

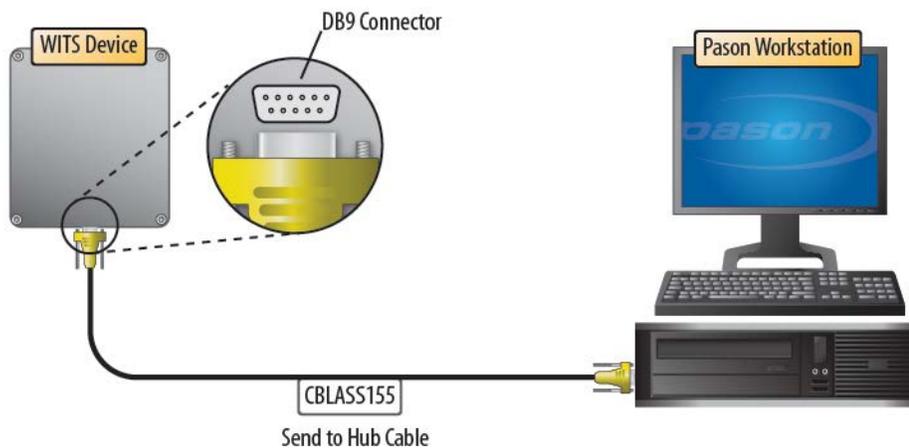
## Overview

To get you started with WITS, we've collected information about the most common WITS tasks in this document. For more detailed information, see the full [Pason WITS User Guide](#) on [help.pason.com](http://help.pason.com).

## Connecting a WITS Device via a Pason Workstation

Follow these steps to connect a WITS device to the EDR via a Pason Workstation:

1. Ensure that the Pason Workstation is powered on.
2. Use a Pason Send to Hub cable (CBLASS155), or a generic DB9 9-pin serial null modem cable, to connect the WITS device to comm port 1 on the Pason Workstation as shown below.



## About Handshaking

Setting up and maintaining WITS communication between a WITS device and the EDR requires the use of a handshake. The handshake is important because it prompts the EDR to recognize that a WITS device has been connected to the system, and is necessary for the EDR to keep WITS communication active. If you connected the WITS device via a toolpush connection box or a network panel, handshaking also prompts the EDR to display a WITS protocol in the Comm Port Setup screen, so handshaking is useful for determining which ports are connected to WITS devices.

---

### Important:

Failure to continuously send at least one packet to the EDR every 30 seconds causes the EDR's communication engine to time out, stopping WITS communication. This is a major cause of WITS communication problems.

---

## Establishing and Maintaining WITS Communication

To establish and maintain WITS communication with the EDR, the third-party WITS device must send at least one WITS packet to the EDR continuously every 30 seconds, *even if the third-party has no other need to send WITS packets*. The only exception to this requirement is when the WITS device is connected via a toolpush connection box or a network panel, and the EDR comm port is set to Send Only.

This requirement can be met in one of the following two ways:

1. The third-party WITS device continuously sends at least one WITS packet to the EDR every 30 seconds as part of the desired operation, or
2. The third-party WITS device is set up to continuously send a handshaking packet to the EDR every 30 seconds. Pason recommends continuously sending a TVD WITS packet configured as shown in Figure 1. The EDR is coded to recognize and use this specific packet for maintaining WITS communication, but can also receive TVD WITS packets with actual values from other WITS devices at the same time. The EDR is capable of receiving this handshaking packet from multiple WITS devices simultaneously.

Be sure to include all of the carriage return and line feed characters shown below.

```
&&<cr><lf>  
0111-9999<cr><lf>  
!!<cr><lf>
```

Figure 1: WITS handshaking packet

## Selecting Standard WITS Codes for Pason to Send

To select standard WITS codes for a Pason computer to send, follow this procedure:

1. From the EDR main screen, click **Menu > Setup > WITS**. The WITS setup screen opens.
  2. Click the tab of the Pason computer you want to send the WITS codes, and ensure that the **Standard** button is selected.
  3. To select a preconfigured setting, click **Half WITS** (recommended) or **Full WITS**. We recommend starting with Half WITS and adding more codes as you need them. Full WITS usually includes codes you don't need, and increases the chance of communication issues.
- Or,
3. To select outgoing WITS codes individually, click on an unselected WITS code's **Enable** check

