Programmable Attenuator

50Ω 1 to 6000 MHz, 0 - 62.5 dB, 0.25 dB step

POE-ATTEN-6G

HIGHLIGHTS

- Wide attenuation range, 62.5 dB
- Fine attenuation resolution, 0.25 dB
- Power and control via any combination of USB or PoE-enabled Ethernet.
- Driverless: WebUI, REST, SCPI, HISLIP services all hosted on attenuator
- Compact size, 3.150 x 1.673 x 0.906”

APPLICATIONS

- Cellular device testing
- TT&C Radio device testing
- Signal level calibration
- Automated gain control
- Laboratory instrumentation

Parameter	Value
Model No.	POE-ATTEN-6G
Case Style	1455D801
Connectors	SMA (female)

PRODUCT OVERVIEW

The POE-ATTEN-6G is a general-purpose, single-channel programmable attenuator designed for a wide range of signal level control applications from 1 to 6000 MHz. It provides 0 to 62.5 dB of attenuation in 0.25 dB steps, with a design that maintains linear attenuation per dB even at the highest attenuation settings.

The unit is housed in a compact, rugged enclosure with SMA female connectors on both RF ports, a Power over Ethernet (IEEE 802.3af) port via RJ45, and a USB Type-C port for power and control.

An onboard web interface (WebUI) and REST API are accessible on port 80. A raw socket SCPI server runs on port 5025 and a HiSLIP-SCPI server on port 4880.

KEY FEATURES

Feature	Advantages
62.5 dB attenuation range	High-accuracy attenuation up to 62.5 dB in 0.25 dB steps provides precise level control across a broad attenuation and frequency range.
No software or driver installation required	All control software is hosted directly on the device. A web browser is all that is needed for manual control — no drivers, no installs.
Auto-detects in Keysight Connection Expert	Device uses mDNS and HiSLIP to appear during automatic discovery in commonly used LXI management tools
USB and Ethernet control	USB and Ethernet interfaces with REST, SCPI, and HiSLIP support provide broad compatibility with a wide range of programming environments and test automation frameworks.

ELECTRICAL SPECIFICATIONS

Parameter	Conditions	Freq (MHz)	Min.	Typ.	Max.	Unit
Attenuation range	0.25 dB step	1 - 6000	0	-	60	dB
Attenuation accuracy	0.25 - 20 dB	1 - 2000	-	±0.25	±(0.45 + 4.5% of Atten.)	dB
		2000 - 6000	-	±0.35	±(0.45 + 4.5% of Atten.)	
	20.25 - 60 dB	1 - 2000	-	±0.85	±(0.75 + 2.0% of Atten.)	dB
		2000 - 6000	-	±0.70	±(0.85 + 1.5% of Atten.)	
Insertion loss	0 dB	1 - 2000	-	3.0	4.7	dB
		2000 - 6000	-	4.5	6.5	
Supply voltage (Vpoe)	Ethernet port (PoE)	-	36	48	57	V_{DC}
Supply current (Ipoe)	Ethernet port (PoE)	-	-	25	35	mA
Supply voltage (Vusb)	USB port	-	4.75	5	5.25	V_{DC}
Supply current (Iusb)	USB port	-	-	-	150	mA

ABSOLUTE MAXIMUM RATINGS

Parameter	Value
Operating temperature	0°C to 50°C
Storage temperature	-20°C to 85°C
DC voltage at RF ports	16 V
V_{USB} MAX	6 V
V_{POE} MAX	57 V

Permanent damage may occur if any of these limits are exceeded.

CONNECTIONS

Port Name	Connector Type
RF in	SMA female
RF out	SMA female
USB	USB type C female
Network (Power Over Ethernet, Ethernet)	RJ45 socket

