

iTOOLS

To check the performance of the HygroGen, or to re-load controller software iTools configuration software from Eurotherm is used. iTools runs on Windows XP and may be downloaded from Eurotherm. The HygroGen must be connected to the Ethernet Local Area Network (LAN). The computer with iTools installed should be on the same LAN.

SETTING CONTROLLER IP ADDRESS

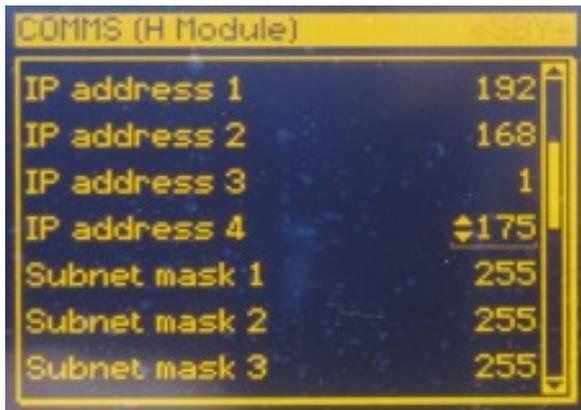
By default the ethernet connection in the HygroGen is set to DCHP so that it does not cause conflicts if it is plugged in to an Ethernet LAN.

To connect to the HygroGen it is recommended to allocate it a static IP address that is not already in use on the network (ask your network administrator). DCHP is adequate though connection will be lost if the IP address is changed (as occurs when the DCHP lease expires).

Warning: The following instructions puts the controller in configuration mode, where it is possible to alter all of the controller software. **We recommend this level of access is only given personnel who will not adjust other settings,** as this will inhibit the controller function.



1. From main screen press page button. In the menu (level 1) select 'ACCESS' and press enter.
2. Scroll up through Access levels to 'config'.
3. Use up and down keys to set 'passcode' to '1972'.
4. From the 'ACCESS' screen press page button twice to get the 'config' menu.
5. Scroll up to 'COMMS' and press enter.
6. Press enter again to select 'H Module'.
7. In the COMMS (H MODULE) menu Change the 'dynamic' option to 'fixed'



8. Scroll to each of the four parts of the IP address and change them using the enter key and the up/down arrow keys.

9. Press the page button twice to get back to the 'config' menu.

10. Scroll down to 'ACCESS' and press enter. Use the arrow keys to select level 1. The controller will restart.

CONNECTING TO ITOOLS

1. Using iTools version 7 you will need to access the opc server through the menu system:

- Options
- Advanced
- Show server

2. When in the server window you will need to follow the menu:

- Add
- New TCP network port...

3. If you have set the IP number in the controller:

- click the 'Add TCP host details' button.
- enter the IP address in the 'TCP Host Setup' window.
- click 'Connect'.
- click the 'OK'.

4. If the controller is set to 'dynamic IP' (the default):

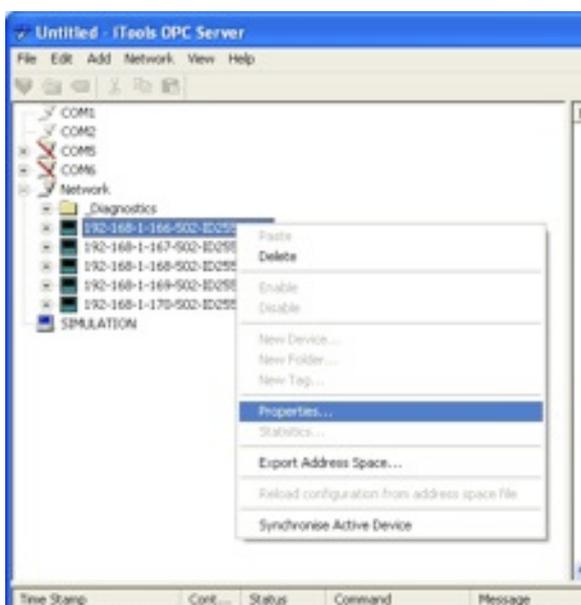
- In the 'TCP Port Setup' window click the 'Scan For TCP Hosts' button.
- Enter the IP address you wish to scan from and click 'Start Scan'.
- When the 'Number found' equals the number of HygroGENs on the LAN, click 'Stop Scan' and click 'OK'.

