ProPlex IQ Tester LV Firmware User Manual

Contents

ProPlex IQ Tester LV Firmware

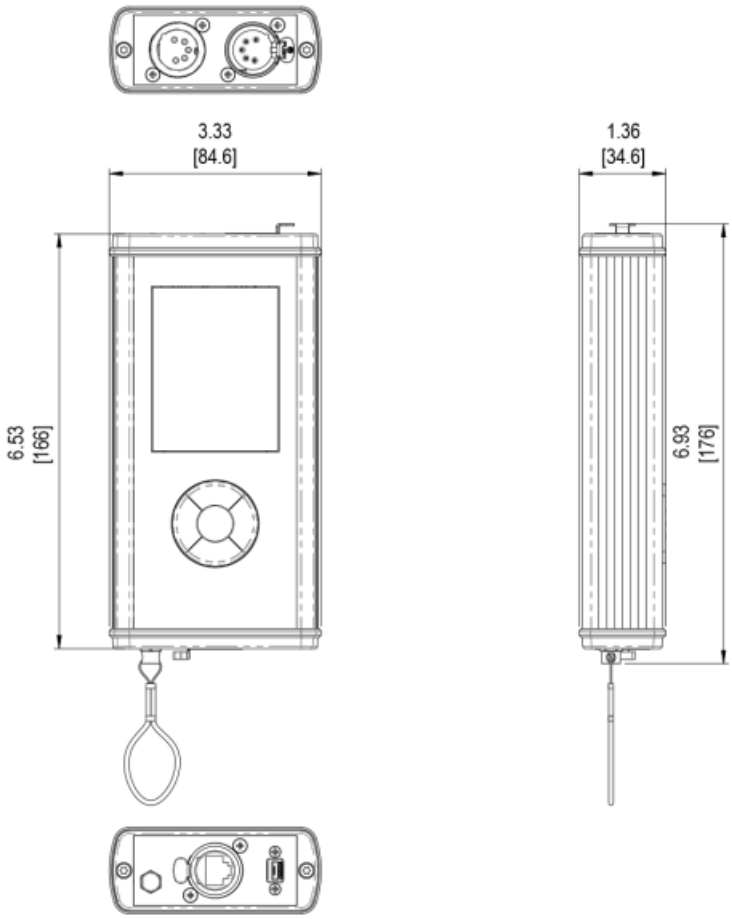
Overview

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

1. Complete analysis of active Network streams and devices
2. Monitors network activity and bandwidth usage
3. Color-coded, scrolling Packet Lister, with touch navigation, shows raw Ethernet packets
4. Multicast Stream detection with multicast switch support
5. Configurable ICMP Ping sender and responder
6. “Protocol Detector” specifically recognizes standard entertainment industry protocols (Dante, ArtNet, sACN, MANet (2 & 3), HogNet, d3Net, and more)
7. PoE detection and analysis of connected sources
8. SMPTE LTC Timecode transmitter, receiver, and statistics analyzer
9. DMX 512 control and analysis via ArtNet, sACN or standard 5-pin DMX
10. DMX Transmission with multiple active universe output and source data editors (touch-sensitive faders, FX engine, stored scene playback & more)

11. Simulate a DMX node by assigning incoming ArtNet or sACN streams to output via 5-pin DMX ports
12. Monitor active incoming sources of DMX, ArtNet or sACN with multiple value display formats, plus flicker-finder and timing statistics
13. RDM device monitoring supports most standard PID and “Raw PID” modes for custom messages
14. “Smart” DMX cable tester, with pin-to-pin and bandwidth testing

Dimensions in Inches and [mm]



Operation

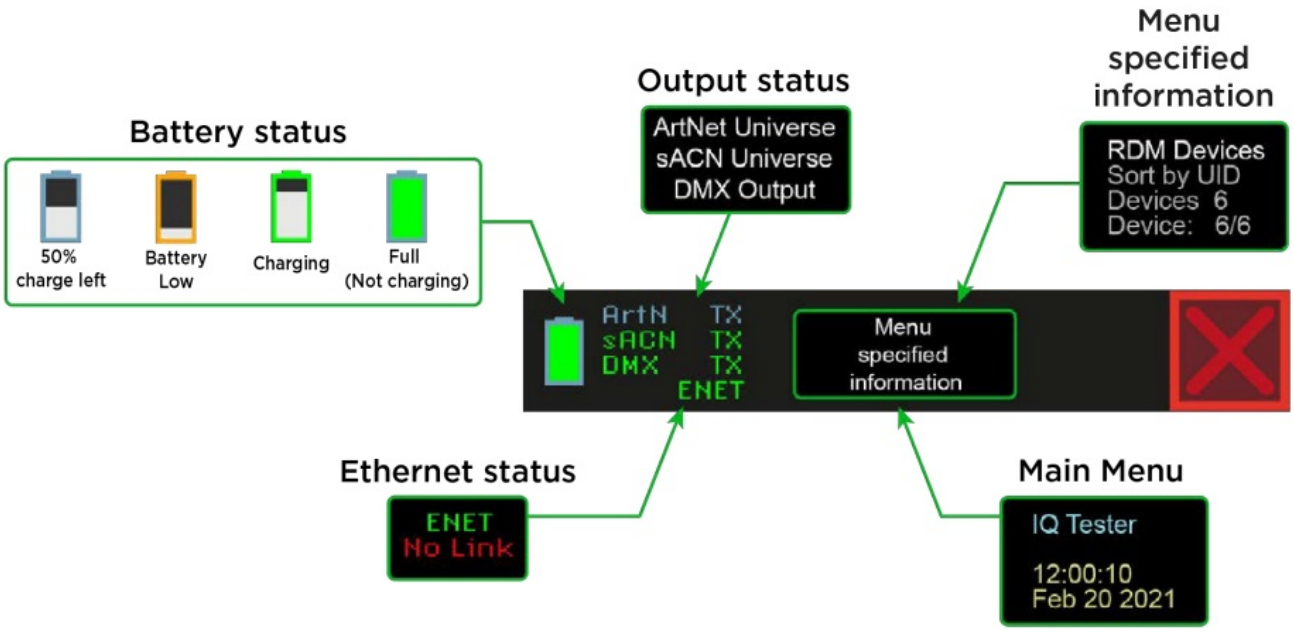
Powering On and Off

Press and hold the center OK button to power on or off the device.

