L125GPNRRKIT

Portable Networked Re-Radiating Kit Technical Product Data

Features

- Re-Radiating Amplifier with External Power Supply
  - 30 dB gain typical.
- Optional Kit Mounting Hardware
  - Re-Radiating Amplifier Mount available.
- Optional Variable Gain Amplifier
  - Adjustable gain from 1 dB to 26 dB.
- Optional Variable Gain Amplifier with LCD Screen
  - Adjustable gain from 1 dB to 30 dB.

Description

The **L1/L2/L5 GNSS P**ortable **N**etworked **R**e-**R**adiating **Kit** (**L125GPNRRKIT**) is a re-radiating kit that is designed for deployments where a full L-band antenna is already in place. The L-band signal received by the previously installed roof antenna is amplified and re-radiated to GPS receivers inside of a denied space using the passive re-radiating antenna. The **L125GPNRRKIT** consists of a passive re-radiating antenna, a coaxial RF adapter, and a re-radiating amplifier (**L125GPNRRKAMP**) with an external power supply that powers the entire system. A cable from the roof antenna to the re-radiating kit is required and can be purchased separately.

In the standard Networked (Externally Powered) configuration, the re-radiating amplifier output (**J1**) is DC Blocked while the antenna port will receive the RF signal and pass the customer selected voltage (3.3 to 15 VDC). Custom gain, DC power, and connector configurations are available upon request.

Use Cases

- To re-radiate signal indoors for GPS product testing.
- To maintain GPS signal for military vehicles parked indoors.
- To facilitate faster GPS signal acquisition for military aircraft inside a hangar.
- In combination with one of our splitter devices, to create a GPS distribution network.

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Re-Radiating Amplifier Electrical Specifications, TA=25°C

General Specification

Parameter	Notes	Min	Typ	Max	Unit
Frequency Range	Covers all major GNSS constellations.	1.1		1.7	GHz
Characteristic Impedance	Input and output ports matched to 50Ω.		50		Ω
Req. DC Input V.	Operating Voltage Range.	3.3		15	VDC
Current Draw	Typical current consumption.		36	40	mA

GPS L1 & L2 RF Specification (1)

Parameter	Notes	Min	Typ	Max	Unit
Gain	The relative increase in signal power provided by the amplifier.	29	30	31	dB
Input SWR	Input Standing Wave Ratio: S11			2.0:1	-
Output SWR	Output Standing Wave Ratio: S22		1.8:1	2.0:1	-
Noise Figure	The increase in noise power relative to an ideal amplifier.		L1:2.0 L2:4.25		dB
Band Gain Flatness	The difference in loss or gain between the L1 and L2 frequencies.		0.5	1	dB
Group Delay	The transmit time for the signal passing through the device.		L1:1.5 L2:2.1		ns
Reverse Isolation	Attenuation applied signals traveling backwards through the amplifier: S12.		L1: -55 L2: -60		dB
Input P1dB	The 1dB compression point.		L1: -21.5 L2: -23		dBm
3rd Order Intercept	Third-order intercept point at L1.		-14		dBm

(1): Performance is slightly reduced around GPS L5. If working on sensitive L5 applications, please request performance data.

External Power Options (Networked Option)		
Source Voltage Options	Voltage Input	Style
	110VAC	Transformer (ITA Type A Wall Mount)
	220VAC	Transformer (ITA Type C Wall Mount)
	240VAC (United Kingdom)	Transformer (ITA Type G Wall Mount)
	Customer Supplied DC 9-32 VDC	MIL-DTL-5015 10SL Two-Pin DC Connector (Includes Mate)
Output Voltage Options (2)	**DC Voltage Out**	**Max Current out For Corresponding Vout**
	3.3 V	110mA
	5V	130mA
	9V	140mA
	12V	180mA
	15V	220mA
	Custom	Custom
Standard DC Configuration without External Power Option		
All Ports Pass DC		
Standard DC Configuration with any External Power Option (AC/DC or Military DC)		
J1 Port DC Blocked with 200Ω load standard		
Antenna Port is DC Pass		
Connector Options	**Connector Style**	**Charge**
	Type N-female	No Charge
	Type SMA-female	No Charge
	Type TNC-female	No Charge
	Type BNC-female	No Charge
	Other	Contact GPS Networking