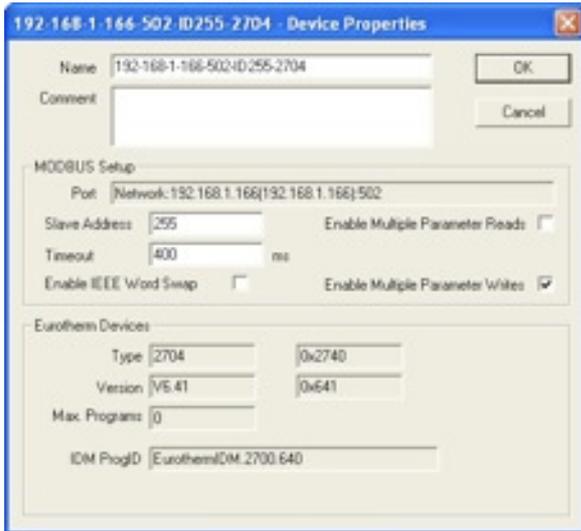
5. In the 'TCP port setup' window, click the 'Connect All' button, and then the 'OK' button.

6. In the iTools OPC Server' window menu bar click:

- Network
- Start One Shot Scan

The controller address/status should appear in the bottom server window.





7. Expand the 'Network' connection icon in the device tree (top left window) by clicking on the '+' next to it.

8. Select the Controller icon by clicking on it once, then right click and select 'Properties'

9. Deselect the 'Enable Multiple Parameter Reads' tick box in the 'Device Properties' window. Multiple parameter reads causes errors on some LAN networks and should be switched off.

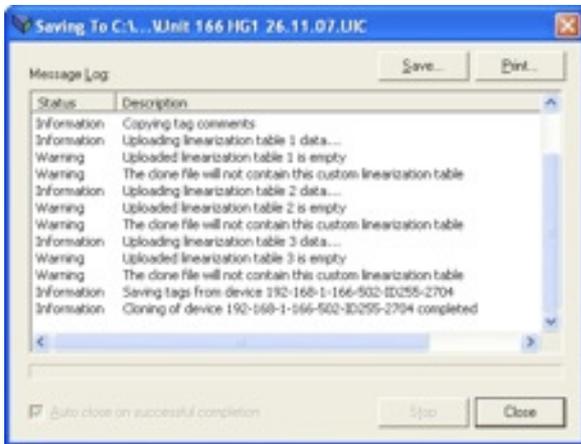
10. In the iTools window click the 'Scan' button and select 'Scan from Device address' and enter '1' to '2' and click OK.



The controller should then appear in the iTools window.

CREATING A CLONE FILE

A clone file is a software copy of the controller configuration that can be kept on a PC and used to program another controller to (or re-program) the existing controller.

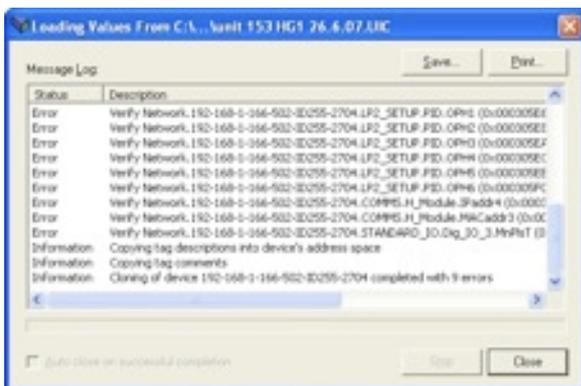


1. To clone a controller ensure it is selected (highlighted in blue) and synchronized then click:

- File
- Save To File

2. Give the clone file a name including the serial number of the HygroGen and the date.

3. Click yes to include custom linearizations. These are not usually configured, but including them avoids the possibility of user adjustments being lost.



