
GNSS 光伝送ユニット

RF over Fiber Unit for GNSS
specification

Ver.1.0

Dec. 3, 2024

SEIKOH GIKEN Co., Ltd.

1.適用

本仕様書はGNSS光伝送ユニットに適用する。

This specification applies to RF over Fiber Unit for GNSS.

2. 型名 Product code

Table 1

Product code	Remarks
ET-G15B	Tx (Optical transmission part)
ER-G15B	Rx(Optical reception part)

3.付属品 Accessories

Table 2

Item	Quantity	Remarks
AC adapter	2	Input: AC100V-240V 50/60Hz Output:DC+5V, 2.5A max, L=1.2m AC Inlet: IEC 320-C14 DC Plug: Power DIN 4pins (Lock type) MTBF: 100kh
AC cable	2	L=1.8m Plug type A (2 Pins)

4.環境条件 Standard operating conditions

Table 3

Item	Specification				Remarks
	Min.	Typ.	Max.	Unit	
Operating temperature range	-20		60	°C	—
Operating humidity range	10		85	%RH	Refrain from dew condensation
Storage temperature range	-20		70	°C	—
SET-up location	Indoor use only				—

5. 定格 Rating

5-1. Tx

Table 4

Parameter		Value	Note
RF	Input Damage Level	0dBm	—
	Input P1dB	-30dBm typ.	—
Optical	Operating Wavelength	1550nm typ.	—
	Output Power	4mW typ.	—
	Connector	SC/PC	—
	Fiber used	SMF/1port	—
LED Status indicators	Power	Pilot LED.	—
	OPT.	Optical output power alarm.	<3dBm
General	GNSS input connector	BNC/J (DC5V output)	50mA max
	Power consumption	5W max	—
	Weight	0.3kg	—
	Dimension	130 × 86 × 39mm	—

5-2. Rx

Table 5

Parameter		Value	Note
Optical	Operating Wavelength	1550nm typ.	—
	Maximum Input Power	10mW	—
	Connector	SC/PC	—
	Fiber used	SMF/1port	—
LED Status indicators	Power	Pilot LED.	—
	Optical Input	Optical input power monitor.	See Table 7
	ALM.	Optical input power alarm.	<-14dBm
	Low	Low mode ON/OFF.	—
General	GNSS output connector	BNC/J	DC25V max
	Antenna dummy current	Normal: 33mA typ.	ALM. Interlocking
		Abnormality: DC Block	
	ALM. Interlocking SW	Antenna dummy current operation change switch.	See Page5
	ALM. connector	MC 1,5/4-ST-3,81(1850686) (Phoenix Contact) Pin1: ANT. ALM. Pin2: Tx ALM. Pin3: Rx ALM. Pin4: Common	• Photocoupler • Normal close See Table 8
	Power consumption	2W max	—
	Weight	0.3kg	—
	Dimension	130 × 86 × 39mm	—

6.性能 Specifications

Table 6

Parameter			Min	Typ.	Max	Unit	Note
Modulation Bandwidth			1		2	GHz	GPS,QZSS,GLONASS, BeiDou,Galileo,NavIC,etc.
Link Gain	Gain Selector	1		-5		dB	Frequency : 1.5GHz Optical loss:0dB
		2		4			
		3		12			
		4		20			
	Low switch ON	—		-15			
Group Delay			4	7	10	ns	Frequency : 1.5GHz Temperature : 25°C

7. 外観図 External

Tx: 付図SNDM-E045-04 Rev1.0による。

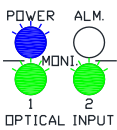
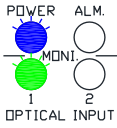
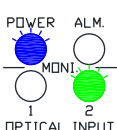
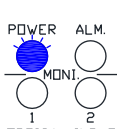
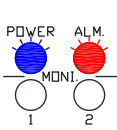
Tx is shown in Fig. SNDM -E045-04 Rev1.0.

