IQ Tester LV User Manual

v0.1

Firmware v1.1.5

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ProPlex IQ Tester LV User Manual

Effective 11 March 2021

Overview

True, All-in-One, Handheld Network Tester!

- Complete analysis of active Network streams and devices
- Monitors network activity and bandwidth usage
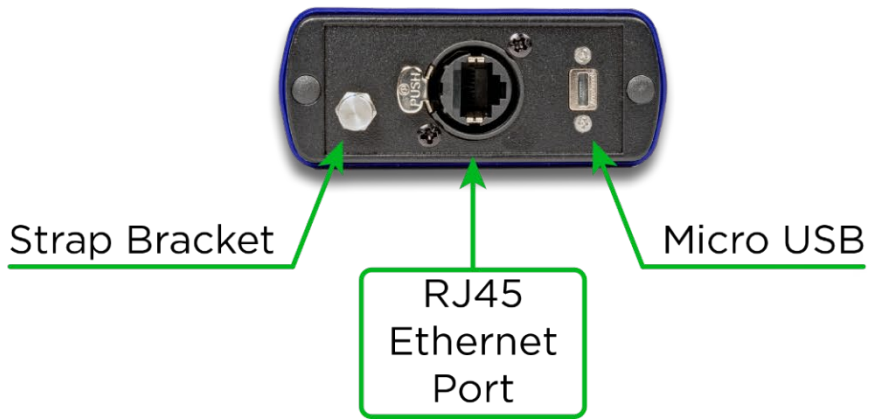- Color-coded, scrolling Packet Lister, with touch navigation, shows raw Ethernet packets
- Multicast Stream detection with multicast switch support
- Configurable ICMP Ping sender and responder
- "Protocol Detector" specifically recognizes standard entertainment industry protocols (Dante, ArtNet, sACN, MANet (2 & 3), HogNet, d3Net, and more)
- PoE detection and analysis of connected sources
- SMPTE LTC Timecode transmitter, receiver and statistics analyzer
- DMX 512 control and analysis via ArtNet, sACN or standard 5-pin DMX
- DMX Transmission with multiple active universe output and source data editors (touch-sensitive faders, FX engine, stored scene playback & more)
- Simulate a DMX node by assigning incoming ArtNet or sACN streams to output via 5-pin DMX ports
- Monitor active incoming sources of DMX, ArtNet or sACN with multiple value display formats, plus flicker-finder and timing statistics
- RDM device monitoring supports most standard PID and "Raw PID" modes for custom messages
- "Smart" DMX cable tester, with pin-to-pin and bandwidth testing

Top

DMX In

DMX Out

LCD Touchscreen

Navigation Pad

Bottom

Strap Bracket

Micro USB

RJ45
Ethernet
Port
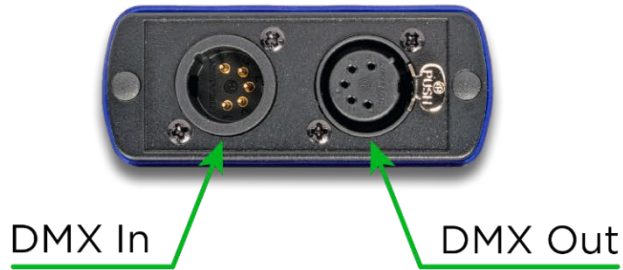
Dimensions in Inches and mm

3.33
[84.6]

1.36
[34.6]

6.53
[166]

6.93
[176]
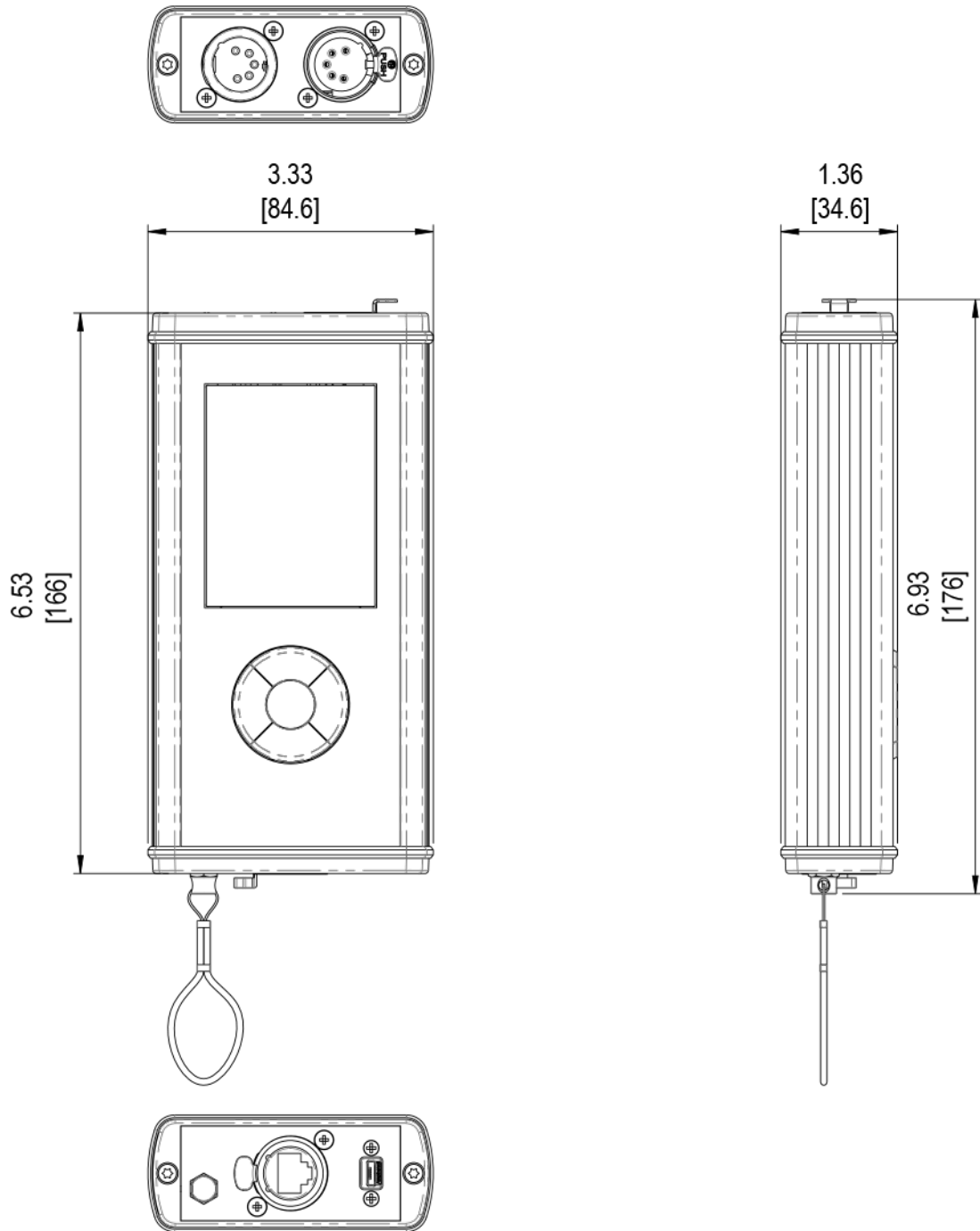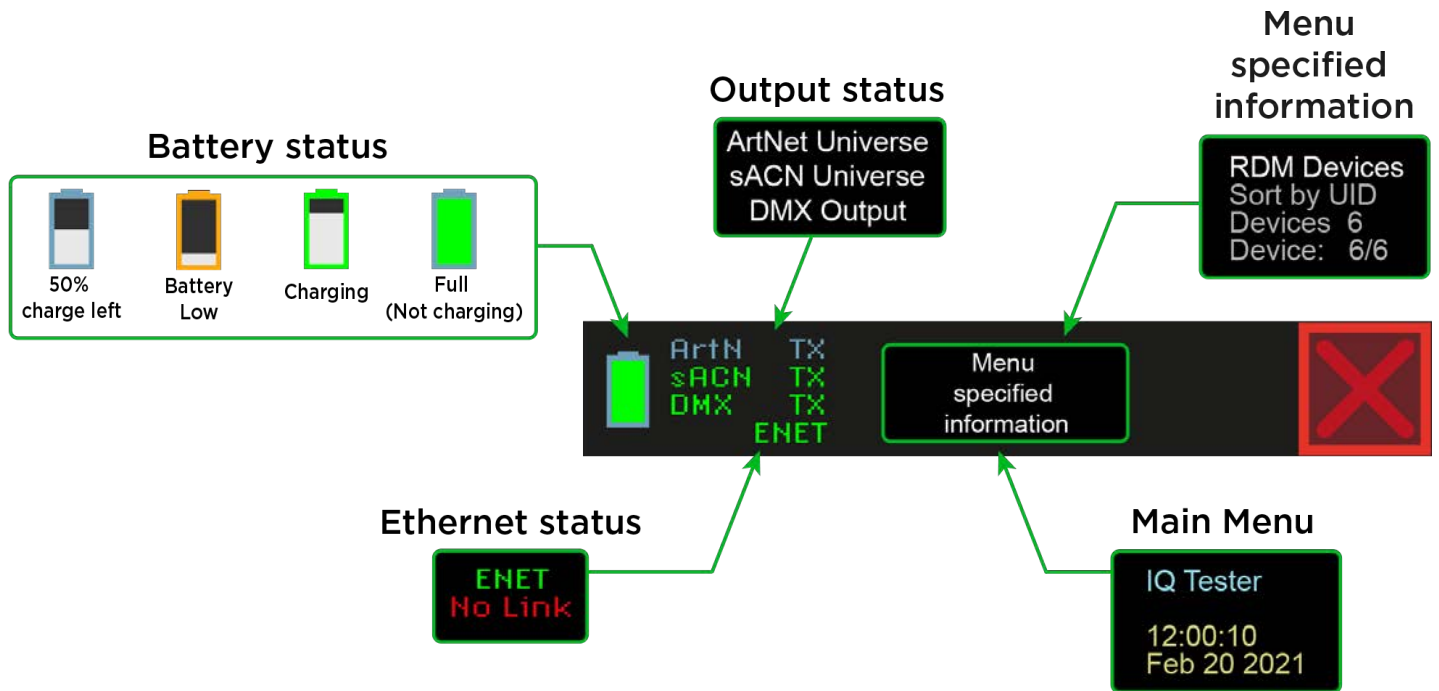
Operation

