mod. HD TAB 9 STCO
THE PROFESSIONAL & ACCURATE TOUCH SCREEN ANALYZER

Automatic, Fast & Easy-to-Use

TFT 9” 16:10

UP SIDE CONNECTOR VIEW

1 = IF/RF In connector type “F” 75 Ω or OPTIC IN: FC-ST-SC opt.
2 = IF/RF In connector type “N” 50 Ω or OPTIC IN: FC-ST-SC opt.
3 = Remote Power Supply switch - DC at RF IN ON/OFF
4 = Analog Audio & Video IN/OUT connector
5 = USB A connector for memory stick
6 = USB B connector for SW/test drive (opt.) upgrades
7 = Common Interface Slot for CAM module
8 = HDMI Output connector
9 = 10 MHz Input connector (opt.)
10 = 1PPS Input connector (opt.)
11 = GPS antenna Input with SMB connector (opt.)
12 = ASI Transport Stream IN/OUT
13 = TS over IP input (IP decapsulator opt.)
14 = LAN Ethernet RJ45 connector
15 = Power Supply input (12 V DC - 3A)
HD TAB 9 MAIN FUNCTIONS

SUPPLIED
- N.2 IF/RF INPUTS "N" 50Ω/"F" 75Ω (or N & opt. OPTIC, or F & opt. OPTIC)
- REAL TIME SPECTRUM with MAX HOLD
- DVB-T2 with Multi-PLP
- DVB-S2 MULTISTREAM with ISI Select
- WORLD WIDE ANALOG TV & RADIO STANDARDS
- DVB-S2 & C2 with AUTOMATIC SYMBOL RATE SELECTION
- ASI INPUT/OUTPUT
- FULL MPEG 2&4/SD & HD DECODER
- T.S. RECORDER/READER via LAN
- MER vs CARRIER Nor/Inverted
- ALL MEASUREMENTS: MER, PER, LDPC, BCH, dBBER, EBER, EVM, NOISE MARGIN, Average POWER
- ECHOES/MICROECHOES/PREECHOES in REAL TIME
- COMMON INTERFACES for CAM
- CATV MEAS: INGRESS, LEAKAGE, BARSCAN & TILT
- LCN PROGRAM CODE
- AAC/HEAAC & AC3/DD+DOLBY SOUND
- FREE SW UPGRADES from the Rover WEBSITE
- SUN and RAIN PROOF

OPTIONAL
- DVB-T2 LITE
- DAB+ MEASURES
- ETR 101-290 T.S. ANALYZER, built-in FPGA
- DVB-C2
- LTE AUTOTEST with REJECTION FILTER
- OPTIC INPUT for PWR & SPECT with INTERCHANGEABLE CONNECTORS, ST/SC/FC
- IP to ASI/DE-ENCAPSULATOR
- IPTV QUALITY ANALYZER
- NETWORK DELAY MEASUREMENTS for the DVB/T SFN NETWORK
- GPS RECEIVER for POSITION & GPS ANTENNA QUALITY TEST
- SIGNAL COVERAGE QUALITY with GPS & "PRODRIVE TEST SW"
- SATEXPERT FUNCTION DISH POINTING
- MINI SPECTRUM ON DIGITAL TV PICTURE

• ALUMINIUM BODY, BAG & CASE
• 6h /10A LI-ION POLIMER BATTERIES
1. Work safely and without restrictions with both hands free.

2. Connect the shoulder strap to the two hooks at the corners of the bag (top left and bottom right), so you can hang your meter around your neck, leaving both hands free.

3. The sun-light-shield flap allows an even better visibility of the high brightness display.

4. Secure your meter by connecting it to the antenna mast or in your car with the help of a practical ring belt with quick attachment.

5. If you change the configuration of the shoulder strap, you can carry the meter easily vertically by your side.

6. You can also carry your instrument using its practical handle.

7. You can use the bag’s convenient stand flap for operation on a counter.

Make work easier by taking advantage of your HD TAB 9’s multi-purpose bag.
# Tech HD TAB 9 Technical Specifications

## Supported Standards

**SAT:**
- DVB-S
- DVB-S2 Single Stream
- DVB-S2 Multi-Stream (for Broadcast Multiple Network, Transmitters feeding)

**TV:**
- Analog TV: PAL / SECAM / NTSC B-G-I-L-M-N
- DVB-T
- DVB-T2 Multi-PLP
- ATSC USA*
- GB20600 China*
- ISDB-T/Tb JAPAN & South America*