The IQ Tester LV will briefly show a charging animation on the display to indicate current battery percentage if the device is off and connected to USB.
Navigate using LCD Touchscreen
Navigate between Menu windows using Navigation pad.

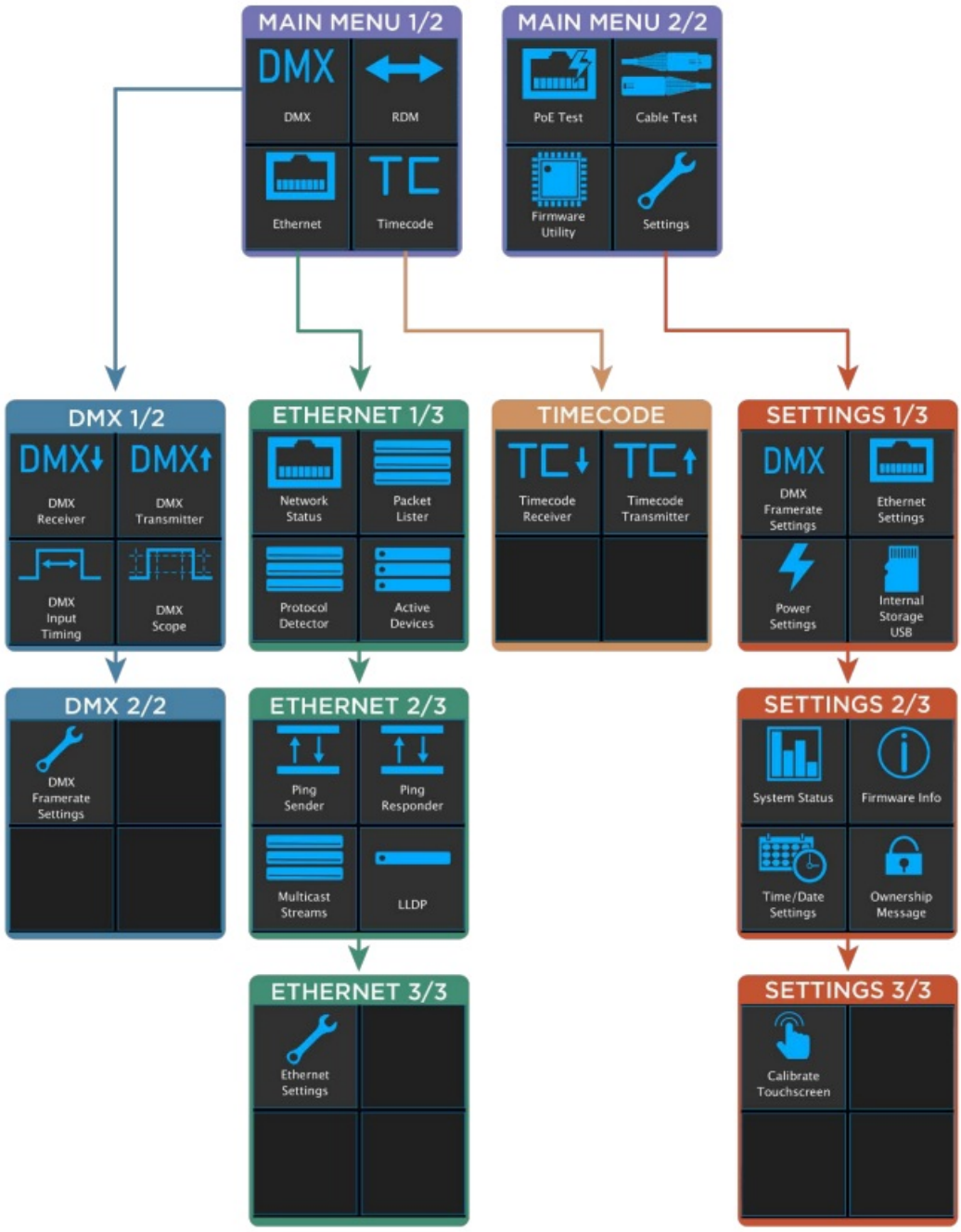
- Press LEFT/RIGHT to switch between MENU windows.
- Press OK to highlight an item. Highlighted item flashes with blue background. Press OK again to confirm the highlighted item.
- Press Down to return to Main Menu

Status bar



In Main Menu top of the screen will show a custom ownership message (if set)
ArtN TX – ArtNet transmitter active
sACN TX – sACN transmitter active
DMX TX – DMX port sending DMX
ENET – Ethernet port link status and activity