(2): With Network Option, any RF port (input or output) can be specified to Pass DC or Block DC

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L125GRRKPA-T Re-Radiating Antenna Electrical Specifications, TA=25°C

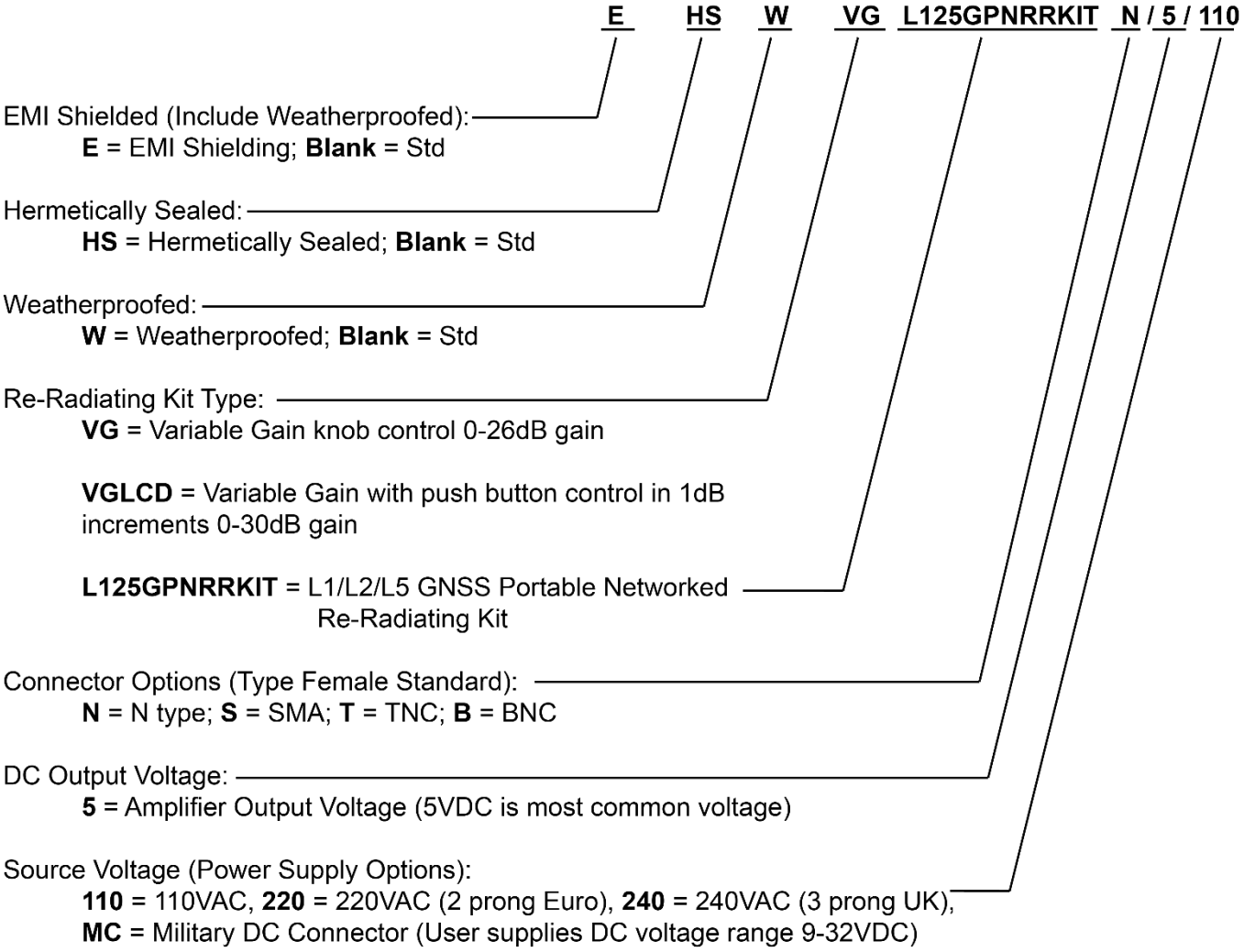
Parameter	Notes	Min	Typ	Max	Unit
Frequency	Receives and amplifies all major GNSS constellations.	1539 1164		1610 1300	MHz
Axial Ratio	Ratio between the major and minor axes of the polarization ellipse.			0.5	dB
Antenna Gain	The increase in signal power relative to an isotropic antenna source.		3.4		dBic
Output SWR	Output Standing Wave Ratio: S22 over the passband.		1.5:1	2.0:1	-
Characteristic Impedance	Output port matched to 50Ω.		50		Ω
Beamwidth	The 3dB angular width of main emission lobe.		120		°
Polarization					
Right Hand Circular Polarization					
Connector Options	**Connector Style**	**Charge**			
	Type TNC-female	No Charge			

