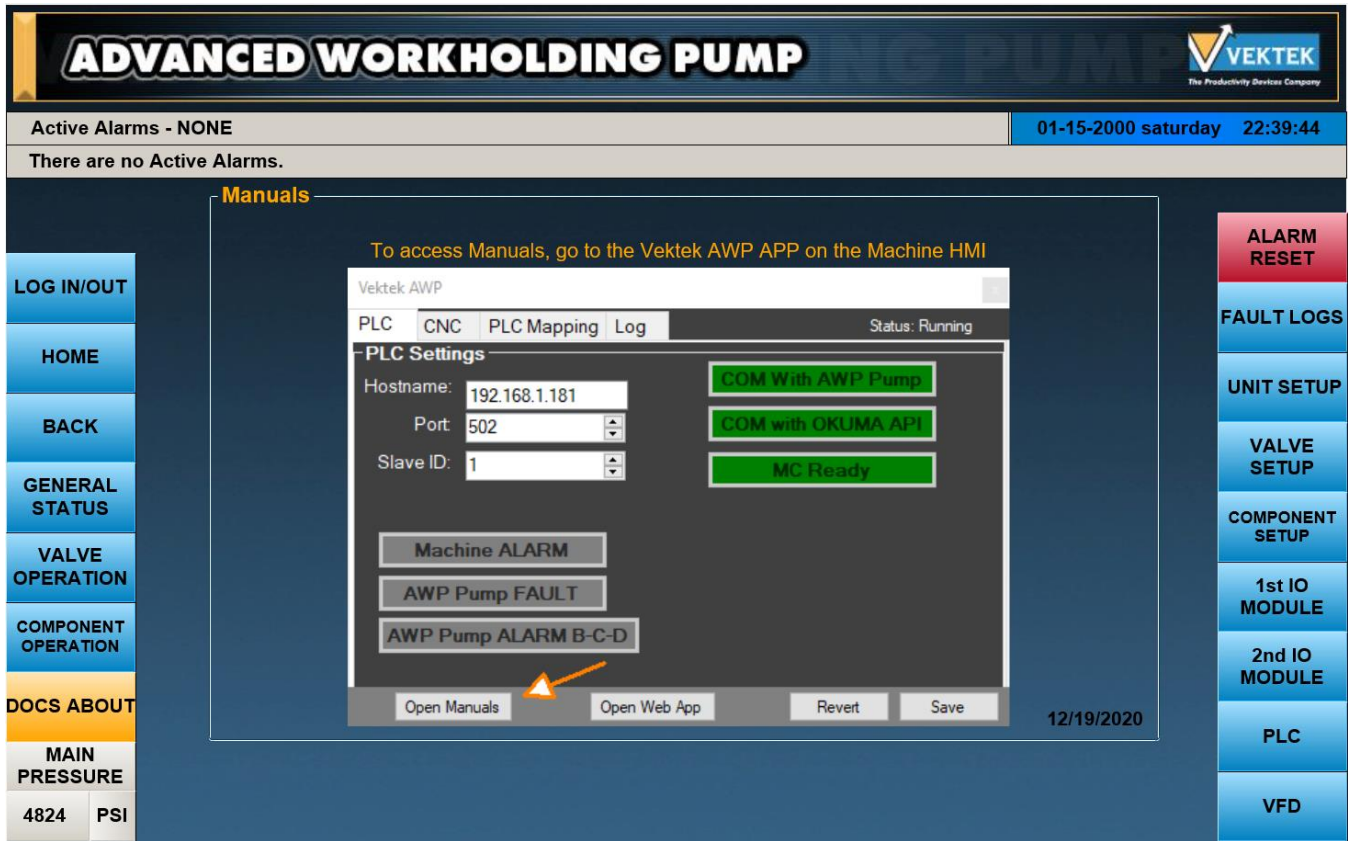
MAIN PRESSURE: 4704 PSI

SYSTEM OPERATIONAL MODE: MAN AUTO

AWP 3-POSITION SELECTOR STATUS: ON OFF JOG

CNC MACHINE OPERATIONAL MODE: MAN MDI AUTO

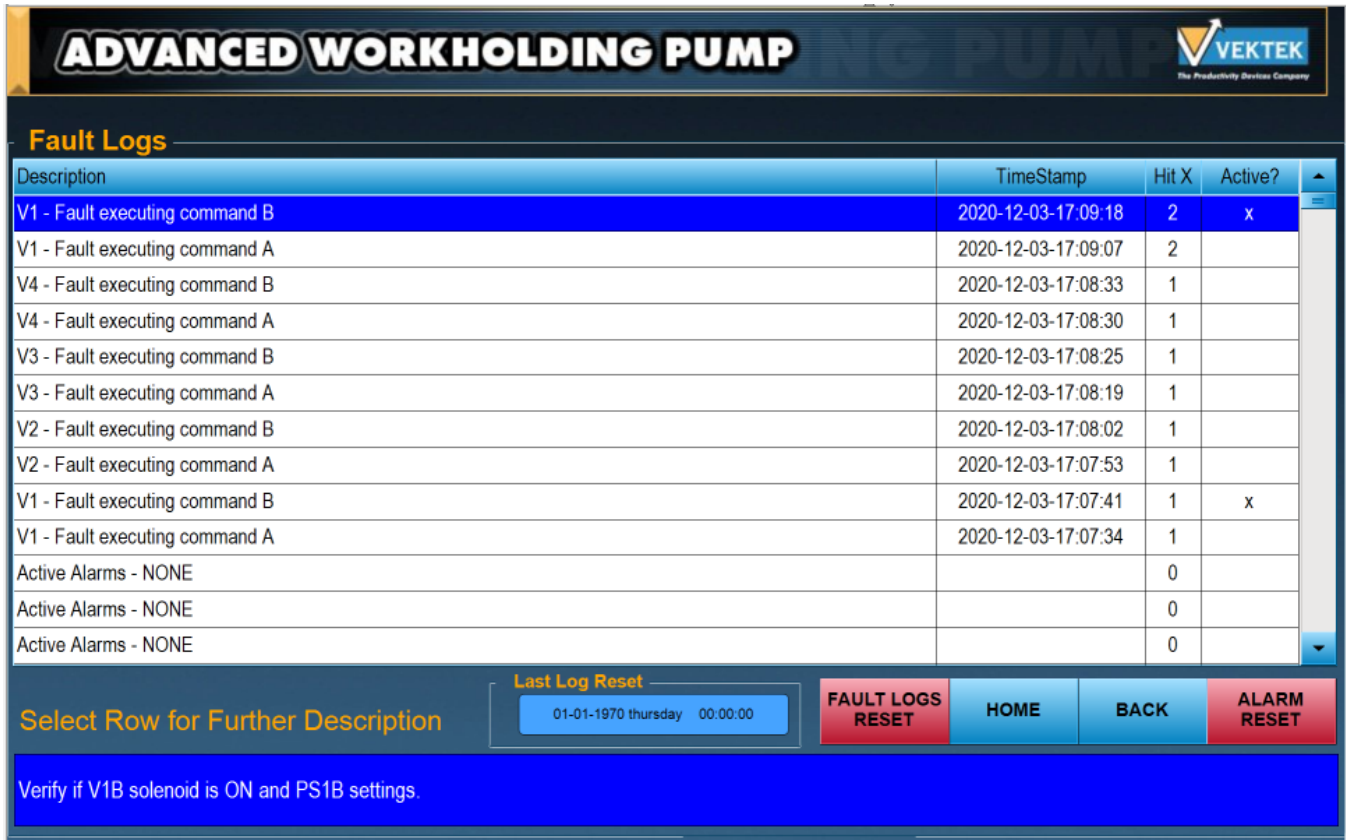
7.0 **DOCS ABOUT** screen directs the operator to the AWP Thin App Operations manual and the AWP Parts List Manual. Select the link in the Vektek AWP APP to open each in pdf viewer format.




8.0 **MAIN PRESSURE** is the system pressure on the main manifold pressure switch and is displayed on the lower left field of all screens real time.

9.0 **ALARM RESET** button is located at the upper right of all screens. Select this button to reset all AWP alarms after the issue that caused the alarm has been corrected.

10.0 **FAULT LOGS** button is located at the upper right, just below **ALARM RESET** button. Select this button to open the Fault Logs file to review all active and inactive faults. Each fault can then be selected to show the long description at the bottom of the screen. Each fault type can be found in the Trouble Shooting section of this manual along with a more detailed description of each, the typical cause, and the resolution of the fault. The **Time Stamp** of each fault is recorded as shown along with the **Hit X** (number of times the fault has occurred), and **Active?** marked with an **X** if the fault is still active. After resolving the cause of each fault, and selecting the **ALARM RESET**, the fault log can be cleared of past faults by selecting the **FAULT LOGS RESET** button at the bottom of the screen. Select **HOME** or **BACK** button to return to the previous screen and normal operation.



ADVANCED WORKHOLDING PUMP 

Fault Logs

Description	TimeStamp	Hit X	Active?
V1 - Fault executing command B	2020-12-03-17:09:18	2	x
V1 - Fault executing command A	2020-12-03-17:09:07	2	
V4 - Fault executing command B	2020-12-03-17:08:33	1	
V4 - Fault executing command A	2020-12-03-17:08:30	1	
V3 - Fault executing command B	2020-12-03-17:08:25	1	
V3 - Fault executing command A	2020-12-03-17:08:19	1	
V2 - Fault executing command B	2020-12-03-17:08:02	1	
V2 - Fault executing command A	2020-12-03-17:07:53	1	
V1 - Fault executing command B	2020-12-03-17:07:41	1	x
V1 - Fault executing command A	2020-12-03-17:07:34	1	
Active Alarms - NONE		0	
Active Alarms - NONE		0	
Active Alarms - NONE		0	

Select Row for Further Description 01-01-1970 thursday 00:00:00

FAULT LOGS RESET **HOME** **BACK** **ALARM RESET**

Verify if V1B solenoid is ON and PS1B settings.

11.0 **UNIT SETUP and Status** screen is used to setup the base unit parameters and monitor the system status for Ethernet communications and sensors throughout the AWP.

11.1 **Pressure Unit** parameter can be set to **PSI** or **Bar** and these units will be reflected on all screens where pressure is displayed.

11.2 **Feedback** parameter can be set to **UNIT SETUP** or **DIGITAL PS SIGNAL** as preferred by the operator.

11.2.1 **UNIT SETUP** parameter allows for all main system pressure values to be set on this screen by the operator. The parameter values in the main manifold pressure switch are ignored.

11.2.1.1 **Pressure Switch Analog End of Scale** should be set to the same value as the Analog End Value parameter (AEP) in the manifold mounted pressure switch. Refer to the pressure switch specifications.

11.2.1.1.1 High-Pressure – 6000 PSI or 400 Bar

11.2.1.1.2 Low-Pressure – 1500 PSI or 100 Bar

11.2.1.2 **Maximum System Pressure (Alarm)** can be set to any value in the operating range of the pump. An Alarm will be generated in the ALARMS AND MESSAGES field if this value is achieved in the system pressure. This will allow the operator to determine the cause of the system pressure that exceeded the programmed value and correct it before damage is caused to any hydraulic system component.

11.2.1.2.1 High-Pressure – 1500-6000 PSI or 100-400 Bar

11.2.1.2.2 Low-Pressure – 300-1500 PSI or 20-100 Bar

11.2.1.3 **System Pressure Set Point (SP1)** can be set to any value from in the operating range of the pump.

11.2.1.3.1 High-Pressure – 1500-5000 PSI or 100-350 Bar

11.2.1.3.2 Low-Pressure – 300-1500 PSI or 20-100 Bar

11.2.1.4 **System Pressure Reset Point (RP1)** can be set to any value a minimum of **10 PSI or 0.7 Bar** below the SP1 value. **Important:** *It is recommended to allow at least 10% below the SP1 value to avoid nuisance cycling of the pump motor.*

ADVANCED WORKHOLDING PUMP





Active Alarms - NONE

07-06-2023 Thursday 08:55:38

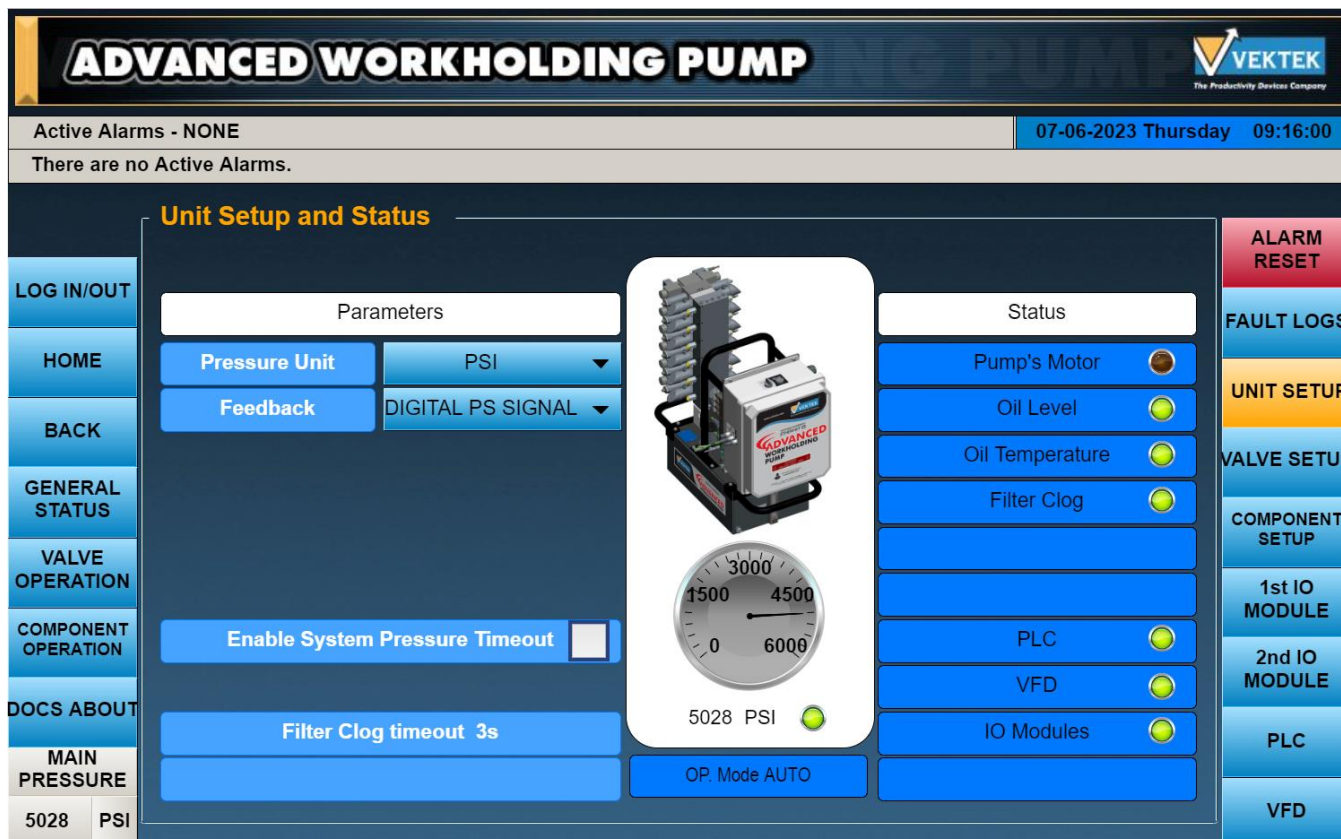
There are no Active Alarms.

