# STANDARD USER MANUAL SMU n° #0020

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# HYDROXYCHROM



<u>Historic</u>

Revision N°	Modification nature	Application date	Modified chapters
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1	Revision	25/10/2012	Ch.3 & 4
2	Revision	22/04/2015	Ch.4.6.2
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In case of warranty particular conditions, the general warranty will not be applied.

# **CHAPTER 1. INTRODUCTION**

This document provides all necessary information for the installation and operation of your HYDROXYCHROM High Purity Hydrogen generator; it also describes the simple maintenance operations, alarms as well as troubleshooting.

It is applicable to the below generation models and software *HYDROXYCHROM Viewer* Version 1.0 produced since October 2012:

- HYDROXYCHROM-100
- HYDROXYCHROM-160

The operating manual considers and describes an instrument generally equipped with the most complex configuration ; should the explanation concerning the most complex instrument be too different from the simpler instrument, both cases will be described.

# **CHAPTER 2. GENERAL INFORMATION & COMPATIBILITY TO NORMALISATIONS**

# **2.1. CE CONFORMITY**

This equipment was built in compliance and is compatible with EC recommendations concerning electrical safety and electromagnetic emissions. It complies with 89/336/EWG, 93/98/EWG, standards EN 50 081-1, in 50 081-2, EN 50 082 - 1 and EN 50 082 - 2.

Note

Any modifications on the instrument which have not been approved in writing by the manufacturer will automatically cancel the manufacturer warranty. If such modifications are nevertheless undertaken, they are under the user responsibility; the manufacturer will under no circumstances be responsible for any damages direct or indirect which they would cause

# **2.2.** W.E.E.E. PRODUCT RECYCLING DECLARATION

In agreement with the European EC/2002/96 directive on electrical and electronic equipment recycling, this product may not be disposed in the garbage. For recycling information, contact the company who sold this product. If you want to get rid of this instrument, identify it as such and direct it to a certified recycling centre.

# **2.3.** SECURITY INSTRUCTIONS AND CORRECT USE

This Hydrogen generator has been designed in order to produce small quantities of Hydrogen for instrumentation applications. This device must only be used for such applications respecting the specifications and recommendations for its proper use described in this operating manual. The main recommendations are:

- Instrument can only be use indoors, at temperatures above 4°C and in a well-ventilated room.
- In case of maintenance inside the instrument, always unplug it before opening the casing(s). HIGH VOLTAGE inside.

# **CHAPTER 3. SPECIFICATIONS AND DESCRIPTION**

# **3.1. SPECIFICATIONS**

Models	HYDROXYCHROM-100		
Wodels	HYDROXYCHROM-160		
H <sub>2</sub> Outflow	HYDROXYCHROM-100 = 100 Nml/min		
@ 1013/20°C	HYDROXYCHROM-160 = 160 Nml/min		
H <sub>2</sub> purity	Maximum Hydrocarbon content: 0.1ppm		
Dew point	-40°C / -40°F		
Outlet Pressure	From 0.5 to 7 bar (7 to 102 psig), adjustable by software.		
Pressure resolution	10 mbar		
Pressure stability	Better than ±10 mbar		
H <sub>2</sub> generation technology	Proton Exchange Membrane (PEM), Solid Polymer Membrane		
Drying technology	No maintenance static dryer		
Water quality	High purity distilled & filtered water. TOC free. Conductivity < 0.20 μS/cm		
Water capacity	5L tank outside, 0.4L tank inside.		
Water consumption	5L water generates about 6000L Hydrogen		
Safety	Low $H_2$ stored volume; over pressure valve; internal leak test; automatic shut down; maximum current limit, water quality.		
Manual control	ON-OFF power switch		
Display	By Hydroxychrom Viewer		
Communications	USB		
H <sub>2</sub> outlet fitting	Stainless steel 1/8" OD compression		
Functioning conditions :			
Temperature	+10°C to +35°C		
Humidity	max 80%, non condensing		
Transport and storage conditions:			
Temperature	+4°C to +40°C		
Humidity	Max 90%		
Duration	Maximum 30 days. Instrument should run 5 minutes every month		
Power supply	Automatic switching from 90VAC to 260VAC, 47 to 63 Hz		
Power consumption			
(max at full flow)	HYDROXYCHROM-100 and HYDROXYCHROM-160: maximum 150W		
Sound pressure	< 40dB (A)		