- box.
4. Select the **Transmission** type and **Interval** for the selected group of WITS codes. The transmission type and interval apply to all WITS codes in the group.
  5. Select the display **Unit**, and type of **Data Summary** from the drop-down lists.
  6. If desired, you can click in a code's row, and enter a new WITS code for that row. Any standard WITS code that you have changed displays a Reset button. If you enter a WITS code that is already in use, click the **Reset** button to change back to the default Pason WITS code.
  7. When you are finished, click **Save** > **Exit** to return to the Setup Menu. The Pason computer starts sending the selected WITS codes.

To enable an outgoing WITS code, select its check box.

The screenshot shows the RMPC software interface. At the top, there are several status boxes for Hole Depth (34<sup>3</sup> FEET), Bit Depth (34<sup>3</sup> FEET), Hook Load (--- KLBS), Weight On Bit (0.0 KLBS), Rotary (--- RPM), Torque (--- KFT-LBS), and ROP (0.0 FT/HR). Below these are buttons for WITS In ALL, WITS Out RMPC, WITS Out TPC Server, WITS Out DHC/SideKick, and WITS Monitor. The main area has tabs for Custom, Standard, and Pason EDR Traces. A search bar and a Clear button are also present. The main table is titled '01: General Time Based' and has columns for Enable, Code, Name, Unit, and Data Summary. The 'Transmission' is set to 'Time Based' and the 'Interval' is 5 seconds. The table lists various WITS codes with checkboxes in the 'Enable' column. An arrow points to the checkbox for code 0108. To the right of the table are buttons for 'Full WITS' and 'Half WITS'. At the bottom, there are buttons for Import, Export, Factory Reset, Save, Cancel, and Exit.

Enable	Code	Name	Unit	Data Summary
<input type="checkbox"/>	0105	Date	--	--
<input type="checkbox"/>	0106	Time	--	--
<input checked="" type="checkbox"/>	0108	Bit Depth	FEET	Average
<input checked="" type="checkbox"/>	0110	Hole Depth	FEET	Average
<input type="checkbox"/>	0112	Block Ht.	FEET	Average
<input checked="" type="checkbox"/>	0113	ROP	FT/HR	Average
<input type="checkbox"/>	0115	Hook Load	KLBS	Average
<input type="checkbox"/>	0117	Weight On Bit	KLBS	Average
<input type="checkbox"/>	0119	Torque	KFT-LBS	Average
<input type="checkbox"/>	0120	Rotary	RPM	Average
<input type="checkbox"/>	0121	SPP	PSI	Average
<input type="checkbox"/>	0122	Casing	PSI	Average
<input checked="" type="checkbox"/>	0123	Strokes #1	SPM	Average
<input checked="" type="checkbox"/>	0124	Strokes #2	SPM	Average
<input checked="" type="checkbox"/>	0125	Strokes #3	SPM	Average
<input type="checkbox"/>	0126	Total Mud	BARRELS	Average
<input type="checkbox"/>	0127	Gain Loss	BARRELS	Average

Figure 2: Selecting WITS codes to send

### Configuring Custom WITS in the EDR

The EDR supports the use of custom WITS. Once you set up a custom WITS code, the EDR can receive it from any connected WITS device, but you need to follow the steps in [Selecting Standard WITS Codes for Pason to Send](#) on page 2 to instruct a Pason computer to send custom WITS codes.

### Setting up Custom WITS Codes

To set up a custom WITS code, use the following procedure:

1. From the EDR main screen on the RMPC, click **Menu > Setup > WITS**. The WITS setup screen opens.
2. On the WITS In All tab, click the **Custom** button. The Custom WITS setup screen opens. This screen displays 50 editable custom WITS codes, names, units, adjustable decimal spaces, and shelf lives.

Enter your codes, names, and units by clicking in any row.