-Navigate using LCD Touchscreen

-Navigate between Menu windows using Navigation pad.

- Press LEFT/RIGHT to switch between MENU windows.
- Press OK to highlight an item. Highlighted item flashes with blue background. Press OK again to confirm the highlighted item.
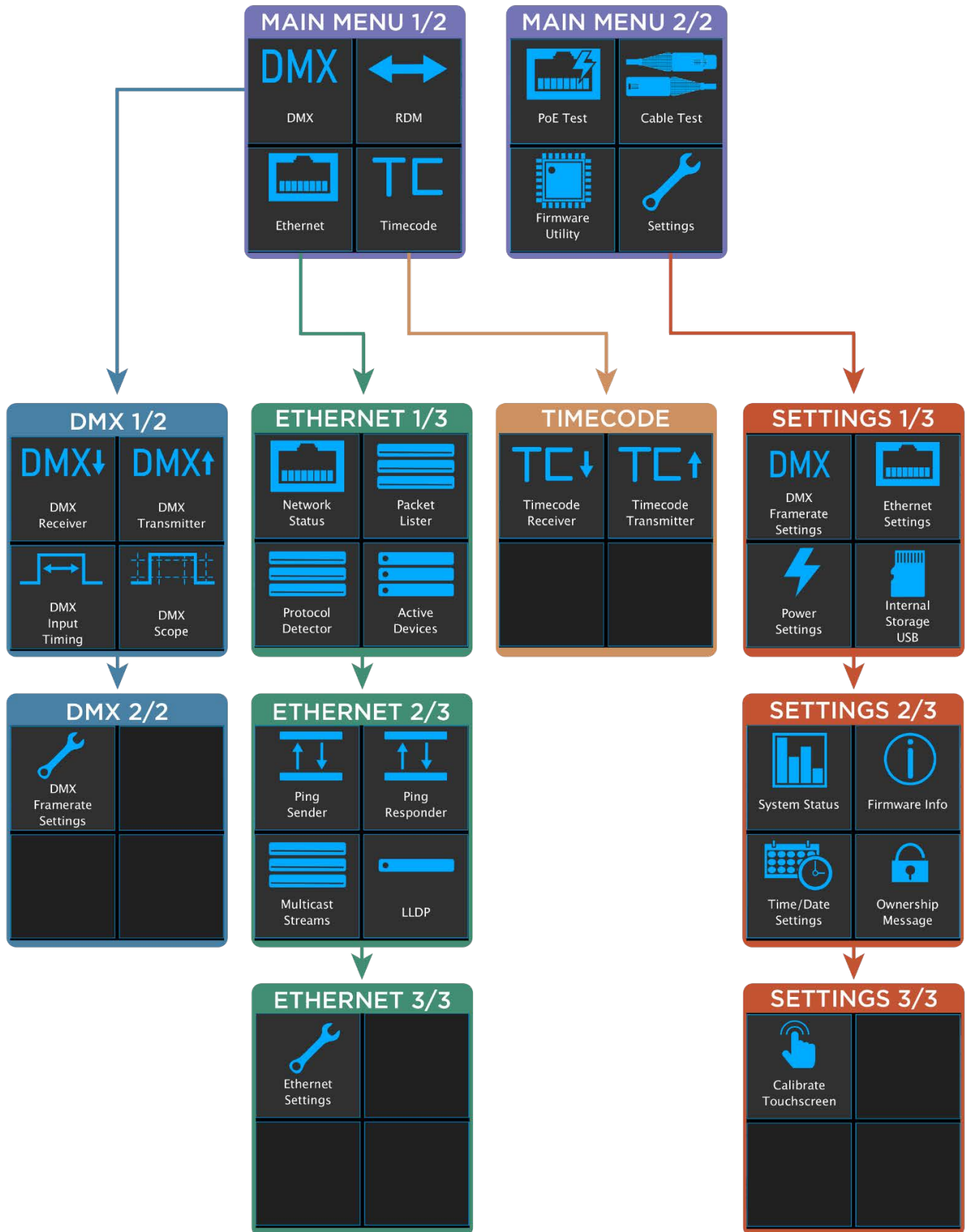- Press Down to return to Main Menu

Status bar

Battery status

- 50% charge left
- Battery Low
- Charging
- Full (Not charging)

Output status

ArtNet Universe
sACN Universe
DMX Output

Menu specified information

RDM Devices
Sort by UID
Devices 6
Device: 6/6

ArtN TX
sACN TX
DMX   TX
      ENET

Menu specified information

Ethernet status

ENET
No Link

Main Menu

IQ Tester

12:00:10
Feb 20 2021

In Main Menu top of the screen will show a custom ownership message (if set)

ArtN TX - Art-Net transmitter active
sACN TX - sACn transmitter active
DMX TX - dmx port sending DMX
ENET - Ethernet port link status and activity

Menu Map

MAIN MENU 1/2
- DMX
- RDM
- Ethernet
- Timecode

MAIN MENU 2/2
- PoE Test
- Cable Test
- Firmware Utility
- Settings

DMX 1/2
- DMX Receiver
- DMX Transmitter
- DMX Input Timing
- DMX Scope

DMX 2/2
- DMX Framerate Settings

ETHERNET 1/3
- Network Status
- Packet Lister
- Protocol Detector
- Active Devices

ETHERNET 2/3
- Ping Sender
- Ping Responder
- Multicast Streams
- LLDP

ETHERNET 3/3
- Ethernet Settings

TIMECODE
- Timecode Receiver
- Timecode Transmitter

SETTINGS 1/3
- DMX Framerate Settings
- Ethernet Settings
- Power Settings
- Internal Storage USB

SETTINGS 2/3
- System Status
- Firmware Info
- Time/Date Settings
- Ownership Message

SETTINGS 3/3
- Calibrate Touchscreen

Main menu has sections representing main tester functions:

- DMX - sending and receiving DMX data over local ports or Ethernet using sACN and Art-Net
- RDM - discovery, monitoring and configuration of RDM enabled devices
- Ethernet - multipurpose network tools for analysis and troubleshooting over Ethernet
- Timecode - sending and receiving of LTC timecode
- PoE - testing of PoE power sourcing equipment (switches and injectors)
- Cable test - testing of 5 pin XLR cables for wiring continuity and digital data transfer
- Firmware utility - updating of Solaris and ProPlex devices over DMX cable
- Settings - device settings
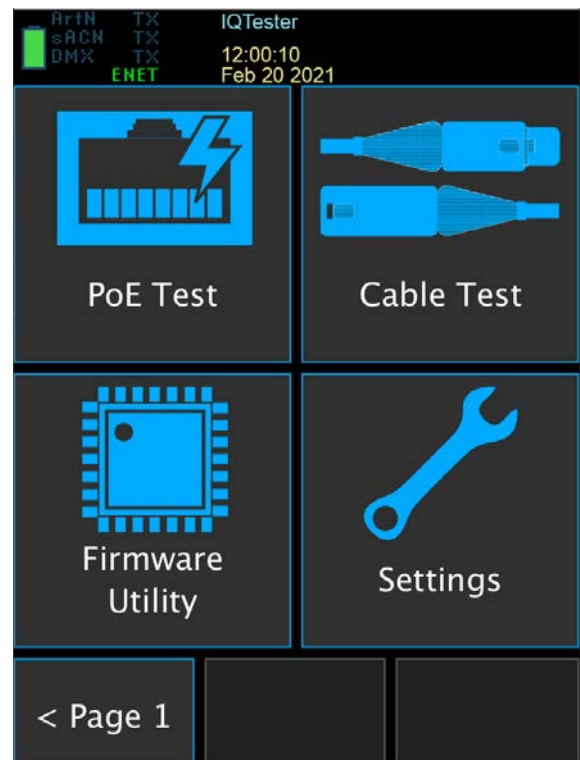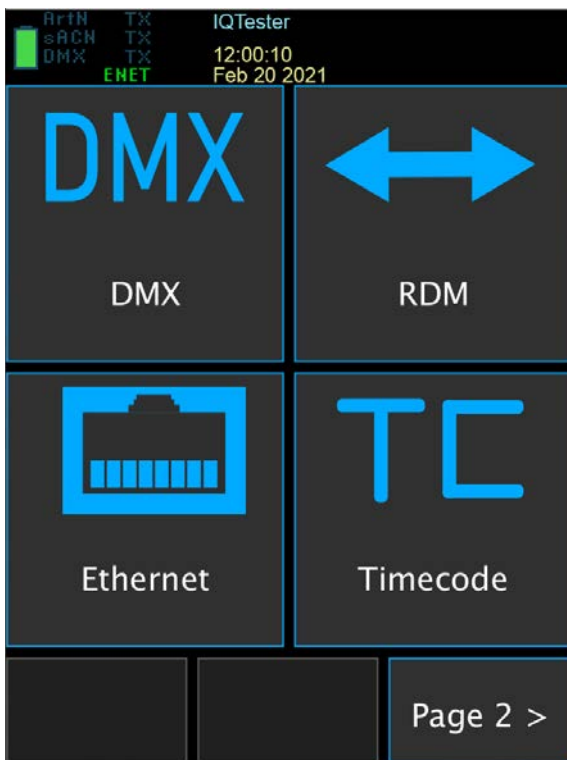
1. DMX

This section contains a collection of tools to send and receive DMX data.
- DMX Receiver - reception of data over DMX Input port or Ethernet
- DMX Transmitter - send DMX data over DMX Output port or Ethernet
- DMX Input Timing - analyze received DMX packet timing
- DMX Scope - visual inspection of received DMX signal
- DMX Framerate settings - transmission framerate and timing settings for DMX port and Ethernet

1.1 DMX Receiver

DMX Receiver main view shows a list of DMX universes that have been active since powerup. DMX Input Port is always shown on top (even if it is not active) followed by a list of Ethernet universes.

Active universes – shown with green label and live stats of packet count and FPS.
Inactive universes – shown with orange label and timer since last seen.

Pressing on right side [⋮] icon will open menu that allows to open DMX View or Store data to Scene that can later be used as DMX Output data source.
Pressing on the left side / center of universe entry will open DMX View.

You can change sorting order of Ethernet universes, available [Sort by] options are:
- Universe number
- Total received packet count
- Active universes on top

[Clear inactive] will remove universes that don't have active online sources.

[Config] opens DMX Input Stream Settings:
[Universe range] – set universe range that is used for ArtPollReply and sACN multicast join messages.
[ArtNet Poll Reply] – enable or disable replying to ArtPoll packets. This is off by default as sending ArtPollReply packets might affect the way ArtNet source (sender) works. Depending on system configurations, you might not see any ArtNet data if this is Disabled.
[sACN Multicast Join] – sends IGMP messages to request data for sACN universes. This will have effect only if the system has multicast-aware Ethernet switches.
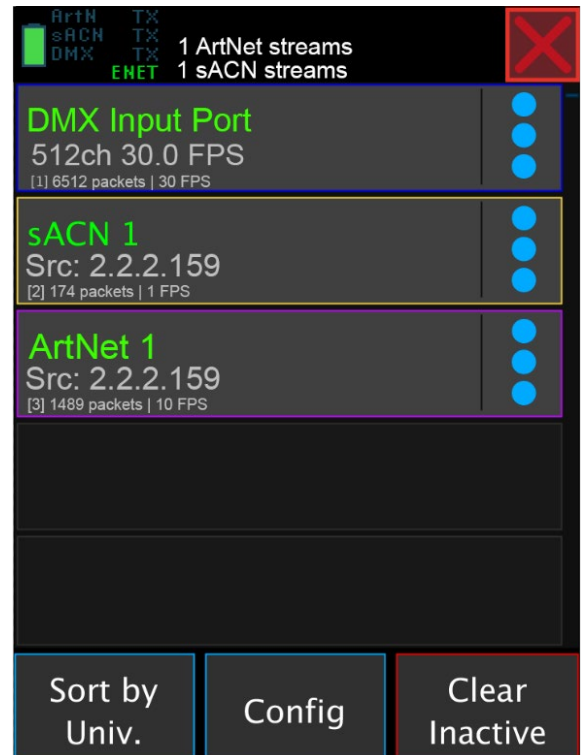
DMX View has number of different display options:
- 48ch Bars - bars with data values
- 512ch Bars - whole universe as bars
- 512ch - values represented as intensity
- RGB - values represented as RGB pixels
- RGBW - value represented as RGBW pixels

48 channel view will also allow to select data value format as:
- Decimal (0-255)
- HEX (00-FF)
- Percent (0-100)

Flicker finder can be used to highlight channels that change value. There are two display modes:
- Hold - if channel has changed values since reset, color of this channel is changed and never set back
- Fade - if channel has changed, it is highlighted, but then gradually faded back to default color

Flicker Finder Fade Time- configurable up to 10 seconds
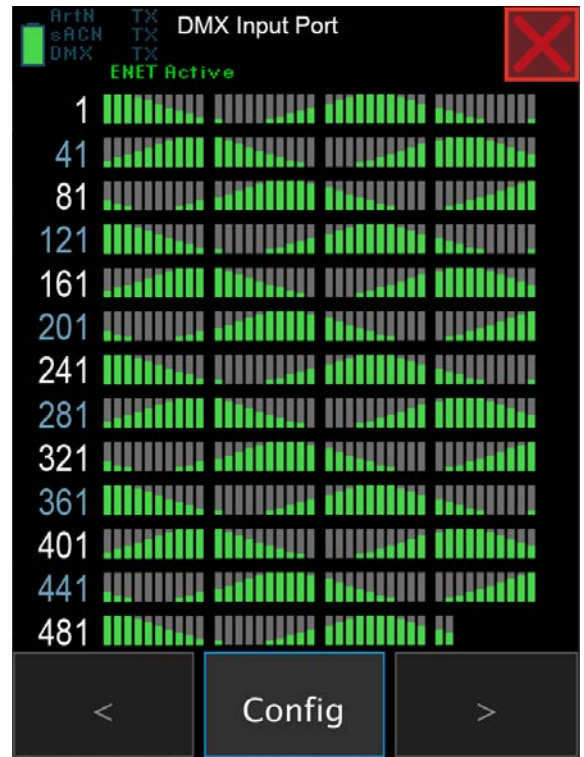
1.2 DMX Transmitter

Main window shows a list of DMX sources.
DMX Output Port is always shown on top.

All created sources and their configurations are saved, but output is disabled on powerup to avoid accidental data transmission.

