



**Kuster Company**

2900 E. 29th Street

Long Beach, CA USA 90806

Telephone 562-595-0661 Fax 562-426-7897 E-Mail [Kuster@kusterco.com](mailto:Kuster@kusterco.com)

# **K10 Surface Readout (SRO)**

**SOFTWARE & OPERATIONAL MANUAL**

---



**Kuster Company**  
2900 E. 29th Street  
Long Beach, CA USA 90806  
Telephone 562-595-0661 Fax 562-426-7897 E-Mail [Kuster@kusterco.com](mailto:Kuster@kusterco.com)

## INTRODUCTION

The K10 Surface Readout (SRO) Unit operates with either the K10 Quartz or K10 Strain Pressure and Temperature Gauge. The Surface Unit provides Power and receives data from the down-hole tool over a single conductor cable. The data is displayed at the surface and is stored in the Surface Readout System and/or PC.

The K10 Surface Readout Unit will also record Depth and Line Speed when using a Digital Encoder.

## FEATURES:

- Fully programmable with computer
- Digital display (SRO)
- 24MB non-volatile memory
- Real time display on unit and/or PC
- Rugged Pelican case
- 24-volt power supply
- Rechargeable batteries
- Displays depth and line speed with optional encoder



## Scope

This manual covers the procedure for using the SRO unit in conjunction with a K10 down-hole instrument and the K10 Software.

## DESCRIPTION

The K10 SRO unit displays pressure, temperature, depth and line speed in real time. It collects data from a K10 Quartz or K10 Strain pressure and temperature gauge. The SRO collects depth from a depth encoder that is attached to the wire spool. All three data streams as well as a line speed calculation are stored in the SRO unit's on board memory. The data can then be downloaded from memory to a PC. Additionally the data can be stored in the PC in real time.



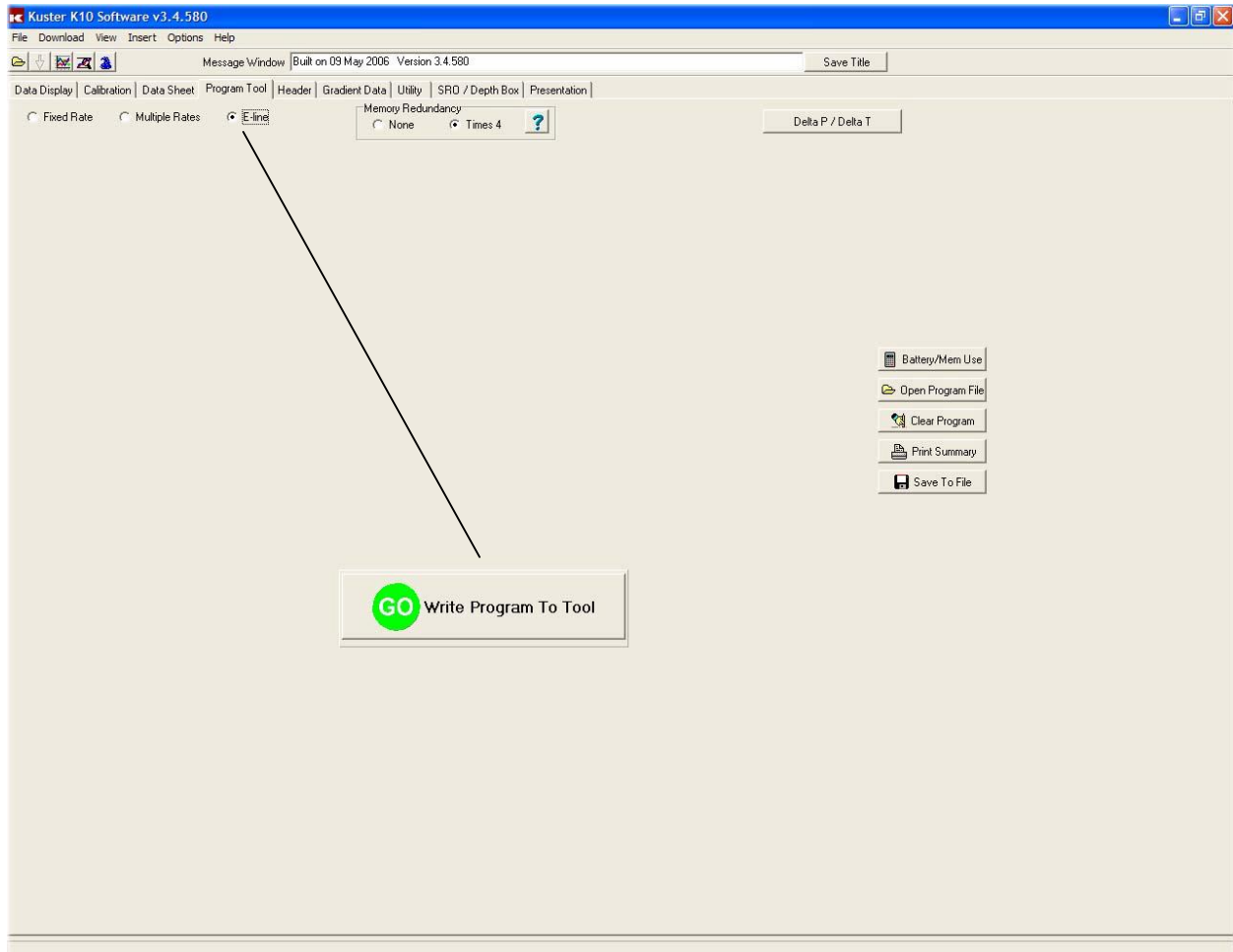
**Kuster Company**  
2900 E. 29th Street  
Long Beach, CA USA 90806  
Telephone 562-595-0661 Fax 562-426-7897 E-Mail [Kuster@kusterco.com](mailto:Kuster@kusterco.com)