* option
- DVB-C & Annex A
- DVB-C & Annex B*
- DVB-C2 EU*

**RADIO:**
- FM
- DAB (PWR MEAS.)

**OPTIC (option):**
- WL 1310 - 1490 (1625 for USA) - 1550

**ASI:**
- ASI IN/OUT

**LAN IPTV (option):**
- Encaps./De-encaps. IP to ASI/ASI to IP

### RF Input Performances (5-2.250 MHz)

- 2 selectable RF inputs:
  - 1-75 Ω "F" connector and 1 - 50 Ω "N" connector, or on request: 1- 50 Ω "N" connector and OPTIC INPUT, or 1-75Q "F" connector and OPTIC INPUT with interchangeable connector ST/SC/FC, Input selectable in the meter’s config menu

- 50Ω input matching (RL):
  - SAT > 18 dB
  - TV/CATV > 20 dB

- 75Ω input matching (RL):
  - SAT > 16 dB
  - TV/CATV > 18 dB

### Audio Decoding

- MPEG-1 Layer I / II (ISO-IEC 13818-3)
- Dolby Digital Plus
- Dolby AC-3
- AAC & HE AAC

### Video Decoding

- MPEG-2 MP@ML HDTV (ISO-IEC 13818-2)
- MPEG-4/AVC (ISO-IEC 14496-10)
- ITU-T H.264
- ITU-T HEVC (2014 with Interchangeable MPEG decoder board)

## Digital Satellite

**Standard:**
- DVB-S (EN 300421)
- DVB-S2 Single Stream (DTH)
- DVB-S2 Multi-stream (for Broadcast Multiple Network, Transmitter feeding)

**RF Input:**
- 2 selectable inputs:
  - 1-75 Ω "F" connector and 1 - 50 Ω "N" connector, or on request: 1- 50 Ω "N" connector and OPTIC INPUT, or 1-75Q "F" connector and OPTIC INPUT with interchangeable connector ST/SC/FC, Input selectable in the meter’s config menu

**Input Level Range:**
- 30 to 130dBuV - Max input power without damage +30 dBm
  - (30V without simultaneous generation of internal voltage to the RF input)

**Frequency Range:**
- 930 MHz to 2250 MHz

**Frequency Resolution:**
- 1MHz (with 100 KHz AFC Control)

**Modulation:**
- QPSK, 8PSK, 16APSK, 32APSK

**Roll Off:**
- Automatic selection in line with the selected standard

**FEC:**
- 1/2, 2/3, 3/4, 5/6, 7/8, (DVB-S)
- 1/2, 2/3, 3/4, 5/6, 8/9, 9/10, 2/5, 3/5 (DVB-S2)
- Automatic selection

**Symbol Rate:**
- DVB-S: 1 to 45MS/s Full automatic selection
- DVB-S2: 2 to 45MS/s Full automatic selection

**ISI Selection (DVB-S2 Multistream):**
- From 1 to 10

**ISSY Synchronization (DVB-S2 Multi-stream):**
- Automatic detection and reading

**Pilot (DVB-S2):**
- On, off. Automatic detection & reading

**FEC Frame (DVB-S2):**
- Normal, short. Automatic detection and reading

**LNB Control:**
- V (13V) / H (18V) polarization
- 22kHz tone
- DiSEqC 1.0 and 2.0, SCR & MOTOR
**Digital SAT Measurement performances**

- **Synchronization indication:** Unlock, Power Too Low, Lock
- **RF power level accuracy:** 1dB typ. (2dB max)
- **RF level unit:** dBµV, dBmV, dBm selectable
- **AFC - Capture range:** 0 to 5MHz – step 100kHz
- **LNB frequency error measurement:** 0 to 5MHz – step 100kHz
- **MER Range:** Up to 25dB
- **MER Accuracy:** 0.5dB up to 18dB - 1dB from 19 to 25dB
- **BER before Viterbi (DVB-S):** 1E-06 to 2E-02
- **BER after Viterbi (DVB-S):** 1E-07 to 0
- **LDPC (DVB-T2):** 1E-08 to 0
- **PER (DVB-S2):** 1E-07 to 0
- **BER before Viterbi (DVB-S):** 1E-06 to 2E-02
- **BER after Viterbi (DVB-S):** 1E-07 to 0
- **LDPC (DVB-T2):** 1E-08 to 0
- **PER (DVB-S2):** 1E-07 to 0
- **Constellation:** Constellation diagram with standard-specific grid and zoom

**SAT Special Functions**

- **SAT SCR:**
  - This function lets you control and verify the SCR LNB installation by checking the correct signal reception at each one of the LNB's RF outputs via the spectrum analyzer or the SAT measurement interface.