Dimensions	W=482mm/19ins, H=180mm/7.1ins, D=600mm/23.6ins
Net weight (Kg)	10 kg
Certification	CE

# **3.2.** INSTRUMENT PRESENTATION

The front panel contains a functioning LED (see chapter 5 for the signification).

The rear panel' left side has:

- Mains plug with fuse and switch
- DB9 interface connectors for RS485, remote control USB, dry relay.

The rear panel' in the center has:

- ZEROWATER input from external tank, fitting for 6mm tube
- Output hydrogen by dual ring fitting stainless steel 1/8"
- Dry air inlet, fitting brass 1/8"
- O<sub>2</sub> output fitting, fitting for 8mm tube
- Mild Air outlet after cooling internal structures

View of rear's face:





# **3.3. FUNCTIONING PRINCIPLE**

The self-priming water pump1 sucks water from the ZEROWATER tank (external tank), and keep the internal tank filled up between the two Infra-Red water level detectors. The internal tank contains a circular deionization cartridge with minimum 1 year lifetime.

The circulating water pump2 aspires ZERO WATER from the internal tank, and make water circulating through the electrolysis cell with PME membrane. Mixed with oxygen generated by electrolysis, the water return to the internal tank.  $O_2$  is separated and flows outside the instrument through a 8mm exhaust fitting.

After creation during the electrolysis, hydrocarbon free wet hydrogen passes through the membrane and is dried a first time in the liquid-gas separator, then a second time by a static dryer without maintenance.

The Hydrogen pressure is measured and regulated to the desired value by a current feedback to the H<sub>2</sub>-cell.

HYDROXYCHROM-100 and HYDROXYCHROM-160 are equipped with a single layer H<sub>2</sub>-cell.



# H2 GENERATION MODULE

# **CHAPTER 4. INSTALLATION AND OPERATION**

# 4.1. RECEIPT OF INSTRUMENT AND CHECK

Each instrument is inspected and packaged prior to transport with great attention. Immediately after receipt, we recommend to perform a quick visual inspection of the package. If the package is damaged, report it in writing to the carrier at the time of delivery.

The HYDROXYCHROM is packed in a wood box with protection and maintaining foams placed above and below the instrument.

The HYDROXYCHROM packaging extraction begins with the opening of the wood box; at this stage, it is possible to verify the visual integrity of the instrument.

Any damages must be immediately identified and photographed; it should be reported to the carrier as well as to your local Distributor or to CHROMATOTEC.

For major damages, the HYDROXYCHROM shall be returned to the manufacturer after synchronization with the service department, which can be reached by e-mail at:

support@chromatotec.com.

In case of non-respect of this procedure, CHROMATOTEC cannot be kept in charge of the caused damage and cost will be charged to the customer.

It is well recommended to keep the wood box for future shipments.

Quantity	Description
1	Hydrogen Generator HYDROXYCHROM with its factory communication option assembled
1	Connection tube from ZEROWATER tank to HYDROXYCHROM.
1	ZEROWATER tank (5L)
1	USB key including operating manual and HYDROXYCHROM Viewer software. If the generator is supplied with an analyzer, these elements are supplied with the USB key of the analyzer.
1	QC and verification certificate
1	USB cable for connecting the device to a PC
1	Power cable 230V, CE or according to your country
1	Shipping box

# 4.2. DELIVERY CONTENT

# **4.3. GENERATOR INSTALLATION**

- The HYDROXYCHROM generator must be installed on a flat surface, without vibrations, avoiding potential shocks and excessive heat source; it should not be in contact with other devices on any of its walls.
- Operate the instrument in an open and well-ventilated area, in which the temperature does not go below +4°C. Good functioning of the instrument is guaranteed for a temperature between +10 and +35°C.
- To ensure proper ventilation, a clear space of at least 5 cm is required on the top of the instrument and around the ventilation outlet. The cooling air intake is located directly on the top and the rear of the instrument; under no circumstances this part should be obstructed.

