QAM Snare Headend Signal Processor Setup and Installation Guide

QSNARE–SP4–1.7

6/13/2016

This document details how to setup and configure the QAM Snare Headend Signal Processor

Table of Contents

![qam snare logo]

Overview

QAM Snare is a leakage detection and reporting platform designed for use in either a multi-hub or standalone environment. One Headend Signal Processor is installed in each hub. A QAM Snare Server connects with either one or many Headend Signal Processors, and ports data to QAM Snare Navigator and Monitor leakage detection devices in the field; and to the user interface software – the QAM Snare Web Client, and the QAM Snare Manger Client.

Installation

1. Apply power to the Signal Processor:
   a. For **QSNARE-SP-4** Input Voltage = 115 – 230 VAC, 50/60 Hz
   b. For **QSNARE-SP-4-48V** Input Voltage = (–)48.0 VDC, with the (–)48 VDC supply connected to the negative (–) terminal.


2. Attach a ground bond wire to the rear of the chassis with the ground lug and hardware kit supplied at the ground point mounting hole as required.

![arcom digital logo]

3

![qam snare logo](qam snare)

3. Install the GPS Antenna outside of the building with a clear view of the open sky. Avoid placing the antenna next to or under walls, plants or other objects that will limit performance. Avoid locations where snow could accumulate.
4. Run an RG-6 or RG-59 cable with F-Type connectors from the GPS antenna to the QAM Snare Server location. The cable should not exceed 75 feet (23 Meters) in length.
5. Install the QAM Snare Headend Signal Processor into an equipment rack.
6. Connect the external GPS Antenna to the "GPS ANT" input on the Signal Processor using an F-Type female to BNC male adapter and a BNC female to SMA male adapter.
7. Establish QAM channel of interest at 0 dBmV peak and connect to the FWD IN port.
8. Connect a 100 Mbps network speed Ethernet cable to the "Internet" port.
9. Apply power to the server and confirm the front panel LED lights.
10. Check the Signal Processor performance using QAM Snare Manager.
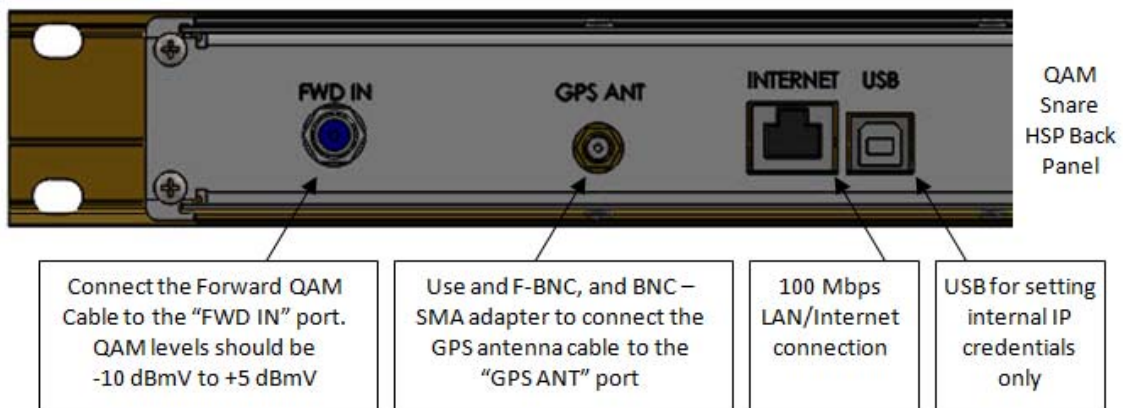
Signal Processor IP Credentials

The Headend Signal Processor requires a static IP address. IP credentials are setup and adjusted with the SignalProcessorIP application.

At the time of this writing there are two Signal Processor firmware releases. Any product shipped before 8/1/2013 will contain Version 1.0. Any product shipped after 8/1/2013, serial number 200 and above, or any signal processor returned for repair or upgrade will include Version 2.0. The SignalProcessorIP application to use depends on the Signal Processor firmware version.

"/31" Subnets

/31 Subnet configuration is only possible using Processor Firmware Version 2.0 and above.

Gateway Address

Entering a Gateway address into the Signal Processors IP is not available as it cannot be utilized by the Signal Processor.

