

PLC Interface

Configuration and Operations Manual (Color OIT)



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OmniLink 5000

Table of Contents

Section 1	Introduction	1.1
Section 2	Parameter Entry and Access Control	2.1
Section 2.1	Parameter Entry	2.1
Section 2.1.1	Numeric Entries	2.1
Section 2.1.2	Text Entry	2.1
Section 2.2	Access Control	2.3
Section 2.2.1	Key Only Mode	2.3
Section 2.2.2	Key or Password Mode	2.3
Section 2.2.3	Password Only Mode	2.4
Section 2.2.4	Key and Password Mode	2.4
Section 2.2.5	Tonnage Monitor Restricted Items	2.4
Section 2.2.6	Access Control Operation	2.4
Section 2.2.6.1	RUN/PROG Key Switch Operation	2.4
Section 2.2.6.2	Password System Operation	2.5
Section 3	Configuration	3.1
Section 3.1	The Main PLC Interface Configuration Screen	3.2
Section 3.2	Screen Status Message Configuration	3.3
Section 3.3	Parameter Status Message Configuration	3.5
Section 3.4	Parameter Configuration	3.6
Section 3.5	PLC Screen Softkey Configuration	3.8
Section 3.6	Screen Status Label Configuration	3.9
Section 4	Operation	4.1
Section 5	Communications Protocol	5.1
Section 5.1	Conventions	5.1
Section 5.2	Acknowledgments	5.1
Section 5.3	Numeric Value Formats	5.1
Section 5.4	Text Value Formats	5.2
Section 5.5	Commands From Link Equipment to PLC	5.2
Section 5.5.1	Job Number Command	5.2
Section 5.5.2	User Parameter Command	5.3
Section 5.6	Requests From the PLC to Link Equipment	5.4
Section 5.6.1	Request for Job Number	5.4
Section 5.6.2	Request to Change Job	5.5
Section 5.6.2.1	Load Job From Local Storage	5.5
Section 5.6.2.2	Loading a Job From LinkNet	5.5
Section 5.6.3	Request for User Parameter Value	5.6
Section 5.6.4	Request for Machine Parameter Value	5.6
Section 5.7	Machine Parameter Reference	5.7
Section 5.7.0	Parameter 000 - RUN/PROG Switch Position	5.7
Section 5.7.1	Parameter 001 - Current User	5.7
Section 5.7.2	Parameter 002 - Month	5.7

Section 5.7.3	Parameter 003 - Day	5.7
Section 5.7.4	Parameter 004 - Year	5.8
Section 5.7.5	Parameter 005 - Hour	5.8
Section 5.7.6	Parameter 006 - Minute	5.8
Section 5.7.7	Parameter 007 - Second	5.8
Section 5.7.11	Parameter 011 - Press Control "A" Current Status Code	5.8
Section 5.7.12	Parameter 012 - Press Control "B" Current Status Code	5.9
Section 5.7.13	Parameter 013 - Press Control "A" Reason For Last Stop Code	5.9
Section 5.7.14	Parameter 014 - Press Control "B" Reason For Last Stop Code	5.9
Section 5.7.15	Parameter 015 - Auxiliary Message Selector Value	5.9
Section 5.7.16	Parameter 016 - Crankshaft Angle	5.10
Section 5.7.17	Parameter 017 - Effective Flywheel Speed.	5.10
Section 5.7.18	Parameter 018 - Crankshaft Speed.	5.10
Section 5.7.19	Parameter 19 - Press Stroking Mode	5.11
Section 5.7.20	Parameter 020 - Mode Select Key Flag	5.11
Section 5.7.21	Parameter 021 - Motor Running Flag	5.11
Section 5.7.22	Parameter 022 - Clutch/Brake Flag	5.11
Section 5.7.24	Parameter 024 - Crankshaft Direction of Rotation	5.12
Section 5.7.25	Parameter 025 - Stop Time Limit (Top)	5.12
Section 5.7.26	Parameter 026 - Stop Time Limit (Not at Top)	5.12
Section 5.7.27	Parameter 027 - Start Time Limit	5.12
Section 5.7.28	Parameter 028 - Last Stop Time	5.12
Section 5.7.29	Parameter 029 - Last Stop Position	5.13
Section 5.7.30	Parameter 030 - Last Start Time	5.13
Section 5.7.35	Parameter 035 - Peak Forward Tonnage (Channel 1)	5.13
Section 5.7.36	Parameter 036 - Peak Forward Tonnage (Channel 2)	5.13
Section 5.7.37	Parameter 037 - Peak Forward Tonnage (Channel 3)	5.14
Section 5.7.38	Parameter 038 - Peak Forward Tonnage (Channel 4)	5.14
Section 5.7.39	Parameter 039 - Peak Forward Tonnage (Total)	5.14
Section 5.7.40	Parameter 040 - Peak Reverse Tonnage (Channel 1)	5.14
Section 5.7.41	Parameter 041 - Peak Reverse Tonnage (Channel 2)	5.14
Section 5.7.42	Parameter 042 - Peak Reverse Tonnage (Channel 3)	5.15
Section 5.7.43	Parameter 043 - Peak Reverse Tonnage (Channel 4)	5.15
Section 5.7.44	Parameter 044 - Peak Reverse Tonnage (Total)	5.15
Section 5.7.45	Parameter 045 - Tonnage Monitor Channel 1 Status	5.15
Section 5.7.46	Parameter 046 - Tonnage Monitor Channel 2 Status	5.16
Section 5.7.47	Parameter 047 - Tonnage Monitor Channel 3 Status	5.16
Section 5.7.48	Parameter 048 - Tonnage Monitor Channel 4 Status	5.16
Section 5.7.49	Parameter 049 - Tonnage Monitor Number of Channels	5.16
Section 5.7.51	Parameter 051 - Tonnage Monitor Machine Rating	5.16
Section 5.7.52	Parameter 052 - Tonnage Monitor Reverse Limits ON Flag	5.17
Section 5.7.53	Parameter 053 - Tonnage Monitor Low Limits ON Flag	5.17
Section 5.7.54	Parameter 054 - Tonnage Monitor Bypass Flag	5.17
Section 5.7.55	Parameter 055 - Tonnage Monitor Status Code	5.17
Section 5.7.56	Parameter 056 - Auto-Setup Module Enabled Flag	5.18
Section 5.7.57	Parameter 057 - Auto-Setup Slide Adjust Switch Flag	5.18
Section 5.7.58	Parameter 058 - Auto-Setup Module Status Code	5.18
Section 5.7.59	Parameter 059 - Stroke Count	5.18
Section 5.7.60	Parameter 060 - Stroke Count	5.18

Section 5.7.61	Parameter 061 - Order Count	5.19
Section 5.7.62	Parameter 062 - Batch Count	5.19
Section 5.7.63	Parameter 063 - Quality Count	5.19
Section 5.7.64	Parameter 064 - Counter 4 Count	5.19
Section 5.7.65	Parameter 065 - Counter 5 Count	5.19
Section 5.7.66	Parameter 066 - Counter 6 Count	5.20
Section 5.7.67	Parameter 067 - Counter 7 Count	5.20
Section 5.7.68	Parameter 068 - Counter 8 Count	5.20
Section 5.7.69	Parameter 069 - Counter 9 Count	5.20
Section 5.7.70	Parameter 070 - Counter 10 Count	5.20
Section 5.7.71	Parameter 071 - Order Counter Limit	5.21
Section 5.7.72	Parameter 072 - Batch Counter Limit	5.21
Section 5.7.73	Parameter 073 - Quality Counter Limit	5.21
Section 5.7.74	Parameter 074 - Counter 4 Limit	5.21
Section 5.7.75	Parameter 075 - Counter 5 Limit	5.21
Section 5.7.76	Parameter 076 - Counter 6 Limit	5.22
Section 5.7.77	Parameter 077 - Counter 7 Limit	5.22
Section 5.7.78	Parameter 078 - Counter 8 Limit	5.22
Section 5.7.79	Parameter 079 - Counter 9 Limit	5.22
Section 5.7.80	Parameter 080 - Counter 10 Limit	5.22
Section 5.7.81	Parameter 081 - Job Description	5.23
Section 5.7.82	Parameter 082 - Press Control Current Status Description	5.23
Section 5.7.84	Parameter 084 -Press Control Reason for Last Stop Description	5.23
Section 5.8	Sending Status Message Codes	5.24
Section 5.8.1	Screen Status Command Format	5.24
Section 5.8.2	Parameter Status Command Format	5.24

Section 1 Introduction

The Link PLC interface is intended to allow communications between Link equipment and generic external devices (primarily PLCs, but other devices could be used - the term PLC will be used in this manual to refer to both) . Features include:

- ◆ Up to 4 user defined screens can be configured.
 - ◆ Each screen can be given a title and a softkey name for navigation.
 - ◆ Each screen can have up to 16 user defined parameters.
 - ◆ Each screen can have up to 5 user defined “action” softkeys.
 - ◆ Each screen can have up to 4 user labeled screen status messages. These messages are 40 characters long and can be color coded. Up to 256 different status messages can be configured and are shared across all screens.
- ◆ Each parameter is named by the user and can consist of a numeric value, a status message, or both.
 - ◆ Each numeric value parameter has a number of digits, decimal place, maximum value, minimum value, and unit of measure associated with it.
 - ◆ Each parameter status message is 15 characters long and can be color coded. Up to 64 different parameter status messages can be configured and are shared across all parameters.
- ◆ All user parameters are stored with the OmniLink job. When the system is powered up or a new job is recalled, the user parameters are automatically sent to the PLC. In addition, the PLC can request the parameter values at any time.
- ◆ The OmniLink job number can be configured to be sent automatically to the PLC when the system is powered up and when a new job is recalled.
- ◆ Many parameters from the press control, such as mode, status, crank angle, and other values can be requested by the PLC.
- ◆ The PLC can tell the OmniLink to recall a job number.

Section 2 Parameter Entry and Access Control

Section 2.1 Parameter Entry

Throughout the OmniLink control, a fairly standard form of data entry is employed. When data entry is allowed, an “editing cursor” will appear on the screen. This cursor can typically be moved from parameter to parameter on the screen with the up, down, left, and right arrow keys. The topmost softkey is used to select the parameter for editing and can change description depending on the parameter selected.

Section 2.1.1 Numeric Entries

Assuming access has been achieved by one of the means listed in the following sections, to change a numeric value:

- a) Place the editing cursor on the parameter to be changed by using the up, down, left, and right arrow keys as appropriate. Note that the editing cursor will only appear on the screen when editing is allowed. For instance, editing is usually not allowed when the press is running.
- b) The topmost softkey will usually say something along the lines of “CHANGE XXXXXX” where XXXXXX is the name of the value to be changed. It may also simply say “CHANGE NUMBER.” In any case, hit this softkey to enter numeric input mode. The editing cursor will change to a rectangle around the parameter to be edited.
- c) Use the numeric keypad to input the new number desired for the parameter.
- d) Press the ENT key to finish.

Note that moving off the parameter with the arrow keys or hitting the EXIT key will abort the edit and leave the parameter at the value it had before the editing process began.

