

TS II Qualifier

Operation Manual



Products for Assembly

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Introduction

Thank you for purchasing ASG’s TS II Qualifier. The following sections describe WARNINGS and CAUTIONS for using our product. Make sure to read these sections before using the TS II Qualifier. If mishandled, a fatal accident, bodily injury, or damage to the TS II Qualifier and other property may occur. In addition to these sections, carefully read the Set-up Procedure and Interface Navigation Guide to ensure proper usage.

The Interface Navigation Guide is broken down into sections: controls that are accessible while the TS II Qualifier is Locked (Advance Operations), and Unlocked (Basic Operations).

This operation manual is designed for the general operation of the TS II Qualifier. If any additional questions or concerns should arise, please contact your local ASG representative.

Please check parts prior to use. If anything is missing or damaged, contact your local ASG representative.

Configuration

TS II Qualifier.....	One Piece
Power Cord.....	One Piece
CyberQ TS II Qualifier Software.....	One Copy
Operation Manual.....	One Copy
RJ11 to DB9 Converter.....	One Piece
RJ11 Cable.....	One Piece
Anti-Tip Bar.....	One Piece

Warning

Make sure to read this section

If these instructions are ignored, and the product is handled inappropriately, serious injury could occur.



Do not disassemble the unit for repair or modifications. There is a high electrical voltage inside the unit that could cause an electric shock, failure, or fire.



If an abnormal odor, unusual sound or smoke is observed, stop using the product, unplug it immediately and contact your ASG representative.



Do not allow any type of liquid to come in contact with any part of the unit, because it could result in an electrical shock or fire.

Fully insert all plugs into their proper receptacle. Insufficient contact may generate heat that could result in a fire or electrical shock.

Do not fold, bend, or impose excessive force on the cord. Excessive force on the cord may cause a short-circuit, which could result in a fire or electrical shock.

While inserting or removing the plugs don't pull on the cords. This action could result in a disconnection or a broken plug. Make sure to hold the plug body during insertion and removal.

■ Cautions

If these instructions are ignored and the product is handled inappropriately, bodily injury or property damage could occur.

- Do not place the product in an unstable location. Dropping the unit could result in bodily injury or failure.
- Do not place or store the unit in a location with moisture or dust, to prevent possible fire or failure.
- When moving the TS II Qualifier, make sure to turn off the power and remove the power plugs.
- Before maintenance, make sure to turn off the power and remove the power plugs.
- Never open the main housing of the unit for repair or modification.

Quick Start Guide

Warning:

Make sure to review the WARNINGS and CAUTIONS sections located on pages 4 and 5 before using the TS II Qualifier.

Step 1:

Power up the unit and wait for the Home Screen (See pages 9, 13) to appear. Once it is in view, Press the Auto Calibrate Button on the control panel. Follow the on screen instructions. (See pages 20-21)

Step 2:

All units ship from the factory with a default password of 0104. Enter the password to access programming functions.

Step 3:

Make sure the Tools/Powersupply Connection Cable is connected to the TS II Qualifier Tools/Powersupply Connector. (See Specifications on page 40-44)

Step 4:

Run the tool on the target fastener and then press the Enter Button. Be certain to run the fastener from beginning to end allowing the tool to clutch out.

Step 5:

Check the screen and be sure the calibration was successful. If not return to step 1. If the calibration succeeded proceed to step 6.

Continued on the next page....

■ Quick Start Guide

Step 6:

Any of the following Advanced Operations can be changed at this point including: (See pages 16-19 for any questions)

- Batch Count
- Clear Batch
- Parameter Set
- View Total
- Password
- Program Select

Step 7:

When finished Editing parameters press the ESC button to lock the unit and return to the main screen.

Step 8:

The unit will return to the Home Screen, and the Green LED above the Lock symbol should remain lit. Run several fasteners to ensure that the unit is working properly. If everything appears to be working, production can begin.

Control Panel

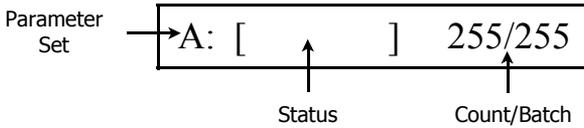
Control Panel:

All of the buttons required to operate the TS II Qualifier are located on the Control Panel. Every one of the buttons functions will be described in detail later in this operation manual.



Control Panel

Home Screen/Display Panel



The Auto Calibrate button is used to automatically set up Tmin, Tmax, and the rest, by learning the parameters of a sample fastener.



The Program Select button is used to access the options menu, including: Parameter set (A,B,...), Prox Switch, Change Password, Relays, and Contrast.



When the green light is lit the unit is locked down and all setting and parameters are password protected.



Accept

Every time an individual fastener is successfully completed the Green Accept LED lights.



Reject

Every time an individual fastener is unsuccessfully completed the Red Reject LED lights. The reject light is produced for a variety of reasons including: cross threading, stripped, and not fully tightened fasteners.



By pressing the Tmin button the minimum time parameter can be adjusted.



By pressing the Tmax button the maximum time parameter can be adjusted.



The Tjog button is used to adjust the ignore timer that is located at the beginning of a rundown.



The Threshold button is used to set up the threshold. The threshold is a percentage of the electrical current that is being drawn by the tool during operation.

Control Panel



By pressing the Clear Batch button the total number in the batch will be returned to zero.



By pressing the Set Batch button the user can change the total number of fasteners that are included in each batch.



By pressing the View Total button the total number of batches that are completed can be viewed.



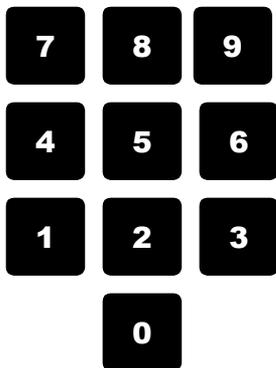
By pressing the Clear Total button the total number of batches that are completed is returned to zero.



The ENTER button has a wide variety of functions including: saving parameters, changing screens, and continuing through different operations.



The ESC button also has a wide variety of functions including: locking the unit, exiting screens, and canceling operations.



The numerical keypad is required for entering any numerical data.

Set-Up Procedure

Connection Procedure

The following are general guidelines for setting up the TS II Qualifier. Specific applications are described in the Interface Navigation Guide. (See pages 13-19)

1. Plug the tool/power pack connector and the AC power cord from the electric tool/power pack into the side of the TS II Qualifier.
2. Plug the AC cord into the side of the TS II Qualifier and then into the wall.
3. Verify that all connections are secure.
4. Flip the Qualifier switch to the ON position.
5. The unit should begin the Power Up Sequence (See page 13).
6. When the TS II Qualifier brings up the home screen, it is ready to be calibrated.

