Agilent / HP-6890 (6850) in UniChrom

Short installation guide

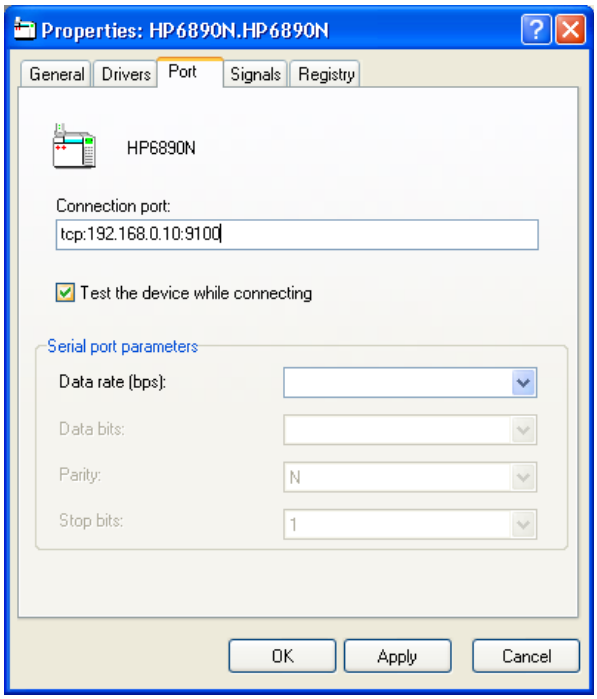
Contents

Agilent / HP 6890 (6850) driver installation

Install the UniChrom software.
During the application setup choose HP-6890 driver and drag the icon from list of available instrument to the list of installed instrument.

Communication port settings

After double-clicking the instrument icon in the left pane the instrument properties window will be shown



At the page «Port» have to be specified the communication port name for the selected instrument.

UniChrom communication layer supports many types of connection. The type of connection port is determined by its name. There are three types of connection:

1. Serial
2. GPIB (through HPIOLIBS)
3. TCP/IP network

Serial communications

Supported only in 6890A, 6890 Series I, Series II, 6850 and all instruments with “Modem” socket on back pane.
Serial connection resource defined by name COM1 … COM255 of system serial port. Default data rate 19200 bps, which should be configured in communication options of instrument.
Instrument button [Options] sub-menu “Communication” serial port settings should be defined as: Bitrate **19200**, Parity **None**, Data Bits **8**, Stopbits **1**

GPIB (HPIB) IEEE-488 communications

Supported only in 6890A, 6890 Series I, Series II but not 6850.
GPIB communication resource specified by the name starting from gpib or hpib and instrument ID delimited with comma. For instance **gpib0,15**

The second parameter is the instrument GPIB ID which can be configured by instrument button [Options] sub-menu “Communication”.

On the PC have to be installed then HPIOLIBS communication layer package. HPIOLIBS package can be downloaded from Agilent test and measurement equipment web-site.
http://www.google.com/search?q=hpiolibs.exe

During the HPIOLIBS configuration the name for GPIB host-controller is defined (e.g. **gpib0** or **hp82350**). UniChrom treats the communication port as GPIB bus only if the host-controller name starts with **gpib** or **hpib** strictly.

LAN communications

Supported only in 6890 Plus, 6890N and 6850.
Communication port name have to be defined in the following style:
tcp:ipaddress_or_name:portnumber
where
ipaddress_or_name – dotted decimal representation of instrument IP address, or the host name which given to instrument in DNS
portnumber – number of TCP port the instrument listens. Should be specified the default value **9100** – JetDirect port. Other values can be specified when instrument is behind TCP tunnel or firewall.
For Agilent 6890 Plus and newer instruments the IP address is defined form the keyboard button [Option] sub-menu “Communication”. In the case of dynamic IP address assignment – look in the stock BOOTP server configuration or ask the LAN administrator for the IP address assigned to instrument by DHCP.
For instance:
When the GC has the address 192.168.0.10, then «Connection port» should be:
tcp:192.168.0.10:9100