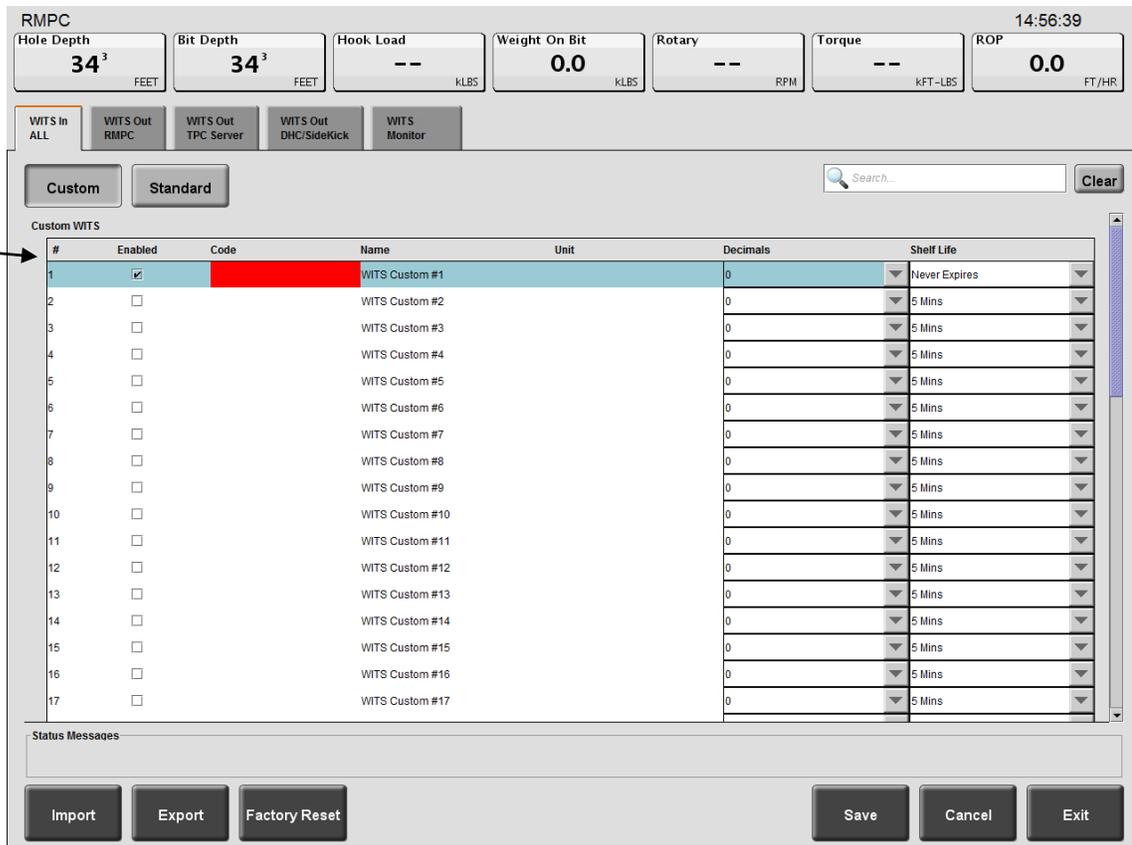


Figure 3: Highlighted custom WITS row

3. Click in a code's row. The EDR highlights the row.
4. Within the highlighted row, enter the following custom code information:

- **Code:** Enter a WITS code for the trace by clicking in the Code column in the highlighted row, and entering a four digit WITS code. Ensure that this code is different from the existing WITS codes. If the code you enter conflicts with a current EDR WITS code, the EDR highlights your entry in red and does not allow you to save your settings.
- **Name:** To enter a name for the custom WITS code, click in the Name column in the highlighted row and enter a name.
- **Unit:** To select the display units, click in the Unit column in the highlighted row and enter the name of the display units. Note that these are display units only—the EDR does not perform conversions based on the units you enter.
- **Decimals:** To select the number of decimal places the EDR uses for the WITS value, click the **Decimals** drop-down box in the highlighted row and select 0, 1, 2, or 3 decimal places.
- **Shelf Life:** To select the length of time the EDR displays the WITS data, click the **Shelf Life** drop-down list and choose **5 Mins** (minutes), **15 Mins**, **1 Hour**, **12 Hours**, **1 Day**, or **Never Expires**. Once the shelf life period is exceeded, the EDR changes the value of the trace to null, represented by two dashes (—).