Menu Map



1. **DMX**
    1. DMX Receiver 1.2 DMX Transmitter
    2. Scenes
    3. FX Engine
    4. DMX Input timing
    5. DMX Scope
    6. DMX Output Framerate Settings
2. **RDM**
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    - LLDP
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5. PoE Test
6. Cable Test
7. Firmware utility
8. Settings
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    - Ethernet Settings
    - Power Settings
    - Internal USB Storage
    - System status
    - Firmware info
    - Time/Date Settings
    - Ownership message
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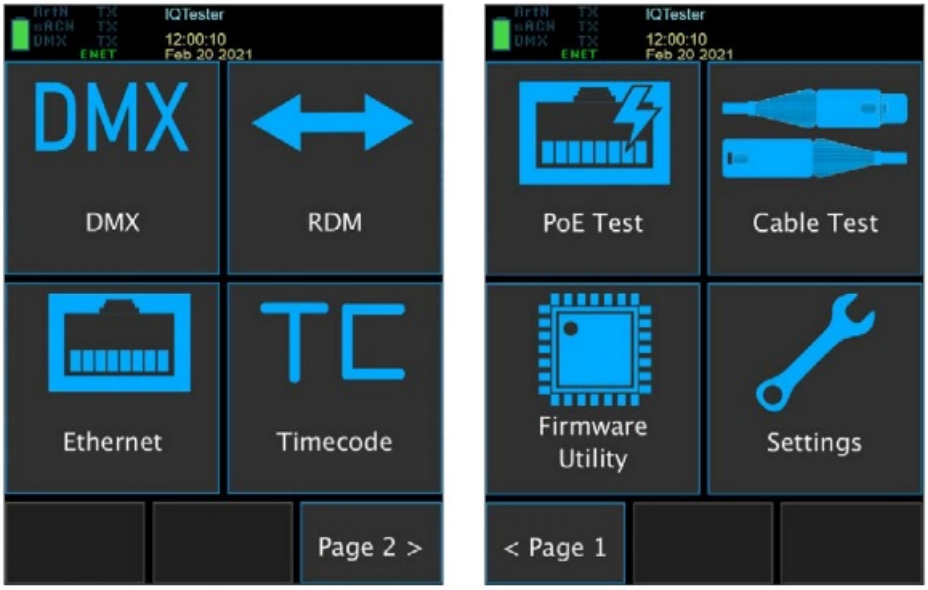
The main menu has sections representing main tester functions:

- DMX – sending and receiving DMX data over local ports or Ethernet using sACN and ArtNet
- 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

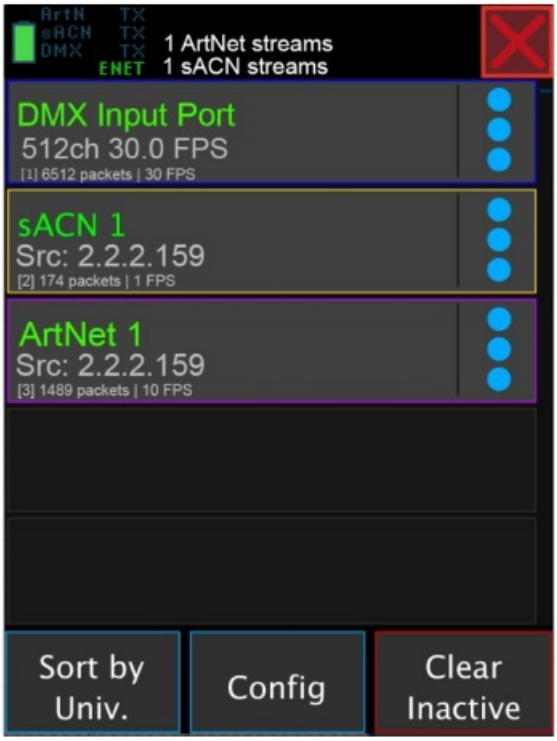


DMX

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

DMX Receiver

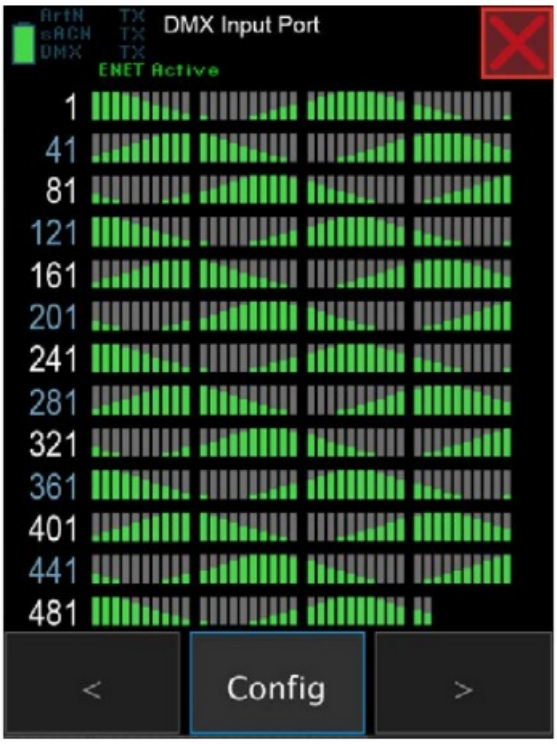


DMX Receiver main view shows a list of DMX universes that have been active since powerup. DMX Input Port is always shown on top (even if it is not active) followed by a list of Ethernet universes.
Active universes – shown with green label and live stats of packet count and FPS.
Inactive universes – shown 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:



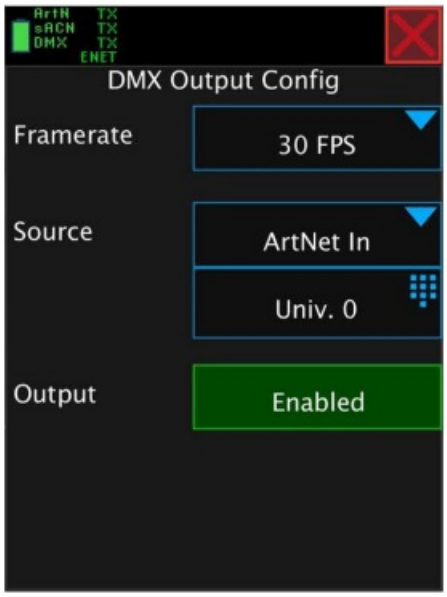
- 48ch Bars – bars with data values
- 512ch Bars – whole universe as bars
- 512ch – values represented as intensity
- RGB – values represented as RGB pixels
- RGBW – value represented as RGBW pixels
- **48 channel view will also allow to select data value format as:**
- Decimal (0-255)
- HEX (00-FF)
- 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

