



# APPLICATION NOTE

USING THE QUADRATURE STRING ENCODER (SE1-50 CELESCO) WITH XLITE 9210 DATA LOGGER

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# QUADRATURE STRING ENCODER (SE1-50 CELESCO) & XLITE 9210 DATA LOGGER



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## 1. PURPOSE

The purpose of this application note is to focus on the configuration and connection of the SE1-50 sensor to the Digital Input Module in the Xlite 9210

To obtain information about **General Specifications** of the previous mentioned equipments access the following web sites.

<http://www.sutron.com/products/XLite9210.htm>

<http://www.celesco.com/promo/spseries.htm>

## 2. PRODUCT OVERVIEW

### 2.1 THE SE1-50 QUADRATURE STRING ENCODER

The Celesco SE1 is the digital encoder version of our compact String Pot series. The SE1 is an economical and durable device that utilizes a flexible cable, a spring-loaded spool and an incremental optical encoder to detect and measure linear position.

The SE1 is designed for tight spaces, high-cycle applications and generously allows cable misalignment. With a handy mounting bracket included, and 2 basic measurement ranges, the SE1 is a perfect solution for many applications, from light industrial to OEM.



### 2.2 XLITE 9210 DATALOGGER

The XLite 9210 Datalogger, a high performance data recorder & communications device for unattended, remote data acquisition, control & communications, is a multi-tasking logger capable of making measurements & communicating simultaneously.

Connect a wide variety of sensors to the system using built-in high-precision analog & digital interfaces as well as via RS232, RS485, & SDI-12



## 3. SETUP AND OPERATION

### 3.1 EQUIPMENT

The following equipment is needed to set up and measure the SE1-50 and the Xlite Datalogger:

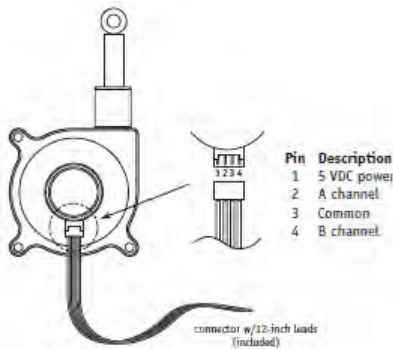
- ▶ Xlite 9210 Datalogger
- ▶ SE1-50 Quadrature String Encoder
- ▶ 5 VDC Power supply
- ▶ PC running Xterm software (for easy configuration of the 9210)
- ▶ RS 232 cable (DB-9)

### 3.2 CONNECTING SE1-50 TO 9210

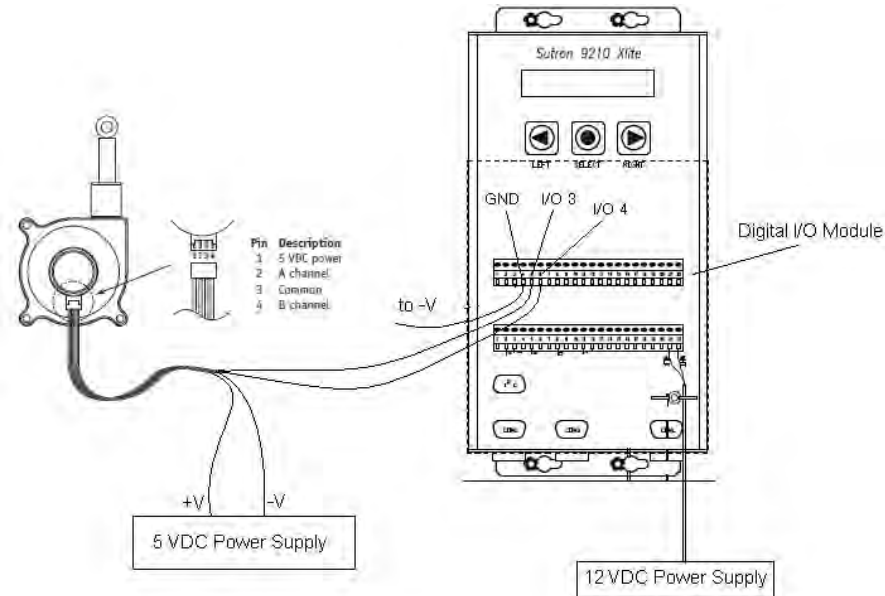
This section describes how to connect the SE1-50 to the digital I/O module build-into the Xlite 9210. Also, the setup for measuring this sensor using graphical setup on Xterm software.