TYPICAL PERFORMANCE CURVES

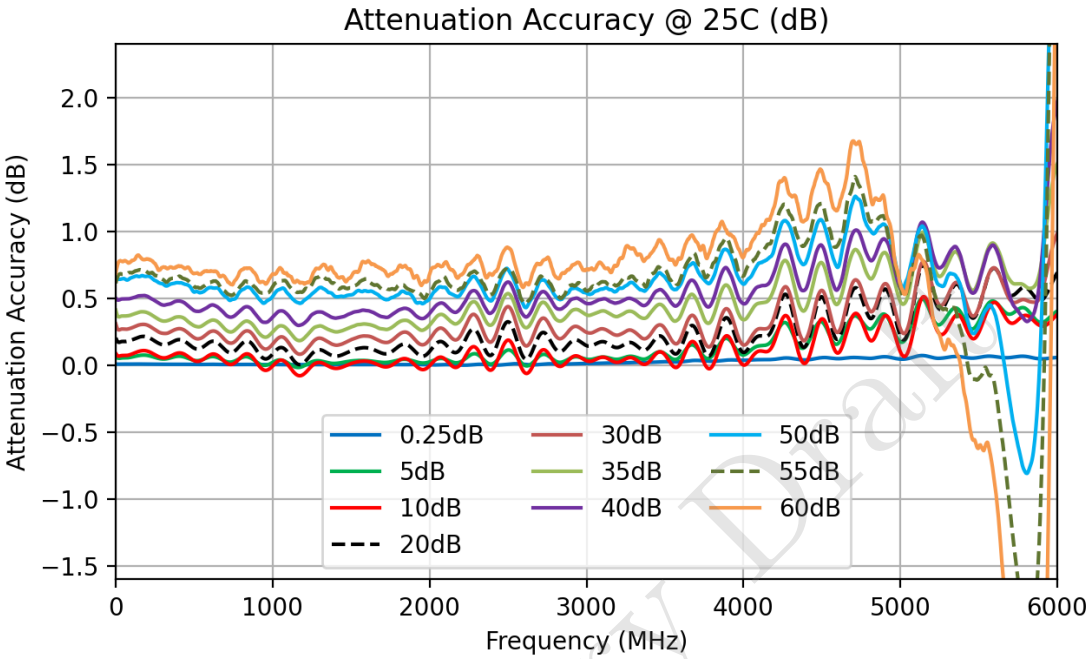

Figure 1: Attenuation Accuracy vs. Frequency

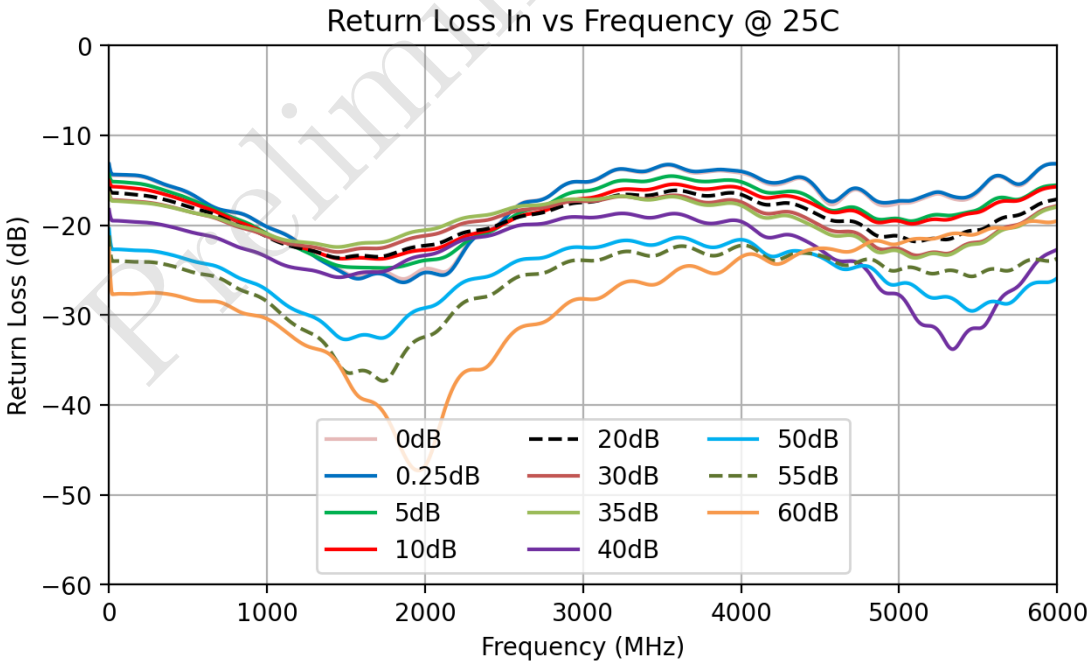