Startup Guide

1. After the Power-Up Sequence (See page 13) the unit needs to be calibrated.
2. The Calibration procedure requires the user to enter a password. The factory password is “0104”.
3. To Calibrate the unit, follow the Auto Calibration procedure located on page 20. Calibration can also be done using the Software, following the instructions in the Software Section. (See page 30)
4. Following calibration, all other parameters can be adjusted. (Refer to the Interface Navigation Guide Section on pages 13-19)
5. Press the ESC button to lock the unit.

■ Set-Up Procedure

Anti-Tip Bar Installation:

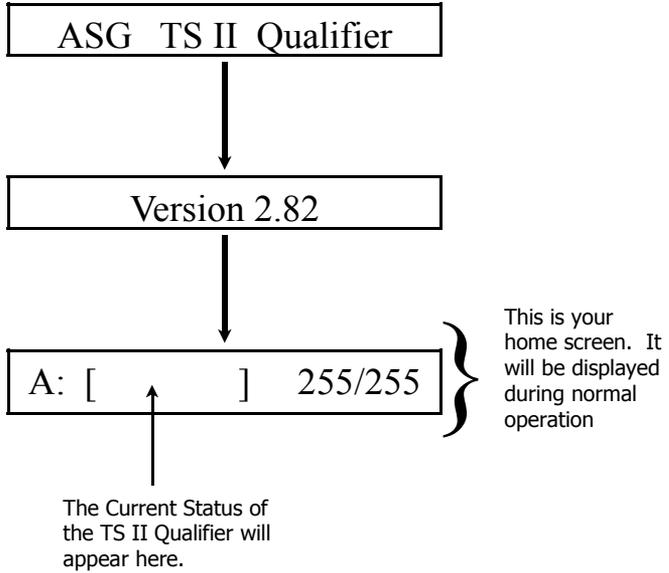
The anti-tip bar is designed to prevent the TS II Qualifier from tipping when the control panel is being pressed.

1. On the base of the TS II Qualifier are two button head screws positioned directly in the center.
2. Remove both button head screws from the TS II Qualifier
3. Make sure the rubber foot is facing down and projecting out towards the back of the TS Qualifier
4. Attach the Anti-Tip Bar with the screw that were just removed from the bottom of the TS II Qualifier

Interface Navigation Guide

Power-Up Sequence & Home Screen

When the unit is powered up, the LCD will display the following screens and then proceed to the home screen.



Interface Navigation Guide

Basic Operations

The following features are active while the TS II Qualifier is locked. The green light above the padlock symbol will be illuminated to indicate that the unit is secure. If the unit is in the unlocked position, it can be locked by pressing the ESC key.

A: [] 255/255	} View during rundown (in-cycle)

A: [Cyc Acc] 255/255	} ACCEPT Statuses
A: [Bat Acc] 255/255	

Cyc Acc: indicates that the previous rundown was successful. A successful rundown will increase the Batch Count and fires the Accept light.

Bat Acc: indicates the previous Batch has been completed and accepted. A double beep will accompany the accepted batch.

A: [Tmin!] 255/255	} REJECTS will be described by their corresponding message.
A: [Tmax!] 255/255	
A: [Tjog!] 255/255	
A: [Tclutch] 255/255	

Tmin!: The tool was unable to run long enough to satisfy the minimum time parameter.

Tmax!: The tool passed the maximum time parameter.

Tjog!: The tool ran past the allocated amount of time, however it did not reach the minimum amount of run time. (Only if activated)

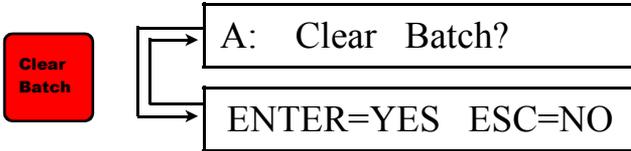
Tclutch: The tools clutch did not engage.

Interface Navigation Guide

Basic Operations Continued

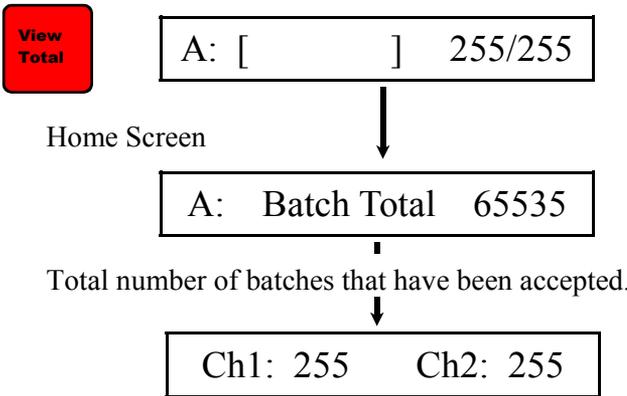
The following features are active while the TS II Qualifier is locked.

Clear Batch



The screens will alternate until [ENTER] clears the batch count or [ESC] cancels the “Clear Batch” command.

View Total



This screen displays the levels detected by each analog input channel.

Interface Navigation Guide

Advanced Operations

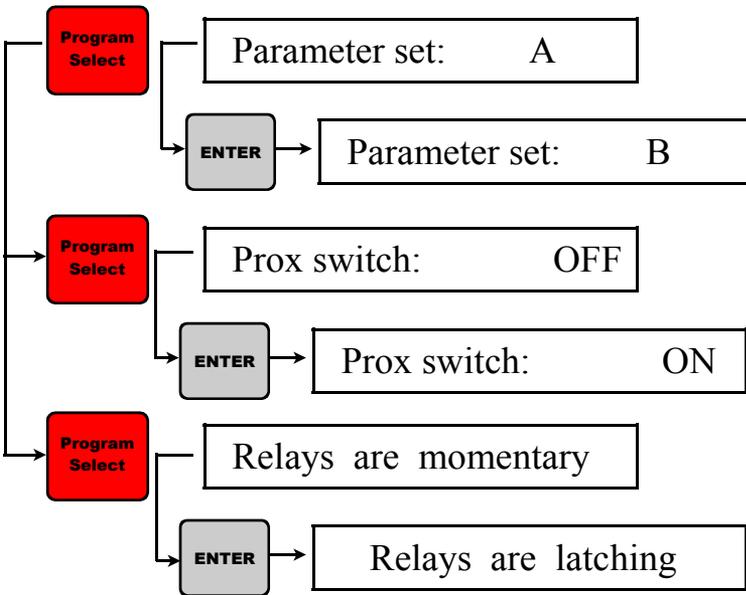
The following features are available only while the unit is unlocked. The operator will be prompted to enter a password to gain access to these advanced operations. The green light above the padlock symbol will flash red, signaling the unit is unlocked. At this time, the TS II Qualifier is not secure, and all the setting and parameters are accessible to the operator. The unit can be locked again by pressing the ESC key.

