



Manual
MicroWire to 4-20mA Interface
Model 6122C



Revision History

File name / Revision	Date	Authors & Change Details	Checked/ Approved
Previous version BX	2004	RS/ JH	MS
Unidata Manual - 6122 MicroWire User Manual Issue 2.0	2007	AB/CB/JH/MS/KC	MS
Unidata Manual - 6122 MicroWire User Manual Issue 3.0	2013	DM/ MS	MS
Unidata Manual - 6122 MicroWire User Manual Issue 4.0 12 07 2013.doc	2013	CB	MS
Unidata Manual - 6122 MicroWire User Manual Issue 5.0	10 09 13	MP	MS
Unidata Manual - 6122C Microwire User Manual Issue 5.1.docx	04 06 14	IM/CB-Update	MS
Unidata Manual - 6122C Microwire User Manual Issue 5.2.docx	06 11 14	CB-Multiple Microwires	KC

Copyright © Unidata Pty Ltd 2000-2013. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any spoken or computer language, in any form or by any means. Electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without prior written permission of Unidata Pty Ltd 40 Ladner St, O'Connor Western Australia 6163.



TABLE OF CONTENTS

1.0	Introduction	1
2.0	Connection	2
2.1	12V Power	2
2.2	4-20mA Output	2
2.3	6122C-S Terminations for use with Starflow 6526H	3
2.4	6122C-L Terminations for use with Starlogger 6004D	3
2.5	Connecting Multiple Microwires.....	4
2.6	Specifications	6
3.0	Programming.....	7
3.1	Starflow 6526H	7
3.2	Starlogger 6004D	10



1.0 INTRODUCTION

The Model 6122C interface enables you to produce a 4-20mA output from a Micro Wire using a compatible synchronous serial signal channel.

The Unidata Starflow supports Micro Wire as an alternative use of the SDI-12 channel. This allows you to connect any of the instrument channels to a 4-20mA transmitter.

The Unidata Starlogger supports Micro Wire using the HSIO serial channel which can be connected using the Starlogger field termination strip. This allows you to connect any of the instrument channels to a 4-20mA transmitter.

2.0 CONNECTION

The Model 6122C Interface supports one (optionally two) 16 bit resolution channels.

The interface is enclosed in a housing which contains SQL socket (for connecting to a STARFLOW Instrument), SQL plug (for connecting to PC) and two glands for the 4-20mA signal output cables or for a separate power connection.

A photo of a typical connection arrangement is below:



2.1 12V Power

There are two different ways to power the interface; either using the Starflow SQL power and communication cable (6603D-SDI) as shown in the picture above, or by connecting 12V power to the 12-15V DC power terminal blocks in the interface. Either method will also provide power to the Starflow Instrument.

Warning: For correct operation of the 4-20mA output, the power supply must not be less than 11 Volts. Maximum voltage should be less than 15V DC.

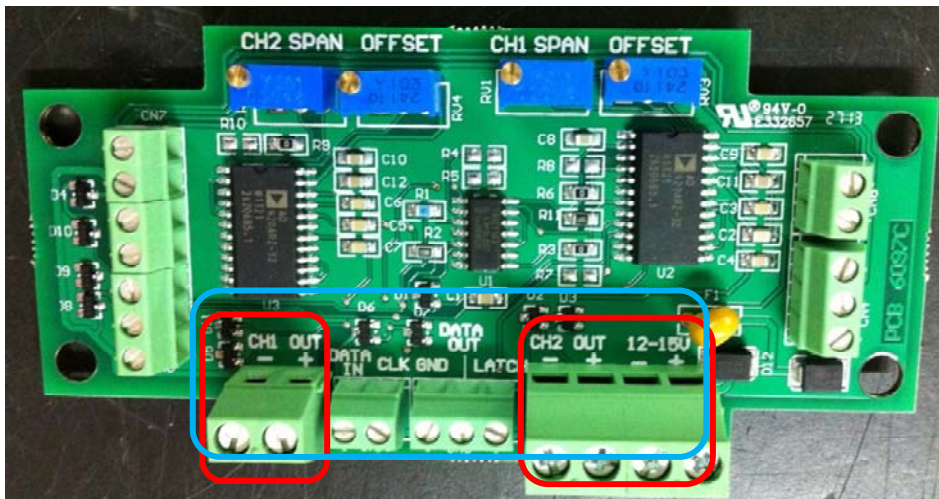
2.2 4-20mA Output

This sources the 4-20mA output signal that may be connected to any 4-20mA receiver.

Warning: The 4-20mA signal is also connected to the Power –ve/ground and the secondary 4-20mA –ve signal.