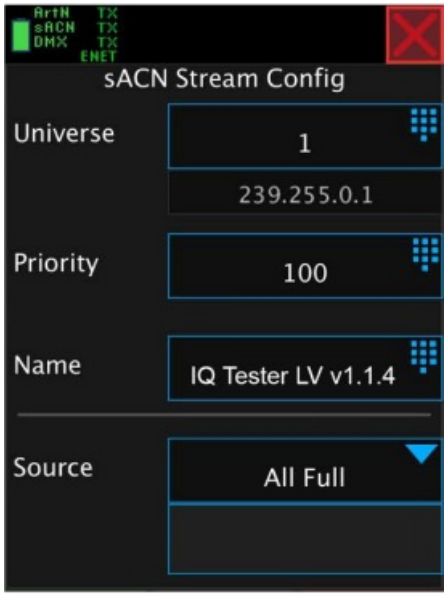
DMX Transmitter

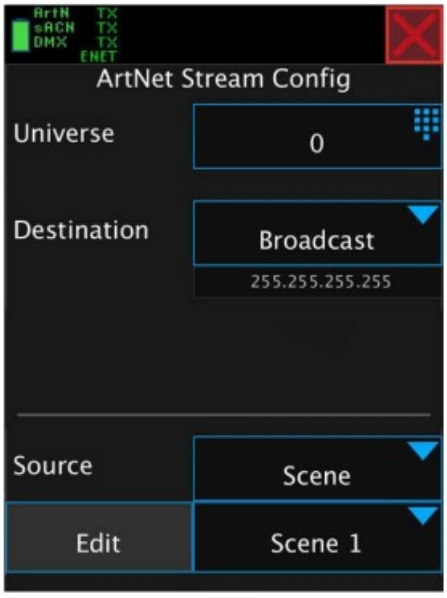
Main window shows a list of DMX sources.
DMX Output Port is always shown on top.
All created sources and their configurations are saved, but output is disabled on powerup to avoid accidental data transmission.
Pressing on right side [⋮] icon will open menu that allows to:

- 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 ArtNet 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 configuration:

1. DMX framerate – change output port framerate between 30, 30, 40 or Custom FPS
2. Enable/disable for DMX Port

sACN Stream configuration:

1. Universe nr – set single universe or range of universes for output
2. sACN priority (0-200)
3. 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:

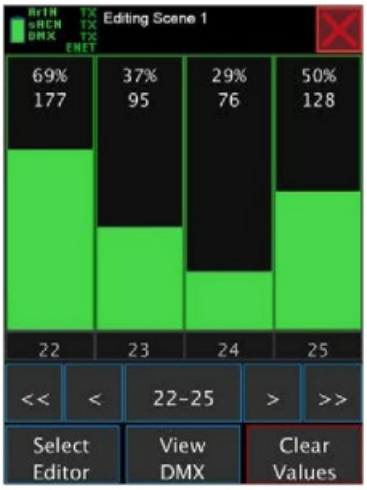
- All Zero – sends all DMX channels at zero (0)
- All Full – sends all DMX channels at full (255)
- DMX In – forwards data from DMX Input port
- ArtNet In – forwards data from ArtNet universe
- sACN In – forwards data from sACN universe
- Scene 1-6 – user created editable scene
- FX Engine – dynamic data generated with built-in FX engine

Scenes

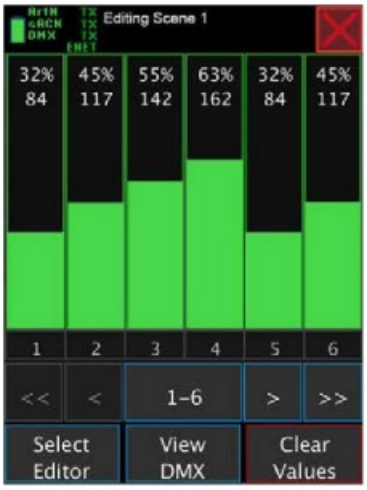
Scenes can be captured from DMX Receiver or created from scratch.
Scene data is stored in memory so will remain their values between power-cycles.
Scene data can be edited with one of these DMX Data editors:

- 4 Channel fader view
- 6 Channel fader view
- CMD Keypad
- RGB fader mode
- RGBW fader mode

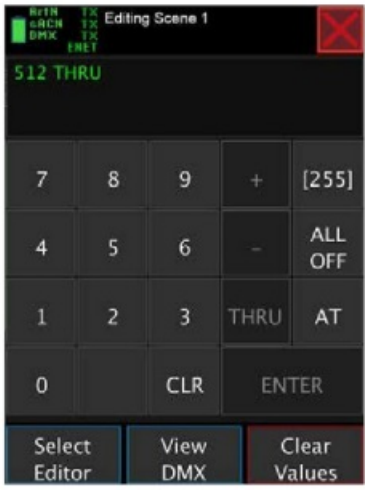
Use [View DMX] to show data being output. Use [Clear Values] to reset all channels back to 0.