Unit Setup and Status

<ul style="list-style-type: none"> LOG IN/OUT HOME BACK GENERAL STATUS VALVE OPERATION COMPONENT OPERATION DOCS ABOUT MAIN PRESSURE 4824 PSI 	Parameters		  4824 PSI	Status		ALARM RESET
	Pressure Unit	PSI		Pump's Motor	●	FAULT LOGS
	Feedback	UNIT SETUP		Oil Level	●	UNIT SETUP
	Pressure Switch Analog End of Scale 6000			Oil Temperature	●	VALVE SETUP
	Maximum System Pressure (Alarm) 5800			Filter Clog	●	COMPONENT SETUP
	System Pressure Set Point (SP1) 5000			PLC	●	1st IO MODULE
	System Pressure Reset Point (RP1) 4500			VFD	●	2nd IO MODULE
	Enable System Pressure Timeout <input type="checkbox"/>			IO Modules	●	PLC
	Filter Clog timeout 3s			OP Mode AUTO		VFD

11.2.2 **DIGITAL PS SIGNAL** parameter allows for all main system pressure values to be set on the main manifold pressure switch. (For pressure switch setting instruction IS7075 see AWP Parts List Manual, Appendix C). Maximum System Pressure (Alarm), System Pressure Set Point, and System Pressure Reset Point are all hidden from the operator, so they are ignored.

11.2.3 **Pressure Unit** parameter has been set to **Bar** and **MAIN PRESSURE** is now displayed in BAR units also.



11.3 **Unit Status** can be monitored for each of the AWP systems and sensors.

11.3.1 **Pump Motor** light is activated if motor is activated and turning.

11.3.2 **Level** light is activated if the oil level sensor falls below the minimum allowable level of approximately 1 gallon (3.7 liters).

11.3.3 **Temperature** light is activated if the oil temperature sensor exceeds 150° F (65° C).

11.3.4 **Filter Clog** light is activated if the return-line filter sensor exceeds 72 PSI (5 Bar).

11.3.5 **PLC** light is activated if the Programmable Logic Controller is powered and active.

11.3.6 **VFD** light is activated if the Variable Frequency Drive is powered and active.

11.3.7 **IO Modules** light is activated if the IO Modules 1 and 2 are powered and active.

11.3.8 **OP. MODE** indicates the active **System Operational Mode** as **Manual** or **Auto**.

11.3.9 **Pressure Gauge** indicates the System Pressure on the main manifold pressure switch and the light is activated if the System Pressure Set Point (SP1) has been reached.

11.4 **Enable System Pressure Timeout** can be checked to allow the **System Pressure Timeout** value to be set to fault if the system pressure on the manifold pressure switch is not met in the allotted time period. This function need not be enabled for the typical workholding application with this on-demand pump but is available if need for the atypical application. Unchecking will disable this function and hide the System Pressure Timeout value from being set.

11.5 **Filter Clog Timeout** can be set to any value from 1-10 seconds. The default value is set to 3 seconds for most applications. A clogged return line filter will cause the sensor to trip and after the timeout value is reached will indicate the Filter Clog alarm to the Unit Status. The value can be increased to avoid nuisance tripping of the alarm for hydraulic systems with large return flow volumes. **Important:** *Setting too high a value can defeat the purpose of the Filter Clog sensor and allow unfiltered oil to bypass the filtration system.*

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Devices Company

Active Alarms - NONE 07-06-2023 Thursday 09:17:15

There are no Active Alarms.

Unit Setup and Status

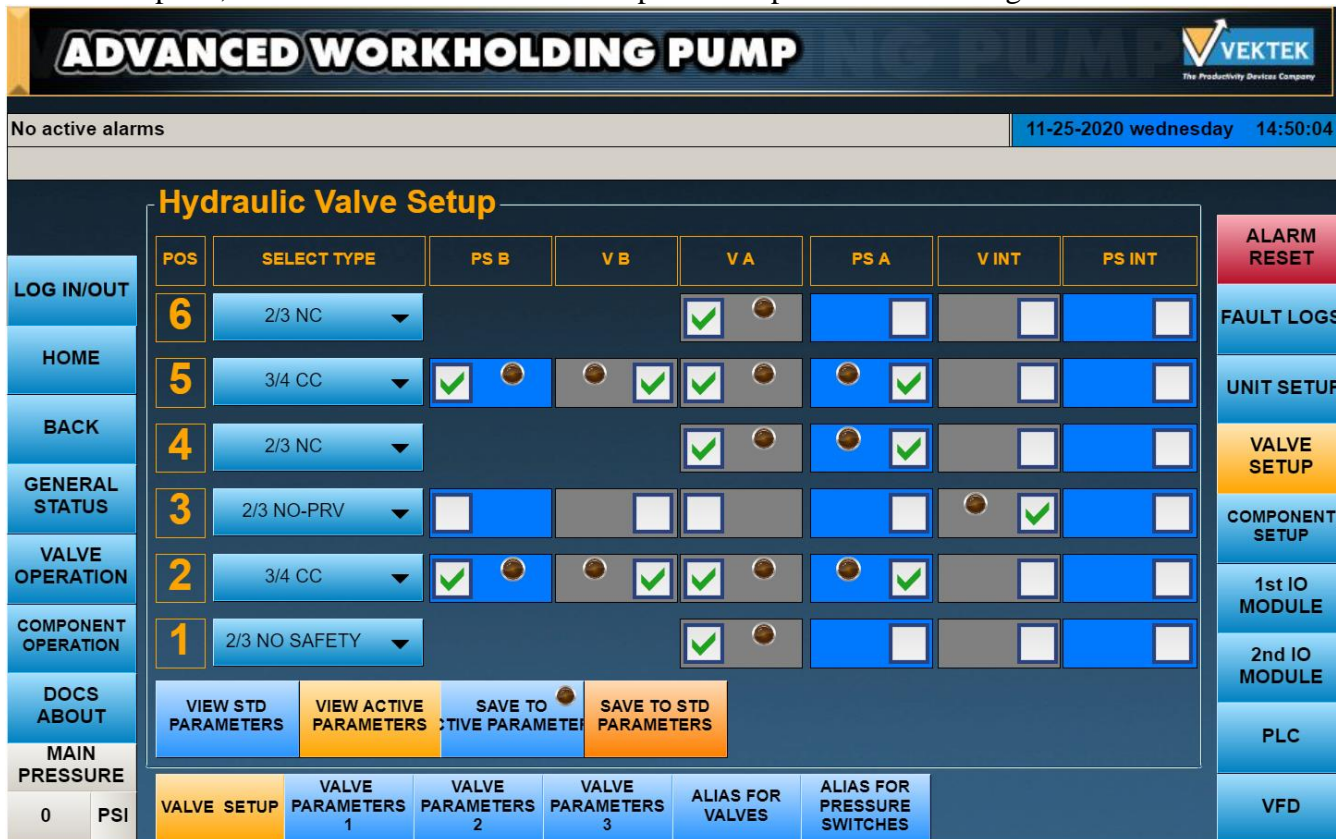
Parameters	Status
Pressure Unit: PSI	Pump's Motor: <input type="radio"/>
Feedback: UNIT SETUP	Oil Level: <input checked="" type="radio"/>
Pressure Switch Analog End of Scale: 6000	Oil Temperature: <input checked="" type="radio"/>
Maximum System Pressure (Alarm): 5800	Filter Clog: <input checked="" type="radio"/>
System Pressure Set Point (SP1): 5000	PLC: <input checked="" type="radio"/>
System Pressure Reset Point (RP1): 4500	VFD: <input checked="" type="radio"/>
Enable System Pressure Timeout: <input checked="" type="checkbox"/>	IO Modules: <input checked="" type="radio"/>
System Pressure Timeout: 10s	
Filter Clog timeout: 3s	
	OP. Mode: AUTO

4968 PSI

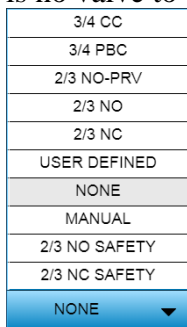
LOG IN/OUT | HOME | BACK | GENERAL STATUS | VALVE OPERATION | COMPONENT OPERATION | DOCS ABOUT | MAIN PRESSURE: 4968 PSI

ALARM RESET | FAULT LOGS | UNIT SETUP | VALVE SETUP | COMPONENT SETUP | 1st IO MODULE | 2nd IO MODULE | PLC | VFD

12.0 VALVE SETUP screen is used to configure all Valves 1-6 A&B ports, Pressure Switches 1-6 A&B ports, and Intermediate Valves 1-6 A port. The procedure to configure these are as follows.



12.1 **SELECT TYPE** of valve for each valve position 1-6 A&B ports from the drop-down list. The default configuration appears for each of the valve types that can be selected. If there is no valve to be configured for a valve position, select NONE.



12.2 If the valve type needed is not listed, select **USER DEFINED** and check the appropriate valve boxes for A&B ports and required pressure switches.



12.3 **Check** Pressure Switch boxes for each position 1-6 A&B ports as needed.



12.4 **Check** Intermediate Valve 2/3 NO-PRV for each position 1-6 as needed. It is recommended to use a separate position even though these are mounted under another valve.



- 12.5 **SAVE TO STD PARAMETERS** button must be selected to save the initial standard setup before leaving this screen.
- 12.6 **SAVE TO ACTIVE PARAMETERS** button must be selected to save any changes made after the initial standard setup before leaving this screen.
- 12.7 **VIEW STD PARAMETERS** button can be selected to view the initial Standard Parameters setup. To permanently return to this setup, select **SAVE TO STD PARAMETERS** button again.
- 12.8 **VIEW ACTIVE PARAMETERS** button can be selected to view the last saved Active Parameters. To permanently return to this setup, select **SAVE TO ACTIVE PARAMETERS** button again.
- 12.9 **Important:** Leaving the Setup screen before selecting either **SAVE TO** button will result in the loss of any setup changes made.
- 12.10 **VALVE PARMAMETERS 1** screen is used to setup timer emulation of pressure switches when they are not configured for any valve position. This will allow an acknowledgement signal to be sent back to the CNC machine after a programmed amount of time according to the requirements of the circuit. Small volume circuits will need less time and large volume circuits will need more time to before sending the acknowledgement signal. The timer for each emulation of pressure switch position must be checked and the value can be adjusted as needed in 0.1 increments during fixture setup. Minimum value is 0.1 seconds and there is no limit to the maximum value. Select each timer emulation value and enter all 3 digits of the value needed. **SAVE TO ACTIVE PARAMETERS** button must be selected to save any changes made to the timer emulation values.

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Device Company

Active Alarms - NONE 12-02-2020 wednesday 16:40:17

Hydraulic Valve Parameters 1

LOG IN/OUT	ALIAS and COMMENTS	POS	EMULATE PS B	EMULATE PS A	EMULATE PS INT	ALARM RESET	
HOME	WORK SUPPORT 6	6		PS6A <input checked="" type="checkbox"/> 3.0s		FAULT LOGS	
BACK	LINK CLAMP 5	5	PS5B	PS5A		UNIT SETUP	
GENERAL STATUS	WORK SUPPORT 4	4		PS4A		VALVE SETUP	
VALVE OPERATION	LOW PRESSURE INTERMEDIATE 3	3			PSINT3 <input checked="" type="checkbox"/> 2.0s	COMPONENT SETUP	
COMPONENT OPERATION	SWING CLAMP 2	2	PS2B	PS2A		1st IO MODULE	
DOCS ABOUT	SAFETY DUMP 1	1		PS1A <input checked="" type="checkbox"/> 1.0s		2nd IO MODULE	
MAIN PRESSURE	VIEW STD PARAMETERS	VIEW ACTIVE PARAMETERS	SAVE TO ACTIVE PARAMETERS	SAVE TO STD PARAMETERS		PLC	
330 BAR	VALVE SETUP	VALVE PARAMETERS 1	VALVE PARAMETERS 2	VALVE PARAMETERS 3	ALIAS FOR VALVES	ALIAS FOR PRESSURE SWITCHES	VFD

12.11 **VALVE PARMAMETERS 2** screen is used to setup the pressure switch PS A Time-Out, PS B Time-Out, or PS INT Time-Out value when a physical pressure switch is configured for any position. If a pressure switch does not reach it's programmed Set Point (SP1) value after valve actuation and in the allotted time, the pressure switch acknowledgement will not be sent back to the CNC machine and an Alarm message will be sent to the Alarm field indicating the cause of the alarm. The Part Program will not be allowed to continue to the next program line, stopping the CNC process.

