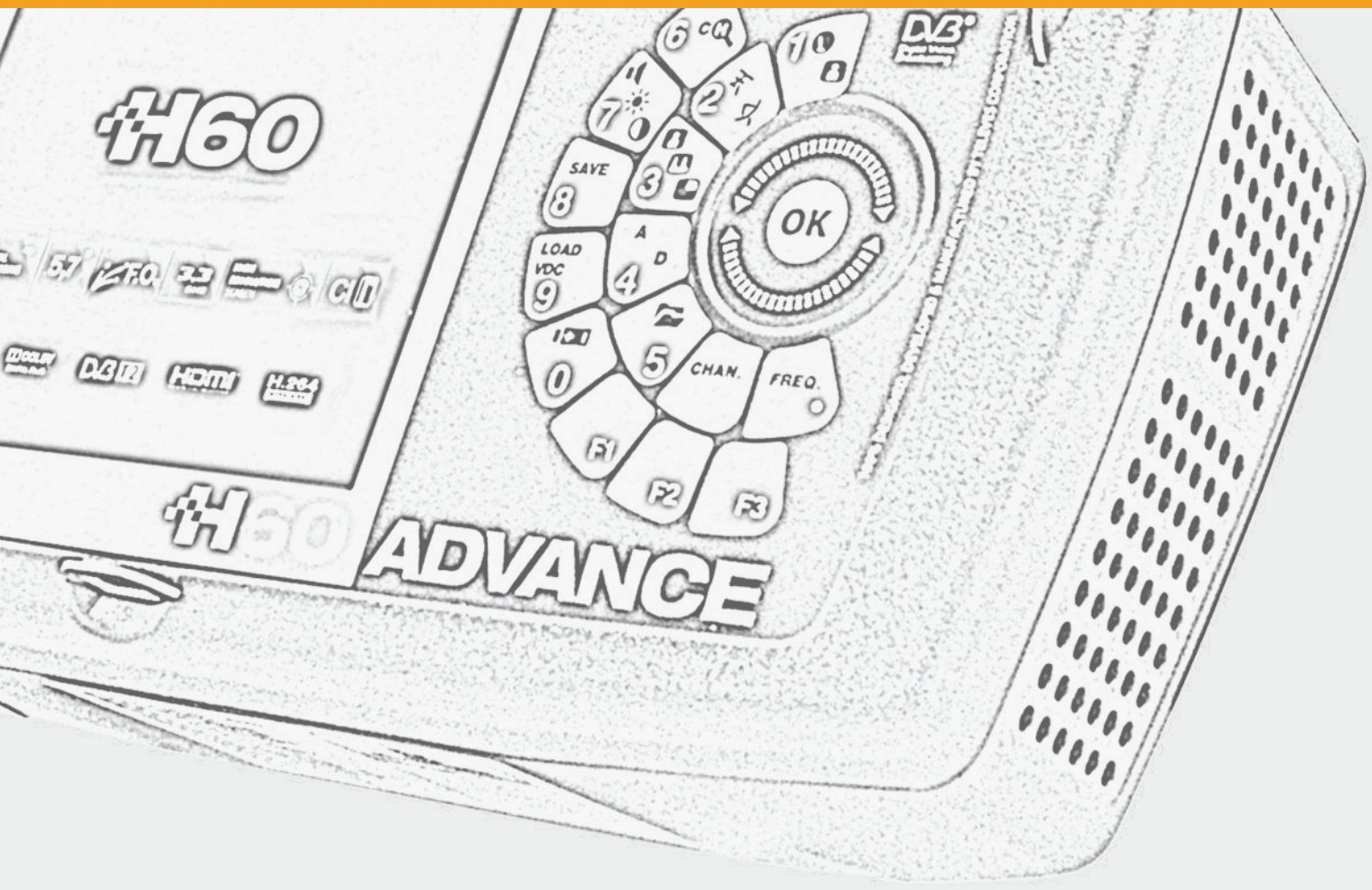
Televes

MEASUREMENT EQUIPMENT

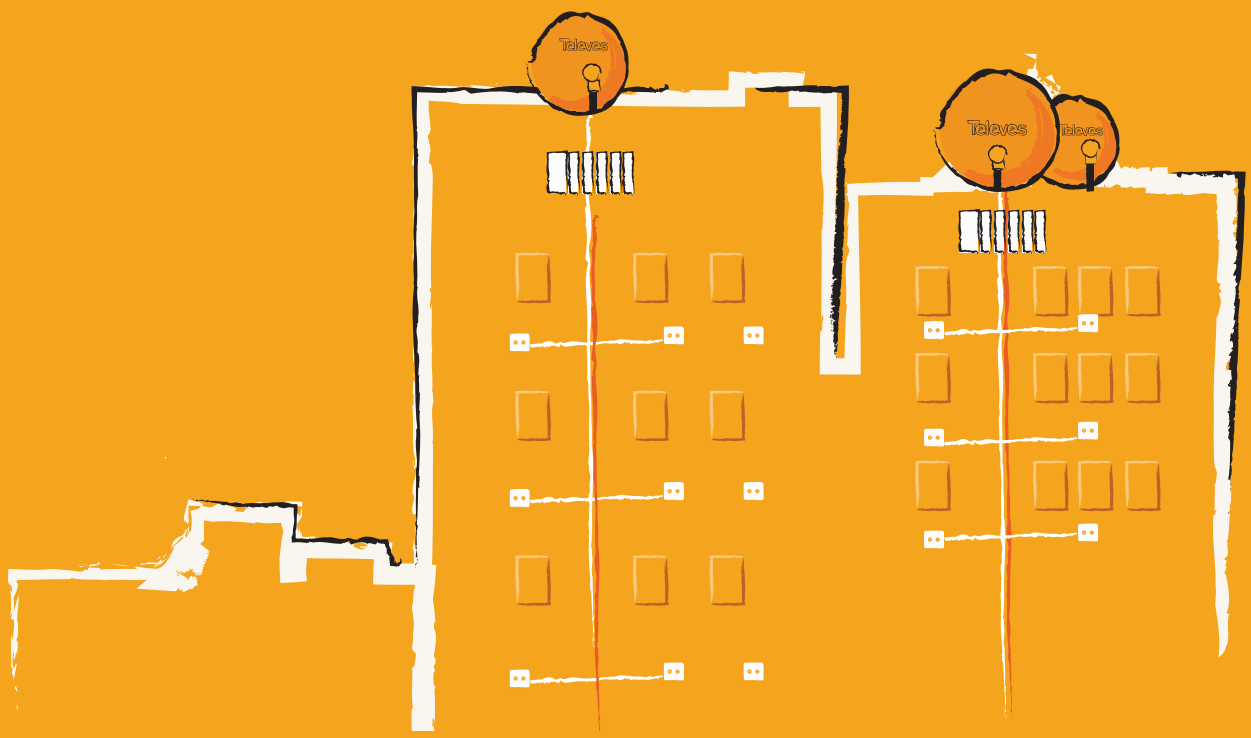


SYSTEM ANALYZERS
H-SERIES

Thanks to their state of the art digital processing technology, Televes' system analyzers provide real-time analysis that ensures unrivaled speed and lab-quality precision in every measurement.

- **Upgradeability:** the basic models can be upgraded with advanced features.
- **Dependability:** total accuracy in every measurement.
- **Long battery life:** over 4 hours on a full charge.
- **Intuitive user interface:** their clever menu structure reduces the learning curve.
- **Ergonomic design:** light and easy to handle.

Their best-in-class spectrum analyzer, features like the Combo Mode, Optical Interface or their multi-standard, multi-function capabilities make the H45 and H60 the most exclusive meters in the market.



SYSTEM ANALYZERS **H-SERIES**

H45 COMPACT

QR-A00207

H45 COMPACT's real-time digital processing engine is the foundation for its affordable yet powerful set of features.

MAIN FEATURES

- **Scan & Log.**
- **UAL** (Universal Auto Lock).
- **QAL** (QPSK auto lock).
- Real time **Combo** mode.
- **Pass/Fail Indicators.**
- Exceptional dynamic range and sensitivity: 50dB(TERR/CATV)/45dB(SAT).
- Fiber Optics interface (optional).

PROFESSIONAL-GRADE SPECTRUM ANALYZER

- MAX/min **Hold function**.
- 1 Marker.
- **Automatic satellite identificator**.

WORKFLOW AUTOMATION

- 250 memory slots.
- **Datalogs**.
- **Instant Logs.**

DECODING AND MEASUREMENTS

- Automatic C/N measurement.
- **COFDM** echoes measurement (optional).
- **FTA SD decoding.**
- **FTA HD decoding** (optional).

