6 Sample setup

This section guides you through a sample logger setup in order to illustrate the procedure you would normally use. The steps covered are:

- configuring standard ranges
- setting up an analogue channel
- setting up a pulse channel
- setting up event channels
- setting an action
- checking the setup
- sending the setup to the SQ 1600
- saving the setup.

To begin the setup, open *Setwise for Windows*.

Configuring standard ranges

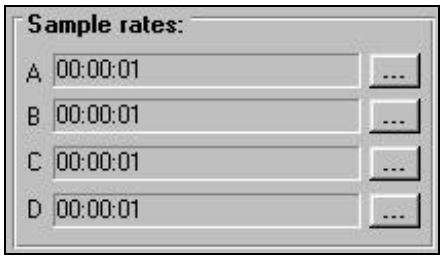
You can configure a number of standard ranges and items that will be applied to channels during setup. In this sample, the following will be configured:

- sample rates
- sensor power supplies
- alarm outputs.

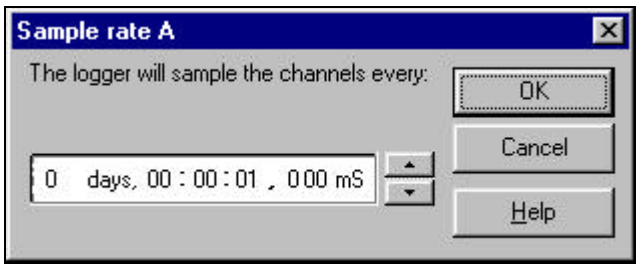
Defining sample rates

You can define up to four different sampling rates. To define sample rates:

1. In the main Setwise window, click the **Logger** tab. This will display the following in the **Sample rates** area:



2. In the **Sample rates** area, click the button at the right-hand end of the **A** field. This will display the following:



3. In the seconds area (which currently shows **01**) and use the up arrow (at the right-hand end of the field) to change the setting
to **5**. This sets the sample rate to once every five seconds.

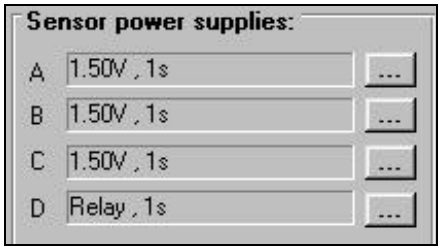
4. Click the **OK** button. The new rate will be shown.
5. Use the same technique to set the **B** rate to one minute and **C** to 100 ms (note that you will need to reduce the seconds entry from **1** to **0** in each of these cases).

You can then apply these rates when setting up channels.

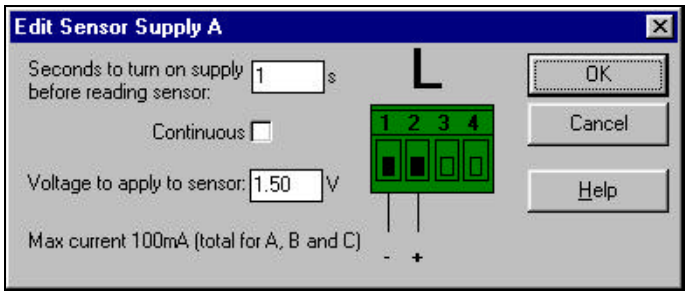
Defining sensor power supplies

You can define up to four different power supplies that can be applied to sensors from the logger. To define power supplies:

1. In the **Logger** tab, the following should be displayed in the **Sensor power supplies** area:



2. In the **Sensor power supplies** area, click the button at the right-hand end of the **A** field. This will display the following:



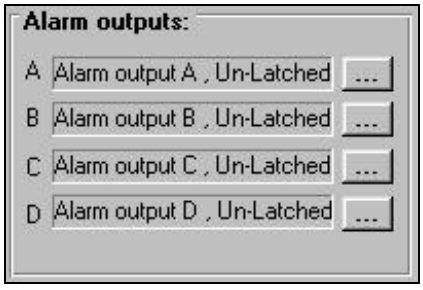
3. In the **Voltage** area (which currently shows **1.50**) enter **2.25** and click the **OK** button.
4. Use the same technique to set the **B** supply to 1.75 V.

You can then apply these voltages to sensors when setting up channels.