# 4.4. CONNECTIONS

### 4.4.1. FLUIDIC CONNECTIONS

#### ZEROWATER Inlet:

- Disconnect the tube assembly which connects the inlet and outlet of the water circulation circuit. This assembly is made for transport.
- Place the ZEROWATER tank close to the H<sub>2</sub>-generator
- Connect the tube to the device. Lubricate the end of tube with distilled water and introduce it in the fitting, (labeled ZEROWATER INLET), push it firmly and screw the nut.

#### REMARK

The ZEROWATER tank has been designed to be placed on the floor at a maximum distance of 1.2 m from the generator. It can, nevertheless, be placed at the same level or above the instrument. The maximum difference in height between the generator and the ZEROWATER tank is 1m.





**Hydrogen Outlet**: Hydrogen pressure is available at the OUTLET  $H_2$  output on the back of the instrument. This outlet is equipped with a stainless steel Swagelok 1/8'' fitting.

**Oxygen outlet:** remove the 8mm tube from the transport tube assembly and connect it to the  $O_2$  Outlet. The  $O_2$  outlet must be kept at atmospheric pressure and without restriction. Some droplets of water condensation are sometime present at the tube's end. This is normal; water could be collected by a small plastic glass.

Air inlet: Air inlet must be dry air at 3 bar.

- Warnings: 1) Oxygen outlet must be maintained at atmospheric pressure.
  - 2) If H<sub>2</sub> outlet under pressure is suddenly opened, in certain circumstances H<sub>2</sub> could be mixed with water. Switch OFF device before disconnecting H<sub>2</sub> Outlet.

**CAUTION**: your HYDROXYCHROM generator has been tested for several hours at the factory and all its tubes have been cleaned of ambient air contaminants. After a break of several days to several weeks of operation, Air ambient has slightly dirt the circuit of the instrument. The walls of the tubes need again to be cleaned. Before connecting to the consumer, please let your H2-generator running during a couple of hours to the atmosphere.

#### 4.4.2. ELECTRIC CONNECTIONS

**Mains:** Connect the HYDROXYCHROM generator with the electrical cable provided; if it was not possible, verify that the cable use has a sufficient section and has a ground wire (3X1 mm<sup>2</sup> minimum). Make sure laboratory differential circuit breaker can absorb an inrush current of at least 6A without switching off.

# 4.5. FACTORY SETTINGS

During one of the last phases of QC, your HYDROXYCHROM has been programmed with a set of values called "factory settings". Those settings will help you to start the generator without troubles:

- Set H<sub>2</sub> Pressure: 2000mbar
- Timeout Pressure Alarm: 0 second (timeout disabled)
- Functioning Mode: Continuous on

#### At this step, the HYDROXYCHROM is ready for startup.

- Switch power ON
- After a few seconds due to generator initialization, the water pump1 sucks ZEROWATER and fill up the internal tank
- When upper water level is reached, current is applied to the hydrogen cell. Electrolysis process is initiated and some H<sub>2</sub> is available at the H<sub>2</sub> outlet.

The H<sub>2</sub> generator's configuration could be modified according to your needs via its USB connection and a PC with *HYDROXYCHROM Viewer* software.

# 4.6. **REMOTE CONTROL SOFTWARE: HYDROXYCHROM VIEWER FOR USB**

# OVERVIEW

HYDROXYCHROM Viewer software provides User Interface to control Gas Generator Network through USB interface

### 4.6.1. SPECIFICATIONS

#### **Requirements**

PC or Laptop under WinXP SP2 or higher / Win Vista / Win 7 At least 5Mb of free space on the Hard drive USB port

## **Performance**

Reporting Instrument Status, Parameters and Settings

# **Connection**

The Instrument is connected to a PC using USB port.