Section 2.1.2 Text Entry

For text entry:

- a) Place the editing cursor on the text to be changed by using the up, down, left, and right arrow keys as appropriate. Note that the editing cursor will only appear on the screen when editing is allowed. For instance, editing is usually not allowed when the press is running.
- b) The topmost softkey will usually say something along the lines of “CHANGE XXXXXX” where XXXXXX is the name of the value to be changed. It may also simply say “CHANGE TEXT.” In any case, hit this softkey to enter text entry mode. The right-hand softkeys will change, a letter selection box will appear, and the editing cursor will change to a rectangle around the text to be edited. Figure 2.1 shows the softkeys and an example text parameter.

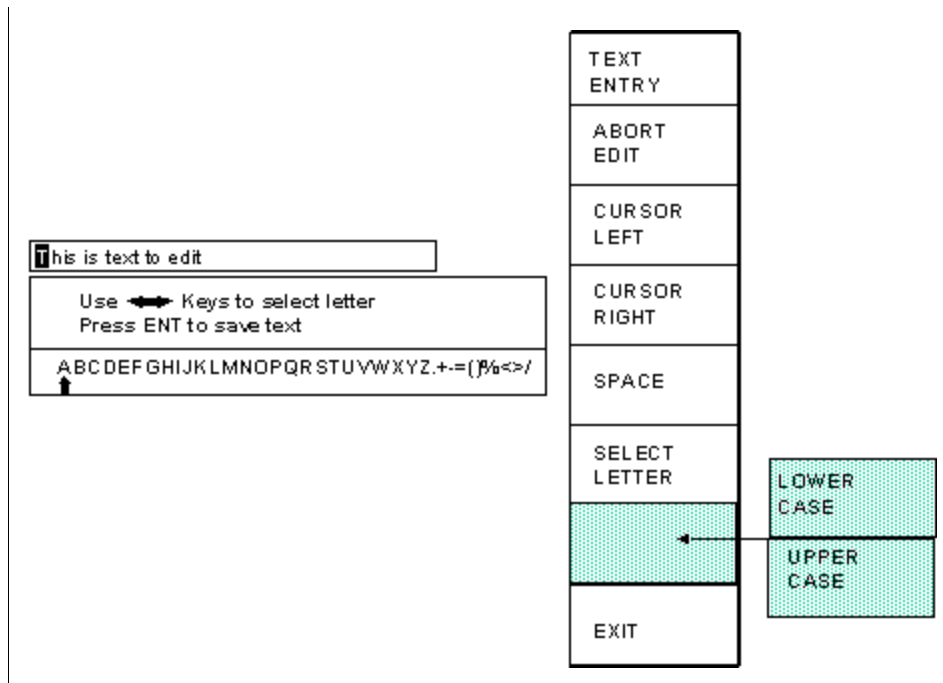


Figure 2.1: Example Text Entry

- c) The first character of the text is highlighted with the text cursor. The CURSOR LEFT and CURSOR RIGHT softkeys will move this cursor.
- d) Use the left and right arrow keys to point to the letter desired in the letter box next to the text being edited. This box will just appear above or just below the text to be edited depending on where it is in the screen. Hit the SELECT LETTER softkey to place that letter at the text cursor. In the example above, the text cursor is on the “T” in “This” and would be replaced with an “A”. The text cursor will automatically move to the right when a letter is selected. Note that numerals can be entered directly with the numeric keypad.
- e) The SPACE softkey can be used to enter a space character in the text.
- f) The softkey immediately above the EXIT softkey is used to select between uppercase and lowercase letters.
- g) The EXIT or ABORT EDIT softkeys can be used to abort the editing operation. The text will revert to what it was before the editing operation started.
- h) After the text has been changed as desired, press the ENT key to accept the changes.

Section 2.2 Access Control

The OmniLink control has several parameters or operations that have limited access. The ability to perform certain operations or change certain parameters should typically be restricted to authorized personnel. The OmniLink control provides several means to limit access to these parameters or operations. These parameters and operations are called restricted items.

The OmniLink control employs combinations of two different means to limit access to restricted items. These means are the RUN/PROG key switch on the operator terminal and a user password system. The user password system assigns names and passwords to up to sixteen users. These two means can be used alone or in combination with each other. When a user employs the proper means to gain access, he will have the ability to perform the actions and change the parameters which have been designated to his control.

There are four possible modes of operation for the restricted access system. They are the “Key Only” mode, the “Key or Password” mode, the “Password Only” mode, and the “Key and Password” mode. The control can be configured to operate in any one of these four modes.

Section 2.2.1 Key Only Mode

The “Key Only” mode is the least complex of the four modes. This mode employs the RUN/PROG key as the only means to limit access to restricted items. Any user with the RUN/PROG key can access all of the restricted items. Without the RUN/PROG key, user access to all of the restricted items is prohibited.

Although the “Key Only” mode has the advantage of being easy to use, it does have a disadvantage. This mode cannot give a particular user access to only some of the restricted items. When operating in this mode, any user with the RUN/PROG key will have access to all of the restricted items.

Section 2.2.2 Key or Password Mode

The key or password mode allows for either of two means to gain access to the restricted items. A user with RUN/PROG key can access all of the restricted items. A user with the correct password can access the restricted items that have been designated for that particular user’s access only. The system allows for passwords to be assigned to sixteen users. Each user can be assigned access to any or all of the restricted items.

The following is an example of a “Key or Password” mode operation. The RUN/PROG key is given to the die set-up personnel. A press operator is assigned a user name and password. With the password the operator can reset tonnage monitor faults. This is the only tonnage monitor related item to which the operator has access. In order to load a die, the set-up personnel uses the RUN/PROG key to recall a job from job storage. The set-up personnel will also be able to make changes to tonnage monitor limits. Once the set-up personnel sets the die and verifies its correct operation, the operator is left to run the die. If a tonnage monitor fault occurs, the operator can enter the correct password and then reset the fault. However, the operator cannot change tonnage monitor limits or bypass the tonnage monitor. This will allow the operator to keep running the job and reset faults that occur. However, if consistent stops occur because a tonnage monitor limit needs changing, the set-up personnel must be called to change the tonnage monitor limit.

The example above can be taken one additional step, if two press operators are given different user names and different passwords. One operator can be assigned the ability to change tonnage monitor limits in addition to the ability to reset tonnage monitor faults, while the other operator is not assigned the ability to change the tonnage monitor limits.

Section 2.2.3 Password Only Mode

The “Password Only” mode allows for sixteen users. Each user can be assigned access to some or all of the restricted items. This mode does not use the RUN/PROG key.

The example listed above indicated that setup personnel required access to all restricted items. In the “Key or Password” mode, the setup personnel used the RUN/PROG key to gain access to all of the restricted items. In the “Password Only” mode, the setup personnel can still have access to all of the restricted items, but the system must be configured as such. The setup personnel must be assigned a user name and password. In addition, all restricted items would be assigned access to the setup personnel.

Section 2.2.4 Key and Password Mode

The “Key and Password” mode requires the user to have the RUN/PROG key, user name, and user password. Operation is basically the same as the Password only mode, except that in addition to entering the password the user must switch the RUN/PROG key to the PROG position.

Section 2.2.5 Tonnage Monitor Restricted Items

The following table lists the PLC Interface restricted items name and function.

PLC INTERFACE RESTRICTED ITEMS

NAME	FUNCTION
PLC Screen 1 Sets	Change Settings on PLC Screen 1
PLC Screen 2 Sets	Change Settings on PLC Screen 2
PLC Screen 3 Sets	Change Settings on PLC Screen 3
PLC Screen 4 Sets	Change Settings on PLC Screen 4

Section 2.2.6 Access Control Operation

To gain access control the user must use one of two means or a combination of these two means. These means are the RUN/PROG key or the user password system.

Section 2.2.6.1 RUN/PROG Key Switch Operation

The RUN/PROG key switch is located on the lower right side of the operator terminal. This is a two position switch. The key is removable in the RUN position only. If the RUN/PROG key switch is being used as a means to access the restricted items, the switch must be turned to the PROG position. When the RUN/PROG key switch is switched to the PROG position, the press will Top Stop and

stroking will be prohibited until the switch is returned to the RUN position.

When operating in the Key Only mode the key switch is the only means available to access the restricted items. All restricted items are accessible when the RUN/PROG key switch is switched to the PROG position.

When operating in the “Key or Password” mode, the key switch is one of the means available to access the restricted items. All restricted items are accessible when the RUN/PROG key switch is switched to the PROG position.

When operating in the “Key and Password” mode, the key switch and password must be used to access the restricted items. In this mode, the user will be granted access only to the restricted items that have been assigned to him.

Section 2.2.6.2 Password System Operation

Figure 2.2 displays a typical password entry sequence. This example shows the steps necessary to change a tonnage monitor limit setting. This is typical for password entry for all restricted items.

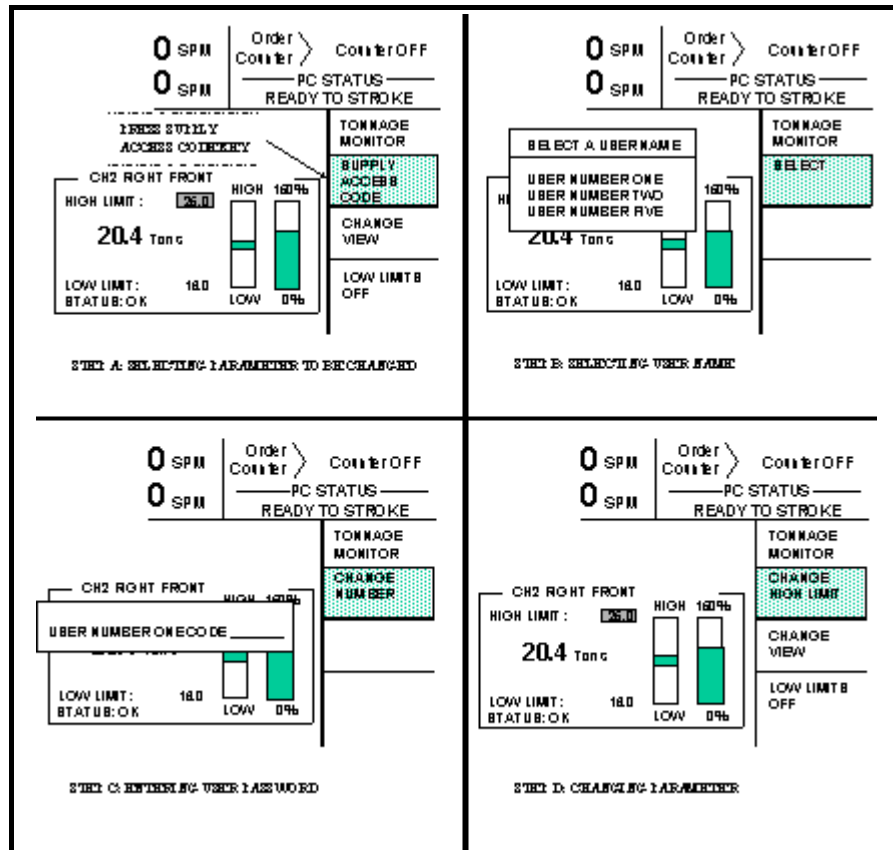


Figure 2.2: Password Entry Sequence

Step A: Select the restricted item. In the example shown in Figure 2.2 the restricted item is Channel 2 High Limit. Once the parameter is selected then Softkey # 1, the upper vertical softkey (Softkey # 1 is highlighted in Figure 2.2) , will display the legend “SELECT”.