REF.	DESCRIPTION
BASE MODEL	
5990	H45 COMPACT
PREMIUM MODELS	
599001	H45 COMPACT + Full HD (Ref. 5990+5991+5997)
599002	H45 COMPACT+ Full HD+CI (Ref. 5990+5991+5997+5998)
599003	H45 COMPACT + FO (Ref. 5990+5999)
599004	H45 COMPACT+ Full HD + FO (Ref. 5990+5991+5997+5999)
599005	H45 COMPACT + Full HD + selective FO (Ref. 5990+5991+5997+599902)
OPTIONS	
5991	HD measurements: DVB-S2, DVB-T, DVB-C
5997	H.264 Full HD decoder (Ref. 5991 required)
5998	Common Interface (CI) (Refs. 5991 + 5997 required)
5999	Fiber Optics interface
599902	Selective Fiber Optics Interface Full HD unit required (Refs. 5991 + 5997)
5994	H45 ADVANCE upgrade (Ref. 5991 required)
5909	Certified H-Series calibration
ACCESSORIES	
5995	Weatherproof bag

▲ 5995

H45 ADVANCE

QR-A00208

The ADVANCE models add more features to the COMPACT models, such as:

MAIN FEATURES

- **Scan & Log.**
- **UAL** (Universal Auto Lock).
- **QAL** (QPSK auto lock).
- Real time **Combo** mode.
- **Pass/Fail Indicators.**
- Extended dynamic range: 60dB(TERR)/55dB(SAT).
- Fiber Optics interface (optional).
- SPAN settings down to 100kHz.
- RBW settings down to 100kHz.

PROFESSIONAL-GRADE SPECTRUM ANALYZER

- **Continous band.**
- MAX/min **Hold function**.
- 3 Markers.
- **Automatic satellite identificator**.
- **Spectrum Zoom**.
- Two **trace** display.
- User-configurable VBW.

WORKFLOW AUTOMATION

- 1000 memory slots.
- SD card.
- **Datalogs**.
- **Instant Logs.**
- **Graph Logs.**

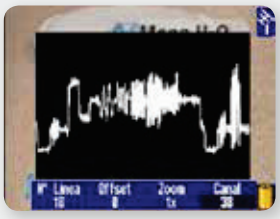
DECODING AND MEASUREMENTS

- Automatic C/N measurement.
- Sync pulse representation.
- **Line** C/N.
- **COFDM** echoes representation
- **DVB-T2** measurements (optional).
- **FTA SD decoding.**
- **FTA HD decoding** (optional).

Weatherproof bag included

REF.	DESCRIPTION
BASE MODEL	
5992	H45 ADVANCE
PREMIUM MODELS	
599201	H45 ADVANCE + Full HD (Ref. 5992+5997)
599202	H45 ADVANCE+ Full HD+CI (Ref. 5992+5997+5998)
599203	H45 ADVANCE + FO (Ref. 5992+5999)
599004	H45 ADVANCE + Full HD + CI + FO (Ref. 5992+5997+5998+5999)
599205	H45 ADVANCE + Full HD + CI + selective FO (Ref. 5992+5997+5998+599902)
OPTIONS	
598901	DVB-T2 (Ref. 5997 required)
598902	3.3GHz Spectrum Analyzer
5997	H.264 Full HD decoder
5998	Common Interface (CI) (Ref. 5997 required)
5999	Fiber Optics interface
599902	Selective Fiber Optics Interface Full HD unit required (Ref. 5997)
5909	Certified H-Series calibration

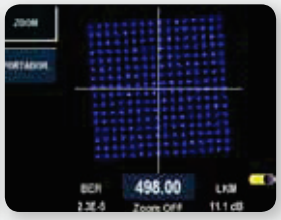
Line C/N



H.264 video display

CAM module

DVB-T2



SYSTEM ANALYZERS **H-SERIES**

MODEL			COMPACT						ADVANCE					
Reference			5990	599001	599002	599003	599004	599005	5992	599201	599202	599203	599204	599205
MAIN FEATURES	Digital Processing Technology		✓						✓					
	Scan & Log w/ automatic channel identification	Terrestrial / CATV	✓						✓					
		Satellite	✓						✓					
	Universal Auto Lock. DVB-T, DVB-C, DVB-S&S2		✓						✓					
	Q.A.L. (QPSK Auto Lock)		✓						✓					
	Interfaces		USB & SCART						SD card					
	USB SW update		✓						✓					
	Latest version HW & SW		✓						✓					
	Thumbwheel navigation		✓						✓					
	Satellite frequency selection		IF, real RF, channel and memory											
	Units		dBµV, dBmV, dBm, dBµV/m											
	Power-saving auto shut off (1- 59 min.)		✓						✓					
	Power-saving auto suspended mode (1- 59 min.)		✓						✓					
	Languages		English, Spanish, German, French, Italian, Portuguese, Russian, Polish											
	Menu and measurement display		On-Screen-Display (OSD)											
	Teletext		Analog & Digital											
	One screen measurements		✓						✓					
	Pass/Fail Indicators		✓						✓					
	Real-time COMBO mode		✓						✓					
	Dynamic Range	Terrestrial / CATV	50 dB						60 dB					
		Satellite	45 dB						55 dB					
	Fiber Optics Interface		Opc. 5999			✓		✓ selective	Opc. 5999			✓		✓ selective
	HDMI output		–	✓	✓	–	✓		–	✓	✓	–	✓	
SPECTRUM ANALYZER	SPAN	Terrestrial / CATV	5, 10, 20, 50, 100, 200, 500 MHz & FULL						100, 200, 500 kHz; 1, 2 MHz; 1, 1.5 & 2 GHz & FULL					
		Satellite	5, 10, 20, 50, 100, 200, 500 MHz & FULL						100, 200, 500 kHz; 1, 2 MHz; 1, 1.5 & 2 GHz & FULL					
	RBW	Terrestrial / CATV	100, 200, 800 y 3200 kHz User-selectable: No Automatic: Yes						User-selectable: 300 Hz to 6.4 MHz					
		Satellite	200, 800 & 3200 kHz User-selectable: No Automatic: Yes											
	BER measurement in spectrum mode		–						✓					
	Vertical scale (dB/div)		Selectable: 5 & 10 dB						Selectable: 1, 2, 5, 10 dB					
	Overload alarm		✓						✓					
	Real time sweeping speeds		< 250 ms						< 10 ms					
	Display refresh		< 250 ms						< 100 ms					
	MAX/min hold mode		✓						✓					
	Markers		1						3					
	Spectrum analyzer Zoom		–						✓					
	Two trace display		–						✓					
	Event trigger		–						✓					
	Background noise display		✓						✓					
	Digital Signal sampling detectors		–						✓					
	User-selectable VBW		–						✓					
	Automatic satellite ID		✓						✓					
WORKFLOW AUTOMATION	Memories		250						1000					
	Macros		100 macros w/ 250 memories each											
	Datalogs		✓						✓					
	Log capacity		Up to 30,000											
	SD card		–						✓					
	Outlet type selection		✓						✓					
	Installation/Outlet datalog classification		✓						✓					
	Instant Logs		✓						✓					
	Graph Logs		–						✓					
HSuite	Data Logger		✓						✓					
	Graph Logger		–						✓					
	Pass/Fail indicators configuration		✓						✓					

SYSTEM ANALYZERS **H-SERIES**

MODEL			COMPACT						ADVANCE					
Reference			5990	599001	599002	599003	599004	599005	5992	599201	599202	599203	599204	599205
BANDS	Return channel (5-47 MHz): DVB-T, DVB-C & analog		–						✓ 5 to 2,500 MHz continuous band					
	Terrestrial/CATV (47-880 MHz): DVB-T, DVB-C, DVB-H & analog		✓											
	FM radio (80-110 MHz)		✓											
	GSM (880-950 MHz): Spectrum mode measurements		–											
	Satellite (950-2,220 MHz): DVB-S & DVB-S2		DVBS2 HD 5991 Opt.	✓	DVBS2 HD 5991 Opt.									
	Wi-Fi (2,220-2,500 MHz): Spectrum mode measurements		–											
	Extended spectrum analyzer (2,500 - 3,300 MHz)		–						598902 Opt.					
ANALOG MEASUREMENT	Color-coded level scale		✓						✓					
	Level and C/N triggered audio alarm		✓						✓					
	V/A & C/N readings (while displaying video)		C/N 45 dB						C/N 52 dB					
	Sync pulse representation		✓(Terrestrial)											
	Video line representation		–						✓					
	Automatic C/N		✓						✓					
	Line C/N		–						✓					
	Standards		PAL B/G, D/K, I, SECAM B/G, D/K, L, NTSC											
	Input range		-15 to 130 dBµV											
DIGITAL MEASUREMENTS	Power level		-15 to 130 dBµV											
	Automatic C/N		✓						✓					
	Referenced C/N		–						in spectrum mode					
	Level and C/N triggered audio alarm		✓						✓					
	COFDM echoes representation		HD 5991 Opt.	✓	DVBS2 HD 5991 Opt.				✓					
	QAM, DVB-S2 (8PSK or QPSK) & COFDM constellation display								✓					
	Packet Error Rate		–						✓					
	NICAM		–						✓					
	DVB - T2		–						598901 Opt.					
	DVB-C	BER	9.9E-2 to 1.0E-8											
		MER	> 38 dB											
		Auto Att.	✓						✓					
		PWR	40 to 125 dBµV											
		Symbol Rate	AUTO, (700 to 7200 kbaud)											
	DVB-T	cBER	9.9E-2 to 1.0E-6											
		vBER	1.0E-4 to 1.0E-8											
		MER	> 35 dB											
		PWR	40 to 125 dBµV											
		Automatic offset detection	✓						✓					
	DVB-S (w/ Q.A.L. technology)	cBER	1.0E-2 to 1.0E-6											
		vBER	1.0E-4 to 1.0E-8											
		MER	✓						✓					
		PWR	40 to 120 dBµV											
		Symbol Rate	AUTO, 1 to 45 Mbaud											
		Code Rate	AUTO, 2/3, 3/4, 5/6, 7/8, 1/2											
	DVB-S2	Link Margin	HD 5991 Opt.	✓	HD 5991 Opt.				(-8.3) to 20 dB					
		cBER							1.0E-2 to 1.0E-8					
		BCH BER							5.0E-2 to 1.0E-8					
		MER							✓					
		Auto Att.							✓					
		PWR							40 to 120 dBµV					
		Symbol Rate							AUTO, 1 to 30 Mbaud					
		Code Rate							AUTO (supporting 1/4, 1/3, 2/5, 3/5, 1/2, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10)					
MPEG	Free-to-Air MPEG-2 SD decoder		✓						✓					
	Free-to-Air H.264 HD decoder up to 1920×1080p (Full HD)		5997 Opt.	✓	✓	5997 Opt.	✓		5997 Opt.	✓	✓	5997 Opt.	✓	
	Number of services, selected service, audio services		✓						✓					
	NID, VPID, APID, SID (w/ Network Descriptor)		✓						✓					
	Video resolution, audio type, language		✓						✓					
	HD identification		✓						✓					
	CAM module (MPEG-2 only)		5998 Opt.		✓	5998 Opt.			5998 Opt.		✓	5998 Opt.		✓
LNB FEED	Power feed w/extra burst (14, 19.5V to compensate long cable runs)		13/18/24 V - 13 + 1/18 + 1/24 V (Extra Burst)											
	22 kHz tone switch		✓						✓					
	DiSEqC & SCR		✓						✓					
	Motor control		–						✓					
BATT.	Type / Autonomy		Litio-ION (over 4h from a full charge on low consumption mode)											
	Energy management: Normal, Low Consumption & Auto		✓						✓					
	Battery status indicator (w/ screen icon and audio beep)		✓						✓					