4 Channel

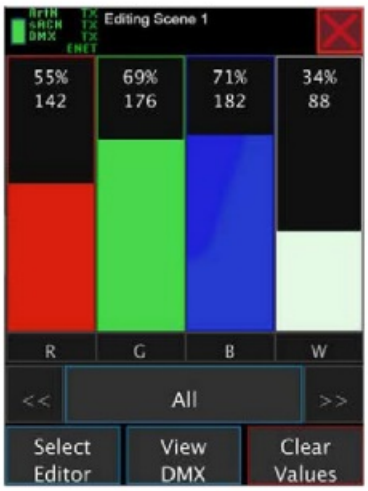


6 Channel



CMD Keypad

RGB



RGBW

FX Engine

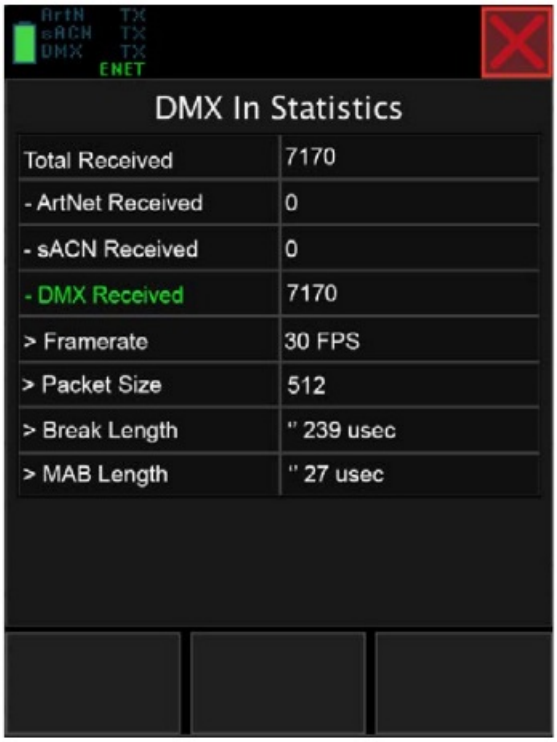
Dynamic DMX patterns can be generated using the build-in FX engine.

Effect speed – enter BPM or use “Tap”
Channel range that effect will be generated for. Remaining channels are sent as 0.
Grouping/repeating of the pattern.
Generation waveform:

- Sine
- Saw
- Triangle
- PWM
- Random

Waveform width

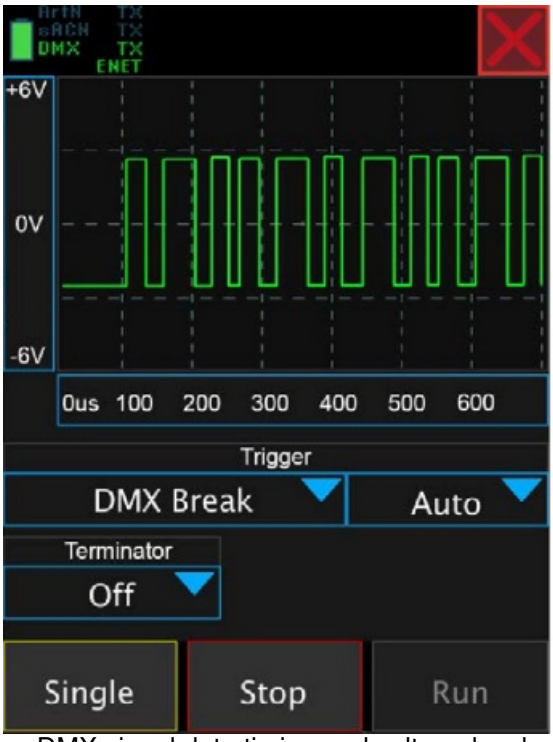
Effect running direction
Low/high value of a waveform
Invert waveform
DMX Input timing



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

DMX Scope



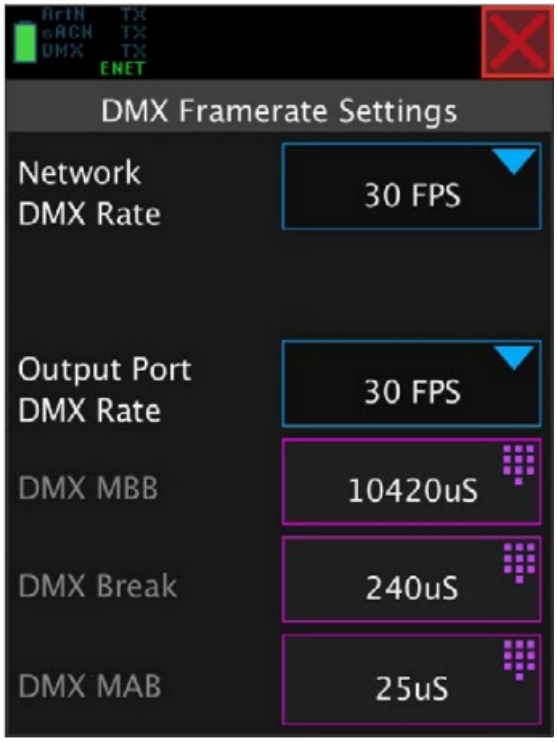
DMX Scope can be used to analyze DMX signal data timing and voltage levels.
Select voltage range +-3V or +-6V
Select time range from 4us/div to 50 mS/div
Setup trigger as:

- DMX break
- DMX start code
- RDM break
- RDM start code

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.
DMX Output Framerate Settings



Network DMX Rate setting will set sACN and ArtNet 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

RDM

RDM section can be used to discover, monitor, and configure RDM-enabled devices.
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 an 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 – sort 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.