Kit Contents

- **1 x L125GPNRRKAMP**
  - 30 dB GNSS amplifier with external power supply.
- **1 x L125GRRKPA-T**
  - Passive L1/L2/L5 GNSS reradiating antenna.
- **1 x RF Adapter**
  - The supplied RF adapter varies depending on the selected RF connector type for the kit.
    - L125GPNRRKIT-N
      - Nm-Tm RF Adapter
    - L125GPNRRKIT-T
      - Tm-Tm RF Adapter
    - L125GPNRRKIT-B
      - Bm-Tm RF Adapter
    - L125GPNRRKIT-S
      - Sm-Tm RF Adapter
- **1 x Reradiating Kit Installation Instructions**

L125GPNRRKIT

Part Number Configuration



(Military DC Mating Connector is included standard with the MC power option).

When no external power supply option (AC or DC) is selected, Output 1/J1 is Pass DC Standard.
When external power supply option is selected, all outputs are DC blocked standard.

Contact GPS Networking Technical Support at 1-800-463-3063 or salestech@gpsnetworking.com for any questions regarding non-standard configurations and corresponding part numbers.

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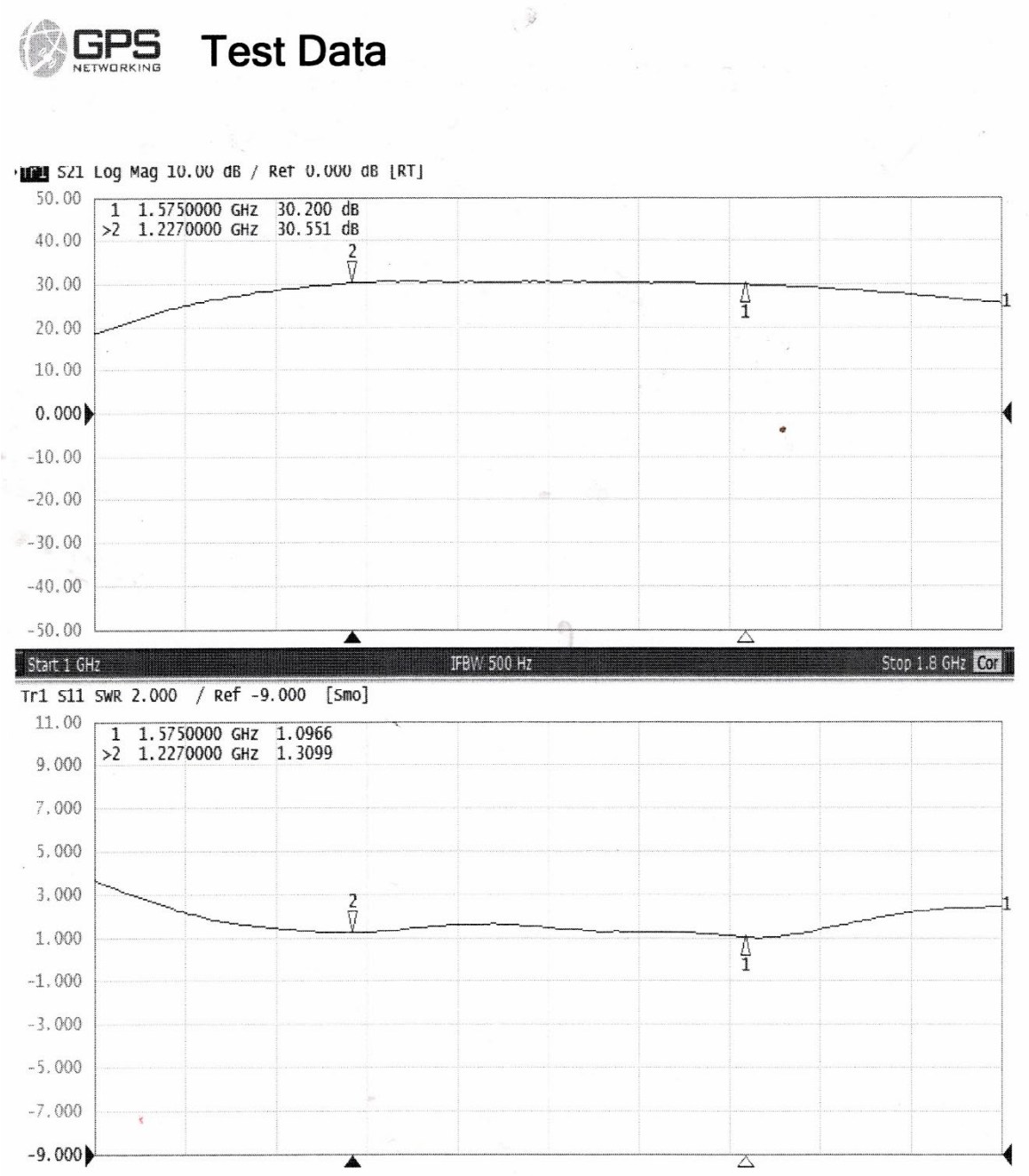
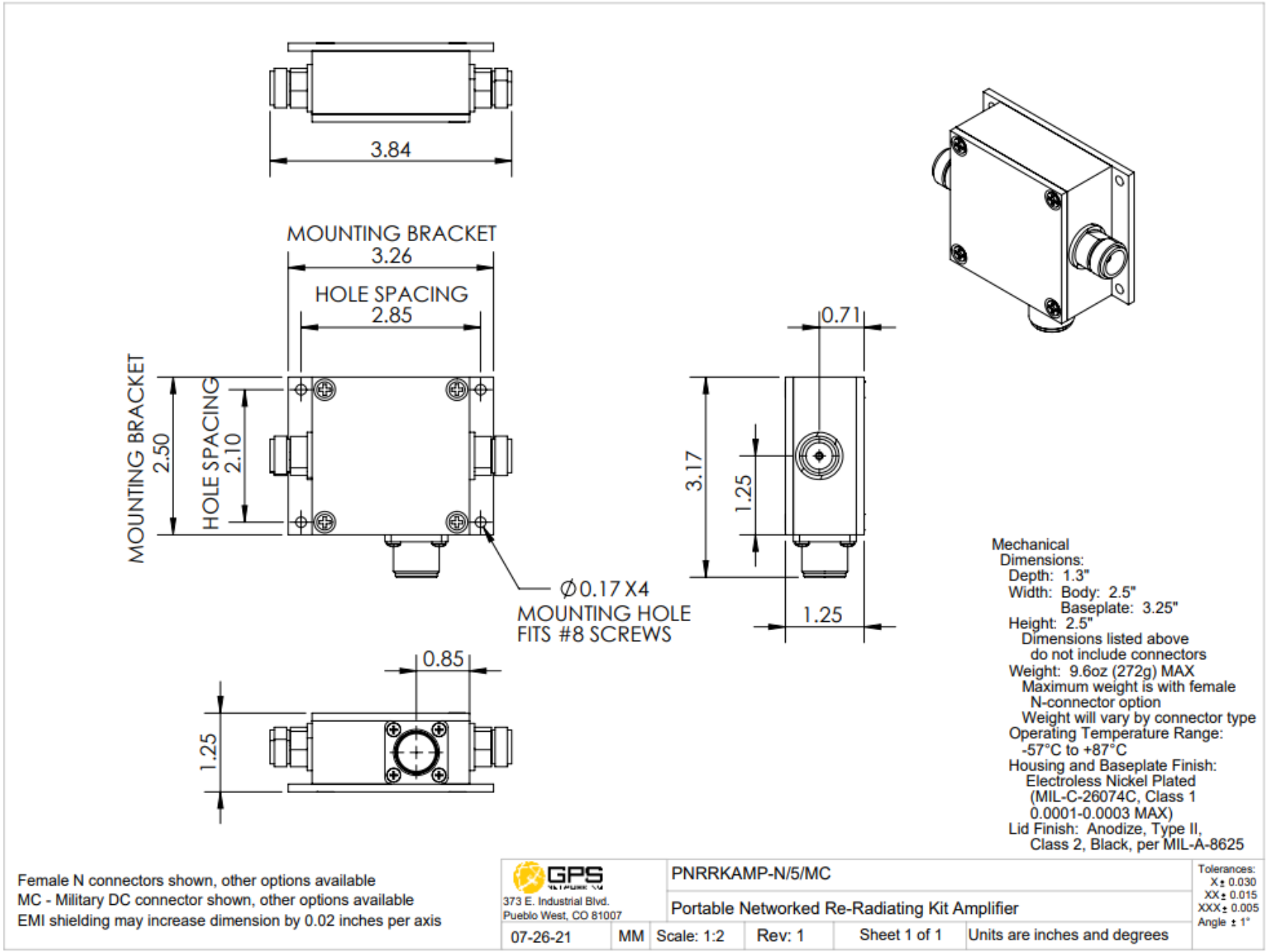
Performance