The screenshot displays the 'ADVANCED WORKHOLDING PUMP' control interface. At the top, it shows 'Active Alarms - NONE' and the date/time '12-02-2020 wednesday 16:41:26'. The main title is 'Hydraulic Valve Parameters 2'. The interface is divided into several sections:

- Navigation Menu (Left):** LOG IN/OUT, HOME, BACK, GENERAL STATUS, VALVE OPERATION, COMPONENT OPERATION, DOCS ABOUT, MAIN PRESSURE (328 BAR).
- Valve Parameters Table:**

ALIAS and COMMENTS	POS	PS B TIME-OUT	PS A TIME-OUT	PS INT TIME-OUT
WORK SUPPORT 6	6		PS6A	
LINK CLAMP 5	5	PS5B 5.0s	PS5A 5.0s	
WORK SUPPORT 4	4		PS4A 2.0s	
LOW PRESSURE INTERMEDIATE 3	3			PSINT3
SWING CLAMP 2	2	PS2B 5.0s	PS2A 5.0s	
SAFETY DUMP 1	1		PS1A	
- Action Buttons (Below Table):** VIEW STD PARAMETERS, VIEW ACTIVE PARAMETERS, SAVE TO ACTIVE PARAMETERS, SAVE TO STD PARAMETERS.
- Bottom Navigation (Right):** ALARM RESET, FAULT LOGS, UNIT SETUP, VALVE SETUP, COMPONENT SETUP, 1st IO MODULE, 2nd IO MODULE, PLC, VFD.
- Bottom Row (Left):** VALVE SETUP, VALVE PARAMETERS 1, VALVE PARAMETERS 2 (highlighted), VALVE PARAMETERS 3, ALIAS FOR VALVES, ALIAS FOR PRESSURE SWITCHES.

12.12 **VALVE PARAMMETERS 3** screen is used to setup each valve position to **KEEP** or keep **AGAIN** the valve actuation command by checking the appropriate box.

12.12.1 **CMD A KEEP** or **CMD B KEEP** is used to keep the valve actuation command turned “ON” until to opposite side valve actuation command is turned “ON”, regardless of the command sent by from the CNC machine Part Program after the pressure switch acknowledgement.

12.12.2 **CMD A AGAIN** or **CMD B AGAIN** is used to send the valve actuation command again if the pressure switch in that circuit falls below the Rest Point 1 (RP1) programmed value. This ensures the circuit pressure will stay between the Set Point 1(SP1) and Reset Point 1 (RP1) values throughout the machining cycle.

The screenshot displays the 'Hydraulic Valve Parameters 3' configuration screen. At the top, it shows 'Active Alarms - NONE' and the date/time '12-02-2020 wednesday 16:43:38'. The main table lists six valves with their respective parameters:

ALIAS and COMMENTS	POS	CMD B KEEP	CMD B AGAIN	CMD A KEEP	CMD A AGAIN	CMD INT KEEP	CMD INT AGAIN
WORK SUPPORT 6	6			<input type="checkbox"/>	V6A	<input type="checkbox"/>	
LINK CLAMP 5	5	<input checked="" type="checkbox"/>	V5B	<input checked="" type="checkbox"/>	V5A	<input checked="" type="checkbox"/>	
WORK SUPPORT 4	4			<input type="checkbox"/>	V4A	<input type="checkbox"/>	
LOW PRESSURE INTERMEDIATE 3	3					<input type="checkbox"/>	VINT3
SWING CLAMP 2	2	<input checked="" type="checkbox"/>	V2B	<input checked="" type="checkbox"/>	V2A	<input checked="" type="checkbox"/>	
SAFETY DUMP 1	1			<input type="checkbox"/>	V1A	<input type="checkbox"/>	

Below the table are four action buttons: 'VIEW STD PARAMETERS', 'VIEW ACTIVE PARAMETERS', 'SAVE TO ACTIVE PARAMETERS', and 'SAVE TO STD PARAMETERS'. The bottom of the screen features a navigation menu with options like 'VALVE SETUP', 'VALVE PARAMETERS 1-3', 'ALIAS FOR VALVES', 'ALIAS FOR PRESSURE SWITCHES', 'PLC', and 'VFD'. A sidebar on the left contains navigation links such as 'LOG IN/OUT', 'HOME', 'BACK', 'GENERAL STATUS', 'VALVE OPERATION', 'COMPONENT OPERATION', 'DOCS ABOUT', and 'MAIN PRESSURE' (328 BAR).

12.13 **ALIAS FOR VALVES** screen is used to setup the operator names for each valve circuit position. Fields with white text can be edited by selecting each and typing in the new name. They can be any alpha/numeric string up to 34 characters. Descriptive names can be very helpful during part fixture setup and troubleshooting of valve circuits.

12.13.1 **LOAD STD NAMES TO ALIAS** button can be used to load the default standard name values to each of the **ALIAS** name values for your convenience.

12.13.2 **SAVE TO ACTIVE ALIAS** button must be selected to save any changes made to the Valve Alias screen.

12.13.3 **Important:** *Valve Standard names will be used to configure all IO Module Output Names. Alias names cannot be used for IO Module Output Names.*

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Devices Company

Active Alarms - NONE 12-02-2020 wednesday 16:50:11

Hydraulic Valve Alias

ALIAS and COMMENTS	POS	STD VB	ALIAS VB	STD VA	ALIAS VA	STD VINT	ALIAS VINT
WORK SUPPORT 6	6	V6B	V6B	V6A	V6A	VINT6	VINT6
LINK CLAMP 5	5	V5B	V5B	V5A	V5A	VINT5	VINT5
WORK SUPPORT 4	4	V4B	V4B	V4A	V4A	VINT4	VINT4
LOW PRESSURE INTERMEDIATE 3	3	V3B	V3B	V3A	V3A	VINT3	VINT3
SWING CLAMP 2	2	V2B	V2B	V2A	V2A	VINT2	VINT2
EDIT THIS FIELD	1	V1B	V1B	V1A	V1A	VINT1	VINT1

LOG IN/OUT | HOME | BACK | GENERAL STATUS | VALVE OPERATION | COMPONENT OPERATION | DOCS ABOUT | MAIN PRESSURE
 326 BA R

12.14 **ALIAS FOR PRESSURE SWITCHES** screen is used to setup the operator names for each pressure switch circuit position. Fields with white text can be edited by selecting each and typing in the new name. They can be any alpha/numeric string up to 34 characters. Descriptive names can be very helpful during part fixture setup and troubleshooting of valve circuits.

12.14.1 **LOAD STD NAMES TO ALIAS** button can be used to load the default standard name values to each of the **ALIAS** name values for your convenience.\

12.14.2 **SAVE TO ACTIVE ALIAS** button must be selected to save any changes made to the Valve Alias screen.

12.14.3 **Important:** *Pressure Switch Standard names will be used to configure all IO Module Output Names. ALIAS names cannot be used for IO Module Output Names.*

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Devices Company

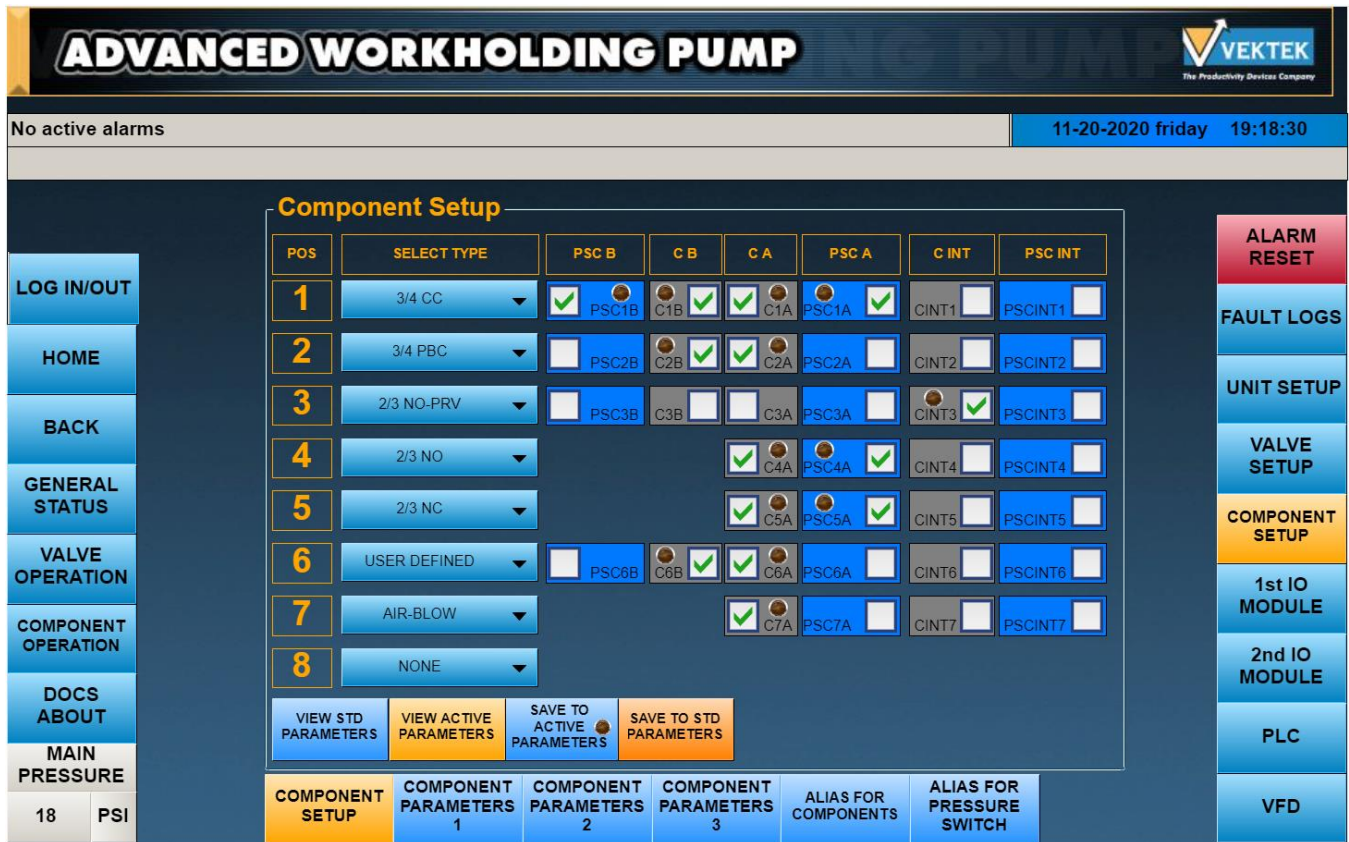
Active Alarms - NONE 12-02-2020 wednesday 16:53:02

Hydraulic Valve - Pressure Switch Alias

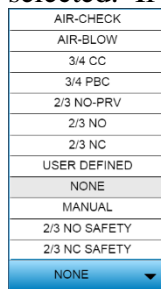
ALIAS and COMMENTS	POS	STD FOR PSB	ALIAS FOR PSB	STD FOR PSA	ALIAS FOR PSA	STD FOR PS INT	ALIAS PS INT	ALARM RESET
WORK SUPPORT 6	6	PS6B	PS6B	PS6A	PS6A	PSINT6	PSINT6	FAULT LOGS
LINK CLAMP 5	5	PS5B	PS5B	PS5A	PS5A	PSINT5	PSINT5	UNIT SETUP
WORK SUPPORT 4	4	PS4B	PS4B	PS4A	PS4A	PSINT4	PSINT4	VALVE SETUP
LOW PRESSURE INTERMEDIATE 3	3	PS3B	PS3B	PS3A	PS3A	PSINT3	PSINT3	COMPONENT SETUP
SWING CLAMP 2	2	PS2B	PS2B	PS2A	PS2A	PSINT2	PSINT2	1st IO MODULE
SAFETY DUMP 1	1	PS1B	PS1B	PS1A	PS1A	PSINT1	PSINT1	2nd IO MODULE

VALVE SETUP	VALVE PARAMETERS 1	VALVE PARAMETERS 2	VALVE PARAMETERS 3	ALIAS FOR VALVES	ALIAS FOR PRESSURE SWITCHES	LOAD STD NAMES TO ALIAS	PLC	VFD
-------------	--------------------	--------------------	--------------------	------------------	-----------------------------	-------------------------	-----	-----

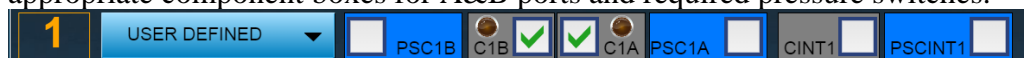
13.0 **COMPONENT SETUP** screen is used to configure all Components 1-8 A&B ports, Pressure Switches 1-8 A&B ports, and Intermediate Components 1-8 A port. The procedure to configure these are as follows.



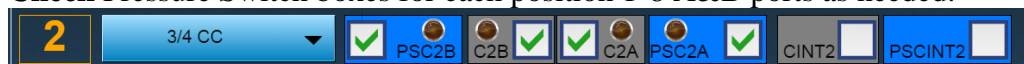
13.1 **SELECT TYPE** of component for each component position 1-8 A&B ports from the drop-down list. The default configuration appears for each of the component types that can be selected. If there is no component to be configured for a position, select NONE.



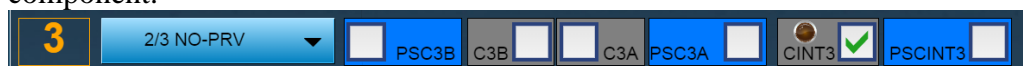
13.2 If the component type needed is not listed, select **USER DEFINED** and check the appropriate component boxes for A&B ports and required pressure switches.



13.3 **Check** Pressure Switch boxes for each position 1-8 A&B ports as needed.



13.4 Check Intermediate Component **2/3 NO-PRV** for each position 1-8 as needed. It is recommended to us a separate position even though these are mounted under another component.



- 13.5 **SAVE TO STD PARAMETERS** button must be selected to save the initial standard setup before leaving this screen.
- 13.6 **SAVE TO ACTIVE PARAMETERS** button must be selected to save any changes made after the initial standard setup before leaving this screen.
- 13.7 **VIEW STD PARAMETERS** button can be selected to view the initial standard parameters setup. To permanently return to this setup, select **SAVE TO STD PARAMETERS** button again.
- 13.8 **VIEW ACTIVE PARAMETERS** button can be selected to view the last saved Active Parameters. To permanently return to this setup, select **SAVE TO ACTIVE PARAMETERS** button again.
- 13.9 **Important:** *Leaving the Setup screen before selecting either **SAVE TO** button will result in the loss of any setup changes made.*

13.10 **COMPONENT PARAMMETERS 1** screen is used to setup timer emulation of pressure switches when they are not configured for any component position. This will allow an acknowledgement signal to be sent back to the CNC machine after a programmed amount of time according to the requirements of the circuit. Small volume circuits will need less time and large volume circuits will need more time to before sending the acknowledgement signal. The timer for each emulation of pressure switch position must be checked and the value can be adjusted as needed in 0.1 increments during fixture setup. Minimum value is 0.1 seconds and there is no limit to the maximum value. **SAVE TO ACTIVE PARAMETERS** button must be selected to save any changes made to the timer emulation values.