The Signal Processor does not initiate any communications, and can only respond to communications initiated by a QAM Snare Server. The server creates a Network Socket with the Processor using the Processor IP Address and port 23125. Therefore the Signal Processor determines the Gateway Address when the socket is established. If the Signal Processor is disconnected from the Server, the Signal Processor cannot broadcast to reconnect. Reconnection is initiated again by the server once it recognizes that communications have been lost.
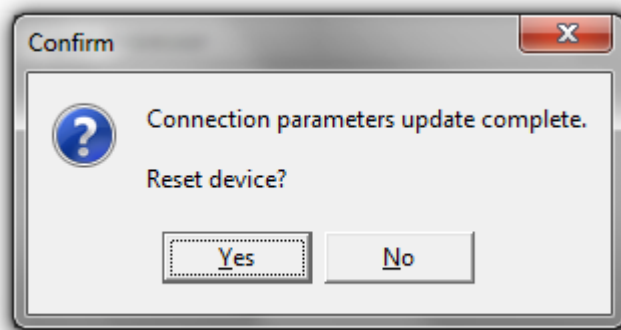
Signal Processor Firmware Version 1.0

1. Using a Windows based PC, retrieve the file named "SignalProcessorIP_1.0.exe" from the Arcom Labs FTP server located in the folder "/From Arcom/Public/QAM Snare/Clients".
2. Connect a USB port from the PC to the USB port on the back of the Headend Signal Processor. Wait until the drivers automatically load.

3. Launch "SignalProcessorIP_1.0.exe". The following dialog box should appear.
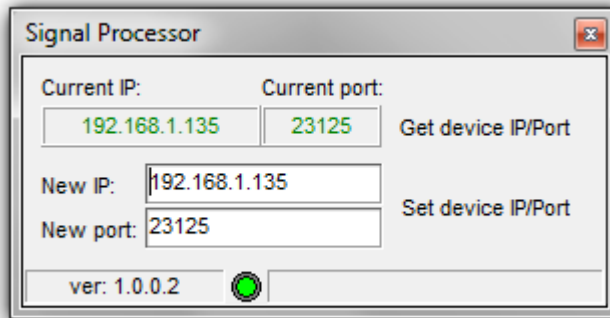
4. Confirm the connection indicator at the bottom of the dialog is GREEN. If the indicator is RED then the PC and Signal Processor are not communicating.
5. Enter the desired IP address into the "New IP" field. Confirm "New Port" = 23125 and click the "Set device IP/PORT" button.
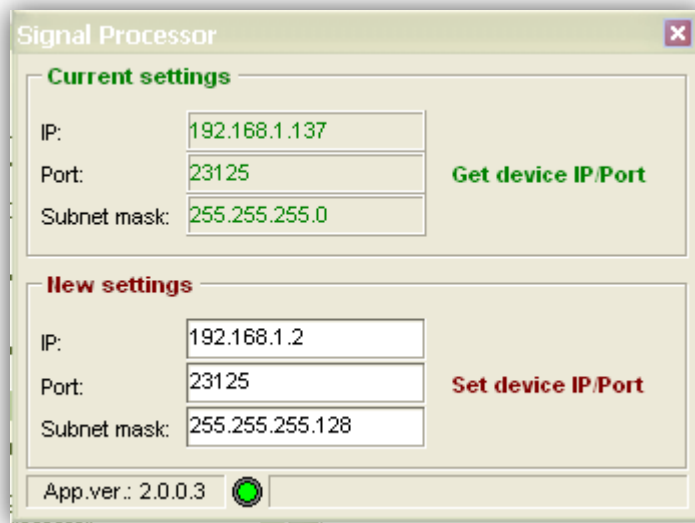6. Confirm that you want to reset the device IP address.

7. Close and restart "SignalProcessorIP_1.0.exe". Confirm the new IP and correct port appears in the "Current IP" field.
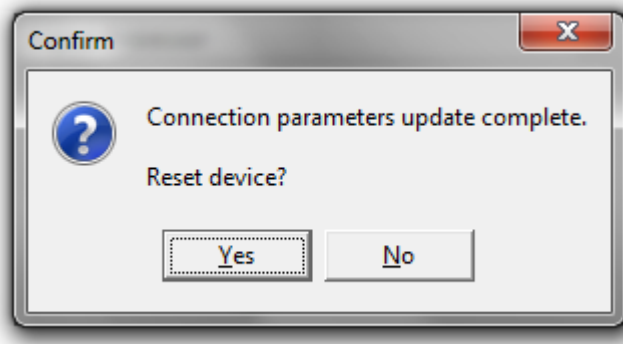
Regarding errors: Errors that occur after the "Set device IP/PORT button or closing the program can be ignored. Always close and re-open SignalProcessorIP.exe to confirm the new IP and port number are shown in the "Current IP" and "Current Port" fields whether errors occur or not.

1. Using a Windows based PC, retrieve the file named "SignalProcessorIP_2.0.exe" from the Arcom Labs FTP server located in the folder "/From Arcom/Public/QAM Snare/Clients".
2. Connect a USB port from the PC to the USB port on the back of the Headend Signal Processor. Wait until the drivers automatically load.
3. Launch "SignalProcessorIP_2.0.exe". The following dialog box should appear.