LOADING A CLONE FILE

Warning: This over-writes any software already on the controller

1. To load a clone file:

- File
- Load Values From File

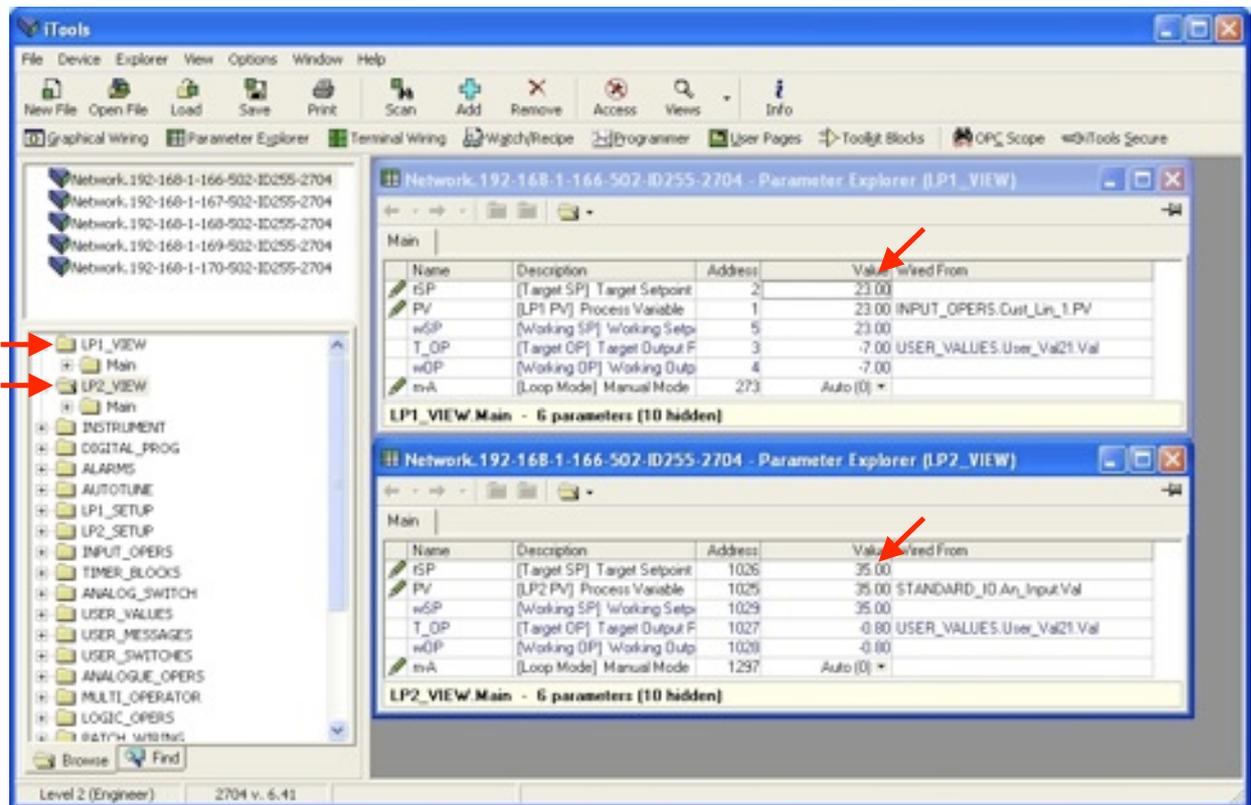
2. If a warning dialogue message appears stating that 'This operation may involve one or more switches....' click yes to proceed.