Program Select



The Program Select button is used to access the options menu. While in the options menu:

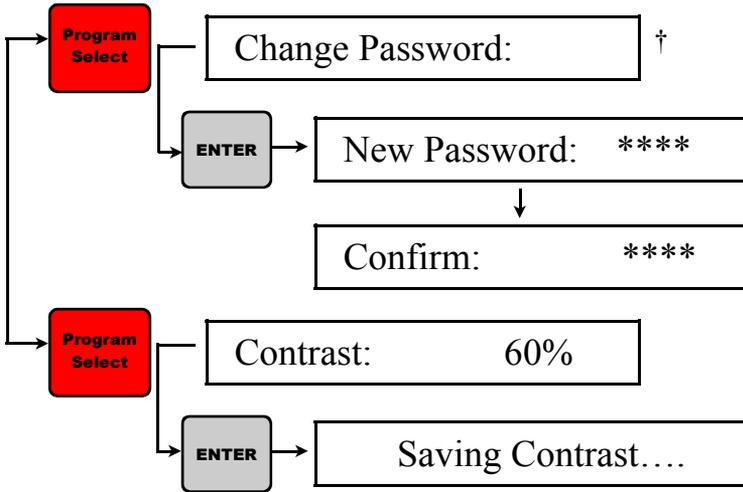
- **Program Select:** advances operator to the next option
- **Enter:** changes the displayed option
- **ESC:** exit the options menu



Continued on the next page....

Interface Navigation Guide

Program Select Continued From Previous Page



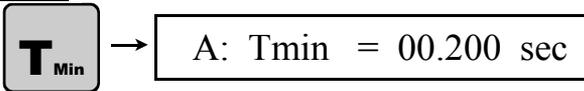
† - If the password is changed, it is the operators responsibility to remember the new password. If the password is forgotten see page 39 for instruction on how to reset the password.

Interface Navigation Guide

Advanced Operations

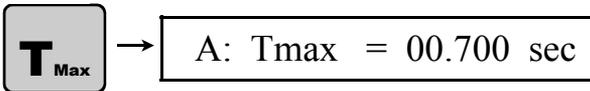
The following advanced operations bring up their corresponding editing screens. A blinking cursor will indicate which digit is active and the numerical keypad is used to enter the desired numbers. Pressing ENTER will save your changes. The ESC button will return you to the Home Screen. Pressing the ESC key again locks the TS II Qualifier, and the light above the padlock will turn green to indicate that the settings are locked.

Tmin



Tmin represents the minimum amount of run time for an accept to be generated.

Tmax



Tmax represents the maximum amount of run time that is permitted without the tools clutch engaging.

Tjog



Tjog represents the ignore timer which is located at the beginning of a run-down. This feature allows the operator to align the bit with a fastener, in a screw presenter by starting the tool without generating a reject.

Threshold



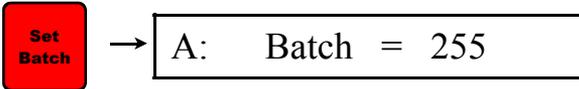
Threshold represents the actual current level of the tool running, minus the threshold percent of that value. Rundown current of the tool must be higher then the threshold value.

Interface Navigation Guide

Advanced Operations Continued

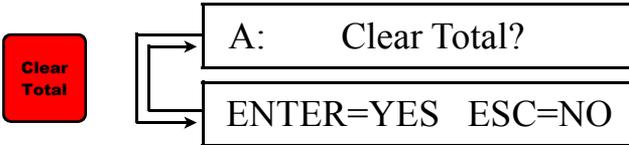
The following features are only available while the TS II Qualifier is unlocked.

Set Batch



This feature allows the operator to set how many fasteners are required for each part or batch.

Clear Total



Clearing the total will reset the number of completed assemblies to zero.



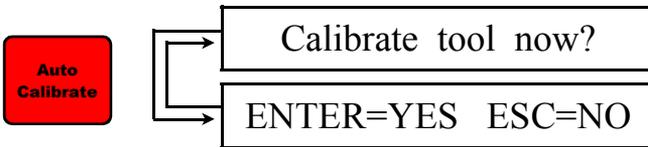
Pressing ENTER after each parameter change, will save those adjustments.



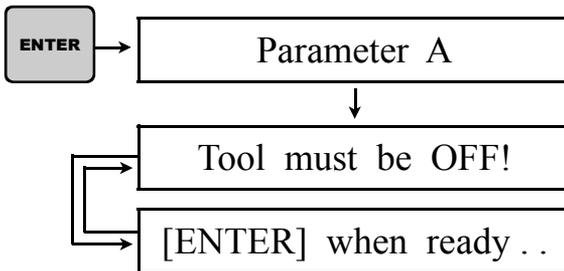
Pressing ESC will return the operator to the home screen.

Auto Calibration Procedure

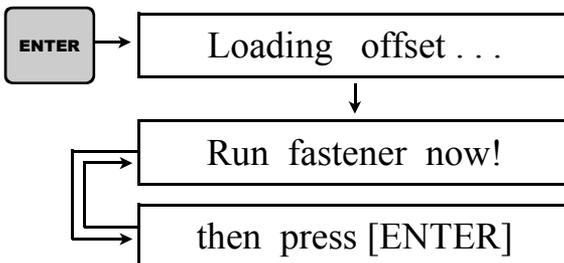
The Auto Calibrate button is used to quickly set-up the qualification parameters. The user runs a sample fastener and allows the TS II Qualifier to review the rundown and automatically set the parameter based on that sample fastener. The following steps will walk the operator through the calibration process.



Screens will alternate until [ENTER] starts the Auto Calibration or [ESC] cancels the operation.