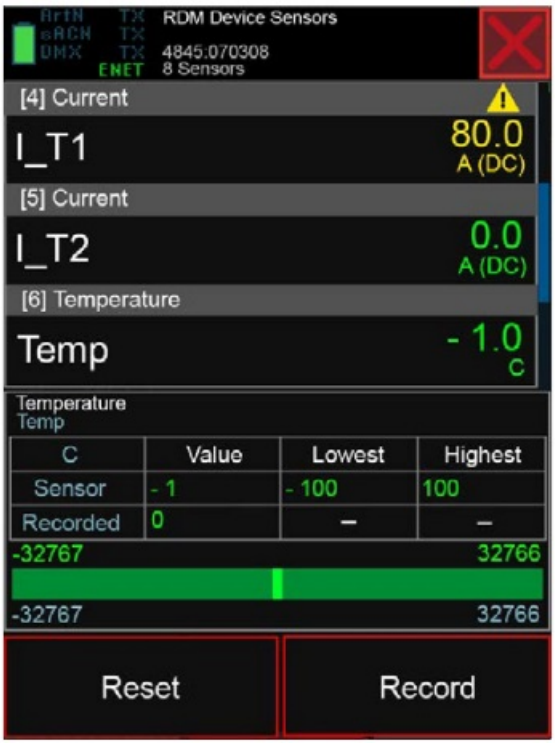
RDM Device window

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 screen has [<] and [>] arrows can be used to select the previous and next device. [Identify] will toggle device Identify function that helps locate device.

RDM Sensors



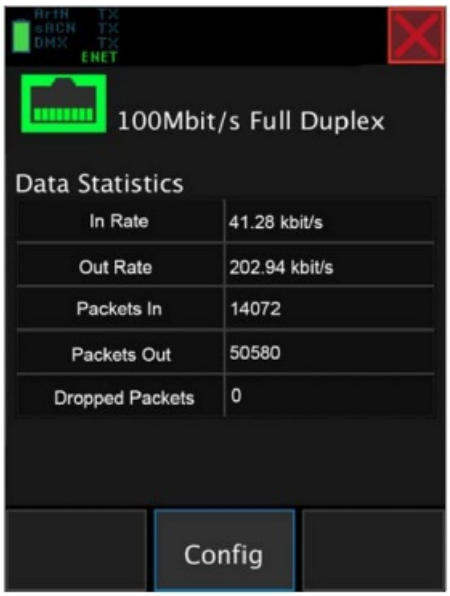
[Sensors] button will open RDM device sensors view that lists all available sensors in the selected device. Sensor list will show sensor name, current value, and sensor type.
For selected sensor a detailed information will be shown on bottom of screen:

- 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.

Ethernet

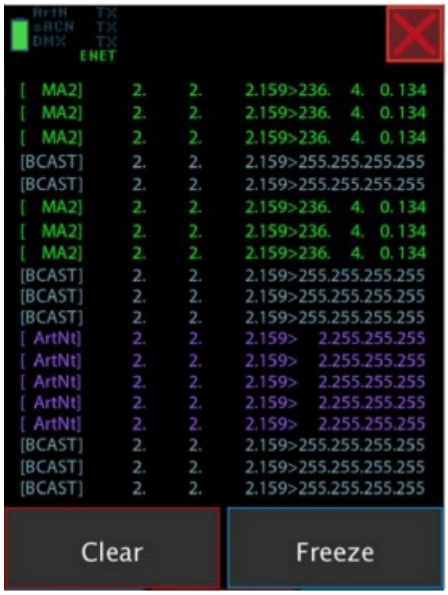
This section contains a selection of network tools for status monitoring and troubleshooting.
Network status



Shows current Ethernet link status as well as general information regarding data:

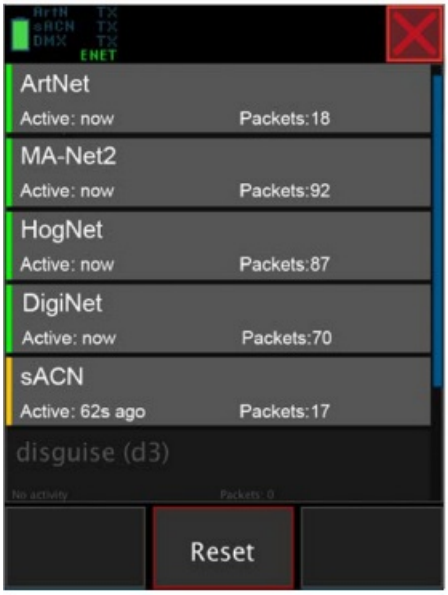
- data Input speed
- data output speed
- Received packet counter
- Sent packet counter
- Dropped packet counter

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 scrolled for inspection. [Clear] will clear the packet list.

Protocol Detector



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

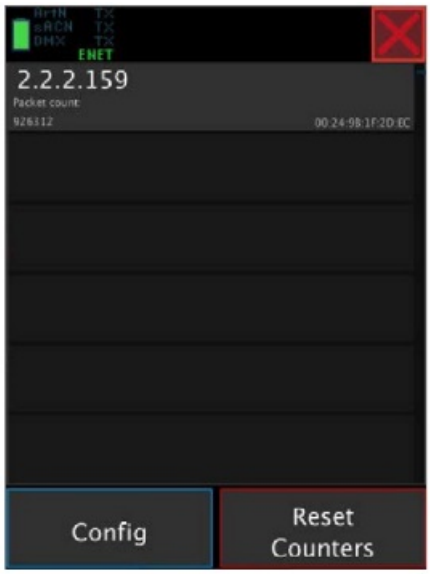
- ArtNet
- sACN
- MA2(no multicast join)
- MA3 (no multicast join)
- HogNet
- d3 (only station broadcasts)
- HippoNet (only station broadcasts)
- GreenGo (no multicast join)
- PSN (PosiStageNet)
- OSC (Open Sound Control)

- ProPlex Manager
- Dante (station broadcasts + PTP)

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

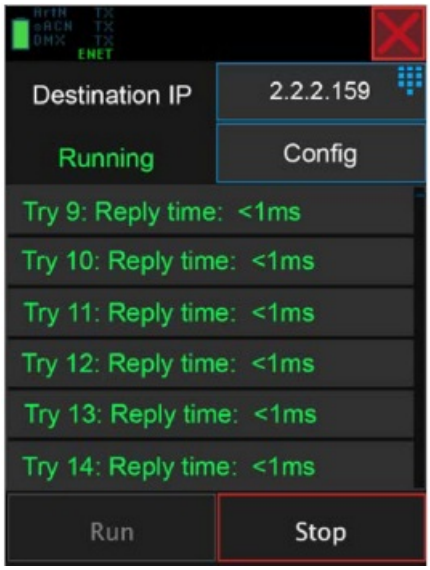
- Green – protocol is active now
- Orange – protocol was active, but is offline now
- Gray – protocol has not been detected in network

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.