#### 4.6.2. INSTALLATION PROCEDURE

#### **HYDROXYCHROM VIEWER :**

To install HYDROXYCHROM Viewer you must log the computer in "administrator"

#### Remark:

If you want work with HydroxychromViewer in Russian start by installing the "Cyrillic code page" (procedure below) and then come back here (only available with HydroxychromViewer V2.0).

Step 1: Run "install\_hydroxychromviewer.exe"

Step 2: Select your preferred language for this installation

	GC Ferv.	4	
My Computer	ServiceGC	147	
<b>S</b>	是		
My Network Places	Install_Cy	🚰 Installing Hydroxychrom Viewer V2.0	
	_	Languages	
1	唱	Select preferred language.	
My Documents	Instal_Hyc		
2		Select your preferred language for this installation Click Next to continue the installation.	n
ImgBurn	Vistachrom	English (English) French (Fransais) Russian (Русский)	_
ADAM-4000 Utility			
Vistachrom Manuals	1	- CreateInstall Free	
2		Ne	xt > Cancel
Recycle Bin			



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Step 3: Choose destination folder or use default.

	GC Terv.	k
My Computer	ServiceGC 147	
<b>S</b>	<u></u>	
My Network Places	Install_Cyr	Installing Hydroxychrom Viewer V2.0
FIGUES		Installation folder
<b>1</b>	是	Select a destination folder where Hydroxychrom Viewer V2.0 will be
My Documents	Install_Hyc	
	4002-0051	Setup will install files in the following folder.
		If you would like to install Hydroxychrom Viewer V2.0 into a different folder, click Browse and select another folder.
ImgBurn	Vistachrom	
		Destination folder
<u>.</u>		D:\Hydroxychrom Browse
ADAM-4000		
Utility		Space required: 962.29 KB
57		Space available: 2.58 GB
Vistachrom		
Manuals	- C	reateInstall Free
1		< Back Next > Cancel
Recycle Bin		
Commit CF		

# Step 4: Complete installation



#### Remarks:

- If you just installed Hydroxychrom Viewer V1.0, when the installation is complete you have to do a "commit cf" (procedure below).
- If you just installed Hydroxychrom Viewer V2.0, when the installation is complete, this window will appear: click on "yes", the computer will restart automatically saving the modification you just made.

	GC Prv.	k	
My Computer	ServiceGC 147		
My Network Places	Install_Cyrill		
<b>1</b>	P		
	Install_Hydro		
ImgBurn	Vistachrom 147	Installing Hydroxychrom Viewer V2.0	
<u>e</u>	H2	You must restart your computer to complete the installation. Restart now?	
ADAM-4000 Utility	Hydroxychrom Viewer	Yes No	
Vistachrom Manuals			
1			
Recycle Bin			
Commit CF			

### **CYRILLIC CODE PAGE INSTALATION:**

Step 1: Run "install\_cyrillic\_codepage.exe"

Step 2: Select your preferred language for this installation

	GC perv.	<b>&gt;</b>
My Computer	ServiceGC 147	
<b>1</b>	- <u></u>	
My Network Places		
	Languages 🦱	
1	Select preferred language.	
My Documents	Install_Hyc	
	Select your preferred language for this installation. Click Next to continue the installation.	
ImgBurn	Vistechrom English (English) French (Français)	
ADAM-4000 Utility		
$\square$		
Vistachrom Manuals	- CreateInstell Free	
2	Next > Cancel	
Recycle Bin		
Commit CF		



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#### Step 3: Complete installation



When the installation is complete, this window will appear: clic on "yes", the computer will restart automatically saving the modification you just made.

GC Ferv. My Computer ServiceGC 147		
My Network Install_Cyrill		
My Documents Install_Hydro		
ImgBurn Vistachrom 147	Installing Cyrillic_codepage	
ADAM-4000 utiky	You must restart your computer to complete the installation. Restart now?	
Site of the second seco		
Recycle Bin		
Commit CF		

Remark:

After the computer restarted you can install the HydroxychromViewer software (go back to the procedure above).