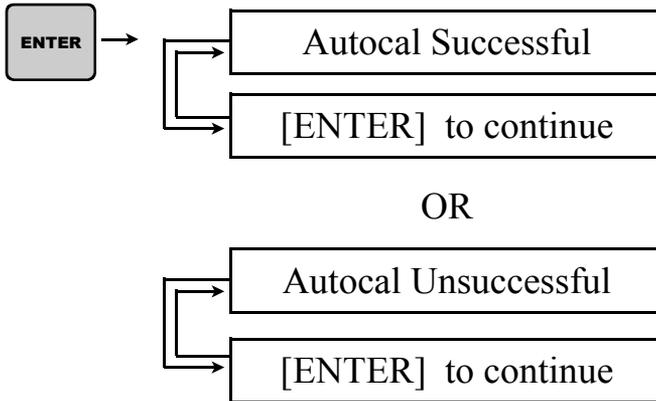
When the screen reads "Tool Must be off!", the driver must not be running. The operator should not turn off the power to the power pack or driver.



The operator will need to rundown the target fastener. The target fastener must match all of the required specifications, because all of the parameter will be based off of the most recent rundown, i.e. the target fasteners.

Auto Calibration Procedure

Auto Calibration Continued



When ENTER is pressed, the profile from the previous sample run-down is loaded. The profile from this sample fastener creates the Tmin, Tmax and all of the other remaining parameters.

Operations Graphs

Note: All of the Operations Graphs are for Electric Tools. Pneumatic tools will have a slightly different graph. Please call ASG Customer Service if there are any questions. (888) 486-6163

Approved Tightening

In Figure 1 the graph demonstrates a tightening cycle that would be accepted by the TS II Qualifier. On CH1 the current level rises above the threshold (TH2) and remains above it for a time greater than the minimum timer (TMin) and less than the maximum timer (Tmax). When the clutch shuts off the current, on CH1, rapidly drops off and the current increases on CH2. CH2 represents the inductive current spike that rises above the TH1 threshold when the clutch shuts off the tool, the clutch shut off must occur after TClutch 1 and before TClutch 2.

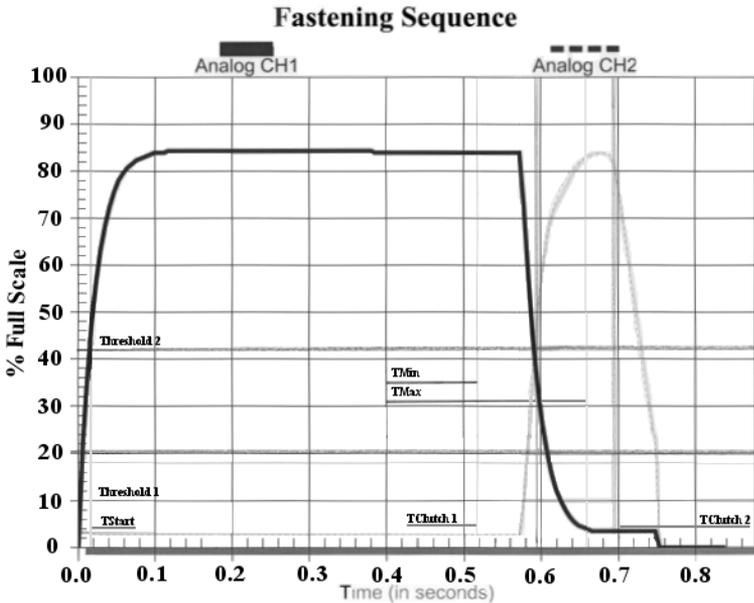


Figure 1

Operations Graphs

Approved Tightening

(Using TJog)

In Figure 2 below the graphs represent the use of TJog. The TJog is essential when a screw presenter is combined with the TS II Qualifier. The graph shows how using the TJog function during an assembly process will not affect a properly assembled screw. However, when a screw is picked up from the presenter, typically the driver is quickly run to locate the screw on the bit. If the TJog function is not turned on then an error will occur. When a time limit is programmed into Tjog, the tool running current (CH1) is ignored for the duration of the Tjog time. (Note: If the (CH2) current rises above the TH1 threshold during Tjog indicating a clutch shut off, the tightening cycle will be rejected.)

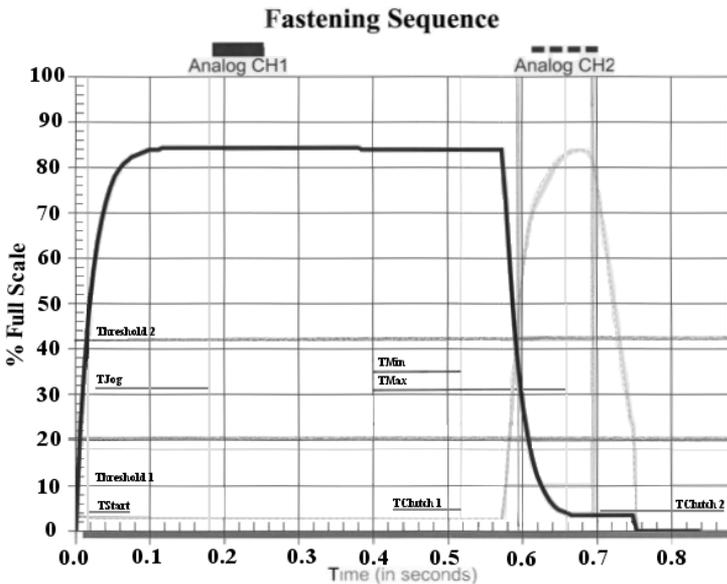


Figure 2

Operations Graphs

Not Approved Tightening

(Incomplete Cycle, No Clutch Signal or Stripped Threads)

The current curve (CH1) shown in Figure 3 displays a typical incomplete cycle. In this case, the forward current (CH1) lasts long enough to satisfy T_{Min} . However, the tool's clutch never engages and therefore the inductive current spike never occurs. T_{Clutch} is violated and the fastener would be rejected.

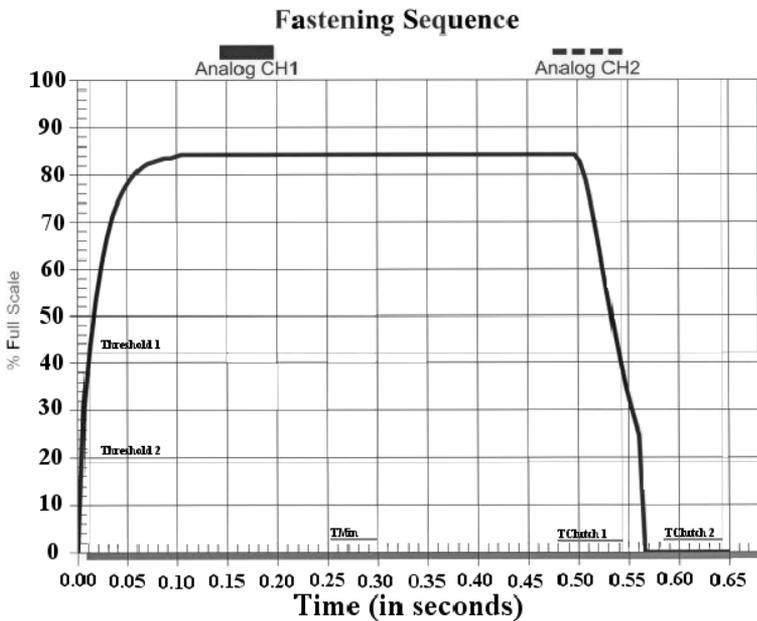


Figure 3

Operations Graphs

Not Approved Tightening

(Double Hit or Cross Thread)