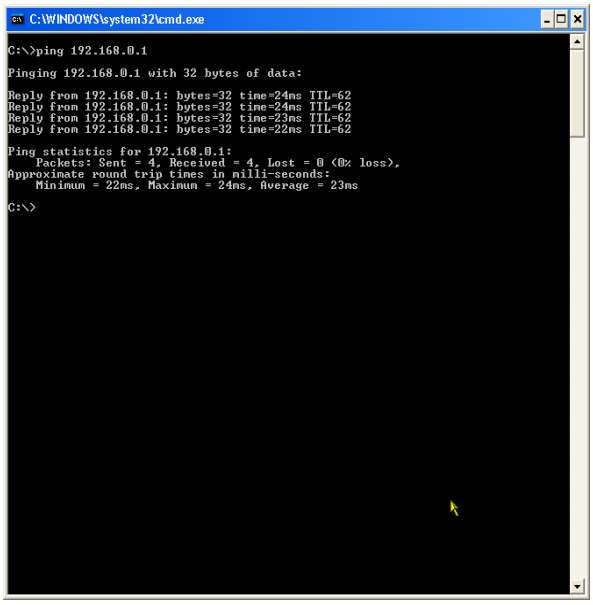
TCP/IP connection peculiarities.

In simplest case both the instrument and computer have to reside in common IP network. It means that no matter if they are connected directly to each other or through switching equipment, the **IP addresses** of PC and GC have to be **DIFFERENT, but SUBNET MASK – have to be THE SAME.**

For instance:

The instrument have configured IP address **192.168.0.10** and subnet mask **255.255.255.0**

The computer have to be configured IP address **192.168.0.11** ans subnet mask **255.255.255.0**



When al cable connections are in place – LINK LEDs are lit on network card, on switch for both ports (GC and PC connections) and on instrument the logical connection can be tested:

Run on the PC command line (menu Start Run\execute **cmd.exe**), and in command line type: **ping 192.168.0.10** and press Enter:

Should be tested the connection of the computer with itself (ping 192.168.0.11), either as with GC (ping 192.168.0.10).

Configuration parameters

The GC driver supports set of configuration parameters which may be altered at corresponding pages of «Configuration Editor» or at the «Registry» page. The parameters marked with [T] are technological and intended only for instrument tuning. The page of driver properties is mentioned in parentheses as: «Detectors».

Parameter	Type	Designation and applicable values range
UseCompress	T	Turns on and off signal data compression during transfer. Allows minimize interface bandwidth. In the case of RS-232 usage — the only variant working with data sampling rates more than 20Hz. By default is turned on **(1)**
Signal1 Signal2	T	Binding each of 2 available analytical signal to corresponding data source. The list of sources is presented in table 2. The number is in range 0 to 255. Bt default Signal1=**0** (Front Detector), Signal2=**1** (Back Detector).
WaitTime		GC system equilibration time before going to ready state. Is being defined at «Behaviour» page.
Simulate	T	(0/1) Fake signal generation in absence of real GC. By default is **0**.

Available signal list

Signal number	Type
0	front detector
1	back detector
2	front detector - back detector
3	back detector - front detector
4	column comp 1 profile
5	column comp 2 profile
6	front - column comp 1 profile
7	back - column comp 1 profile
8	front - column comp 2 profile
9	back - column comp 2 profile
10	Test plot
11	Ramp signal
12	oven temperature

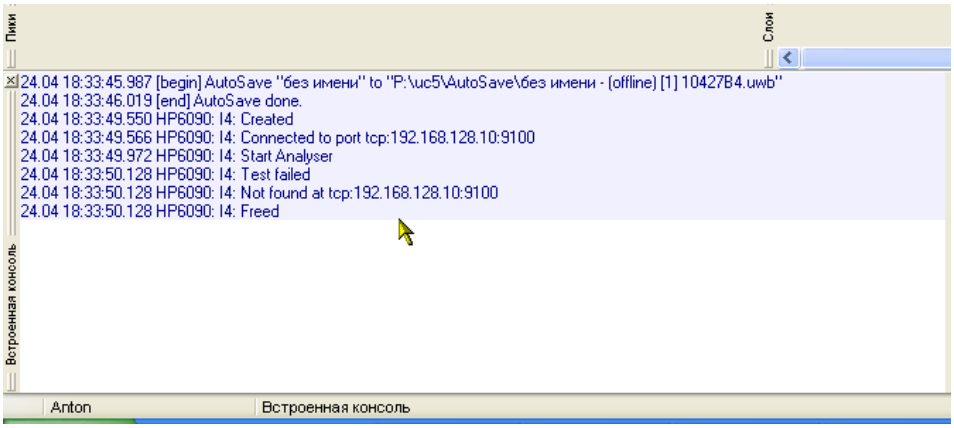
Signal number	Type
13	front detector temperature
14	back detector temperature
15	front injector temperature
16	back injector temperature
17	auxiliary #1 temperature
18	auxiliary #2 temperature
19	column 1 volumetric flow
20	column 2 volumetric flow
21	column 1 head pressure
22	column 2 head pressure
23	front inlet filtered current total flow
24	back inlet filtered current total flow
25	front inlet filtered current pressure
26	back inlet filtered current pressure
27	front det gas 1 pressure
28	front det gas 2 pressure
29	front det gas 3 pressure
30	back det gas 1 pressure
31	back det gas 2 pressure
32	back det gas 3 pressure
33	front det gas 1 flow
34	front det gas 2 flow
35	front det gas 3 flow
36	back det gas 1 flow
37	back det gas 2 flow
38	back det gas 3 flow
39	aux #3 filtered current pressure
40	aux #4 filtered current pressure
41	aux #5 filtered current pressure
42	mux’ adc offset