Step B: A list of users that have access to this restricted item will appear. In the example shown in

Figure 2.2 only User Number One, User Number Two, and User Number Five have access to this restricted parameter. The system may have several more users, but the three users listed on the screen are the only users that have access to change a High Peak Limit. The user must use the arrow keys to position the cursor on his user name. After placing the cursor on the correct name, the user must press the SELECT softkey. The SELECT softkey must be pressed even if there is only one user name displayed.

Step C: The display will show the selected user name and request the user password. The user must enter the correct password and then press the ENT key.

Step D: Upon entry of the correct password, the user will be allowed access to the restricted item. In the example shown in Figure 2.2, the user will have access to change the Channel 2 High Limit.

After performing the steps listed above, the user will be logged in to the password system. The user will have access to all restricted items that have been designated for his access. This access will remain until the user performs a log out or until the user is automatically logged out.

The user can log out by using the “ACC” key. This key will directly switch the display to the Quick Access screen. The “LOGOUT” soft key legend will appear along the bottom of the screen. If the operator presses this key, he will log out. He will no longer have access to the restricted items, unless he repeats steps A through D.

In addition to the manual log out, the system contains an automatic logout. The intent of automatic log out is to reduce the possibility of users other than the intended user having access to restricted items. If there were no provisions for automatic log out and a user forgot to manually log out, all restricted items to which the user had been designated for access would be available from the log in time until power was removed from the OmniLink control. This presents the possibility of users other than the intended user having access to restricted items. Automatic log out is based upon both time and press strokes. During system configuration automatic Access Timeout parameters are entered. An automatic access timeout time and automatic access timeout strokes are entered. The time entered is the amount of time after the last key stroke that will be allowed before the system will automatically log out the user. For example, if the automatic access timeout is set to 60 seconds, the user will be logged out 60 seconds after the last key stroke. If the user presses a key before the 60 seconds have elapsed, a new 60 second cycle will be started. The number of strokes that are entered is the number of press strokes after the last key stroke that will be allowed before the system automatically logs out the user. For example, if the automatic timeout is set to 10 strokes, the user will be logged out when the press completes ten strokes after the last key stroke. If the user presses a key before 10 strokes have been completed, a new 10 stroke cycle will be started.

Section 3 Configuration

Before the PLC Interface can be configured, it must be enabled in the Auxiliary Communications Setup screen. To get to this screen:

- a) Press the “CONFIGURE” softkey in the Press Control Screen. The configuration access code will have to be entered to gain access to this screen.
- b) Press the “OPERATOR TERMINAL” softkey.
- c) Press the “AUXILIARY COMM SETUP” softkey.
- d) The screen should now look similar to that of Figure 3.1 (there may differences depending on the particular options enabled on each control).

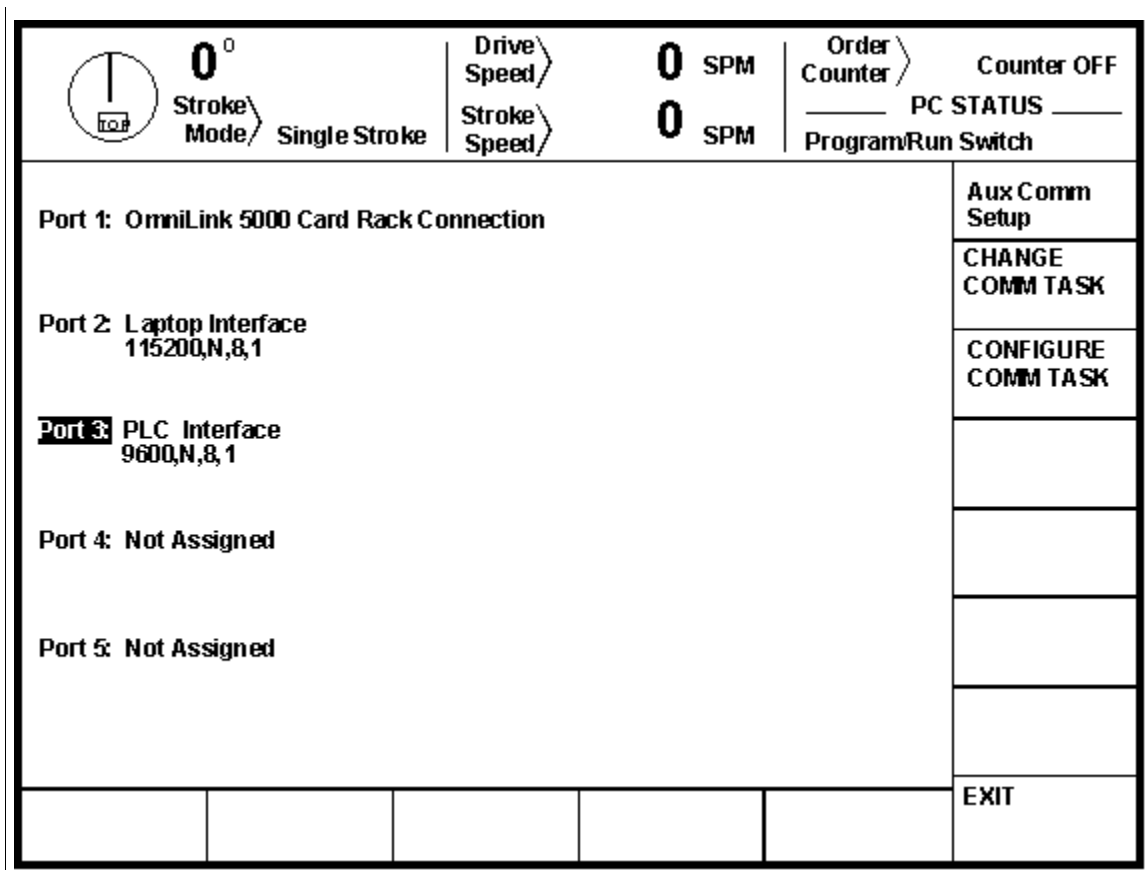


Figure 3.1: Example Auxiliary Communications Setup Screen

- e) There are five ports that can be configured for various functions such as laptop interface, network interface, feed interface, and so on. On the OmniLink 5000, port 1 is fixed for use by the system. Ports 2 through 5 can be configured by the user according to need. To change the function of a port, move the cursor to the port and hit the “CHANGE COMM TASK” softkey. This key will cycle through the available functions of the port. Note that most functions can only be selected on one port at a time. Place the cursor on the port the PLC Interface should run on (Port 3 in the example of Figure 3.1) and hit the “CHANGE COMM TASK” softkey until “PLC Interface” appears. If it does

not appear, make sure it is not currently configured on another port.

f) Once “PLC Interface” is selected to run on the port, press the “CONFIGURE COMM TASK”

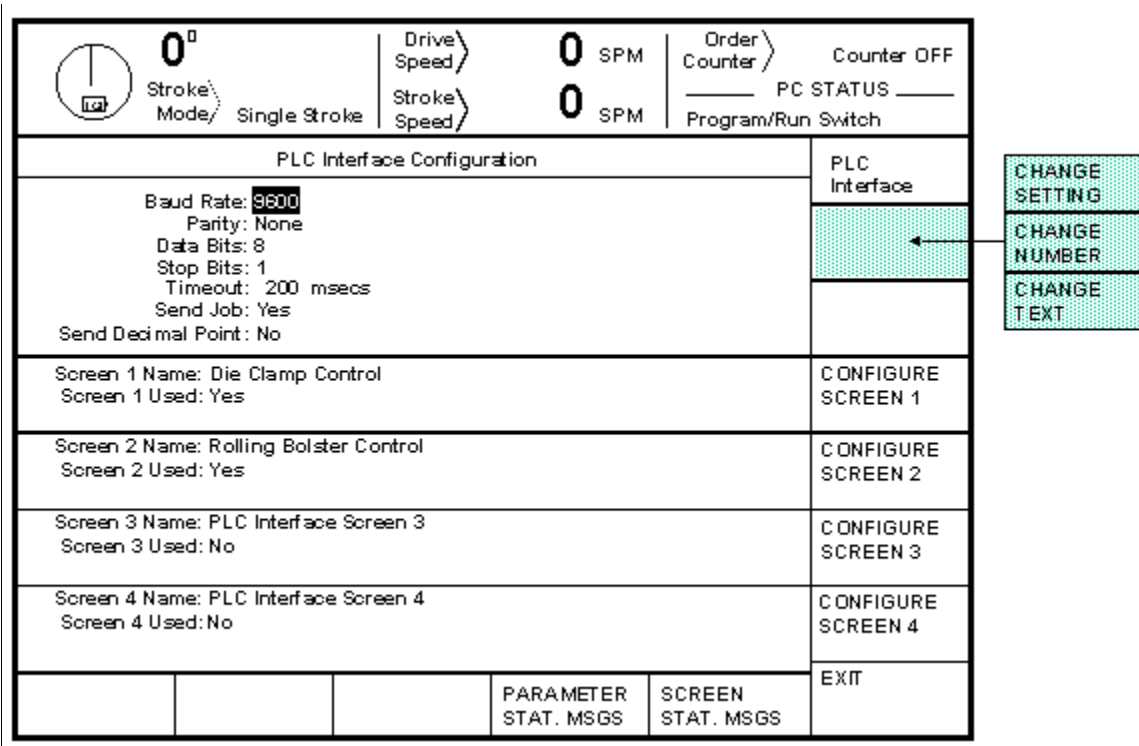


Figure 3.2: Example PLC Main Configuration Screen

softkey and the screen of Figure 3.2 should appear.

Section 3.1 The Main PLC Interface Configuration Screen

The main PLC Interface configuration screen (shown in Figure 3.2) contains settings that apply to the PLC Interface as a whole. Individual PLC screens are configured separately.

The settings on this screen are:

Baud Rate: Choices are 300, 1200, 2400, 9600, 19200, 38400, and 57600. This must match the speed of the device on the other end of the line.

Parity: Choices are None, Even, Odd, Mark and Space. This must match the parity of the device on the other end of the line.

Data Bits: Choices are 5, 6, 7 and 8. This must match the data bits setting of the device on the other end of the line.

Stop Bits: Choices are 1 and 2. This must match the stop bits setting of the device on the other end of the line.

Timeout: This value should be between 100 milliseconds and 5000 milliseconds. This is the amount of time the interface will wait for a response from the PLC before assuming

there is a problem with the communications link.