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Devices Company

No active alarms 11-20-2020 friday 19:19:21

Component Parameters 1

ALIAS and COMMENTS	POS	EMULATE PS B	EMULATE PS A	EMULATE PS INT
SWING CLAMP 1	1	PSC1B	PSC1A	
SWING CLAMP 2	2	PSC2B <input checked="" type="checkbox"/> 3.0s	PSC2A <input checked="" type="checkbox"/> 5.0s	
LOW PRESSURE INTERMEDIATE 3	3			PSCINT3 <input checked="" type="checkbox"/> 2.0s
PULL CYLINDER, SA, 4	4		PSC4A	
PUSH CYLINDER, SA, 5	5		PSC5A	
COLLET VISE, DA, 6	6	PSC6B <input checked="" type="checkbox"/> 2.0s	PSC6A <input checked="" type="checkbox"/> 2.0s	
AIR BLOW, 7	7		PSC7A <input type="checkbox"/> 0.0s	
	8			

VIEW STD PARAMETERS
VIEW ACTIVE PARAMETERS
SAVE TO ACTIVE PARAMETERS
SAVE TO STD PARAMETERS

COMPONENT SETUP
COMPONENT PARAMETERS 1
COMPONENT PARAMETERS 2
COMPONENT PARAMETERS 3
ALIAS FOR COMPONENTS
ALIAS FOR PRESSURE SWITCH

ALARM RESET

FAULT LOGS

UNIT SETUP

VALVE SETUP

COMPONENT SETUP

1st IO MODULE

2nd IO MODULE

PLC

VFD

LOG IN/OUT

HOME

BACK

GENERAL STATUS

VALVE OPERATION

COMPONENT OPERATION

DOCS ABOUT

MAIN PRESSURE

18 PSI

13.11 **COMPONENT PARAMMETERS 2** screen is used to setup the pressure switch PS A Time-Out, PS B Time-Out, or PS INT Time-Out value when a physical pressure switch is configured for any position. If a pressure switch does not reach it's programmed Set Point (SP1) value after component actuation and in the allotted time, the pressure switch acknowledgement will not be sent back to the CNC machine and an alarm message will be sent to the Alarm field indicating the cause of the alarm. The Part Program will not be allowed to continue to the next program line, stopping the CNC process.

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Devices Company

No active alarms 11-20-2020 friday 19:20:50

Component Parameters 2

ALIAS and COMMENTS	POS	PS B TIME-OUT	PS A TIME-OUT	PS INT TIME-OUT
SWING CLAMP 1	1	PSC1B 5.0s	PSC1A 5.0s	
SWING CLAMP 2	2	PSC2B	PSC2A	
LOW PRESSURE INTERMEDIATE 3	3			PSCINT3
PULL CYLINDER, SA, 4	4		PSC4A 3.0s	
PUSH CYLINDER, SA, 5	5		PSC5A 3.0s	
COLLET VISE, DA, 6	6	PSC6B	PSC6A	
AIR BLOW, 7	7		PSC7A 0.0s	
	8			

VIEW STD PARAMETERS
VIEW ACTIVE PARAMETERS
SAVE TO ACTIVE PARAMETERS
SAVE TO STD PARAMETERS

COMPONENT SETUP
COMPONENT PARAMETERS 1
COMPONENT PARAMETERS 2
COMPONENT PARAMETERS 3
ALIAS FOR COMPONENTS
ALIAS FOR PRESSURE SWITCH

13.12 **COMPONENT PARAMMETERS 3** screen is used to setup each component position to **KEEP** or keep **AGAIN** the component actuation command by checking the appropriate box.

13.12.1 **CMD A KEEP** or **CMD B KEEP** is used to keep the component actuation command turned “ON” until to opposite side component actuation command is turned “ON”, regardless of the command sent by from the CNC machine Part Program after the pressure switch acknowledgement.

13.12.2 **CMD A AGAIN** or **CMD B AGAIN** is used to send the component actuation command again if the pressure switch in that circuit falls below the Rest Point 1 (RP1) programmed value. This ensures the circuit pressure will stay between the Set Point 1(SP1) and Reset Point 1 (RP1) values throughout the machining cycle.

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Devices Company

No active alarms 11-20-2020 friday 19:25:18

Component Parameters 3

ALIAS and COMMENTS	POS	CMD B KEEP	CMD B AGAIN	CMD A KEEP	CMD A AGAIN	CMD INT KEEP	CMD INT AGAIN
SWING CLAMP 1	1	<input type="checkbox"/>	C1B <input type="checkbox"/>	<input checked="" type="checkbox"/>	C1A <input type="checkbox"/>		
SWING CLAMP 2	2	<input type="checkbox"/>	C2B <input type="checkbox"/>	<input type="checkbox"/>	C2A <input checked="" type="checkbox"/>		
LOW PRESSURE INTERMEDIATE 3	3					<input checked="" type="checkbox"/>	CINT3 <input type="checkbox"/>
PULL CYLINDER, SA, 4	4			<input type="checkbox"/>	C4A <input checked="" type="checkbox"/>		
PUSH CYLINDER, SA, 5	5			<input type="checkbox"/>	C5A <input checked="" type="checkbox"/>		
COLLET VISE, DA, 6	6	<input type="checkbox"/>	C6B <input type="checkbox"/>	<input type="checkbox"/>	C6A <input checked="" type="checkbox"/>		
AIR BLOW, 7	7			<input type="checkbox"/>	C7A <input type="checkbox"/>		
	8						

VIEW STD PARAMETERS
VIEW ACTIVE PARAMETERS
SAVE TO ACTIVE PARAMETERS
SAVE TO STD PARAMETERS

COMPONENT SETUP
COMPONENT PARAMETERS 1
COMPONENT PARAMETERS 2
COMPONENT PARAMETERS 3
ALIAS FOR COMPONENTS
ALIAS FOR PRESSURE SWITCH

ALARM RESET
FAULT LOGS
UNIT SETUP
VALVE SETUP
COMPONENT SETUP
1st IO MODULE
2nd IO MODULE
PLC
VFD

LOG IN/OUT

HOME

BACK

GENERAL STATUS

VALVE OPERATION

COMPONENT OPERATION

DOCS ABOUT

MAIN PRESSURE

18 PSI

13.13 **ALIAS FOR COMPONENTS** screen is used to setup the operator names for each component circuit position. Fields with white text can be edited by selecting each and typing in the new name. They can be any alpha/numeric string up to 34 characters. Descriptive names can be very helpful during part fixture setup and troubleshooting of component circuits.

13.13.1 **LOAD STD NAMES TO ALIAS** button can be used to load the default standard name values to each of the **ALIAS** name values for your convenience.

13.13.2 **SAVE TO ACTIVE ALIAS** button must be selected to save any changes made to the Component Alias screen.

13.13.3 **Important:** *Component Standard names will be used to configure all IO Module Output Names. Alias names cannot be used for IO Module Output Names.*

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Devices Company

Active Alarms - NONE 12-02-2020 wednesday 16:56:10

Component Actuator Alias

ALIAS and COMMENTS	POS	STS CB	ALIAS CB	STD CA	ALIAS CA	STD CINT	ALIAS CINT
EDIT THIS NAME	1	C1B	C1B	C1A	C1A	CINT1	CINT1
SWING CLAMP 2	2	C2B	C2B	C2A	C2A	CINT2	CINT2
LOW PRESSURE INTERMEDIATE 3	3	C3B	C3B	C3A	C3A	CINT3	CINT3
PULL CYLINDER, SA, 4	4	C4B	C4B	C4A	C4A	CINT4	CINT4
PUSH CYLINDER, SA, 5	5	C5B	C5B	C5A	C5A	CINT5	CINT5
COLLET VISE, DA, 6	6	C6B	C6B	C6A	C6A	CINT6	CINT6
AIR BLOW, 7	7	C7B	C7B	C7A	C7A	CINT7	CINT7
	8	C8B	C8B	C8A	C8A	CINT8	CINT8

VIEW STD PARAMETERS
VIEW ACTIVE PARAMETERS
SAVE TO ACTIVE PARAMETERS
SAVE TO STD PARAMETERS

LOG IN/OUT

HOME

BACK

GENERAL STATUS

VALVE OPERATION

COMPONENT OPERATION

DOCS ABOUT

MAIN PRESSURE

324 BA R

COMPONENT SETUP

COMPONENT PARAMETERS 1

COMPONENT PARAMETERS 2

COMPONENT PARAMETERS 3

ALIAS FOR COMPONENTS

ALIAS FOR PRESSURE SWITCH

LOAD STD NAMES TO ALIAS

ALARM RESET

FAULT LOGS

UNIT SETUP

VALVE SETUP

COMPONENT SETUP

1st IO MODULE

2nd IO MODULE

PLC

VFD

13.14 **ALIAS FOR PRESSURE SWITCHES** screen is used to setup the operator names for each pressure switch circuit position. Fields with white text can be edited by selecting each and typing in the new name. They can be any alpha/numeric string up to 34 characters. Descriptive names can be very helpful during part fixture setup and troubleshooting of component circuits.

13.14.1 **LOAD STD NAMES TO ALIAS** button can be used to load the default standard name values to each of the **ALIAS** name values for your convenience.

13.14.2 **SAVE TO ACTIVE ALIAS** button must be selected to save any changes made to the Component Alias screen.

13.14.3 **Important:** *Pressure Switch Standard names will be used to configure all IO Module Output Names. ALIAS names cannot be used for IO Module Output Names.*

ADVANCED WORKHOLDING PUMP VEKTEK
The Productivity Business Company

Active Alarms - NONE 12-02-2020 wednesday 16:57:03

Component Actuator Alias

ALIAS and COMMENTS	POS	STS CB	ALIAS CB	STD CA	ALIAS CA	STD CINT	ALIAS CINT
SWING CLAMP 1	1	C1B	C1B	C1A	C1A	CINT1	CINT1
SWING CLAMP 2	2	C2B	C2B	C2A	C2A	CINT2	CINT2
LOW PRESSURE INTERMEDIATE 3	3	C3B	C3B	C3A	C3A	CINT3	CINT3
PULL CYLINDER, SA, 4	4	C4B	C4B	C4A	C4A	CINT4	CINT4
PUSH CYLINDER, SA, 5	5	C5B	C5B	C5A	C5A	CINT5	CINT5
COLLET VISE, DA, 6	6	C6B	C6B	C6A	C6A	CINT6	CINT6
AIR BLOW, 7	7	C7B	C7B	C7A	C7A	CINT7	CINT7
	8	C8B	C8B	C8A	C8A	CINT8	CINT8

LOG IN/OUT
 HOME
 BACK
 GENERAL STATUS
 VALVE OPERATION
 COMPONENT OPERATION
 DOCS ABOUT
 MAIN PRESSURE
 324 BAR

14.0 **1ST IO MODULE** screen is used to setup all Valves, Components, and Pressure Switches to the appropriate Input/Output Connector Port Pin for positions 1-4. **Important:** Pin 4 is used for A port and Pin 2 is used for B port per industry standards. Fields with white text can be edited by selecting each and typing in the new value.

14.1 **Outputs** are configured to send output signals from the PLC using the following Standard Name syntax. (substitute _ with position number 1,2,3,4)

14.1.1 Valves – V_A or V_B

14.1.2 Valves Intermediate, 2/3 NO-PRV – VINT_ (always port A)

14.1.3 Components – C_A or C_B

14.1.4 Components Intermediate, 2/3 NO-PRV – CINT_ (always port A)

14.2 **Inputs** are configured to receive input signals from sensors to the PLC using the following Standard Name syntax. (substitute _ with position number 1,2,3,4)

14.2.1 Pressure Switches Valve – PS_A or PS_B

14.2.2 Pressure Switches Intermediate – PSINT_ (always port A)

14.2.3 Pressure Switches Component – PSC_A or PSC_B

14.2.4 Pressure Switches Component Intermediate– PSCINT_ (always port A)

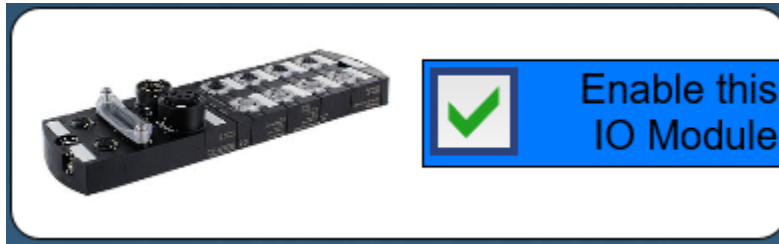
13.3 **SAVE TO STD PARAMETERS** button must be selected to save the initial standard setup before leaving this screen.

13.4 **SAVE TO ACTIVE PARAMETERS** button must be selected to save any changes made after the initial standard setup before leaving this screen.

13.5 **VIEW STD PARAMETERS** button can be selected to view the initial standard parameters setup. To permanently return to this setup, select **SAVE TO STD PARAMETERS** button again.

13.6 **VIEW ACTIVE PARAMETERS** button can be selected to view the last saved Active Parameters. To permanently return to this setup, select **SAVE TO ACTIVE PARAMETERS** button again.

13.7 **Enable this IO Module** box must be checked to activate this IO Module for communications with the PLC.



13.8 **SAVE TO ACTIVE PARAMETERS** button must be selected to save any changes made after the initial standard setup before leaving this screen.

13.9 **Important:** *Leaving the Setup screen before selecting either **SAVE TO** button will result in the loss of any setup changes made.*

14.0 2ND IO MODULE screen is used to setup all Valves, Components, and Pressure Switches to the appropriate Input/Output Connector Port Pin for positions 5-8. **Important:** Pin 4 is used for A port and Pin 2 is used for B port per industry standards. Fields with white text can be edited by selecting each and typing in the new value.