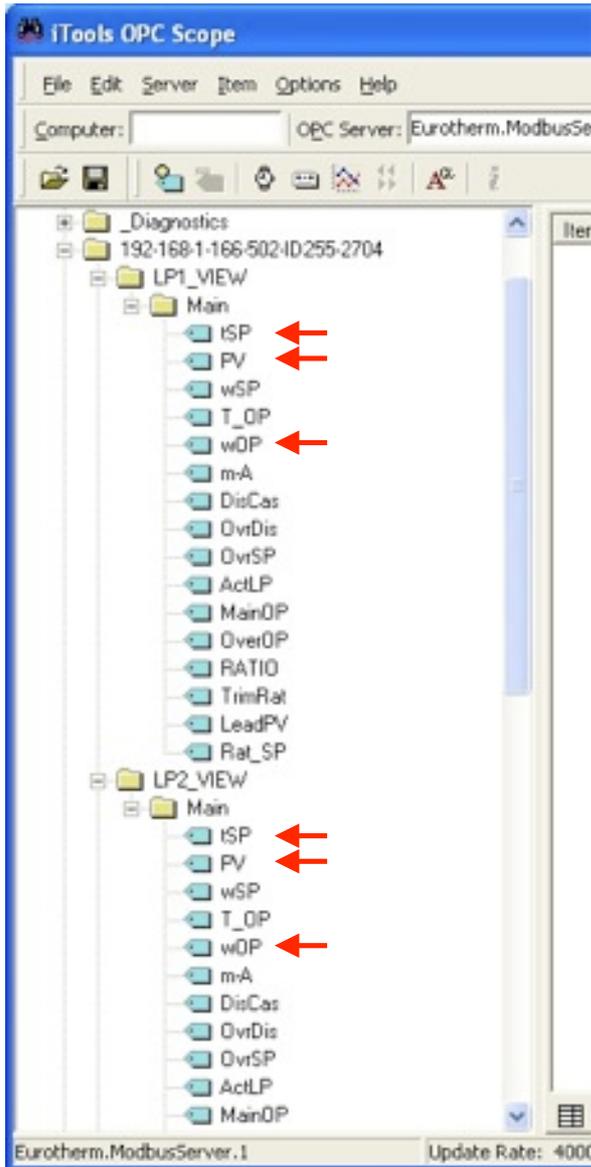
3. Depending on the configuration the clone there may be several errors reported. These can be ignored.

CHANGING SET-POINTS USING iTOOLS

iTools can be used to remotely change the set-points of the controller.

In the controller tabs tree window double click the LP1_view and LP2_view tabs. This will bring up loop 1 (temperature) and loop 2 (relative humidity) view windows. The set pint of each can then be edited.





PLOTTING USING ITOOLS

To establish correct operation of the HygroGen it is necessary to check the temperature and relative humidity performance. These parameters, setpoints and power outputs can be logged using iTools.

1. To monitor the controller click the 'OPC Scope button' on the iTools menu bar.
2. In the OPC Scope window click on the Network '+' tab to expand the tree and reveal any HygroGens on the network.
3. Select the HygroGen to be monitored and expand the tree to expose the 'LP1_VIEW Main' and 'LP2_VIEW Main' folder contents. Double click on the 'tSP' (target set point), 'PV' (process variable, i.e. the actual value) and 'wOP' (working output) tags for both loop 1 (temperature) and loop 2 (relative humidity).
4. Select the Chart tab at the bottom of the page, followed by the 'Show Chart Control Panel' Button, check each of the desired parameter boxes. The data will now plot.
5. Look at the other 'Chart Control Panel' tabs to see how to manipulate and review data (using the mouse to zoom in and out and move the plot) Close the 'Chart Control Panel'.
5. It is possible to log the data in real time in to an excel format file. This is not necessary for the purposes of checking the HygroGen performance.

PERFORMANCE

The performance of the HygroGen should be tested according to the 'Service Checklist' temperature and relative humidity document.

Ambient temperature for these tests should be 23°C.

The performance (response time) of the control HygroClip will degrade with time. It is critical that these tests are done using a new HygroClip probe.

