

Televes®



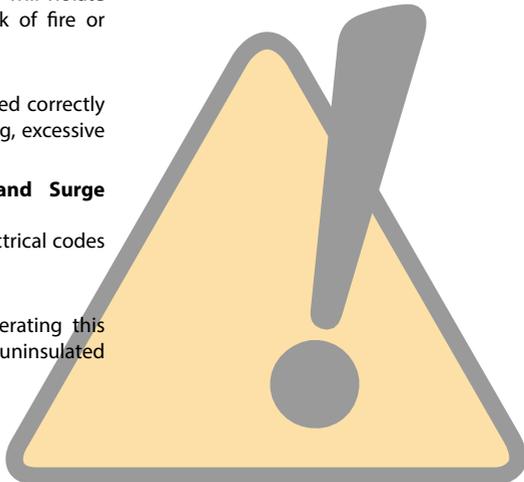


Index

Safety requirements	4	Firmware Update	25
Overview	5	Web Application	25
Introducing the H30+	5	1. Measurements	25
Key Features	5	2. Plans	26
General Specification	6	3. Quality Profiles	27
Technical Specifications	7	4. Multiscreen	28
Description equipment components	8	5. Clone	28
Connectors and controls	8	6. Update	28
Keyboard	9	Repair service	29
Power supply	9	Warranty	29
Battery Recommendations	10		
Product operation	10		
1. Docsis (H30D+ / H30D+Adv)	10		
2. Channel Info	13		
3. System Scan	14		
4. Tilt	15		
5. Spectrum	15		
6. Constellation	16		
7. Voltmeter & Hum	17		
8. Learning plan	18		
9. Ingress Scan	18		
10. Speed Test	19		
11. MPEG	20		
12. LT Monitoring	20		
13. Wi-Fi Scan			
14. Setup	22		
15. IPTV	23		
16. Echoes	24		

Safety requirements

- **Product inspection**
 - Inspect the equipment for shipping damage. Should any damage be discovered, immediately file a claim with the carrier.
- **Read and Follow All Instructions**
 - All the safety and operating instructions should be read prior to and followed while operating this product.
- **Cleaning**
 - Follow the cleaning instructions contained in the Maintenance section of this manual.
- **Attachments**
 - Do not use attachments that are not approved by the product manufacturer.
- **Water and Moisture**
 - This product is weather resistant but is not submersible.
- **Power Sources**
 - This product should be operated only from the type of power source specified.
- **Grounding or Polarization**
 - Do not bypass or defeat electrical plug polarization or grounding. Doing so will violate the warranty and may pose a risk of fire or electrocution.
- **Wire Protection**
 - Ensure all connected wiring is routed correctly to avoid damage including pinching, excessive bends, or compression.
- **Electrical Supply, Grounding, and Surge Protection**
 - Ensure that all local or national electrical codes are followed.
- **Power Lines**
 - Always use caution and avoid operating this or any connected equipment near uninsulated power lines or any other hazards.
- **Servicing**
 - There are no user serviceable parts except the battery. Do not attempt to service this product or remove covers other than the battery cover. Refer all servicing to qualified service personnel. Follow the instructions in this manual when replacing the battery.
- **Heat**
 - The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.
- **Maximum in the power connector**
 - Ensure that the voltage applied to the power connector does not exceed 15V. Higher voltages could damage the equipment
- **Maximum voltage at the RF connector**
 - Ensure that the voltage applied to the RF connector does not exceed +150 VDC nor 150 VAC. Higher voltages could damage the equipment.



Overview

Introducing the H30+.

New from Televes, a go-to meter designed with the needs of a Cable TV operator in mind.

The **H30+** is a light weight, rugged unit, packed with all the features needed to install and troubleshoot a television system using QAM digital modulation as well as analog signals.

This handy little unit is even inexpensive enough to leave in your headend and use its unique in its class remote measurement and control capabilities to provide long term monitoring or to troubleshoot those hard to find, intermittent problems.

Available for the first time in such a portable and affordable package, its real time digital processing engine gives the installers the lab-precision measurements needed in today's fulfilment environment.



Key Features

- **User friendly**, handheld QAM meter.
- **Remote measurements and control** in an affordable package.
- Complete portfolio of Analog/Digital measurements with easy-to-read **pass/fail indicators**.
- **Quick and easy to use interface** with features such as Channel measurements, System Scans, Tilt Function, Constellation Diagram, Spectrum Analyzer, Voltmeter, Hum, Service Identification, Datalogger, and more.
- Rugged, light weight, fully automatic, fast, and accurate.
- **Automatic** through-the-cloud software updates.
- 100% automatic ITU-T J.83 Annex A/B parameter detection and measurement with **no setup needed**.
- **Up to 1794MHz spectrum range** with selectable span.
- **PASS/FAIL Indicators:** Icons indicate if a measurement is good, bad, or in the warning zone for quick and easy status checks. Reduce installer entry errors and improve decision making.
- **Control your H30+ remotely and make measurements from any internet connected device.** Ideal for extended signal tests over time in headends and broadband distribution networks. Leave your **H30+** connected to your headend or anywhere in your plant and control the unit and measure signals and quality parameters remotely. Once finished, export the results to your computer using the included **Remote Application** software.

General Specification

Display	2.8" TFT 400 x 240 full colour
Weight	H30+ : 529g (1.16lb) H30D+ & H30D+Adv: 633g (1.39lb)
Dimensions	6.9 x 3.9 x 2 in / 175 x 100 x 52 mm (H x W x D)
AC Adaptor	Input: 100-240V~ 50-60Hz Output: 12VDC, 2A
Battery	Li- Ion smart battery (7.2VDC, 2550mAh)
Operating Time	Up to 4 hours
Operating Temperature	-5°C to 45°C (23°F to 104°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	5% to 95% non-condensing
Ruggedness	Survives 1 m (3 ft) drop to concrete on all sides
Communication Interfaces	RJ45 10/100/1000-T Ethernet interface for Remote Control, Measurements, Datalog Retrieval and Automatic Software Updates
Storage	1.5 GB (internal) for measurements
Power up time	< 10 seconds

Technical Specifications

References	
H30+	593901
H30D+	593902
H30D+ Advance	593905
Frequency	
Range	593901: 5 MHz to 1002 MHz 593902: 5 MHz to 1218 MHz 593905: 5 MHz to 1794 MHz
Resolution	50 kHz
Tuning	Frequency or channel
Input	
Impedance	75Ω F-type connector
Spectrum Analyzer	
Span	2.5, 6.25, 12.5, 25, 62.5, 125, 250, 500 MHz and Full
Scale	5 and 10 dB/div
Auto and manual reference level	✓
Reverse Path Ingress Scan	
Range	Selectable 5 to 42MHz, 5 to 65MHz, 5 to 85MHz and 5 to 204MHz
Mode	Peak, Average, Min, and Real-time
Digital Channel Power Measurements	
Power	-15 to +50 dBmV (-35 to +60dBmV opt.593235)
Accuracy	±2 dB
Resolution	0.1 dB
Digital Measurements DVB-T (H30D+Adv or opt. 593231)	
Freq. Range	42 - 1002MHz
Modulations	COFDM (QPSK, 16QAM, 64QAM)
MER	Up to 35dB
C/N	Up to 40dB
CBER	9.9E-2 - 1.0E-6
VBBER	1.0E-3 - 1.0E-8
Echoes	✓
Constellation with Zoom Capability	✓
Digital Measurements DVB-T2 (H30D+Adv or opt. 593231 + 593232)	
Freq. Range	42 - 1002MHz
Modulations	COFDM (QPSK, 16QAM, 64QAM and 256QAM)
MER	Up to 35dB
C/N	Up to 40dB
LDPCBER	9.9E-2 - 1.0E-6 (Pre LDPCBER)
BCHBER	1.0E-3 - 1.0E-8 (Pre BCHBER or Post LDPCBER)
Link Margin	Up to 30dB
Echoes	✓
Constellation with Zoom Capability	✓
Digital Measurements DVB-C	
Freq. Range	42 - 1002MHz
Demodulation	ITU-T J.83 Annex A/B standard
Support	16, 32, 64, 128 and 256 QAM, QPSK
Symbol Rate	2 to 6.9 MS/sec
Q.A.L. Technology (QAM Auto Lock)	Automatic detection of signal characteristics and modulation parameters