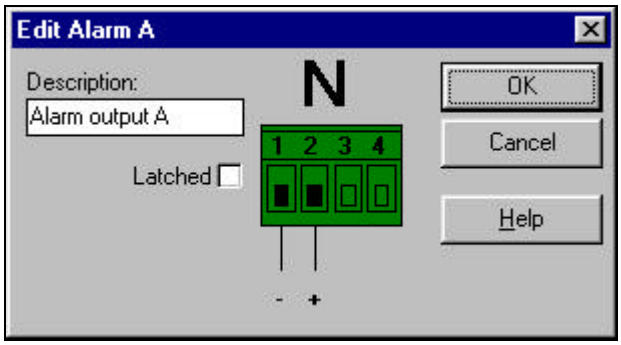
Setting alarm outputs

You can define up to four different alarm outputs that can be applied to channels. To define alarms:

1. In the **Logger** tab, the following should be displayed in the **Alarm outputs** area:



2. In the **Alarm outputs** area, click the button at the right-hand end of the **A** field. This will display the following:



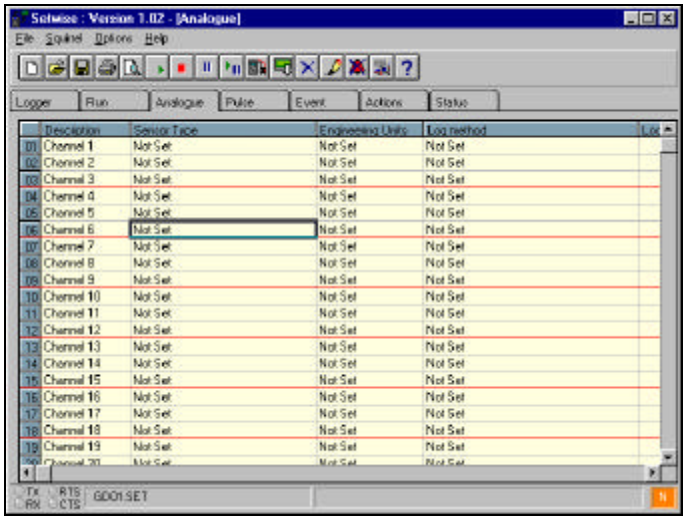
3. In the **Description** field type **Humidity**. This will be shown as the alarm message when the alarm is triggered.
4. Select the **Latched** checkbox. This will continue to flag the alarm even when the alarm conditions have been removed.
5. Click the **OK** button.

You can then configure these alarms to trigger when a specified input condition occurs. This is defined by setting up an action.

Setting up an analogue channel

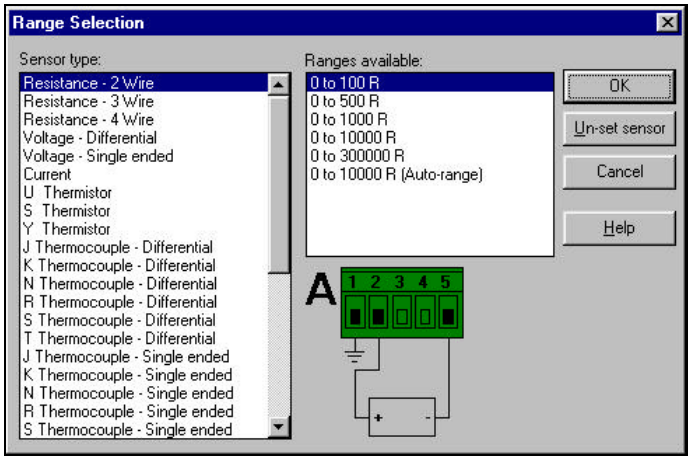
To illustrate the setup of an analogue channel, this sample will set channel 1 to use a voltage sensor that will represent relative humidity.

1. Select the **Analogue** tab. This will display the following:

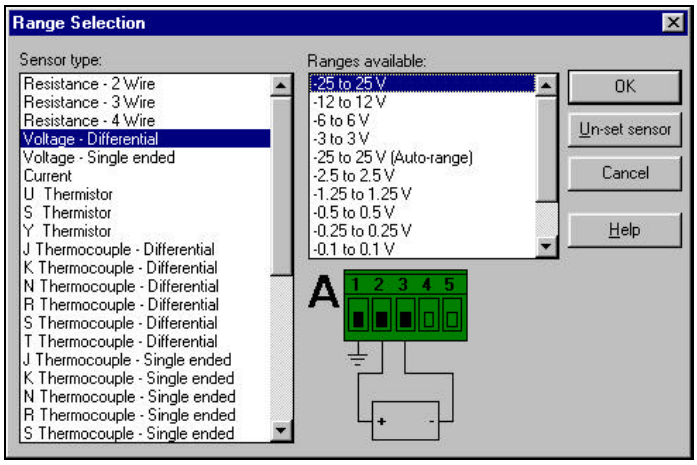


You can maximise this window (using standard Windows procedures) to show all the information relating to each channel.