Rx: 付図SNDM-E046-05 Rev1.0による。

Rx is shown in Fig. SNDM -E046-05 Rev1.0.

8.光入力モニタ Optical input power monitor

Table 7

LED status indicators of Rx	Fiber loss
	0~4dB
	4~8dB
	8~12dB
	12~20dB
	>20dB

9. アラームについて About Alarms

アラームの接点出力から想定される異常箇所は表8の通りです。

Table 8 shows expected locations of abnormality based on the alarm contact outputs.

Table 8

Pin1	Pin2	Pin3	Expected locations of abnormality
Close	Close	Close	<u>・Normal</u>
Close	Close	Open	<u>・Rx</u>
Close	Open	Close	<u>・Tx</u> ・Optical line
Close	Open	Open	<u>・Tx & Rx</u> ・Optical line & Rx
Open	Close	Close	<u>・Antenna</u>
Open	Close	Open	<u>・Antenna & Rx</u>
Open	Open	Close	<u>・Tx (Optical output power failure etc.)</u> <u>・Optical line (disconnection etc.)</u> ・Antenna & Tx
Open	Open	Open	<u>・Rx (Power Supply failure etc.)</u> ・Antenna & Tx & Rx ・Tx (Optical output power failure etc.) & Rx ・Optical line (disconnection etc.) & Rx

GNSS出力コネクタのアンテナダミー電流は、何れかのアラームが発報した場合DCブロックします。アラーム連動スイッチをOFFにすると、アラームが発報してもダミー電流が流れます。

The antenna dummy current in the GNSS output connector blocks DC when any alarm is triggered. When the alarm interlocking switch is set to OFF, the current continues to flow even if an alarm is triggered.