Figure 2: Return Loss (Input) vs. Frequency

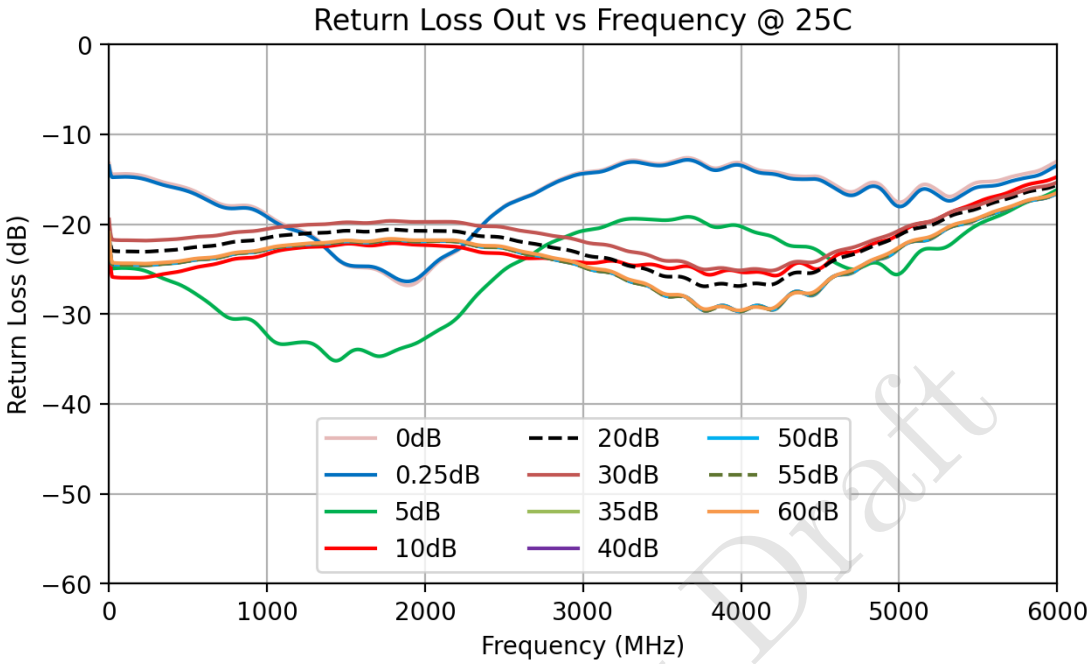

Figure 3: Return Loss (Output) vs. Frequency

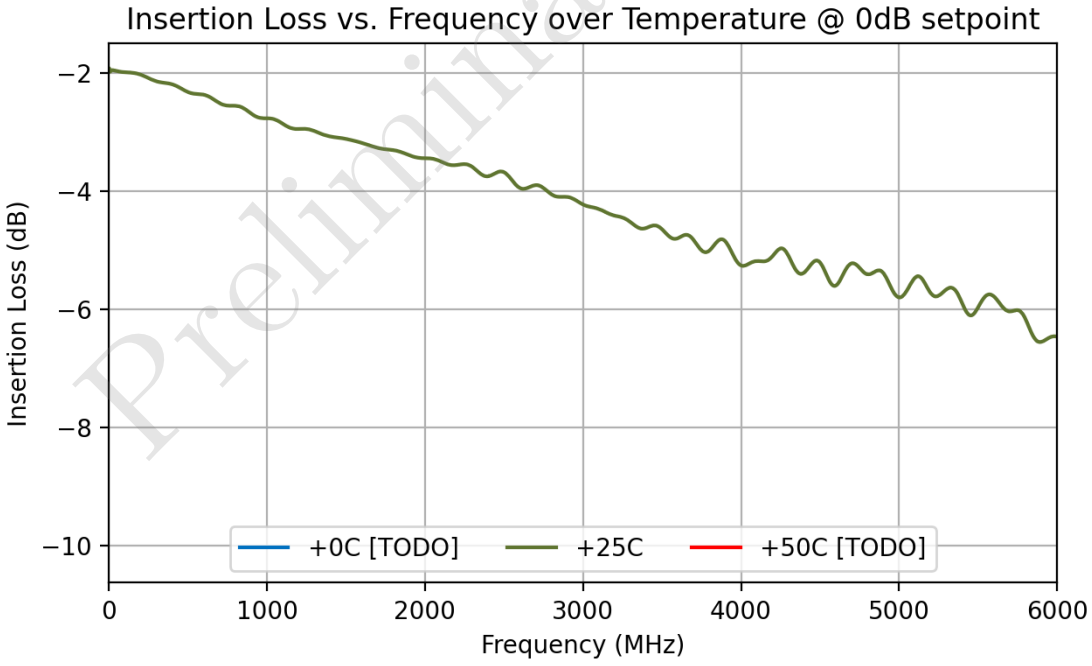