2.3 6122C-S Terminations for use with Starflow 6526H

Terminal	Signal Name	Description
CH1 OUT +	4-20mA +VE	Primary 4-20mA Output Channel
CH1 OUT -	4-20mA -VE	
CH2 OUT +	4-20mA +VE (optional)	Secondary 4-20mA Output Channel
CH2 OUT -	4-20mA -VE (optional)	
12-15V DC +	+12V DC Power	Interface Power
12-15V DC -	Ground	Interface Power



Starflow terminations - red, Starlogger terminations - blue

2.4 6122C-L Terminations for use with Starlogger 6004D

Terminal	Signal Name	Description	Starlogger FTS Terminal
CH1 OUT +	4-20mA +VE	Primary 4-20mA Output Channel	
CH1 OUT -	4-20mA -VE		
CH2 OUT +	4-20mA +VE (optional)	Secondary 4-20mA Output Channel	
CH2 OUT -	4-20mA -VE (optional)		
LATCH	Micro Wire LATCH	External Latch Signal	15 (5V p)
CLOCK	Micro Wire CLOCK	Micro Wire Data Transfer signals	12 (Clock 0)
DATA IN	Micro Wire DATA IN		11 (Data 0)
DATA OUT	Micro Wire DATA OUT (optional)	Signal extension Link	
12-15V DC +	+12V DC Power	Interface Power	
12-15V DC -	Ground	Interface Power	

2.5 Connecting Multiple Microwires

A single micro-wire supports two 4-20mA outputs but in some circumstances more than two outputs are required. In these cases two micro-wire devices can be cascaded together so that the user can then have four 4-20mA outputs. The Starlog V4 software supports this directly by selecting these parameters in the scheme.

Connect the Starflow or Starlogger to the first micro-wire as discussed in sections 2.3 and 2.4.



Use the following connections to connect Micro-wire 1 to Micro-wire 2.

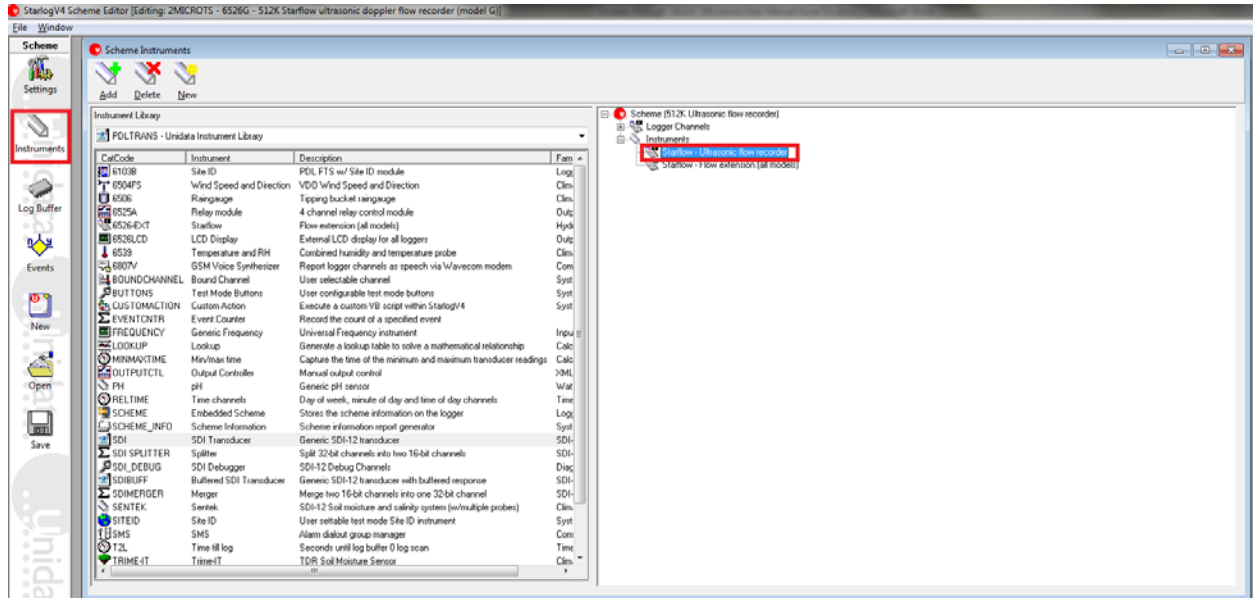
Micro-wire 1	Micro-wire 2
CLK	CLK
DATA OUT	DATA IN
12-15V DC +	12-15V DC +
GND	GND

Note: Only one power supply to be used and this must to be connected to Micro-wire 1 power terminal only.

