# NuPhotonics

VOA-1216-XX-X

Product State: Production

Rev. 1.1 – March 2026

# 1210 – 1650 nm MEMs Optical Attenuator

## Description

The VOA series optical attenuator is an electronically variable optical attenuator based on an electrostatic rotating mirror. The device offers high repeatability, low power consumption, fast response time, and is compliant with Telcordia GR-1221 standards. The MEMS optical attenuator is hermetically sealed. The VOA series comes with full customization capability. A BNC connection is available for easy system and machine integration.

## Features

- 45 dB attenuation
- Low voltage (0-8 V)
- High repeatability
- Fast response
- Low initial insertion loss
- Stable across temperature
- Continuous attenuation

## Applications

- Test and Measurement
- Datacenters
- RF over Fiber (RFoF)

IMPORTANT NOTICE: More Information on warranty, changes, rights, notices, and other information are presented at the back sheet of this data sheet. If the back sheet is not present, refer to www.nuphotonics.com for the company-issued datasheet.

**Electro-Optical Characteristics (**T = 25°C**)**

| Parameter | Symbol | Min. | Typ. | Max | Unit | Notes |
|---|---|---|---|---|---|---|
| Wavelength | λ | 1250 | | 1650 | nm | Others available |
| Insertion Loss | OIL | - | 0.3 | 1 | dB | |
| Optical Return Loss | ORL | - | 50 | - | dB | Taken at 1310 & 1550 nm |
| Repeatability | R | - | 0.05 | - | dB | Attenuation < 20 dB |
| Bias Voltage | V | 0 | | 7 | V | |
| Cycles | | - | 10 | - | $10^9$ | |
| Polarization Depend Loss | $P_{DL}$ | - | 0.2 | - | dB | Attenuation < 10 dB |
| | | - | 0.5 | - | | Attenuation < 20 dB |
| Switching Time | Ts | | 0.5 | 3 | ms | Off to On |
| Optical Power handling | Po | - | - | 500 | mW | |
| Wavelength Dependent Loss | WDL | - | 0.5 | - | dB | |
| Attenuation temperature change | - | - | | 1 | dB | From 25 – 80°c at 20 dB Attenuation |
| Ripple | - | - | 0.05 | - | dB | 20 dB attenuation |
| PMD | - | - | 0.1 | - | ps | |

**Absolute Maximum Rating (**T = 25°C**)**

| Parameter | Symbol | Condition | Min. | Max. | Unit |
|---|---|---|---|---|---|
| Voltage | $V_r$ | VOA | - | 8 | V |
| Forward Current | $I_F$ | - | - | 0.05 | mA |
| Input Optical Power | $P_{in}$ | - | - | 600 | mW |
| Fiber Bend Radius | R | SMF28 | 30 | - | mm |
| Storage Temperature | $T_{stg}$ | - | -25 | 90 | °C |
| Storage Humidity | $H_{stg}$ | - | - | 85 | % RH |
| Operating Temperature | $T_{op}$ | - | -25 | 80 | °C |
| Soldering Temperature | $T_{st}$ | 60 sec | - | 200 | °C |
| ESD Susceptibility | - | HBM | 100 | - | V |