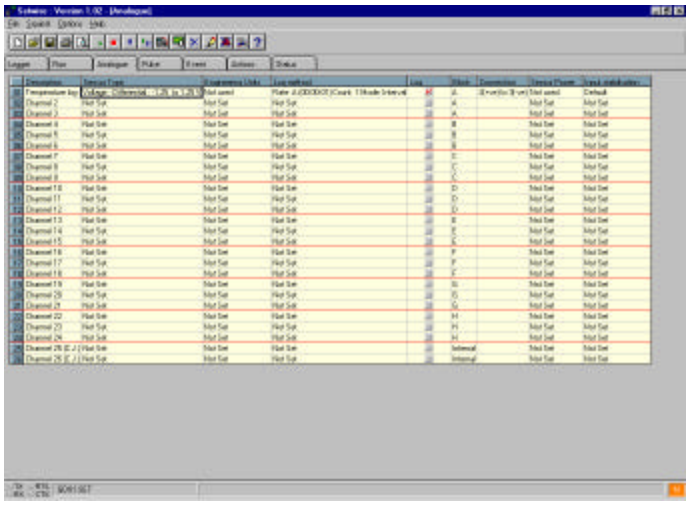
2. The sensor type for channel 1 is currently shown as **Not Set**. Double-click this **Not Set** entry to open the **Range Selection** window:



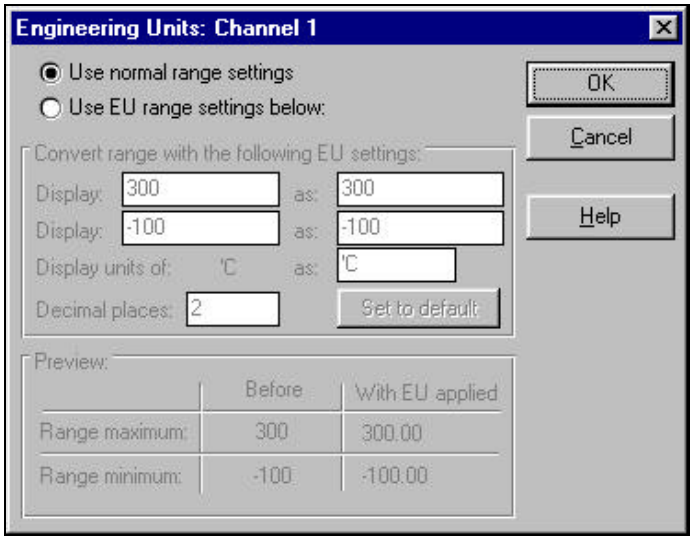
3. Select **Voltage - Differential** from the **Sensor type** list. The available ranges for this sensor type will be shown, together with the wiring diagram:



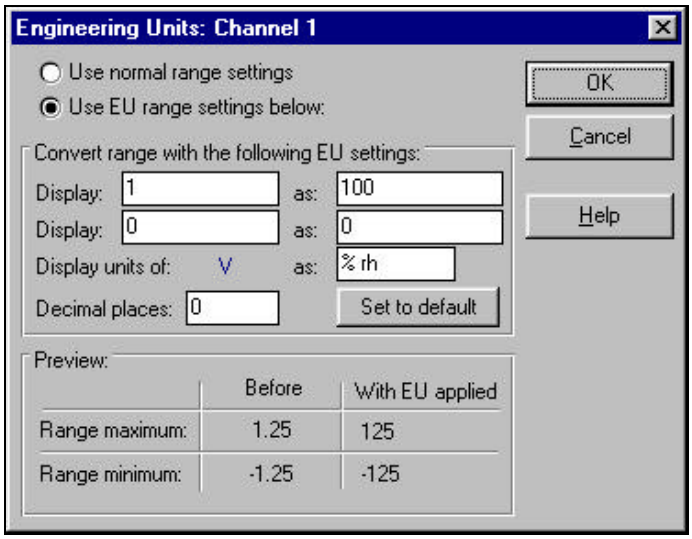
4. Select **-1.25 to 1.25 V** as the range and click the **OK** button to close the window. Your selections should now be reflected in the **Analogue** tab:



5. To apply engineering units to the metered values, double-click the **Engineering Units** entry for the channel (it currently shows **Not Used**). This will display the following:

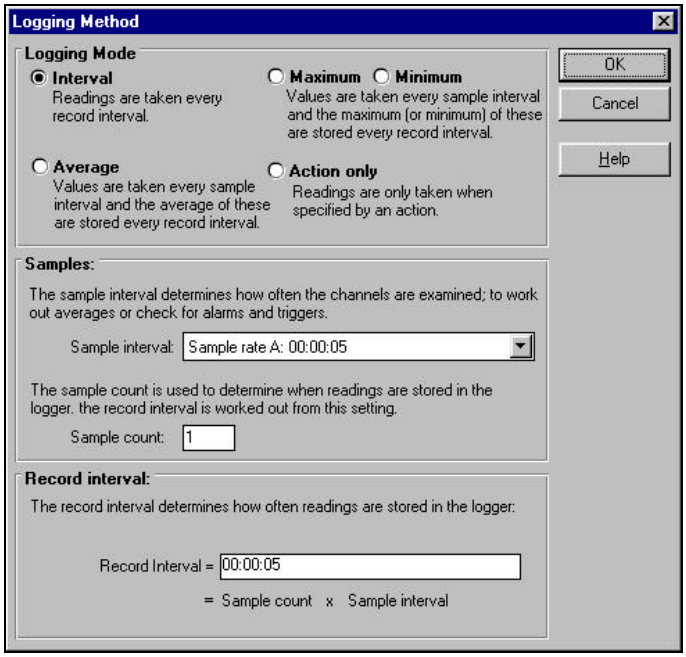


6. Select the **Use EU range settings below** option button, then make the entries shown in the following illustration:

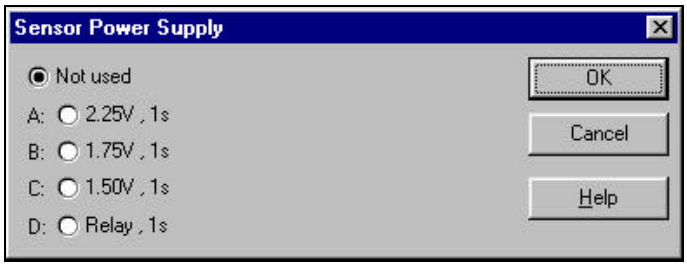


This will generate an output range of 0 to 1 V which will be shown as 0 to 100% rh.

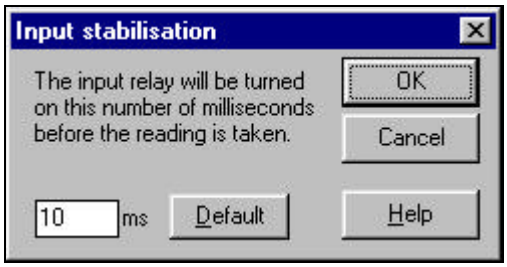
7. To apply a sample rate, double-click the Log method column entry for the channel. This will display the following:



8. From the **Sample interval** list, select **Sample Rate B**, a one minute rate that was set up when configuring standard ranges.
9. Click the **OK** button. The new sample rate will be shown.
10. To select a power supply for the sensor, double-click the **Not Used** entry in the **Sensor Power** column for the channel. This will display the following:



11. Select the **B** option button to apply a sensor supply of 1.75 V, then click the **OK** button. The new power supply will be shown.
12. To set a stabilisation time that will be left after the input relay is turned on, click the **Default** entry in the **Input stabilisation** column for the channel. This will display the following:



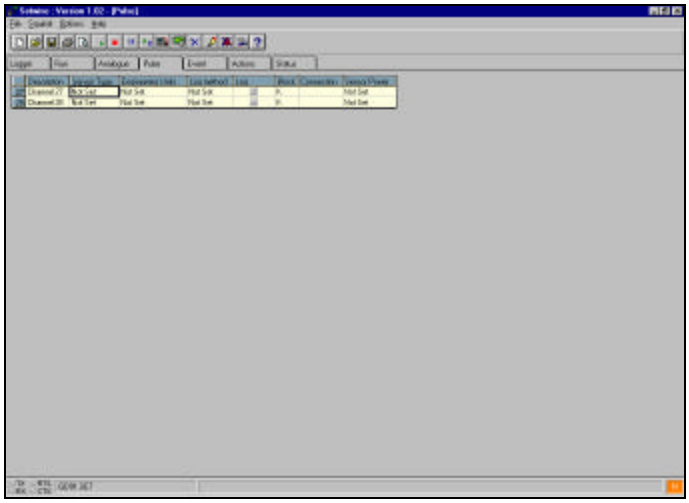
13. Change the indicated time to **100 ms** then click the **OK** button.
14. To apply a meaningful name to the channel, double-click the **Description** entry for the channel (it currently shows **Channel 1**). Type **Humidity log**, and this should be shown as the new description.

The analogue channel configuration is now complete.

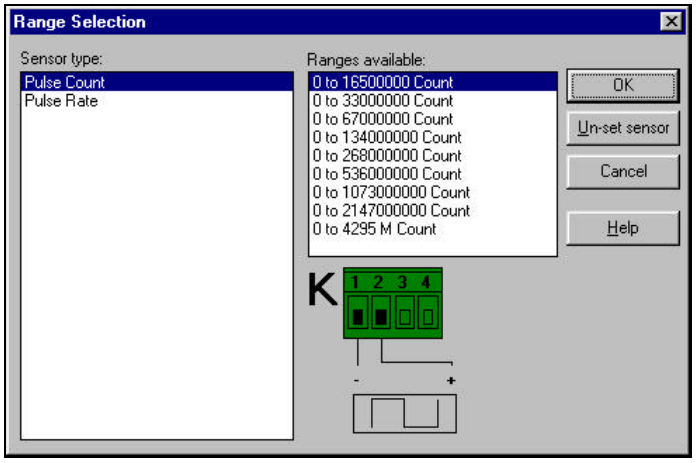
Setting up a pulse channel

Pulse channel setup is similar to the procedure above. This sample will configure a channel to measure pule rates up to 32 kHz.