- **DUAL FEED LNB:**
  - This function enables the user to verify the installation of a Dual Feed LNB dish, that can be either 9°&13°, 13°&19° or 19°&23° or others; if the installation type is set to VARIABLE the user can perform the test on a couple of independent plans, at choice among those available in the meter.

- **DiSEqC MOTOR:**
  - This function allows the user to control motorized dishes by moving the motor via DiSEqC commands.

- **SAT FINDER:**
  - This function allows the user to determine the correctness of the dish pointing by detecting three transponders among those composing the requested satellite.

- **BUZZER & NOISE MARGIN GRAPH:**
  - This function could be activated on Satellite and Terrestrial canalizations. Its main AIM is to provide the user with a real time GRAPHIC diagram of the Noise Margin vs time. The measurement is also associated with a buzzer, synthesizing a tone the intensity of which is proportional to the signal quality.

- **SAT POINT:**
  - The aim of this function is to automatically set all spectrum parameters to facilitate dish pointing operations; the MAX HOLD & LIVE function guarantees perfect pointing at the maximum signal strength direction.

- **SATEXPERT FUNCTION:** (Option)
  - Advanced universal SAT pointer, the faster & accurate SAT FINDER (with electronic compass opt.)

**DIGITAL TERRESTRIAL TV**

- **Standard:**
  - DVB-T/DVB-H (ETSI EN 300 744)
  - DVB-T2 (ETSI EN 302 755)

- **RF input:**
  - 2 selectable inputs:
    - 1- 75 Q "F" connector and 1 - 50 Q "N" connector, or on request: 1- 50 Q "N" connector and OPTIC INPUT, or 1-75Q "F" connector and OPTIC INPUT with interchangeable connector ST/SC/FC, Input selectable in the meter’s config menu

- **Input level range:**
  - 29 to 130dBµV - Max input power without damage +30dBm
  - (30V without simultaneous generation of internal voltage to the RF input)

- **Frequency range:**
  - 47MHz to 1000 MHz

- **Frequency resolution:**
  - 50kHz

- **OFDM Modulation:**
  - QPSK, 16QAM, 64QAM (DVB-T)
  - 256QAM (DVB-T2)

- **FFT mode:**
  - 2k, 8k (DVB-T)
  - 1k, 2k, 4k, 8k, 16k, 32k (DVB-T2)
  - Automatic selection

- **Guard Interval:**
  - 1/4, 1/8, 1/16, 1/32 (DVB-T)
  - 1/4, 1/8, 1/16, 1/32, 1/128, 19/128, 19/256 (DVB-T2)
  - Automatic selection

- **FEC:**
  - 1/2, 2/3, 3/4, 5/6, 7/8 (DVB-T)
  - 1/2, 2/3, 3/4, 5/6, 7/8, 3/5, 4/5 (DVB-T2)
  - Automatic selection

- **Channel Bandwidth:**
  - 5MHz, 6 MHz, 7 MHz, 8 MHz

**Digital TV Measurement performances**

- **Synchronization indication:** Unlock, Power Too Low, Lock
- **RF power level accuracy:** 0.5dB typ. (1dB max)
- **RF level unit:** dBµV, dBmV, dBm Selectable
- **MER Range:** Up to 42dB
**MER Accuracy:** 0.5dB up to 38dB, 0.7dB up to 40dB, 1.2dB up to 42dB

**BER before Viterbi (DVB-T):** 1E-06 to 1E-02

**BER after Viterbi (DVB-T):** 1E-08 to 0

**BCH (DVB-T2):** 1E-06 to 1E-01

**LDPC (DVB-T2):** 1E-08 to 0

**PER (DVB-T2):** 1E-07 to 0

**Constellation:** Constellation diagram with standard-specific grid and zoom

**Echoes measurement:** -340 µs to 340 µs

**MER vs Carrier:** MER measurement for DVB-T and DVB-T2 signals with selectable carrier range: 1 to 32k carriers, normal or reverse.