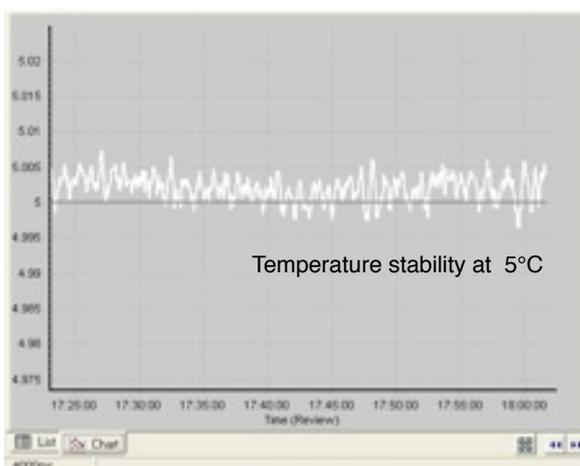
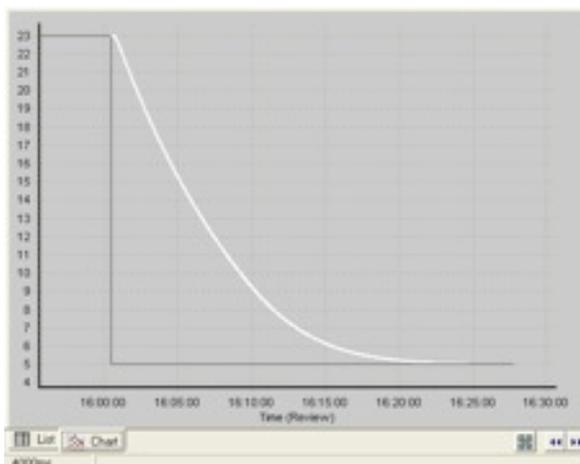
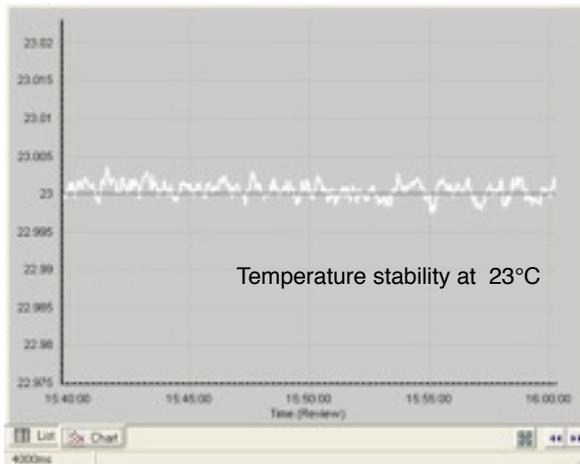
THERMAL PERFORMANCE

check the thermal performance at 5, 23 and 50 degrees Celsius as detailed on the 'Service Checklist'

if the time to target is longer than acceptable check:

- the ambient temperature is 23°C.
- air circulation about the back of the HygroGen is adequate.
- that both airflow sleeves are positioned properly.
- all the fans are working/connected.
- sample loop is not open or switched on.
- the door is seated correctly.
- the bungs are seated correctly.

Example plots opposite show typical stability at 23°C and time to temperature, 23 - 5 °C.

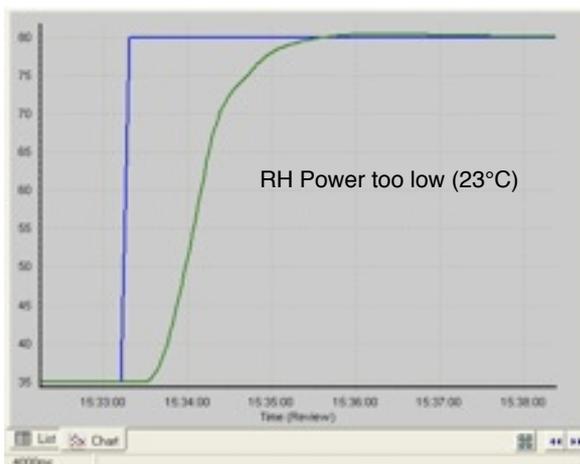
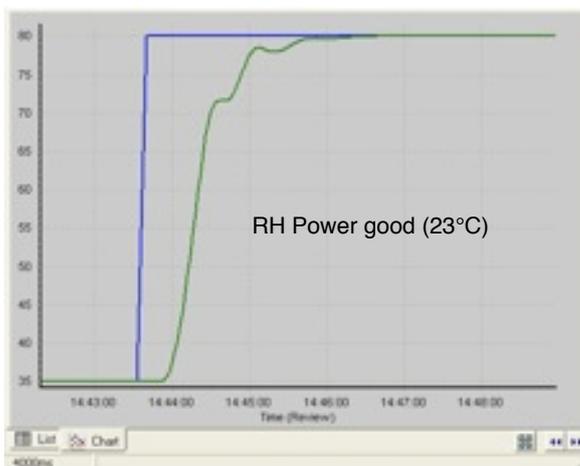
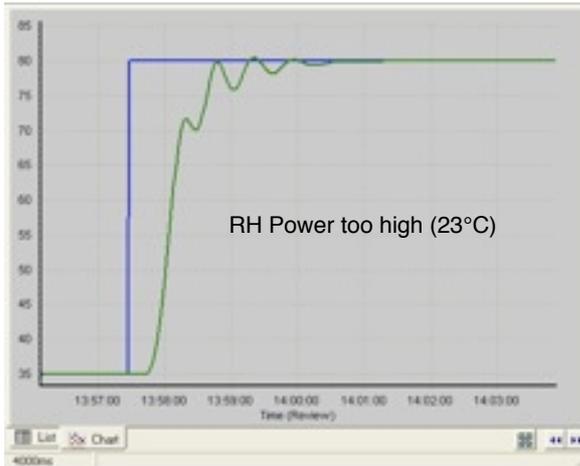