Attempting to re-tighten a fastener that has already been tightened with an electric tool creates a current signature similar to the one in Figure 4. The current on CH1 rises very rapidly and then drops very quickly when the clutch shuts the tool off. Since the clutch turns the tool off almost instantly, the forward current is present only briefly and does not run long enough to satisfy TMin.

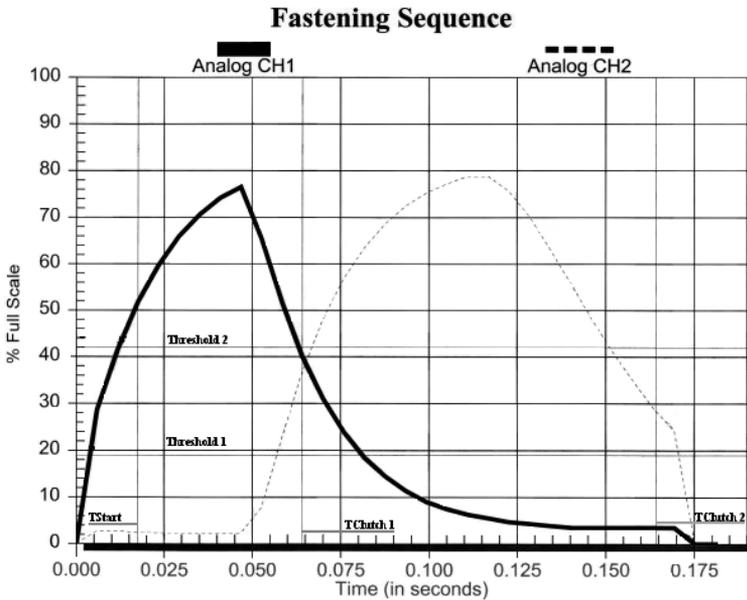


Figure 4

TS II Qualifier Software

Software (Cyber Qualifier) Index:

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Introduction:

The Cyber Qualifier software is included with your purchase, however it is not required for operating the new TS II Qualifier. The following sections will detail the operations associated with the TS II Qualifier. Many advanced functions can be performed by the Cyber Qualifier software including: editing parameters, plotting, time and date set-up, retrieving past statuses, as well as several other functions.

Requirements:

The Cyber Qualifier software needs to run on a computer that is running Windows 9X, Windows NT, Windows ME, Windows 2000 or Windows XP. The computer should have at least 32 MB of RAM memory and have 5MB of hard disk space available. The computer will also need to have the display set to at least an 800 x 600 resolution. A high color setting is recommended (16 bits or better).

A free comm. port is necessary in order to communicate with a Qualifier. Complications can arise if another program is attempting to use the comm. port while the Cyber Qualifier software is running.

In order to use the Cyber Qualifier software, a modular phone cable (RJ11) (Included) that is wired straight through and an RJ11 to DB9 converter (Included) must be used.

TS II Qualifier Software

Installing the Software:

To install the software on a computer with a Windows operating system, run the SETUP.EXE program on the Cyber Qualifier CD. The setup program will lead the installer through the installation. Depending on which version of Windows is being used, the machine may need to be restarted once during the installation and the installation process re-initiated. Make sure that no other software is running on the target machine during the installation process.



CyberQ

Running The Software:

After the program is installed, a new entry will be found under the Window's Start Menu. To start the program, press the Window's Start Button. On the menu that appears choose Programs and then CyberQ. This should start the application.

Alternately, the user can find and then double-click on the CyberQ icon. This will also start the application.

Splash Screen:

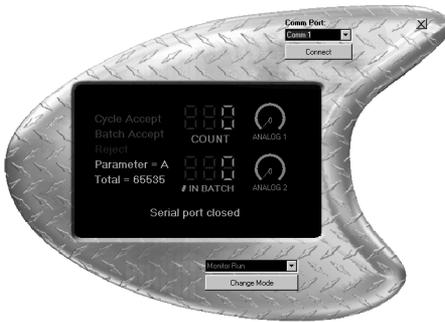
Shortly after the program is started, the splash screen will appear. It will remain on the screen for approximately 3 seconds. There is one important piece of information on the splash screen and that is the version number. This number tracks the software being used on your computer, so you can have the most up-to-date version.



TS II Qualifier Software

Main Screen:

After the splash screen disappears, the main software screen will appear. This screen can act as a ‘virtual’ qualifier.



Using the drop-down box in the upper right hand corner of the form, a comm. port can be selected. Once the appropriate comm. port is selected and, the user can initiate communications with the TS II Qualifier by pressing the Connect button. Be certain that the comm. cable is plugged

into both the PC and the target Qualifier.

If the comm. port is set up correctly, communications will begin to occur between the Cyber Qualifier software and the target TS II Qualifier. Once this communication is initiated, the form will update automatically showing the user the current count, target batch count, analog information on a 0-100% scale, current parameter, and statuses of the target unit.

The drop-down box that appears in the lower center portion of the main form allows the user to select other functions for the software to perform. Once a new function is selected, pressing Change Mode will take the software to that function.

Communications will be terminated between the software and target TS II Qualifier if Change Mode is selected. Communications can be re-established once the new form comes into view.

Pressing the X button in the upper right hand corner of any form will end the application.

TS II Qualifier Software

Editing Parameter Sets:

From the main form, selecting Edit Parameter on the mode changing drop-down and then pressing the Change Mode button will take the software to the Edit Parameter form.

Using this form, parameters can be downloaded from the TS II Qualifier, edited, and then uploaded to the unit to make desired changes.

In order to download the current parameter settings from the TS II Qualifier, select the appropriate comm. port and then press the Retrieve Settings button. The software will initiate communications with the Qualifier, retrieving the current parameter settings once communications are established, and then update the form with the parameter settings.



Once the settings are retrieved, the user can choose to edit any of these settings by selecting the desired cell and then changing the value in the cell.