Send Dec Pt: Choices are “Yes” and “No”. If the setting is “Yes” then a decimal point will be sent to the PLC for parameters that have one. If “No” then the number will be sent without a decimal point. For instance, if parameter 1 is configured with 6 digits and 3 decimal places, it might look like “123.456” on the screen. If “Send Dec Pt” is “Yes” then the PLC Interface would send “123.456” to the PLC. If “Send Dec Pt” is “No” then “123456” would be sent to the PLC. This setting is used to allow decimal places to be shown on the user screen even if it would be difficult to handle them on the PLC.

Send Job Num: Choices are “Yes” and “No”. If this setting is “Yes” then the PLC interface will send the current job number to the PLC whenever it changes and on power-up. If this setting is “No” the job number will not automatically be sent but the PLC can still request it.

Screen X Name: Where *X* is 1 to 4. The four possible PLC screens can each be given a name. This name will be the title at the top of the PLC operator screen when that screen is selected. The example screen in Figure 3.2 shows that screen 1 is going to interface to an external die clamp system and screen 2 is going to interface to a rolling bolster control system. The names for screens 3 and 4 do not matter as they are not enabled.

Screen X Used: Where *X* is 1 to 4. Each of the four possible PLC screens can be used or not used. A screen must be marked as used before it is available for operation. The example screen in Figure 3.2 indicates that screen 1 and screen 2 are used while screens 3 and 4 are not.

There are also several softkeys on this screen:

“CONFIGURE SCREEN X” Where “X” is 1 to 4. This displays the “Parameter Configuration” screen for the respective PLC screen number. See Section 3.4 for details.

“SCREEN STAT. MSGS” This softkey will display the “Screen Status Message Configuration” screen. See Section 3.2 for details.

“PARAMETER STAT. MSGS” This softkey will display the “Parameter Status Message Configuration” screen. See Section 3.3 for details.

Section 3.2 Screen Status Message Configuration

NOTE: Screen status messages are not a required part of the PLC Interface. If status and/or error messages from the PLC are not going to be displayed on the OmniLink operator terminal, then this section may be skipped.

The PLC interface allows the PLC to display specific status and/or error messages on the OmniLink OIT

without requiring a separate display. To do this, the PLC sends a command to the OmniLink OIT that indicates which status line is being addressed (there are up to 4 per screen) and the message number to

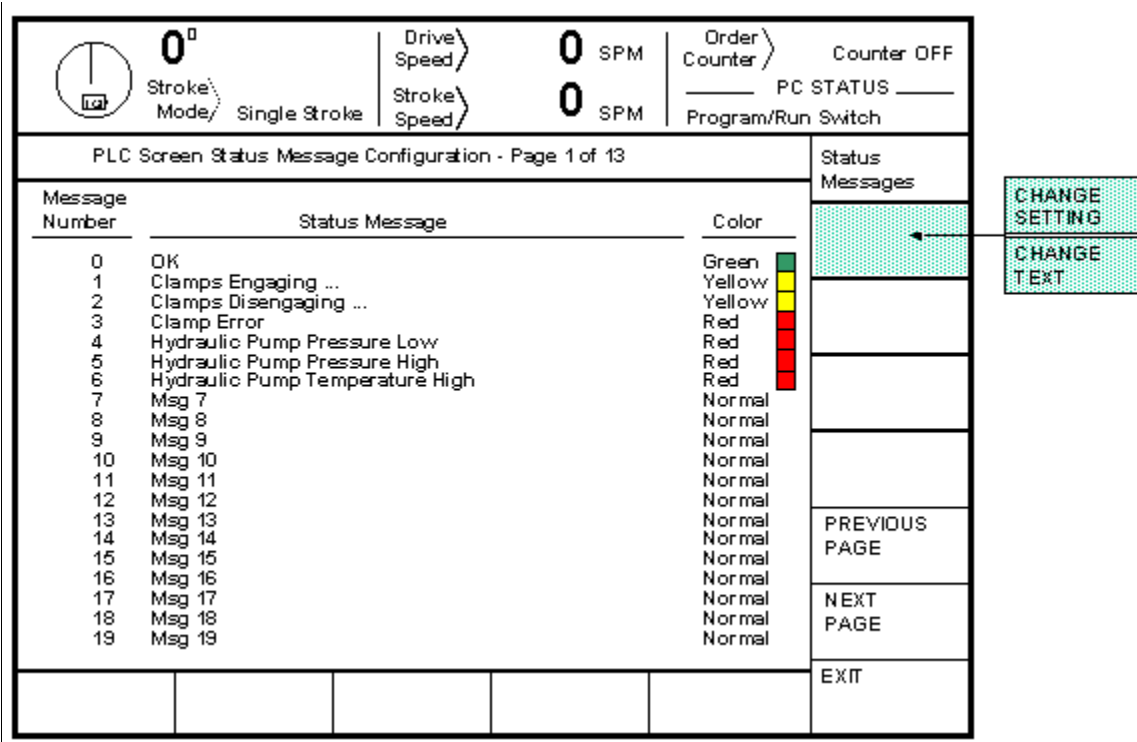


Figure 3.3: Example “Screen Status Message Configuration” screen

display (See section 5 for details on the message format). The messages themselves are configured in this screen.

Figure 3.3 shows an example “Screen Status Message Configuration” screen.

Features of this screen include:

Message Number Identifies the message for use in the status display protocol. See Section 5 for details on the use of this number. This is not a configurable item.

Status Message Each message can be up to 40 characters long. This is the message that will be displayed on the screen when the PLC selects this message number. To change a message description, place the editing cursor in the message to be changed and press the “CHANGE TEXT” softkey. Enter the new message using the text entry system described in Section 2.

Color Each message can be one of 4 color combinations - “Normal” (black text on a white background), “Green” (black text on a green background), “Yellow” (black text on a yellow background), and “Red” (white text on a red background). To change a message color, place the editing cursor on the color of the message to change and press the “CHANGE SETTING” softkey. Select the color desired from the list that appears and hit the “ENT” key. A small block to the right of the color name will be displayed in the color selected.

There are 256 possible screen status messages. Use the “PREVIOUS PAGE” softkey to display the

previous group of messages. Likewise, use the “NEXT PAGE” softkey to see the next group of messages.

Section 3.3 Parameter Status Message Configuration

NOTE: Parameter status messages are not a required part of the PLC Interface. If status and/or error messages from the PLC are not going to be displayed on the OmniLink operator terminal, then this section may be skipped.

The PLC interface allows the PLC to display specific status and/or error messages for each configured parameter, if desired. To do this, the PLC sends a command to the OmniLink OIT that indicates which

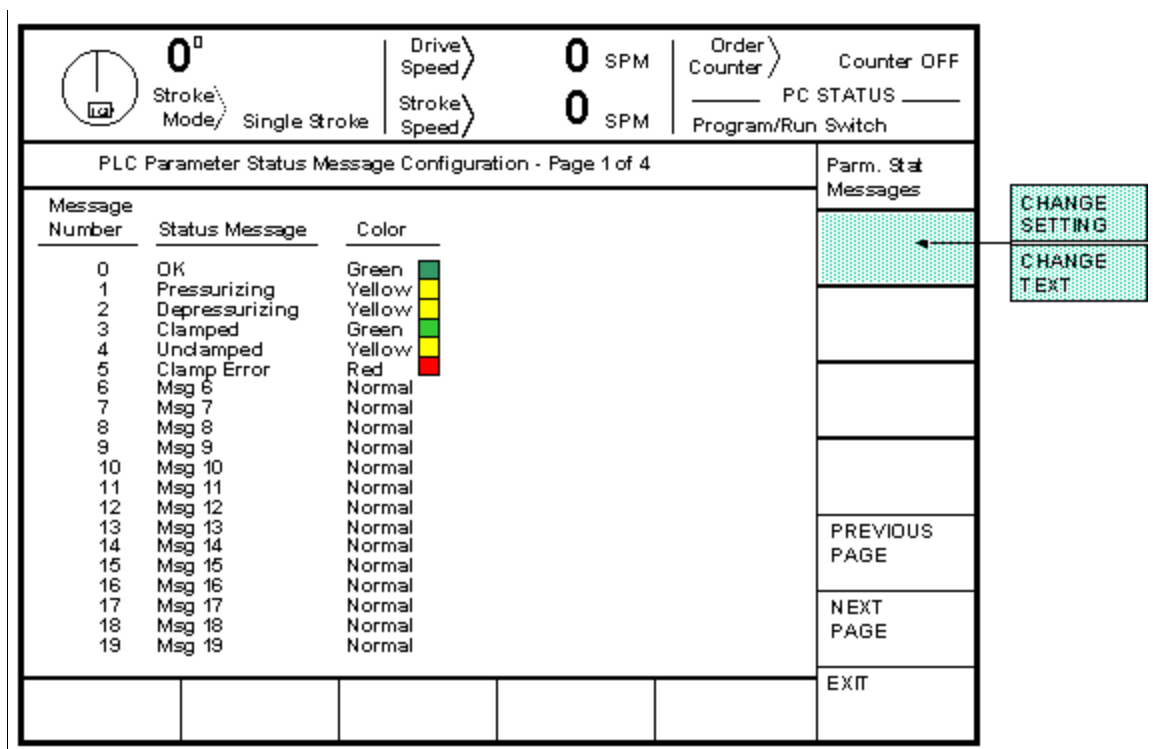


Figure 3.4: Example Parameter Status Configuration Screen

parameter is being addressed (there are up to 16 per screen) and the parameter message number to display (See section 5 for details on the message format). The parameter messages themselves are configured in this screen.

Figure 3.4 shows an example “Parameter Status Message Configuration” screen.

Features of this screen include:

Message Number Identifies the message for use in the status display protocol. See Section 5 for details on the use of this number. This is not a configurable item.

Status Message

Each message can be up to 15 characters long. This is the message that will be displayed on the screen when the PLC selects this message number. To change a message description, place the editing cursor in the message to be changed and press the “CHANGE TEXT” softkey. Enter the new message using the text entry system described in Section 2.

Color

Each message can be one of 4 color combinations - “Normal” (black text on a white background), “Green” (black text on a green background), “Yellow” (black text on a yellow background), and “Red” (white text on a red background). To change a message color, place the editing cursor on the color of the message to change and press the “CHANGE SETTING” softkey. Select the color desired from the list that appears and hit the “ENT” key. A small block to the right of the color name will be displayed in the color selected.