4. Confirm the connection indicator at the bottom of the dialog is GREEN. If the indicator is RED then the PC and Signal Processor are not communicating.
5. Enter the desired IP and Subnet Mask in the "New settings" field. Confirm "Port" = 23125 and click the "Set device IP/PORT" button.
6. Confirm that you want to reset the device IP address.

![qam snare logo]

7. Close and restart "SignalProcessorIP_1.0.exe". Confirm the new IP and correct port appears in the "Current IP" field.

Regarding errors: Errors that occur after the "Set device IP/PORT button or closing the program can be ignored. Always close and re-open SignalProcessorIP.exe to confirm the new IP and port number are shown in the "Current IP" and "Current Port" fields whether errors occur or not.
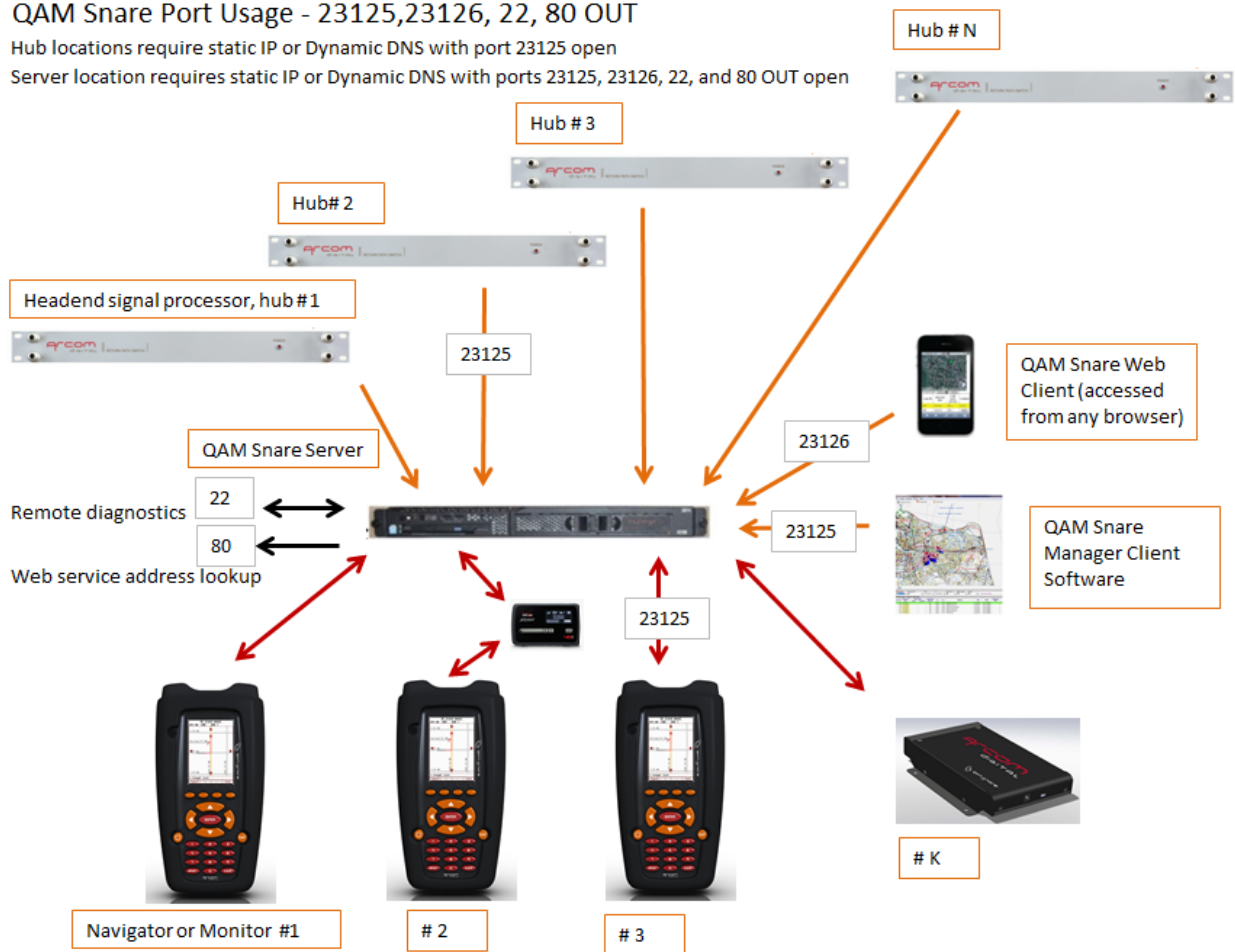
Port Usage

The diagram below details the internet socket port numbers used for communication between various QAM Snare devices.