---

**Important:**

Shelf life is an important selection for time-sensitive data. The EDR displays the last received WITS value until the sender transmits a new value, or until it reaches the end of the shelf life. WITS data with a long shelf life can be misleading if users don't know the data's age.

---

5. To enable your custom code to be sent or received, click on the code's **Enable** check box.
6. When you're finished, click **Save > Exit** to return to the Setup Menu.

The EDR can now receive the custom WITS code. To send this code, follow the directions in the next section.

You can return all custom WITS settings to default at any time by clicking the **Factory Reset** button.

### Selecting Custom WITS Codes to Send

After you have set up a custom WITS code, follow the steps below to instruct a Pason computer to send the code:

1. From the EDR main screen on the RMPC, click **Menu > Setup > WITS**. The WITS setup screen opens.
2. On the WITS out tab of the Pason computer you want to send the custom WITS code, click the **Custom** button.

3. From the **Transmission** drop-down list, select the transmission type for the custom WITS group.
4. Click the custom code's **Enable** check box.
5. Click **Save > Exit** to return to the Setup Menu. The Pason computer starts sending the custom WITS codes you selected.

### Setting Up WITS Codes for Custom Sensors

The EDR enables you to physically connect and monitor up to 50 custom sensors. If you enter a name for the custom sensor when you set it up in the EDR's Custom Calibration Menu, you can assign it a custom WITS code, which you can instruct a Pason computer to send.

Follow these steps to set up a Pason computer to send a custom WITS code for a connected custom sensor:

1. Ensure that the custom sensor is connected, and assigned a name in the EDR's Custom Calibration Menu.
2. From the EDR main screen on the RMPC, click **Menu > Setup > WITS**. The WITS setup screen opens.
3. On the WITS out tab of the Pason computer you want to send the custom WITS code, click the **Custom** button.
4. Scroll down to the Custom Analog Port section. You should see the name of the custom sensor listed.
5. Click in the custom code's row. The EDR highlights the row.
6. Click under Code in the highlighted row, and enter a four digit WITS code. Ensure that the code is different from existing WITS codes. If the code you enter conflicts with a current EDR WITS code, the EDR highlights your entry in red and does not allow you to save your settings.

RMPC 16:34:21

Hole Depth **0<sup>0</sup>** FEET Bit Depth **0<sup>0</sup>** FEET Hook Load **--** KLBS Weight On Bit **0.0** KLBS Rotary **--** RPM Torque **--** kFT-LBS ROP **--** FT/HR

Custom WITS Transmission: Request-Response  
 There are no items defined for this Record.

Custom Traces Transmission: Request-Response

Enable	Code	Name	Unit	Data Summary
<input checked="" type="checkbox"/>		ALT PUMP1	RPM	
<input type="checkbox"/>		ALT PUMP2	RPM	

Status Messages  
 Error: ALT PUMP1 has an invalid WITS code. It must be exactly 4 digits.

Figure 4: Adding a WITS code for a custom sensor

7. Select a transmission type from the Transmission drop-down list.
8. To enable the selected Pason computer to send your custom code, click on the code's **Enable** check box.
9. Click **Save** > **Exit**. The Pason computer starts sending the custom WITS codes you selected.

---

**Note:**

If you do not see any custom sensors listed in the Custom Analog Port section, ensure that you assigned your custom sensor a name in the EDR's Custom Calibration Menu. The EDR will not list any custom sensors in the Custom Analog Port section unless you have assigned a name to at least one of them.

---

### Issues Related to Sending WITS 01 Codes to the Pason EDR

The EDR can only receive the WITS 01 codes listed below in certain situations. You need the assistance of a Pason field technician to set up the EDR to receive them. Although you can select these codes on the RMPC's WITS In All tab (Figure 4), don't select them without contacting Pason. Improperly configured WITS 01 codes cause the EDR to display incorrect values and negatively impact other applications.