There are 64 possible parameter status messages. Use the “PREVIOUS PAGE” softkey to display the previous group of messages. Likewise, use the “NEXT PAGE” softkey to see the next group of

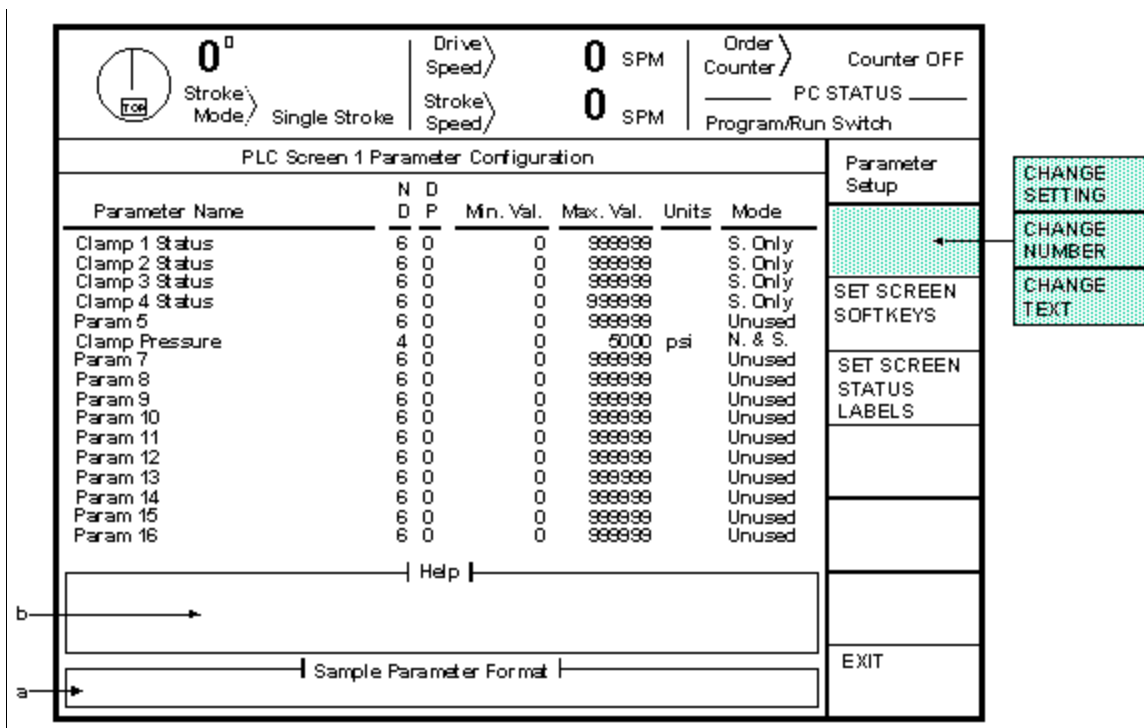


Figure 3.5: Example Parameter Configuration Screen

messages.

Section 3.4 Parameter Configuration

Up to 16 user defined parameters can be displayed on each of 4 PLC screens. These parameters must be named and configured before use. Figure 3.5 shows an example parameter configuration screen.

The features of this screen are:

- Parameter Name: Up to 20 characters can be entered as the name of each parameter. This name will be displayed on the PLC user screen.
- ND: The number of digits for this parameter. Valid values are 1 to 8.
- DP: The number of decimal places for this parameter. Valid values are 0 to 7 but must also be at least 1 less than the number of digits. A 0 for this value means no decimal point will be used.
- Min. Val.: The minimum value for this parameter. This can be any number less than the max value. When a user changes a parameter value it is checked against this value. If it is less than the minimum, a message is displayed indicating the problem and the new number is NOT accepted or sent to the PLC. This value only applies to numeric parameters (“Numeric Only” or “Numeric and Status”).
- Max. Val.: The maximum value for this parameter. This can be any number larger than the min value. When a user changes a parameter value it is checked against this value. If it is more than the maximum, a message is displayed indicating the problem and the new number is NOT accepted or sent to the PLC. This value only applies to numeric parameters (“Numeric Only” or “Numeric and Status”).
- Units: The units to display after the number. This can be up to 5 characters long. In the example of Figure 3.5, “Clamp Pressure” is configured with units of “psi”. Units will only be shown for numeric parameters (“Numeric Only” or “Numeric and Status”).
- Mode: Choices are “Unused”, “N. Only” (Numeric Only), “S. Only” (Status Only), and “N. & S.” (Numeric and Status). There are 16 possible user parameters but not all of them have to be used. Only those that are used will be displayed in the PLC operation screen (the screen where the user actually enters the parameter values - see section 4 for details). Numeric Only mode will simply display the parameter name, current value, and units on the operation screen. Minimum and maximum values will be enforced. Status Only mode will display the parameter name and a 15 character parameter status message (see section 3.3 for details on setting up the parameter status messages). Numeric and Status mode will act the same as numeric mode with the addition of the 15 character parameter status message.
- Help: A help box (see “b” in Figure 3.5) will display information about the parameter the editing cursor is on as a reminder of how it is used.
- Sample Parameter Format: The sample parameter format box (see “a” in Figure 3.5) displays a line that shows how the parameter that the editing cursor is on will look in the PLC operation screen.

Notice that some screen formatting is possible by leaving “gaps” between parameters. In the example of Figure 3.5, a parameter is skipped between “Clamp 4 Status” and “Clamp Pressure”. This will leave a blank line between these two parameters on the PLC operation screen.

Press the “SET SCREEN SOFTKEYS” softkey to configure softkeys for this PLC screen. See section 3.5 for details.

Press the “SET SCREEN STATUS LABELS” softkeys to configure the legends for screen status messages for this screen. See section 3.6 for details.

Section 3.5 PLC Screen Softkey Configuration

NOTE: PLC screen softkeys are not a required part of the PLC Interface. If there is only one PLC screen being used and no PLC action keys are used then this section may be skipped.

Each PLC screen can have a “Screen Name” softkey and up to 5 PLC action softkeys. The “Screen Name” softkey is used for getting to a particular PLC operation screen if there is more than one PLC screen defined. It will appear in one of the softkeys positions at the bottom of the PLC operation screen (See “a” in Figure 4.1) if not currently on that screen. Pressing this key will, of course, take the user to this screen.

PLC action softkeys will send a message to the PLC whenever the softkey is pressed. This allows the PLC to take some action based on the particular key pressed. In the example of Figure 3.6, two keys have been configured to tell the PLC when to clamp and unclamp a die.

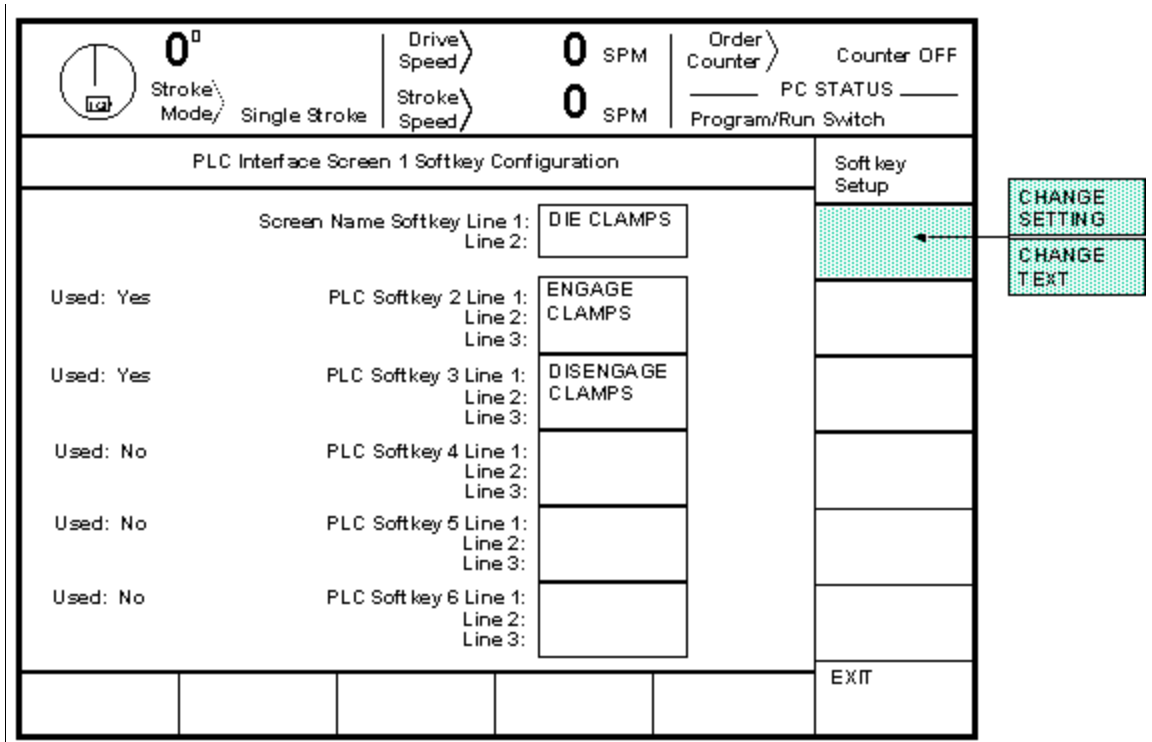


Figure 3.6: Example PLC Softkey Configuration Screen

Each PLC action key (“PLC Softkey 2” through “PLC Softkey 6”) can be enabled or disabled by selecting “Yes” or “No” for the “Used” parameter. Softkeys that are not used will not be displayed on the PLC operation screen. See Figure 4.1 to see how these keys would look on the PLC operation screen.

Section 3.6 Screen Status Label Configuration

NOTE: PLC Screen Status Labels are not a required part of the PLC Interface. If status/error messages are not going to be sent from the PLC to the OmniLink display, then this section may be skipped.

Each PLC screen may have up to 4 lines of “screen status”. Each line may have its’ own label or “legend”. Figure 3.7 shows an example Status Label Configuration screen.

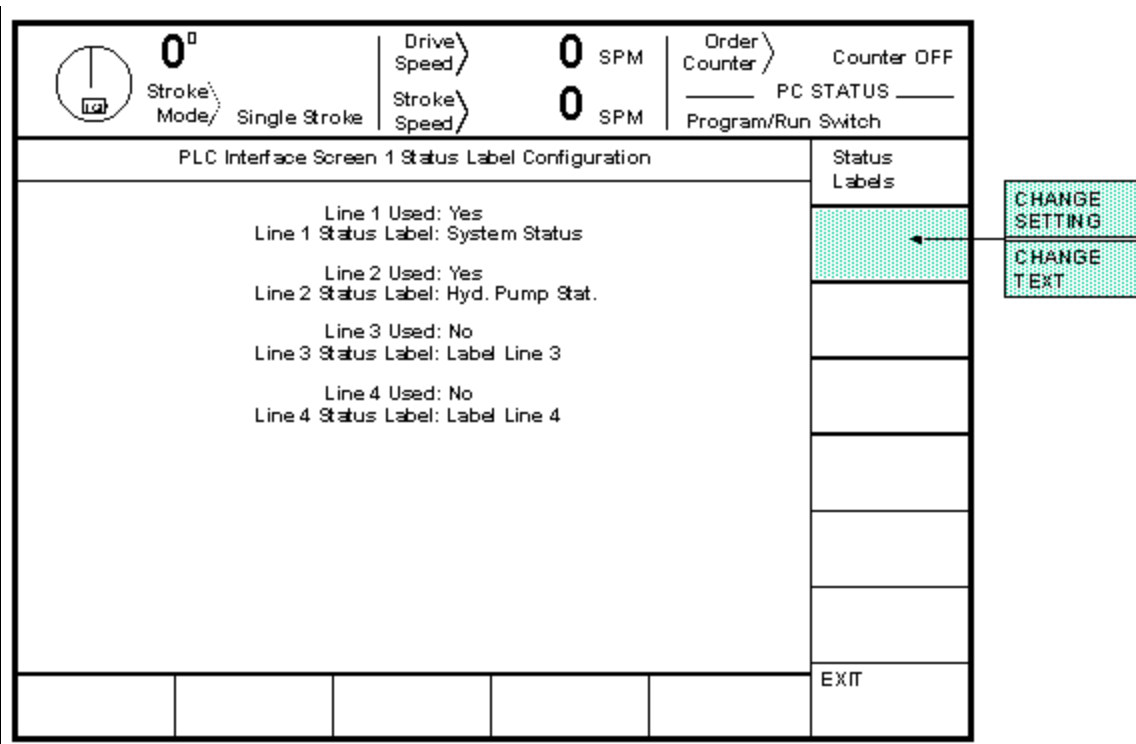


Figure 3.7: Example Status Label Configuration Screen

The four status lines can be individually enabled or disabled on a line by line basis. If “Line X Used” is “Yes” then the status line will be shown on the PLC operation screen (see “e” on Figure 4.1 to see what this configuration shown in Figure 3.6 would look like on the operation screen)

Each status line label can consist of up to 15 characters. Notice also, that Line 1 and Line 3 could be used instead of Line 1 and Line 2 to provide a space between status lines if desired.