14.1 Outputs are configured to send output signals from the PLC using the following Standard Name syntax. (substitute _ with position number 5,6,7,8)

14.1.1 Valves – V_A or V_B

14.1.2 Valves Intermediate, 2/3 NO-PRV – VINT_ (always port A)

14.1.3 Components – C_A or C_B

14.1.4 Components Intermediate, 2/3 NO-PRV – CINT_ (always port A)

14.2 Inputs are configured to receive input signals from sensors to the PLC using the following Standard Name syntax. (substitute _ with position number 5,6,7,8)

14.2.1 Pressure Switches Valve – PS_A or PS_B

14.2.2 Pressure Switches Intermediate – PSINT_ (always port A)

14.2.3 Pressure Switches Component – PSC_A or PSC_B

14.2.4 Pressure Switches Component Intermediate– PSCINT_ (always port A)

The screenshot displays the '2nd IO Module Configuration' interface. At the top, it shows 'Active Alarms - NONE' and the date/time '01-15-2000 saturday 02:41:52'. The main area is divided into three sections: 'Fill in Outputs' names, a central diagram of the IO module, and 'Fill in Inputs' names. The outputs list includes configurations for connectors X3, X2, X1, and X0 on pins 4 and 2. The inputs list includes configurations for connectors X7, X6, X5, and X4 on pins 4 and 2. A status bar below the inputs list shows 'Status - IO Module Disabled', 'Ethernet IP Comm', and 'Inputs OK / Outputs OK'. At the bottom, there are four buttons: 'VIEW STD PARAMETERS', 'VIEW ACTIVE PARAMETERS', 'SAVE TO ACTIVE PARAMETERS', and 'SAVE TO STD PARAMETERS'. A vertical menu on the right side contains options like 'ALARM RESET', 'FAULT LOGS', 'UNIT SETUP', 'VALVE SETUP', 'COMPONENT SETUP', '1st IO MODULE', '2nd IO MODULE', 'PLC', and 'VFD'.

14.3 SAVE TO STD PARAMETERS button must be selected to save the initial standard setup before leaving this screen.

14.4 SAVE TO ACTIVE PARAMETERS button must be selected to save any changes made after the initial standard setup before leaving this screen.

14.5 VIEW STD PARAMETERS button can be selected to view the initial standard parameters setup. To permanently return to this setup, select **SAVE TO STD PARAMETERS** button again.

14.6 VIEW ACTIVE PARAMETERS button can be selected to view the last saved Active Parameters. To permanently return to this setup, select **SAVE TO ACTIVE PARAMETERS** button again.

14.7 Enable this IO Module box must be checked to activate this IO Module for communications with the PLC.



14.8 SAVE TO ACTIVE PARAMETERS button must be selected to save any changes made after the initial standard setup before leaving this screen.

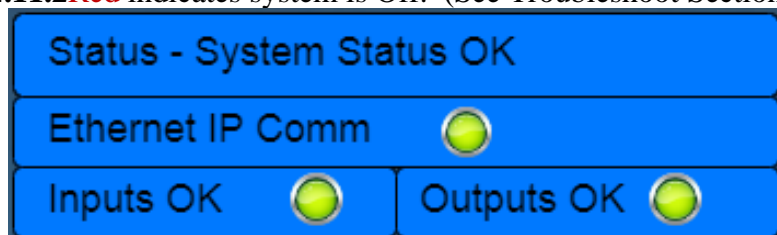
14.9 Important: Leaving the Setup screen before selecting either **SAVE TO** button will result in the loss of any setup changes made.

14.10 Important: Valves, Components, and Pressure Switches can be configured on the same IO Module or either IO Module as the AWP configuration requires, provided the M12 cable connections made are correct for the IO Module configuration and setup. The IO Modules can be configured in any combination of valves mounted to the pump manifold and components mounted on a remote manifold provided they do not exceed the maximum number of 8 positions when combined. This also allows for up to 16 pressure switches when connected via M12 “Y” connector to the Input ports on both IO Modules. The AWP THINC Application has been pre-programmed to accommodate any possible combination within these configurations.

14.11 System Status of IO Module is shown at the lower right of the screen with Ethernet IP Comm, Inputs OK, and Outputs OK lights.

14.11.1 Green indicates system is On for normal operation.

14.11.2 Red indicates system is Off. (See Troubleshoot Section)



14.12 If IO Module is not used, the **Enable this IO Module** box is left unchecked, and system is disabled.

Status - IO Module Disabled	
Ethernet IP Comm	
Inputs OK	Outputs OK

15.0 **PLC** screen is used for Controller Monitoring and Status Monitoring.

15.1 Parameters

15.1.1 CPU – IP Address – Controller IP Address (does not change)

15.1.2 Modbus TCP – IP Address - TM4ES4 IP Address (may change)

15.1.3 Modbus RTU Address – VFD RTU Address (does not change)

15.1.4 Date and Time – Set in Controller CPU

15.2 Status of Ethernet Communications.

Green indicates system is On for normal operation.

Red indicates system is Off. (See Troubleshoot Section)

15.2.1 Ethernet IP light indicates normal communications with the IO Modules.

15.2.2 Modbus TCP light indicates normal communications with the TM4ES4 switch.

15.2.3 PLC/CNC Comm light indicates normal communications with the CNC machine.

15.2.4 Modbus RTU light indicates normal communications with the VFD.

15.2.5 Comms Error number indicates the communication errors that have occurred.

15.2.6 Operation Error number indicates the operation errors that have occurred.

15.3 CPU Status lights indicate the operational status of each of the controller systems.

15.3.1 PWR – Power – **Green** – On power applied - Off power is removed.

15.3.2 RUN – Machine Status – **Green** – Controller running valid application.

15.3.3 ERR – Error – **Red** - On, Operating System - Fast Flash, Internal – Slow Flash, Minor Error

15.3.4 I/O – Input/Output – **Red** – On, device error on embedded I/O, serial line 1 or 2, SD Card, TM4 Bus

15.3.5 SD – SD Card – **Green** – On, SC Card is being accessed – Off, no access

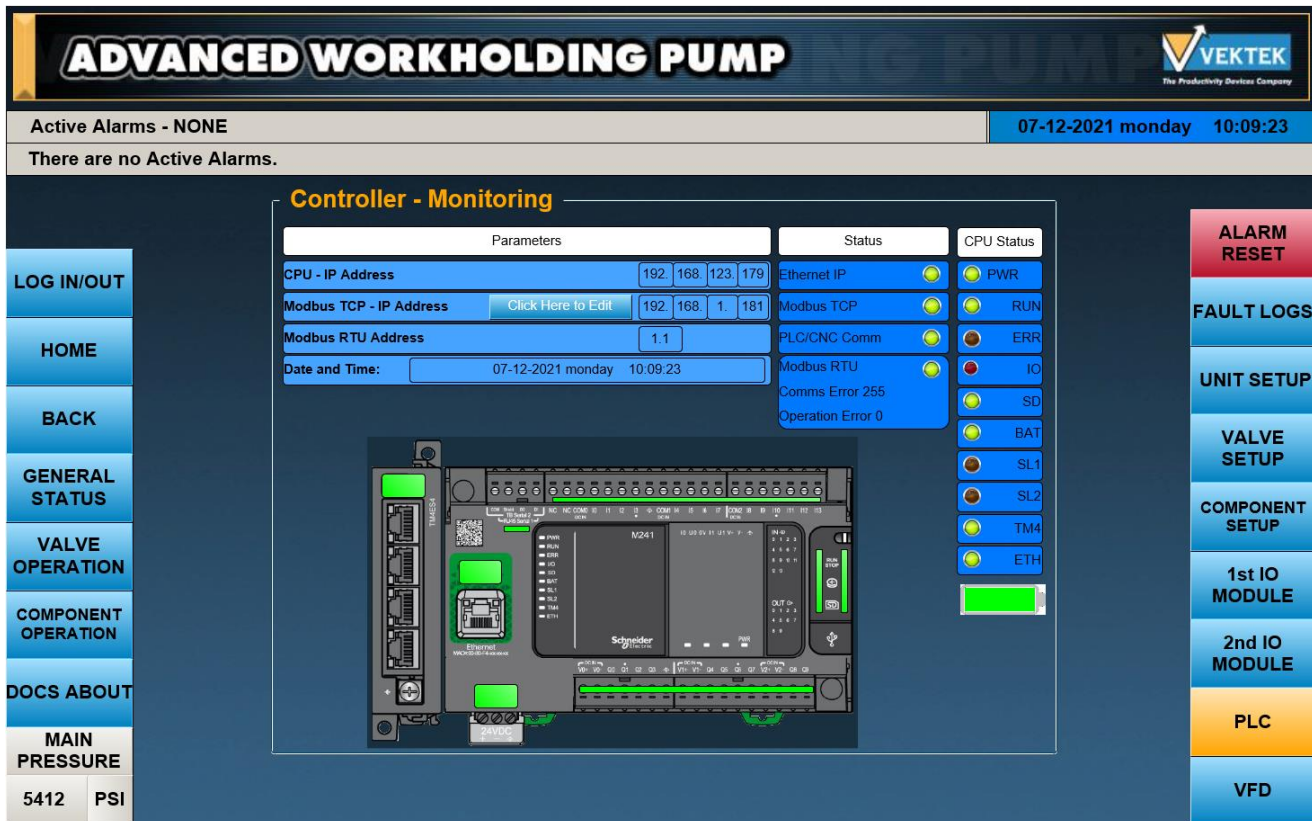
15.3.6 BAT – Battery – **Green** – On, Battery Ok

Red – On, battery needs replaced – Flashing, battery charge low

15.3.7 SL1 – Serial Line 1 – **Green** – On, active communication – Off, no communication

15.3.8 SL2 – Serial Line 2 – **Green** – On, active communication – Off, no communication

15.3.9 TM4 – Error on TM4 bus – **Green** – On, device Ok – **Red** – On, device



15.4 Modbus TCP-IP Address – Edit AWP IP Address to be compatible with CNC machine network. **Important:** CNC machine must be set to a fixed IP Address in order to maintain communication with the AWP.

15.4.1 Method 1 If CNC browser is connected to AWP and the change is **inside** the CNC Network, Subnet Mask, and Gateway.

15.4.1.1 Use CNC browser to access Vektek AWP Home screen using the default URL.

15.4.1.1.1 <http://192.168.1.181:8080/vektek.htm>

15.4.1.2 Select LOG IN/OUT button on upper left-hand side of screen.

15.4.1.3 Log in as Administrator to enable access to PLC screen settings.

15.4.1.3.1 See Section IV 2.0. for procedure.

15.4.1.4 Select **PLC** button on the lower right-hand side of the screen.

15.4.1.5 Select **Click here to Edit** button to open TM4ES4 Communication/Switch Module configuration screen.

15.4.1.6 Edit AWP IP Address to the following values.

15.4.1.6.1 IP Address: 192.168.1.zzz (zzz to be any value between 1-254 that does not conflict with other machine IP Addresses on the network)

15.4.1.6.2 Subnet Mask: 255.255.255.0 (set to same value as CNC machine)

15.4.1.6.3 Gateway: 0.0.0.0 (set to same value as CNC Machine)

15.4.1.7 Select the **TEST NEW** button. Browser connection will be lost.

15.4.1.8 Edit browser URL to new IP Address, enter and refresh browser window, and confirm the Status is DONE.

15.4.1.8.1 <http://192.168.1.zzz:8080/vektek.htm>

15.4.1.9 Select the **SAVE PERMANENT** button to complete the process. Button will light up and when complete and will go out to confirm the Status is DONE.

ADVANCED WORKHOLDING PUMP



Active Alarms - NONE

07-12-2021 monday 10:11:14

There are no Active Alarms.

TM4ES4 Communication/Switch Module - Configuration

- LOG IN/OUT
- HOME
- BACK
- GENERAL STATUS
- VALVE OPERATION
- COMPONENT OPERATION
- DOCS ABOUT
- MAIN PRESSURE
- 4920 PSI

Current	New	Previous	
IP Address: 192.168.1.181	IP Address: 192.168.1.ZZ	IP Address: 192.168.1.181	TEST NEW
Sub Mask: 255.255.255.0	Sub Mask: 255.255.255.0	Sub Mask: 255.255.255.0	CANCEL
Gateway: 0.0.0.0	Gateway: 0.0.0.0	Gateway: 0.0.0.0	SAVE PERMANENT
Mac Address: 0 80 f4 3f c8 9f	PLC/CNC Comm: ●		LOAD FACTORY
Device Name: TM4ES4	HeartBeat: ●		
Status:			
Error: No error			
<p>Notes:</p> <p>Changes to the TM4ES4 Communication/Switch Module can raise problems, such as, loss of communication between devices, loss of communication between the PLC and this browser, duplicate IP Addresses, among others.</p> <p>If the Heartbeat indicator stops flashing or stays ON or OFF constantly, it indicates there is no communication between the PLC and this browser.</p> <p>If the PLC/CNC Comm Indicator is flashing Red, it means "there is no communication between the PLC and CNC". Refer to the Operations Manual for procedures to change the AWP IP Address and establish communication.</p>			

- ALARM RESET
- FAULT LOGS
- UNIT SETUP
- VALVE SETUP
- COMPONENT SETUP
- 1st IO MODULE
- 2nd IO MODULE
- PLC
- VFD

15.4.2 Method 2 If separate PC browser is connected to AWP and the change is **outside** the Network, Subnet Mask, and Gateway.