After all of the desired settings are altered, the user can then choose to upload those new settings to the TS II Qualifier. Once again the user should be certain that the appropriate comm. port is selected. Then, pressing Program New Settings will initiate a transfer from the Cyber Qualifier software to the TS II Qualifier. The TS II Qualifier will accept the new settings into its parameter sets.

A button with the picture of a printer also appears on this form. Pressing that button will send a copy of the current parameter sets to the Window's system printer.

Pressing the Return To Monitor Mode button will send the software back to the Monitor Mode form.

Pressing the X button in the upper right hand corner of this form will end the program.

TS II Qualifier Software

Automatic Calibration Form:

Selecting Auto-Calibrate from the drop-down and then pressing the Change Mode button will send the software to the **AutoCal**™ form.



The **AutoCal**™ feature located inside the TS II Qualifier can be accessed through the use of this form. In order to access this feature, be certain that the appropriate comm. port is selected. Also, be sure that the tool is connected to the unit and is off. Then press the Connect button.

Once the Connect button is pressed the Cyber Qualifier will tell the TS II Qualifier to take the transducer's background threshold (this will set the level at which the unit goes in and out of cycle). After this threshold is set the Cyber Qualifier software will ask the user to run a good fastener and then press the **AutoCal**™ button.

When this screen appears, the user will want to run the tool on a target fastener. It's okay if a mistake is made, the TS II Qualifier will remember the last full cycle. So if the tool is accidentally run in reverse, correct the problem and then tighten another fastener from beginning to end allowing the tool's clutch to engage at the end of the fastening process.

Press the **AutoCal**™ button after a typical fastener has been tightened properly. The software will then inform the user if the calibration was successful or not.

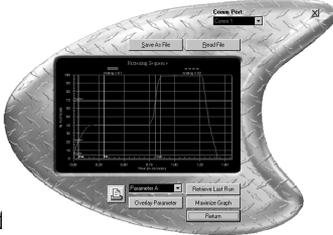
At any time, the **AutoCal**™ form is in view, the Return To Monitor Mode button can be pressed sending the software back to the Main form. Also, the X button can be pressed to end the application.

TS II Qualifier Software

Viewing A Fastener:

Each time a fastening process occurs, the TS II Qualifier captures analog information. This information can be viewed using the Cyber Qualifier Software. If View Run is selected from the drop-down on the Main form and then Change Mode is pressed, the software will be sent to the View Run form.

In order to download the last run from the TS II Qualifier, be sure the correct comm. port is selected and that the comm. cable is connected to the TS II Qualifier and the computer. If Retrieve Last Run is pressed, the Qualifier will attempt to contact the Qualifier and ask for the analog information that pertains to the previous run.



As this information is retrieved from the TS II Qualifier, a progress bar will come into view allowing the user to monitor the progress of the transfer.

Once the analog information is retrieved, a graph will appear. The graph will be an XY type plot where the horizontal axis is time. If the attached TS II Qualifier is pneumatic, the horizontal axis will represent pressure. If the attached TS II Qualifier is electric, the horizontal axis will represent electrical current. (See Pages 22 to 25 for the Operations Graphs)

Pressing the Maximize Graph button will enlarge the graph portion of the form for easier viewing. After maximizing the graph, pressing the ESC button will force the graph to revert to its original size.

The parameter set that the TS II Qualifier was using during the download process will be overlaid on top of the graph. Other parameter sets can be overlaid one at a time by using the parameter drop down and the Overlay Parameter button at the bottom of the form.

A copy of the image can be sent to the Window's system printer by pressing the button that has the picture of the printer on it. The run can also be saved, see the next page for details.

TS II Qualifier Software

Viewing A Fastener Continued:

The analog information and all the information from the parameter sets can be stored to a file on the computer. If the Save As File button is pressed, a file browsing form will appear. Using this new form the user can select a file name and a directory to save the data to.



Files that have been saved using this method can be re-opened and the graph can be viewed by pressing the Read File button. If the Read File button is pressed, the File Browser will be opened and the user can select the file to be opened by the software. Once the file is opened, the information will be graphed as if it was uploaded directly from a TS II Qualifier.

At any time the View Run form is in view, the Return button can be pressed sending the software back to the Main form. Also, the X button can be pressed to end the application.

TS II Qualifier Software

Setting The Time and Date:

Each time a status is created (accept or reject), the TS II Qualifier will store that status in memory along with a Time & Date stamp. If the status information is going to be downloaded or viewed, setting the Time & Date will make the information much more relevant.



If Edit Time/Date is selected from the drop-down on the Main form and then Change Mode is pressed, the software will be sent to the Time and Date form.

In order to retrieve the TS II Qualifier's time & date, be sure the correct comm. port is selected and that the communications cable is attached to both the unit and the PC.

If Retrieve Time/Date is pressed the Cyber Qualifier Software will contact the TS II Qualifier and ask it what time it is. Once a response is received from the unit the software will display both the time and the date in the center of the form.

The time is represented as military time. So, nine p.m. would appear as 21:00:00.

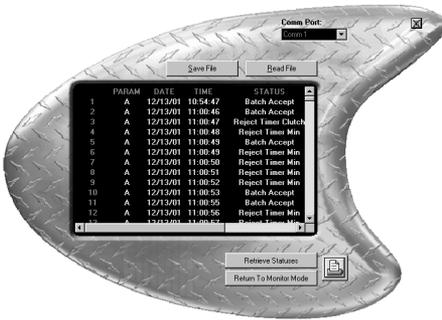
Both the time and date can be edited and then programmed into the unit. After editing the time and/or date, pressing Program New Time/Date will transfer the new time and date to the TS II Qualifier. After the time & date are transferred the user will be reminded by the software that the TS II Qualifier will have to be turned off and then back on again for the change to take place.

At any time the Time and Date form is in view, the Return To Monitor Mode button can be pressed sending the software back to the Main form. Also, the X button can be pressed to end the application.

TS II Qualifier Software

Viewing Statuses:

The TS II Qualifier has the ability to store up to 1000 statuses. Each time a Cycle Accept, Batch Accept, or any kind of Reject are created a status is stored. That stored event will contain the status, time, date, parameter, and a serial number if one has been inserted.



If View Statuses is selected from the drop-down on the Main form and then Change Mode is pressed, the software will be sent to the Statuses form.

In order to retrieve the TS II Qualifier's statuses, be sure the correct comm. port is selected and that the communications

cable is attached to both the PC and the unit.