10. 光損失に対する利得 Gain to Optical loss

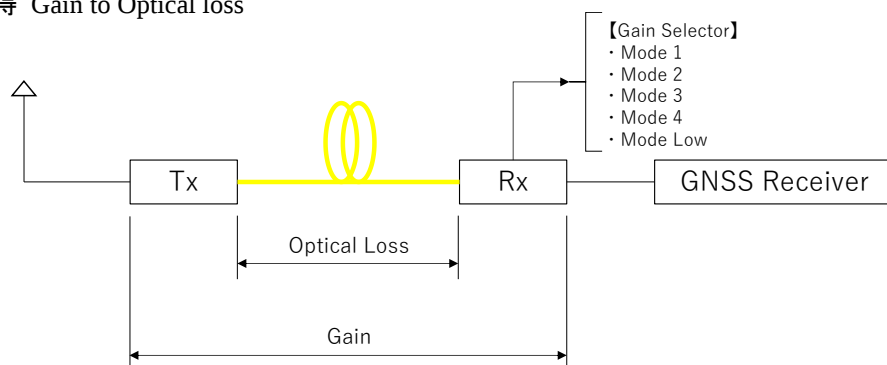


Fig.1 System diagram

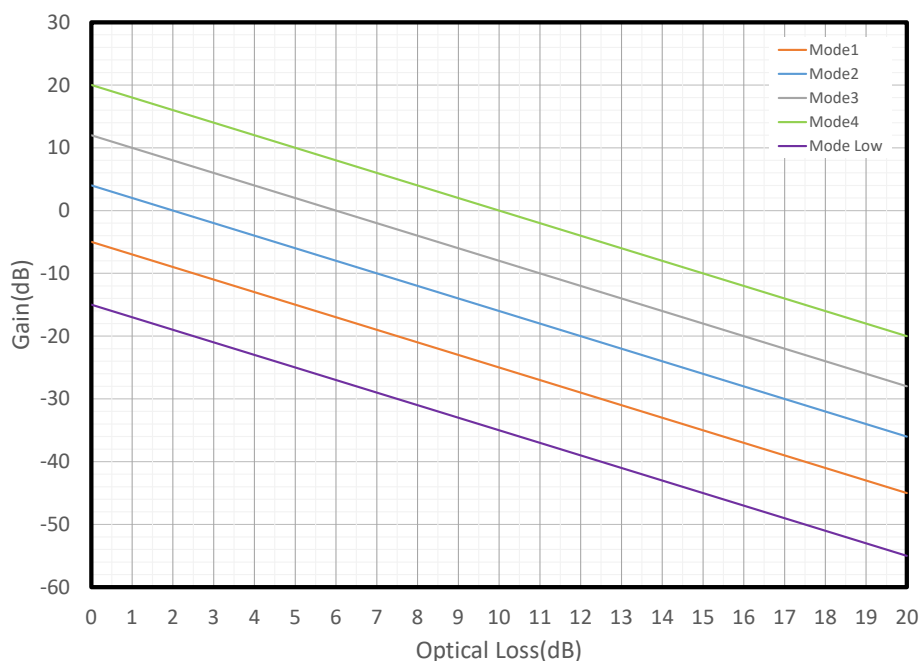


Fig.2 Gain vs Optical Loss

11. ゲイン設定 Gain setup

アンテナ～GNSS受信機間の利得がGNSS受信機の入力範囲となるようFig.1～3を参照しGain Selectorを設定してください。

Set the Gain Selector by referring to Figures 1 to 3 so that the gain between the antenna and the GNSS receiver is within the input range of the GNSS receiver.

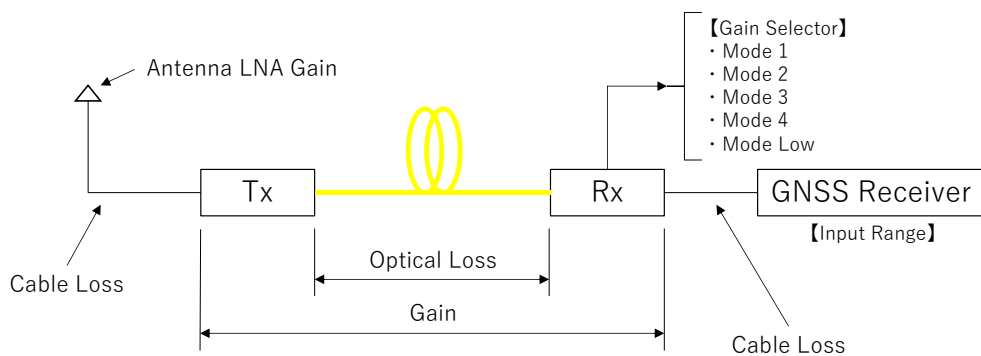


Fig.3 System Gain diagram

12. 群遅延 Group Delay

本装置の群遅延は光ファイバーの長さが支配的となります。光ファイバー1mあたり5nsで計算します。

The group delay of this device is dominated by the length of the optical fiber. Calculate with 5ns per 1m of optical fiber.