C/N	Up to 45 dB
MER	Up to 45 dB
Pre-BER and Post-BER (Annex B)	1.0E-3 to 1.0E-8
BER (Annex A)	1.0E-3 to 1.0E-8
Constellation with Zoom Capability	✓
Analog Measurements	
Freq. Range	42 MHz to 1002 MHz
Level measurement	-15 to +50 dBmV (-35 to +60dBmV opt.593235)
V/A	up to 30 dB
C/N	up to 54 dB
Accuracy	±2 dB
Resolution	0.1 dB
Channel Plans	
Factory channel plans	FCC STD, FCC EXT, FCC OFFAIR, CCIR, CCIR+LTE
Custom channel plans (learning plan)	✓
System Scan	
Channels	User selectable zoom up to all channels (analog or digital)
Measurements	Level bar representation and C/N BER/MER of the selected channel
Tilt	
Channels	Up to 16 channels (analog and/or digital)
Selectable markers	✓
Pass/Fail Indicators	
Factory profiles	Headend, Fiber Nod, Trunk, Bridge, Line Ext, Tap, End Line, Ground, Modem/STB, Off Air
Custom profiles	up to 20 profiles
Voltmeter	
Range	±5VDC to ±150VDC, ±5VAC to ±100VAC
Accuracy	±(0.5V +1%)
Speed Test	
DCHP Status	✓
Connection Status	✓
Ping	✓
Lost packets	✓
DS/US speeds	593901: 20Mbps 593902: 500Mbps 593905: 1000Mbps
Service Info	
Channel parameters	NIT, PAT, TSID, CBRT, number of services
Service parameters	SID, VID, AID, bitrate, encoding type
Video visualization	MPEG-2 / MPEG-4
HEVC visualization	Up to 1080p (H30D+Adv or opt. 593252)
Cable Modem (H30D+ / H30D+ Adv)	
Modes	3.1 / 3.0 / BPI+
Dowstream	Up to 32 QAM channels and 2 OFDM channels of 192MHz
UpStream	Up to 8 QAM channels and 2 OFDM-A channels

Connect Status	DS and US frequency, DHCP, TOD, config. file name, security level, registration
Diplexer	Auto (config. file) or user selectable (5-85MHz / 108-1002MHz) (5-204MHz / 258-1218MHz)
Measurements	Bar diagram of DS and US channels. Power, MER, PreBER and PostBER of selected channel
Throughput Test	IP modem, DS and US maximum speed, ping current and average delay, lost packets, transfer speed
Modem Emulation	Connection status of the modem, instantaneous speed and size data sent through the modem
D3.1 Advanced Measurements	PLC: Frequency, level, MER, CWE Level: average, max, min MER: average, std, pct NCP CWE Profile A: Corrected / Uncorrected CWEMER: average, std, pct
Upstream Equalizers	Bar diagram of US channels equalizer, level, time and distance of selected channel
Throughput Test	DHCP Status, Connection Status, Ping Delay, Lost Packets, Upstream and Downstream Speed, Modem IP, maximum DS and US Speed, current and average PING delay, lost packets, transfer speed (via FTP).
LT Monitoring	
Historical measurements in the selected channel	✓
Time interval between two consecutive measure shots	User defined
Connectivity	
Bluetooth	✓
Wifi	✓
Wi - Fi Scan (H30D+Adv or Option 593250)	
Automatic Wi-Fi networks scan	✓
Data shown	networks name, MAC, channels, access point power, protection access type
Views	list and map
IPTV Analyzer (H30D+Adv or Option 593251)	
Measurements	packets per second, min. and max. packet arrival time, IP payload bitrate, UDP payload bitrate, media loss rate, lost IP frames
Service info	✓

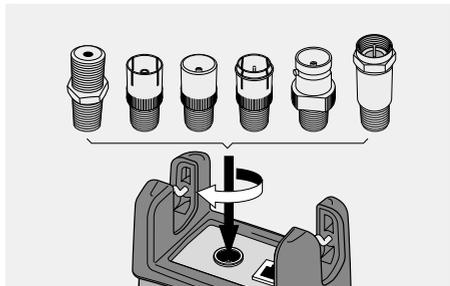
* Specifications are subject to change without notice.

Description of equipment components

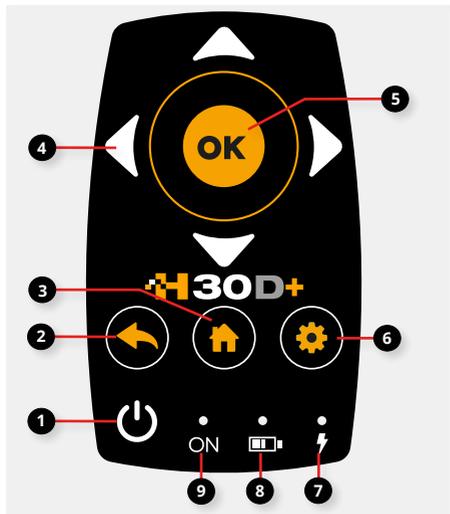
Connectors and controls



1. External power connector (12VDC).
2. LCD display.
3. Keyboard and LED indicators
4. Ethernet connector.
5. USB connector.
6. RF F-connector.
7. DOCSIS connector.



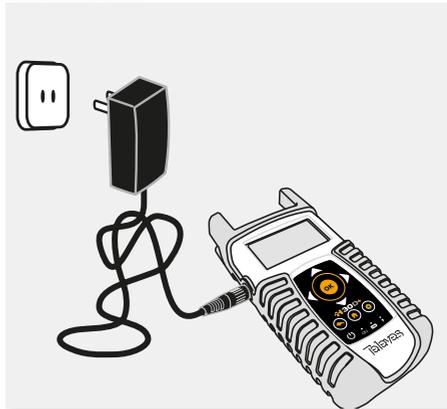
Keyboard



- 
Device On/Off button: To turn the equipment off, press and hold for approximately 3 seconds.
- 
Back button: Return to the previous menu or close a parameter entry window.
- 
Home button: Return to the main menu.
- 
Navigation buttons: Used to scroll through options.
- 
OK Button: To confirm selection.
- 
Setup button: Parameter window for the current function.
- LED Load:** Indicates if the equipment is powering an external load.
- LED Charging Battery:** Indicates if the battery is charging.
- LED Power ON:** Illuminated when the equipment is on.