SYSTEM ANALYZERS **H-SERIES**

H60 ADVANCE

QR-A00209

Televes launches its newest masterpiece with substantial enhancements and state-of-the-art new features, now presented in a larger and much brighter screen.:

MAIN FEATURES

- 640x480 resolution screen.
- **Scan & Log.**
- **UAL** (Universal Auto Lock).
- **QAL** (QPSK auto lock).
- Real time **Combo** mode.
- **Pass/Fail Indicators.**
- Exceptional dynamic range and sensitivity: 60dB(TERR/CATV)/55dB(SAT).
- Fiber Optics interface (optional).
- SPAN settings down to 100kHz.
- RBW settings down to 200Hz.
- **Ethernet** remote control / measurements (optional).
- **HDMI** output

PROFESSIONAL-GRADE SPECTRUM ANALYZER

- **3.3GHz** continuous band.
- MAX/min **Hold function**.
- 3 Markers.
- **Automatic satellite identificator**.
- **Spectrum Zoom**.
- Two **trace** display.
- User-configurable VBW.

WORKFLOW AUTOMATION

- 1000 memory slots.
- SD card.
- **Datalogs**.
- **Instant Logs.**
- **Graph Logs.**

DECODING AND MEASUREMENTS

- Automatic C/N measurement.
- Sync pulse representation.
- **Line** C/N.
- **COFDM** echoes representation
- **DVB-T2** measurements (optional).
- **FTA SD decoding.**
- **FTA HD decoding** (optional).
- **CATV tools**: TILT, RF Attenuation, HUM, CTB/CSO.
- Multi-window selective optical measurements.

see it **Clearer**

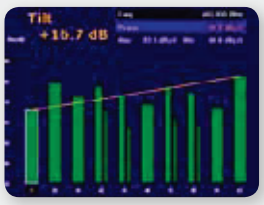
www.televesh60.com

Weatherproof bag included

REF.	DESCRIPTION
BASE MODEL	
5960	H60 ADVANCE (Full HD + CI + F.O. + 5...3.3GHz spectrum anal.)
PREMIUM MODELS	
596005	H60 ADVANCE (Full HD + CI + selective F.O. + 5...3.3GHz spectrum analyzer)
***USA* MODELS**	
596001	H60 ADVANCE (Full HD + 5...3.3GHz spectrum analyzer)
596002	H60 ADVANCE (Full HD + F.O. + 5...3.3GHz spectrum analyzer)
OPTIONS	
598901	DVB-T2
599902	Selective Fiber Optics Interface
598903	Ethernet remote control and measurements
5909	Certified H-Series calibration

RF Attenuation screen

Tilt screen



Constellation display

SCAN & LOG

SYSTEM ANALYZERS **H-SERIES**

AN ALL-NEW SYSTEM ANALYZER

H60

with Digital Processing

Unrivaled speed and lab-quality precision in all your measurements...

...now presented in a larger and much brighter screen.

Leave your H60 connected to your headend, node or anywhere in your HFC distribution network **and control the unit and measure signals and quality parameters remotely**

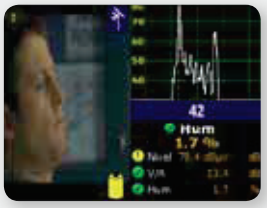
Tilt screen, RF attenuation measurements, H.264 with C.I., Full HD video on the screen, Selective optical interface, HDMI output, DVB-T2 demodulator, 5.7" high resolution screen, Real-time Digital Processing

Once finished, export the results to your computer using the included **HSuite** software.

DVB-T2 measurements

3.3GHz spectrum

HUM measurement



CSO/CTB measurements

SYSTEM ANALYZERS **H-SERIES**

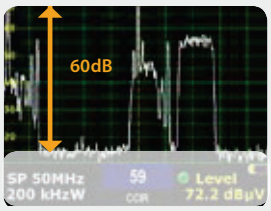
Spectrum Analyzer

- **Exceptional Dynamic Range and Sensitivity.** Up to 60dB, allows testing weak and strong signals with equal accuracy.
- **100kHz resolution.** Digital filters down to 300Hz and frequency resolutions of 100kHz allow the installer to study every possible nuance or impairment in the signal.
- **Spectrum Zoom.** Dig deep, without losing sight of the big picture.
- **Event triggers and hold mode.** Easy detection of quick pulsing signals.
- **3.3GHz extended range.** Test any desired or interfering signal up to 3.3GHz. Ideal for troubleshooting broadcast and wireless networks.
  - WIMAX.
  - LTE channels.
  - Peaking of optical-LNB and stacking-LNB systems.

LTE Band	Transmission Mode	Uplink (MHz)	Downlink (MHz)
BAND-7	FDD (frequency divison duplex)	2,500 ... 2,570	2,620 ... 2,690
BAND-38	TDD (time division duplex)	2,570 ... 2,620	2,570 ... 2,620

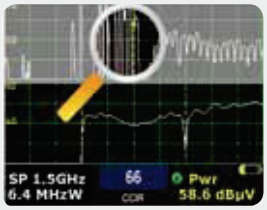
Example of LTE channels over 2,200 MHz

Exceptional Dynamic Range

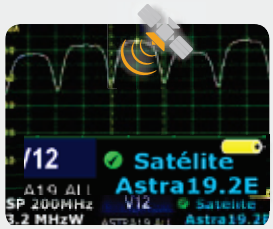


100kHz narrow SPAN

Spectrum Zoom

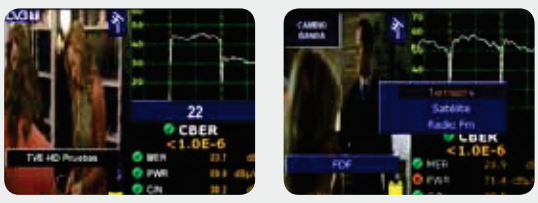


Satellite ID



Combo Mode

- **Full-HD picture on screen, spectrum, measurements and pass/fail indicators** in one single screen updated in real time.
- **All the signal information** you need, in plain sight.
- **Completely automatic** input signal parameter detection and measurement with **no setup needed.**

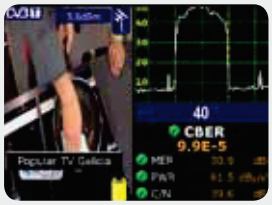


Fiber Optics Interface

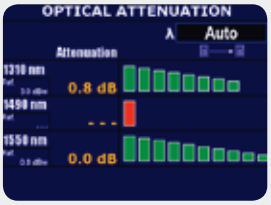
- Certification of **FTTx networks.**
- Multi-window **optical power measurement** in every screen (dBm or mW).
- **Optical attenuation** - When paired with the OPS3L it automatically measures the optical attenuation budget over 1310nm, 1490nm and 1550nm.
- **Optical Interface with built-in receiver** - Demodulation, visualization of HDTV pictures and measurement of all the TV signal quality parameters directly over fiber.