- $A+C=7\text{ns}$

- $B=5\text{ns/m}$

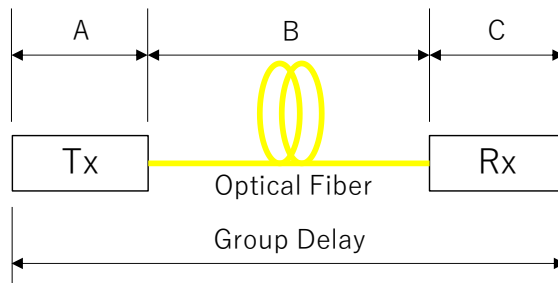


Fig.4 System Group Delay diagram

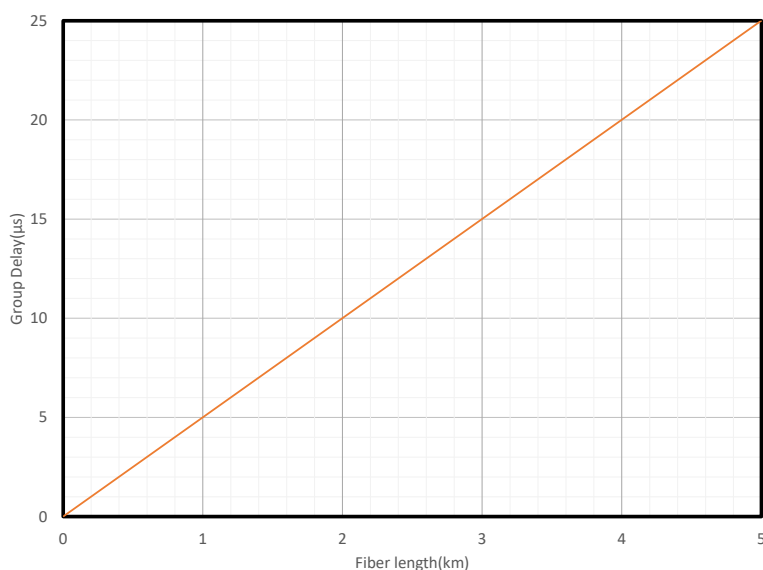
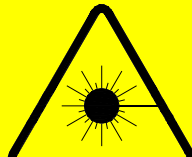


Fig.5 Group Delay vs Fiber length

13. セーフティーインフォメーション Safety information

本製品はクラス1不可視レーザー光を使用しております。直接レーザー光を見ないようにして下さい。

This product uses a class 1 laser light that is not visible to human eyes. Please exercise proper caution and do not look directly into the laser light as it may cause blindness.