**Device Pin Configuration** (Bottom View)

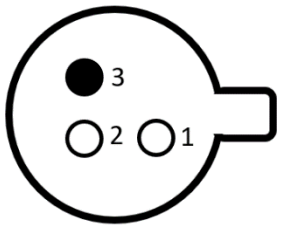



Fig 1A: Bottom View

| Pin | Function |
|---|---|
| 1 | V+ |
| 2 | GND / V- |
| 3 | Case Ground |

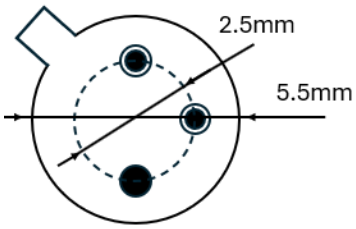
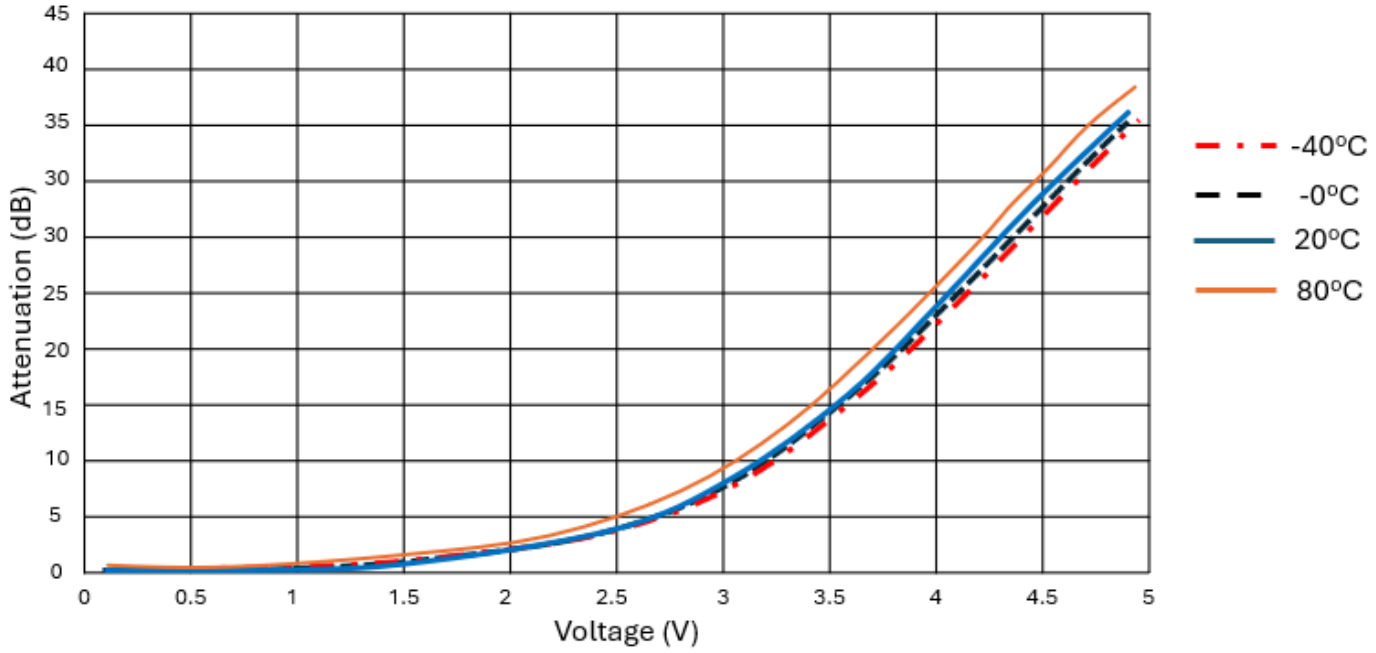



Fig 1B: Pin Dimensions

**Typical Performance Curves** (Top = 25°C)




**Device Dimensions**

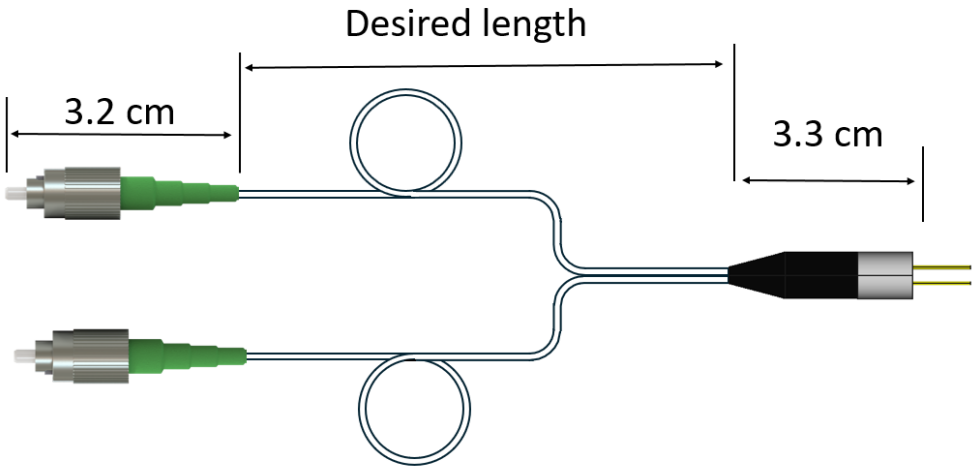



Fig 2: Device mechanical drawing. (All units in mm). Fiber and connector size differs based on build configuration.