Pressing on right side [⋮] icon will open menu that allows to:
- Configure
- Enable / Disable
- Delete
- View data

Pressing on the left side / center of source will open the corresponding [Configure] window.
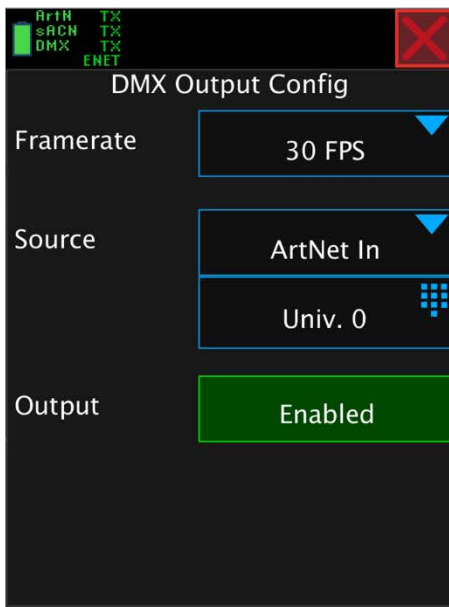
Use [Add] to create new sACN or Art-Net courses. Use [Delete] to clear all sources.

[DMX In Merge] enables merging of DMX Input port data with output source data.
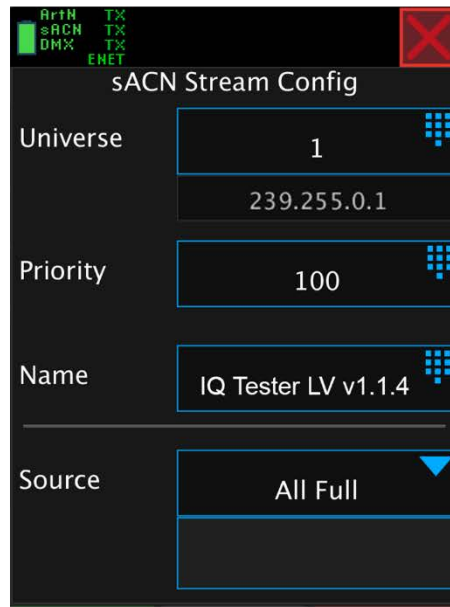
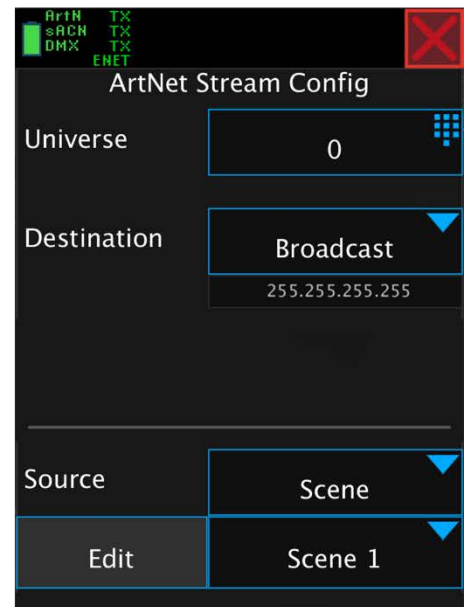Source configuration window options depend on source type.

DMX Output port config: sACN config: Art-Net config:

DMX Output port configuration:
- DMX framerate - change output port framerate between 30, 30, 40 or Custom FPS
- Enable/disable for DMX Port

sACN Stream configuration:
- Universe nr - set single universe or range of universes for output
- sACN priority (0-200)
- sACN source name

ArtNet Stream configuration:
- Universe nr - set single universe or range of universes for output
- Destination IP - set Broadcast or Unicast destination IP

Bottom of all source types will have data source selection where you can choose between:
- All Zero – sends all DMX channels at zero (0)
- All Full – sends all DMX channels at full (255)
- DMX In – forwards data from DMX Input port
- Art-Net In – forwards data from Art-Net universe
- sACN In – forwards data from sACN universe
- Scene 1-6 – user created editable scene
- FX Engine – dynamic data generated with built-in FX engine

1.2.2 Scenes

Scenes can be captured from DMX Receiver or created from scratch.
Scene data is stored in memory so will remain their values between power-cycles.

Scene data can be edited with one of these DMX Data editors:
- 4 Channel fader view
- 6 Channel fader view
- CMD Keypad
- RGB fader mode
- RGBW fader mode

Use [View DMX] to show data being output.
Use [Clear Values] to reset all channels back to 0.

4 Channel   6 Channel   CMD Keypad

RGB   RGBW

1.2.3 FX Engine

Dynamic DMX patterns can be generated using build-in FX engine.

Effect speed – enter BPM or use "Tap"

Channel range that effect will be generated for. Remaining channels are sent as 0.
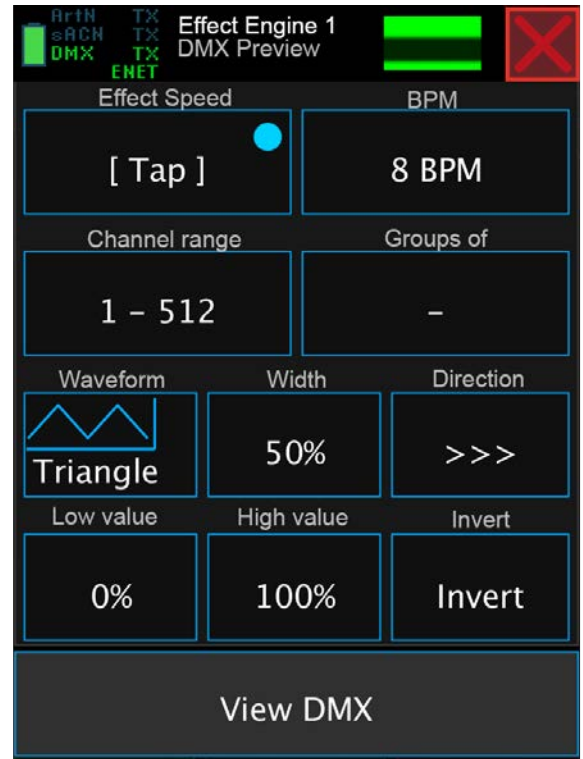
Grouping/repeating of pattern.

Generation waveform:
- Sine
- Saw
- Triangle
- PWM
- Random

Waveform width
Effect running direction

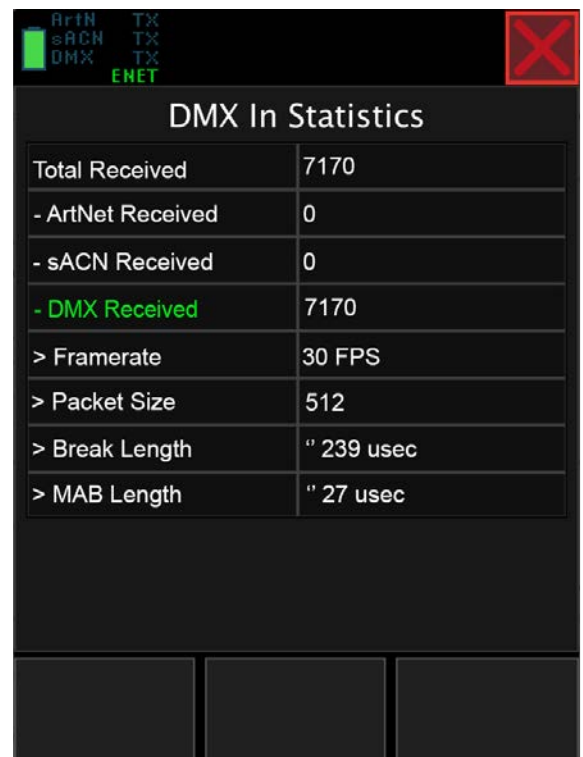Low/high value of waveform
Invert waveform

1.3 DMX Input timing

Set of statistics for DMX Receiver are shown here.
This includes packet counters for ArtNet, sACN and DMX as well as detailed information for DMX Input port:
- framerate
- packet size
- break length
- MAB length

1.4 DMX Scope

DMX Scope can be used to analyze DMX signal data timing and voltage levels.