Class 1 Laser System

INVISIBLE LASER RADIATION

MAXIMUM OUTPUT POWER:10mW

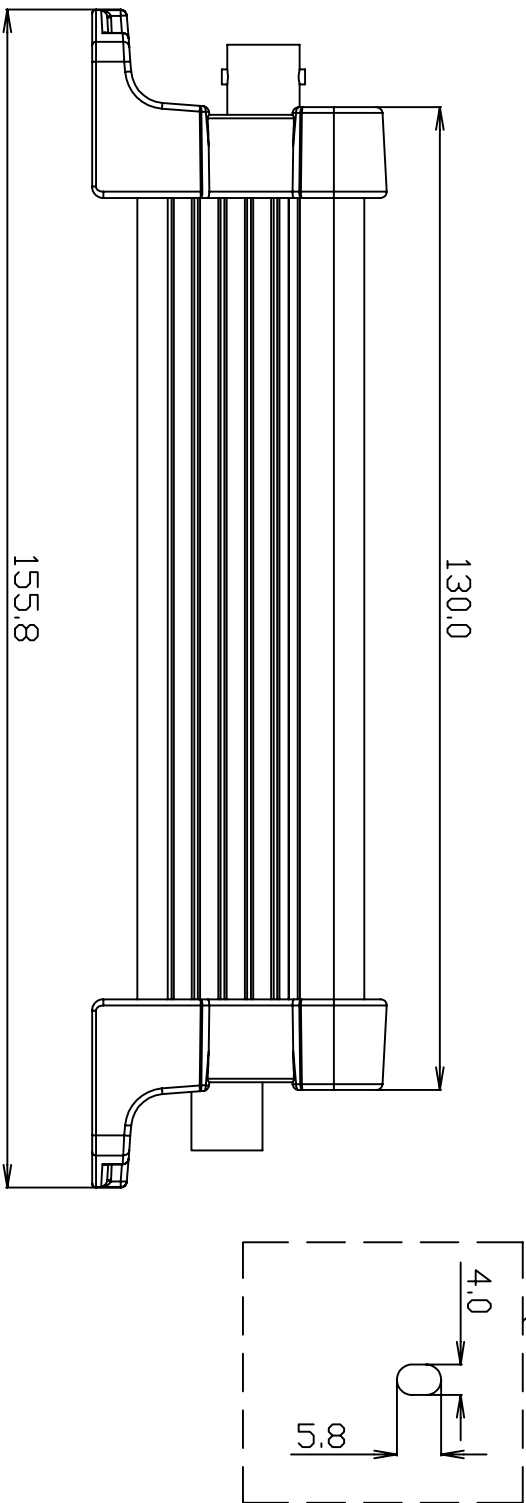