Power supply

A DC adapter is provided to power and charge the meter. Plug the adapter into a properly grounded electrical supply and the power connector on the side of the unit.



When external power is supplied, the battery management system automatically controls the charging process.

A battery icon indicates the charge status of the battery.

When the battery is fully charged, the battery icon is completely filled. As the battery discharges, the amount the icon is filled decreases in steps.

The icon shows 5 states representing the approximate battery charge:

-  - Battery charge less than 5%.
-  - Battery charge between 5% and 25%.
-  - Battery charge between 25% and 50%.
-  - Battery charge between 50% and 75%.
-  - Battery charge greater than 75%.

From a fully discharged state, a full charge takes approximately 8 hours and a 3 hour charge will provide approximately a 75% charge.

The charge management system will detect various conditions preventing charging, such as a battery that is over a safe temperature.

Battery Recommendations

To maximize battery life:

- ▶ Avoid fully discharging the battery.
- ▶ The battery should always be charged with the battery pack attached to the device and using the supplied DC adapter or applying a constant voltage within the specified range (12-15VDC).
- ▶ For long term storage, keep the unit at room temperature, or about 25° C. Start with a charged battery and re-charge the battery every 2 to 3 months.

Product operation



1. Docsis (H30D+ / H30D+Adv)

In this menu are grouped all functions related to Docsis network.



1.1. Connection Status

This function shows all the steps the **H30D+ / H30D+Adv** is taking to connect to a DOCSIS network.

Each time a step is successfully completed, it is indicated with a checkmark.

The steps are shown in order.

The first thing that the modem has to do is read the status of the connection.

Then, the modem has to range and lock on to the downstream channel. Once the modem is locked, it is shown the frequency of the channel used for receiving data from the CMTS (Cable Modem Termination System). The modem will then attempt the same with the upstream channel.

Then, the DHCP server must assign the IP network parameters to the modem. The next step is to synchronize the time with the TOD (Time Of Day) server. In both cases, the IP addresses of the servers will be shown in the window.

The modem then gets and displays the name of the configuration file given by the CMTS.

Last, is the modem registration status, the level of security (None or BPI+), the DOCSIS version, and the channel bonding configuration.

1.1.1. Main window

Below is a capture of a Connection window with a brief explanation of its features.

The screenshot shows the 'Connect. Status' window with the following data:

```

Docs > Connect. Status 13:58
MAC: fc:4a:e9:8f:bc:66
Status: operational
DS FREQ: CH 194 (264.00 MHz)
US FREQ: UCD 4 ( 10.00 MHz)
CM IP: 192.168.200.20
TOD:
Config: cm-config/cm30_bstlow.cfg
Registration: 34DSx8US
CPE IP: 192.168.200.21
    
```

Callouts and their descriptions:

- MAC of the DOCSIS modem:** Points to the MAC address: fc:4a:e9:8f:bc:66
- Connection Status:** Points to the Status: operational
- Parameters of the DOCSIS network:** Points to the DS FREQ, US FREQ, CM IP, and CPE IP fields.
- Steps that the meter must be completing:** Points to the Config and Registration fields.
- Indicators that show the state of the processes:** Points to the green checkmarks on the right side of the screen.

1.2. Docsis3.1 Advanced

This function shows all the measurements of the OFDM Docsis channel.

In addition to the level and MER measurements, all the PLC (physical link channel) and NCP (next codeword pointer) measurements are also shown which are very important for the system to work properly.

For the Level measure, the average, maximum and minimum values of all the frequencies are shown.

For the MER measure, the average, maximum and minimum values of all the frequencies are shown.

For the PLC, the average, maximum and minimum values of all the frequencies are shown., the MER and the uncorrectable codeword errors. This last measure is also shown for NCP.

1.2.1. Main window

Below is a capture of a Docsis3.1 Advanced window with a brief explanation of its features.

The screenshot shows the 'Docsis > Doc. 1 Advanced' window with the following data:

ID	PLC Freq	264.0 MHz
258.0 - 430.0 MHz	PLC Lev	67.9dBuV
Lev avg 68.1dBuV	PLC MER	45.2 dB
Lev max 70.0dBuV	PLC CWE	0
Lev min 64.6dBuV	NCP CWE	0
MER avg 48.0 dB	A CWE Corr	0
MER std 1.4 dB	A CWE Un	0
MER pctL 44.0 dB		

Callouts and their descriptions:

- Channel ID Change using:** Points to the ID field (194).
- Frequencies:** Points to the frequency range (258.0 - 430.0 MHz).
- PLC Frequency and measurements. Color according to checkmarks:** Points to the PLC Lev, PLC MER, and PLC CWE rows.
- List of Level and MER measurements with pass/fail indicators:** Points to the Level and MER rows.
- Profile A measurements. Color according to checkmarks:** Points to the A CWE Corr and A CWE Un rows.

1.3. Measurements

This function shows the status of all the upstream and downstream channels at a glance.

The internal modem of the **H30D+/H30D+Adv** supports two 192 MHz OFDM downstream channels, thirty two single-carrier QAM downstream channels, two 96 MHz OFDM-A upstream channels and eight single-carrier QAM upstream channels. This function graphically shows the status of all of these channels in a way that clearly shows which channels comply with the used-defined thresholds by its green, yellow, or red colour.

A single channel can then be chosen for further analysis. The detailed measurements of the selected channel as well as the modulation data



1.4. Throughput test

This function measures the upstream and downstream rates of the DOCSIS network.

The rate measurements are performed using an FTP server that must be configured by the user (URL, file, get/put, user, password). See section 1.56Setup.

This feature shows the IP modem within the DOCSIS network and the maximum speed negotiated (DS/US). When you start the speed test, the speed value is updated at the end of the test.

1.4.1. Main window

Below is a capture of a Throughput Test window with a brief explanation of its features.

The screenshot shows the 'Throughput Test' window with the following data and callouts:

- Modem IP within the DOCSIS network:** CPE IP: 192.168.200.2
- Transmitted and received packets:** Tx/Rx 16/10
- Current PING delay:** Current 7 ms, Average 6 ms
- Maximum DS and US speed negotiated:** DS/US: (34/8) 3868.9 Mbps/122.9 Mbps
- Lost packets:** Loss --- %
- Average PING delay:** (Callout to Average 6 ms)
- Transfer speed:** (Callout to 3868.9 Mbps)
- URL set by the user:** URL: ftp://192.168.200.1/test_d
- Transfer status:** (Callout to the progress bar)

network via the H30D+/D+Adv's Ethernet port.

1.5.1. Main window

Below is a capture of a Modem Emulation window with a brief explanation of its features.

The screenshot shows the 'Modem emulation' window with the following data and callouts:

- Modem status:** Status Online
- Modem IP:** CM IP 192.168.200.23
- Transmitted data size:** TX size 248.5 MB
- Received data size:** RX size 90.6 MB
- Download speed:** Download 805.2 Mbps
- Upload speed:** Upload 103.4 Mbps



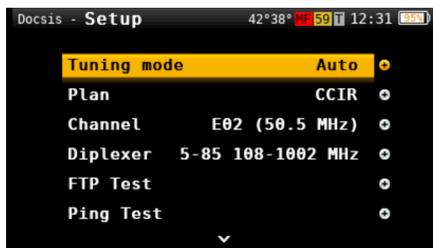
1.5. Modem Emulation

This function sets the H30D+/H30D+Adv to be used as a DOCSIS modem. It may be used to give to another device a connection to the DOCSIS



1.6. Setup

The features in this menu allows you to set the required parameters to analyze a DOCSIS network.