Configuration

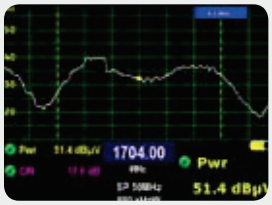
Optical power reading



Optical attenuation

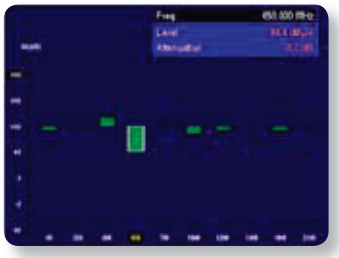


Built-in optical receiver



RF Attenuation Measurements

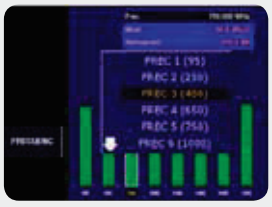
- **Attenuation graphical representation** in up to 10 different channel/frequencies.
- **Transform your H60 into a field network analyzer:**
  RF ATTENUATION + NOISE GENERATOR (Ref. 5930)
- User-selectable parameters:
  - Reference signal calibration.
  - Display mode.
  - # of frequencies/channels.
  - Channel/frequency selection.
  - Reference level configuration.
  - Vertical scale (dB/div) selection.



Calibration

Display mode

Frequencies



Reference level

SYSTEM ANALYZERS **H-SERIES**

Reference			5960	596005
MAIN FEATURES	Digital Processing Technology		✓	
	Scan & Log w/ automatic channel identification	Terrestrial / CATV	✓	
		Satellite	✓	
	Universal Auto Lock. DVB-T, DVB-C, DVB-S&S2		✓	
	Q.A.L. (QPSK Auto Lock)		✓	
	Interfaces		HDMI, USB, SD card, Mini-DIN, CAM, FC/APC (F.O.)	
	USB SW update		✓	
	Latest version HW & SW		✓	
	Thumbwheel navigation		✓	
	Satellite frequency selection		IF, real RF, channel, and memory	
	Units		dBµV, dBmV, dBm, dBµV/m	
	Power-saving auto shut off (1- 59 min.)		✓	
	Power-saving auto suspended mode (1- 59 min.)		✓	
	Languages		English, Spanish, German, French, Italian, Portuguese, Russian, and Polish	
	Menu and measurement display		On-Screen-Display (OSD)	
	Teletext		Analog & Digital	
	One screen measurements		✓	
	Pass/Fail Indicators		✓	
	Real-time COMBO mode		✓	
	Dynamic Range	Terrestrial / CATV	60 dB	
		Satellite	55 dB	
	Fiber Optics Interface		✓	
	HDMI output		✓	
	Ethernet remote control and measurements		598903 opt.	
SPECTRUM ANALYZER	SPAN	Terrestrial / CATV	100, 200, 500kHz, 1, 2, 5, 10, 20, 50, 100, 200, 500 MHz, 1, 1.5, 2GHz & FULL	
		Satellite	100, 200, 500kHz, 1, 2, 5, 10, 20, 50, 100, 200, 500 MHz, 1, 1.5, 2GHz & FULL	
	RBW	Terrestrial / CATV	300, 600Hz, 1.5, 3, 6, 12, 24,100, 200, 400, 800kHz, 1.6, 3.2MHz	
		Satellite	200, 400, 800KHz, 1.6, 3.2MHz	
	BER measurement in spectrum mode		✓	
	Reference level		User-selectable: 1, 2, 5, and 10 dB	
	Overload alarm		✓	
	Real time sweeping speeds		< 10 ms	
	Display refresh		< 100 ms	
	MAX/min hold mode		✓	
	Markers		3	
	Spectrum analyzer Zoom		✓	
	Two trace display		✓	
	Event trigger		✓	
	Background noise display		✓	
	Digital Signal sampling detectors		✓	
	User-selectable VBW		✓	
	Automatic satellite ID		✓	
WORKFLOW AUTOMATION	Memories		1000	
	Macros		100 macros w/ 250 memories each	
	Datalogs		✓	
	Log capacity		Up to 30,000	
	SD card		✓	
	Outlet type selection		✓	
	Installation/Outlet datalog classification		✓	
	Instant Logs		✓	
	Graph Logs		✓	
HSuite	Data Logger		✓	
	Graph Logger		✓	
	Pass/Fail indicators configuration		✓	
BANDS	Return channel (5-47 MHz): DVB-T, DVB-C & analog		✓ 5 to 3,300 MHz continuous band	
	Terrestrial/CATV (47-880 MHz): DVB-T, DVB-C, DVB-H & analog		✓ DVB-T2 598901 opt.	
	FM radio (80-110 MHz)		✓	
	GSM (880-950 MHz): Spectrum mode measurements		✓	
	Satellite (950-2,220 MHz): DVB-S & DVB-S2		✓	
	Wi-Fi (2,220-2,500 MHz): Spectrum mode measurements		✓	
	Extended spectrum analyzer (2,500 - 3,300 MHz)		✓	
ANALOG MEASUREMENTS	Level		✓	
	Level and C/N triggered audio alarm		✓	
	Automatic C/N		C/N 52 dB	
	Line C/N		✓	
	Field Strength		✓	
	Automatic C/N		✓	
	CTB/CSO		✓	
	HUM		✓	
	Sync pulse representation		✓(Terrestrial)	
	Video line representation		✓	
	Standards		PAL B/G, D/K, I, SECAM B/G, D/K, L, NTSC	
	Input range		-15 to 130 dBµV	

SYSTEM ANALYZERS **H-SERIES**

Reference			5960	596005
DIGITAL MEASUREMENTS	Power level		-15 to 130 dBµV	
	Automatic C/N		✓	
	Referenced C/N		✓	
	Level and C/N triggered audio alarm		✓	
	COFDM echoes representation		✓	
	Constellation display: DVB-T (user-selectable carrier), DVB-T2 (598901 opt.), DVB-C, DVB-S2 (8PSK or QPSK)		✓	
	Packet Error Rate		✓	
	NICAM		✓	
	DVB-T	cBER	9.9E-2 to 1.0E-6	
		vBER	1.0E-4 to 1.0E-8	
		MER	> 35 dB	
		PWR	40 to 125 dBµV	
		Automatic offset detection	✓	
	DVB-T2 (598901 only)	Link Margin	-1 to 10dB	
		LDPCBER	1.0E-2 to 1.0E-6	
		BCHBER	9.9E-2 to 1.0E - 8	
		MER	> 35dB	
		PWR	40 to 120 dBµV	
		Automatic offset detection	✓	
	DVB-C	BER	9.9E-2 to 1.0E-8	
		MER	> 38dB	
		AUTO Attenuation	✓	
		PWR	40 to 125 dBµV	
		Symbol Rate	AUTO, (700 to 7200 kbaud)	
	DVB-S (w/ Q.A.L. technology)	cBER	1.0E-2 to 1.0E-6	
		vBER	1.0E-4 to 1.0E-8	
		MER	✓	
		PWR	40 to120 dBµV	
		Symbol Rate	AUTO, from 1 to 45 Mbaud	
		Code Rate	AUTO, 2/3, 3/4, 5/6, 7/8, 1/2	
	DVB-S2	Link Margin	(- 8.3) to 20 dB	
		cBER	1.0E-2 to 1.0E-8	
		BCH BER	5.0E-2 to 1.0E-8	
		MER	✓	
		AUTO Attenuation	✓	
		PWR	40 to120 dBµV	
		Symbol Rate	AUTO, 1 to 30 Mbaud	
		Code Rate	AUTO (supporting 1/4, 1/3, 2/5, 3/5, 1/2, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10)	
OTHERS	Optical	Wavelength	1310 nm, 1490 nm, and 1550 nm	
		Attenuation	✓	
		CWDM channel	-	✓
	RF	RF Attenuation	✓	
		TILT	✓	
MPEG	Free-to-Air MPEG-2 SD decoder		✓	
	Free-to-Air H.264 HD decoder up to 1920×1080p (Full HD)		✓	
	Number of services, selected service, audio services		✓	
	NID, VPID, APID, SID (w/ Network Descriptor)		✓	
	Video resolution, audio type, language		✓	
	HD identification		✓	
	CAM module (MPEG-2 only)		✓	
LNB FEED	Power feed w/extra burst (14, 19.5V to compensate long cable runs)		13/18/24 V - 13 + 1/18 + 1/24 V (Extra Burst)	
	22 kHz tone switch		✓	
	DiSEqC & SCR		✓	
BATTERY	Type / Autonomy		Litio-ION (over 4 hours from a full charge in low-consumption mode)	
	Energy management: Normal, Low Consumption & Auto		✓	
	Battery status indicator (w/ screen icon and audio beep)		✓	

