Xpert/XLite QuadW SLL

USERS MANUAL

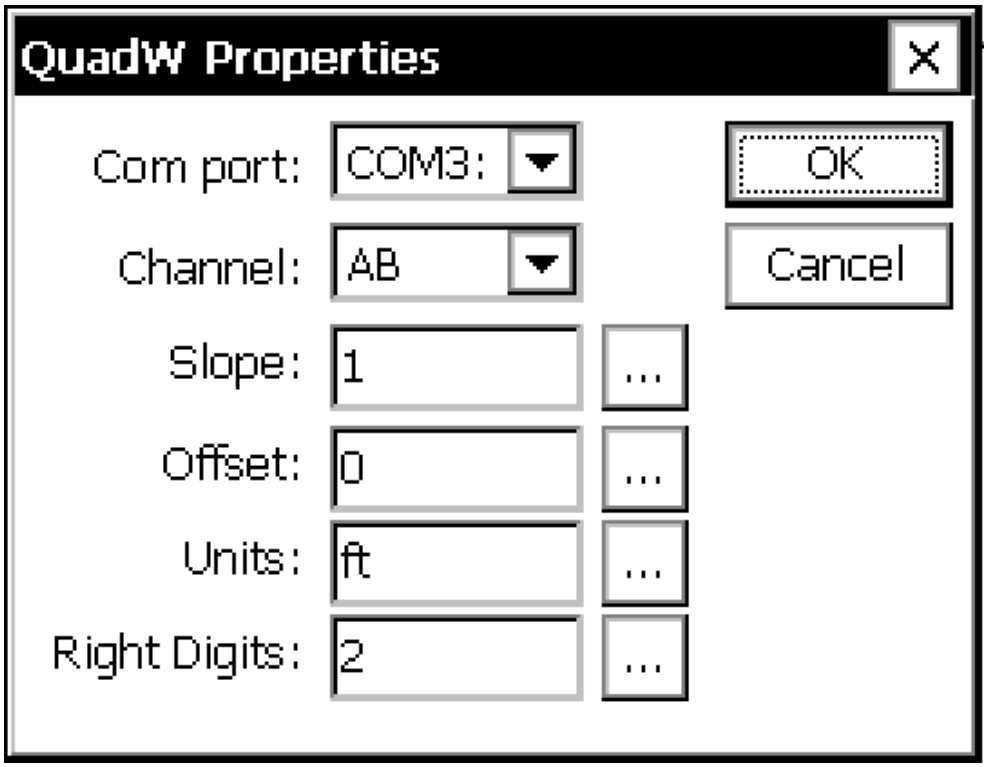

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Table of Contents

Introduction 3
Installing QuadW.sll 4
QuadW Block 5
Inputs 5
Outputs 5
Description 5
Calibration 6
Wiring 6

Table of Figures

Figure 1: Properties of the QuadW Sensor Block 5
Figure 2: Calibrating Quad 6

INTRODUCTION

Sutron's 9210B and Xpert2 (hereafter, the "Xpert"), have been designed to be easily expandable by adding additional software libraries, called Sutron Link Libraries (SLLs). One such library is QuadW.sll, which adds the ability for the Xpert to measure a quadrature shaft encoder connected to the Xpert via a Weeder Tech WTDIN-M digital input module. This document describes how to use the QuadW SLL. The following topics are discussed:

- How to install the library.
- How to configure the properties of the QuadW sensor block.

INSTALLING QUADW.SLL

This section describes installation of the QuadW.sll library.

To install the QuadW.sll library, copy the file to the "\Flash Disk" subdirectory of your Xpert using XTerm. For more information on performing this file transfer, please refer to chapter 6 of the Xpert or 9210 user manual.

Once the library file has been transferred, reboot the Xpert. The library will load automatically after the Xpert reboots.

To uninstall the library, use XTerm to delete the file from the Flash Disk subdirectory. This can only be done when the Xpert application is not running (select "Exit App" from the Status tab).

In order for the QuadW.sll library to load and operate correctly, the version of the QuadW.sll file must be the same as the version of the application loaded into the Xpert. This is usually not a concern because the same versions of the sll and application are typically packaged together. Should the need arise to verify that the versions are the same, the version of the sll as it resides on the PC can be determined by looking at the file's properties (right-click on the file and select the "Version" tab). The version of the Xpert application is given by the application itself, at the top of the About dialog, which is accessed from the Status tab.

QUADW BLOCK

Inputs

None, this is a sensor block. Refer below to wiring.