## PROCEDURE

### Programming the gauge

Connect the K10 Quartz/Strain gauge to the communications box and the communications box to the PC.

Open the K10 Software and go to the 'Program Tool' select 'E-line' mode and click 'Write Program To Tool'.



Disconnect the gauge from the communications box and the communications box from the PC.

### Programming the SRO Unit

If SRO is run without Depth Encoder then it does not require any specific programming. If SRO is being run with Depth Encoder then Power on SRO unit with the switch on the left side of the box.

Connect the SRO box directly to the PC with the USB (gauge has to be connected to the e-line).



## Kuster Company

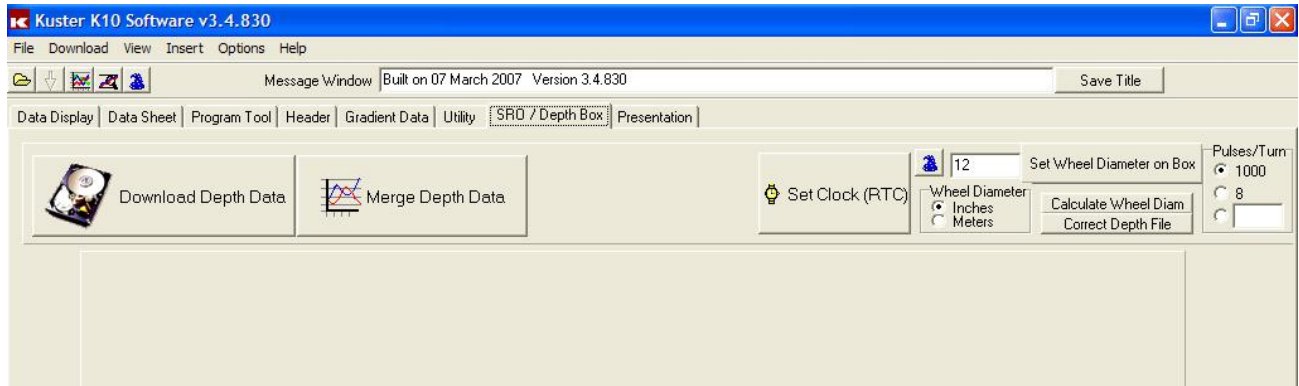
2900 E. 29th Street

Long Beach, CA USA 90806

Telephone 562-595-0661 Fax 562-426-7897 E-Mail [Kuster@kusterco.com](mailto:Kuster@kusterco.com)

Go to the SRO tab and enter the wheel diameter and click 'Set Wheel Diameter' if depth encoder is being used with SRO. If everything is fine, at the bottom of the screen you would read 'Wheel Diameter is set'

Click 'Set Clock (RTC) button. At bottom of the screen you would read 'RTC is set'



On first use with a particular wire-line spool run a depth check. Compare the depth given at a certain known point. Click 'Calculate Wheel Diam' on the SRO tab you will be prompted to enter the actual depth from reference meter at the deepest point. Then you will be prompted to enter the reading that the box shows at the deepest point. Software will recalculate and set new wheel diameter to the box.