SYSTEM ANALYZERS **H-SERIES**

USA models: H60 technical specifications

MAIN FEATURES		**H60** ADVANCE	
		REFERENCES	
		596001	596002
Product differentiation	Real-time digital processing	✓	
	High Sensitivity (-75 dBmV to 70 dBmV) Extended Dynamic Range (60 dB)	✓	
	Combo Mode (HDTV picture, spectrum analysis, measurements and pass/fail indicators in one screen)	✓	
	Hsuite computer SW • Download measurements • Threshold edition • Job report generation • Channel plan customization	✓	
	Total remote control and measurements in real time (Ethernet)	opc. 598903	
	5.7"TFT Display	✓	
	Ergonomy (4 lbs) , > 4.5h battery autonomy, ease-of-use	✓	
	Weatherproof bag	✓	
HDTV measurements and analysis	Visualization and analysis of analog signals (NTSC) with sync and line representation	✓	
	ATSC/8VSB, QAM Annex A/B/C, DVB-S, QPSK Turbo, 8PSK Turbo, DSS, DVB-S2	✓	
	DVB-S2 high definition measurements (Link Margin)	✓	
	Errored packet analysis in ATSC, QAM and Satellite	✓	
	Constellation display: QAM and DVB-S2	✓	
	CATV tools: TILT, CTB, CSO, HUM, Equalizer	✓	
	RF attenuation measurements	✓	
Full HDTV Display	Full HD (H.264@1080p) Audio Digital: • AC3 (Dolby Digital) • EAC3 (DD+) • AAC w/ HDMI	✓	
	HDMI output: Video, OSD, Spectrum Analyzer...	✓	
Fiber Optics	TV signal and spectrum analysis directly over fiber. Optical power and attenuation measurements in 1310, 1490 y 1550 nm	opc. 5999	✓
Professional-grade Spectrum Analyzer	Professional-grade spectrum analyzer Real-time sweep speeds < 10 ms	✓	
	SPAN: 100kHz to 3.3GHz RBW filters: Down to 200 Hz	✓	
	Continuos band from 2 MHz to 3.3 GHz	✓	
	Spectrum capture (pictures and raw data)	✓	
	Event triggers for intermittent signal detection	✓	
	LTE-Ready frequency range up to 3.3 GHz	✓	

Compare H45-H60 models

	MAIN FEATURES	**H45** COMPACT						**H45** ADVANCE						**H60** ADVANCE	
		REFERENCES													
		5990	599001	599002	599003	599004	599005	5992	599201	599202	599203	599204	599205	5960	596005
Product differentiation	Real-time digital processing			✓						✓				✓	
	High sensitivity (-15 to 130 dBµV) Extended dynamic range			✓						✓				✓	
	Combo mode (picture, spectrum, measurements, pass/fail)			✓						✓				✓	
	Hsuite computer SW • Management • Update • Job report generation			✓						✓				✓	
	Screen size	5″												5.7″	
	Ergonomy (2,2 kg) , > 4.5h battery autonomy, ease-of-use			✓						✓				✓	
	Weatherproof bag		5995 option							✓				✓	
TV measurements and analysis	Analog terrestrial TV analysis and display (w/ sync pulse representation)			✓						✓				✓	
	DVB-T, DVB-C, DVB-S			✓						✓				✓	
	DVB-S2 high definition measurements (Link Margin)		✓	✓		✓	✓			✓				✓	
	Errored packets analysis: DVB-T, DVB-C, DVB-S, and DVB-S2									✓				✓	
	Constellation display: DVB-T, DVB-C, DVB-S2, and ECHOES (DVB-T)		✓	✓		✓	✓			✓				✓	
	DVB-T2 measurements, constellation and full-HD video display							598901 option							
Full HD pictures on the screen	Full HD (H.264@1080p) Audio Digital: • AC3 (Dolby Digital) • EAC3 (DD+) • AAC w/ HDMI		✓	✓		✓	✓		✓	✓		✓	✓	✓	
	MPEG2 encrypted channels H.264 encrypted channels - **CAM module**			✓						✓		✓		✓	
Fiber Optics	Fiber optics interface and built-in receiver Optical attenuation on 1310, 1490, and1550nm				✓	✓					✓	✓	✓	✓	
	Selective F.O. interface						✓						✓		✓
Professional-grade Spectrum Analyzer	Professional-grade spectrum analyzer Real-time sweep speeds < 10 ms									✓				✓	
	SPAN: 100kHz to 2.5GHz RBW: Down to 200 Hz									✓				✓	
	5 to 2,500MHz continuous band									✓				✓	
	Spectrum graph logs									✓				✓	
	Event triggers									✓				✓	
	3,300 MHz extended spectrum analyzer						✓	598902 option						✓	✓
	CATV tools													✓	✓

SYSTEM ANALYZERS **H-SERIES**

H30 Next Generation CATV Meter

QR-A00170

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 trouble shoot a television system using QAM digital modulation as well as NTSC 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 trouble shoot 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 fulfillment environment.

FEATURES AND BENEFITS

- **Remote Control & Measurements** - In an affordable package.
- **Rugged and Light Weight** - Total reliability.
- **Intuitive User Interface** - Reducing the learning curve.
- **Ergonomic Handheld Design** - Three buttons + thumbwheel.
- **Long Battery Life** - Over 5 hours on a full charge.
- **Lab-quality Precision** - Real-time digital processing.
- **Feature-packed** - With pass/fail indicators.
- **Automatic SW upgrades** - Updated at all times.
- **100% Automatic** - Signal detection.
- System Scan.
- QAL Technology.
- Tilt.
- Voltmeter.
- HUM.

REF.	DESCRIPTION
593102	H30 DVB-C
***USA* MODEL**	
593101	H30 CATV

Reference		593101 / 593102
Frequency	MHz	5 to 1,002
Resolution	kHz	50
Input impedance	Ω	75
Input level	dBµV	45 to 125
Standards		ITU-T J.83 Annex A/B/C
Modulation		16/32/64/128/256 QAM, QPSK
Symbol Rate	Msps	2 to 6,9
MER	dB	≤ 40
Tolerance	dB	± 2
Digital Measurements		Power MER C/N Pre-BER, Post-BER (Annex B) BER (Annex A/C) Constellation display
Analog Measurements		Video level Audio level V/A ratio C/N CTB/CBO
General		
Display		2,8" TFT full color
Screen resolution	pixel	400 x 240 (2,8")
Weight	g	510
Size (H x W x D)	mm	175 x 100 x 52
AC Adaptor	Vdc	12
Battery	Vdc	Li-Ion 7,2
Battery charge	mAh	2,300
Operating temperature	ºC	-5 to 45

SYSTEM ANALYZERS **H-SERIES**

Channel info

- The single channel measurement automatically detects the type of channel, providing video and audio levels, V/A, and C/N for analog signals, and Power, C/N, MER, Pre-BER, and Post-BER in digital mode. All these tests are completed using just one button push and all the metrics reported based on user-defined location thresholds providing pass/fail results easy to interpret by even the least experienced technician in the team.

Pass/fail indicators

- Reduce installer errors with on screen pass/fail indicators that give a quick and easy to understand interpretation of the test results.
- Different thresholds are available for different testing locations such as headend, launch amp, tap, bonding block, customer premises, etc.

Constellation display

- The Constellation display is an indispensable tool for the technician when trying to measure the quality of the QAM modulated signals.
- Constellation diagrams help detect the presence of noise, phase jitter, interference, and gain compression, all of which impact overall signal quality leading to service disruption.
- By visually inspecting the size and shape of the dots within the constellation matrix, the technician can easily identify the nature of the problem.

Remote control / measurements

- Control your meter and access your measurements from a smartphone, tablet, laptop or any other 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 to measure signals and quality parameters remotely.

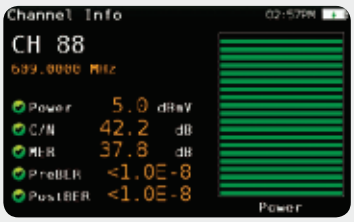
Spectrum analyzer

- The H30's spectrum analyzer includes 2.5, 6.25, 12.5, 25, 62.5, 125, 250, 500MHz, and 1GHz full span settings, as well as automatic reference level adjustment.
- Real-time processing speeds ensure capture of any fast, intermittent plant impairments. You'll be blown away by the accuracy and level of detail provided by this ultra-portable pocket-sized spectrum analyzer.

Intuitive user interface

- Easy to use one-level menu structure with very intuitive functions for increased usability, faster operation and maximum productivity.
- No function requires more than three successive button pushes to achieve the desired operation. It doesn't get any easier than this.

Channel Info



Pass/fail indicators

Constellation display

Remote control & measurements

Spectrum analyzer

Intuitive user interface

SYSTEM ANALYZERS **H-SERIES**

Integral management software

HSuite is the H-Series integral management software tool that allows you to:

- **Download** test results and graphs
- **Job report generation**
- **Channel plan customization**
- **Threshold configuration** (for pass/fail indicators)
- **Update the firmware** of the unit

Workflow automation

HSuite connects the H-Series meters to a **database** to keep the **firmware always updated**

ONLINE UPDATES

Update your tool and keep it always fresh with the latest developments, completely automatic. You will just need a computer and internet connection.

It allows to update the following:

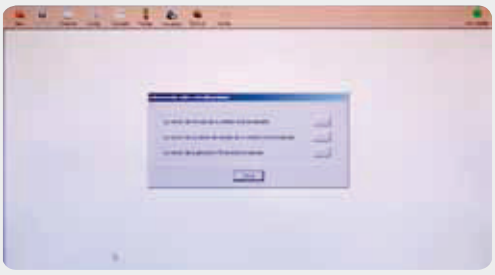
- Channel plans
- HSuite software version
- H-Series meters software version

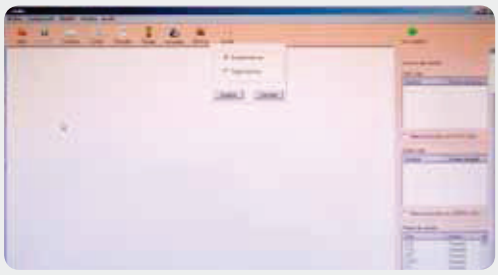
BACKUP

Backup all your meter's data:

- Memories
- Macros
- Channel plans

Save the data to a PC so they can be restored to the same or other units, allowing to copy a common configuration on all the meters in your team.



