QLST Hardware and Reference Manual

Prodys
PROCESAMIENTO DIGITAL Y SISTEMAS, S.L.

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CE Declaration of Compliance

Procesamiento Digital y Sistemas S.L., hereby declares that Quantum ST bearing the CE168X parking are in compliance with Electromagnetic Compatibility Directive (2004/108/EEC), and the Low Voltage Directive (2006/95/EEC) of the European Union.

A "Declaration of conformity" for Quantum ST is available on file at Prodys offices in Spain. To obtain this information, contact with sales@prodys.net.
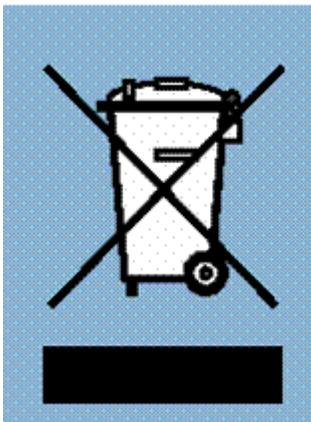
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Chapter I

INTRODUCTION

Picture 1. QLST codec.

QLST is a small IP audio codec designed to be the studio counterpart of the Quantum Lite handheld audio codec. Like the rest of the audio codec from the Quantum family, it inherits world-class IP technology from the Prodys Quantum Codec Family.

Its main application is to receive, decode and store (in a external memory device) audio streams from remote Quantum Lite units. But QLST is not just a decoder; it is also capable of encoding audio back to the remote Quantum Lite codec.

This unit can be controlled from its built-in web graphical interface, its front panel display (optional), or from the ProdysControlPlus application.

I.1 QLST Features

Among QLST most remarkable features are:

- **Analog Hardware or Digital Audio Hardware:** <u>Any of two flavours might be purchased: either analogue or AES/EBU in/out</u>. QLST is offered with professional XLR line level audio inputs and outputs. These can be either analog or AES/EBU digital.

- **Compression algorithms** [1] **:** QLST is equipped with OPUS and apt-X compression algorithms to guarantee low delay communications.

- **Communications**: IP (2 Ethernet interfaces).

- **Control and monitoring**: This unit can be controlled from its built-in web graphical interface, its front panel display menu (with an optional touch panel), or from the ProdysControlPlus application. All the controls are configurable remotely. It is also possible to remote control the unit from the ProdysControlPlus application as long as the unit is connected to the Internet, and even when the unit is connected to the Internet through a firewall.

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[1] Other compression modes might be offered as option. Please contact us at <u>sales@prodys.net</u> for further information in this regard.

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Installation Guide

This chapter describes the QLST hardware installation.

II.1 Initial checks

Before unpacking the unit, please check its packaging for any signs of damage or mishandling during transportation. Report any damage to the shipping company immediately. Unpack the unit carefully, if you find any damage or the unit does not work correctly, you should contact Prodys or its distributor as soon as possible.

II.2 Setting the IP address

QLST default IP configuration is DHCP, so if a codec is booted when connected to a network with a DHCP server, this will assign a free IP address to the codec in the established DHCP range.

When the user has a touch panel connected to the QLST, it's very easy to find out the IP address assigned by the DHCP server. It can be found in the "IP " field of Quantum Lite's 'Menu->Conf->Interfaces->Lan->IP' menu:


Picture 2. QLST IP menu.

©Prodys S.L. Tel: +34 91 6896880 Θ Fax: +34 91 6943777 Θ Email: sales@prodys.net Θ Web: www.prodys.com
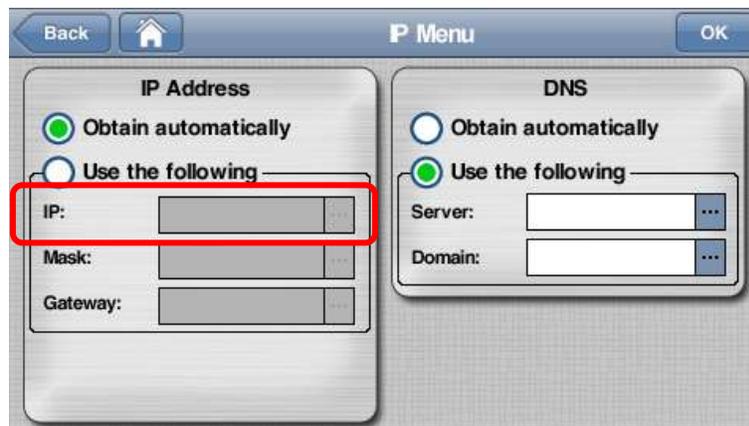
Many times there is no visualization method available, so it's important to follow these steps to install the QLST:

1. Switch on the codec with the RJ45 cable directly connected between the codec LAN1 connector and the computer.

2. Once the codec boots, without any DHCP server replying, it will set to the default IP address **192.168.100.100**

3. By means of your PC, IP address within the range 192.168.100.xxx, connected to the LAN1 connector of the QLST and access its control webpage with a browser at the address 192.168.100.100.

4. Change the codec IP address manually selecting "Use the following" in the aforementioned menu.
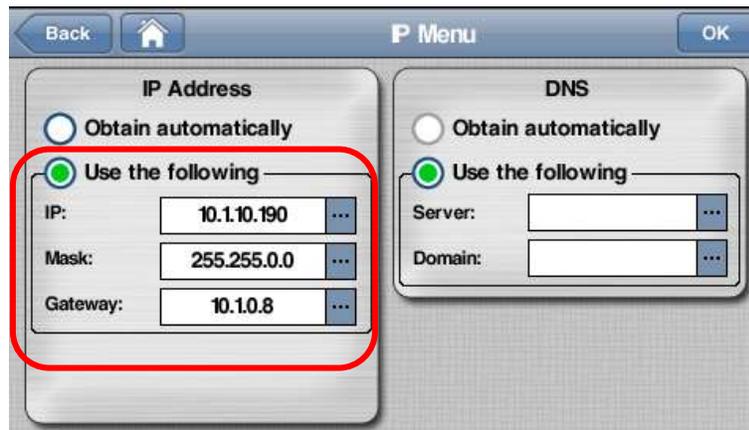
Picture 3. Setting the local IP.

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Chapter III

FRONT AND REAR PANELS

III.1 Front Panel

Picture 4. QLST front panel.

III.1.1 ON/OFF Button

This button turns the power on /off.

III.1.2 USB Display connector

This connector allows the user to plug and unplug the touch panel (hot insertion is allowed).

Take into account that the touch panel menu orientation can be rotated 180º. To rotate the display, click on 'Menu->Conf->System->Display->Rotate Display'.

III.1.3 LEDs

There are three LEDs in the front panel

- **ALARM**: (Blinking red) An alarm event is taking place.
- **SYS**: (Green) The codec is on and working.
- **PWR**: (Blue) Power is on.

III.2 Rear Panels

There are two different rear panel configuration depending on the kind of input/ouputs: analog or digital:

Picture 5. QLST rear panel (digital)

Picture 6. QLST rear panel (analog)

III.2.1 Power supply

QLST comes supplied with an AC/DC converter (12 volts output) to be connected to the power connector <VDC INPUT> located at the rear panel. The power converter works with an AC input range of 100 to 240 VAC, 50 to 60 Hz.

III.2.2 Audio interfaces

III.2.2.1. Digital audio AES/EBU STEREO input/output

An AES/EBU interface is available via three XLR connectors on the rear panel of the unit. The central connector provides the option to connect an externally synchronised signal. The user can select via software if the digital output is to synchronise with the audio input or with an external sync signal. The connectors are wired in the following way:

Pin	Function
1	Ground
2	AES/EBU IN-OUT-SYNC +
3	AES/EBU IN-OUT-SYNC -

III.2.2.2. Analog audio input/output

The analog audio I/O is connected through the XLR connections on the rear panel. The wiring conforms to the following scheme:

Pin	Function
1	Ground
2	Audio+
3	Audio-

III.2.3 Network interfaces[2]

III.2.3.1. LAN1:

RJ-45 connector on the rear side; 10/100/1000BT Ethernet interface. Default interface for streaming and remote control.