**Digital TV Special Functions**

**ATTENUATION TEST:** This function lets you verify that all ends of the distribution system receive the same signal strength, to make sure that there are no losses or other distribution issues.

**DIGITAL CABLE CATV**

**Standard:**
- DVB-C (ETSI EN 300 429)
- DVB-C2 (ETSI EN 302 769) (opt.)

**RF input:**
2 selectable inputs:
- 1-75 Q “F” connector and 1 - 50 Ω "N" connector, or on request: 1-50 Q "N" connector and OPTIC INPUT, or 1-750 Q “F” connector and OPTIC INPUT with interchangeable connector ST/SC/FC, Input selectable in the meter’s config menu

**Input level range:**
- 35 to 130dBµV - Max input power without damage +30dBm (30V without simultaneous generation of internal voltage to the RF input)

**Frequency range:** 4MHz to 1000 MHz

**Frequency resolution:** 50kHz

**Modulation:**
- 16QAM, 32QAM, 64QAM, 128QAM, 256QAM (DVB-C), 1024QAM (DVB-C2)

**Symbol rate:**
- 2 to 6.999MS/s - Automatic selection

**FEC:**
- Channel Bandwidth:
  - 6 MHz, 7 MHz, 8 MHz

**CATV Measurement performances**

**Synchronization indication:** Unlock, Power Too Low, Lock

**RF power level accuracy:** 0.5dB typ. (1dB max)

**RF level unit:** dBµV, dBmV, dBm selectable

**MER Range:**
- Up to 40 dB

**MER Accuracy:** 0.5dB typ.

**BER before Reed Solomon:** 1E-09 to 1E-02

**BER after Reed Solomon:** 1E-09 to 0

**Constellation:** Constellation diagram with standard-specific grid and zoom

**Digital CATV Special Functions**

**LEAKAGE:** This function provides a technician with a tool to verify the presence of any signal leakage in a CATV distribution system.

**INGRESS:** This function lets the user verify the interference of the CATV return path, with a frequency band ranging from 4 to 66 MHz

**OPTICAL INPUT (option)**

**Input interface:** FC / ST / SC exchangeable connectors

**Wavelengths range:** WL 1310 - 1490 (1625 for USA) - 1550

**Optical input level range:** -40 dBm to +10 dBm

**Optical level resolution:** 0.1dB

**Optical level measurement accuracy:** 0.5dB

**ANALOG TV**

**Standard:** PAL / SECAM / NTSC B-G-I-L-M-N

**RF input:**
2 selectable inputs:
- 1-75 Q “F” connector and 1 - 50 Ω "N" connector, or on request: 1-50 Q "N" connector and OPTIC INPUT, or 1-75Q “F” connector and OPTIC INPUT with interchangeable connector ST/SC/FC, Input selectable in the meter’s config menu

**Input level range:**
- 5 to 130 dBµV - Max input power without damage +30 dBm (30V without simultaneous generation of internal voltage to the RF input)

**Frequency range:** 47 MHz to 1000 MHz

**Frequency resolution:** 50 kHz

**Analogue TV Measurement performances**

**Level indication:** Level to low

**RF power level accuracy:** 0.5dB typ. (1dB max)

**RF level unit:** dBµV, dBmV, dBm selectable
### C/N measurement:
5dB to 55dB

### A/V ratio:
4dB to 26dB

### Audio carrier FM modulation:
4.5MHz, 5.5 MHz, 6.0 MHz, 6.5 MHz

### Audio Carrier AM modulation
6.5 MHz "L" FRANCE Standard

### LAN IP/ASI ENCAP./DENCAP. (option)

#### IP Interface
- **LAN:** 1 Gb/s Ethernet interface
- **IP protocol:** UNICAST/MULTICAST RTP/UDP WITH 2 dimensional FEC, IGMP v2
- **FEC:** Pro MPEG CoP#/SMPTE 2022

#### IP measurement
- **Streaming status:** Present, Not Present
- **Number of MPEG packet size:** 1 - 7
- **TS packet size:** 188, 204
- **FEC status:** No FEC, FEC1, FEC2
- **L:** 1 ≤ L ≤ 20
- **D:** 4 ≤ D ≤ 20
- **Input Ethernet port:** 1, 2, both
- **TS bitrate:** 0 - 216 Mb/s
- **Number of missing packets successfully recovered:** 0 - ∞
- **Number of missing packets:** 0 - ∞
- **IP Stream Jitter:** 0 - 1000 ms
- **IAT:** MIN, MAX, MED, Jitter