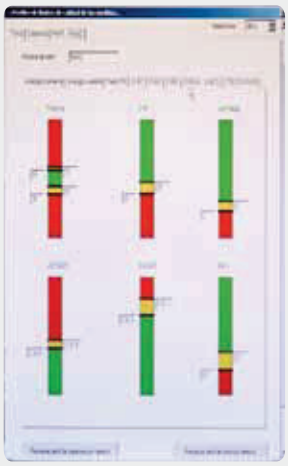


HSUITE SOFTWARE

Administrative tools

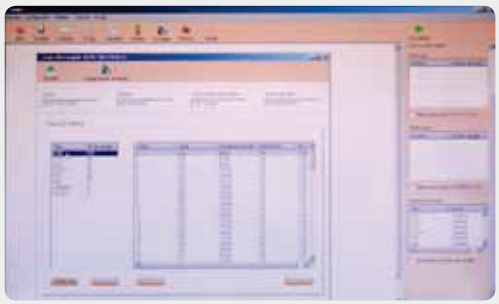
PASS/FAIL CONFIGURATION

Select the pass/fail indicator thresholds and configure each of the four profiles to any particular needs.



CHANNEL PLAN MANAGEMENT

Create, copy or modify custom channel plans to cover different scenarios, properties or regions.



INFORMATION MANAGEMENT

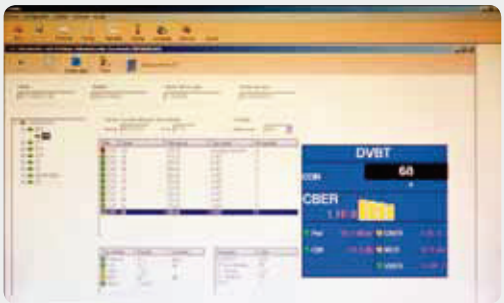
Smart presentation of the meter's data as:

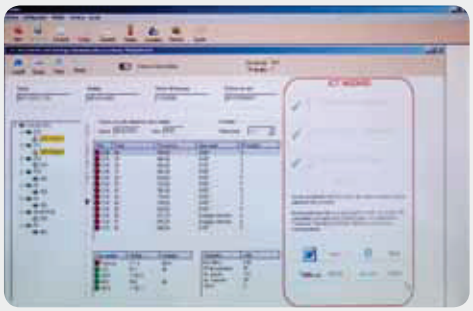
- Graphs
- Job reports
- Data Logs
- Several formats (Excel©, XML, etc.)

Analyze the results of automatic measurements such as:

- Macros
- Scan & Log
- Instant Logs

Then present them as numerical or graphic data∫.



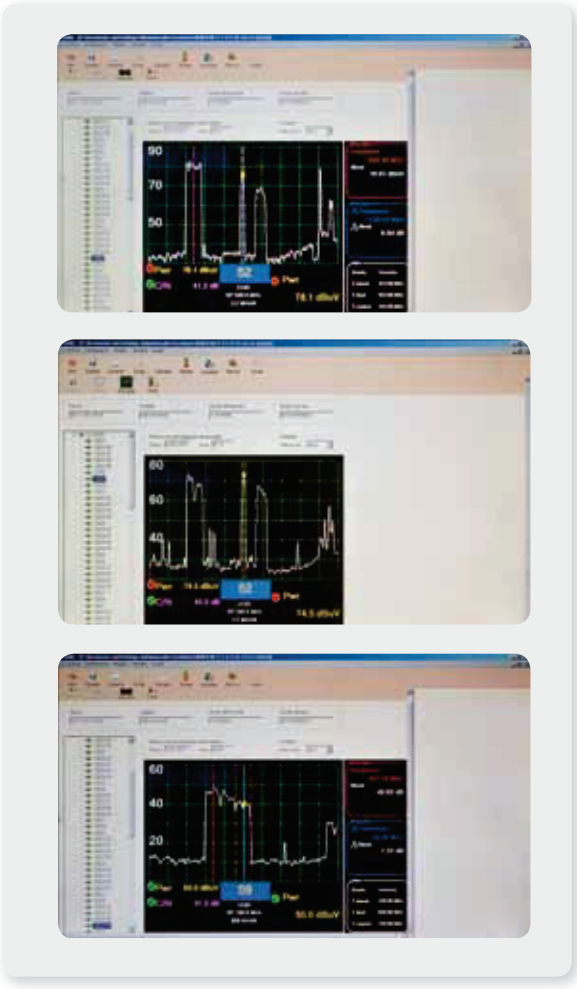


HSUITE SOFTWARE

Administrative tools

EXPORT DATA IN DIFFERENT FORMATS

- Automatic job report generation in different regulated formats.
- Intelligent information management.
- Export to Excel©, XML.
- Print.

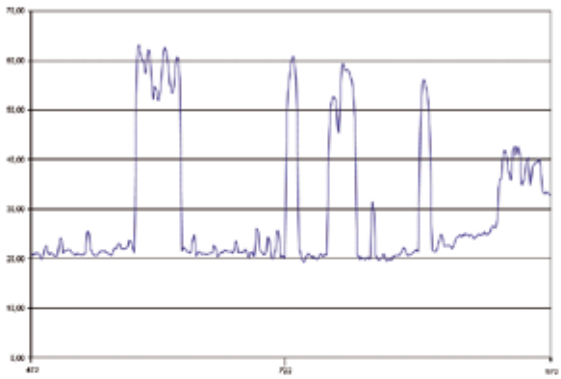


GRAPHS

Manage stored graphs for job report generation.

H-Serie's graphs are not simple screenshots, the underlying RF data is stored as part of the graph log as well.

This data that can be further exported for detailed off-site analysis, providing a powerful remote diagnosis tool.

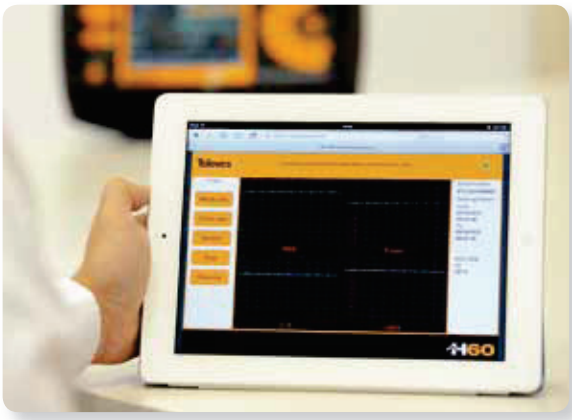


Remote control & measurements

H60 ETHERNET + INTERNET = TOTAL REMOTE CONTROL AND TESTING

Control your H60 remotely and make measurements from any internet connected device. Ideal for extended signal tests over time in headends and broadband distribution networks.

Leave your H60 connected to your headend, node, or anywhere in your HFC distribution network and control the unit and measure signals and quality parameters remotely. Once finished, export the results to your computer using the included HSuite software.

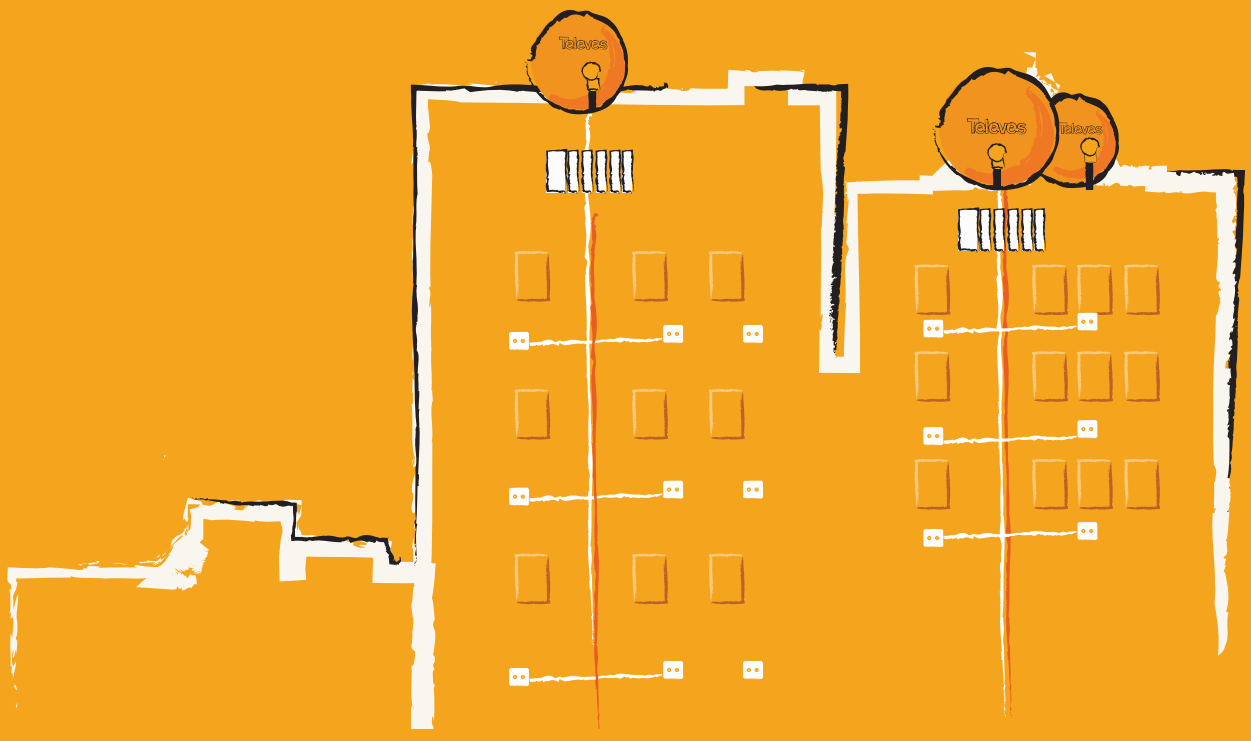


Televes

FIBER SPLICING KITS
NETWORK CERTIFIERS
SIGNAL GENERATORS

Televes provides additional devices that complement the operational features of our field meters and system analyzers.