This interface is always enabled and it is used for transmission and reception of control data (Web and ProdysControlPlus), regardless of the settings for the Streaming Network option (be it Wi-Fi, Ethernet, Custom…).

When 'Custom' is selected as the streaming network configuration menu, LAN1 can be selected as IP interface for bonding to other IP interfaces and thus to

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[2] If the QLST is always initiating the AoIP calls to another QLST (for example), you might benefit from the bonding option adding the streaming bandwidth of LAN1 and LAN2 at the <NET = CUSTOM> setting (BRAVE protocol). Please notice using this bonding configuration, this QLST is not able to get anymore an incoming call from its mate; it is just set to be always the calling party.

transmit and receive audio data. In this case, LAN1 will carry both audio and control data simultaneously.

When LAN2 interface is disabled and 'Ethernet' is selected as the streaming network configuration menu, LAN1 will transmit and receive all audio.

But, when LAN2 is enabled, and 'Ethernet' is selected as the streaming network configuration menu, LAN1 interface will only transmit control data (web control, ProdysControlPlus or any other IP data not related to the audio streaming.

III.2.3.2. LAN2:

RJ-45 connector on the rear side; 10/100/1000BT Ethernet interface. It can be enabled or disabled by the user.

This interface will carry the streaming data (not control) if the LAN2 interface is enabled in the configuration. When enabled it is available for bonding or diversity with other IP interfaces to stream audio data.

LAN LED's:

In the socket there are two leds to indicate different states for the connection and these are very useful in problem-solving situations.

- Green LED → LINK STATUS: ON = Connected

- Orange LED → RECEIVE STATUS: On = Receiving Data.

From the web interface and the touch panel menu it is possible to set the speed and duplex configuration to the following values: AUTO, 10HD, 10FD, 100HD, 100FD. Click on 'Menu->Conf->Interfaces->LAN->Ethernet'.
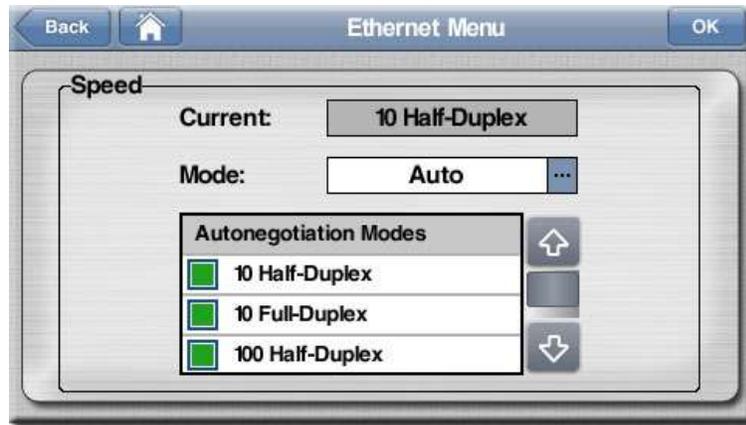
Picture 7: Ethernet Menu

III.2.3.3. Wi-Fi on a USB modem:

A USB Wi-Fi modem can be supplied optionally with the unit. This Wi-Fi connection can be used for streaming or for bonding to other IP interfaces to stream audio and video data.

Wi-Fi standards: 802.11b, 802.11g, 802.11n
Security protocols: 128-bit WEP, 64-bit WEP, WPA, WPA2.

III.2.4 Control interfaces

III.2.4.1. The RS232 port:

This port is meant to be used as an auxiliary data port. This port allows the transmission and reception of data along with encoded audio. Note that this socket is RJ45 connector, as opposed to the typical Sub-D 9 ways connector. To make the conversion between RJ45 and RS232 Sub-D connector there are modular connectors available that should be wired as follows:
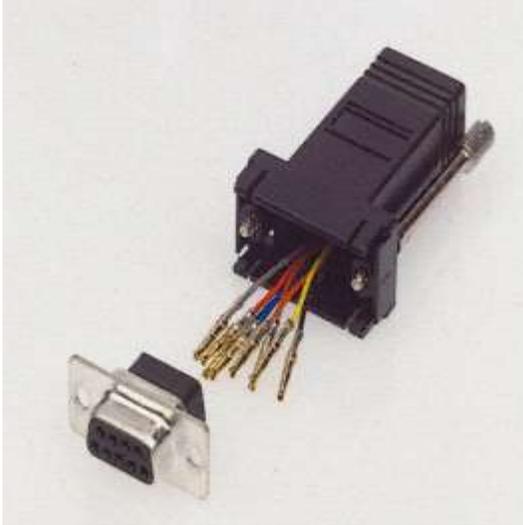
RJ45 Connector	9-pin female D-sub Connector
1 (NC)	1
2 (Rx)	3
3 (GND)	5
4 (NC)	4
5 (NC)	6
6 (GND)	7
7 (Tx)	2
8 (NC)	8

1,4,5,8 must be unconnected

The port is always set to 8 DATA bits, NO parity, 1 START bit and 1 STOP bit. The bit rate can be adjusted to between 300 and 9600 bps via software.

> **Each QLST acts as a DCE device, therefore the connection to each of the RS232 ports is wired in the following way:**
>
> QLST – Pin 7 connector RJ45.........................Pin 2 PC
>
> QLST – Pin 2 connector RJ45.........................Pin 3 PC
>
> QLST – Pin 3,6 connector RJ45.......................Pin 5 PC
>
> **Hardware handshaking signals are ignored.**

III.2.4.2. Rear USB slots:

Two USB slots (Host 2.0) are available on the rear side for the connection of memory storage devices or for future applications.
External storage should be formatted as FAT32[3]. Maximum addressed storage capacity is 2 TB.

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[3] NTFS format is not supported

III.3 Bottom side (Factory default switch)

At the bottom side, a small open gap, allows access to an octal microswitch.

By default all the switches must be in OFF position according the picture.

ON
OFF
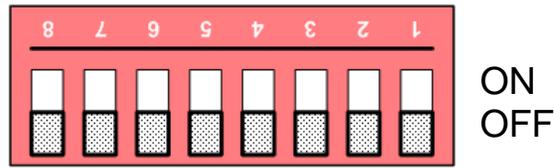
> **Switch number 7 will restore the default factory configuration if set ON before a power cycle.**
>
> **The IP address is changed to a DHCP IP configuration. In case a DHCP server is not available on the network the address is set to 192.168.100.100 and the net mask to 255.255.255.0.**

After the factory default setting the switch number 7 must return to the OFF position for usual operation.

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TECHNICAL SPECIFICATIONS

IV.1 Dimensions & Weight

- Width: 210mm; Height: 42 mm; Depth: 173 mm.
- Weight: 500 g.

IV.2 Power Supply

- 1x VDC input 90V to 264V
- Connector plug Ø5.5 x Ø2.5 x 11mm.

IV.3 User interface

- 1x capacitive touch panel 95 x 55mm (optional).
- 1x remote web control.
- Front power on/off.
- LED status indication for alarm and power-on.

IV.4 Audio inputs /outputs

- Analog or digital stereo inputs/outputs with XLR connectors.

IV.5 Communication

- 1x Control Ethernet port (10/100/1000BaseTx Ethernet, RJ45 connector).
- 1x Streaming Ethernet port (10/100/1000BaseTx Ethernet, RJ45 connector).
- 2x USB ports (Host 2.0 with maximum 500mA current supply)
- 1x RS232. RJ45 connector.
- BRAVE protocol with bonding or diversity.

IV.6 Audio Compression[4]

- Enhanced aptX^{TM}.
- OPUS

IV.7 Audio Storage

- Audio recording on external USB memory device.
- Recording time depending on memory size:

WAV Format – 1 track, 48K Sample Rate at 16 Bit Depth

1GB:	3hrs, 7 mins
2GB:	6hrs, 13 mins
4GB:	12hrs, 26 mins
8GB:	24hrs, 52 mins
16GB:	49hrs, 44 mins
32GB:	99hrs, 29 mins
64GB:	198hrs, 57 mins
132GB:	410hrs, 21 mins
264GB:	820hrs, 42 mins

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[4] Some compression modes might be available as an option. Please contact sales@prodys.net for more information.

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PICTURE INDEX