The software will start to fetch statuses as soon as the Retrieve Statuses button is pressed. A progress bar and status box will appear to give the user feedback during the downloading process.

Once the statuses are uploaded, the user may wish to print a copy by pressing the button with the printer icon on it. Pressing the printer button will send a copy of the statuses to the Window's system printer.

The runs statuses can also be saved, see the next page for details.

TS II Qualifier Software

Viewing Statuses Continued:

Statuses can also be saved to a file. If the Save File button is pressed, a file browser form will open up allowing the user to select a directory and a file name under which the status information is to be stored.



After a status file has been saved it can also be read using a similar method. The Read File button on this form will open up the file browser allowing the user to negotiate through directories, find a file, and open it up.

Once a stored file is opened, the statuses will become visible on the form just like they were when they were downloaded from the TS II Qualifier.

At any time the View Statuses form is in view, the Return To Monitor Mode button can be pressed sending the software back to the Main form. Also, the X button can be pressed to end the application.

TS II Qualifier Software

Setting And Retrieving A Serial Number:

An alphanumeric code can be uploaded into the TS II Qualifier to serve as a part's serial number. Every event will be tagged with this new serial number until a new serial number is entered or the TS II Qualifier is powered down.

The Cyber Qualifier software has a means of reading this serial number and writing to it.



If Set Serial Number is selected from the drop-down on the Main form and then Change Mode is pressed, the software will be sent to the Serial Number form.

In order to retrieve the TS II Qualifier's current serial number, be sure the correct comm.

port is selected and that the communications cable is attached to both the unit and the PC.

If Retrieve Serial Number is pressed, the software will attempt to download the current serial number from the TS II Qualifier. Once this data is received it will be displayed in the center of the form.

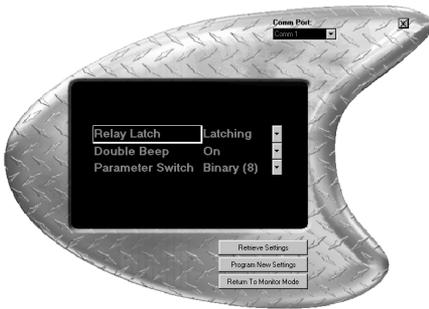
This serial number can be edited and then uploaded by pressing the Program New Serial Number button.

At any time the Serial Number form is in view, the Return To Monitor Mode button can be pressed sending the software back to the Main form. Also, the X button can be pressed to end the application.

TS II Qualifier Software

Editing Options:

Options pertaining to the functionality of the TS II Qualifier may be edited using the Edit Options form including: Relay Latch, Double Beep, and Parameter Switch. If Edit Options is selected from the drop-down on the Main form and then Change Mode is pressed, the software will be sent to the Options form.



In order to retrieve the TS II Qualifier's current settings, be sure the correct comm. port is selected and that the communications cable is attached to both the unit and the PC.

Pressing Retrieve Settings will prompt the software to request the current settings from the TS II

Qualifier. Once these settings are downloaded, they will be displayed in the center of the form.

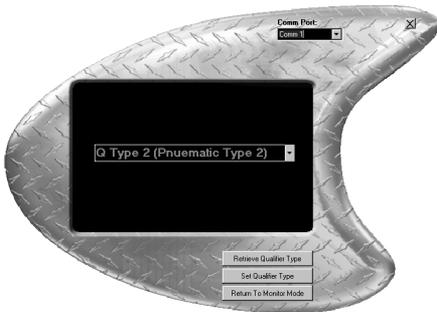
There is a drop-down menu located next to the option that allows the user to select a new option from a list. For instance, the Relay Latch setting can be set to either Latching or Momentary. After the desired options are in place the user can press Program New Settings. Once this button is pressed, the new options will be uploaded to the TS II Qualifier.

At any time the Options form is in view, the Return To Monitor Mode button can be pressed sending the software back to the Main form. Also, the X button can be pressed to end the application.

TS II Qualifier Software

Setting the Qualifier Type:

There are several different methods that the TS II Qualifier can use in order to analyze analog data. These different methods define the type of TS II Qualifier that is being used. The TS II Qualifier Type form can be used to change the settings from electric or pneumatic. In order to adjust this setting, users can select Set Qualifier Type from the drop-down menu on the main form and then press the Change Mode button in order to reach the Qualifier Type form.



In order to retrieve the TS II Qualifier's current type, be sure the correct comm. port is selected and that the communications cable is attached to both the unit and the PC.

Pressing Retrieve Qualifier Type will prompt the software to request the current type from

the TS II Qualifier. Once this setting is downloaded, it will be displayed in the center of the form.

CAUTION: Changing the unit's type changes the way the TS II Qualifier analyzes the data. Altering this setting may stop the unit from working properly if the correct hardware is not in place to support that functionality. For instance, a user would not want to set up an electric tool to be monitored by one of the pneumatic engines.

The drop-down menu in the center of the form can be used to pick a new TS II Qualifier type. Once the new type is selected, the Set Qualifier type button can be pressed to program this new type into the unit.

At any time the Qualifier Type form is in view, the Return To Monitor Mode button can be pressed sending the software back to the Main form. Also, the X button can be pressed to end the application.

TS II Qualifier Software

Resetting the Default Password:

In the event that a unit's password is forgotten, it can be reset using the Default Password form. Selecting Reset Password from the drop-down on the Main form and then pressing Change Mode will send the software to the Default Password form.



In order to reset the password to the factory default (0 1 0 4), be sure that the correct comm. port is selected and that the communications cable is attached to both the PC and to the unit. Pressing Reset Password at this point will prompt the software to re-program the password setting.