You can access to Setup menu by pressing button.

- **Tuning mode:** Auto, Manual.

If Auto is selected, the H30D+/D+Adv tries to find a DOCSIS channel following this searching sequence:

- PLC (with steps of 1MHz)
- QAM Annex B in FCC STD channel plan
- QAM Annex B in FCC HRC channel plan
- QAM Annex A in CCIR channel plan

If you select Manual, you must select one channel from the Channel list.

- **Plan:** FCC STD, FCC RETURN, FCC IRC, FCC HRC, FCC OFFAIR, CCIR, Custom plans.

- **Channel:** Allows you to select the channel when Manual is selected in the Tuning mode.

- **FTP Test:** These parameters allows to set the ftp to do the Throughput test.

FTP Server: Enter the ftp address using navigation buttons

FTP Path: Enter the file path using navigation buttons.

Method: GET, PUT.

GET selects the downstream channel and PUT select the upstream for the FTP Test in the Troughput test feature.

User: Enter the user for the FTP server.

Pass: Enter the appropriate password for the FTP server user.

- **Ping Test:** These parameters allows to set the IP to do the Throughput test

IP: Enter the IP address using navigation buttons

Count: Enter the number of PINGs to do using navigation buttons



2. Channel Info

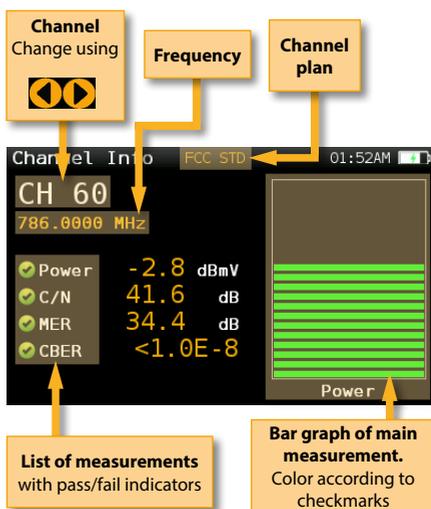
Analog and digital channels are very different in terms of signal content and power distribution and thus require the advanced SLM techniques provided in the Televes **H30+/D+/D+Adv**.

In analog mode, video and audio levels, V/A and Carrier to Noise (C/N) are measured.

In digital mode it's Power, C/N, Pre-BER and Post-BER.

2.1. Main window

Below is a capture of a Channel Info window with a brief explanation of its features.



2.2. Setup

Press  to change the Channel Info options.



- **Ter. Plan:** Selected Terrestrial plan.
- **Tuning:** Channel, Frequency
- **A/D:** Auto, Analog, Digital
- **Save datalog:** Saves the current measurements. You can see the datalogs using the remote control application.



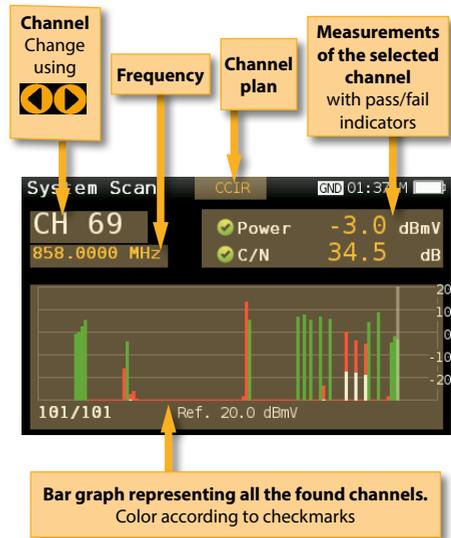
3. System Scan

This function scans the selected channel plan and detects every existing analog and digital channel in real time to determine the overall frequency response of the system.

The scan measurement leverages the location based thresholds to clearly show whether or not signal levels comply with the cable system's specifications with their green, yellow and red bars. This gives an easy-to-understand real-time view of the system, including the BER and MER values of the selected channel.

3.1. Main window

Below is a capture of a System Scan window with a brief explanation of its features:



3.2. Setup

Press  to change the System Scan options.



- **Ter. Plan:** Selected Terrestrial plan.
- **Digital tuning:** If it is ON, allows to see C/N and MER measurements when a digital channel is selected and the user presses Ok button.
- **Ref. Level:** Select the reference level of the bar graph
- **Span:** Select the number of channels showed in the bar graph
- **Save datalog:** Saves the current scan measurements. You can see the datalogs

using the remote control application



4. Tilt

Any number of analog, digital or DOCSIS channels can be measured using the tilt measurement, and you can even select which carriers are your reference points to determine the tilt between any of the channels included in the measurement.

The Tilt measurement leverages the location based thresholds to clearly show whether or not signal levels comply with the cable system's specifications with their green, yellow and red bars.

4.1. Main window

Below is a capture of a Tilt window with a brief explanation of its features:

The screenshot shows the Tilt measurement interface. At the top, it displays 'Tilt' and 'CUSTOMO'. Below this, two channels are listed: 'CH 117 751.25 MHz' and 'CH 133 849.00 MHz'. A 'Tilt' indicator shows '-5.1 dB'. The main part of the window is a bar graph with 20 bars, each color-coded (red, yellow, green) based on checkmarks. Callouts explain: 'Selected channels Change using' (with a double arrow icon), 'Channel plan' (with a gear icon), 'Tilt measurement between the selected channels' (with a double arrow icon), and 'Bar graph representing all the channels. Color according to checkmarks'.

4.2. Setup



Press **SETUP** to change the Tilt options.



- **Ref. Level:** Select the reference level of the bar graph.
 - **Ter. Plan:** Selected Terrestrial plan.
 - **Channels:** Select the channels to show in the bar graph
 - **Quality profiles:** Trunk, Tap, End Line, Ground.
- Select thresholds according to testing location.
- **Save datalog:** Saves the current scan measurements. You can see the datalogs using the remote control application.



5. Spectrum

Real-time processing speeds ensure capture of any fast, intermittent plant impairments.

Due to the accuracy and level of detail provided by this spectrum analyzer, the **H30+/D+/D+Adv** is the ideal tool for identifying and locating noise, interference, ingress and other waveforms that may be affecting cable services quality.

5.1. Main window

Below is a capture of a Spectrum window with a brief explanation of its features:

Selected channel
Change using [Left Arrow] [Right Arrow]

Span
User can change it using [BACK] (+) or [OK] (-)

List of measurements with pass/fail indicators

Reference level (Auto)

Spectrum
CH 60
786.0000 MHz
Span: 25MHz
01:49AM

Measurements:
Pwr dBmV: -1.7
C/N dB: 38.9

Reference level: -20

This is a useful feature to point antennas without having to look at the display.