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 sending. Ping reply list is scrollable so you can inspect the ping reply history.

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.

Multicast streams

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

LLDP

Shows content of received LLDP messages:

- Chassid ID
- Port ID
- TTL
- Port Description
- System Name

Ethernet settings

Change unit IP address and subnet mask here.

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.

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:

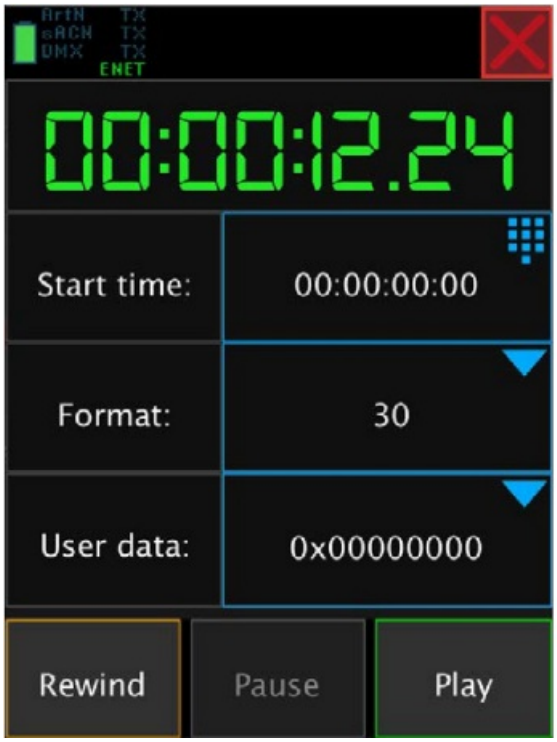
- FPS – actual timecode speed
- Format – timecode type encoded in data; this should match FPS under normal circumstances
- User data – user bytes that can be defined in timecode sender
- Start – time value of first valid frame received since start of reception

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.

Timecode transmitter

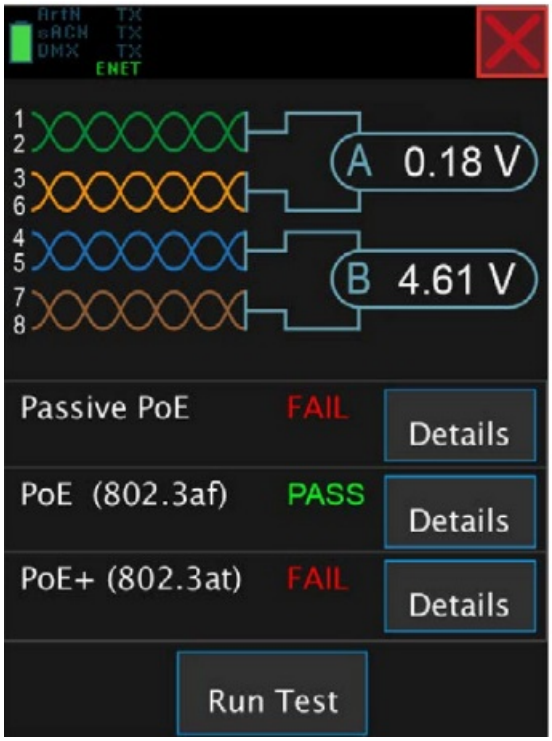


Timecode data will be transmitted over both DMX Output and DMX Input ports.
To connect with other timecode equipment you will need a XLR 5 pin to XLR 3 pin or another balanced audio signal connector.
[Start time] – set generator start time
[Format] – select timecode format. Available options are:

- 23.976
- 24
- 25
- 29.97
- 29.97 Drop- frame
- 30
- 30 Drop- frame

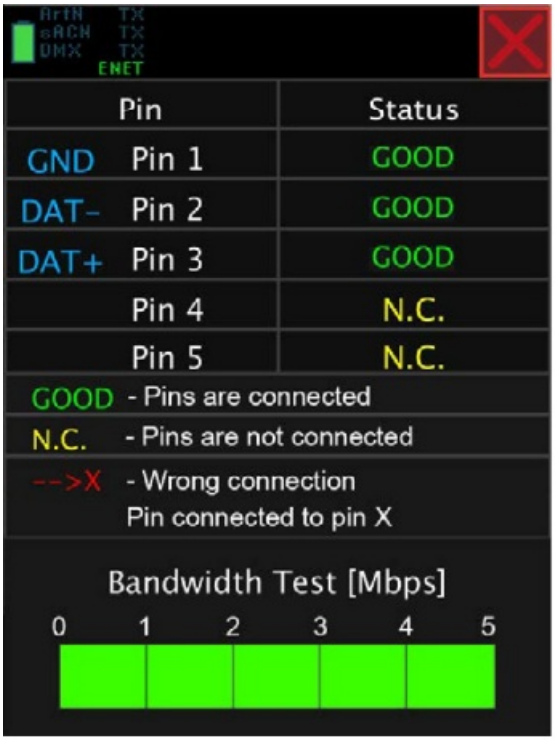
[User data] – set user bits.
[Play] will start the generator.
[Pause] will stop generator at current time so you can continue generation,
[Rewind] will set time to the value set in Start time.