Equipment for fusion and mechanical fiber splicing and on-site verifications, in addition to the classic equipment for coaxial networks, all geared to meet the most demanding telecommunications regulations worldwide.



FIBER SPLICING KITS

Fiber splicing kits

QR-A00023

FUSION SPLICER (Ref. 232101): Three-axis aligning fusion splicer with final verification.

A five inch LCD screen guides the user and allows for the configuration of all the operating parameters. The resulting splices have low insertion loss and virtually no back reflection.

- Fusion **surface verification**
- Fiber **distance adjustment**
- Fiber **core alignment**
- **Splice-loss estimation**
- Small and light package

MECHANICAL SPLICER (Ref. 2341): Mechanical splicer tool with accessories. Typically used for emergency repairs and fiber testing.

▲ 232101

REF.	DESCRIPTION
232101	Fusion splicer + F.O. stripping tool (ref. 2324) + F.O. cutting tool (ref. 2323)
2341	Mechanical splicer + F.O. stripping tool (ref. 2324) + F.O. cutting tool (ref. 2323) + Cleaning kit*

(*): Refs. 2322 and 2328 (5 units), 2329 (10 units), 2323, 2324, cleaning tape plus spare, 10 isopropyl alcohol wipes, 10 connector cleaning swabs, and carrying bag.

Reference		232101
Main characteristics		
Average splice loss	dB	0,02 (SM) / 0,01 (MM)
Average splicing time	sg	9 (SM)
Average heating time		30
Fiber aligning method		core aligning (X, Y, Z)
Fiber diameter	µm	125
Coating diameter		0,2-1,5
Fiber cleaved length	mm	16
Datalog capacity		5,000
Screen		
LCD size	inch	5
Display		X & Y simultaneously
Adjustable parameters		
Heating time		
Fiber offset angle		
Tension test		
Fiber type		
Program		Pre-arc power, Pre-arc distance, Arc power, Speed, Overlap
Maintenance		Electrode clean-up, Electrode aged, Image back
		Time & date, Partial counter, Arc counter, Splice memory
		Languages: English, Spanish, German, Portuguese, Russian, Chinese, Corean
Power		
Battery		Li-battery (8,000mAh)
Voltage	Vac	100-240
Consumption	W	30
Weight	gr	3,500
Dimensions (W x H x D)	mm	180 x 190 x 150

FIBER SPLICING KITS

Fuision splicer detail

▲ 2341

Accessories

QR-A00210

REF.	DESCRIPTION
2327	Fusion sleeves (for reference 2321)
2322	Fiber optic mechanical splice tool
2328	Fiber optic mechanical splice (for references 2322 y 2341)
2323	Fiber optic precision cutting tool
2324	Fiber optic precision stripping tool
2325	Fiber optic precision multi-fiber cutting tool
2329	SC/APC connector
2362	650nm/5dBm red laser pointer pen

▲ 2322

▲ 2328

▲ 2324

▲ 2327

▲ 2329

▲ 2325

▲ 2323

SIGNAL GENERATORS

OPS-3L Optical Light Source

QR-A00026

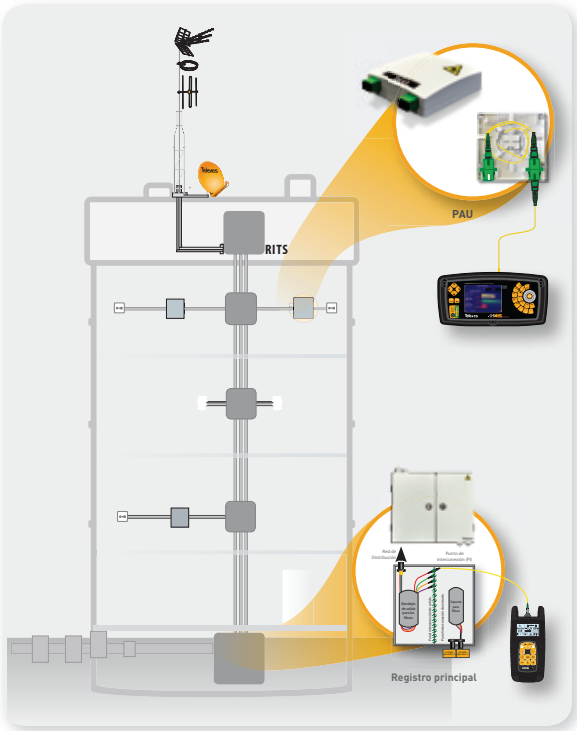
Covering three wavelengths (1310, 1490, and 1550nm), the OPS-3L will meet the requirements of just about every application you might encounter.
Pairs with the H-Series System Analyzers and automatically measures your optical plant loss.

REF.	DESCRIPTION
2340	OPS-3L Optical Light Source (1310, 1490, and 1550nm)

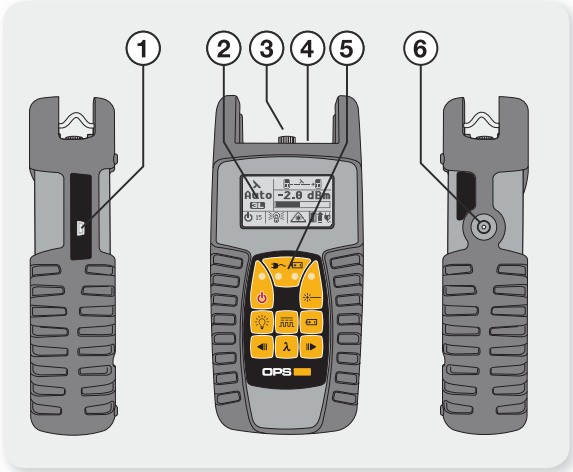
▲ 2340

Reference		2340
Screen		LCD 128×64 px
Languages		Universal
Wavelengths	nm	1310, 1490, 1550
Modulation		270Hz, 1kHz, 2kHz Automatic ID (H-Series)
Tolerance	nm	±20
Laser		Fabry Pérot
Power	dBm	0 to -8 (in 1dBm steps)
Short term stability (15 min.)	dB	± 0,1
Long term stability (2 hours)		± 0,3
Power		
Battery	type	Li-Ion 7.4 V
External power	Vdc	12
Consumption (max.)	W	12
Autonomy	h	26

- **User-selectable power** (0dBm to -8dBm).
- **The laser can be disabled** for adjustment work.
- **Signal modulation**.
- **Automatic ID**: Seamlessly pairs with Televes' H-Series System Analyzers and automatically detects the wavelength.
- Power-saving mode with **automatic shut off**.



UNIT DESCRIPTION	
1	USB (firmware updates only)
2	LCD screen
3	Interchangeable FC/APC connector
4	Reset
5	Keypad and monitoring LEDs
6	External 12Vdc external supply connector



Satellite IF simulator

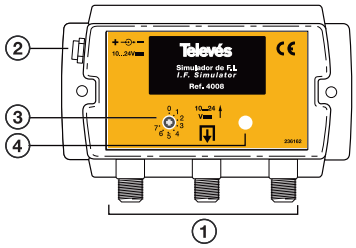
QR-A00036

Designed for attenuation and flatness tests in satellite IF distributions.

- Rotating knob to select different **operating modes.**
- Outputs **sweeps** in the 950 to 2,150 MHz band.