- **Span:** 2.5MHz, 6.25MHz, 12.5MHz, 25MHz, 62.5MHz, 125MHz, 250MHz, 500MHz, Full.
- Set the span of the spectrum. To easily change the span, use the **OK** Button to decrease the span and the **Back** Button to increase the span.
- **Ref. Level:** Select the reference level of the spectrum graph
- **Tuning:** Channel, Frequency
- **A/D:** Auto, Analog, Digital.
- **dB/div:** 5 dB/div, 10 dB/div
- **C/N:** ON, OFF. Shows/Hides the C/N measure.
- **Hold mode:** ON, OFF. Shows/Hides the maximum graph.
- **Save datalog:** Saves the current scan measurements. You can see the datalogs using the remote control application.

5.2. Setup

Press  to change Spectrum options.

Spectrum - Setup 13:21

- Span 50MHz
- Ref. Level Auto
- Tuning Channel
- A/D Auto
- dB/div 10dB/div
- C/N 0n

- **Ter. Plan:** Selects the channel plan
- **Aim antenna:** Emits a modular audible signal with frequency directly proportional to signal level in the spectrum trace relative to reference level. It is recommended to set the reference level manually, as well as to select the span to include a frequency range wide enough.
The audible signal becomes continuous when the signal level is close to the reference level. Then it is necessary to increase the reference level to get a more accurate adjustment.



6. Constellation

Digital video often does not show signal impairment until it is too late due to the small margin between acceptable quality and failure.

Constellation diagrams are an indispensable tool to help detect the presence of noise, phase jitter, interference, and gain compression, all of which impact overall signal quality and thus reduce Modulation Error Ratio (MER).

Ideally, each of the symbols in a constellation diagram should display a clean dot indicating a perfect QAM signal.

The **H30+/D+/D+Adv's** real time constellation, allows the installer to assess the size and shape of the build up of dots indicative of problems which contribute to bit errors leading to service disruption

6.1. Main window

Below is a capture of a Constellation window with a brief explanation of its features:

Selected channel
Change using

Modulation

Constellation QAM64 6108 01:56AM

CH 60
786.0000 MHz

- Pwr 8.3 dBmV
- C/N 41.5 dB
- MER 36.0 dB
- CBER 1.0E-8

List of measurements with pass/fail indicators

Constellation diagram

6.2. Setup

Press  to change Constellation options.

Constellation - Setup 56°52' 40" 59" 12:51

- Ter. Plan CCIR
- Zoom Off
- Tuning Channel
- Save datalog

- **Ter. Plan:** Selected Terrestrial plan.
- **Zoom:** OFF, 1st, 2nd, 3rd, 4th.
Select a quadrant of the constellation to be represented for more detailed view. Select Zoom OFF for the full constellation.
- **Tuning:** Channel, Frequency
- **Save datalog:** Saves the current scan measurements. You can see the datalogs using the remote control application.



7. Voltmeter & Hum

H30+/D+/D+Adv measures the voltage present at the RF input.

The HUM measurement indicates the variation in percentage of the video carrier amplitude of the TV signal. This will help you diagnose those ground and power interference problems that may result from a defective power supply or faulty/overloaded power inserters.

7.1. Main window

Below is a capture of a Voltmeter & Hum window with a brief explanation of its features:

Selected channel
Change using

Channel plan

Volt & Hum FCC STD 04:30AM

CH 123
789.0000 MHz

- Volt 89.5 DC
- Hum <1.0 %

List of measurements with pass/fail indicators

Bar graph of the HUM measurement.
Color according to checkmarks

7.2. Setup

Press  to change Voltmeter & Hum options.



- **Tuning:** Channel, Frequency.
- **Save datalog:** Saves the current scan measurements. You can see the datalogs using the remote control application.



8. Learning plan

Analyzes the input signal to the meter and automatically detects all channels.

This feature automatically identifies the channels as either analog or digital and performs measurements on each.

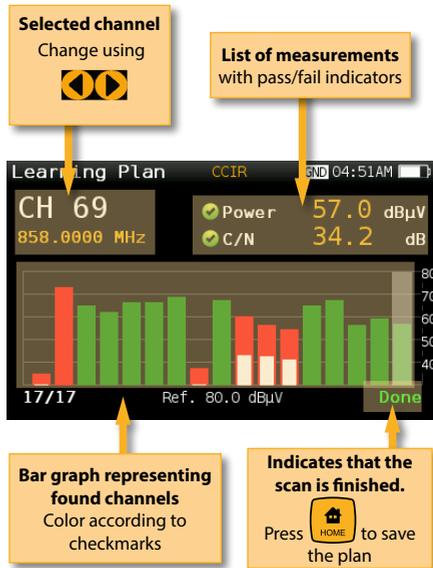
A bar graph is displayed with the height representing the power for digital channels and the level of the video carrier for the analog channels.

The measurements made for analog channels are video carrier level and V/A. For digital channels the measurements are power and C/N.

The analog channels will have an extra, smaller white bar indicating the level of the audio carrier.

8.1. Main window

Below is a capture of a Learning Plan window with a brief explanation of its features:



9. Ingress Scan

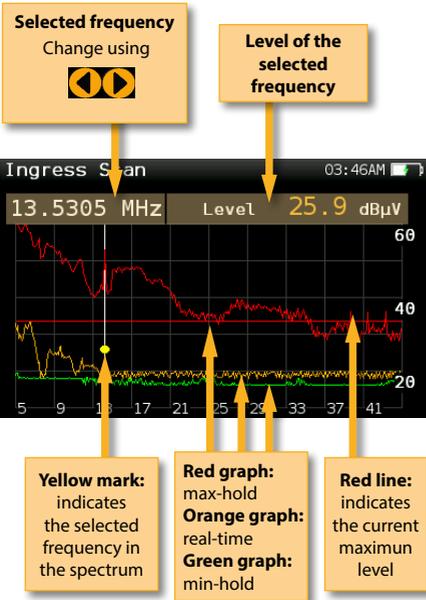
Help identify reverse path problems before your customers are affected.

Poorly shielded coaxial cable and faulty terminations are important sources of ingress noise which can easily add up in the return due to the large number of subscriber-generated signals that are sent back to the headend.

The combined and amplified interference is often responsible for service disruption, so having a good reverse path ingress scan tool is a must.

9.1. Main window

Below is a capture of an Ingress Scan window with a brief explanation of its features:



9.2. Setup

Press  to change Ingress Scan options.



- **Ingress frequencies:** 5-42 MHz, 5-66 MHz, 5-86 MHz, 5-206 MHz.

Select the span of the graph.

- **Ref. Level:** Select the reference level of the bar graph

- **Reset Data:** Delete the max-hold and min-hold graph



10. Speed Test

EN

Allows you to check your basic network performance parameters so you don't need to get your laptop out.

This function attempts to connect to the server (the server is selected automatically by the **H30+/D+/D+Adv** by location), checks the DHCP protocol and the connection to the Internet.

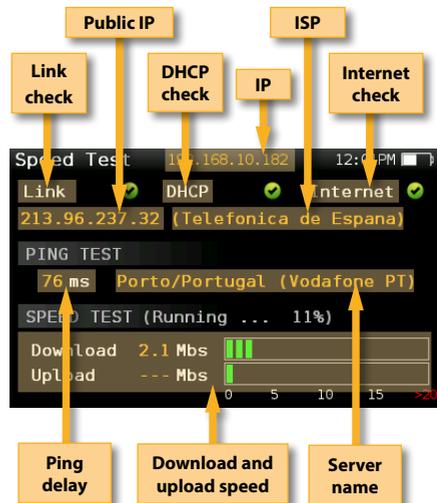
If it is all right, the **H30+/D+/D+Adv** makes a ping to the server and shows the delay times.