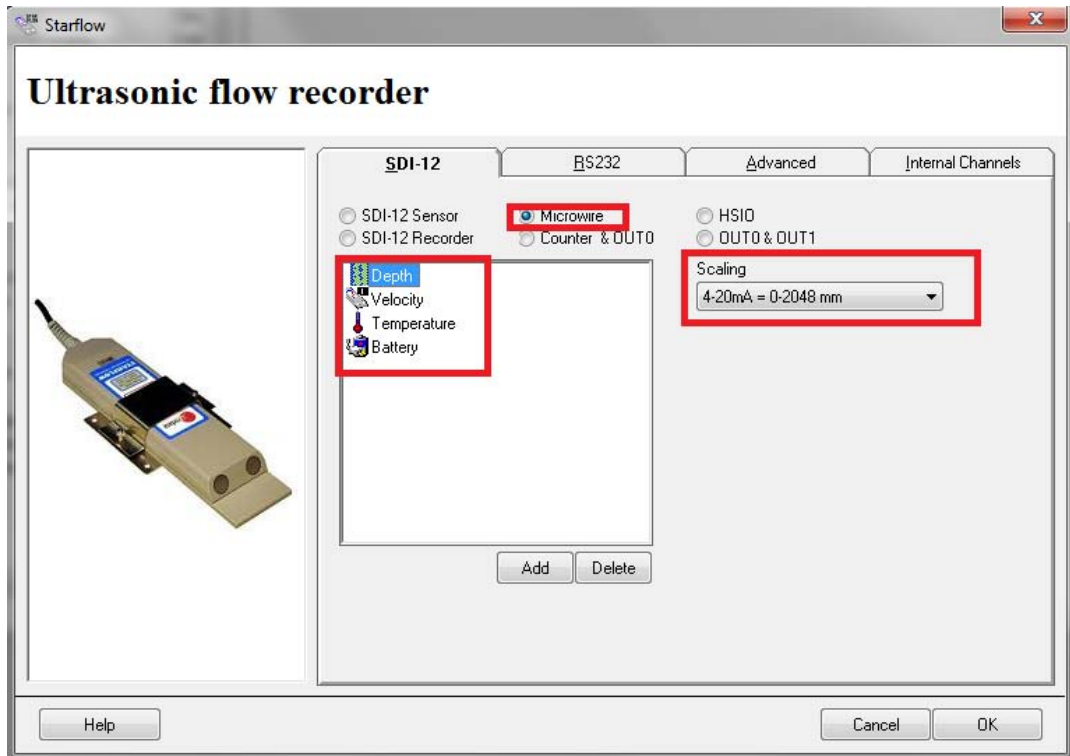
Scheme creation:

1. Create a New Starflow scheme or modify an existing scheme.

2. Click on the Instruments icon and double click on Ultrasonic flow recorder



3. Click on the Microwire radio button and add the channels to output to the 4-20mA
4. Select the correct scaling for each channel to provide good resolution, for example with a Starflow with a 2m depth sensor the scaling selected should be 0-2048mm. Note that for channels such as temperature and battery the channel readings will be treated as an integer value (no decimal point) E.g 13.06V will be treated as 1306 so a 0-2048V scaling should be selected.



The below table indicates how the above parameters will be output on two cascaded micro-wire devices.

Micro-wire Device Number	Micro-wire Channel
Micro-wire 1	Channel 1 - Temperature
Micro-wire 1	Channel 2 - Battery
Micro-wire 2	Channel 1 - Depth
Micro-wire 2	Channel 2 - Velocity

As from the above table it can be seen that the first two channels in the scheme get output to micro-wire 2 and the second two channels get output to micro-wire 1.