PoE Test



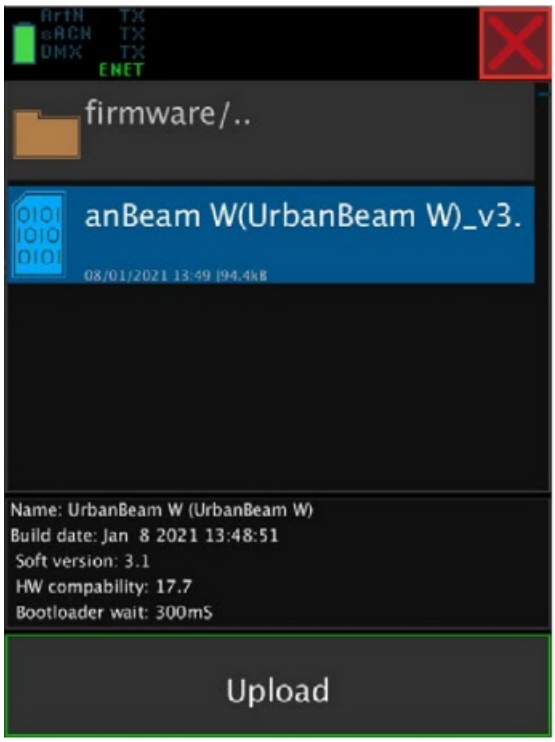
PoE Test will determine capabilities of connected Ethernet switch or PoE injector.
Top of screen shows live voltage readouts for both A and B PoE wiring types.
Passive PoE – non-standard PoE type that applies DC voltage to Ethernet cable without any detection or classification algorithm in place.
“PoE” (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.

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.

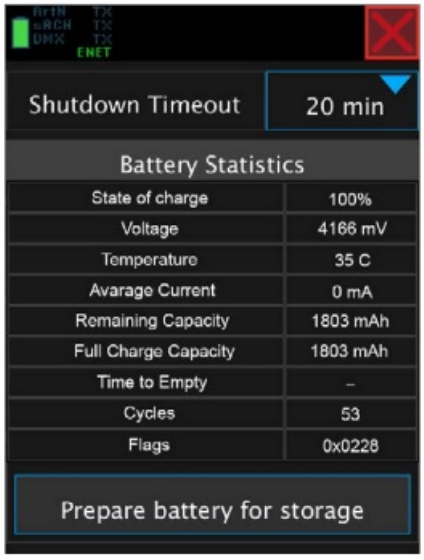
Firmware utility



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.

Settings

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



- **DMX Framerate Settings**

  DMX Output framerate for DMX and Ethernet.
- **Ethernet Settings**

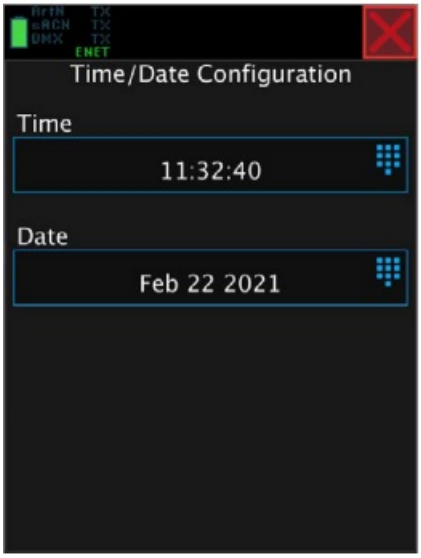
  Settings for unit Ethernet IP address and subnet mask.

- **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.
- **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.
- **System status**

  Shows system state for debug purposes.
- **Firmware info**

  Shows current firmware version and build date
- **Time/Date Settings**

  Set current time and date.
- **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.
- **Calibrate touchscreen**

  Starts touchscreen calibration sequence.

  Note tester uses a resistive touchscreen so for calibration it’s best to use a stylus 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**.

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Return Procedure

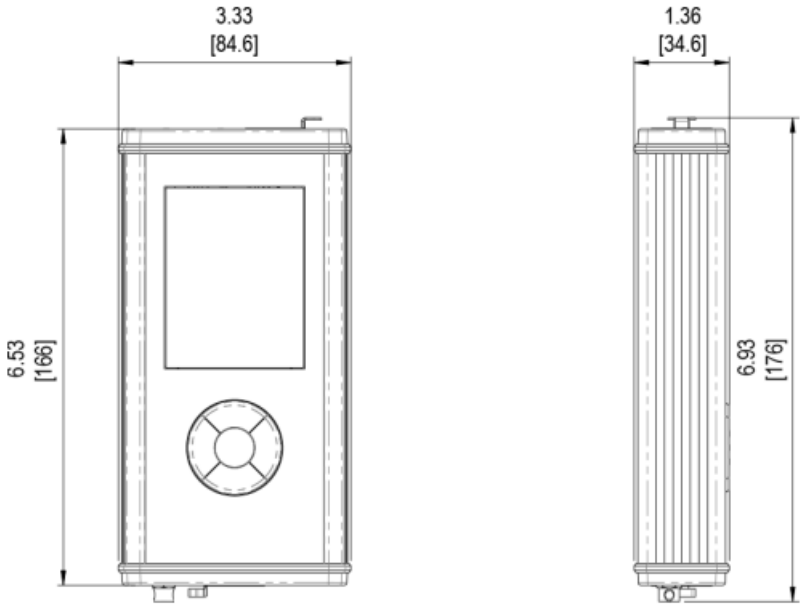
Please send returned merchandise prepaid and in the original packing. Freight call tags will not be issued for shipping the product to TMB, but TMB will pay the freight for return to the customer. Clearly label package with a Return Merchandise Authorization Number (RMA #). Products returned without 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:

- your name
- Your address
- Your phone number
- The RMA #
- 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)



Documents / Resources

	ProPlex IQ Tester LV Firmware [pdf] User Manual IQ Tester LV Firmware, Tester LV Firmware, LV Firmware

References

- TMB