QAM Snare Port Usage - 23125, 23126, 22, 80 OUT
Hub locations require static IP or Dynamic DNS with port 23125 open
Server location requires static IP or Dynamic DNS with ports 23125, 23126, 22, and 80 OUT open

Hub # N

Hub # 3

Hub# 2

Headend signal processor, hub #1

23125

QAM Snare Server

Remote diagnostics   22

80

Web service address lookup

23126

QAM Snare Web Client (accessed from any browser)

23125

QAM Snare Manager Client Software

23125

K

Navigator or Monitor #1   # 2   # 3

![arcom digital logo]

Headend Signal Processor port number

The Headend Signal Processor requires port 23125 to be open.

QAM Snare Server port number

The QAM Snare Server requires ports 23125, 23126, 22, and 80 to be open.

Setting the QAM Input Levels

The recommended method of setting an HSP QAM input level is to use the "HUB ADC Data" screen in QS Manager, displaying the Time Domain or the "Oscilloscope" view. Using attenuators adjust the HSP QAM input level for the channel of interest so the voltage response is between 0.20 and 0.80V Pk.
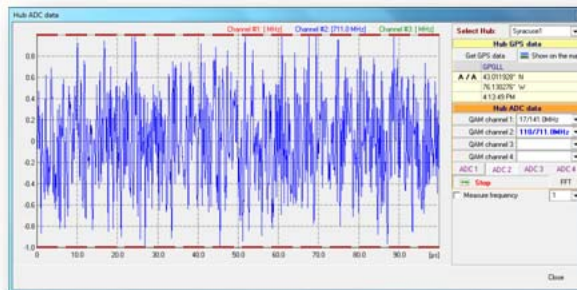
To illustrate the correct level setting, the pictures below show one ADC input at 0.2V Peak, one at 0.8V Peak, and one slightly above 1.0V Peak. Keeping the peaks between 0.2V and 0.8 Volts is correct, anything over 0.8 Volts is incorrect. The peaks are marked by the dashed lines.
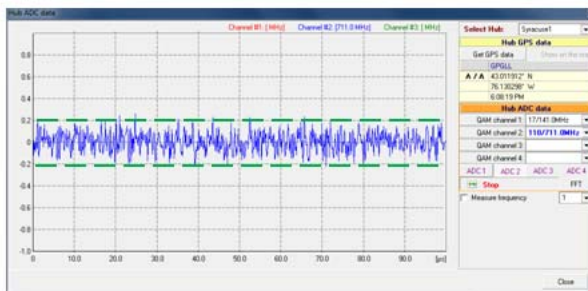
0.20V pk ADC Input – correct!
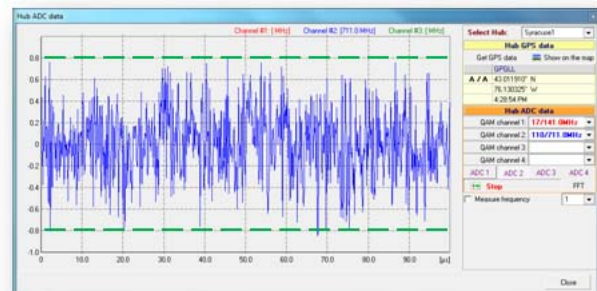
0.80V pk ADC Input – correct!

>1.0V pk Max ADC Input – incorrect!

Server Configuration/Location

The QAM Snare Server requires a static IP address or alternatively dynamic DNS.

Multi-hub environment

In a multi-hub environment, the QAM Snare Server can be either physically located in one hub, a company data center, or it can be cloud based. The Server and all Headend Signal Processors require their own IP connections.

Single hub environment

For a single hub installation, the Headend Signal Processor may connected using any of the following configurations:

1) Directly by a cable to the second Ethernet port of the server. One server port is used for communication with the Headend Signal Processor, and the second is used for the server connection to Internet (external IP).   In this configuration the Headend Signal Processor should be assigned IP 192.168.1.XXX.
2) To LAN of the hub where Headend Signal Processor and server is installed. In this case the server will communicate from a single Ethernet port via LAN to both the Headend Signal Processor and Internet.
3) Directly to Internet just like in the multi-hub environment, with the Headend Signal Processor having its own IP address. This solution is least desirable since two IP addresses are required.

Headend Signal Processor size, voltage, power specifications

QSNARE-SP-4 Input Voltage = 115 – 230 VAC, 50/60 Hz
QSNARE-SP-4-48V Input Voltage = -48.0 VDC
Power = 40 Watts max during normal operation.
Size = 1-up 19" Rack Mounted
Dimensions = 19"W X 1-3/4"H X 9"D
QAM input = 0 to -20dBmV, 75 Ohms