## Preparing for Operation

If intending to use in with battery power charge the battery by plugging in box for overnight. That charge will last approximately 12 hours.

Go to well site.

1. With the power off connect the gauge to the transmitter.
2. Connect the transmitter to the e-line.
3. Connect the other end of the e-line to the SRO box.
4. With the depth encoder already mounted on the spool connect the other end to the SRO box.
5. Power on the SRO box.
6. Wait for the boot sequence on the LCD panels to begin to complete. It should include a series of diagnostic countdowns. The initial boot and download may take a few minutes to complete.
7. The lower right LCD screen will count down from 15 then count up to 80 twice. That checks for communication between the box and gauge. The calibration file will then download from the tool to the SRO box. After the diagnostic checks complete, the pressure and temperature readings will appear on all four LCD screens.
8. Zero the mechanical counter and then the SRO Box by pressing the Zero Depth Button. Keep pressing until box starts resetting itself. It will zero out the depth and erase the memory.



## Connecting the Kuster SRO to the E-Line

The Kuster SRO is connected to the e-line via a BNC connector on the left hand side of the box. Included in the kit is 3 adapters that are commonly used on wireline trucks RCA-BNC, UHF-BNC and a BNC-BNC. By attaching these to the end of the supplied BNC cable the operator should find it easy to hook up the SRO to his/her e-line.

The E-line is attached to the EMR gauge via a standard GO-connector. The GO-connector adapter is used to attach the GO-Connector where the battery barrel is usually placed. Inside the GO connector adapter is the SRO Transmitter that allows the tool to talk to the SRO on the surface.



EMR gauge, SRO Transmitter, GO to Recorder Adapter and the GO Cable Head



**Kuster Company**

2900 E. 29th Street

Long Beach, CA USA 90806

Telephone 562-595-0661 Fax 562-426-7897 E-Mail [Kuster@kusterco.com](mailto:Kuster@kusterco.com)



## Assembled Unit

The center conductor on the GO-Connector where the E-line is attached should be protected from the oil. Standard practice in North America is to use a layer of Capton Tape, followed by Electric tape then 3M-rubber tape. Then the whole thing is wrapped with wax string to keep the tape from peeling back in the heat. The rubber boot sometimes used with the go adapter does not work as well as the tape. If you have a poor connection to the GO adapter on the cable head you will not have enough voltage for the gauge to operate right. Normally on a short wire it should be 11-12 volts (From the center conductor to the case on the tool). If its not you have a wiring problem.

Begin survey.