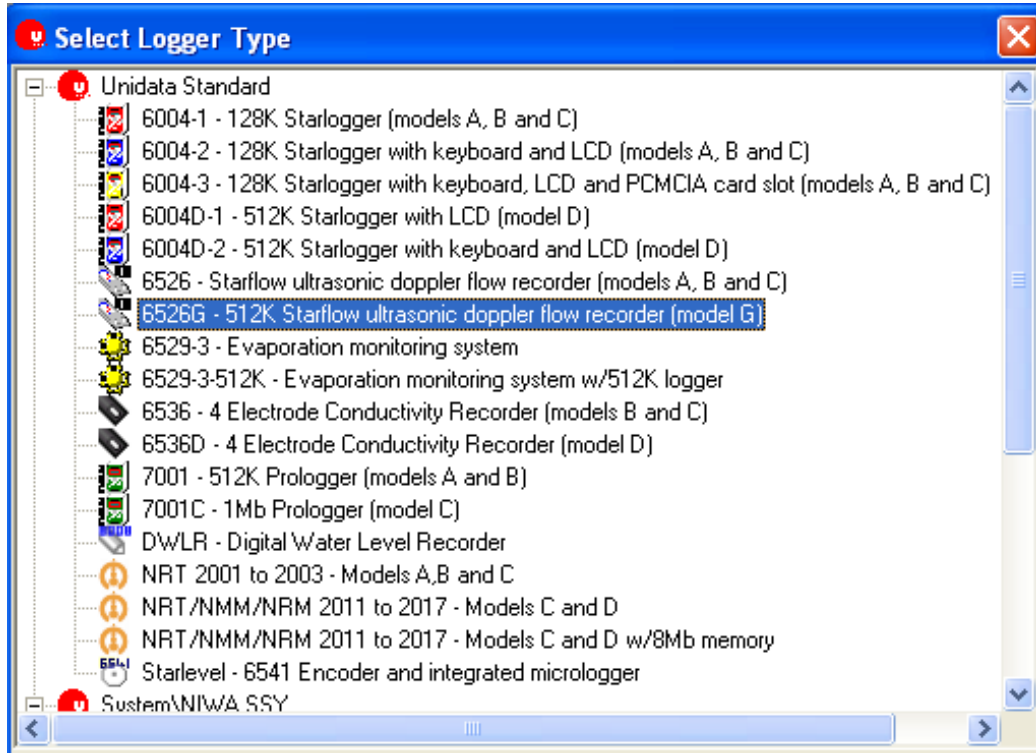
2.6 Specifications

Power: 11V DC to 15V DC.3mA plus 4-20mA per channel.
Size: 110 mm (L) x 60mm (W) x 50mm (D).
Resolution: 16 bits, $\pm 0.0015\%$.
Accuracy: $\pm 0.015\%$
Operating Temperature: 0°C to 60°C.