15.4.2.1 Connect PC via Ethernet cable to TM4ES4 switch port.

15.4.2.2 Set PC IP Address to the following values.

15.4.2.2.1 IP Address: 192.168.1.179 (179 can be any value between 1-255 that does not conflict with other machine IP Addresses on the network)

15.4.2.2.2 Subnet Mask: 255.255.255.0 (set to same value as AWP)

15.4.2.2.3 Gateway: 0.0.0.0 (set to same value as AWP)

15.4.2.3 Open PC browser window and enter the new URL value for AWP Home screen.

15.4.2.3.1 <http://192.168.1.181:8080/vektek.htm>

15.4.2.4 Select LOG IN/OUT button on upper left-hand side of screen.

15.4.2.5 Log in as Administrator to enable access to PLC screen settings.

15.4.2.5.1 See Section IV 2.0. for procedure.

15.4.2.6 Select **PLC** button on the lower right-hand side of the screen.

15.4.2.7 Select **Click here to Edit** button to open TM4ES4 Communication/Switch Module configuration screen.

15.4.2.8 Edit the new AWP IP Address to values compatible with the CNC machine.

15.4.2.8.1 IP Address: www.xxx.yyy.zzz (Set Octet 1, 2, 3 to the same values as the CNC and set Octet 4 to any value between 1-255 that does not conflict with other machine IP Addresses on the network)

15.4.2.8.2 Subnet Mask: 0.0.0.0 (Set to the same value as CNC)

15.4.2.8.3 Gateway: 0.0.0.0 (set to same value as CNC Machine)

15.4.2.9 Select the **TEST NEW** button. Browser connection will be lost.

15.4.2.10 Set PC IP Address to the following values.

15.4.2.10.1 IP Address: www.xxx.yyy.zzz (Set Octet 1, 2, 3 to the same values as the CNC and set Octet 4 to any value between 1-255 that does not conflict with other machine IP Addresses on the network)

15.4.2.10.2 Subnet Mask: 255.255.255.0 (set to same value as AWP)

15.4.2.10.3 Gateway: 0.0.0.0 (set to same value as AWP)

15.4.2.11 Edit browser URL to new IP Address, enter and refresh browser window, and confirm the Status is DONE.

15.4.2.12 <http://www.xxx.yyy.zzz:8080/vektek.htm>

15.4.2.13 Select the **SAVE PERMANENT** button to complete the process. Button will light up and when complete and will go out to confirm the Status is DONE.

15.4.2.14 Use CNC browser to access Vektek AWP Home screen using the new URL.

15.4.2.14.1 <http://www.xxx.yyy.zzz:8080/vektek.htm>

ADVANCED WORKHOLDING PUMP

The Productivity Devices Company

Active Alarms - NONE

07-12-2021 monday 10:12:29

There are no Active Alarms.

TM4ES4 Communication/Switch Module - Configuration

	Current	New	Previous	
IP Address	192.168.1.181	www 168.1.181	192.168.1.181	TEST NEW
Sub Mask	255.255.255.0	255.255.255.0	255.255.255.0	CANCEL
Gateway	0.0.0.0	0.0.0.0	0.0.0.0	SAVE PERMANENT
Mac Address	0 80 f4 3f c8 9f	PLC/CNC Comm ●		LOAD FACTORY
Device Name	TM4ES4	HeartBeat ●		
Status:				
Error: No error				
<small>Notes:</small> Changes to the TM4ES4 Communication/Switch Module can raise problems, such as, loss of communication between devices, loss of communication between the PLC and this browser, duplicate IP Addresses, among others. If the Heartbeat indicator stops flashing or stays ON or OFF constantly, it indicates there is no communication between the PLC and this browser. If the PLC/CNC Comm Indicator is flashing Red, it means "there is no communication between the PLC and CNC". Refer to the Operations Manual for procedures to change the AWP IP Address and establish communication.				

LOG IN/OUT

 HOME

 BACK

 GENERAL STATUS

 VALVE OPERATION

 COMPONENT OPERATION

 DOCS ABOUT

 MAIN PRESSURE
 4818 PSI

ALARM RESET

 FAULT LOGS

 UNIT SETUP

 VALVE SETUP

 COMPONENT SETUP

 1st IO MODULE

 2nd IO MODULE

 PLC

 VFD

15.4.3 Important: The new AWP IP Address must also be set in the Vektek AWP App as described in Section 1.0, 2.11 of this manual.

15.5 PLC Input Assignments

- 15.5.1** I0 - Fault Reset
- 15.5.2** I1 – Pump JOG
- 15.5.3** I2 – Pump ON
- 15.5.4** I3 – E-Stop 1 from CNC
- 15.5.5** I4 – Not Used
- 15.5.6** I5 – Power Supply ON
- 15.5.7** I6 – VFD Circuit Breaker
- 15.5.8** I7 – System Pressure Switch SP1 – HNC – Hysteresis Normally Closed
- 15.5.9** I8 – VFD Fault
- 15.5.10** I9 – System Pressure Switch SP2 – FNO – Window Normally Open
- 15.5.11** I10 – Filter Clog Sensor
- 15.5.12** I11 – Oil Level Switch
- 15.5.13** I12 – Oil Temperature Switch
- 15.5.14** I13 – Not Used

15.6 PLC Output Assignments

- 15.6.1** Q0 – Enclosure Fault Light
- 15.6.2** Q1 – VFD LI4 External Fault
- 15.6.3** Q2 – Not Used
- 15.6.4** Q3 – VFD LI3 Fault Reset
- 15.6.5** Q4 – IO Module Power Relay to Valves/Components
- 15.6.6** Q5 – Not Used
- 15.6.7** Q6 – VFD LI2 Enable Run
- 15.6.8** Q7 – Not Used
- 15.6.9** Q8 – VFD LI1 System Pressure Switch Emulation SP1
- 15.6.10** Q9 – E-Stop 2 – VFD Class A Alarm Active – Dry Contact to CNC

16.0 **VFD** screen is used for Variable Frequency Drive setup and status monitoring. Any changes to these parameters should be done at the factory or by qualified service personnel and is password protected. Use the LOG IN/OUT screen to have the appropriate access.

16.4 Parameters

16.4.1 Maximum Frequency default setting is 60 Hz. Setting range is 20-60 Hz.

16.4.2 Drive Type – **Important: Manufacturer password protected parameter.**

16.4.2.1 ATV12 – 200-240 VAC

16.4.2.2 ATV320 – 380-500 VAC, 525-600 VAC

16.5 Status – PID

16.5.1 PID Set Point – Default is 83.4% (5000 PSI / 6000 PSI)

16.5.2 PID Feedback – Display valve as a percentage of current system pressure

16.6 Status – Digital Inputs

16.6.1 Fast Stop (LI1 low) - **yellow** light indicates Fast Stop signal active (Pressure Switch SP1)

16.6.2 Freewheel Stop (LI2 low) - **yellow** light indicates Freewheel Stop signal active (3-position switch OFF)

16.6.3 Fault Reset (LI3 high) – **Red** light indicates Fault Reset signal is active (Select Alarm Rest button)

16.6.4 External Fault (LI4 low) – **Red** light indicates External Fault signal is active (Oil Level, Oil Temp, or Return-line Filter)

16.6.5 VFD Circ Breaker (status) – **Green** light indicates Ok or Off if breaker tripped.

16.7 Status – Digital Outputs

16.7.1 VFD Fault Active (R1B high) – **Red** light indicates VFD Fault is active

16.8 VFD Display (Center)

16.8.1 LED status display as shown on VFD

16.8.2 Actual Frequency - Hz

16.8.3 Current (motor) - Amps

16.8.4 VFD Fault Code in numerical format. (last recorded fault)

16.8.5 VFD Fault Description in alpha numeric format as displayed on VFD

ADVANCED WORKHOLDING PUMP

The Productivity Device Company

Active Alarms - NONE

07-06-2023 Thursday 09:32:26

There are no Active Alarms.

LOG IN/OUT

HOME

BACK

GENERAL STATUS

VALVE OPERATION

COMPONENT OPERATION

DOCS ABOUT

MAIN PRESSURE

4920 PSI

VFD Setup and Status

Parameters

Status - PID

Maximum Frequency 60 Hz Confirm

Drive Type

ATV 12

Actual Frequency 0.0 Hz

Current 0.0 A

VFD Fault Code # 8

[External flt-L1/Bit] (EPF1)

VFD Circ Breaker OK

VFD Fault Active (R1B high)

ALARM RESET

FAULT LOGS

UNIT SETUP

VALVE SETUP

COMPONENT SETUP

1st IO MODULE

2nd IO MODULE

PLC

VFD

16.9 PID Setpoint Offset

16.9.1 Manufacturer level access is required to show and edit the PID Setpoint Offset parameter in the VFD setup screen. This can be edited as required between 0.0-2.0% offset of the PID Set Point value to ensure the motor/pump will reach the Set Point value entered on the Unit Setup screen for systems with low-pressure and/or low volume during initial pressurization. This will be set and tested before shipment.

ADVANCED WORKHOLDING PUMP



Active Alarms - NONE

07-06-2023 Thursday 09:31:37

There are no Active Alarms.

VFD Setup and Status

<ul style="list-style-type: none"> LOG IN/OUT HOME BACK GENERAL STATUS VALVE OPERATION COMPONENT OPERATION DOCS ABOUT MAIN PRESSURE 4914 PSI 	Parameters			Status - PID		<ul style="list-style-type: none"> ALARM RESET FAULT LOGS UNIT SETUP VALVE SETUP COMPONENT SETUP 1st IO MODULE 2nd IO MODULE PLC VFD 	
	Maximum Frequency 60 Hz Confirm			PID Set Point 83.4%	PID Feedback 81.0%		
	PID Setpoint Offset 0.1% (0.0 to 2.0%)			Status - Digital Inputs			Fast Stop (L11 low) ●
	Drive Type	ATV 12		Actual Frequency 0.0 Hz	Freewheel Stop (LI2 low) ●		Fault Reset (LI3 high) ●
				Current 0.0 A	External Fault (LI4 low) ●		VFD Circ Breaker OK ●
				VFD Fault Code # 8	Status - Digital Outputs		
				[External flt-LI/Bit] (EPF1)	VFD Fault Active (R1B high) ●		

17.0 **SD Card Procedure** is used to update the PLC application to the latest version of PLC5500. Updates will be sent to the customer upon request or at the recommendation of Vektek Customer Support and Engineering. Reconfiguration of AWP settings may be required after application installation is complete.

17.1 Remove power from the AWP and PLC in preparation for PLC updates.

17.2 Remove AWP enclosure lid to have access to PLC.

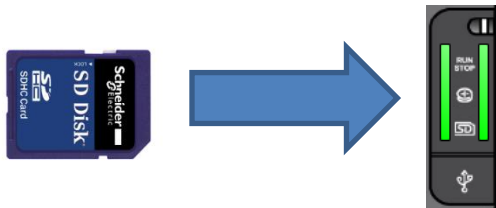
17.2.1 **Important:** Removal of electrical enclosure lid to be done by qualified personnel only.

17.3 Prepare SD Card for installation of files.

17.3.1 SD Card must be cleaned and formatted FAT or FAT32 and labeled.

17.3.2 SD Card must have appropriate files for upgrade copied to it as provided by Vektek.

17.4 Open SD Card slot cover and insert prepared SD Card with updated PLC5500 application and related files. Inset notch down and label facing right. Push unit it clicks.



17.5 Restore power to the AWP and PLC.

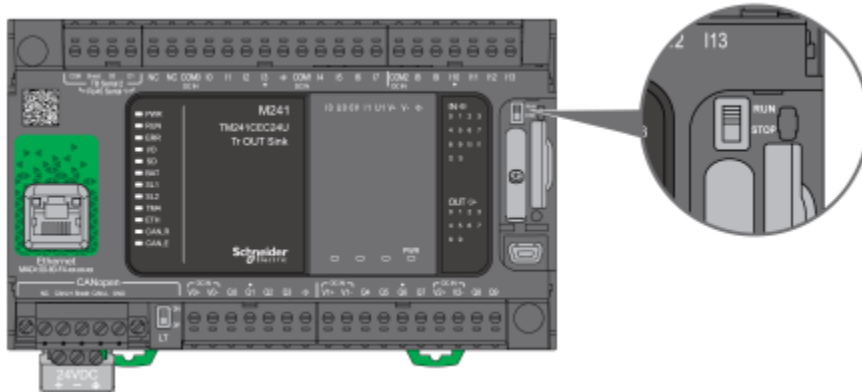
17.6 Installation starts and SD LED is flashing during application download.

17.6.1 If the SD LED (green) is ON, and the ERR LED (red) flashes regularly, the download ended successfully.

17.6.2 If the SD LED (green) is OFF, and the ERR and I/O LEDs (red) flash regularly, an error is detected.

17.6.3 If the RUN LED (green) is ON, the application is running correctly.

17.6.4 If the RUN LED (green) is FLASHING, the application is loaded but stopped. Switch the Run/Stop hardware switch to Stop and then back to Run to Start the application.



17.7 Remove SD Card after new application download is complete.

17.8 Cycle power to AWP PLC to complete the new application installation process.

17.8.1 PWR and RUN LED (green) should be solid ON indicating PLC is active and application running.

ADVANCED WORKHOLDING PUMP



Active Alarms - NONE

07-12-2021 monday 15:17:26

There are no Active Alarms.

Controller - Monitoring

- LOG IN/OUT
- HOME
- BACK
- GENERAL STATUS
- VALVE OPERATION
- COMPONENT OPERATION
- DOCS ABOUT
- MAIN PRESSURE
- 5094 PSI

Parameters		Status	CPU Status
CPU - IP Address	192.168.123.179	Ethernet IP	● PWR
Modbus TCP - IP Address	Click Here to Edit 192.168.1.181	Modbus TCP	● RUN
Modbus RTU Address	1.1	PLC/CNC Comm	● ERR
Date and Time:	07-12-2021 monday 15:17:26	Modbus RTU	● IO
		Comms Error 255	● SD
		Operation Error 0	● BAT
			● SL1
			● SL2
			● TM4
			● ETH

- ALARM RESET
- FAULT LOGS
- UNIT SETUP
- VALVE SETUP
- COMPONENT SETUP
- 1st IO MODULE
- 2nd IO MODULE
- PLC
- VFD

SECTION V

TROUBLESHOOTING

1. ALARMS

- 1.1. **Active Alarms** – **NONE** shown after selection of **ALARM RESET** button from top of right-hand vertical menu.
 - 1.1.1. There are no Active Alarms.

- 1.2. **External E-Stop** is displayed when the CNC machine E-Stop has been activated.
 - 1.2.1. Alarm Class A
 - 1.2.2. Emergency stop actuated on CNC machine.
 - 1.2.3. Verify and reset CNC machine E-STOP buttons.
 - 1.2.4. Select **ALARMS RESET** button after it has been reset.