**Device Nomenclature**

**VOA-1216-XX-X**

**Product Line – MEMS VOA**

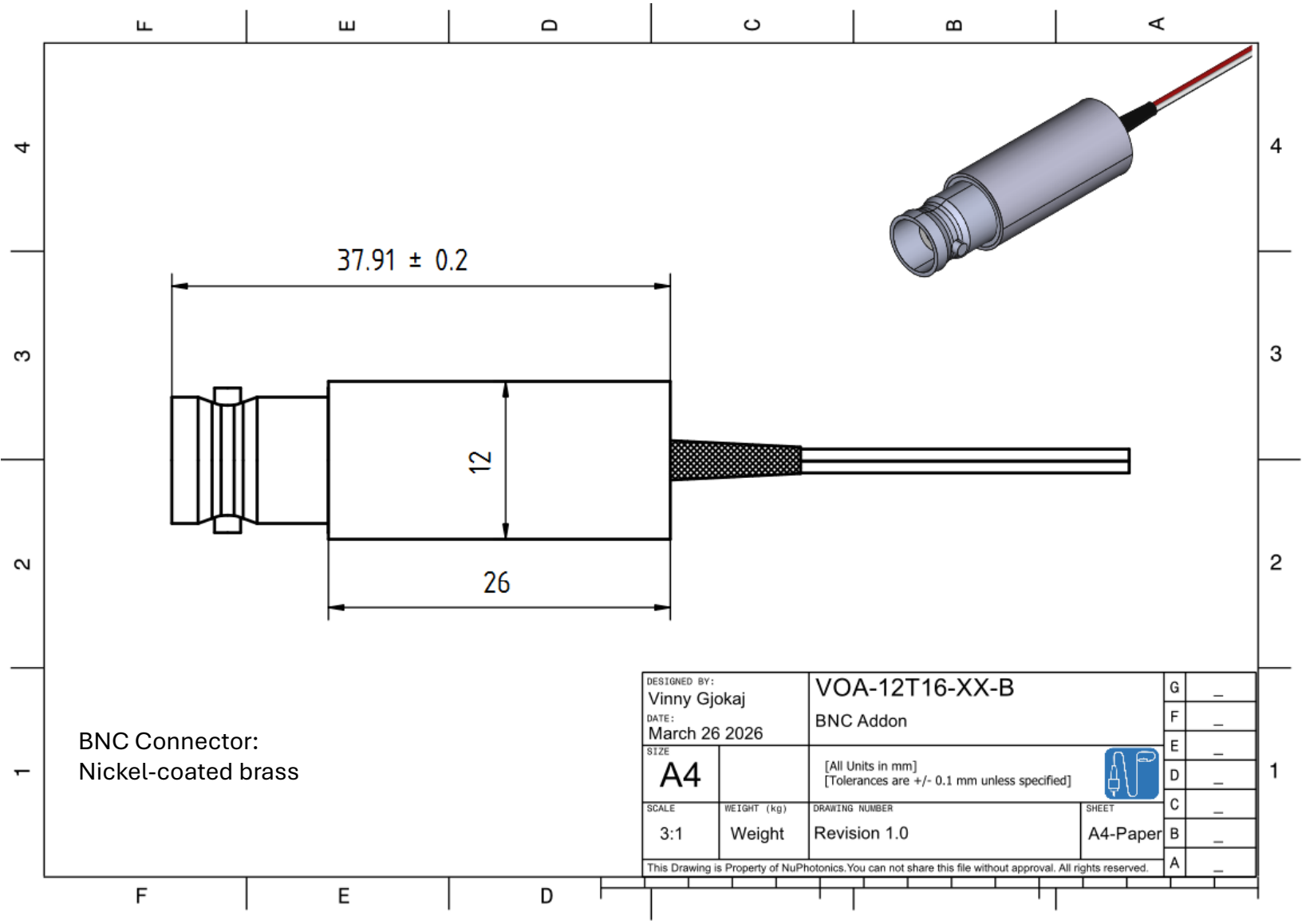
**Wavelength Range** – 1210-1650

**Build**
A) Standard Build
B) BNC Connection

**Optical Connector**
(00) No Connector
(FA) FC/APC
(FP) FC/PC
(SA) SA/APC
(SP) SC/PC

Example – VOA-1216-FA-B
1210–1650 nm MEMS VOA, FC/APC, BNC connection

**BNC Connection** (Option B)




| | | | |
|---|---|---|---|
| DESIGNED BY: Vinny Gjokaj | | VOA-12T16-XX-B | |
| DATE: March 26 2026 | | BNC Addon | |
| SIZE A4 | | [All Units in mm] [Tolerances are +/- 0.1 mm unless specified] | |
| SCALE 3:1 | WEIGHT (kg) Weight | DRAWING NUMBER Revision 1.0 | SHEET A4-Paper |

This Drawing is Property of NuPhotonics. You can not share this file without approval. All rights reserved.

BNC Connector:
Nickel-coated brass

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**Beta Build** – Device is available for external evaluation and engineering sampling. Specifications are subject to minor change.
**Production Build** – Device is released for production. Minor cosmetic or appearance variations may occur.
**Obsolete** – Device is no longer in production and is not supported.

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# Revision History

1.1 – March 2026 – Grammatical and spelling error correction. Updated Disclaimer section. Added BNC Option.

1.0 – January 2024 – Initial Release