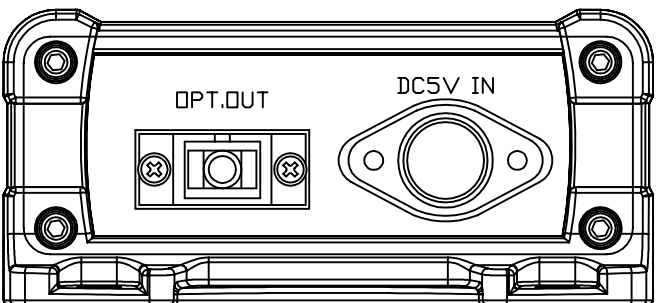
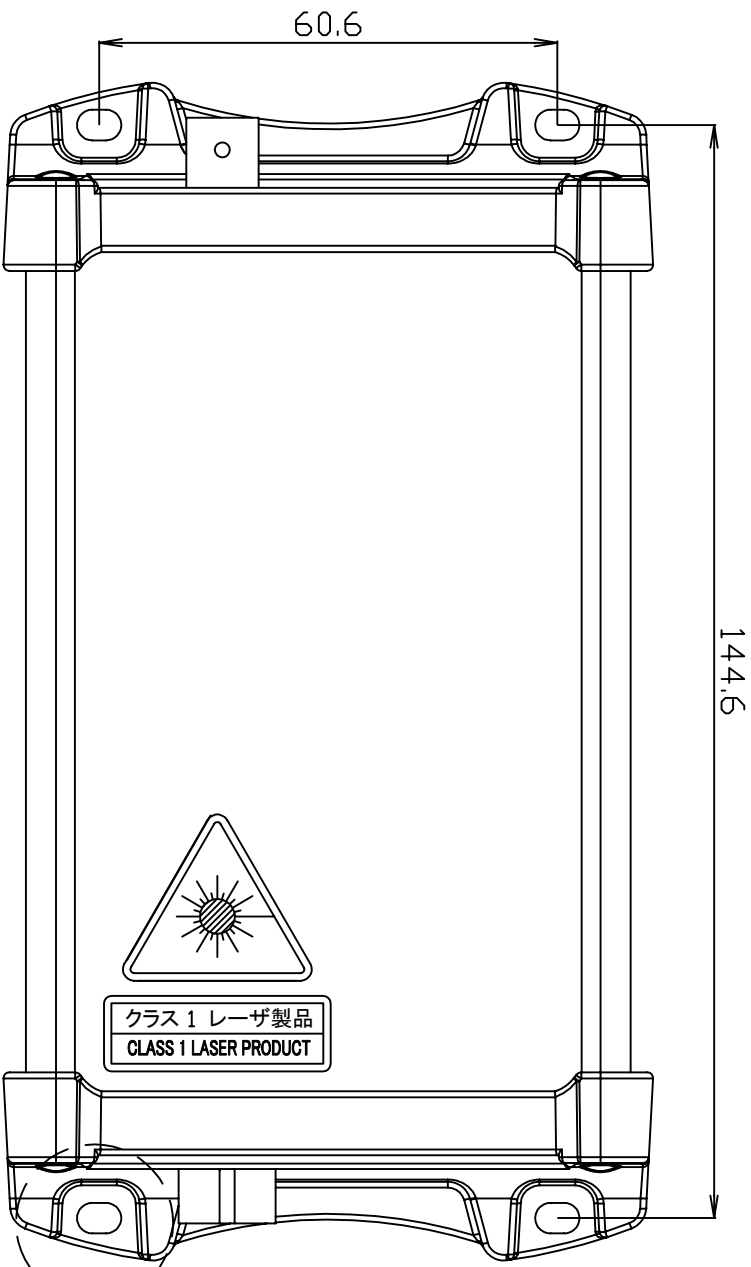
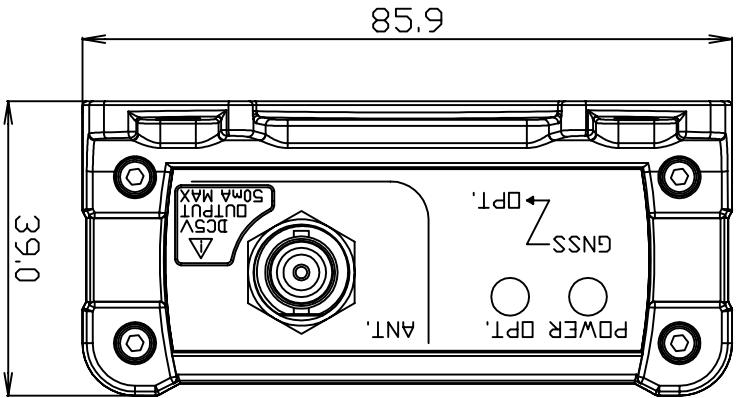
WAVELENGTH:1300 to 1600nm