Finally, the **H30+/D+/D+Adv** makes a download and upload speed test.

To start a new test, press **OK** button.

10.1. Main window

Below is a capture of a Speed Test window with a brief explanation of its features:





11. MPEG

The **H30+/D+/D+Adv's** MPEG feature will show the image of the selected service.

11.1. Main window

Below is a capture of a MPEG window with a brief explanation of its features:

Selected channel
Change using

Press OK button to see the services list

11.2. Setup

Press to change the Channel info options.

- **Ter. Plan:** Selected Terrestrial plan.

- Volume

- **Info Service:** On/Off info about the Service.



12. LT Monitoring

The **H30+/D+/D+Adv's** Long Term Monitoring feature allows automatic monitoring of the selected channel. The user must select the time interval elapsed between two consecutive measurements shots. The **H30+/D+/D+Adv** automatically performs all the measurements on the selected channel and saves them in memory.

Once you enter the function, you must press the **OK** button to start measuring. The **H30+/D+/D+Adv** will measure and store all the measurements while the user does not leave the function.

12.1. Main window

Below is a capture of a LT Monitoring window with a brief explanation of its features:

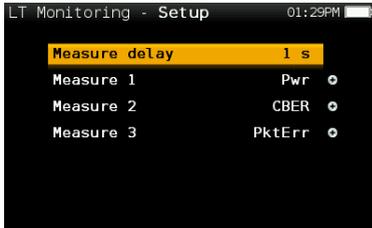
Selected channel
Change using

Graph showing the last 264 measurements, with color according to pass/fail indicators.

Last measurements.

12.2. Configuration

Press  to change LT Monitoring options.



- **Measure delay:** Select the time interval between two consecutive measure shots. Minimum value is 1 second.
- **Measure 1, 2, 3:** Allows select the three measures that the user wants to visualize in the main window:



11.1. List view

Wi-Fi network's name	Wi-Fi network's MAC	Wi-Fi protect access type	Power of each Wi-Fi access point's signal
Arantia hotel	64:d1:54:da:97:47	WPA2	-64dBm
dd-wrt	58:ef:68:4e:cf:4a	WPA2	-77dBm
G6 Santi	a8:b8:6e:46:d5:07	WPA2	-88dBm
GL - AR150 - 5ad	e6:95:6e:41:e5:ad	WPA2	-73dBm
Gsertel - Guest	12:da:43:c3:4a:d8	WPA2	-58dBm

You can go through the list using  and  and select one of the Wi-Fi networks to display it separately.

If a Wi-Fi network has multiple access points, you will see several networks with the same name. If you select one of them, you will separately all the access points of that network. The first one in the list is the one you are connected to, which is the one that has more signal power at that point.

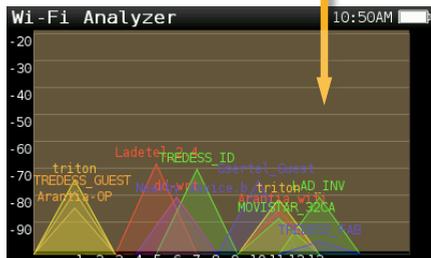


13. Wi-Fi Scan (H30D+Adv)

Analyzes the Wi-Fi band and automatically detects all the Wi-Fi networks, as well as their names and the power of the access point's signal.

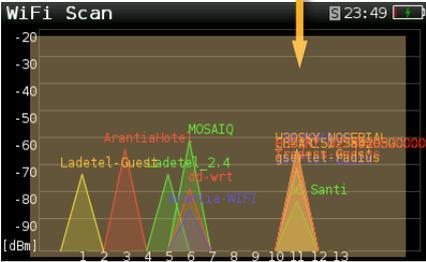
There are two different screens to display the information: List and Map.

Graph showing the wifi networks. Each triangle represents a network. The height of the triangle represents the power of the access point's signal.



11.2. Map view

Graph showing the wifi networks. Each triangle represents a network. The height of the triangle represents the power of the access point signal.



11.3. Setup

Press  to change the Wi-Fi Scan options.

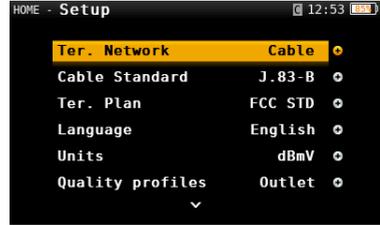


- **Band:** Select band to scan (2.4GHz, 5GHz or both)
- **Mode:** Selects between Map or List View
- **Sort:** Only in List View mode. Allows to select how to sort the Wi-Fi list: name, level, or channels
- **Save datalog:** Saves the current scan measurements. You can see the datalogs using the remote control application.



14. Setup

Change main configuration settings:



- **Ter. Network:** Aerial, Cable.
- **Cable Standard:** J.83-B / A.
- **Ter. Plan:** Selected Terrestrial plan.
- **Language:** English, Español.
- **Units:** dBμV, dBmV, dBm
- **Quality profiles:** Trunk, Tap, End Line, Ground.

Different thresholds are available for different testing locations.

- **Analog Standard:** Selects the standard for the analog channels and changes automatically the audio carrier to a value according to the selected standard.
- **Audio Carrier:** 4.5 MHz, 5.5 MHz, 6.0 MHz, 6.5 MHz.
- **Volume**
- **Network:**
 - Setup:** Manual, Auto.

When Setup Manual is selected, the user must set the IP, gateway and DNS.

 - Gateway**
 - IP**
 - DNS**
- **Wi-Fi :** Allows to connect the H30+/D+/D+Adv to a Wi-Fi network.
 - Wi-Fi:** On, Off
 - Scan:** When Wi-Fi is turned on, shows a list of all the found Wi-Fi networks.



As you can see in the image above, the list shows the name of the Wi-Fi networks and indicates if the network is open or restricted, as well as the protection access type.

To access to a restricted network, you must

enter the password using  and 

To verify the password, find a red square behind the last character of the password

and press 



If you connect a mobile device (such as a mobile phone, tablet, etc.) and your H30+/D+/D+Adv to the same Wi-Fi network, you can use your mobile device to control your **H30+/D+/D+Adv**. You just have to download the **H30+/D+/D+Adv** app (available for IOS and Android)

MAC: The MAC can be set automatically or user-selected

Setup: Auto, Manual

MAC: When Setup Manual is selected, the user must enter the MAC using

navigation buttons and



SSID: Shows the SSID of the H30+/D+/D+Adv

BSSID: Shows the SSID of the H30+/D+/D+Adv

IP: Shows the SSID of the H30+/D+/D+Adv

- **Units System:** Metric, Imperial

- **Time and Date:**

Set current time (hour and minutes) and date (day of the month, month and year).

- **Energy:**

Auto suspension

Auto shutdown

- **Update firmware:** ON, OFF

When ON, every time the **H30+/D+/D+Adv** is connected to the internet, it will allow the user to update the firmware if a new version is available.

- **Reset configuration:** Resets the meter to factory settings.

- **Licenses:** Shows the options included in you H30+/D+/D+Adv

- **About SW:** Shows the firmware version

- **About HW:** Shows the product reference number, serial number and IP address.