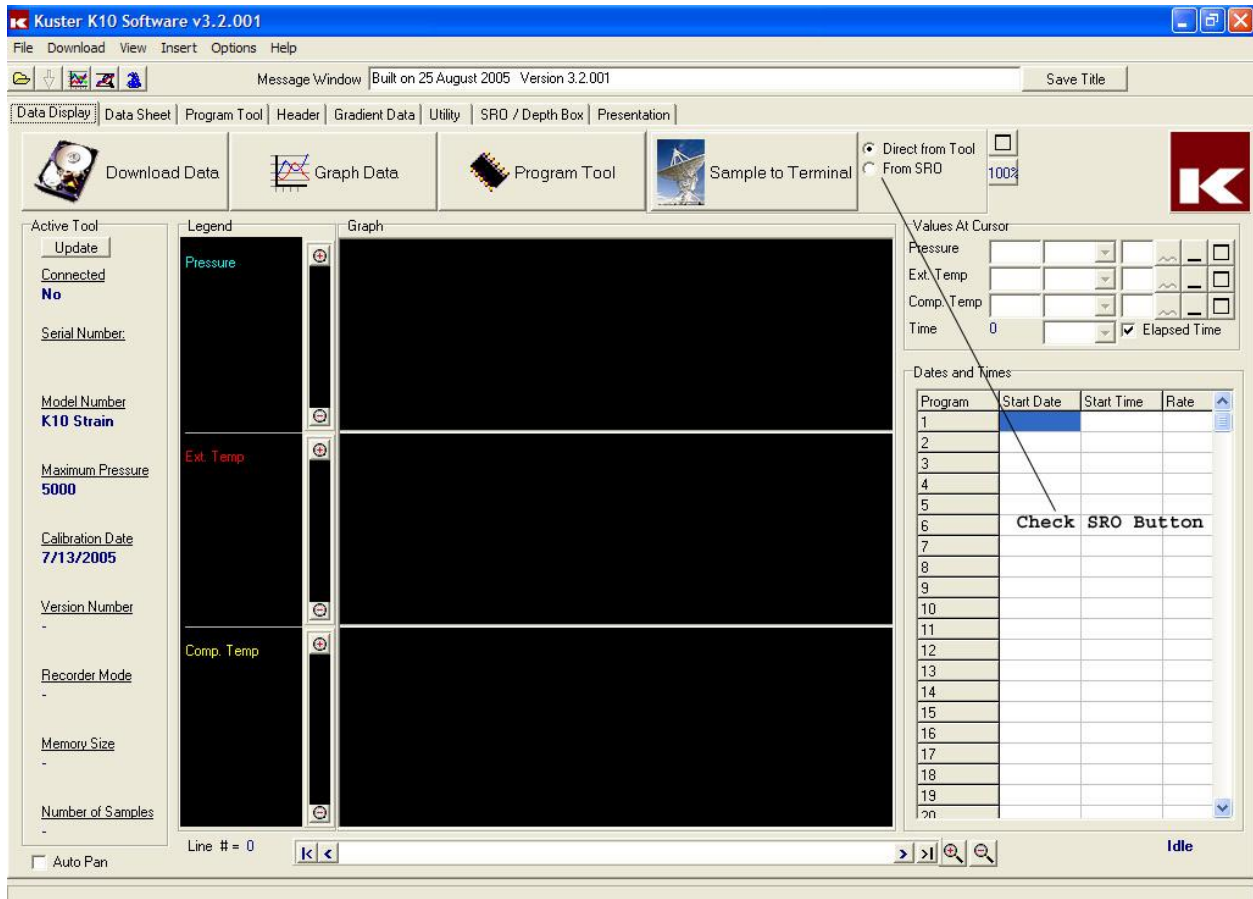
Retrieving Data after Survey



**Kuster Company**  
2900 E. 29th Street  
Long Beach, CA USA 90806  
Telephone 562-595-0661 Fax 562-426-7897 E-Mail [Kuster@kusterco.com](mailto:Kuster@kusterco.com)

## Downloading:

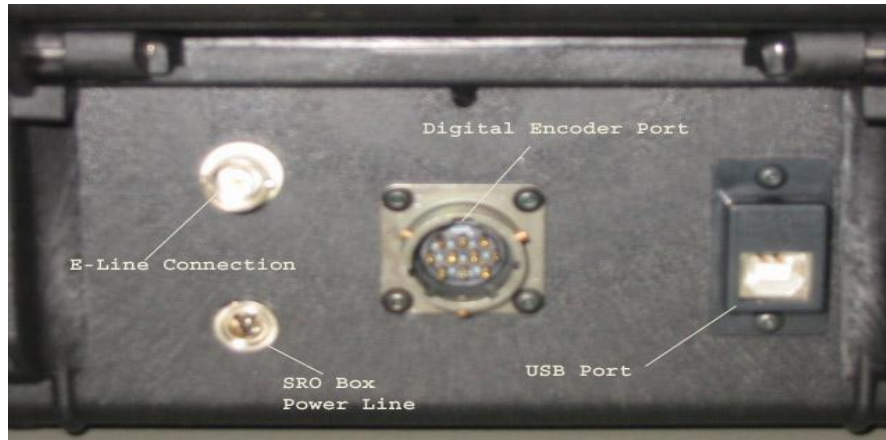
1. Connect the SRO box directly to the PC via the USB.
2. Open the K10 Software.
3. Power up the SRO box
4. On the 'Data Display' select the 'From SRO' radio button.



Click 'Download Data' you will be prompted to assign a filename. The pressure, temperature, depth and line speed streams will be saved to a .log file with the filename you specified.



## SRO Hardware



E-line Mode - The gauge is connected to the SRO through a wire-line and dropped downhole. It receives power from the SRO, there is no battery.

Warning: If the gauge is programmed for E-line mode, it will not take data if connected to a battery.

Here is the following Hardware in SRO box for connection Establishment,

1. USB Port
2. Depth Encoder
3. E-Line Connection
4. SRO Box Power Line