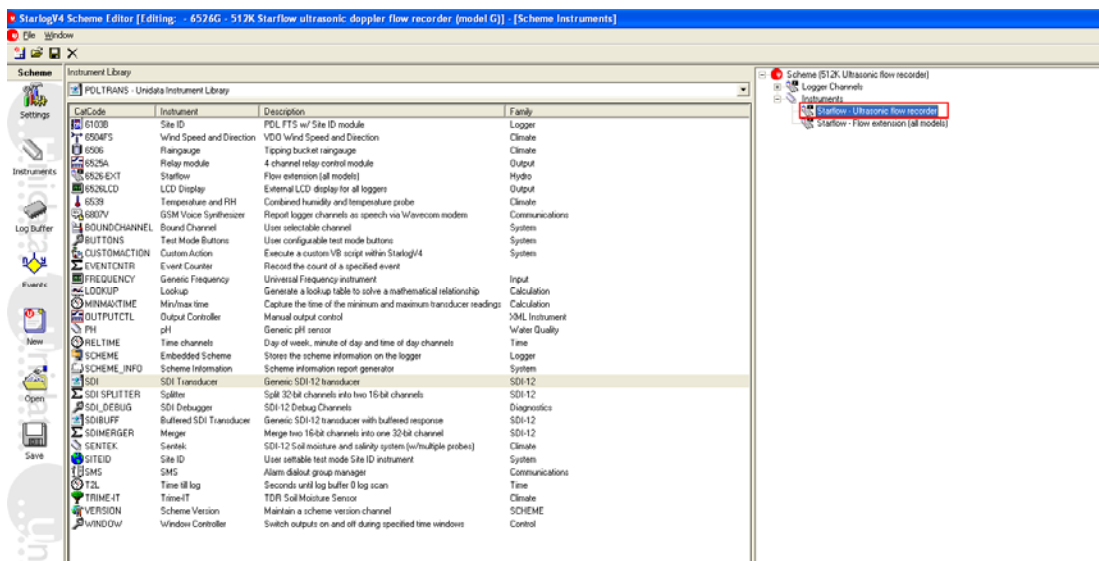
3.0 PROGRAMMING

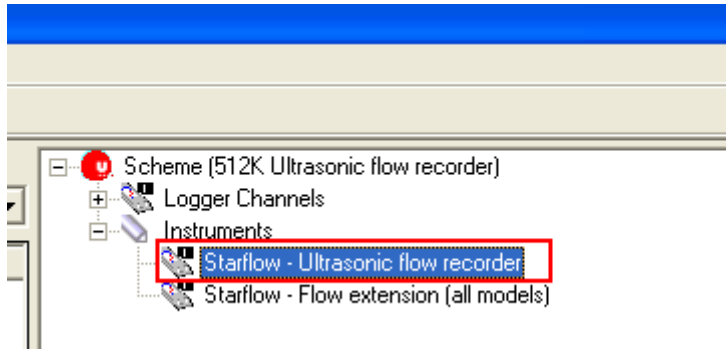
3.1 Starflow 6526H

1. Create a new Starflow Scheme



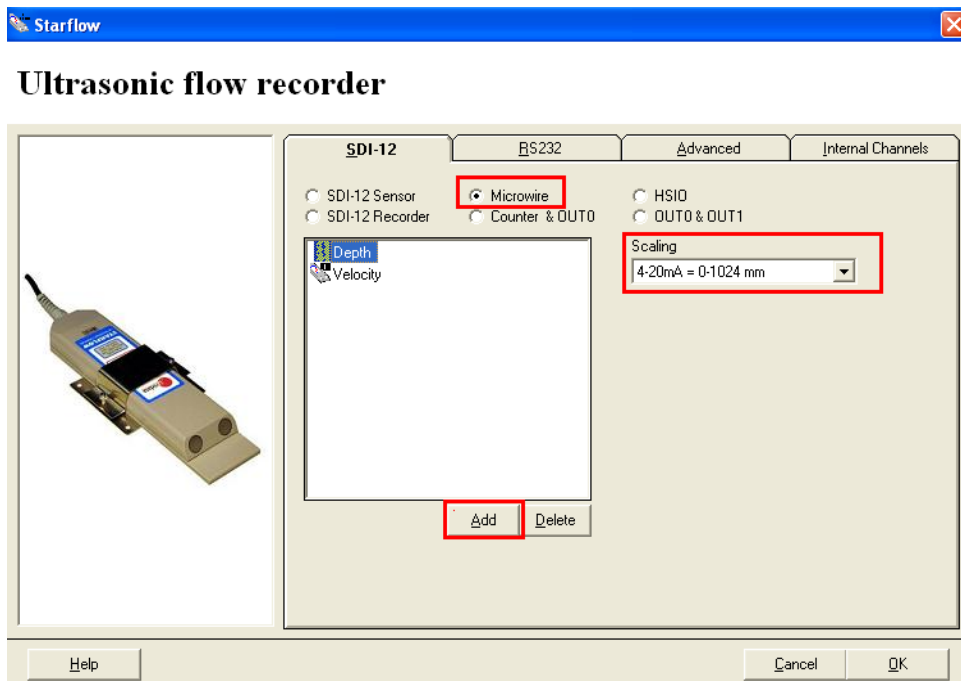
2. Click on instruments icon and then open the Starflow – Ultrasonic flow recorder instrument by double clicking on it.



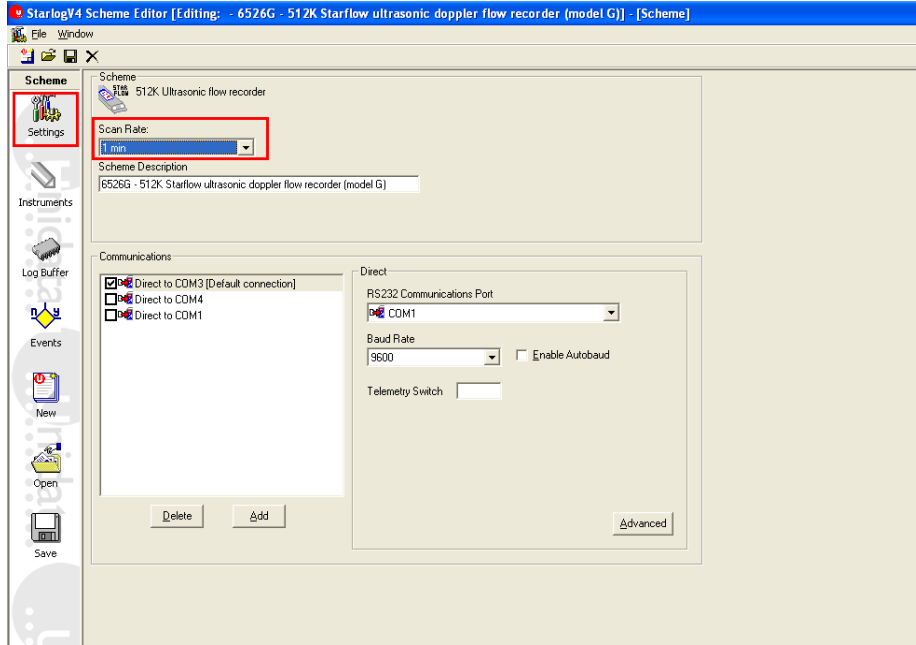


3. Click on the Micro wire radio button and Add the channel(s) to output on the micro wire interface and the scaling required then click OK.

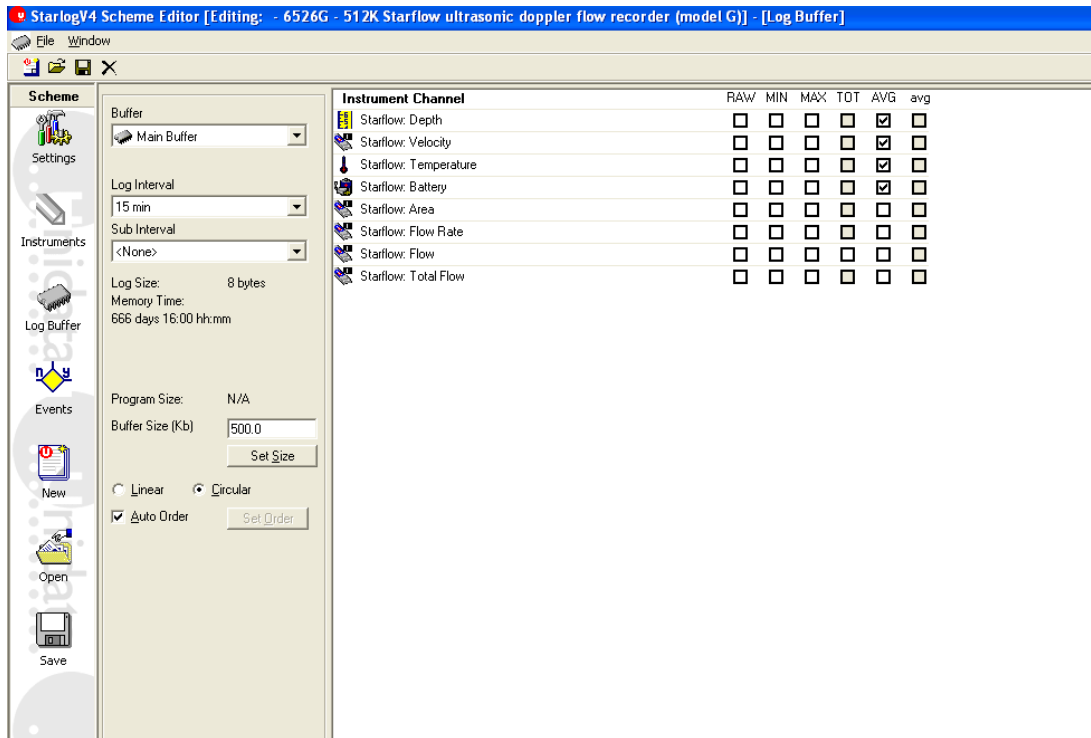
Note: If one channel is defined, the output is on the Primary 4-20mA signal. If two channels are selected, the first defined channel is on the Secondary 4-20mA output and the second defined channel is on the Primary 4-20mA output.