14. 保証 Warranty

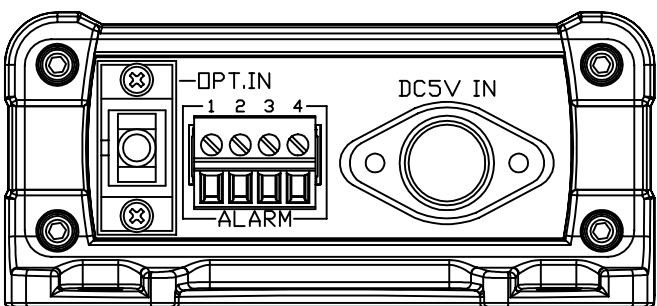
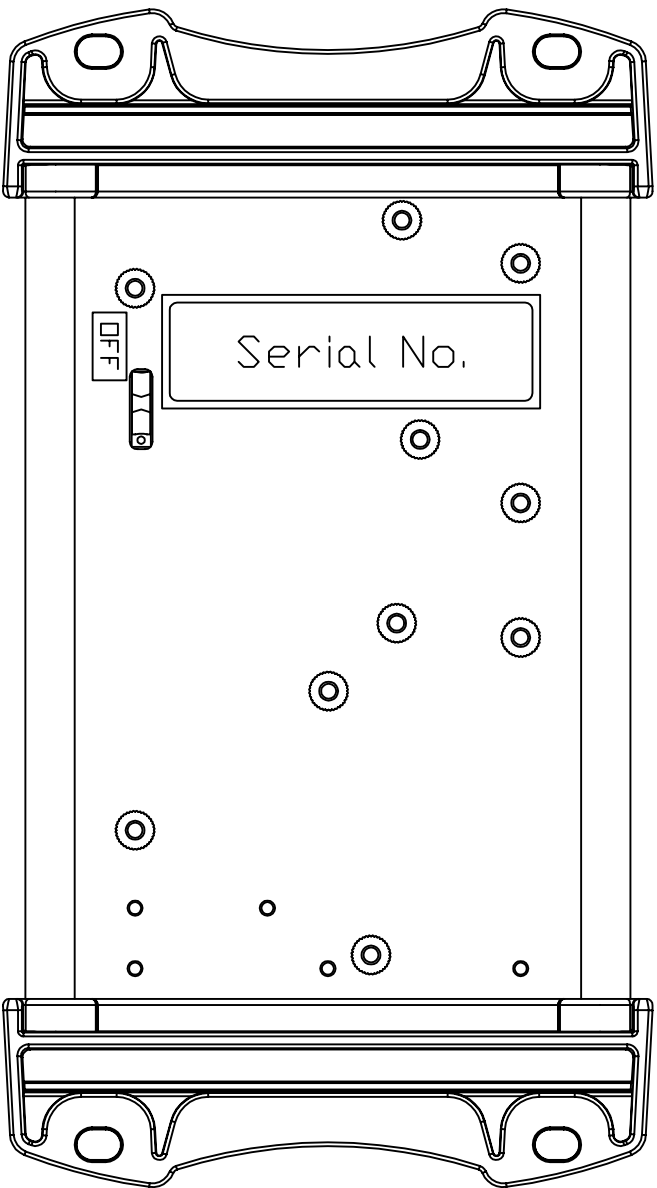
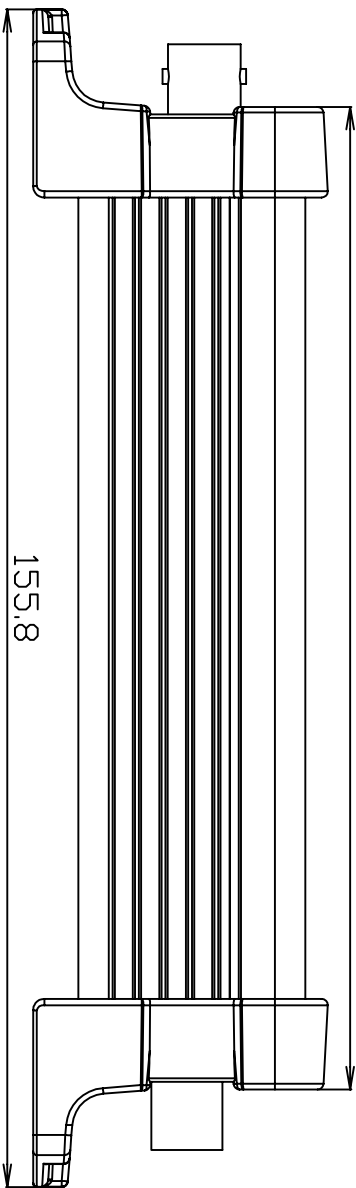
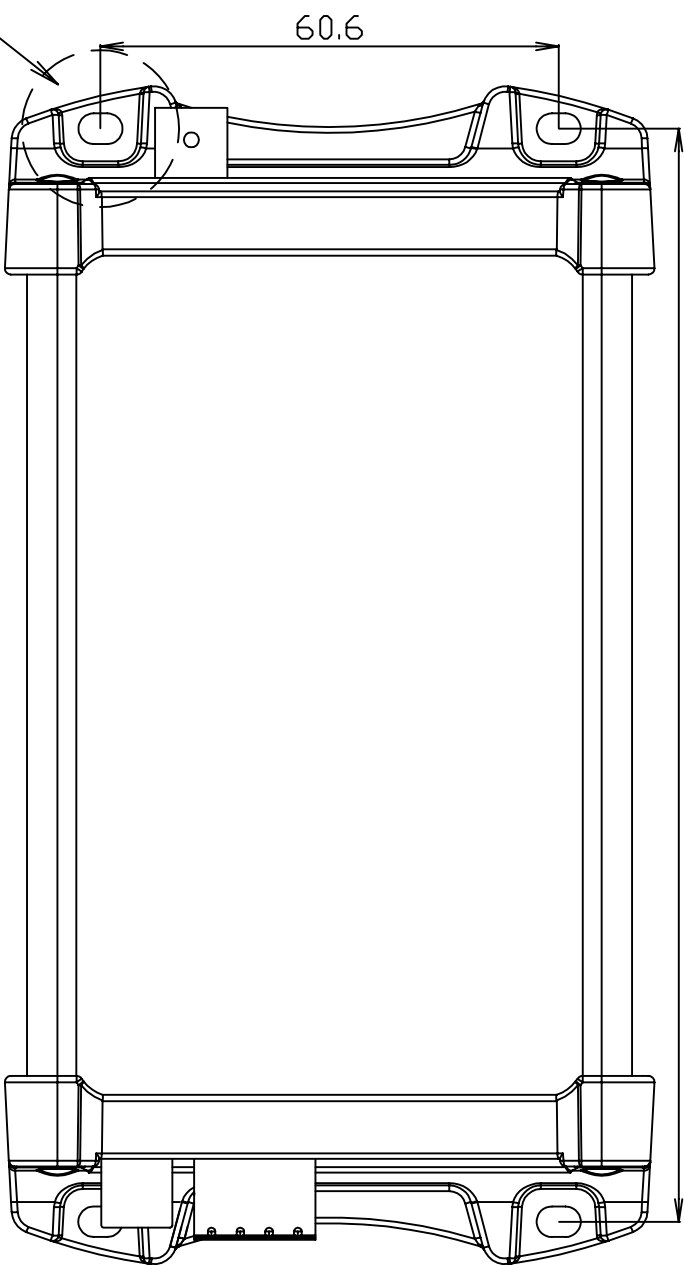
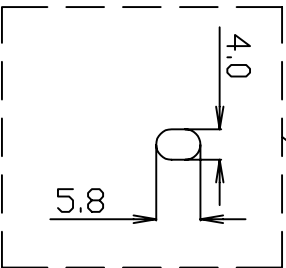
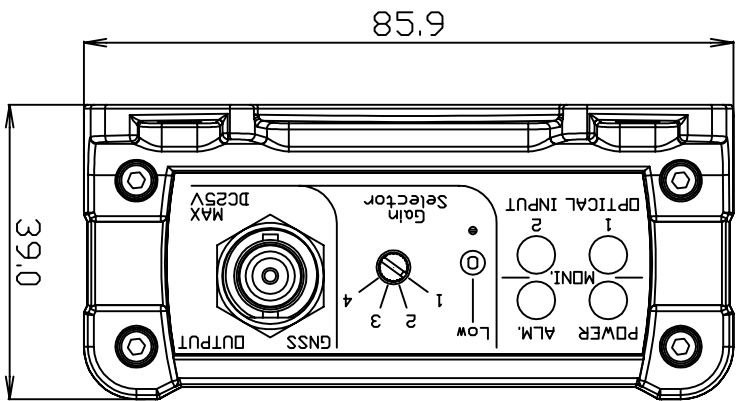
本製品に関し、構成部品の故障や製造上の欠陥に対して納入日から1年間無償修理保証致します。

但し、本保証は製品の正常な使用において発生した故障のみに適用致します。

SEIKOH GIKEN warrants the Unit against defects in parts and workmanship for one full year from B/L date. This warranty shall be invalid by any abuse, misuse, misapplication or improper installation.



Rev.	DESIGN CHANGE	DATE	24.12.03	TITLE	
		Rev.	1.0	RF over Fiber Unit for GNSS Tx	
		UNIT	[mm]	ET-G15B External	
		SCALE	1/1		
		Gen Tolerance	JIS medium grade		
		APPD.	M.Dhizawa	DWG.No.	SNDM-E045-04
		CHECKD	T.Yamauchi	SEIKOH GIKEN	
		DRAWN	J.Terakado		



Rev.	DESIGN CHANGE	DATE	24.12.03	TITLE	RF over Fiber Unit for GNSS Rx ER-G15B External
		Rev.	1.0		
		UNIT	[mm]		
		SCALE	1/1		
		Gen Tolerance	JIS medium grade		
		APPD.	M.Dhizawa	DWG.No.	SNDM-E046-05
		CHECKD	T.Yamauchi		
		DRAWN	J.Terakado		