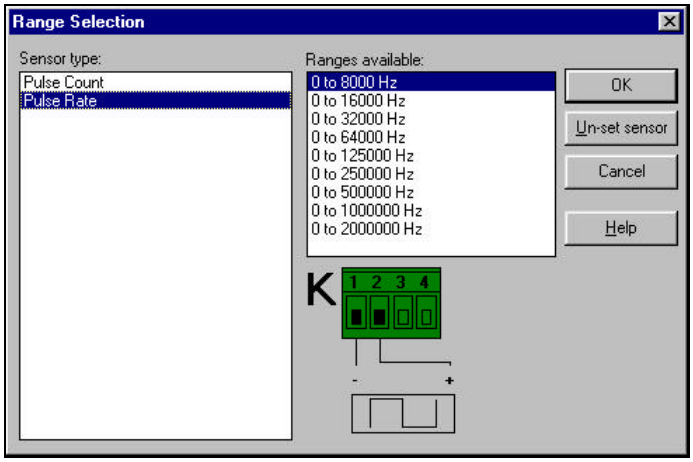
1. Select the **Pulse** tab. This will display the following:



2. The sensor type for channel 27 is currently shown as **Not Set**. Double-click this **Not Set** entry to open the **Range Selection** window:



3. Select **Pulse Rate** from the **Sensor type** list. The available ranges for this sensor type will be shown, together with the wiring diagram:



4. Select **0 to 32000 Hz** and click the **OK** button.

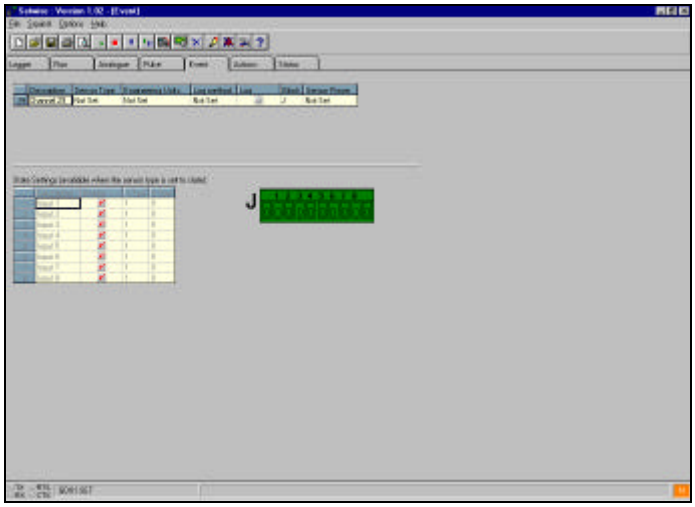
5. To apply a meaningful name to the channel, double-click the **Description** entry for the channel (it currently shows **Channel 27**). Type **Pulse Rate**, and this should be shown as the new description.

The pulse channel configuration is now complete. Note that you could apply engineering units as described for the analogue channel, but this was not done because the procedure is identical.

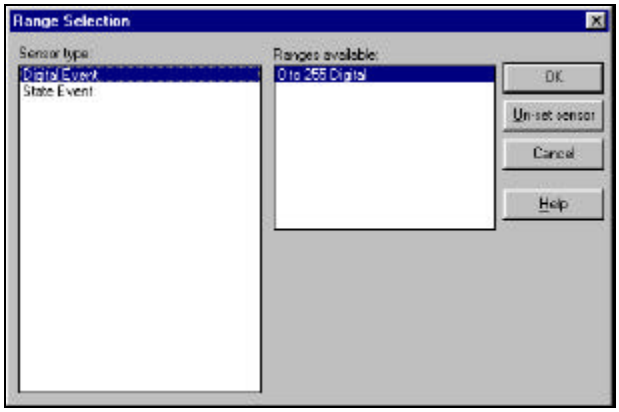
Setting up event channels

You can configure the event channel either to represent a single 256 state input or as eight independent event inputs. This sample will adopt the latter approach, configuring four inputs to represent a fan, a hopper, a motor and a side door sensor.

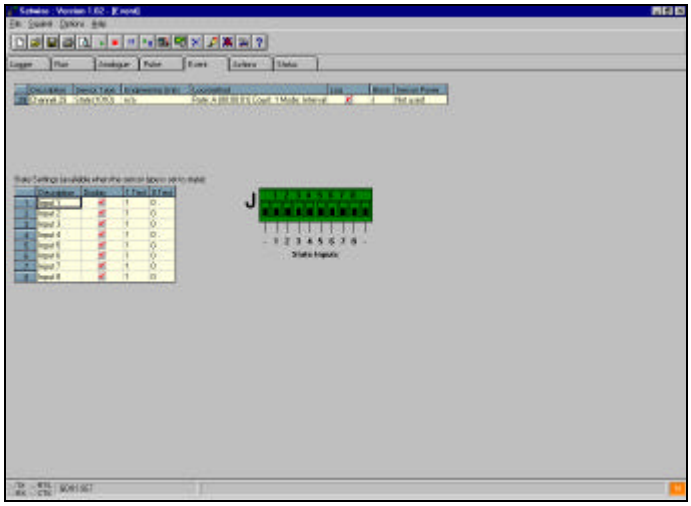
1. Select the **Event** tab. This will display the following:



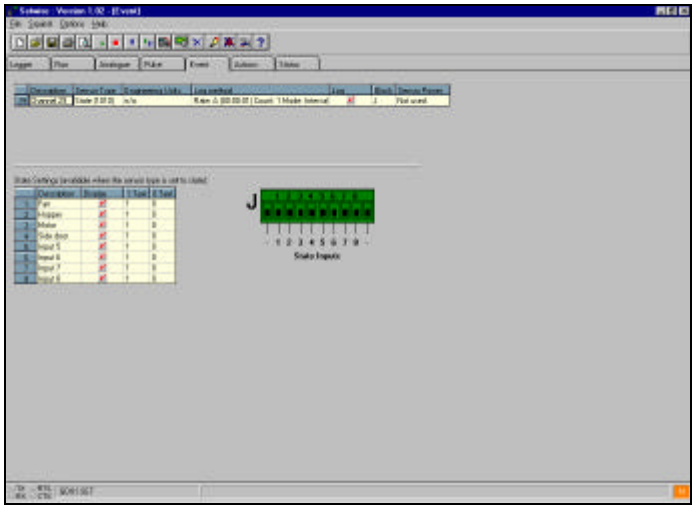
2. The sensor type for channel 29 is currently shown as **Not Set**. Double-click this **Not Set** entry to open the **Range Selection** window:



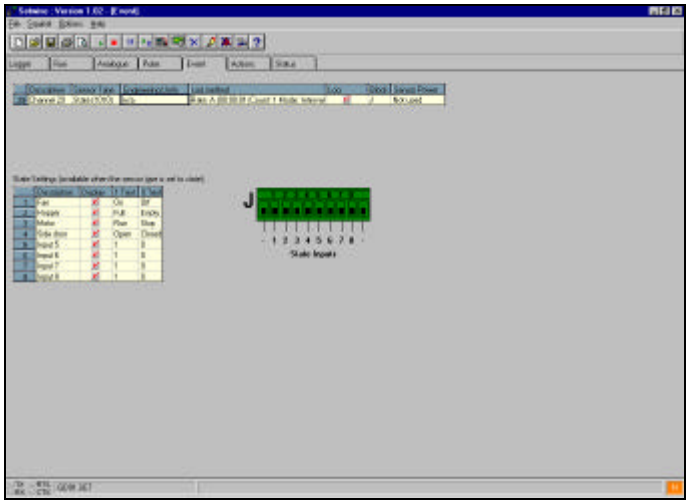
3. Select **State Event** from the **Sensor type** list and click the **OK** button. This selection will be reflected in the **Event** tab:



4. In the **Description** column of the **State Settings** area, enter **Fan** for **Input 1** (double-click **Input 1** and then type **Fan**), **Hopper** for **Input 2**, **Motor** for **Input 3** and **Side door** for **Input 4**. The tab should now look like this:



5. The **1 Text** and **0 Text** columns show the text that will be displayed when this input is in the high and low states respectively. Make entries as shown in the following illustration for inputs 1 to 4:



6. In the **Display** column, deselect the checkboxes for inputs 5 to 8.

7. To apply a meaningful name to the channel, double-click the **Description** entry for the channel (it currently shows **Channel 29**). Type **Input monitor**, and this should be shown as the new description.

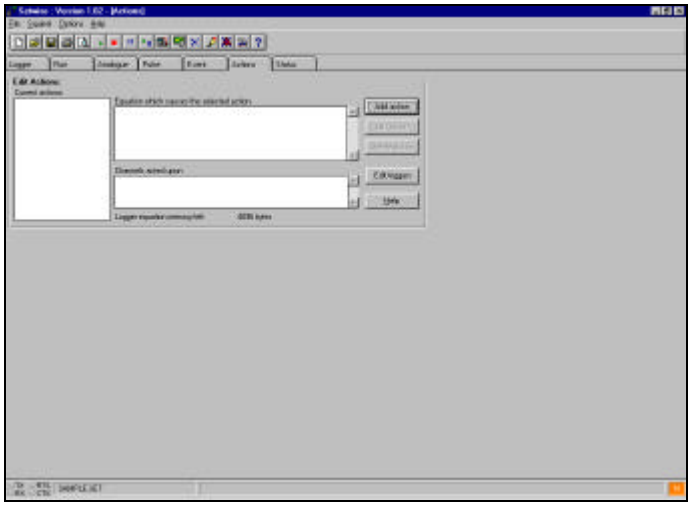
The event channel configuration is now complete.