- 1.3. **24VDC Voltage LOW** is displayed when the power supply voltage to the PLC is below the minimum value.
 - 1.3.1. Alarm Class B
 - 1.3.2. Verify AWP 24 power supply voltage. Auxiliary contact for Power Supply Output Voltage Level is less than 21.6VDC.
 - 1.3.3. PLC may or may not function if auxiliary output is OFF.
 - 1.3.4. Check power supply breaker and reset switch if needed.
 - 1.3.5. Check power supply output voltage and if low, adjust voltage or replace power supply if faulty.
 - 1.3.6. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.4. **VFD – Circuit breaker OFF** is displayed if the breaker has tripped off.
 - 1.4.1. Alarm Class B
 - 1.4.2. Verify AWP VFD circuit breaker status or other possible current overload causes to AWP or fixture.
 - 1.4.3. Check for any fault code on VFD panel.
 - 1.4.4. Select **ALARM RESET** button after cause of alarm has been corrected.
 - 1.4.5. If breaker trips again, further diagnostics of internal wiring and VFD function is required.
 - 1.4.6. Replacement of VFD or motor may be necessary.

- 1.5. **VFD General FAULT** is displayed if the VFD has faulted.
 - 1.5.1. Alarm Class B
 - 1.5.2. Verify details on VFD display
 - 1.5.3. Cross reference fault code in AWP Parts List/Manual Appendix A or B. Follow diagnostics and remedy for fault code as stated in manual.
 - 1.5.4. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.6. **Main system pressure above MAXIMUM** is displayed.
 - 1.6.1. Alarm Class C
 - 1.6.2. Check external Over-Pressure-Relief-Valve on pump manifold and adjust as necessary.
 - 1.6.3. The pump manifold Over-Pressure Relief Valve may need to be re-adjusted to a value lower than the parameter value to avoid nuisance tripping of the alarm.
 - 1.6.4. Correct the cause of the system pressure exceeding the parameter value.
 - 1.6.5. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.7. **Main system pressure - Failed to reach pressure switch set point SP1** is displayed.
 - 1.7.1. Alarm Class B
 - 1.7.2. AWP System Pressure did not reach Set Point 1 within timeout setting. Verify hydraulic circuit, valves, fixture, and piping. Adjust System Pressure Timeout setting as required or disable if necessary.
 - 1.7.3. Correct the cause of the low system pressure. Typical causes are oil leaks in valves, components, or plumbing.
 - 1.7.4. If no leaks are found, other possible causes are over-pressure relief valve adjustment, blockages in pump pressure line, high-pressure filter, or manifold check valve.
 - 1.7.5. If no causes are found, pump rotating group may need service.
 - 1.7.6. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.8. **Main system - Filter clog pressure HIGH** is displayed if the return-line filter is clogged.
 - 1.8.1. Alarm Class C
 - 1.8.2. AWP filter needs to be replaced.
 - 1.8.3. Refer to AWP Parts List Manual for part number and instructions on Filter Replacement.
 - 1.8.4. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.9. **Main system - Oil level LOW** is displayed if the oil level falls below the oil level switch minimum.
 - 1.9.1. Alarm Class C
 - 1.9.2. The AWP reservoir needs to be refilled. Refer to the AWP Part List Manual for part number and instructions on refilling the reservoir.
 - 1.9.3. Check oil level sight glass to confirm if oil level is below Add Oil arrow. If so, fill reservoir with Vektek Hydraulic Fluid 65-0010-01 or approved equivalent.
 - 1.9.4. Do not over-fill reservoir.
 - 1.9.5. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.10. **Main system - Oil temperature HIGH** is displayed if the oil temperature exceeds 150 ° F.
 - 1.10.1. Alarm Class C
 - 1.10.2. Verify hydraulic circuit, check for external leaks, and fixture component internal leaks.
 - 1.10.3. Typical causes of high oil temperature are oil leaks in valves, components, or plumbing.
 - 1.10.4. Check external Over-Pressure-Relief-Valve on pump manifold and adjust as necessary.
 - 1.10.5. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.11. **PLC – System Machine RUN** light is displayed to show system status.
 - 1.11.1. Controller **RUN** light status
 - 1.11.1.1. **Green/ON** - Controller running a valid application
 - 1.11.1.2. **Green/Flashing** – Controller valid application program is stopped
 - 1.11.1.3. **Green/1 Flash** – Controller application is paused
 - 1.11.1.4. **Green/Off** – Controller not programmed
 - 1.11.2. Cycle incoming power source OFF and back ON by flipping breaker switches or disconnecting and reconnecting power source. Wait until controller program is completely loaded and monitor the status of Controller RUN light. If **Green/ON**, normal operation has resumed.

- 1.12. **AWP PLC - Controller ERROR** is displayed if the Controller is not running properly.
 - 1.12.1. Alarm Class B
 - 1.12.2. Controller **ERR** light status
 - 1.12.2.1. **Red/On** – Operating system error detected
 - 1.12.2.2. **Red/Fast Flashing** – Internal error detected
 - 1.12.2.3. **Red/Slow Flashing** – Minor error or no application detected
 - 1.12.3. Refer to the Operations Manual for further information.
 - 1.12.4. Cycle incoming power source OFF and back ON by flipping breaker switches or disconnecting and reconnecting power source. Wait until controller program is completely loaded and monitor the status of Controller RUN light.
 - 1.12.4.1. If **Green/ON**, normal operation has resumed.
 - 1.12.4.2. If **Red/On, Red/Fast Flashing, Red/Slow Flashing** is displayed, contact Vekttek Customer Support for guidance.
 - 1.12.5. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.13. **AWP PLC - IO ERROR** is displayed if there are controller input/output device errors.
 - 1.13.1. Alarm Class B
 - 1.13.2. Controller **I/O** light status
 - 1.13.2.1. **Red/On** is displayed if device errors on embedded I/Os, serial line1 or 2, SD card, cartridge, TM4 bus, or Ethernet port are detected.
 - 1.13.3. Verify information on PLC screen. Verify which IO group is faulty.
 - 1.13.4. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.14. **AWP PLC - SD Card ERROR** is displayed if there is an SD Card status change.
 - 1.14.1. Alarm Class D
 - 1.14.2. Controller **SD** light status
 - 1.14.2.1. **Green/On** is displayed if the SD card is being accessed.\
 - 1.14.3. Verify SD Card, format it, replace it.
 - 1.14.3.1. Format SD Card to FAT or FAT32 only.
 - 1.14.3.2. Add label via PC using File Explorer, Removable Disk, Properties, General tab
 - 1.14.4. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.15. **AWP PLC - Battery Voltage LOW** is displayed if battery is not working properly.
 - 1.15.1. Alarm Class D
 - 1.15.2. Controller **BAT** light status
 - 1.15.2.1. **Red/On** – Indicates that the battery needs to be replaced
 - 1.15.2.2. **Red/Flashing** – Indicates that the battery charge is low
 - 1.15.3. Replace battery.
 - 1.15.4. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.16. **AWP PLC - Serial Line 1 Modbus RTU Communication to VFD ERROR**
 - 1.16.1. Alarm Class B
 - 1.16.2. Controller **SL1** light status
 - 1.16.2.1. **Green/On** indicates the status of Serial Line 1
 - 1.16.2.2. **Green/Off** indicates no serial communication
 - 1.16.3. Review cable between the PLC and VFD. If the VFD was recently installed, update all parameters, including those related to Modbus RTU Communication.
 - 1.16.4. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.17. **AWP PLC - Serial Line 2 Modbus TCP Communication ERROR - Not Used**

- 1.18. **AWP PLC - TM4ES4 Bus ERROR** is displayed if there is an error on the TM4 switch
 - 1.18.1. Alarm Class B
 - 1.18.2. Controller **TM4** light status
 - 1.18.2.1. **Red/On** indicates that an error has been detected on the TM4 bus.
 - 1.18.2.2. **Red/Off** indicates that NO error has been detected on the TM4 bus.
 - 1.18.3. Verify TM4ES4 module connection to the PLC, PWR status green LED is On, and Ethernet connection status green LED is On.
 - 1.18.4. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.19. **AWP PLC – Ethernet IF1 error detected – PLC CPU Ethernet Port 1**
 - 1.19.1. Alarm Class B
 - 1.19.2. PLC Fault. Power cycle the PLC. If necessary, replace the PLC.
 - 1.19.3. Select **ALARM RESET** button after cause of alarm has been corrected.

- 1.20. **AWP PLC - Ethernet Port to I/O Module STATUS** is displayed if there is a connection error.
 - 1.20.1. Controller **ETH** light status
 - 1.20.1.1. **Green/On** indicates the Ethernet port is connected and the IP Address is defined
 - 1.20.1.2. **Green/3 Flashes** indicates the Ethernet port is Not connected.
 - 1.20.1.3. **Green/4 Flashes** indicates the IP Address is already in use.
 - 1.20.1.4. **Green/5 Flashes** indicates the module is waiting for BOOTP or DHCP sequence.
 - 1.20.1.5. **Green/6 Flashes** indicates that the configured IP Address in not valid.

1.21. **IO Module 0 - Communication error - Ethernet IP**

- 1.21.1. Alarm Class B
- 1.21.2. Verify Ethernet cables between the PLC Ethernet Port 1 and this IO Module. If this is a new IO Module, verify this IO Module DIP switch configuration.
- 1.21.3. Check communication cables inside and outside enclosure for proper connection.
- 1.21.4. Check power cable to IO Module.
- 1.21.5. See Section VI for IO Module Configuration procedure.
- 1.21.6. Select **ALARM RESET** button after cause of alarm has been corrected.

1.22. **IO Module 1 - Communication error - Ethernet IP**

- 1.22.1. Alarm Class B
- 1.22.2. Verify Ethernet cables between the PLC Ethernet Port 1 and this IO Module. If this is a new IO Module, verify this IO Module DIP switch configuration.
- 1.22.3. Check communication cables inside and outside enclosure for proper connection.
- 1.22.4. Check power cable to IO Module
- 1.22.5. See Section VI for IO Module Configuration procedure.
- 1.22.6. Select **ALARM RESET** button after cause of alarm has been corrected.

1.23. **AWP/CNC – Modbus TCP Communication ERROR** is displayed if Ethernet communication is lost between the PLC, TM4ES4 switch, and the CNC Machine.

- 1.23.1. Alarm Class B
- 1.23.2. Verify Ethernet cables between AWP and CNC machine.
- 1.23.3. Check communication cables inside and outside enclosure for proper connection.
- 1.23.4. Select **ALARM RESET** button after cause of alarm has been corrected.

1.24. **AWP PLC - Ethernet IP communication ERROR** is displayed if Ethernet communication is lost between the PLC and IO modules.

- 1.24.1. Alarm Class B
- 1.24.2. Verify Ethernet cables between the PLC and IO Modules
- 1.24.3. Check communication cables inside and outside enclosure for proper connection.
- 1.24.4. Select **ALARM RESET** button after cause of alarm has been corrected.

1.25. **V or C Missing conditions to execute command A** is displayed if after receiving a command from the CNC machine, the pump PLC cannot complete the command. Typical causes for this fault are the following:

- 1.25.1. Alarm Class B
- 1.25.2. AWP SYSTEM OPERATION MODE has not been set to MAN or AUTO
- 1.25.3. AWP 3-POSITION SELECTOR SWITCH STATUS has not been set to ON
- 1.25.4. CNC MACHINE OPERATION MODE has not been set to AUTO or MDI
- 1.25.5. CNC MACHINE DOOR is not Closed.

1.26. **V or C FAULT executing command A** is displayed if after component actuation, the A Port pressure switch Set Point 1 (SP1) value is not met, and acknowledgement not sent within the programmed PS Time-Out value. The PS Time-Out value can be increased to allow more time to meet the pressure switch Set Point 1 value. If fault still occurs, typical causes are oil leaks in valves, components, or plumbing in that circuit.

1.26.1. Alarm Class B

1.27. **V or C FAULT executing command B** is displayed if after component actuation, the B Port pressure switch Set Point 1 (SP1) value is not met, and acknowledgement not sent within the programmed PS Time-Out value. The PS Time-Out value can be increased to allow more time to meet the pressure switch Set Point 1 value. If fault still occurs, typical causes are oil leaks in valves, components, or plumbing in that circuit.

1.27.1. Alarm Class B

1.28. **V or C FAULT executing command INT** is displayed if after component actuation, the INT Port pressure switch Set Point 1 (SP1) value is not met, and acknowledgement not sent within the programmed PS Time-Out value. The PS Time-Out value can be increased to allow more time to meet the pressure switch Set Point 1 value. If fault still occurs, typical causes are oil leaks in valves, components, or plumbing in that circuit.

1.28.1. Alarm Class B

1.29. **V or C Acknowledgement A and B at the same time** is displayed if the pressure switch Set Point 1 (SP1) value on A Port and B Port are both met at the same time. This indicates simultaneous full pressure on both sides of the valve/component circuit and is unacceptable. Typical causes of this issue would be a stuck valve/component solenoid or a blockage in one or both sides of the circuit. Service of valve/component solenoids may be required.

1.29.1. Alarm Class B

2. Controller - Monitoring Status Communication Lamps

2.1. **Green** indicates system is On for normal operation of Unit Communications.

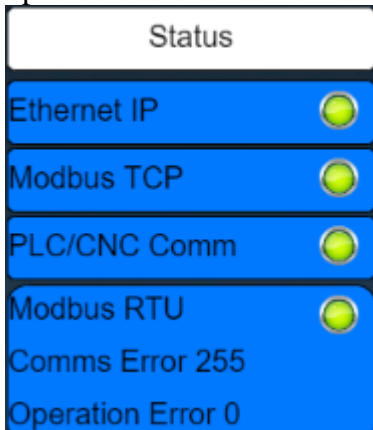
2.2. **Red** indicates system is Off and needs attention to restore operation of Unit Communications.

2.2.1. Ethernet IP – Check Ethernet cable and connections from PLC Ethernet connection to IO modules for normal operation

2.2.2. Modbus TCP – Check connection from PLC to TM4 Switch for normal operation

2.2.3. PLC/CNC Comm – Check Ethernet cable and connections from PLC to TM4 Switch to CNC for normal operation

2.2.4. Modbus RTU – Check Ethernet cable and connections from PLC to VFD for normal operation.



3. IO Module Setup Communication Lamps

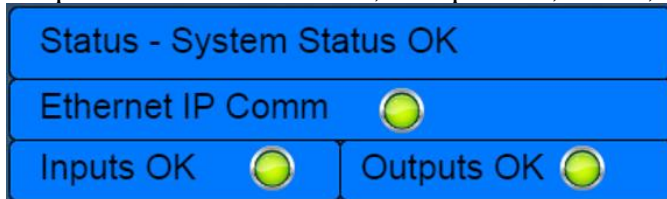
3.1. **Green** indicates system is On for normal operation of IO Modules.