Figure 4: Insertion Loss vs. Frequency @ 0 dB

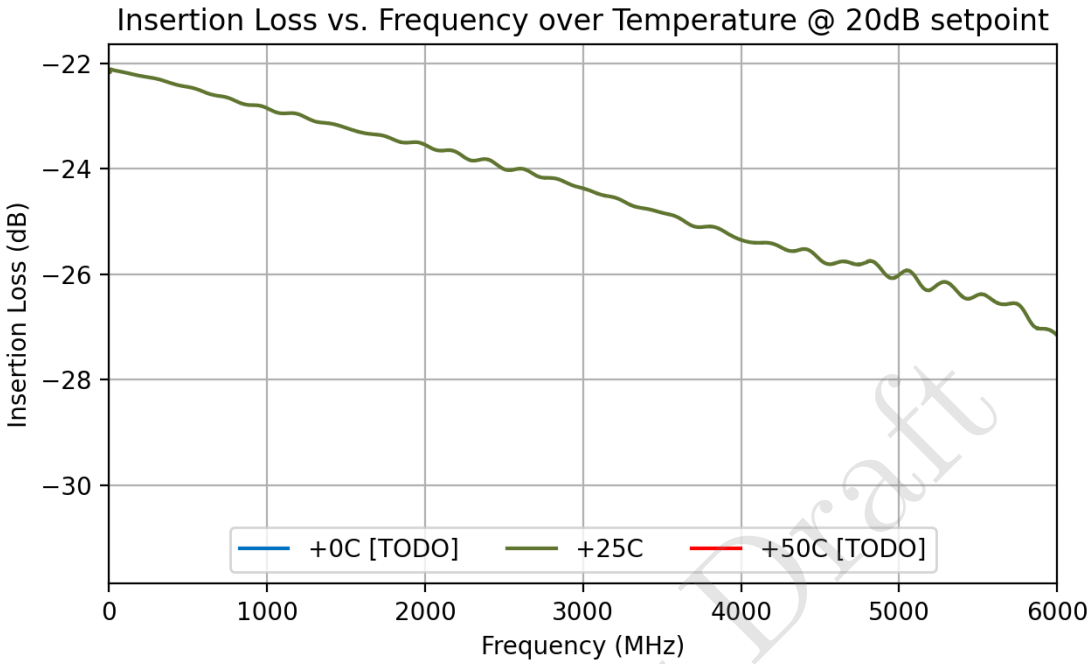

Figure 5: Insertion Loss vs. Frequency @ 20 dB