L1/L2GPNRRKAMP (Standard Gain)

Each L1/L2GPNRRKAMP ships with a test sheet that verifies critical performance characteristics, such as gain, input VSWR, and amplitude balance; a typical VNA test sheet is shown below.

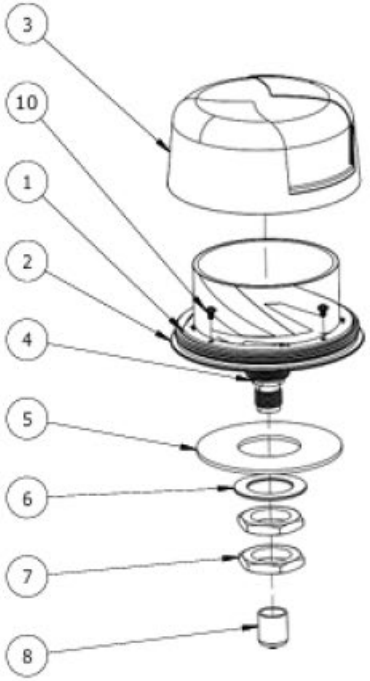


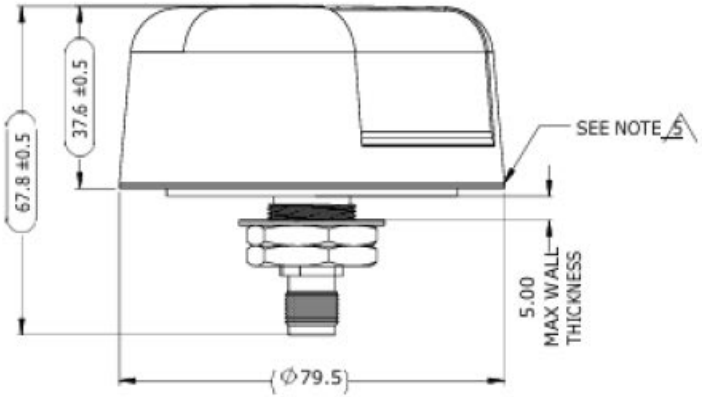
Mechanical



Contact us at salestech@gpsnetworking.com for 3D models or CAD drawings.

GPS NETWORKING Part Number: L125GRRKPA-T





DRAWING REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
1	INITIAL RELEASE	2022-09-25	MP