Select voltage range +-3V or +-6V

Select time range from 4us/div to 50 mS/div

Setup trigger as:
- DMX break
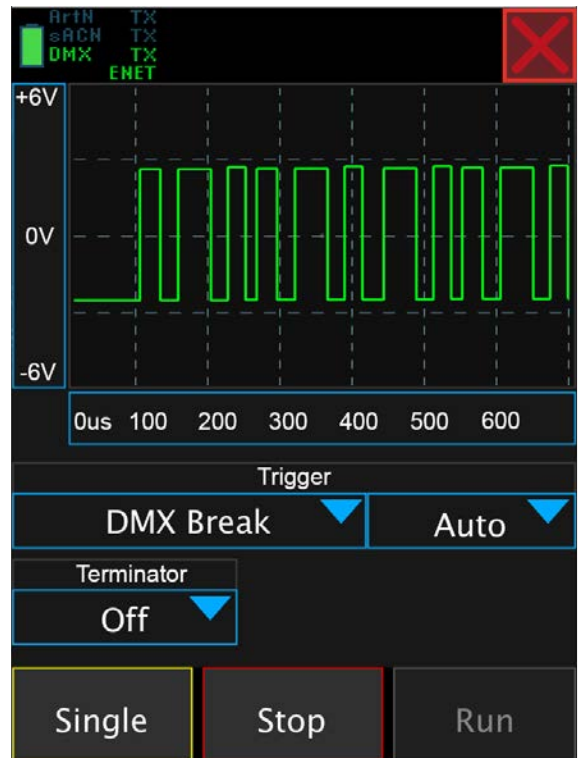- DMX startcode
- RDM break
- RDM startcode

Trigger mode:
- Auto – redraw if trigger not found
- Normal – redraw only on trigger event

Enable or disable DMX line termination.

[Run] and [Stop] will accordingly start and stop DMX signal capture.
[Single] will run trigger once and then stop capture.
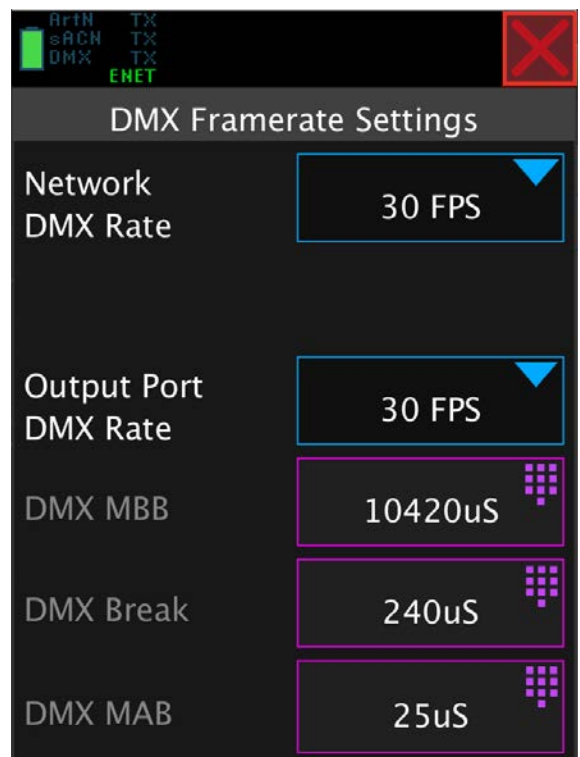
1.5 DMX Output Framerate Settings

Network DMX Rate setting will set sACN and Art-Net transfer rate.

Output port frame rate can be set to predefined values of 20, 30, 40 or to Custom timing that allows to modify separate times for:
- Mark Before Break
- Break
- Mark After Break

2. RDM

RDM section can be used to discover, monitor and configure RDM enabled devices.

2.1 RDM Device list

Main window will show a list of discovered RDM devices. Depending on a setting, it might also show discovered devices that are gone offline.

Each entry representing a RDM device contains basic info regarding this device:

- Green/red dot - device online/offline
- Sand clock - RDM communication activity
- RDM UID
- Device label
- DMX address
- Control mode

[Menu] button opens RDM device list settings menu.

There are different RDM list sorting options.

- None - unsorted, shown in sequence of discovery
- Model - sort by device model id
- UID - dor by RDM Unique Identifier
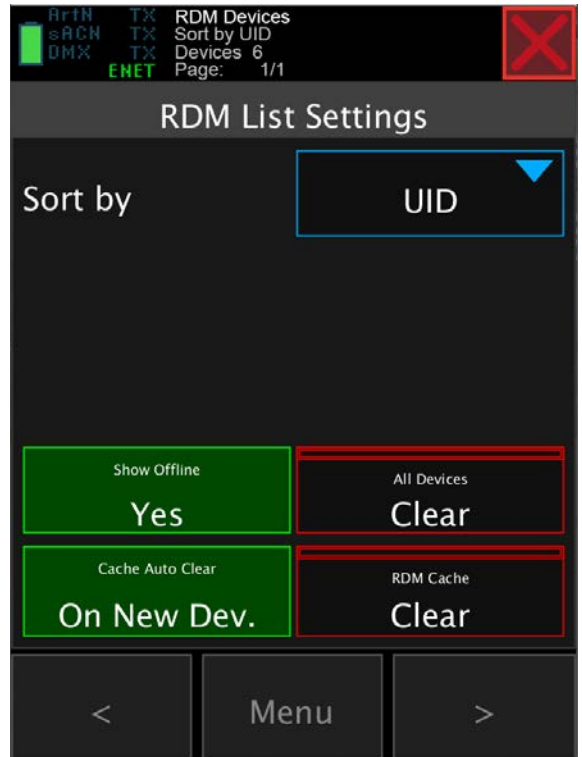- Manufacturer - sort by manufacturer

[Show offline] - hide devices if they go offline.
[All devices Clear] - clear device list and restart discovery

To speed up RDM communication IQ Tester is caching part of RDM device information.
[Cache auto clear on new device discovery] will automatically refresh device cache once new device is discovered.
[RDM cache Clear] - manually clear RDM device cache.

2.2 RDM Device window

Clicking a RDM device will open the RDM device window showing detailed information regarding this device.

Top of window shows basic device information:
- RDM UID
- Device label
- Model
- Manufacturer
- Software version

Middle of the screen contains a scrollable list of RDM PIDs. Features nor available in selected device will be grayed out.

Bottom of screech has [<] and [>] arrows can be used to select the previous and next device.

[Identify] will toggle device Identify function that helps locate device.
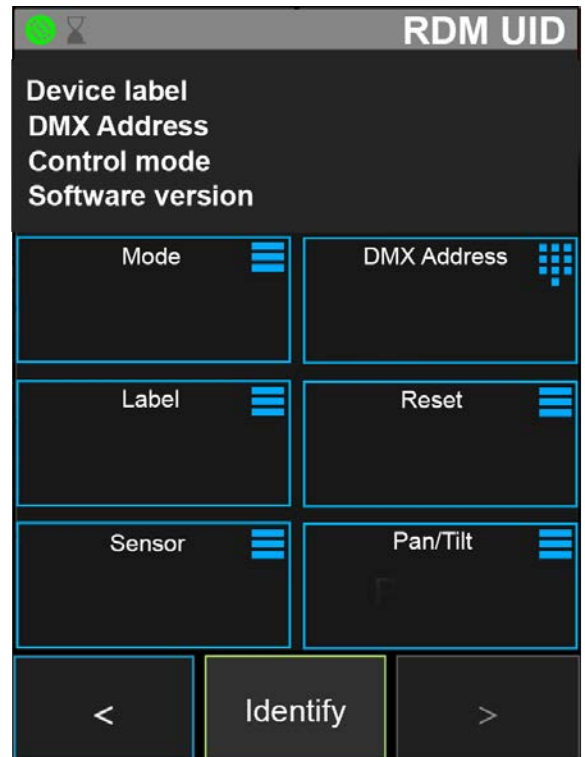
2.2.1 RDM Sensors

[Sensors] button will open RDM device sensors view that lists all available sensors in the selected device.
Sensor list will show sensor name, current value and sensor type.
For selected sensor a detailed information will be shown on bottom of screen:
- Sensor label
- Sensor type
- Current value
- Lowest value
- Highest value
- Recorded value
- Sensor range
- Sensor normal range

[Reset] and [Record] will issue corresponding RDM commands to the device.
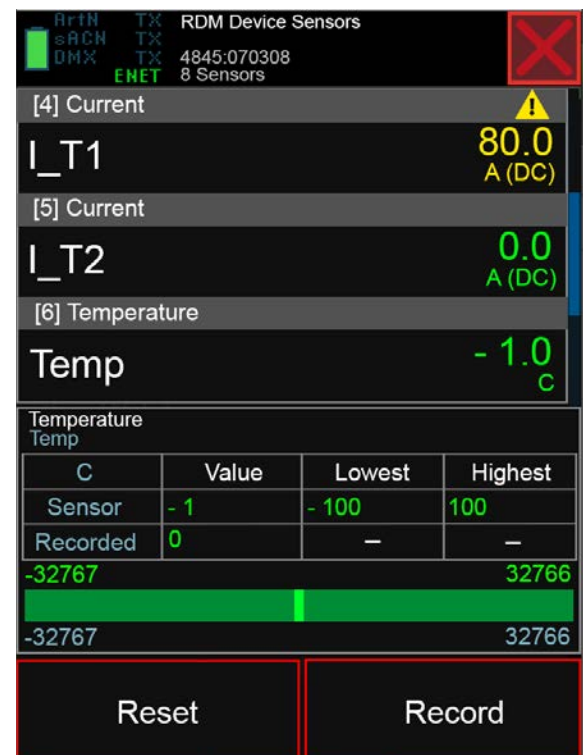
3. Ethernet

This section contains selection of network tools for status monitoring and troubleshooting.