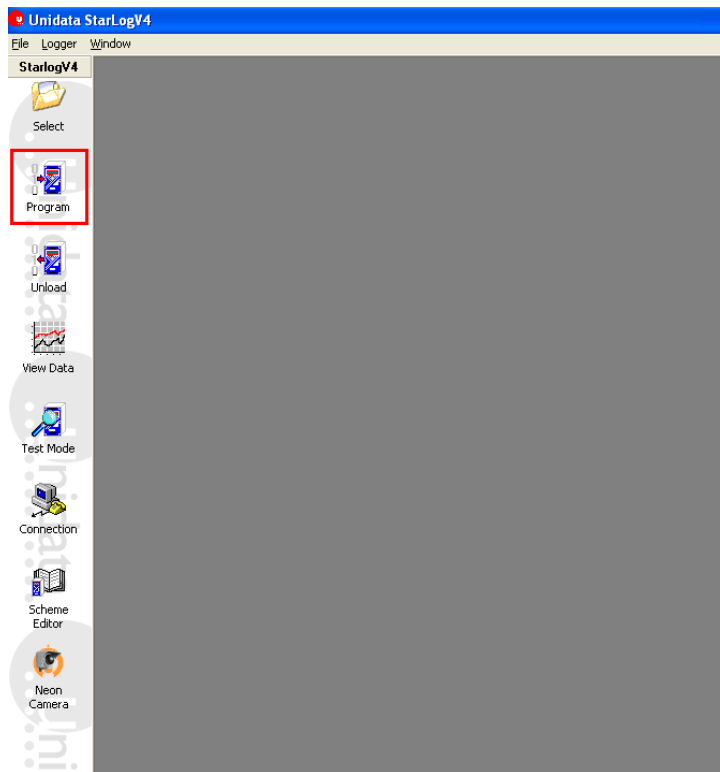
- Click on the Settings icon and select an appropriate scan rate (i.e. 1 minute). The scan rate will determine how often the 4-20mA readings are updated.



- Click on the Log Buffer icon and select what data to record on the Starflow and how often to record the data, then click the save icon.