 IPTV

15. IPTV (H30D+Adv.)

This menu provides the necessary measurements and parameters to guarantee a correct reception of IPTV services.

12.1. IPTV functions

To achieve this, this menu has three functions:

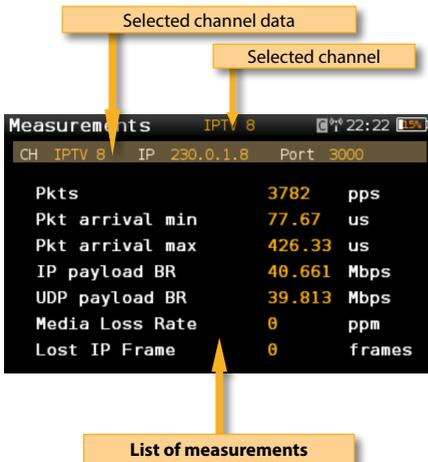


12.1.1. Measurements

This function shows all the necessary measurements of the selected IPTV channel.

12.1.1.1. Main Window

Below is a capture of a IPTV Measurements window with a brief explanation of its feature:



12.1.1.2. Setup

Press  to change IPTV Measurements options.



- **Channels:** Allows to change the selected IPTV channel.

- **Save Datalog:** Saves the current IPTV measurements. You can see the datalogs using the remote control application.



16. Echoes (H30D+Adv.)

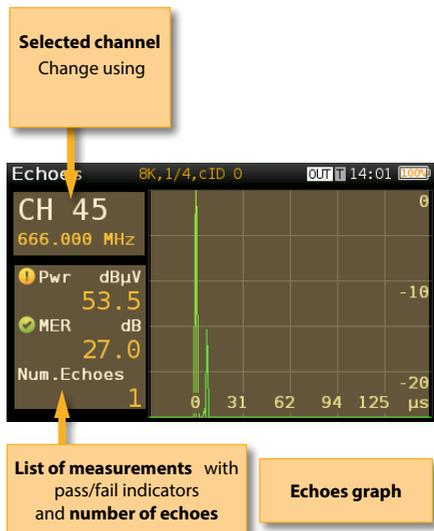
It is important to check that no echoes can cause problems in the reception of DVBT / T2 signals.

This feature you allows to visualize the echoes of the received signal, helping the installer to minimize them as much as possible for optimal signal reception.

In addition to the echoes graph, this function shows the channel power and MER measurements, as well as the FFT mode, the guard interval, and the Cell ID.

9.1. Main window

Below is a capture of a Ecos window with a brief explanation of its features:



List of measurements with pass/fail indicators and number of echoes

Echoes graph

8.2. Setup

Press  to change Echoes options.

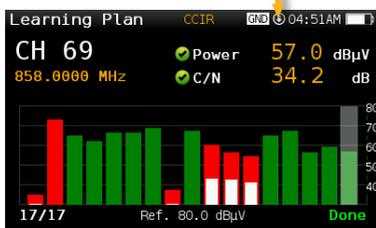


- **Powering:** Off, 13V, 18V, 24V.
- **Tuning:** Channel, Frequency
- **Units:** us, km

Firmware Update

Whenever your H30+/D+/D+Adv is connected to the internet, it will automatically check if there is a newer firmware version. If it is so, an arrow icon will appear at the top of the screen:

The icon with the arrows indicates that there is a new firmware version



If the user wants to update the firmware, please select function *Update firmware* in the *Setup* menu. If there is a new firmware version, a message will be displayed when the user selects this function:



Press OK button to automatically download and install the new firmware version.

Web Application

First of all, connect your H30+/D+/D+Adv to the network using the Ethernet connector or the Wi-Fi interface. Then you must find out the IP of your H30+ (see section 14.- *Setup - Network/Wi-Fi*).

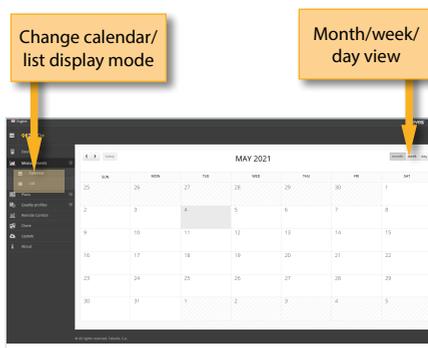
Then, type your H30+/D+/D+Adv IP in the address bar of your web browser and press Enter.

Then you can see the home window of the **H30+/D+/D+Adv** web application:

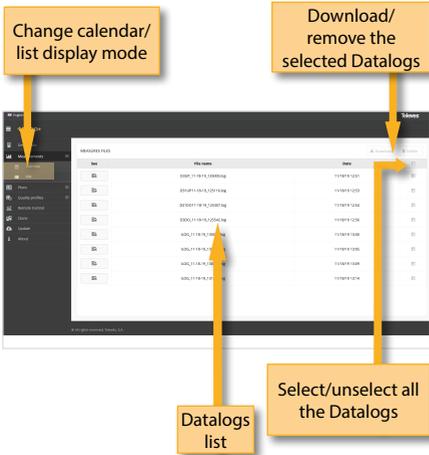


1. Measurements

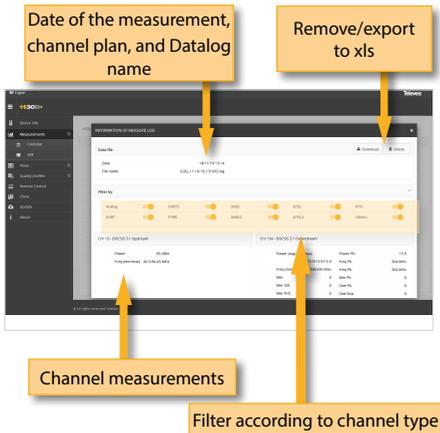
In this window, you can see all the datalogs saved in your H30+/D+/D+Adv. They are grouped by date in a calendar:



To change the display mode from calendar mode to list mode, just click on the corresponding button placed at the menu bar:



Using the buttons placed at the top right of the screen, you can remove the selected Datalogs or download them to your computer in .xls format (it will be generated a .xls file for each Datalog and they all will be downloaded together in a .zip file)
 Clicking on a Datalog of the list, the measurements of that Datalog will be displayed:



2. Plans

In this window, you can see all the channel plans of your H30+/D+/D+Adv.

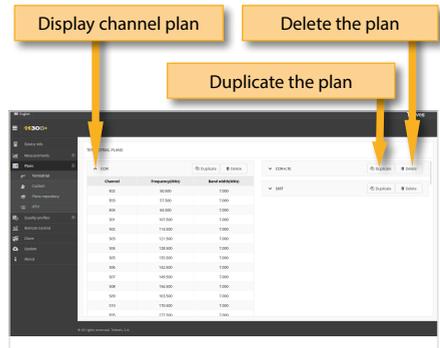
2.1.- Terrestrial and Customer Channel Plans

The channel plans are grouped in three categories: Terrestrial and Customer.