3.1 Network status

Shows current Ethernet link status as well as general information regarding data:
- data Input speed
- data output speed
- Received packet counter
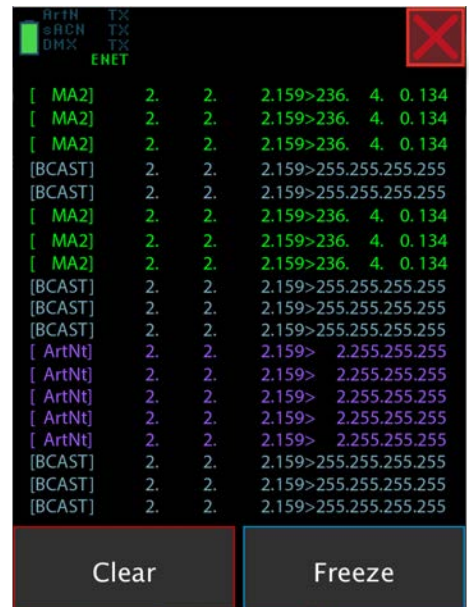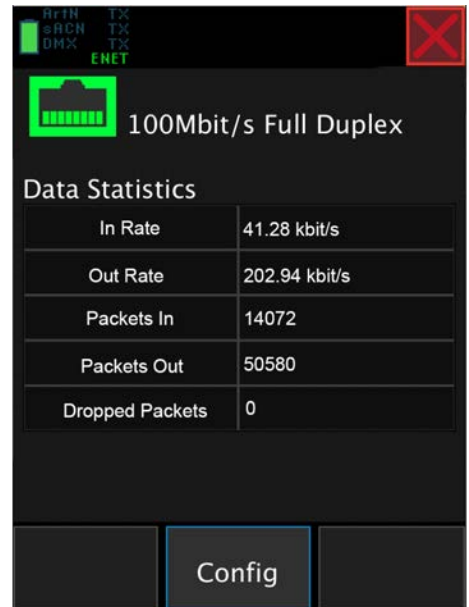- Sent packet counter
- Dropped packet counter

3.2 Packet lister

Shows real-time network activity by listing all received packets.

List shows each packet as:
[PROTOCOL] Source > Destination

Packet lister can be stopped with [Freeze] and then scroller for inspection. [Clear] will clear the packet list.

3.3 Protocol Detector

Protocol detector will show list of industry standard protocols and their status in network:

- ArtNet
- sACN
- MA2 (no multicast join)
- MA3 (no multicast join)
- HogNet
- d3 (only station broadcasts)
- HippoNet (only station broadcasts)
- GreenGo (no multicast join)
- PSN (PosiStageNet)
- OSC (Open Sound Control)
- ProPlex Manager
- Dante (station broadcasts + PTP)

Protocols that are detected will be highlighted and moved to top of list:

- Green - protocol is active now
- Orange - protocol was active, but is offline now
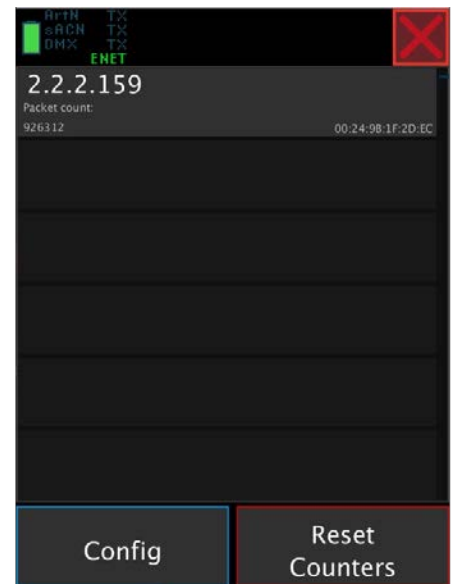- Gray - protocol has not been detected in network
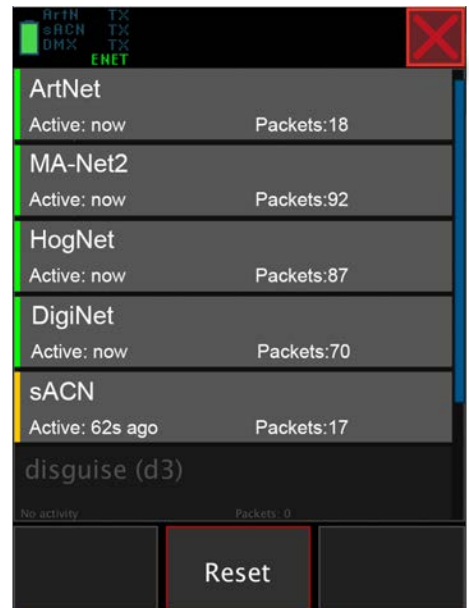
3.4 Active devices

Lists all Ethernet devices discovered.
As this feature is based on passive detection some devices might not show up in this list.

[Config] menu opens a window where you can select sorting order and clear the device list.

3.5 Ping sender

Sends Internet Control Message Protocol (ICMP) echo request packets to
verify if a device is reachable in network.
[Destination IP] sets the ping target.

[Config] opens settings window where you can set
- Ping size - range 1-1024 bytes
- Ping interval - range 10mS - 60 Seconds

Use [Run] to start sending ping packets and [Stop] to stop send.
Ping reply list is scrollable so you can inspect the ping reply history.

3.6 Ping responder

Use this feature to see source and timing of ping requests.
Note that the ping responder is active even if this window is not open.

3.7 Multicast streams

Detects active multicast groups.
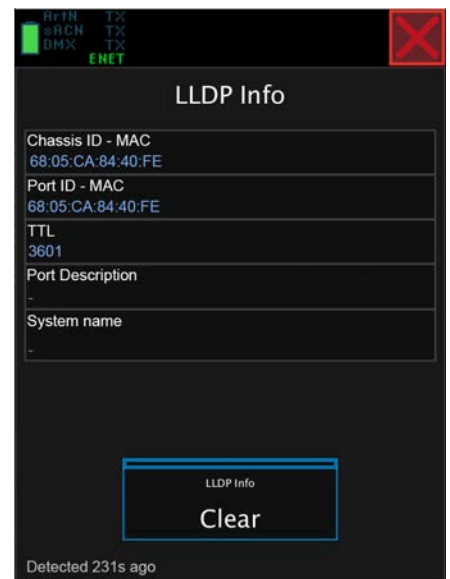[Config] menu opens a window where you can select sorting order and clear the list.

3.8 LLDP

Shows content of received LLDP messages:
- Chassid ID
- Port ID
- TTL
- Port Description
- System Name

3.9 Ethernet settings

Change unit IP address and subnet mask here.

4. Timecode

Timecode is sent and received over DMX ports. Note that both ports are used at the same time for both sending and receiving timecode.

4.1 Timecode receiver

Data can be received over both DMX Input and DMX Output ports. To connect timecode, you will need a XLR 5 pin to XLR 3 pin or other balanced audio signal connector.

Squares on the screen top represent the corresponding port and show its status:
- Green - valid timecode on this port
- Red - no timecode detected

Top of screen shows last received frame time value.
Color represents current status:
- Red - not receiving valid timecode
- Orange - locking to timecode
- Green - locked to timecode

Timecode is considered locked if it has been valid for more than 1 second.
A missed frame will cause sync to be lost and the time display will turn orange.

Below time readout you will see signal shape scope. Press on it to change the vertical (voltage) scale if the signal level is too high or too low.
Note that scope is available only for DMX In port.