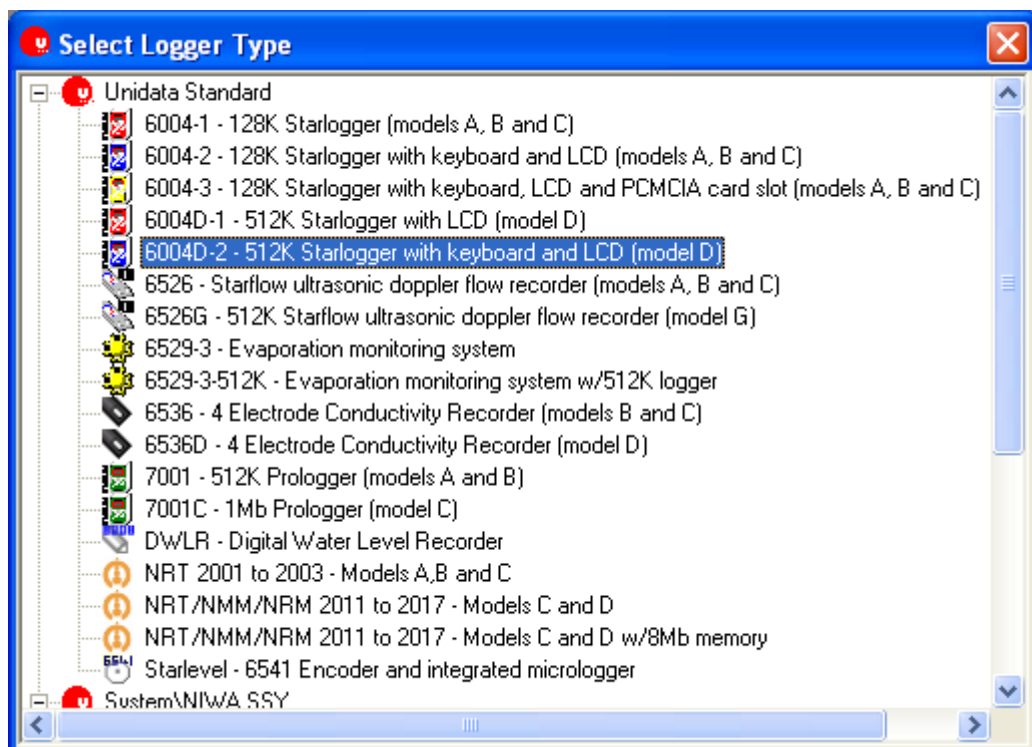


6. Program the logger and the 4-20mA recordings from the micro wire are now active.

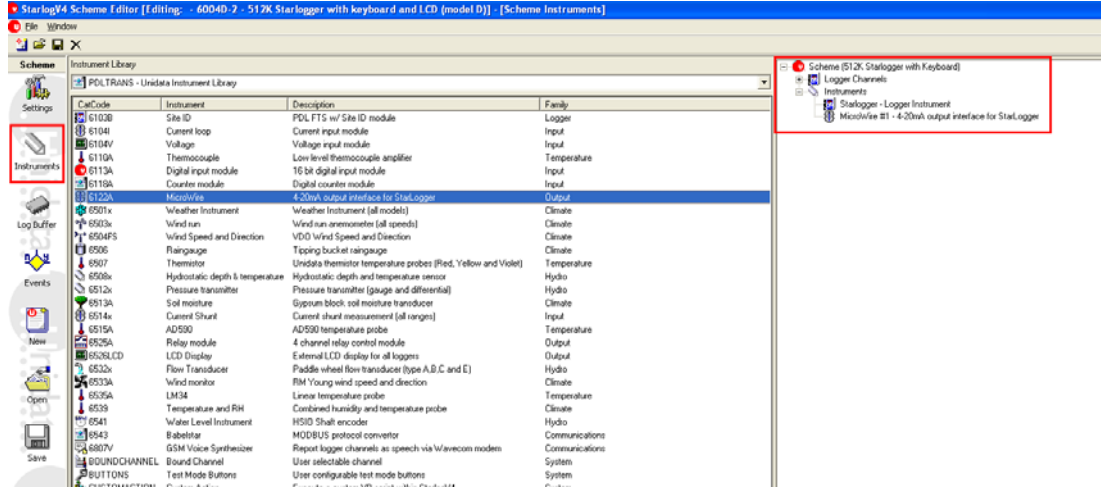


3.2 Starlogger 6004D

1. Create a new Starlogger Scheme



- Click on the instruments icon and then add a 6122A instrument from the PDLTRANS-Unidata Instrument Library by double clicking on it.

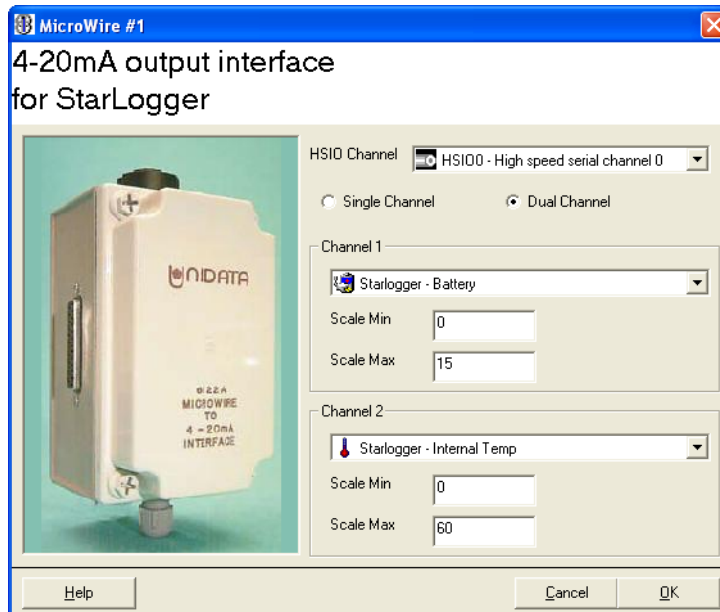


- Add any other instruments to the scheme which need to be recorded or output on the 4-20mA micro wire interface.
- Click on the Micro wire # 1 instrument and select HSIO channel 0 and single or dual channel depending if the micro wire has one or two channels.
- Select the channels that are required to be output on the 4-20mA micro wire interface.
- Type the scaling range required for the 4-20mA range. Click OK.