Section 4 Operation

The operation screen for the PLC interface is reached in the following manner:

- Press the “ACC” key on the OmniLink 5000 Operator Interface Terminal. This key can be pressed from almost any screen in the control. The Quick Access screen should be displayed.
- Press the “AUXILIARY COMM.” softkey. This should bring up the Auxiliary Communications Status screen. All configured communications interfaces that require operator input will have a status display and softkey on this screen.
- For the PLC Interface, the softkey name will be “PLC INTERFACE”. Press this softkey and the PLC Operation screen will be displayed. An example screen is shown as Figure 4.1. This example is in keeping with the die clamp example configured in section 3. Actual PLC operation screens will vary in appearance depending on configuration.

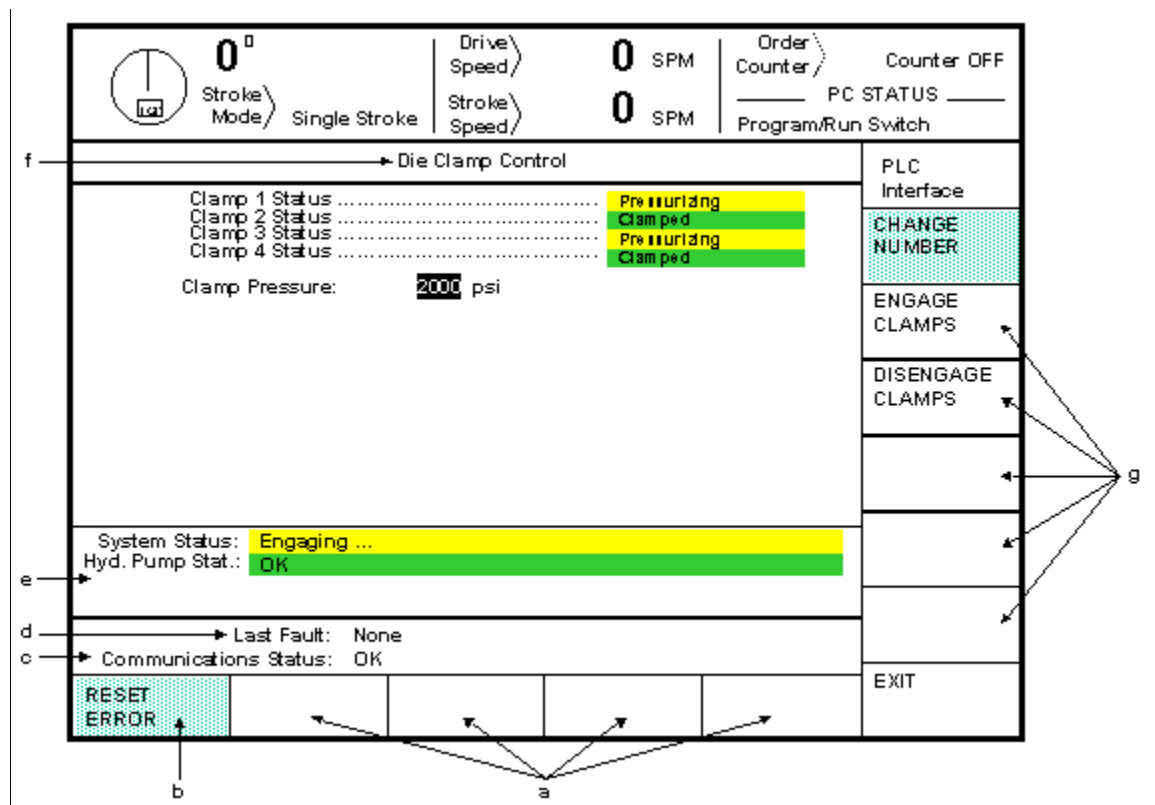


Figure 4.1: Example PLC Operation Screen

Referring to Figure 4.1:

Item “a” These softkeys are where the “Screen Name” softkeys will appear (as configured in the configuration screen of Figure 3.6). Note that the screen name softkey for the current screen will not appear. If two or more PLC screens are configured, the screen name softkeys for the screen that are not currently displayed will appear and will switch to that screen if pressed.

Item “b” If a communications error or memory error is present or has occurred, a top stop will be sent to the press control. The PLC Interface “latches” the error and displays it on the

“Last Fault” line (“d”). To clear the top stop, the stop condition must be corrected (communications restored etc.) and the “RESET ERROR” softkey must be pressed. Note that this key will only appear when an error condition has been detected.

Item “c” The current communications status is displayed here. Note that this is entirely different from a PLC screen or parameter status message. This line shows the state of communications between the OmniLink OIT and the PLC. If the OmniLink tries to send information to the PLC and no response or an incorrect response is received, the OmniLink will try 2 more times before reporting an error. After the error is reported, the OmniLink will continue to try to reestablish communications. If communications are restored, the status will go back to “OK”. Note however, that even a momentary loss of communication will result in a top stop and the error will be shown on the “Last Fault” line to allow diagnosis of the problem.

Item “d” The “Last Fault” line shows the reason, if any, that the PLC Interface signaled the press to top stop. Under normal conditions, this should say “None”. When a fault is latched here, the “RESET ERROR” softkey will appear. Press the “RESET ERROR” key to attempt to clear the fault.

Item “e” This is the PLC Screen Status message area. The status labels (“System Status” and “Hyd. Pump Stat.” in this example) are the ones configured in Figure 3.7. The messages shown are selected by the PLC using the communications protocol discussed in section 5. Note that this area may not be present as the PLC Interface does not require PLC status messages to be used.

Item “f” This is the screen name configured in the screen of Figure 3.2. This is quite useful when more than one PLC screen is being used. In this example, it tells the operator that he is working with the die clamp system.

Item “g” These softkeys are the PLC action softkeys as configured in the screen of Figure 3.6. Depending on configuration, there will be 0 to 5 softkeys present.

The main part of the screen displays the user defined parameters that were set up in the screen of Figure 3.5. In the example above, there are 4 “Status Only” parameters that indicate the state of 4 individual die clamps. In addition, there is a “Numeric Only” parameter that sets the die clamp hydraulic pressure. To change a numeric parameter, place the editing cursor on the desired parameter and enter a new number. If the new number is less than the minimum value configured for that parameter or is greater than the maximum value configured for that parameter, a message will appear explaining the condition. Otherwise, if the number is accepted, it will be sent to the PLC. Note that access to this screen must be gained by the RUN/PROG keyswitch or an access code depending on the system configuration as explained in section 2. If access codes are used, each PLC screen can be separately controlled. For instance, a die clamp screen and a rolling bolster screen can be configured. A user could be set up to have access to the die clamp parameters but not the rolling bolster parameters.

<p>NOTE: What the PLC does when a parameter is changed or an action key is pressed is completely dependent on the PLC program.</p>

Section 5 Communications Protocol

This section is for those responsible for programming the PLC or other device that will communicate with the Link PLC Interface .

The protocol uses messages that consist of a start of message character, a data field, and an end of message character. Note that all numbers transferred have leading zeros if necessary to fill out the number field.

Section 5.1 Conventions

- [LF] - Start of Message Character. Line Feed (decimal 10, hex 0A).
- [CR] - End of Message Character. Carriage Return (decimal 13, hex 0D).
- [S] - A single space character. (decimal 32, hex 20).
- # - A single ASCII decimal digit (decimal 48 to 57, hex 30 to 39).
- PLC - Used generically to refer to the device that the Link equipment is communicating with. This could, for instance, be an axis controller.

Section 5.2 Acknowledgments

In order to assure that the data sent to a PLC is what it received, most messages are acknowledged by returning the same message back to the Link equipment for verification. If the message is not the same as what was sent, it will be retried up to 2 additional times (3 tries total). If the message is still not accepted, the Link Operator Terminal will report a communications error.

If a PLC receives a message that is invalid for any reason (wrong length, number too big, number too small, etc) it should reply with:

[LF] NAK [CR]

as a negative acknowledgment. This acknowledgment will be subject to retries since the message may be invalid due to noise etc. Optionally, the PLC can simply ignore the message and send no reply.

If a message type is simply not supported by the PLC then the recipient should reply with:

[LF] NOT [CR]

as an indication to the sender that the message is being ignored on purpose. The message that generates this response may still be retried since it may be the result of noise but *no communications error will be generated if all retries result in this reply!*

Section 5.3 Numeric Value Formats

Unless otherwise noted in the particular command section, a fixed numeric format is employed in order to keep the protocol as simple as possible for the PLC to handle. All parameter values are sent with nine digits, zero padded as necessary. For instance, 456 would be sent as 000000456. This is referred to as

“Standard Numeric” in this document.

Values that include decimal points are, by default, sent *without* the decimal point. For example 123.456 would be sent as 000123456. Decimal points can be sent by setting “Send Decimal Point” to “Yes” in the Main PLC Configuration Screen. 123.456 would then be sent as 000123.456.

Section 5.4 Text Value Formats

In order to keep the protocol as simple as possible for the PLC to handle, a fixed text format is employed. All parameters that return text (Job Description, Current Status, Reason for Last Stop, etc) return a 40 character space padded string. For example, “Testing” would be sent as “Testing_____” where the underscores represent the number of spaces that are required to make the text 40 characters long. This format is referred to as “Standard Text” in this document.

Section 5.5 Commands From Link Equipment to PLC

These commands originate from the Link equipment and require a response from the PLC. If a proper response is not received after three tries, then a communications error will be displayed in the PLC interface operator screen and a top stop will be sent to the press control.

Section 5.5.1 Job Number Command

This is sent to notify the PLC that a job change has occurred.

From Link:

```
[LF] JOB=##### [CR]
```

where:

is a nine digit job number.

Reply from PLC:

return of message.