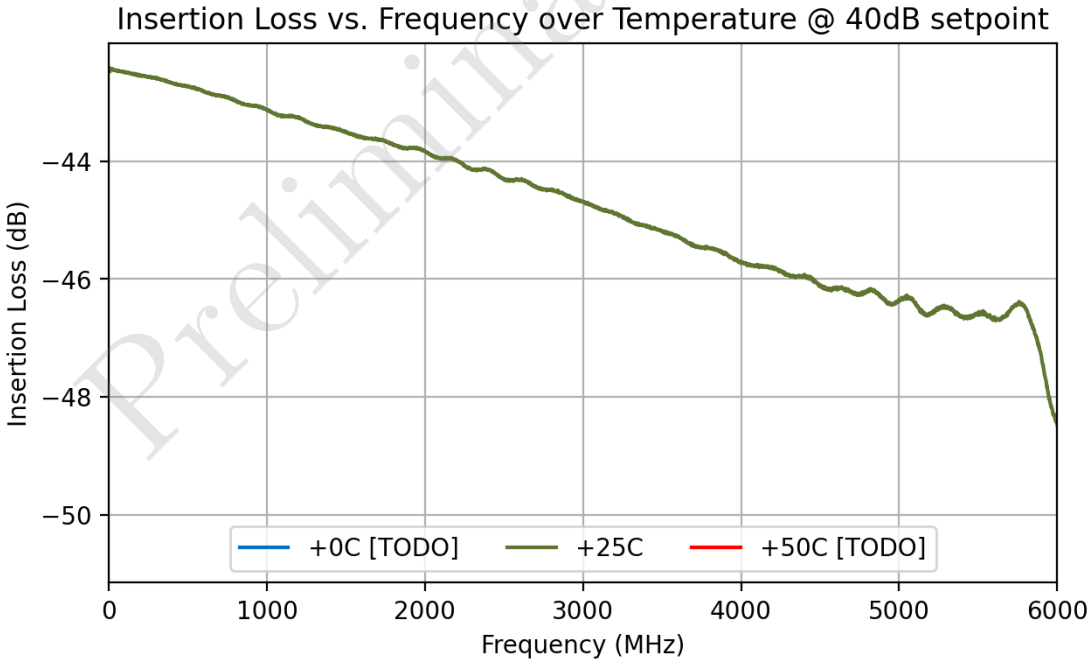

Figure 6: Insertion Loss vs. Frequency @ 40 dB

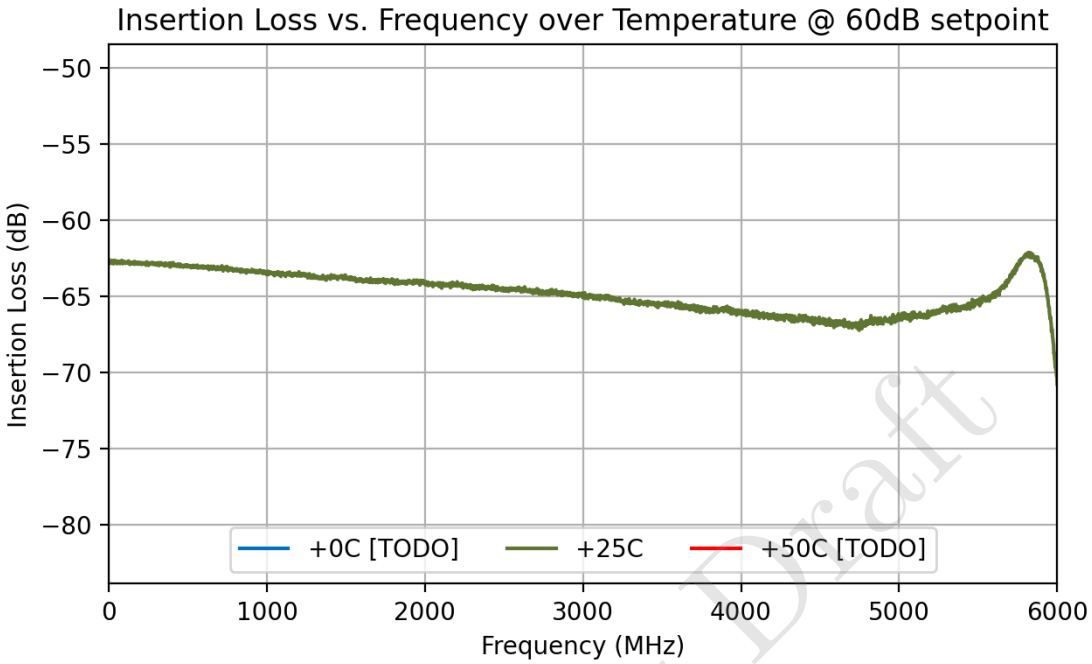

Figure 7: Insertion Loss vs. Frequency @ 60 dB