#### ASI mode
- **ASI Mode:** MPEG-TS on ASI Compliant to EN 50083-9 packet length 188/204 bytes
- **ASI Status:** Lock 188, Lock 204, Unlock
- **ASI bitrate:** 0 - 216 Mb/s
- **Destination MAC Address:** MAC is the host receiver in unicast; in multicast it is the MAC multicast defined by the Destination IP address

#### Transport Stream Content
- MPEG2 and MPEG4 HD Service

### GPS RECEIVER (option for Position & Installation Antenna Test)
- **RF Input:** SMA 50Ω connector
- **DC at RF IN:** 5V d.c. automatic, for active and passive Antennas (active antenna supplied)
- **RF level Sensitivity:** - 160 dBm
- **Frequency:** L1 (1575, 42 MHz)
- **Noise Figure:** 1.5 dB typ.
- **Position accuracy:** 2.0 m typ, 2.5 m
- **Hot Start Autonomus:** 1 s
- **Timepulse Frequency:** 10 MHz & ppS
- **Received SAT:** up to 12

### SAT, TV & CATV SPECTRUM ANALYZER

#### Measurement parameters
- **Frequency range:** 4MHz to 2.250 MHz
- **RF level range:** 5 to 130dBµV
- **Resolution Bandwidth:** TV / CATV = 100kHz
- **SPAN:** TV / CATV: 2MHz, 5 MHz, 7 MHz, 10 MHz, 20 MHz, 50 MHz, 100 MHz, 200MHz, 500 MHz, Full VHF, Full UHF, 5/65 RP and FULL band 4 to 1000 MHz
- **SAT:** 50MHz, 100MHz, 200MHz, 500MHz, FULL band 930-2.250 MHz
- **Video Bandwidth:** Automatic selection
- **Satellite:** FAST mode = 10kHz
- **SUPERFAST mode =5kHz
- **TV & CATV:** FAST mode = 100kHz
- **SUPERFAST mode =50kHz
- **Frequency sweep:** Up to 80ms
- **dB/div scale selection:** 1dB/div, 2dB/div, 5dB/div, 10dB/div

#### Spectrum Special functions
- **Max-hold function:** to compare the real-time signal with the max-hold envelope.
- **Spectrum save & recall function:** to save and store spectrum measurements.
Markers:
- Single marker: 1 mrk to perform punctual measurements on the signal envelope
- Delta marker: 2 mrk to perform frequency offset and differential power measurements between two points of the spectrum Marker BW: 3 mrk to measure precisely the channel frequency bandwidth and the corresponding bandwidth power

Help function:
To perform channel auto-discovery from the signal spectrum: the meter determines automatically modulation type and parameters (DVB-T/2, DVB-S/S2, DVB-C/C2, Symbol Rate, Centre frequency, etc).

Visualization modes:
Full Picture or Envelope MENU Selectable

Trace color schemes Customizable:
GREEN BLUE GREY BROWN config. Selection

**TRANSPORT STREAM PERFORMANCE ANALYZER**

**TS interface**
Input / output:
75 Ω BNC connectors

ASI mode:
MPEG-TS on ASI - compliant to EN 50083-9
Packet length 188 / 204 bytes

Transport Stream content:
MPEG-2 and MPEG-4 HD Services

**TR 101 290 v1.2.1 ANALYSIS**

1st priority monitoring:
- 1.1 Sync loss
- 1.2 Sync byte
- 1.3.1 PAT Int
- 1.3.2 PAT PID
- 1.3.3 PAT scr
- 1.4.a Cont [Ord]

2nd priority monitoring:
- 2.1 Transport error
- 2.2 CRC error
- 2.3a PCR repetition error
- 2.3b PCR discontinuity error

3rd priority monitoring:
- 3.1 PID error
- 3.2 SI Rep
- 3.4 UNREF PIDS
- 3.5 SDT error

**TS information monitoring**

SI tables decoding:
Visualization of service list, stream type

PMT decoding:
Service PID composition; real time refresh on service selection

Bitrate measurement:
TS total bitrate, Stuffing rate Service bitrate, ES bitrate 0 to 270Mb/s Resolution 1kb/s

**TS advanced monitoring (option)**

Network Delay measurement:
Transport Stream delay measurement based on MIP packets range: 0 to 999 ms**

PCR accuracy:
PCR accuracy measurement and graphical representation*
Measurement range: 0 to 1000 ns

Jitter measurement:
Jitter accuracy measurement and graphical representation*
*on a selected service (opt.)
**external 10MHz/1PPS reference needed (opt.)