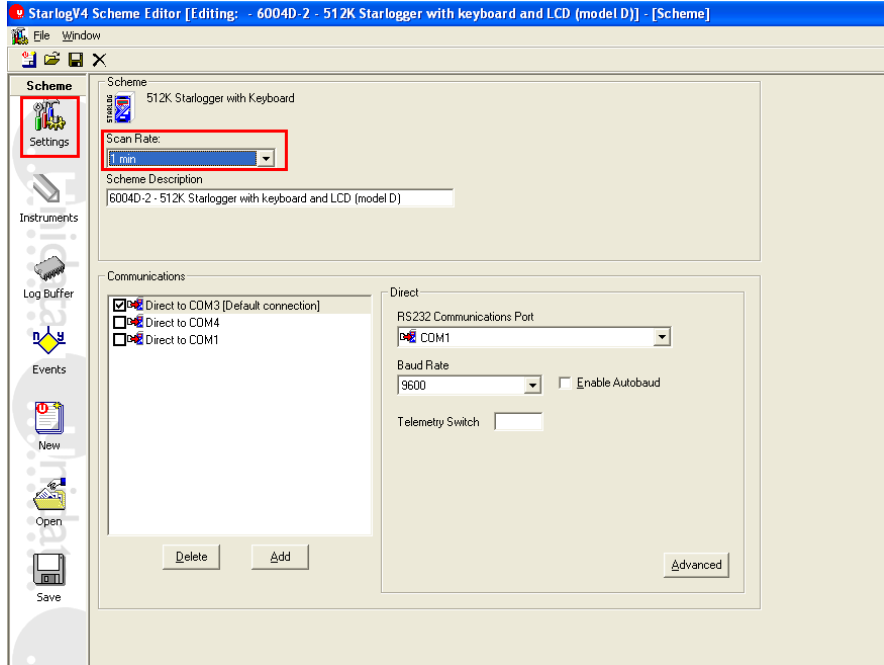
E.g. Channel 1 4mA = 0 Volts, 20mA = 15 Volts.

Channel 2 4mA = 0 Deg C, 20mA = 60 Deg C

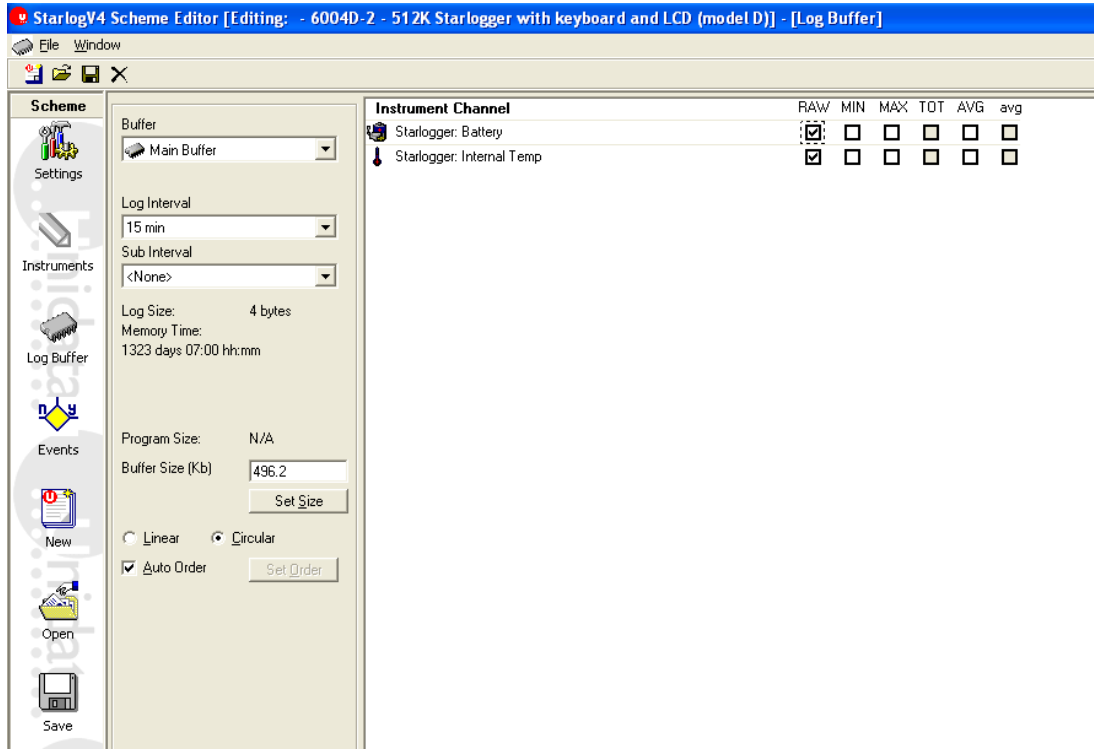
Note: If one channel is defined, the output is on the Primary 4-20mA signal. If two channels are selected, the first defined channel is on the Secondary 4-20mA output.



- Click on the Settings icon and select an appropriate scan rate (i.e. 1 minute). The scan rate will determine how often the 4-20mA readings are updated.



- Click on the Log Buffer icon and select what data to record on the Starlogger and how often to record the data, then click the save icon.



9. Program the logger and the 4-20mA recordings from the micro wire are now active.