DEVICE DISCOVERY VIA MDNS

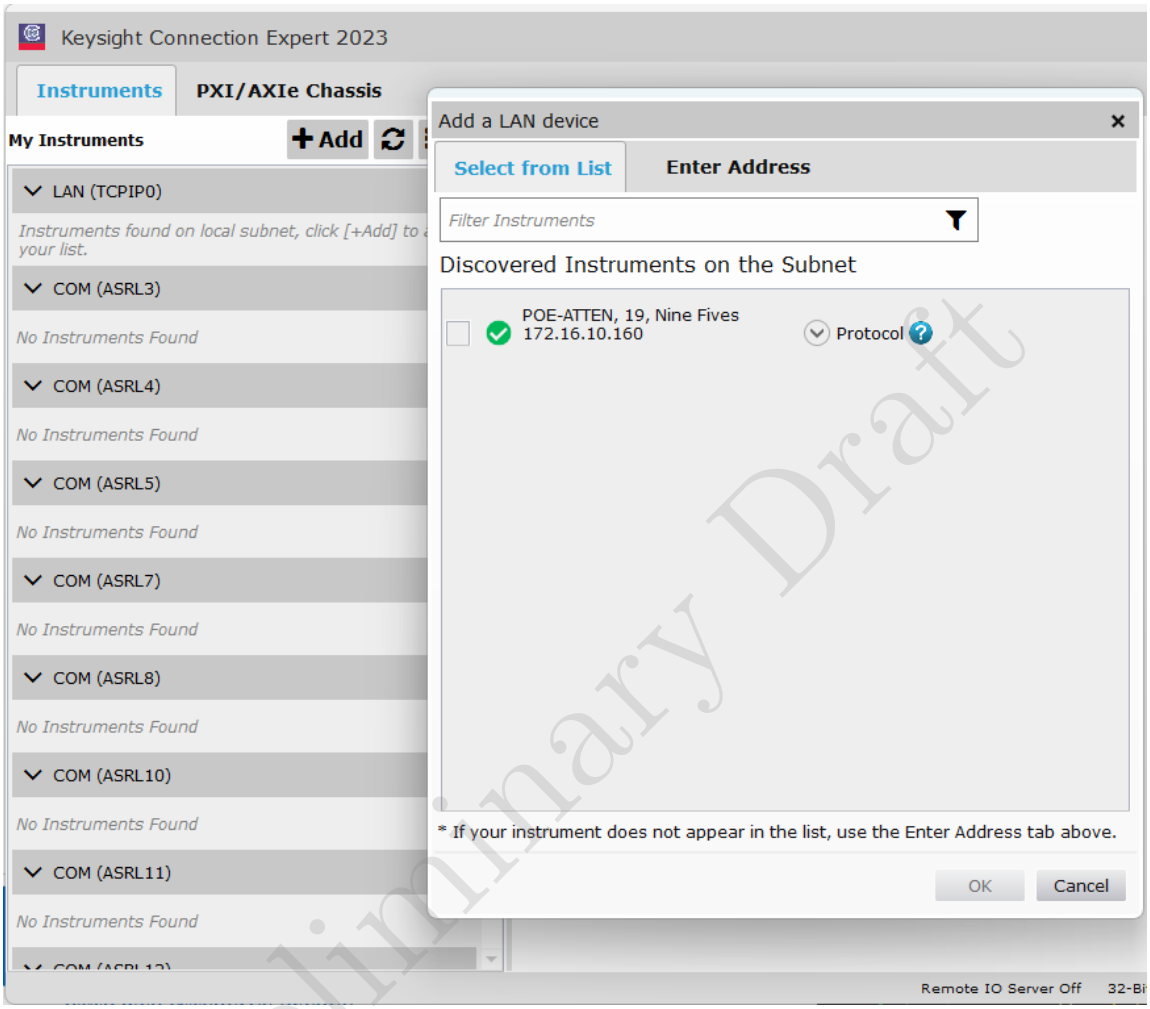

Figure 8: Device Discovery via mDNS

HTTP WEB INTERFACE (WEBUI)