Besides time other details are shown:
- FPS - actual timecode speed
- Format - timecode type encoded in data; this should match FPS under normal circumstances
- User data - user bytes that can be defined in timecode sender
- Start - time value of first valid frame received since start of reception

Timecode frame counters:
- Good - valid frames received
- Incomplete - invalid frames received
- Jump - time jumps / frames out of sequence
- Pause - loss of timecode synchronization count

With good timecode after timecode counter reset only [Good] frame count should increase and rest should stay at 0.
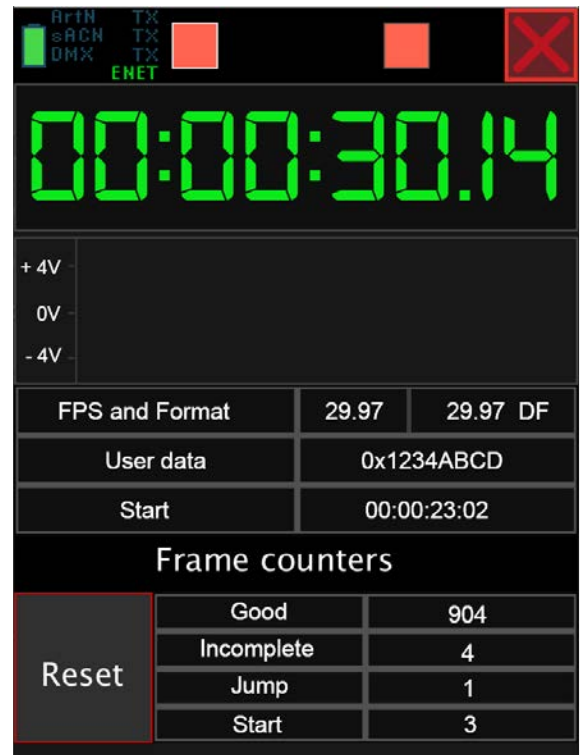
4.2 Timecode transmitter

Timecode data will be transmitted over both DMX Output and DMX Input ports.
To connect with other timecode equipment you will need a XLR 5 pin to XLR 3 pin or other balanced audio signal connector.

[Start time] - set generator start time
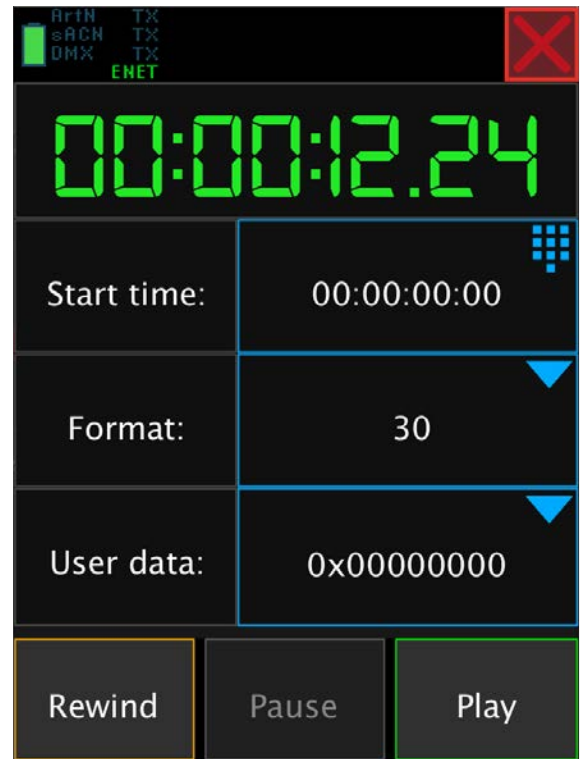[Format] - select timecode format. Available options are:
- 23.976
- 24
- 25
- 29.97
- 29.97 Drop- frame
- 30
- 30 Drop- frame

[User data] - set user bits.

[Play] will start the generator.
[Pause] will stop generator at current time so you can continue generation,
[Rewind] will set time to the value set in Start time.

5. PoE Test

PoE Test will determine capabilities of connected Ethernet switch or PoE injector.

Top of screen shows live voltage readouts for both A and B PoE wiring types.

Passive PoE - non-standard PoE type that applies DC voltage to Ethernet cable without any detection or classification algorithm in place.

"PoE" (802.3af) - 15W capable PoE standard

"PoE+" (802.3at) - 25W capable PoE standard

Press [Run Test] to start the test sequence.
After the test, press [Details] to get information about PoE type test results.
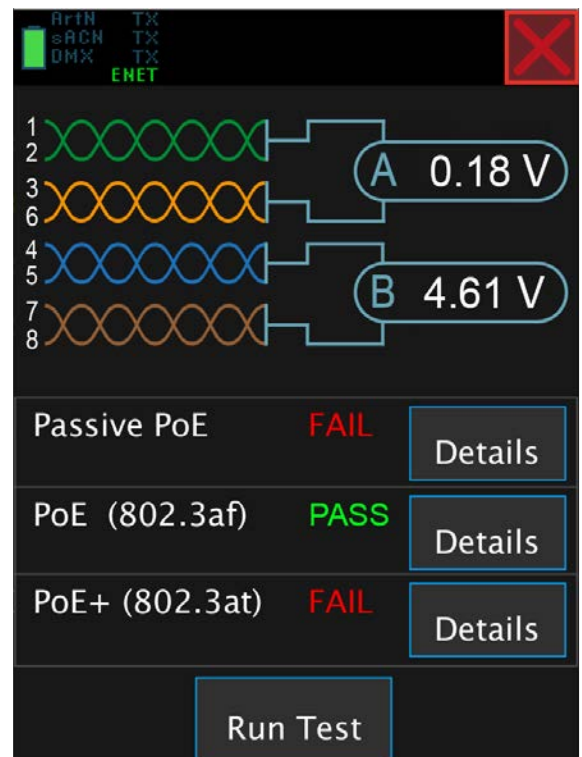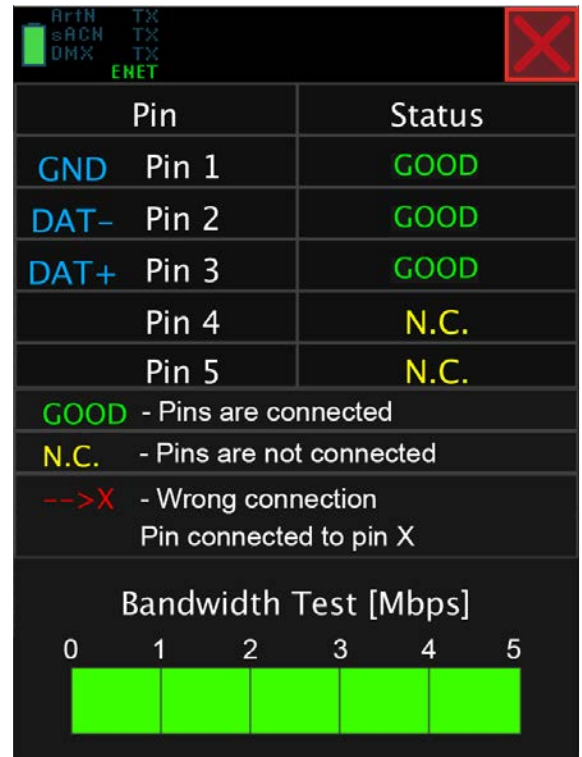
6. Cable Test

Test 5-pin XLR cable pinout and signal transfer capabilities.

Standard DMX cables should have pins 1 thru 3 connected. Connection of pins 4 and 5 is optional.

Bandwidth test will determine cable throughput.

7. Firmware utility

Use firmware utility to update firmware of Solaris and ProPlex devices supporting firmware upload over DMX cable.

To copy firmware files into Tester, go to [Settings] > [Internal Storage USB] and connect to PC using USB cable - Tester will show up as a flash drive.
Copy firmware files to "firmware" folder. You can make subdirectories to sort firmware files for convenient access.