#### COMMIT CF PROCEDURE FOR COMPUTER UNDER EMBEDDED WINDOWS:

Open the program named "command prompt" in the toollbar

vistachrom Manuals		
🥑 Recycle Bin		
UISTR	🔤 Command Prompt	
🏄 Start 🕜 🏠 📓	Performs text-based (command-line) functions.	🛐 🖮 😰 vc 🎽 ൽ 13:23

In this program, write "commitcf" as shown in the picture below and press enter.



The program asks you to restart, write "Y" for yes as shown in the picture below and press enter.



# **CHANGING LANGUAGE:**

Step 1: Open Application partition.

🛃 My Computer					_ 8 ×
File Edit View F	avorites Tools Help				
🕝 Back 🔹 🕥 🔹	🏂 🔎 Search 🜔	Folders 🛛 🕼 🏂 🗙	▶		
Address 😼 My Compu	ter				💌 🄁 Go
Name	Туре	Total Size	Free Space	Comments	
Files Stored on This	5 Computer				
C Shared Documents	File Folder				
Hard Disk Drives					
System (C:)	Local Disk	2.98 GB	2.46 GB		
Application (D:)	Local Disk	2.98 GB	2.56 GB		
🖾 🕹 🕹 🕹 🕹	Local Disk	31.2 GB	31.1 GB		
	ice: 2.56 GB e: 2.98 GB				

Step 2: Open Hydroxychrom folder.

File Edit View Favorites	Tools Help			
🜏 Back 🔹 🕥 - 💋 🚽	🔎 Search 🛛 🍋 Fol	ders 🔒 🗿	▷ 🗙 🍤 📖-	
Address 🖙 D:\				💌 🄁 Go
Name 🔺	Size	Туре	Date Modified	
Hydroxychrom		File Folder	2015-04-22 07:30	
TempSysData		Eile Eolder	2008-08-27 09:57	
Size: 1.02 MB Files: HydroxyChrom_FR.lng, F	ivdroxvChrom RU.Ina	older	2012-06-01 09:14	

Step 3: Open Hydroxychrom\_v2.ini file with "Notepad".

File Edit View		is Help earch 😥 Fold	lers 🕼 🍺 🗙	<b>(19</b> )	
Address 🛅 D:\F	lydroxychrom				💌 🔁 Go
Name 🔺		Size	Туре	Date Modified	
HydroxyChron	n_FR.lng	3 KB	LNG File	2015-03-10 13:44	
HydroxyChron	n_RU.lng	3 KB	LNG File	2015-03-27 14:04	
🛅 HydroxyChron	n_UK.lng	3 KB	LNG File	2015-03-10 13:39	
K Hydroxychrom	n_v2.exe	927 KB	Application	2015-03-31 16:00	
RHydroxychrom	n_v2.ini	1 KB	Configuration Settings	2015-04-22 08:43	
🕍 uninstall.exe		116.КВ	Application	2015-04-22 07:30	
🧿 uninstall.ini	Type: Configuration Date Modified: 2019 Size: 115 bytes		Configuration Settings	2015-04-22 07:30	

Step 4: Modify the second line of the code:

- LanguageFile=Hydroxychrom\_UK.lng for English language
- LanguageFile=Hydroxychrom\_FR.Ing for French language
- LanguageFile=Hydroxychrom\_RU.lng for Russian language

Hydroxychrom	_ [2] ×]
Hydroxychrom_v2.ini - Notepad	
File Edit Format View Help	
[Global]	*
LanguageFile=Hydroxychrom_RU.Ing	
SlaveID=1	
Port=COM7	
Logged=1	
PortUSB2Serial=0	
EnableAlarmWindow=1	

And then save the file.