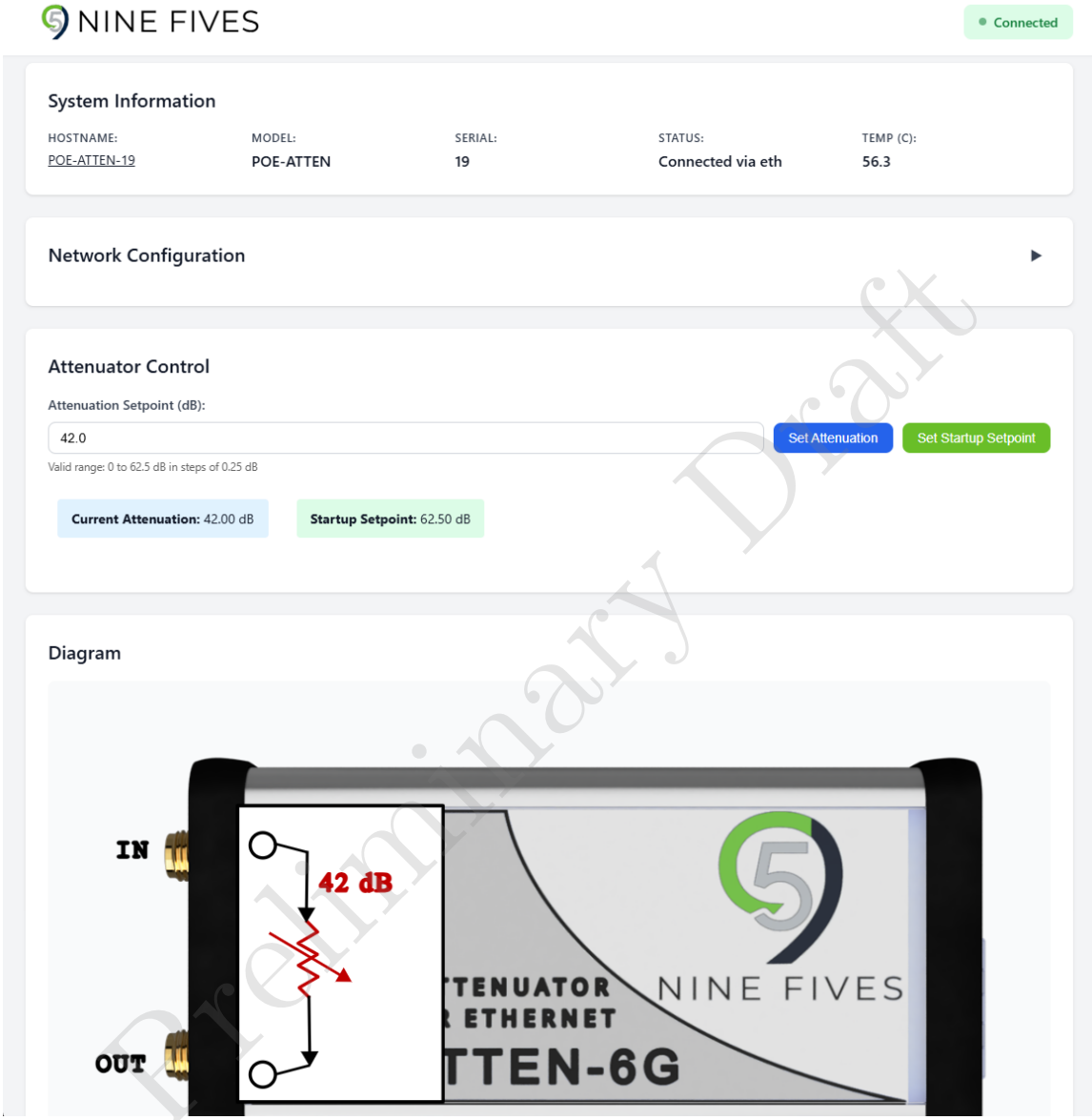

Figure 9: Web Interface (WebUI)