3.2. **Red** indicates system is Off and needs attention to restore power and/or operation of IO Modules.

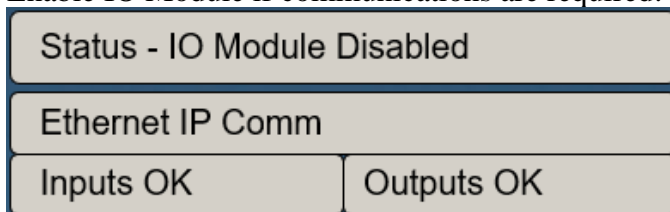
3.2.1. Ethernet IP Comm – Check Ethernet cable and connections from M12 enclosure connector to IO Module for normal operation.

3.2.2. Inputs OK – Check Pressure Switches, cables, and connections for normal operation.

3.2.3. Outputs OK – Check Valves, Components, cables, and connections for normal operation



3.2.4. Enable IO Module if communications are required.



4. VFD Status Communication Lamps for diagnostics and trouble shooting.

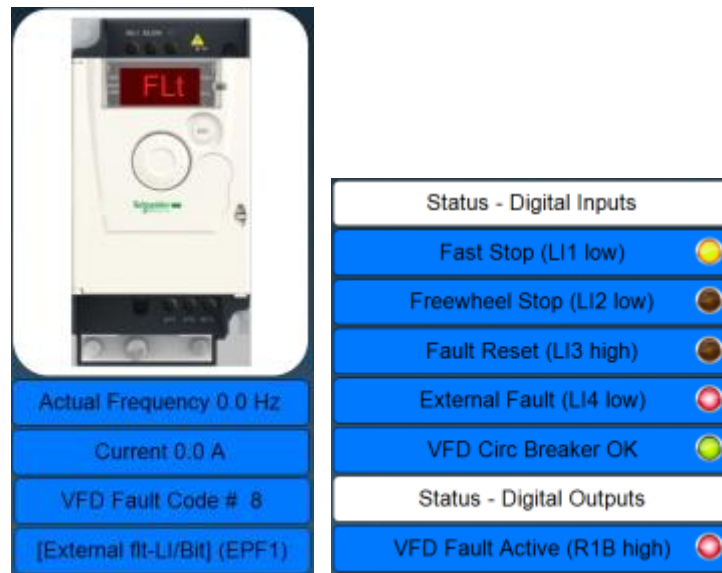
4.1. Status Digital Inputs

- 4.1.1. Fast Stop (LI1 low) - **yellow** light indicates Fast Stop signal active. (Pressure Switch SP1 signal)
- 4.1.2. Freewheel Stop (LI2 low) - **yellow** light indicates Freewheel Stop signal active. (3-Position Switch OFF signal)
- 4.1.3. Fault Reset (LI3 high) – **Red** light indicates Fault Reset signal is active. (Select Alarm Rest button)
- 4.1.4. External Fault (LI4 low) – **Red** light indicates External Fault signal is active. Check Unit Setup and Status screen to determine which sensor status lamp is no longer illuminated **Green** for a specific fault.
 - 4.1.4.1. Oil Level – Add suitable hydraulic oil to reservoir above oil level fill line.
 - 4.1.4.2. Oil Temp – Caused by oil leak and continuous running pump motor. Find and correct cause of oil leak and allow oil temperature to cool to below 100°F (38°C) before restarting AWP.
 - 4.1.4.3. Return-line Filter is clogged. Replace with new filter part no. 31050018.

4.2. Status – Digital Outputs

- 4.2.1. VFD Fault Active (R1B high) – Red light indicates VFD Fault is active. Read fault code on VFD Fault Description or VFD display before powering down.

Important: Removal of electrical Enclosure lid to be done by qualified personnel only.



5. If Command signal from CNC machine does not result in completion of command at AWP.
 - 5.1. Check if AWP 3-POSITION SELECTOR STATUS on HOME screen is switched to On.
 - 5.2. Check if SYSTEM OPERATION MODE on HOME screen is set to AUTO.
 - 5.3. Check if CNC MACHINE OPERATION MODE on HOME screen display is AUTO.
 - 5.4. Check communication in AWP THINC APP Log file.
 - 5.4.1. Error Connecting to CNC
 - 5.4.2. Error Connecting to PLC
 - 5.4.3. Error Connecting to MirrorData
 - 5.4.4. Error Initializing Cmachine and CVariables:

6. If Acknowledgment Signal from AWP does not result in completion of Command at CNC machine
 - 6.1. Check communication in AWP THINC APP Log file. (same as above)

7. System Status lights on IO Module is **Red** or Off.
 - 7.1. Check connections of IO Module cable from AWP enclosure.
 - 7.2. Check connections of IO Power cable from AWP enclosure.
 - 7.3. Check IO Modul screen, System Status lights.

SECTION VI

IO Module Configuration

1. Set IO Module IP address to default value.
 - a. Set DIP switch 10 to On and power IO Module Off and On.
 - b. Set DIP switch 10 to Off and power IO Module Off and On
2. Set DIP switch to **1** for IO Module 0 (IP Address 192.168.123.1)

Input DMX Address Number:

1 Show



- a.
3. Set DIP switch to **2** for IO Module 1 (IP Address 192.168.123.2)

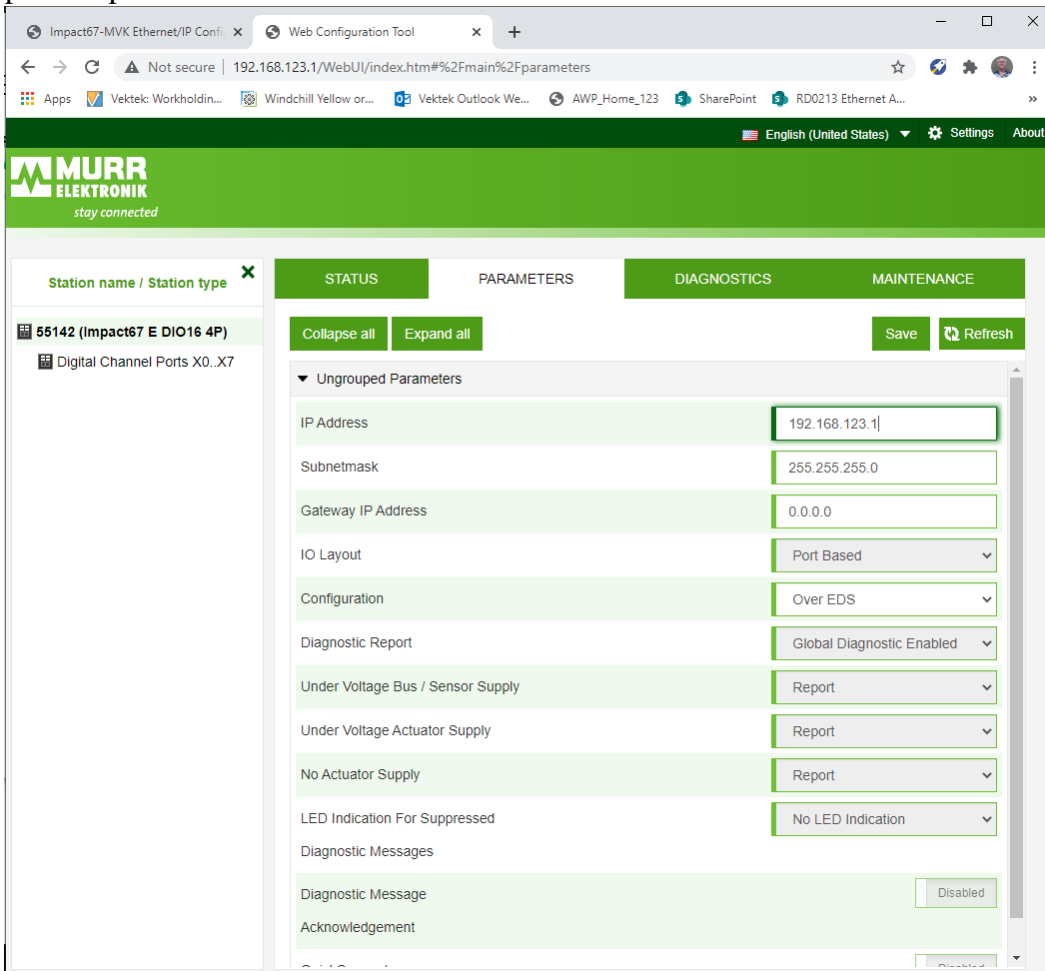
Input DMX Address Number:

2 Show



- a.
4. Connect Date Cable direct to IO Module data port (program 1 IO module at a time)
5. Set PC network IP Address to fixed 192.168.1.xxx
6. Open a web browser and type in the default IP Address 192.168.1.1 into the URL field.

7. After Web Configuration Tool starts, enter new IP Address
 - a. 1-4 valve IO Module 0 = 192.168.123.1
 - b. 5-6 valve IO Module 1 = 192.168.123.2
8. Change Configuration parameter to Over EDS so it will load correct parameters from PLC on power up.

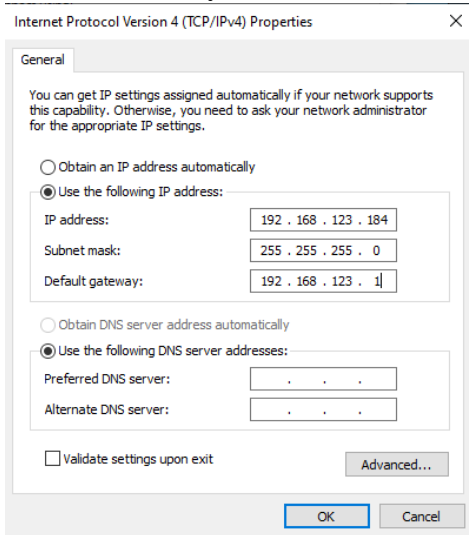


9. Select SAVE

10. Power down IO Module and Power up.

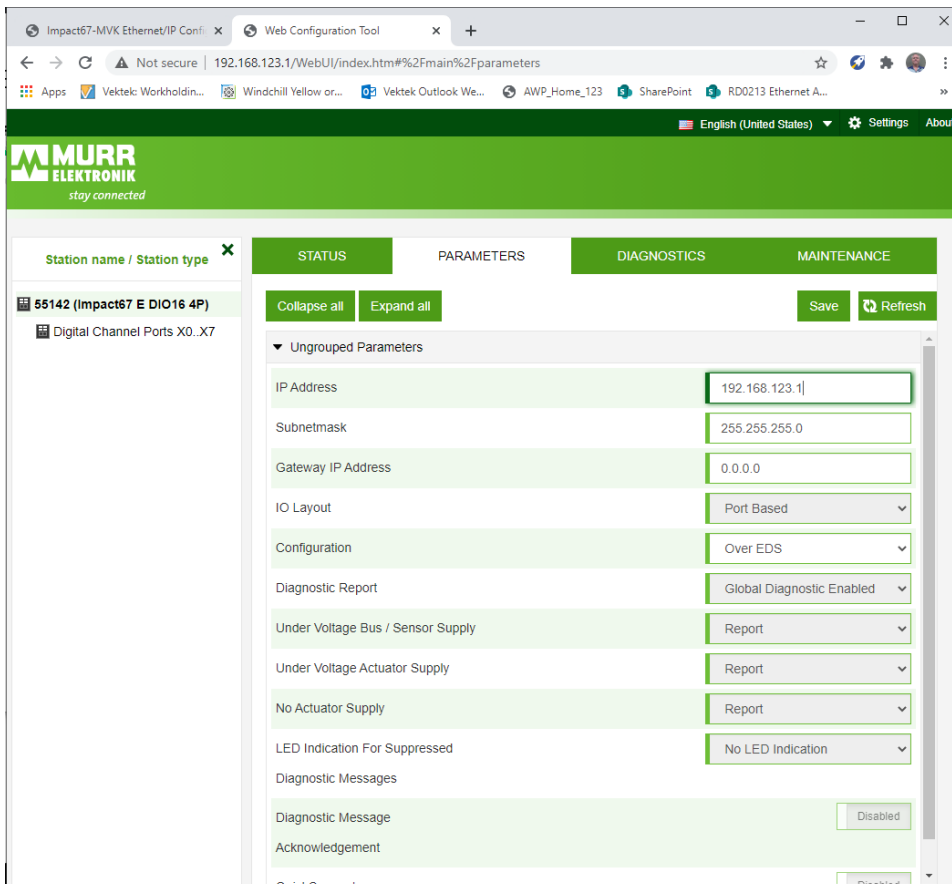
11. To check settings of IO Module, set PC network properties as follows.

- a. IP Address: 192.168.123.xxx (3rd octet must be change to .123. to match IO Modules)
(xxx can be any number that does not conflict on the existing network)
- b. Subnet Mask: 255.255.255.0
- c. Default Gateway: 192.168.123.1



12. Open a web browser and enter the new IP Address in the URL field.

- a. 1-4 valve IO Module 0 = 192.168.123.1
- b. 5-6 valve IO Module 1 = 192.168.123.2



SECTION VII

GLOSSARY

- 1.0 A – A Port
- 2.0 ACK - Acknowledgement
- 3.0 APP – Application
- 4.0 AUTO - Automatic
- 5.0 AWP – Advanced Workholding Pump
- 6.0 B – B Port
- 7.0 C – Component
- 8.0 CMD – Command
- 9.0 CNC – Computer Numerical Control
- 10.0 CPU – Central Processing Unit
- 11.0 INT – Intermediate (Valve or Component)
- 12.0 IO – Input Output
- 13.0 MAN- Manual
- 14.0 MDI – Manual Data Entry
- 15.0 PID – Proportional Integral Derivative (Calculation used in VFD to anticipate pressure switch set point for stopping pump motor)
- 16.0 PLC – Programmable Logic Controller
- 17.0 POS – Position
- 18.0 PS – Pressure Switch
- 19.0 PSI – Pounds per Square Inch
- 20.0 THINC – Open Architecture programming application, trademark of Okuma America Corporation
- 21.0 V – Valve
- 22.0 VAC – Volts Alternating Current
- 23.0 VFD – Variable Frequency Drive
- 24.0 WSA - Web Server Application