0	Hydroxych	rom		_ I&I × I
	📕 Hydroxychrom_v2.ini - Notepad			
F	ile Edit Fo	ormat View	Help	
A	New	Ctrl+N		A
-	Open	Ctrl+O	ychrom_RU.Ing	
	Save	Ctrl+S		
	Save As			
	Page Setup	o		
	Print	Ctrl+P	-1	
	Exit		- *	
In			-	

Step 5: Exit Hydroxychrom viewer:

GC BEW	
My Computer ServiceGC 147	
🦉 🚬	
My Network Vistachrom 147 Places	
My Documents Hydroxychrom Viewer	
and a second sec	
<u>a</u>	
ADAM-4000 Ukity	
2	
Vistachrom Manuals	
3	
Recycle Bin	
Restore Hydroxychrom Viewer	
🐉 Start 🚱 🖓 🗒 » 🗐 🗖 🖏	07:33 Wednesday

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# And open it again:



### USAGE:

Step 1: Connect USB

Step 2: Start HYDROXYCHROM Viewer



Step 3: Adjust the COM port number that is associated with USB port

🞎 Hydroxychrom Vie	ewer ¥1.0 Beta 4	
Connect Sia	Port COM7  Refresh ports list Refresh ports list F Enable alarm window	w display
Information Device type	irmware 0 Serial 0 Status Dis Version Comm.	connected
Operation mode	Pressure	
Continuous On	Set Pressure (mBar) 2000 🏂	Time out (s) 0 🏂
C On C Remote control C Leak-check	Actual Pressure (mBar) 1999 Timeou	ut Alarm (s) 0
-H2 Generator Status -	10 maturit	
Water	H2 product Cell parameters Estimated Production	Temperature
Consumption (ml/h)	(ml/mn) Production % 0	Temperature 0
Level (%)	Current (A)	Vottage (V)
Cell runtime parameters		
Days 0	kAh 0 KWh 0	

Step 4: Left Click on Connect

#### 4.6.3. INSTRUMENT INFORMATION STATUS AND OPERATION MODE

🕌 Hydroxychrom Vie	ewer ¥1.0 Beta 4		<u>- 0 ×</u>
Disconnect		Refresh ports list Enable alarm window display	
Device type 1.2	irmware 0311 Serial Version 0311 number	65535 Status Comm. Communication Ol	<
Operation mode C Off C Continuous On C On C Remote control C Leak-check	Pressure Set Pressure (mBar) Actual Pressure (mBar)	2000     Time Out       2000     Time out (s)       1999     Timeout Alarm (s)	*
H2 Generator Status – Good			
	H2 product	Cell parameters	
Consumption (ml/h) Level (%) 100	Estimated Production (ml/mn) 55		ture 38.2 (°C) 1.695
Cell runtime parameters	,		
Days 209	kAh 95 kv	Wh 189	

#### MODE:

Instrument working mode could be chosen from one of following:



**Off** – No gas generation;

**On** – Gas generation is running but will be stopped after power off;

**Continuous On** – Gas generation is running but will be automatically started every time after power on;

**Remote control**– Gas generation Started/Stopped depending on the Digital Input signal at the rear side of the instrument.

Leak check – allows to check internal H<sub>2</sub> leaks

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#### **INSTRUMENT INFORMATION:**

Information						
Device type 1.2	Firmware 0311	Serial number	65535	Status Comm.	Communication OK	

Instrument information section provides Firmware Version, Instrument Serial Number, Run time and Cell total current.

#### **PRESSURE INFORMATION AND SETTINGS:**

Pressure	Time Out
Set Pressure (mBar) 2000 🏒	Time out (s) 0
Actual Pressure (mBar) 2000	Timeout Alarm (s)

Actual Pressure shows the pressure measured at the outlet of the instrument;

Set Pressure is a parameter, where user could see and/or modify desired value of the pressure;

Timeout is time in seconds showing for how long the Actual Pressure does not match the Set Pressure;

Timeout Alarm is time in seconds given to the instrument after start to reach the Set Pressure.