Notes:

If “Send Job Num” is “Yes” in the PLC main configuration screen, then this command will be sent automatically when the Link equipment is powered up and whenever the job changes (whether by user selection or PLC command). In addition, the PLC can request the job number at any time (see section 5.6.1).

Section 5.5.2 User Parameter Command

This sends a user defined parameter to the PLC.

From Link:

```
[LF]U[PNUM]=[PVAL][CR]
```

where:

[PNUM] is a three digit parameter number (with leading zero if necessary).

[PVAL] is the value of the parameter.

Reply from PLC:

return of message.

Notes:

If the user has user parameters enabled on the Link equipment, then one or more of these commands will be sent on power-up, when a job is recalled, and when the user changes a value. This command is fixed format if the “Send Decimal Point” parameter is “No” in the PLC main configuration screen. The PNUM is always a three digit number with leading zero if necessary. The PVAL always contains 9 digits and can have a decimal point if “Send Decimal Point” is “Yes” AND the parameter is configured with a decimal place value that is non-zero. Note that 9 digits are sent regardless of how many digits are present on the PLC operator screen.

For example, the user parameter 1 is set to 6 digits and 3 decimal places. With “Send Decimal Point” set to “Yes” the command might look like :

```
[LF]U001=000123.456[CR]
```

With “Send Decimal Point” set to “No” the same command would look like:

```
[LF]U001=000123456[CR]
```

User parameters 0 to 15 are on PLC screen 1, parameters 16 to 31 are on PLC screen 2, parameters 32 to 47 are on PLC screen 3, and parameters 48 to 63 are on PLC screen 4.

Section 5.6 Requests From the PLC to Link Equipment

The PLC can request certain information from the Link equipment. The commands that do this differ from regular commands in that they cause the Link equipment to not only generate a reply to the PLC, but expect the PLC to echo the reply back. This was done to ensure reliable data transfer. When the Link equipment gets an information request command, it will send the information and expect the command to be echoed back from the PLC for verification. If the verification fails, there will be the usual 2 retries. If the retries fail, a communications error will be displayed. For example, if a PLC wants to query the value of user parameter 3 the sequence might be:

From PLC - [LF]U003?[CR]
(Request for value of U03)

From Link - [LF]U003=000012345 [CR]
(Value of U03)

From PLC - [LF]U003=000012345 [CR]
(Echo back for verification)

This simplifies programming the PLC in that the last two messages are exactly the same as generated by the Link equipment when the user changes a parameter value or a job is recalled.

Section 5.6.1 Request for Job Number

From PLC:

[LF]JOB?[CR]

Reply from Link:

Generates Job Number Command (See Section 5.5.1).

Notes:

None.

Section 5.6.2 Request to Change Job

Jobs can come from local storage or, if LinkNet is installed, can be downloaded from a host computer. The methods for doing either technique are very similar.

Section 5.6.2.1 Load Job From Local Storage

From PLC:

```
[LF] SETJOB=##### [CR]
```

where:

= nine digit job number with leading zeros if necessary.

Reply from Link:

Generates Job Number Command (See section 5.5.1).

Notes:

It can take a relatively long period of time (several seconds) for the reply to come from this request. When the job change request is received, the Link equipment checks to see if the job is valid. If it is, the job is recalled. If the job is not valid, a job number command is still generated but the job number will be unchanged. Therefore, it is a good idea to check the reply to this message to verify the job has been changed as intended.

Section 5.6.2.2 Loading a Job From LinkNet

From PLC:

```
[LF] NETJOB=##### [CR]
```

where:

= nine digit job number with leading zeros if necessary.

Reply from Link:

Generates Job Number Command.

Notes:

It can take a relatively long period of time (around 30 seconds) for the reply to come from this request. When the job change request is received, the Link equipment checks to see if the job is valid. If it is, the job is recalled. If the job is not valid, a job number command is still generated but the job number will be unchanged. Therefore, it is a good idea to check the reply to this message to verify the job has been changed as intended.

Section 5.6.3 Request for User Parameter Value

From PLC:

[LF] U [PNUM] ? [CR]

where:

[PNUM] is the three digit parameter number (with leading zero if necessary) of the value requested.

Reply From Link:

Generates User Parameter Command (See section 5.5.2).

Notes:

None.

Section 5.6.4 Request for Machine Parameter Value

From PLC:

[LF] P [PNUM] ? [CR]

where:

[PNUM] is the three digit parameter number (with leading zero if necessary) of the value requested.

Reply From Link:

[LF] P [PNUM] = [PVAL] [CR]

where:

[PNUM] is the three digit parameter number (with leading zero if necessary) of the value requested.

[PVAL] is the value of the parameter requested.

Notes:

[PVAL] will vary depending on the parameter requested. Numeric value will generally be a 9 digit zero padded number. Text values will 40 characters long. See section 5.7 for details.

Section 5.7 Machine Parameter Reference

Machine parameters allow certain information to be extracted from the Link Equipment. Each parameter has a unique parameter number. The information is requested as outlined in section 5.6.4

Section 5.7.0 Parameter 000 - RUN/PROG Switch Position

Value:

Standard Numeric

Meaning:

Current position of the OIT RUN/PROG keyswitch. The value will be 0 for RUN, 1 for PROG. This can be used to supply the PLC with RUN/PROG switch functionality, if desired, without installing a separate switch.

Section 5.7.1 Parameter 001 - Current User

Value:

Standard Numeric

Meaning:

Currently logged in user when using access codes, if any. The value will be 65535 for no user. Consult the System 5000 Press Control Manual for details on setting up users.

Section 5.7.2 Parameter 002 - Month

Value:

Standard Numeric

Meaning:

The Month number (1-12) reported from the real time clock on the OmniLink OIT.

Section 5.7.3 Parameter 003 - Day

Value:

Standard Numeric

Meaning:

The Day number (1-31) reported from the real time clock on the OmniLink OIT.

Section 5.7.4 Parameter 004 - Year

Value:

Standard Numeric

Meaning:

The Year number (2000, 2001, etc) reported from the real time clock on the OmniLink OIT.

Section 5.7.5 Parameter 005 - Hour

Value:

Standard Numeric

Meaning:

The Hour number (0-23) reported from the real time clock on the OmniLink OIT.

Section 5.7.6 Parameter 006 - Minute

Value:

Standard Numeric

Meaning:

The Minute number (0-59) reported from the real time clock on the OmniLink OIT.

Section 5.7.7 Parameter 007 - Second

Value:

Standard Numeric

Meaning:

The Second number (0-59) reported from the real time clock on the OmniLink OIT.

Section 5.7.11 Parameter 011 - Press Control "A" Current Status Code

Value:

Standard Numeric

Meaning:

The numeric “current status” code for the “A” side of the Press Control. A zero for this value indicates the press is ready to run. See parameter 082 for a command to get the actual text description of this code.

Section 5.7.12 Parameter 012 - Press Control “B” Current Status Code

Value:

Standard Numeric

Meaning:

The numeric “current status” code for the “B” side of the Press Control. A zero for this value indicates the press is ready to run. See parameter 083 for a command to get the actual text description of this code.

Section 5.7.13 Parameter 013 - Press Control “A” Reason For Last Stop Code

Value:

Standard Numeric

Meaning:

The numeric “reason for last stop” code for the “A” side of the Press Control. See parameter 084 for a command to get the actual text description of this code.

Section 5.7.14 Parameter 014 - Press Control “B” Reason For Last Stop Code

Value:

Standard Numeric

Meaning:

The numeric “reason for last stop” code for the “B” side of the Press Control. See parameter 085 for a command to get the actual text description of this code.

Section 5.7.15 Parameter 015 - Auxiliary Message Selector Value

Value:

Standard Numeric

Meaning:

The value of the parallel auxiliary messages selector port. This is a seven bit port on the back of the OmniLink OIT. This value can be 0 to 127.

Section 5.7.16 Parameter 016 - Crankshaft Angle

Value:

Standard Numeric

Meaning:

The angle of the press crankshaft in .01 degrees. Note that if “Send Decimal Point” is “No”, then the PLC must assume a decimal position of two. For example:

30 degrees would be sent as 3000
45.6 degrees would be sent at 4560
359 degrees would be sent as 35900
etc.

Due to serial port speed limitations, this value should not be considered a real-time angle value. It can, however, provide an accurate measurement of where the press stopped. See parameter 023 for determining if the press is running or not.

Section 5.7.17 Parameter 017 - Effective Flywheel Speed.

Value:

Standard Numeric

Meaning:

The effective flywheel speed in RPM. *The accuracy of this value depends on calibration (see OmniLink Press Control Manual).* Note that the flywheel may not actually be turning at this RPM (typical for geared presses) but this value represents the speed the crankshaft should turn when the clutch is engaged.

Section 5.7.18 Parameter 018 - Crankshaft Speed.

Value:

Standard Numeric

Meaning:

The actual crankshaft speed in RPM This value is read from the resolver on the press crankshaft. It should be zero when the clutch is not engaged.

Section 5.7.19 Parameter 19 - Press Stroking Mode

Value:

Standard Numeric

Meaning:

Numeric code for the stroking mode of the press. The following codes apply:

- 1 = Inch
- 2 = Single Stroke
- 3 = Auto Single Stroke
- 4 = Continuous
- 5 = Timed Inch
- 6 = Setup/Stop Time Test
- 7 = Continuous on Demand
- 8 = Maintained Continuous

Section 5.7.20 Parameter 020 - Mode Select Key Flag

Value:

Standard Numeric

Meaning:

Non-Zero if Mode Select Key is active. The PLC can use this flag to give itself a mode select capability without having to have a separate keyswitch.

Section 5.7.21 Parameter 021 - Motor Running Flag

Value:

Standard Numeric

Meaning:

Non-Zero if Motor is running.

Section 5.7.22 Parameter 022 - Clutch/Brake Flag

Value:

Standard Numeric

Meaning:

Non-Zero if Clutch is engaged. This basically tells the PLC when the press is actually stroking.

Section 5.7.24 Parameter 024 - Crankshaft Direction of Rotation

Value:

Standard Numeric

Meaning:

0 for forward rotation. Non-Zero for reverse rotation.

Section 5.7.25 Parameter 025 - Stop Time Limit (Top)

Value:

Standard Numeric

Meaning:

The stopping time limit of the press in milliseconds for stops at the top of the stroke. See Press Control Manual for more information.

Section 5.7.26 Parameter 026 - Stop Time Limit (Not at Top)

Value:

Standard Numeric

Meaning:

The stopping time limit of the press in milliseconds for stops NOT at the top of the stroke.

Section 5.7.27 Parameter 027 - Start Time Limit

Value:

Standard Numeric

Meaning:

The starting time limit of the press in milliseconds.

Section 5.7.28 Parameter 028 - Last Stop Time

Value:

Standard Numeric

Meaning:

The stopping time of the press in milliseconds the last time it stopped.

Section 5.7.29 Parameter 029 - Last Stop Position

Value:

Standard Numeric

Meaning:

0 = Did not stop at top.

1 = Stopped at top.

Section 5.7.30 Parameter 030 - Last Start Time

Value:

Standard Numeric

Meaning:

The starting time in milliseconds the last time the clutch was engaged.