The SE1-50 includes a molex connector with 12 in. leads. The following table explains how to connect the SE1-50 to the 9210

SE1-50 PIN	5 VDC Power Supply	Xlite 9210 Digital I/O Module PIN
1. 5 VDC	+ 5 VDC	
2. A Channel		5. I/O channel 3
3. Common	- VDC	4. GND
4. B Channel		6. I/O channel 4



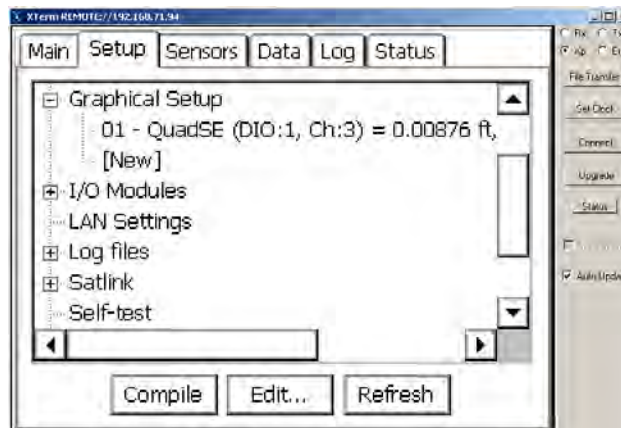
The following figure illustrates how to connect the SE1-50 to the Xlite 9210



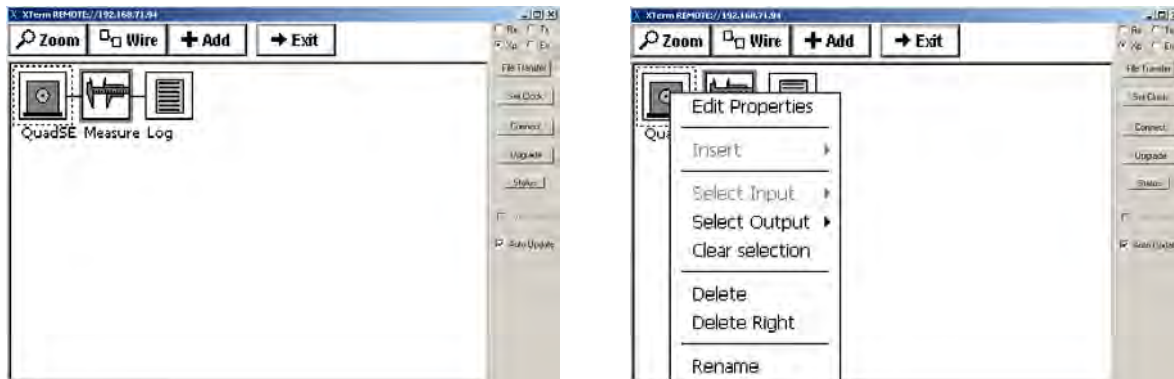
### 3.3 CONFIGURING THE XLITE 9210

In order to obtain data from the SE1-50 encoder we have to configure the Xlite 9210. The Xlite 9210 has a Xterm software that can be access via RS-232 interface using a PC running Xterm Software. For any further details about how to operate the 9210 with a PC please check the Xlite 9210 Operation and maintenance manual, Chapter 6.

Once we have access the 9210 and are ready to start the graphical setup, we have to select the Graphical Setup branch from the Setup Tap (Setup > Graphical setup).



We add the QuadSE block and click on the block to proceed to configure the block properties.



Once we select Edit Properties from the selection list we have to enter the following parameters. This parameter has been selected according with the sensor properties and the specific function of the block.

**Quadrature Shaft Encoder Properties**

DIO Module:

Channel:

Wheel Circumference:

Other Circumference:

Counts per Turn:

Rotation:  CW  CCW

Units:  ft  m

- DIO Module:** 1 = Assigned number for the built-in Digital Input Module.
- Channel:** 3 = I/O channel selected for the signal A of the SE1 sensor. For signal B, I/O channel 4 is selected since the block automatically looks for it.
- Wheel Circumference:** Other = This block has been created for the larger shaft encoder. To make it work with the SE1 sensor, further calculations must be performed.
- Other Circumference:** 0.0365= This value is based on the resolution of the SE1 sensor (56.4 pulses per in).
- Counts per Turn:** 100 = Calculations are based on this number.
- Rotation:** The user selects rotation during installation.
- Units:** User's preference
- NOTE:** If you select "ft" then enter 0.0365 in **Other Circumference**. If you select "m" then enter 0.0113 in **Other Circumference**