HUMIDIFIER POWER ADJUSTMENT

The humidification response can be adjusted at different temperature bands to fine tune performance. This can be done through the controller (set to level 2 access, see manual) via the 'RH Power' page, or via iTools.

1. To access the RH Power settings via iTools select the controller you wish to adjust and then double click the 'ANALOG_SWITCH' folder in the controller tree window. This will open the analogue Switch window, select 'Switch_2'.

Values 0 to 5 adjust the power applied to the humidifier at 6 temperature bands between 5 and



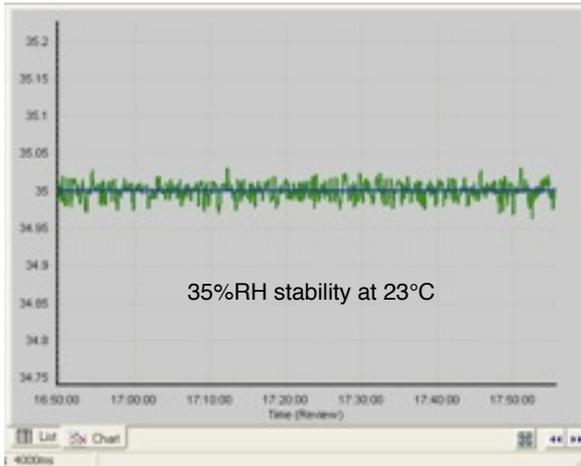
50°C. 5.0 - 7.0, 7.1 - 17.0, 17.1 - 27.0, 27.1 - 37.0, 37.1 - 47.0, 47.1 - 50.0. Typically the power setting of the top and bottom temperature bands should be 0.3 or 0.4 higher than the other bands.

2. Check that the water reservoir contains 100 ml of water.
3. Ensure the desiccant in the drier cell is fresh.
4. Set the temperature to 23 °C and the relative humidity to 35%. Allow to stabilise.
5. Set the relative humidity to 80%. The transition should take 2 - 3 minutes (to within 0.2 of target).
6. If the response is too:
 - rapid then reduce the value of 'Val2'
 - slow then increase the value of 'Val2'
7. Repeat the 35 to 80 cycle 3 times after each adjustment to allow the changes to stabilise. Re-adjust 'Val2' as necessary.
8. When the response is correct use the 'Val2' setting in 'Val1', 'Val3' and 'Val4'
9. Use the 'Val2' figure plus 0.3 for the 'Val0' and 'Val5' values.

HUMIDITY PERFORMANCE TEST SEQUENCE

Testing the performance of the humidity in the following sequence will minimise the time taken waiting for the hygroGen to stabilise. The HygroGen will take a while to stabilise when switching from wet to dry conditions.

1. Test at 23°C and adjust as described in the 'Humidifier Power Adjustment' section.
2. Test at 50°C. The transition from 10 to 90 should take about 5 minutes adjust the 'RH Power' 'Val5' as required (do not exceed 1.3)
3. Test at 43°C. Adjustment of 'RH Power' 'Val4' should be minimal, if necessary at all.
4. Test at 33°C. Adjustment of 'RH Power' 'Val3' should be minimal, if necessary at all.



5. Test at 5°C, 10%, 50%, 90%. Adjust 'RH Power' 'Val0' as necessary, though this should not exceed 1.3.

6. Test at 13, 10% first. Adjust 'RH Power' 'Val1' as necessary, though this should be minimal.

7. Retest at 23 to confirm performance.

8. Typical stability plots.