SCPI COMMANDING

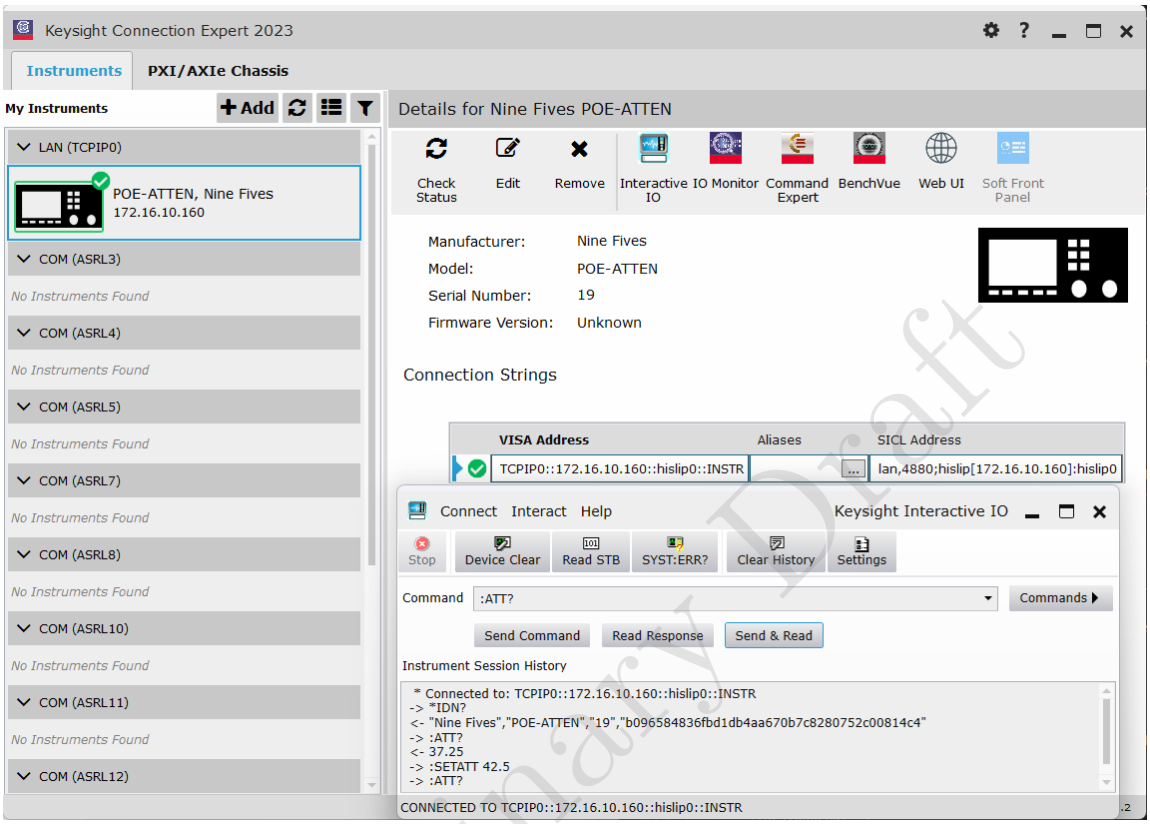

Figure 10: SCPI Commanding

COMPATIBLE WITH PYTHON

SCPI via PyVISA

```
>>> import pyvisa; rm = pyvisa.ResourceManager()
>>> rm.list_resources()
('TCPIP::172.16.10.160::hislip0,4880::INSTR',)
>>> atten = rm.open_resource(rm.list_resources()[0])
>>> atten.query('*IDN?')
'"Nine Fives","POE-ATTEN","19",...\n'
>>> atten.write(':SETATT 0')
>>> atten.query(':ATT?')
'0\n'
>>> atten.write(':SETATT 22.25')
>>> atten.query(':ATT?')
'22.25\n'
```

REST API via Requests

```
>>> import requests
>>> requests.get('http://172.16.10.160/api/system/status').
json()
{'device': 'Nine Fives Switch Controller',
 'hostname': 'POE-ATTEN-19',
 'model': 'POE-ATTEN',
 'serial': '19',
 'status': 'Connected via eth',
 'temperature': 55.628,
 'connectedIface': 'eth0'}
>>> requests.post('http://172.16.10.160/api/attenuator',
...     json={'setpoint': 0})
<Response [200]>
>>> requests.get('http://172.16.10.160/api/attenuator').json()
{'setpoint': 0}
>>> requests.post('http://172.16.10.160/api/attenuator',
...     json={'setpoint': 22.25})
<Response [200]>
>>> requests.get('http://172.16.10.160/api/attenuator').json()
{'setpoint': 22.25}
```