Testing the instrument connection

After successful network connection testing we can connect to the instrument. New method can be created in one of the following manners:

- Create in UniChrom method of appropriate type (menu New) and connect it to the selected GC using “wrench” button in toolbar.
- Select from drop-down menu on ”New” button – New on HP-6890
- Right click the instrument icon in UniChrom Navigator window and select “New”.

If the instrument connection succeeds the “GC Instrument” page starts displaying instrument actuals and setpoints. If connection fails – the dialog message informs problem with possible reasons. For connection problem diagnosis the **instrument log** can be used: in main UniChrom menu select View/Information forms/Built-in console. The instrument logs and UniChrom logs are saved in UniChrom\log directory.



The picture show unsuccessful connection.

PC was connected to GC but got not meaningful answer.

When connection attempt succeeds – it is possible to press “Run” button in UniChrom toolbar and look at chromatographic signal.

Runtime events

The instrument contains set of controlled objects which settings can be modified according to timetable. The procedure of changing specific object at specified time staring from run is called runtime event.

The instrument supports the following objects:

Number	Name	Parameter units
1	VALVE_1	<on/off> [1|0]
2	VALVE_2	<on/off> [1|0]
3	VALVE_3	<on/off> [1|0]
4	VALVE_ 4	<on/off> [1|0]
5	VALVE_5	<on/off> [1|0]
6	VALVE_6	<on/off> [1|0]
7	VALVE_7	<on/off> [1|0]
8	VALVE_8	<on/off> [1|0]
9	MULTI_VALVE	[1- 32]
10	SIGNAL_1_DEF	<signal_type>
11	SIGNAL_2_DEF	<signal_type>
12	SIGNAL_1_ZERO	<signal_zero>
13	SIGNAL_2_ZERO	<signal_zero>
14	SIGNAL_1_ATTN	[0- 10]
15	SIGNAL_2_ATTN	[0- 10]
16	SIGNAL_1_RANGE	[0- 13]
17	SIGNAL_2_RANGE	[0- 13]
18	AUX_3_PRESSURE	pressure units
19	AUX_4_PRESSURE	pressure units
20	AUX_5_PRESSURE	pressure units
21	FRNT_DET_POLARITY	detector negative polarity on/off [1|0], only applicable to the TCD

Number	Name	Parameter units
22	BACK_DET_POLARITY	detector negative polarity on/off [1|0], only applicable to the TCD
23	FRNT_DET_FUEL_GAS	detector fuel gas flow on/off [1|0], only applicable to the NPD
24	BACK_DET_FUEL_GAS	detector fuel gas flow on/off [1|0], only applicable to the NPD

The runtime events table for instrument is defined at “GC Instrument” page section Events/List.

The runtime events table itself represent three-column table which describes at which time the specified object should change its state.

Example:

Object	State	Time
MULTI_VALVE	1	0.1
VALVE_1	ON	0.5
VALVE_1	OFF	3

Sampling system

Recent version of 6890 driver automatically detects sampling devices. The UniChrom sampling device concept state the following:

The entire sampling system is configured per instrument.

Each sampling system consists of up to 4 samplers.

Each sampler can have up to 2 injection devices (towers, motors) etc, for instance 7673 sampler can have 2 towers, Gas Sampling Valve has 1 gas-injection mechanism.

During the instrument detection samplers list is filled in the order: ALS, valves 1..8.

The sample table line have to use “Tower” parameter to identify which sampling machine would inject the specified sample.

Tower numbers are hardcoded:

Towers: 1,2 – belong to the ALS.

Towers: 3,4 – Valve #1 etc.