Setting an action

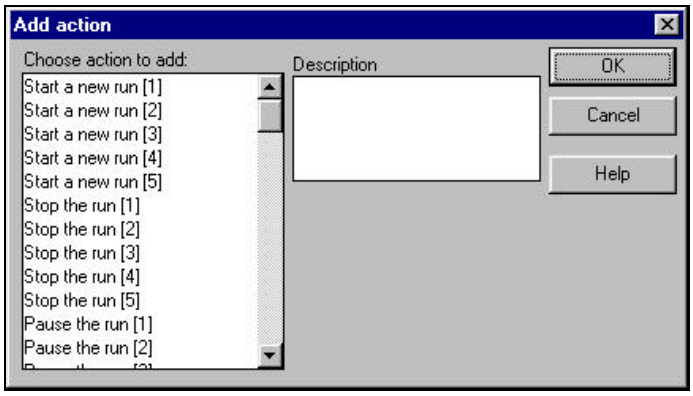
The actions capability of *Setwise for Windows* allows you to maximise the potential of the SQ 1600. For this sample, we will set a high level alarm. You should note that you can program complex actions to trigger alarms under only the exact required conditions.

To set the action:

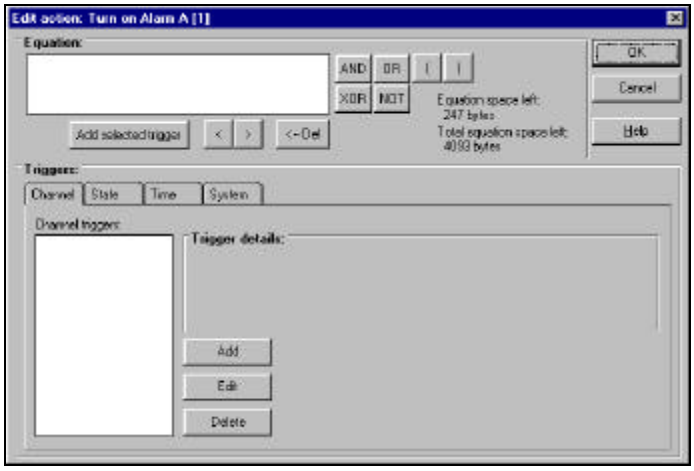
1. click the **Actions** tab to display the following:



2. Click the **Add action** button to display the following:

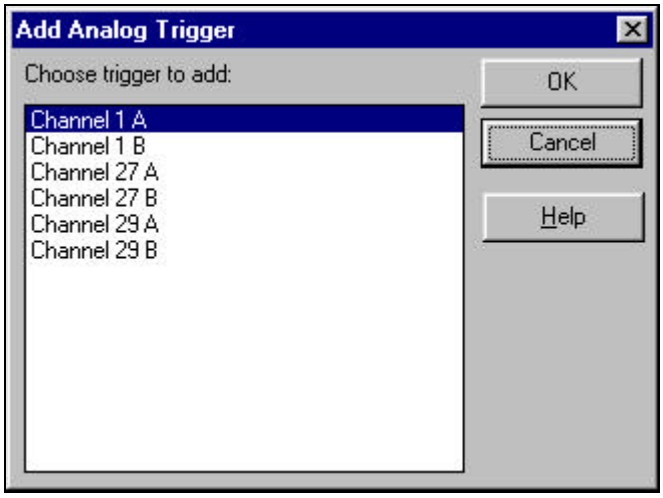


3. From the list of actions, select **Turn on Alarm A (1)** and click the **OK** button. This will display the following, in which you can define the conditions that will trigger the action:



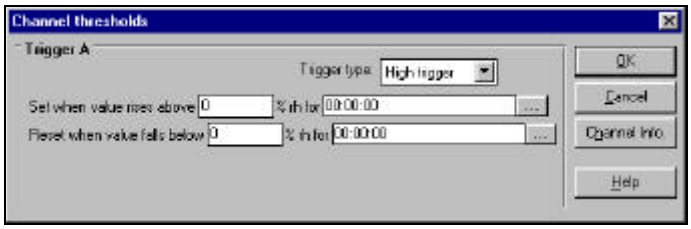
4. In the **Triggers** area, ensure that the **Channel** tab is selected. This allows you to configure conditions on the channel inputs that will trigger the alarm.

5. Click the **Add** button to display the following:



6. Select **Channel 1 A**. Note that the A and B options allow two different triggers to be set for the same channel.

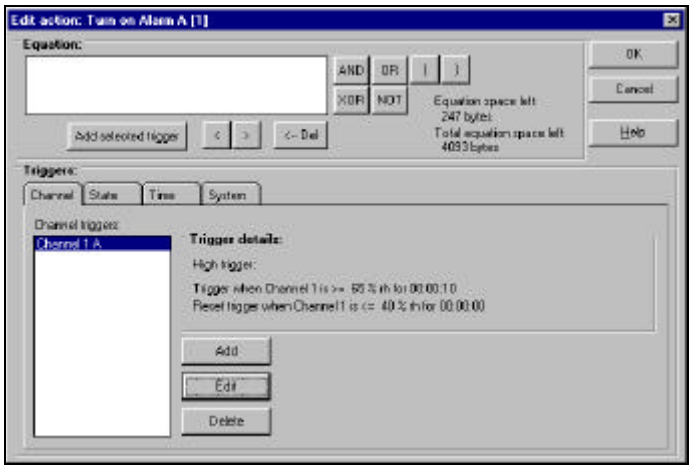
7. Click the **OK** button. This will display the following:



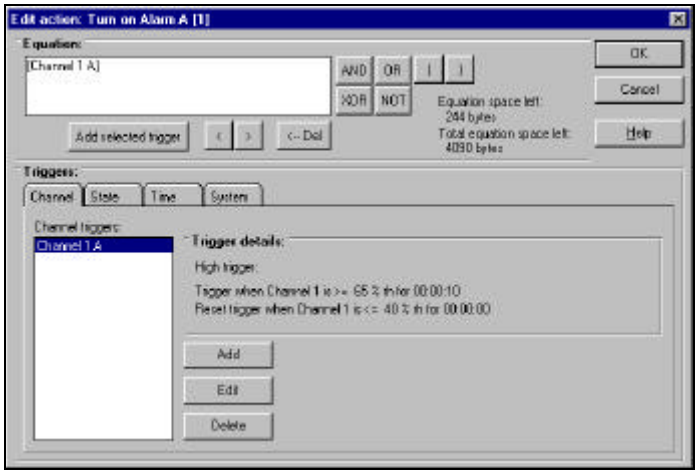
As we calibrated channel 1 to measure relative humidity, this can be used to trigger the alarm.

8. Enter **65** in the **Set** field and **40** in the **Reset** field. Click the button at the right-hand side of the **Set** time field, and set the time to **10** minutes (as described earlier in this sample) The alarm will then be triggered if relative humidity rises above 65% for 10 minutes, and the alarm will be removed when the relative humidity drops to below 40%.

9. Click the **OK** button. This will show the trigger conditions:



10. Click the **Add selected trigger** button to add the trigger to the action equation:

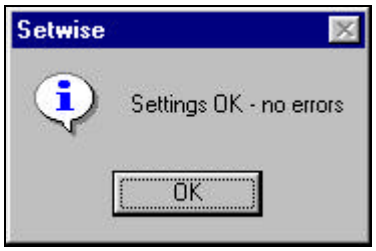


You will appreciate that you could build an expression combining a number of conditions that would trigger the alarm.

Checking the setup

Before implementing the setup, you can check its consistency. To do this:

1. Select **Check settings** (**File** menu). This should display the following:



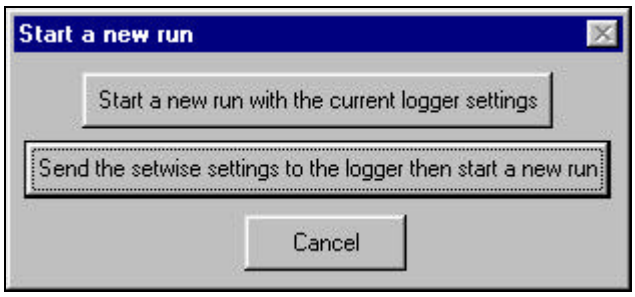
2. Click the **OK** button to close the window.

If there are any errors indicated, these must be corrected before you send the setup to the SQ 1600.

Sending the setup to the SQ 1600

You can send the setup to the logger and begin the logging run using a single command:

1. Click the **Start Squirrel logging** button on the toolbar. This will display the following:

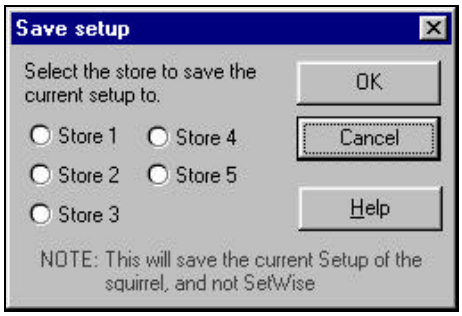


2. Click the **Send the setwise settings to the logger then start a new run** button. When the setup has been sent, the message **Start completed** will be displayed in the status bar at the bottom of the Setwise window.

Saving the setup

You can save the setup both on your PC and in the logger itself:

1. Click the **Save setup** button on the toolbar to save the setup on your PC.
2. To store the setup in the SQ 1600 itself, select **Store Squirrel setup** (**Squirrel** menu). As the SQ 1600 can store up to five setups, you will be presented with the following:



Note that as the setup saved by this operation is that currently in the logger itself, this will only be the same as that on the Setwise screen if the **Send setup to Squirrel** function has already been performed.

3. Select the **Store 2** option button and click the **OK** button. On completion, the following will be displayed:

4. Click the **OK** button.

The logger is now running using your sample setup.