- 0108 bit depth
- 0110 hole depth
- 0113 ROP
- 0115 hook load
- 0117 weight on bit
- 0119 torque
- 0120 RPM
- 0121 standpipe pressure
- 0122 casing pressure
- 0150 diff. pressure

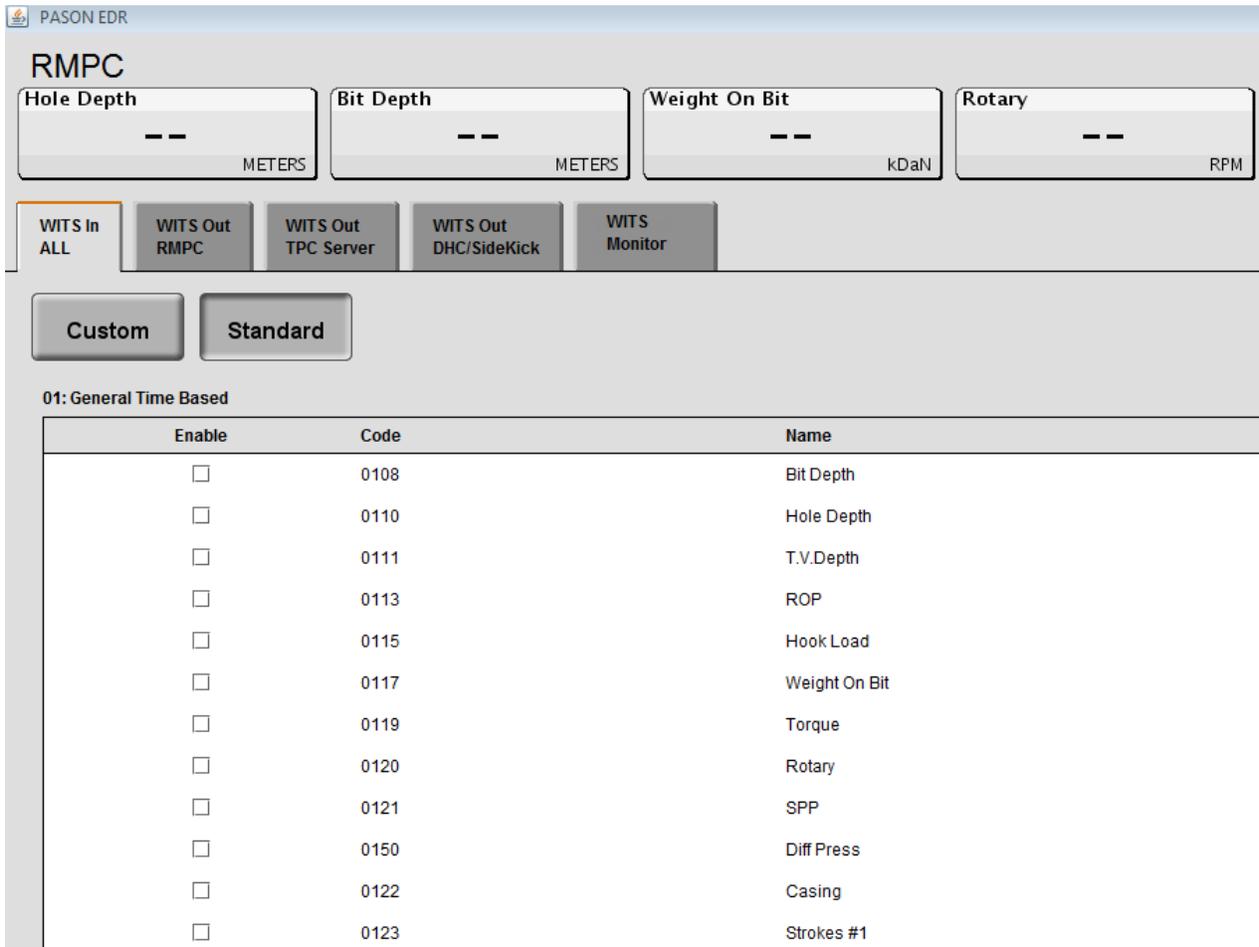


Figure 5: WITS in All tab