Outputs

Out1 AB
Out2 CD
Out3 EF
Out4 GH

Description

The QuadW sensor block is used to measure a quadrature sensor connected to a WTDIN-M module. The WTDIN-M module is capable of tracking quadrature at much faster rates than the normal Quad block in the Xpert. A single QuadW block measures all four channels of the Weeder Tech module on each measurement cycle. This module is configured to read quadrature when the first read command is issued to it. The initial value will be 0. The shaft position is then tracked with a minimum pulse width of 75uS which translates into a maximum rate of 3rev/sec for the 1024 sensor (4096 counts/rev) or 12 rev/sec for the 254 sensor (950 counts/rev). The WTDIN-M will retain its measurement of position until power is removed.

Note: the address is assumed to be “A”.

The properties dialog for the QuadW block appears below.

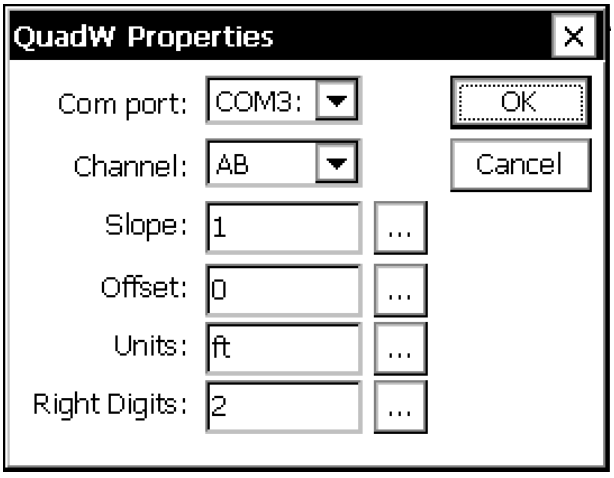

Figure 1: Properties of the QuadW Sensor Block

The properties of the QuadW block are defined as follows:

Com port Identifies the communications port to use to measure the sensor.

Channel	Select which channel's Slope and Offset to view in the dialog.
Slope	The slope and offset are applied to the measured Counts value to compute the height value of the output. For a shaft encoder type quadrature sensor measuring water level, the slope is diameter/counts_per_revolution. Note: slope may be entered in scientific notation (e.g. 2.49537e-4) and as a positive or negative number for CW and CCW operation.
Offset	The slope and offset are applied to the measured Counts value to determine the value of the "Quad" output. Note that Offset is adjusted during calibration of the sensor.
Units	The units string to use when formatting the Quad output.

Note: this block has four outputs: AB, CD, EF, and GH. Each is the computed height of the corresponding channel, i.e., the final scaled value.

Calibration

To calibrate the sensor block, go to the Sensors tab, highlight the top line of the QuadW block entry, and press the "Cal…" button. The following dialog is shown, allowing you to enter the current value for height. After entering height and pressing Ok, the new value for height is assumed. The calibration is retained as long as the WTDIN-M is not powered down.

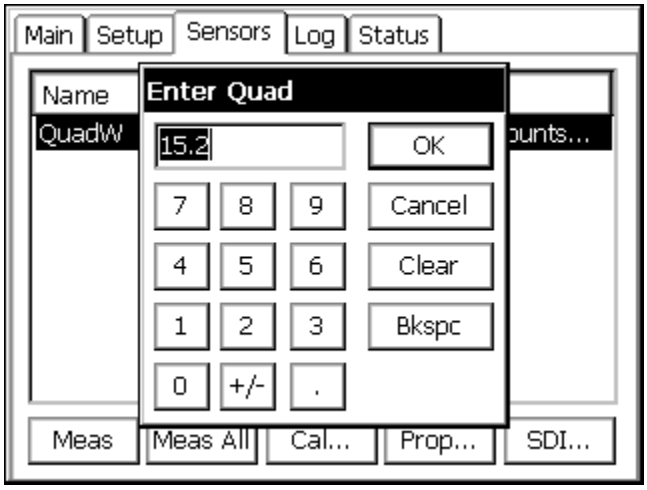

Figure 2: Calibrating Quad

Wiring

This section describes how to wire the quadrature sensor to the Weeder WTDIN-M, and the Weeder to the Xpert.

- Connect a straight MF DB9 cable between Com2, 3 or 4 to the Host connection on the WTDIN-M
- Connect +12V power and Ground to the + - terminal strip on the WTDIN-M
- Connect the quadrature power and ground to V+ and GND.
- Connect the quadrature output to the desired channels