To upload firmware, connect fixture to be updated with DMX cable to DMX Output port, select corresponding firmware file in browser and press [Upload].
Wait until firmware upload is complete before selecting other firmware or disconnecting cable.
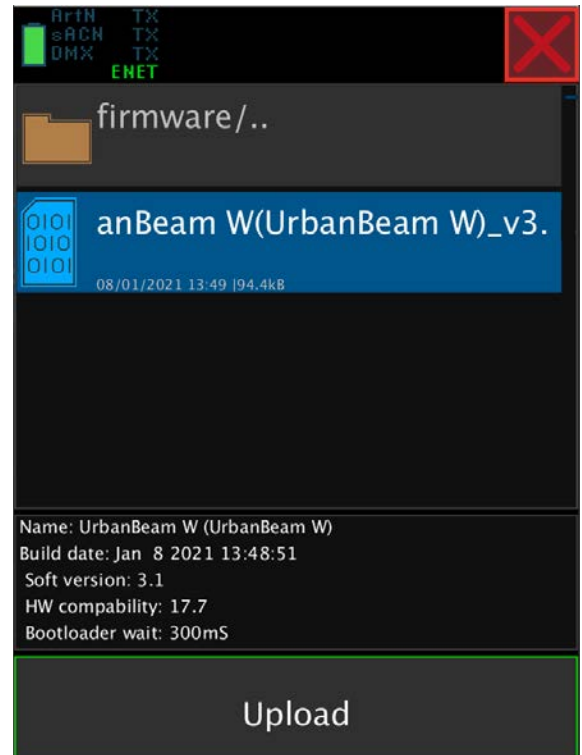
8. Settings

This section has unit settings including settings for DMX Framerate and Ethernet IP config.

8.1 DMX Framerate Settings

DMX Output framerate for DMX and Ethernet.

8.2 Ethernet Settings

Settings for unit Ethernet IP address and subnet mask.

8.3 Power Settings

Shutdown timeout - automatic shutdown timeout to save battery range of 1-30 minutes

Battery statistics will show info regarding current battery state.

Battery preparation for storage - to maintain longer battery life, use this feature before prolonged unit storage. This will get the battery to a preferred storage charge and automatically shut down the unit. You might be prompted to connect the USB charger if the battery level is too low.

8.4 Internal USB Storage

Sets unit in USB Storage access mode. When this mode is activated, the unit will show up as a USB flash drive. In emergencies storage can also be used for general data transfers (for example, show file backups) but this is not intended use and memory can be wiped after firmware updates.

8.5 System status

Shows system state for debug purposes.

8.6 Firmware info

Shows current firmware version and build date

8.7 Time/Date Settings

Set current time and date.
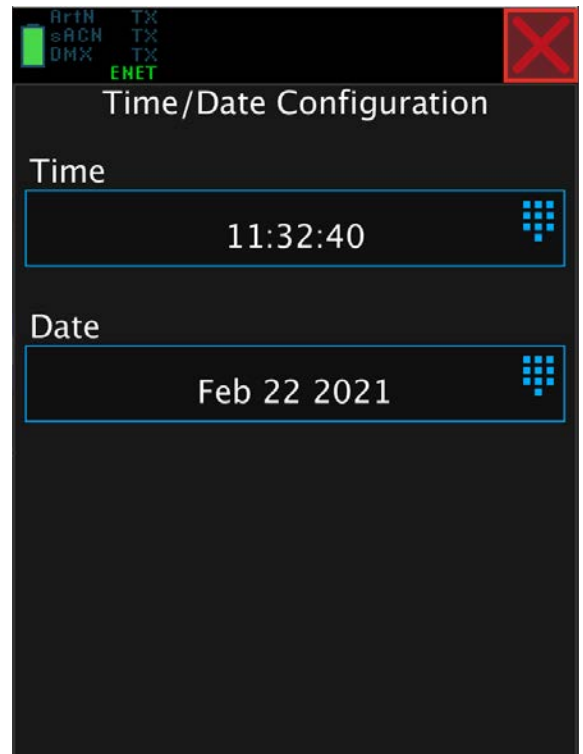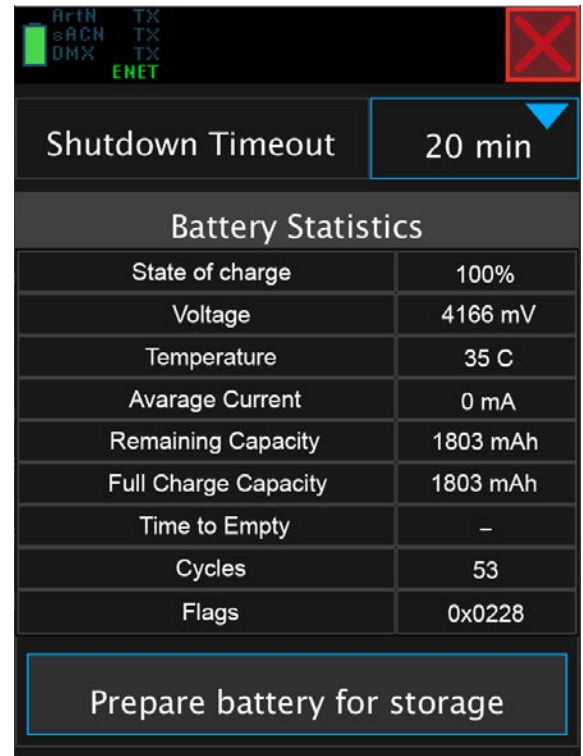
8.8 Ownership message

Owner name can be set here. It will be shown on top of the screen in the main menu.
Default pin is 0000.

8.9 Calibrate touchscreen

Starts touchscreen calibration sequence.
Note tester uses a resistive touchscreen so for calibration it's best to use a pointy object and not your fingers.

Limited Warranty

ProPlex Data Distribution Devices are warranted by TMB against defective materials or workmanship for a period of two (2) years from the date of original sale by TMB.

TMB's warranty shall be restricted to the repair or replacement of any part that proves to be defective and for which a claim is submitted to TMB before the expiration of the applicable warranty periods.

This Limited Warranty is void if the defects of the Product are the result of:
- Opening the casing, repair, or adjustment by anyone other than TMB or persons specifically authorized by TMB
- Accident, physical abuse, mishandling, or misapplication of the product.
- Damage due to lightning, earthquake, flood, terrorism, war, or act of God.

TMB will not assume responsibility for any labor expended, or materials used, to replace and/or repair the Product without TMB's prior written authorization. Any repair of the Product in the field, and any associated labor charges, must be authorized in advance by TMB. Freight costs on warranty repairs are split 50/50: Customer pays to ship defective product to TMB; TMB pays to ship repaired product, ground freight, back to Customer.

This warranty does not cover consequential damages or costs of any kind.

A Return Merchandise Authorization (RMA) Number must be obtained from TMB prior to return of any defective merchandise for warranty or non-warranty repair. For all repairs please contact TMB Tech Support Repair using the contact information below or email TechSupportRepairNA@tmb.com.

US
527 Park Ave.
San Fernando, CA 91340
Tel: +1 818.899.8818
Fax: +1 818.899.8813
tmb-info@tmb.com
www.tmb.com

UK
21 Armstrong Way
Southall, UB2 4SD England
Tel: +44 (0)20.8574.9700
Fax: +44 (0)20.8574.9701
tmb-info@tmb.com
www.tmb.com

Return Procedure

Please send returned merchandise prepaid and in the original packing. Freight call tags will not be issued for shipping the product to TMB, but TMB will pay the freight for return to the customer. Clearly label package with a Return Merchandise Authorization Number (RMA #). Products returned without an RMA # will delay service. Please contact TMB and request an RMA # prior to shipping the unit. Be prepared to provide the model number, serial number, and a brief description of the cause for the return. Be sure to properly pack the unit; any shipping damage resulting from inadequate packaging is the customer's responsibility. TMB reserves the right to use its own discretion to repair or replace product(s). Proper UPS packing or double-boxing will better ensure product integrity when shipped.

Note: If you are given an RMA #, please include the following information on a piece of paper inside the box:

1) Your name
2) Your address
3) Your phone number
4) The RMA #
5) A brief description of the symptoms

Technical Specification

Connectivity:	
Ethernet	(Neutrik EtherCON RJ45)
DMX - Input and Output	(Neutrik XLR5)
LTC	Available through DMX connectors with adapter
Micro USB	Charging and data transfer
Operating Temp.	-4 to 104 ºF (-20 to +40 ºC)
Power source	Built-in Li-ion 1800mAh battery
Power input	Micro USB 5V/500mA
Display	2.8'' Resistive LCD touchscreen
Dimensions (HxWxD)	6.93 (176) x 3.33 (84,6) x 1.36 (34,6)
Weight	0.9 lb (410 g)