▲ 4008

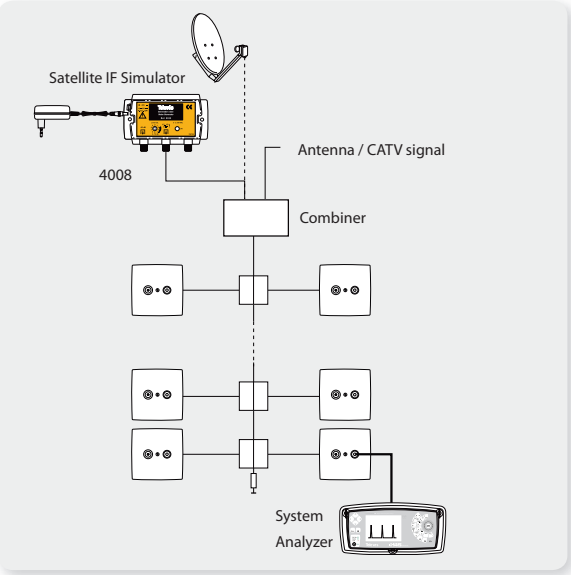
REF.	DESCRIPTION
4008	Satellite IF simulator



	UNIT DESCRIPTION
1	Outputs
2	External power input
3	Operating mode selector
4	Two-color LED

Reference		4008
Powering	Vdc	12 ... 18
Consumption	W	< 2
Connectors	Type	F female
Frequency range	MHz	see operating modes
Tolerance	kHz	< ± 200
Spurious	dBc	< -20
Protection	IP	20
Dimensions (W x H x D)	mm	98 x 65 x 27

Typical application



Operating modes						
Mode	Power input	Powering	LED	Frequencies (MHz)	Modulation	Level (dBµV)
0	External / Coaxial cable	12 - 18V	-	960 - 1,550 - 2,140	No	105 ± 2
1	External / Coaxial cable	12 - 18V	-	960 - 1,550 - 2,140	Yes	105 ± 2
2	External / Coaxial cable	12 - 18V	-	960 - 1,550 - 2,140	No	85 ± 2
3	External / Coaxial cable	12 - 18V	-	960 - 1,550 - 2,140	Yes	85 ± 2
4	External / Coaxial cable	12 - 18V		950 to 2,150 sweep	No	105 ± 2
5	External / Coaxial cable	12 - 18V		950 to 2,150 sweep	No	85 ± 2
6	Coaxial cable	14V	Solid green	960 - 1,550 - 2,140	No	105 ± 2
		18V	Solid red	960 - 1,550 - 2,110	No	105 ± 2
		14V - 22kHz	Blinking green	960 - 1,550 - 2,140	Yes	105 ± 2
		18V - 22kHz	Blinking red	960 - 1,550 - 2,110	Yes	105 ± 2
7	Coaxial cable	14V	Solid green	960 - 1,550 - 2,140	No	85 ± 2
		18V	Solid red	960 - 1,550 - 2,110	No	85 ± 2
		14V - 22kHz	Blinking green	960 - 1,550 - 2,140	Yes	85 ± 2
		18V - 22kHz	Blinking red	960 - 1,550 - 2,110	Yes	85 ± 2

Noise generator

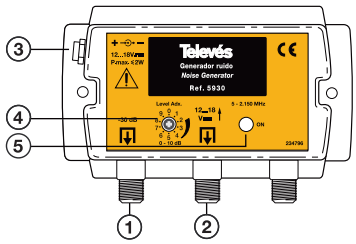
QR-A00074

This band noise generator is typically used to study the distribution network's frequency response.

- User-selectable **output level**.
- External or line-powered.

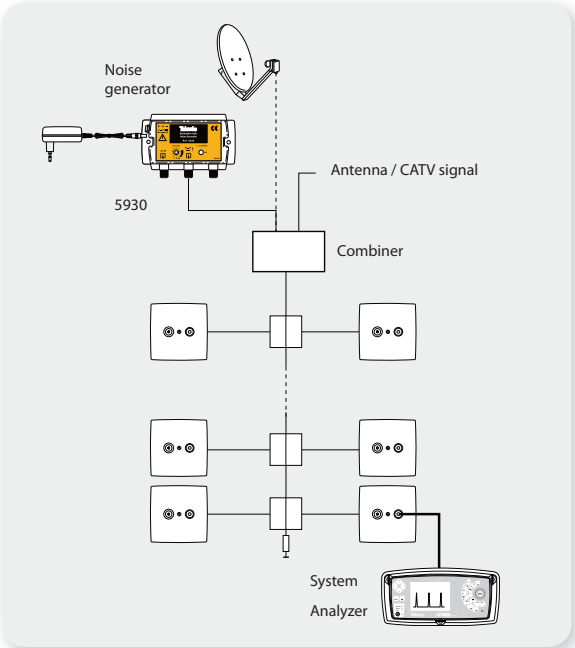
▲ 5930

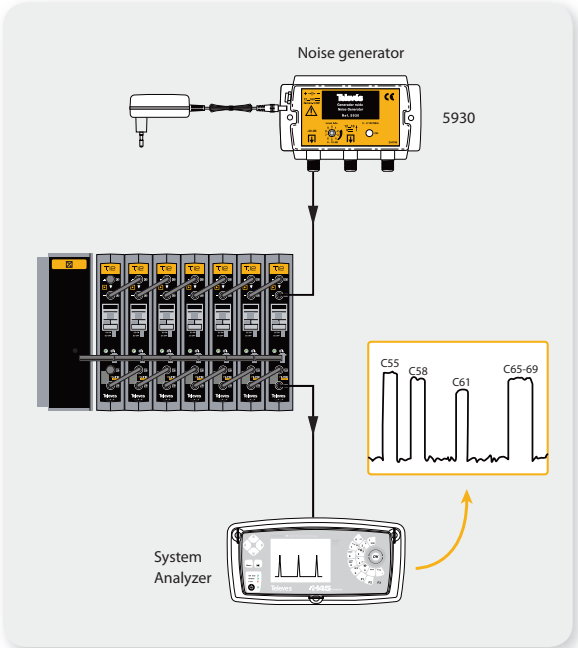
REF.	DESCRIPCIÓN
5930	Noise generator



Reference		5930
Frequency range	MHz	5 ... 2,150
Maximum output level	dBµV	80 ± 3 (3 MHz)
Output regulation	dB	0 ... 10
Powering	Vdc	12 ... 18
Consumption	W	2
Dimensions (W x H x D)	mm	98 x 65 x 27

	UNIT DESCRIPTION
1	Output
2	-30dB output
3	External power input
4	Operating mode selector
5	Two-color LED





Return channel simulator

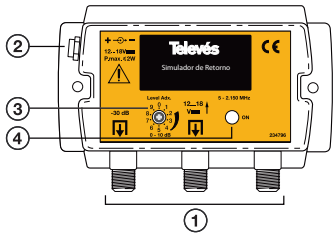
QR-A00098

Designed for attenuation and flatness tests in the upstream (5 ... 30 MHz).

- **Seven** operating modes.
- User-selectable **fixed frequencie or sweeps.**

REF.	DESCRIPTION
7637	Return channel simulator

▲ 7637



	UNIT DESCRIPTION
1	Outputs
2	External power input
3	Operating mode selector
4	Two-color LED

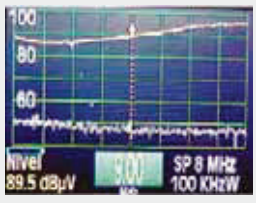
Reference		7637
Powering	Vdc	12 / 15
Consumption	W	1,5
Connector	type	F female
Frequency range	MHz	see operating modes
Output level	dBµV	
Spurious	dBc	> 40
Protection	IP	30
External power		
Mains	Vac/Hz	100 ...240 / 50
Rating	W	15
Output	Vdc	15
Current (max)	A	0,8
Protection	IP	30
Dimensions (W x H x D)	mm	98 x 65 x 27

Operating modes			
Mode	Frequency (MHz)	Output level (dBµV) (2)	LED
0	7,5	98 ± 2	Solid red
1	14,75	98 ± 2	Solid red
2	22,65	98 ± 2	Solid red
3	5 to 30 sweep	98 ± 4	Blinking red
4	7,5 (1)	90 ± 2	Solid green
5	14,75	90 ± 2	Solid green
6	22,65	90 ± 2	Solid green
7	5 to 30 sweep	90 ± 4	Blinking green

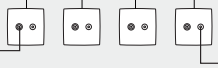
(1): The oscillators will be simulating different frequencies covering 5 to 30 MHz

(2): 75 ohm load

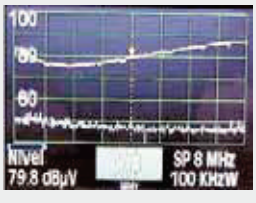
First, measure the output of the upstream simulator directly



Select operating mode



Second, measure the attenuation in the upstream by measuring the real signal and comparing with the previous readings.



Universal programmer

QR-A00081

Universal programmer for all Televes programmable devices (T.0X, T.05, Avant...).

- Internal storage for **configuration backup, copy and paste.**
- Adjustable brightness.
- **User friendly.**
- One meter RJ45 jumper included.

▲ 7234

REF.	DESCRIPTION
7234	PCT 5.0 Universal programmer

Tools

QR-A00083

REF.	DESCRIPTION
7301	SAT Finder
2145	Premium coaxial cable stripper
2162	Coaxial cable stripper
2163	Coaxial compression F-connector crimp tool

▲ 2162

▲ 2145

▲ 7301

▲ 2163

Reference		7301
Frequency range	MHz	90 ... 2,025
Powering	Vdc	11 ... 18
Consumption	mA	60 ... 100
Connector	type	F
Input levels	dBm	-50 ... - 17*

(*) ASTRA 1C

Optical (scale) or acoustical (beep) signalling.

Publications and Software

QR-A00016

REF.	DESCRIPTION
216801	TSuite Software + PC-to-module cable + USB 2.0 to RS232 adaptor
5838	USB 2.0 to RS232 adaptor
2164	CAST60 Software

▲ 5838

▲ 2164

▲ 216801