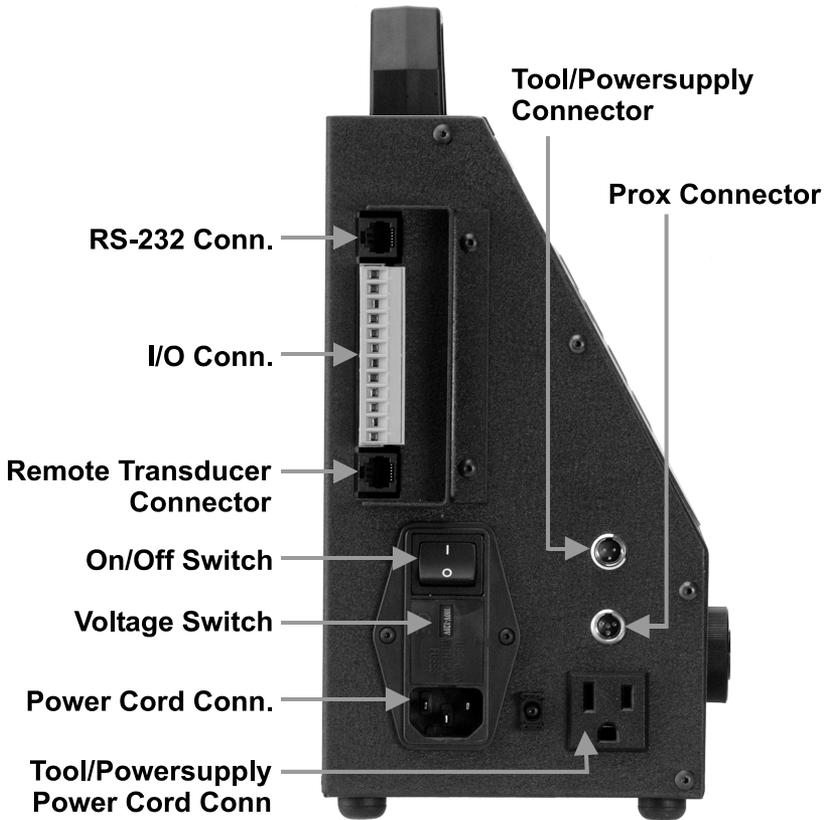
The software will prompt the user when this task is completed successfully.

At any time the Reset Password form is in view, the Return To Monitor Mode button can be pressed sending the software back to the Main form. Also, the X button can be pressed to end the application.

Specifications

Connection Guide:

All of the connections required to operate the TS II Qualifier are called out in the picture below. Every connector will be described in detail later in this section.

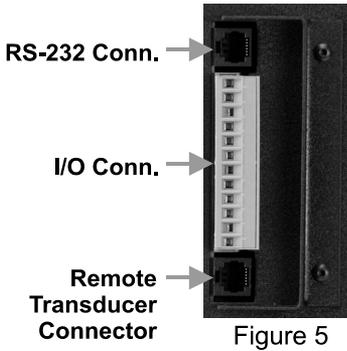


Specifications

RS-232 Connector

The RS-232 Connector is used to communicate with external serial devices (like a computer). The connector is a standard RJ-11 connector. Pin 1 on the connector is the top-most pin as pictured in the figure to the left.

The pin-out is as follows:



- | | |
|--------|--------|
| 1. N/C | 4. TX |
| 2. N/C | 5. GND |
| 3. RX | 6. N/C |

Remote Transducer Connector

The remote pressure transducer plugs into the lower RJ11 connector as seen in Figure 5 above. The pin-out for that connector is as follows:

- | | |
|---------------------|------------|
| 1. +5VDC | 4. RS-485- |
| 2. ANALOG SIGNAL IN | 5. GND |
| 3. RS-485+ | 6. N/C |

Specifications

I/O Connector

The I/O Connector is used to provide discreet signals to external devices (such as a PLC). Pin 1 is located at the top of the connector as pictured in the Figure 5 on the previous page. The pin-out is as follows:

- | | |
|-------------------|-------------------|
| 1. RS485- | 7. GND/OPTO COM |
| 2. RS485+ | 8. RESET INPUT |
| 3. REJECT RELAY | 9. SUSPEND INPUT |
| 4. BATCH RELAY | 10. PARAM B INPUT |
| 5. CYCLE RELAY | 11. PARAM C INPUT |
| 6. +24VDC/RLY COM | 12. PARAM D INPUT |

A series of jumpers control how the relay function operates. There is one jumper for each relay (JP8-JP10). These jumpers will allow each relay to either be normally open or normally closed. Relays may be wetted with +24VDC or be dry contacts depending upon the setting of jumper JP5.

There is a software setting that controls whether the relay comes on momentarily or remains latched at the end of a cycle. (See page 16)

The inputs are all optically isolated. Each opto-isolator has a 1.5K input impedance, which will work well if +24VDC signals are used to assert the inputs. When connected, jumper JP3 makes the opto-inputs common with the system ground. When removed, the opto-isolators are completely isolated and inputs need to be referenced to PIN 7, OPTP COM.

Specifications

The following connectors are specifically designed for their application. Both connectors are located on the left side of the TS II Qualifier. Insert the appropriate male connector into the female connector making sure the pin-outs line up.



Figure 6

Tool/Powersupply Connector

The tool connector is designed to fit the cable that comes from the tool or powersupply. This connection is required before operation of the tool begins. The pin-out is as follows:

1. IN
2. NO CONNECTION
3. OUT



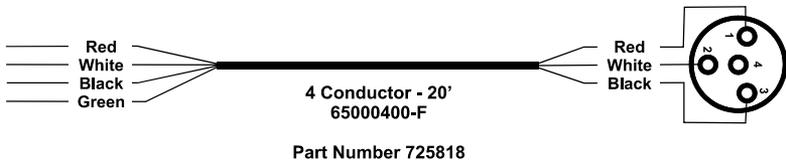
Figure 7

Prox Connector

The prox switch is an option for your TS II Qualifier. ASG can provide a 20 ft. cable with your order; you are required to attach the type of prox you require. The pin-out is as follows:

1. +24V OUTPUT (Red)
2. PROX INPUT (White)
3. GND (Black)
4. NO CONNECTION (Green)

Optional Prox Switch Cable



Specifications

Dip Switch Settings

Note: Before adjusting the dip-switch, make sure to turn off the power and remove the power plugs.

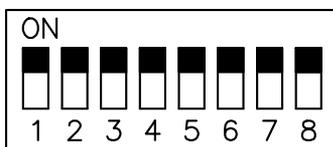


Figure 8

The dip-switch (located in the corner of the CE2731 board) controls certain aspects of the TS II Qualifier functionality. Those functions are listed below.

Position	ON	OFF
1. Parameter Selection	Software Select	External Input Selection
2. No Function		
3. No Function		
4. Test Mode	Test Mode ON	Normal Operation
5. Test Selection 1	See Below	See Below
6. Test Selection 2	See Below	See Below
7. No Function		
8. RS-485 Terminator	Termination ON	Termination OFF

Test Modes

When dip-switch four is in the ON position, the backboard (CE2731) enters a test mode. The possible test are as follows:

DIP5	DIP6	FUNCTION
OFF	OFF	Digital Outputs Test (each output is turned on one at a time).
OFF	ON	Digital Inputs Test (digital input will appear as a segment on bar LED).
ON	OFF	Analog Test CH0 (analog input on CH0 will appear as a % on bar LED).
ON	ON	Analog Test CH1 (analog input on CH1 will appear as a % on bar LED).

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