**IMPORTANT NOTE:** For security reasons, the Instrument stops generation when the **Timeout** value became equal to **Timeout Alarm**.

#### **FLOW INFORMATION:**

-/Vater	H2 product	-Cell parameters	2
Consumption (ml/h) 2	Estimated Production (ml/mn)	Production % 11.2	Temperature 33.7
Level (%) 89	70	Current (A) 2.265	Voltage (V) 1.581

**Consumption** shows current water consumption in ml/h;

**Production** shows actual production of H<sub>2</sub> in percentage from the maximum capacity;

**Estimated Flow** shows actual  $H_2$  flow in ml/min. Please note that this value is not directly measured but calculated inside the instrument. Use it only for estimation purposes.

#### **CELL INFORMATION:**

Cell runtime param	eters	14 M	
Days 145	kAh 67	kWh 125	

Cell information section provides Run time and Cell total current.

# **CHAPTER 5. MAINTENANCE, ALARMS + TROUBLESHOOTING**

# **5.1. REGULAR MAINTENANCE**

The Hydrogen generator HYDROXYCHROM does not need regular maintenance; it needs ZEROWATER and electrical power. If the instrument is used according to recommendations made by the constructor, the deionizing bags (internal and external tanks) should be exchanged once every 1 year and the internal tank filter should be exchanged once every 3 years. In order to keep the instrument in its original conditions, please use exclusively distilled and filtered water.

# **5.2.** LED AND BUZZER INDICATIONS

Green	Red	Buzzer	
ON	OFF	OFF	STBY (by user), REMOTE – STBY, ON, CONTINEOUS ON, REMOTE – ON
FAST	OFF	OFF	STBY with Warning
FAST	OFF	FLASH	ON with Warning, CONTINEOUS ON with Warning, REMOTE – ON with Warning
OFF	FAST	FAST	STBY with Error
FLASH	OFF	SLOW	LeakTest in process
FLASH	OFF	OFF	LeakTest success
FLASH	SLOW	FAST	LeakTest Fail
FAST	FAST	OFF	USB-CABLE-CONNECTED
Variable	OFF	OFF	H2 Flow Production indication versus maximum capacity

STBY = STAND-BY

# 5.3. ALARMS + TROUBLESHOOTING

Alarm #	Alarm Name	Cause	Cure
1	Water Level	<ul> <li>Internal tank could not be filled up to maximum level detector.</li> <li>Tube between external tank and device is leaky.</li> </ul>	<ul> <li>External tank is empty, add water.</li> <li>Push tube in the INLET WATER quick connector.</li> </ul>
2	H <sub>2</sub> Output pressure	• Actual H <sub>2</sub> pressure could not reach set value, because there is a leak inside your generator or on the line between generator and GC.	• Proceed to a leak check with HYDROXYCHROM Viewer software and verify if fittings are screwed correctly.
			<ul> <li>Volume between H<sub>2</sub> generator and consumer too big. Pressure value could not be reached on time. Increase value of timeout.</li> </ul>
		• H <sub>2</sub> flow consumed by your GC is superior to the generator's capacity.	<ul> <li>Verify capacity and consumption, reduce consumption of GC.</li> </ul>
3	H <sub>2</sub> -Cell Voltage	Bad quality of water.	<ul> <li>Replace actual water exclusively by distilled and filtered water.</li> </ul>
		• Deionisant bags inside internal and external tank are not any more efficient.	<ul> <li>Exchange deionisant bags.</li> </ul>
		• H <sub>2</sub> -cell is dry.	<ul> <li>Verify if water is correctly circulating. Circulating pump should not be stopped.</li> </ul>
4	Internal communication	<ul> <li>One or several cable(s) inside device is(are) disconnected or damaged</li> </ul>	<ul> <li>If a cable is simply disconnected due to vibrations during shipment, please switch of the device and reconnect simply the cable.</li> </ul>
		One board inside device is damaged.	<ul> <li>If one board is damaged, please call your local distributor for repair.</li> </ul>