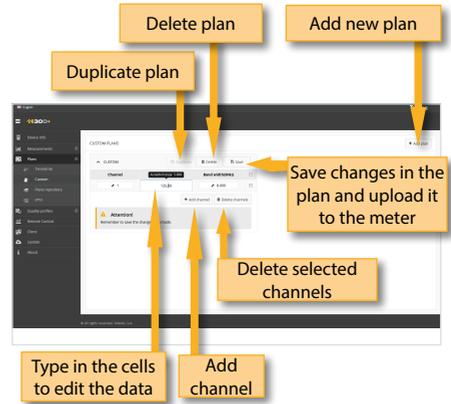
The default Terrestrial channel plans are the standard channel plans.

These plans can be removed from the meter, but they can not be edited. However, you can make a copy of one of them to build a new customer channel plan from it.

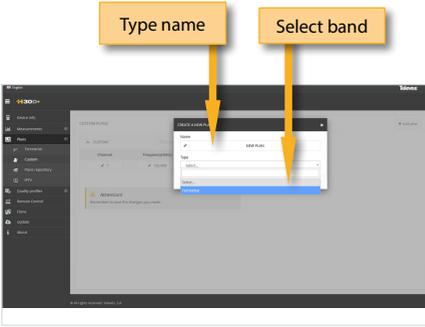
The duplicated plans will appear in the Customer list automatically.



The customer channel plans can be edited:



You can create a new channel plan from an existing one by clicking on the corresponding button. Or you can start from scratch, by clicking on the "New custom plan" button:



2.2.- Plans repository

The application also allows to configure the channel plans according to the geographic area you will use the meter. When you turn the meter on for the first time, you must select the language and then you must select the geographic area. So, the channel plans corresponding to that area will be available in your H30+/D+/D+Adv. But the user may add other standard channel plans corresponding to other geographic areas (this is specially helpful for those places located near the frontier between two areas). To do that, click on the "Channel plan repository" button :

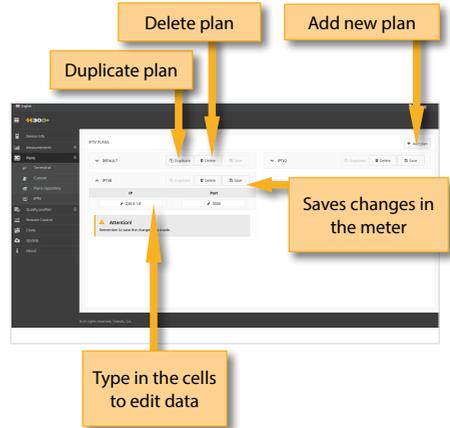


The channel plans added from the repository will

be uploaded to your H30+/D+/D+Adv, but none of the channel plans in your meter will be removed.

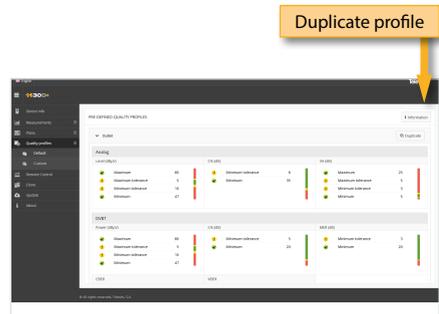
2.4.- IPTV

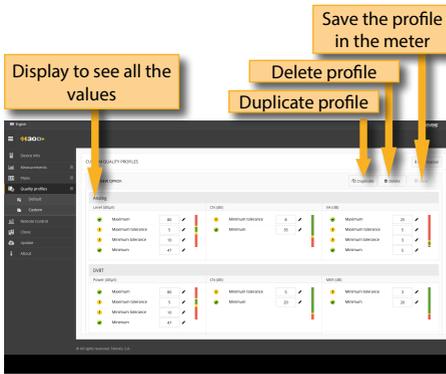
Using this function, the user can create and edit IPTV channels plans. Each channel plan has only one plan, indicating the IP address and the port for each channel:



3. Quality Profiles

Using the web application you can add new quality profiles. The H30+/D+/D+Adv has two pre-defined quality profiles (head-end and outlet) that can not be edited, but they can be duplicated. The duplicated quality profiles are saved in the custom quality profiles, and the custom quality profiles can be edited.





file on your computer.

Then, connect other H30+/D+/D+Adv where you want to copy the configuration to and select the Import feature.



4. Multiscreen

Using this feature you can control your H30+ remotely. For this to work, it is necessary that the H30+/D+/D+Adv and the computer are connected to the same LAN.

To access to this feature you must enter the password admin in the right top part of the window. Then you will see the screen of the H30+/D+/D+Adv in your computer:



6. Update

In this section you can update the firmware of your H30+/D+/D+Adv , as well as install new licenses in your meter.

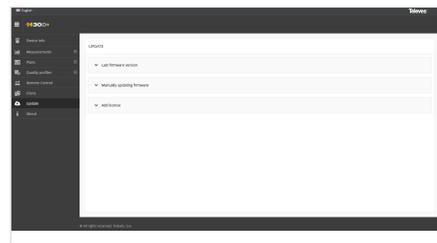
If your H30+/D+/D+Adv is connected to the internet, the system will detect automatically if your meter is already updated by clicking on “Last firmware version”. If it is not, then you can download the new version and install it automatically from this menu.

If you get the update file from your distributor, you can install it on your H30+/D+/D+Adv by clicking on “Manually updating firmware”.

Same with licenses: if your H30+/D+/D+Adv is connected to the internet, it will detect new purchased licenses automatically when you turn it on, and will install them automatically. But if you get the licenses from your distributor, you can install them in your device by clicking on “Add license”.

5. Clone

Using this feature it is very easy to have the same configuration in all your H30+/D+/D+Adv meters. You only have to export the configuration of the H30+/D+/D+Adv that you want to copy, using the Export feature. This configuration will be saved to a



Maintenance

Always disconnect the unit before cleaning. Use only a mild solution of detergent and water applied with a soft damp cloth. Dry thoroughly before use.

Do not use aromatic hydrocarbons or chlorinated solvents. These products may damage the unit.

Do not use alcohol or alcohol based products on the front panel, especially the display. These products may damage the unit.

Technical support

For any questions, contact Technical Support at www.televes-usa.com.

Before contacting Technical Support for repair, read the manual to ensure proper use and attempt to RESET the unit to clear any problems.

Repair service

Do not return the unit without first contacting Televes Technical Support.

If the unit needs to be returned, Televes will arrange for free shipping. The unit will need to be appropriately packed for shipping.

In compliance with IATA Regulations, when using our shipping service follow these instructions:

- ▶ Label the package.
- ▶ The equipment should fit as snugly as possible in the box. It is recommended to use the original packing materials.
- ▶ Attach the precaution label to the package.



Failure to comply with these shipping requirements may result in the shipping agent rejecting the package.

Warranty

- A) Televes warrants, only to the original Purchaser, all Products be free from any defect in materials or workmanship for a period of one (1) year, six (6) months for the battery, from the date of original purchase, unless otherwise specified.
- (B) Televes shall, free of charge and in its sole discretion, either repair, replace with a new or factory reconditioned equivalent, or refund the purchase price of the Product(s), that has been determined by Televes to be defective in material or workmanship, subject to the limits of this warranty.
- (C) This warranty excludes any inoperability resulting from:
- (I) use or installation that is not in strict compliance with the written instructions and specifications;
 - (II) any modification or alteration performed by any third party not authorized in writing by Televes;
 - (III) service or repair performed by any third party not authorized in writing by Televes;
 - (IV) misuse, abuse, intentional harm, or lack of reasonable care;

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