Section 5.7.35 Parameter 035 - Peak Forward Tonnage (Channel 1)

Value:

Standard Numeric, 1 decimal place

Meaning:

The peak forward tonnage registered on this channel for the last hit. This value is in .1 tons. If "Send Decimal Point" is "No" then the PLC must assume a decimal place of 1. For example:

12.3 tons will be sent as 123

25 tons will be sent as 250

Note that this is true even if the tonnage monitor itself does not show a decimal point on its screen.

Section 5.7.36 Parameter 036 - Peak Forward Tonnage (Channel 2)

Value:

Standard Numeric, 1 decimal place

Meaning:

Same as parameter 35

Section 5.7.37 Parameter 037 - Peak Forward Tonnage (Channel 3)

Value:

Standard Numeric, 1 decimal place

Meaning:

Same as parameter 35

Section 5.7.38 Parameter 038 - Peak Forward Tonnage (Channel 4)

Value:

Standard Numeric, 1 decimal place

Meaning:

Same as parameter 35

Section 5.7.39 Parameter 039 - Peak Forward Tonnage (Total)

Value:

Standard Numeric, 1 decimal place

Meaning:

Same as parameter 35

Section 5.7.40 Parameter 040 - Peak Reverse Tonnage (Channel 1)

Value:

Standard Numeric, 1 decimal place

Meaning:

The peak reverse tonnage registered on this channel for the last hit. This value is in .1 tons. If “Send Decimal Point” is “No” then the PLC must assume a decimal place of 1. For example:

7.3 tons will be sent as 73
12 tons will be sent as 120

Note that this is true even if the tonnage monitor itself does not show a decimal point on its screen.

Section 5.7.41 Parameter 041 - Peak Reverse Tonnage (Channel 2)

Value:

Standard Numeric, 1 decimal place

Meaning:

Same as parameter 40

Section 5.7.42 Parameter 042 - Peak Reverse Tonnage (Channel 3)

Value:

Standard Numeric, 1 decimal place

Meaning:

Same as parameter 40

Section 5.7.43 Parameter 043 - Peak Reverse Tonnage (Channel 4)

Value:

Standard Numeric, 1 decimal place

Meaning:

Same as parameter 40

Section 5.7.44 Parameter 044 - Peak Reverse Tonnage (Total)

Value:

Standard Numeric, 1 decimal place

Meaning:

Same as parameter 40

Section 5.7.45 Parameter 045 - Tonnage Monitor Channel 1 Status

Value:

Standard Numeric

Meaning:

The numeric code for the status of the tonnage monitor channel. Values Are:

- | | |
|--------------------------|--------------------------|
| 0 = OK | 1 = Tonnage Alarm |
| 2 = Channel Error | 3 = Vref Shorted |
| 4 = TOTAL Alarm | 5 = Machine Rating Error |
| 6 = Peak Degree Error | 7 = Peak Setpoint Error |
| 8 = DW 1 Setpoint Error | 9 = DW 2 Setpoint Error |
| 10 = DW 3 Setpoint Error | 11 = DW 4 Setpoint Error |
| 12 = UNUSED | 13 = UNUSED |
| 14 = UNUSED | 15 = Bypassed |

Section 5.7.46 Parameter 046 - Tonnage Monitor Channel 2 Status

Value:

Standard Numeric

Meaning:

Same as parameter 45

Section 5.7.47 Parameter 047 - Tonnage Monitor Channel 3 Status

Value:

Standard Numeric

Meaning:

Same as parameter 45

Section 5.7.48 Parameter 048 - Tonnage Monitor Channel 4 Status

Value:

Standard Numeric

Meaning:

Same as parameter 45

Section 5.7.49 Parameter 049 - Tonnage Monitor Number of Channels

Value:

Standard Numeric

Meaning:

The number of channels configured for the tonnage monitor.

Section 5.7.51 Parameter 051 - Tonnage Monitor Machine Rating

Value:

Standard Numeric

Meaning:

The machine rating of the press as configured in the tonnage monitor.

Section 5.7.52 Parameter 052 - Tonnage Monitor Reverse Limits ON Flag

Value:

Standard Numeric

Meaning:

0 = Reverse limits are OFF

1 = Reverse Limits are ON

Section 5.7.53 Parameter 053 - Tonnage Monitor Low Limits ON Flag

Value:

Standard Numeric

Meaning:

0 = Low limits are OFF

1 = Low Limits are ON

Section 5.7.54 Parameter 054 - Tonnage Monitor Bypass Flag

Value:

Standard Numeric

Meaning:

0 = Tonnage monitor is NOT bypassed

1 = Tonnage monitor IS bypassed

Section 5.7.55 Parameter 055 - Tonnage Monitor Status Code

Value:

Standard Numeric

Meaning:

- 0 = All Conditions OK
- 1 = Communication Failure
- 2 = Bypassed
- 3 = Error Condition Exists - See Channel Status
- 4 = Option is Not Installed

Section 5.7.56 Parameter 056 - Auto-Setup Module Enabled Flag

Value:

Standard Numeric

Meaning:

- 0 = Auto-Setup NOT enabled
- 1 = Auto-Setup enabled

Section 5.7.57 Parameter 057 - Auto-Setup Slide Adjust Switch Flag

Value:

Standard Numeric

Meaning:

The slide adjust switch position as reported by the auto-setup module.

- 0 = Slide adjust switch OFF
- 1 = Slide adjust switch ON

Section 5.7.58 Parameter 058 - Auto-Setup Module Status Code

Value:

Standard Numeric

Meaning:

- 0 = All Conditions OK
- Non-Zero = Error Condition Exists

Section 5.7.59 Parameter 059 - Stroke Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Stroke Counter.

Section 5.7.60 Parameter 060 - Stroke Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Scrap Counter.

Section 5.7.61 Parameter 061 - Order Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Order Counter.

Section 5.7.62 Parameter 062 - Batch Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Batch Counter.

Section 5.7.63 Parameter 063 - Quality Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Quality Counter.

Section 5.7.64 Parameter 064 - Counter 4 Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Auxiliary Counter 4.

Section 5.7.65 Parameter 065 - Counter 5 Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Auxiliary Counter 5.

Section 5.7.66 Parameter 066 - Counter 6 Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Auxiliary Counter 6.

Section 5.7.67 Parameter 067 - Counter 7 Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Auxiliary Counter 7.

Section 5.7.68 Parameter 068 - Counter 8 Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Auxiliary Counter 7.

Section 5.7.69 Parameter 069 - Counter 9 Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Auxiliary Counter 7.

Section 5.7.70 Parameter 070 - Counter 10 Count

Value:

Standard Numeric

Meaning:

The value of the OmniLink Auxiliary Counter 10.

Section 5.7.71 Parameter 071 - Order Counter Limit

Value:

Standard Numeric

Meaning:

The Limit of the Order Counter.

Section 5.7.72 Parameter 072 - Batch Counter Limit

Value:

Standard Numeric

Meaning:

The Limit of the Batch Counter.

Section 5.7.73 Parameter 073 - Quality Counter Limit

Value:

Standard Numeric

Meaning:

The Limit of the Quality Counter.

Section 5.7.74 Parameter 074 - Counter 4 Limit

Value:

Standard Numeric

Meaning:

The Limit of Auxiliary Counter 4.

Section 5.7.75 Parameter 075 - Counter 5 Limit

Value:

Standard Numeric

Meaning:

The Limit of Auxiliary Counter 5.

Section 5.7.76 Parameter 076 - Counter 6 Limit

Value:

Standard Numeric

Meaning:

The Limit of Auxiliary Counter 6.

Section 5.7.77 Parameter 077 - Counter 7 Limit

Value:

Standard Numeric

Meaning:

The Limit of Auxiliary Counter 7.

Section 5.7.78 Parameter 078 - Counter 8 Limit

Value:

Standard Numeric

Meaning:

The Limit of Auxiliary Counter 8.

Section 5.7.79 Parameter 079 - Counter 9 Limit

Value:

Standard Numeric

Meaning:

The Limit of Auxiliary Counter 9.

Section 5.7.80 Parameter 080 - Counter 10 Limit

Value:

Standard Numeric

Meaning:

The Limit of Auxiliary Counter 10.

Section 5.7.81 Parameter 081 - Job Description

Value:

Standard Text

Meaning:

The Job Description of currently loaded job.

Section 5.7.82 Parameter 082 - Press Control Current Status Description

Value:

Standard Text

Meaning:

The readable description of the current status of the press control.

Section 5.7.84 Parameter 084 -Press Control Reason for Last Stop Description

Value:

Standard Text

Meaning:

The readable description of the reason for last stop as given by the press control.

Section 5.8 Sending Status Message Codes

The OmniLink Color OIT can be configured to display status messages for PLC operation screens and for individual parameters as outlined in section 3.

Section 5.8.1 Screen Status Command Format

There are 4 possible PLC operation screens, each with up to 4 status messages. To select a status message for display, the line number and status message number must be supplied to the OmniLink OIT. The line number tells the OmniLink which line on which operation screen is to be assigned a message number. Lines 0 to 3 are on PLC operation screen 1, lines 4 to 7 are on screen 2, lines 8 to 11 are on screen 3, and lines 12 to 15 are on screen 4. These area these lines appear in is shown in “e” of Figure 4.1 with lower numbered lines at the top. In other words, line 0 is the first line in area “e” on PLC operation screen 1, line 1 is right below it, line 2 below that and so on. The message number selects the text to be displayed on a particular line. The messages themselves are configured as described in section 3.

The format to select a screen status message is:

From PLC:

```
[LF]GS [LNUM] = [MNUM] [CR]
```

where:

[LNUM] is the two digit line number (with leading zero if necessary) .

[MNUM] is the message number that is to be set for the line.

Reply From Link:

```
[LF]GSA [LNUM] = [MNUM] [CR]
```

where:

[LNUM] is the two digit line number (with leading zero if necessary) .

[MNUM] is the message number that was set for the line.

It is strongly recommended that the PLC check the return reply to verify the message arrived correctly at the OmniLink.

Section 5.8.2 Parameter Status Command Format

There are 4 possible PLC operation screens, each with up to 16 user defined parameters. To select a parameter status message for display, the parameter number and parameters status message number must be supplied to the OmniLink OIT. The parameter number tells the OmniLink which parameter is to be assigned a status message number. Parameters 0 to 15 are on PLC operation screen 1, parameters 16 to 31 are on screen 2, parameters 32 to 47 are on screen 3, and parameters 48 to 63 are on screen 4. The message number selects the text to be displayed on a particular line. The messages themselves are configured as described in section 3.

The format to select a parameter status message is:

From PLC:

[LF] VS [PNUM] = [MNUM] [CR]

where:

[PNUM] is the two digit parameter number (with leading zero if necessary) .

[MNUM] is the message number that is to be set for the line.

Reply From Link:

[LF] VSA [PNUM] = [MNUM] [CR]

where:

[PNUM] is the two digit parameter number (with leading zero if necessary) .

[MNUM] is the message number that was set for the line.

It is strongly recommended that the PLC check the return reply to verify the message arrived correctly at the OmniLink.