**PRODRIVE TEST**

Fast Multiple CH Measurement, from 1 to 8 Analyzers in parallel.

Single CH or multiple CHs measurements acquisition for each Analyzer.

Supported mobile measurements: Field strength/power, Mux lock, MER, PER/BER, ECHOES, (depending on speed and standard).

Supported Stationary Measurements: Field strength/power, Mux lock, MER, PER/BER, ECHOES.

## DATA STORAGE AND LOGGING

<table>
<thead>
<tr>
<th>Logging capabilities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Autonemory:</strong></td>
<td>Automatic channels detection and recording based on a channel PLAN. The result is an AUTO plan stored in the meter to be used as reference during measurement campaign</td>
</tr>
<tr>
<td><strong>Manumemory:</strong></td>
<td>Function to create customized mixed channel plans SAT-TV-CATV-RADIO manually or with PC</td>
</tr>
<tr>
<td><strong>Datalogger:</strong></td>
<td>Automated measurement campaign based on an Autonemory or Manumemory channel plan. The Datalogger contains all the RF parameters of the listed channels and can store up to 1300 channels</td>
</tr>
<tr>
<td><strong>Data export:</strong></td>
<td>USB-On-The-Go plug to connect an external USB device 10/100 Base-T LAN to download data on an external PC</td>
</tr>
</tbody>
</table>

## GENERAL DATA

### Integrated Controller

- **CPU:** ARM11 & Cortex ARM7
- **Operating System:** RO.VE.R. embedded OS
- **Storage:** External USB drive
  - LAN connection for data download on external PC

### Interfaces

- **Universal Serial Bus (USB):**
  - 1x USB-A, USB On-The-Go for USB memory stick
  - 1x USB-B for PC connection
- **Local Area Network (LAN):**
  - 1x 10/100 Base-T Ethernet interface (management)
- **Asynchronous Serial Interface (ASI):**
  - ASI input on 75Ω BNC connector
  - ASI output on 75Ω BNC connector
- **External Reference:**
  - 10MHz input on 75Ω BNC connector*
  - 1PPS input on 75Ω BNC connector*
  - * Supplied with optional SFN Network Delay Measurement
- **Audio / Video:**
  - Composite A/V input
  - HDMI output
- **Common Interface:**
  - PCMCIA slot for single/multi-service CAM modules
- **IF/RF input:**
  - 2 selectable inputs:
    - 1- 75Ω “F” connector and 1 - 50Ω “N” connector, or on request: 1- 50Ω “N” connector and OPTIC INPUT, or 1-75Ω “F” connector and OPTIC INPUT with interchangeable connector ST/SC/FC, Input selectable in the meter’s config menu

### Remote Operation

- **USB interface:** S.M.A.R.T. management Software for firmware upgrades and file Expert to create plans & download measurements, etc.
- **Ethernet:** Instrument remote measurement application via SNMP*

### Local Operation (Dual command TOUCH and MECHANICAL)

- **Touch screen display:**
  - Full touch instrument operation
  - Touch screen excludable via conf. menu
- **Full Keyboard & High precision 24 steps encoder:**
  - Direct access to meter’s with 6 main direct keys: SAT, TV, CATV, Spectrum, Barscan, PLAN and CHs, Freq. Enter with mechanical encoder.

### Very High Brightness TFT Display

- **Width:** 10.2” - brightness 1200 candles per m2
- **Format:** 16:10 full VGA 800x480 high brightness touch screen display
- **Resolution:** 720p to 1080 p
- **Graphical User Interface:** Selectable color themes (green, blue, grey, brown)

### Environmental conditions

- **Operating temperature range:** 0° C to +50° C
- **Storage temperature range:** -25° C to 70° C
- **Humidity:** Up to 90% non condensing
- **AMSL:** Up to 3.000 m

### Power Supply

- **External power adapter - Input:**
  - 110 VAC to 240 VAC
  - - 50 Hz to 60 Hz
- **Output:** 12 VDC - max 3A
- **Internal Battery:**
  - Li-ion Polymer 10A battery with up to 6 hours duration