

- Specification -

C-band 10W BUC

Model No. NJT5762 series

Model No.	RF Frequency	Local Frequency	IF Frequency
NJT5762 series	5.85 to 6.425 GHz	4.9 GHz	950 to 1,525 MHz
NJT5763 series	5.85 to 6.725 GHz	4.9 GHz	950 to 1,825 MHz
NJT5764 series	6.725 to 7.025 GHz	5.76 GHz	965 to 1,265 MHz

Output Power @ 1dB G.C.P.: +40 dBm (10W)

IF Input Interface: N-type / F-type, Female Connector

Ref. (10MHz) Input: IF Connector

DC Power Input: Circular Connector / IF Connector (*)

RF Output Interface: Waveguide, CPR-137G

Power Supply: DC Power, +18 to +60 V DC

Floating DC Power, -48 / +48 V DC

AC Power Operation, 100 to 240 V AC

*) Circular Connector models shall apply DC voltage via only Circular Connector.

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Microwave Business Division

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Caution

1. While Nisshinbo Micro Devices Inc. (NISD) continually strives to improve the quality and reliability of our products, failures will occur in microwave products over time. For this reason, it is important that customers fulfill their responsibilities to ensure designed-in safety – including failsafe functions, redundancy, and measures to prevent malfunctions and the spread of fire – in order to avoid injuries, accidents, or social repercussions resulting from the failure of any products related to satellite communications on this document (hereinafter, “the product”). Customers must pay careful attention to ensuring the safety of their equipment.
2. The product is designed and tested to function in accordance with its specifications. Do not use under conditions that deviate from the product specifications included in the delivery specifications. NISD assume no responsibility and shall not be liable for any injuries, accidents, or social repercussions resulting from the product being in a poor or damaged state because it was used under conditions that depart from the specifications.
3. The product is covered by a warranty for one year following delivery unless otherwise stipulated in the contract or delivery conditions. In the event of a failure for which NISD are responsible occurring during the warranty period, NISD undertake to repair or replace the product free of charge. Note, however, that the warranty does not cover failures such as those listed here (see bullets below), even if they occur within the warranty period. In addition, in the case of a product being repaired or replaced by us, the starting date for the warranty period is still the original delivery date of the product.
 - Failure due to the product being used in conditions other than those stipulated in the data sheet, specification sheet, etc.
 - Failure due to modifications or repairs carried out by some entity other than our company
 - Failure determined to be the result of unsuitable maintenance or replacement of a consumable item that requires due maintenance
 - Failure due to circumstances that were unforeseeable given the scientific/technological standards at the time of shipment
 - Other failures due to external factors such as fire, earthquake, flood and power supply anomalies for which NISD are not responsible

In addition, the product warranty is limited to the provision of repair services or replacement at no cost. It does not cover secondary damage (to equipment, business opportunities, profits, etc.) or any other damage that may have resulted from failure of the product.
4. The product must be handled appropriately to ensure its continued reliability. Since it can be damaged by the intrusion of water, dust, oil, chemicals, etc., it must be given appropriate protection. Even in the case of a product with an airtight construction, avoid using it in an environment that exceeds the stated levels of waterproofing/dustproofing. Also, be sure to use connectors and waveguides properly.

If replacement parts such as fans are included, proper maintenance is necessary. To maintain product performance and functionality, it is necessary to conduct inspections and maintenance at appropriate intervals and exchange replacement parts when necessary. Improper inspections or maintenance may result in failure.

In addition, the warranty does not cover the use of the product in areas where salt damage can be expected or where there is a substantial presence of corrosive gases such as Cl_2 , H_2S , SO_2 , and NO_2 . If the product is to be used in such areas, at the time of installation you must take appropriate steps to protect the product.
5. If the product is to be used with equipment/systems that must meet special quality and reliability standards (aerospace equipment, medical equipment, power generation control equipment, automotive/railway transportation equipment, safety equipment, disaster prevention and security equipment, etc.), please consult with our sales staff in advance.
6. Some products contain gallium arsenide (GaAs), classified as a harmful substance. To avoid danger, do not incinerate, crush, or chemically treat the product in such a way that gases or dust are released. When disposing of the product, comply with all applicable laws and regulations and do not treat it as general industrial waste or household waste.
7. When exporting a product or technology, observe export laws and regulations such as those governing foreign exchange and foreign trade, and obtain any necessary licenses for export, service transactions, etc.

NISD request that you do not use our products or the technical data published on this document for developing weapons of mass destruction or for any other military purposes or applications.
8. The product specifications in this document are subject to change without notice. If you are considering using a product, delivery specifications must first be settled.

*Above Specifications are subject to change without notice.



Scope

This BUC is designed for the block up-converter intended for the satellite communication data uplink application in C-band. It can transmit an RF signal (C-band 5.85 to 6.425 GHz, 5.85 to 6.725 GHz, or 6.725 to 7.025 GHz) output with up to 10W (+40 dBm) linear as output power @ 1 dB G.C.P. (P1dB). It is combined a GaAs high power amplifier and a block up-converter with a phase locked local oscillator (4.9 GHz or 5.76 GHz) which is synchronized with external 10MHz reference.

The BUC receives a reference signal (10 MHz) and an IF signal (L-band: 950 to 1,525 MHz, 950 to 1,825 MHz, or 965 to 1,265 MHz) input and transmits an RF signal (C-band 5.85 to 6.425 GHz, 5.85 to 6.725 GHz, or 6.725 to 7.025 GHz) output. It is operated by +24 V and +48 V DC power (Range: +18 to +60 V) input which is supplied via either an IF connector or circular connector as depended on product model number. Also the floating power supply option model can be operated with -48 V DC power. And the AC/DC power supply unit can be selected for AC power operation as optional part. It can support the FSK communication M&C as optional function.

The BUC comes in a single, weatherized housing rated for outdoor use and has either an N-Type or F-type female connector as IF input, a CPR-137G waveguide flange as RF output.

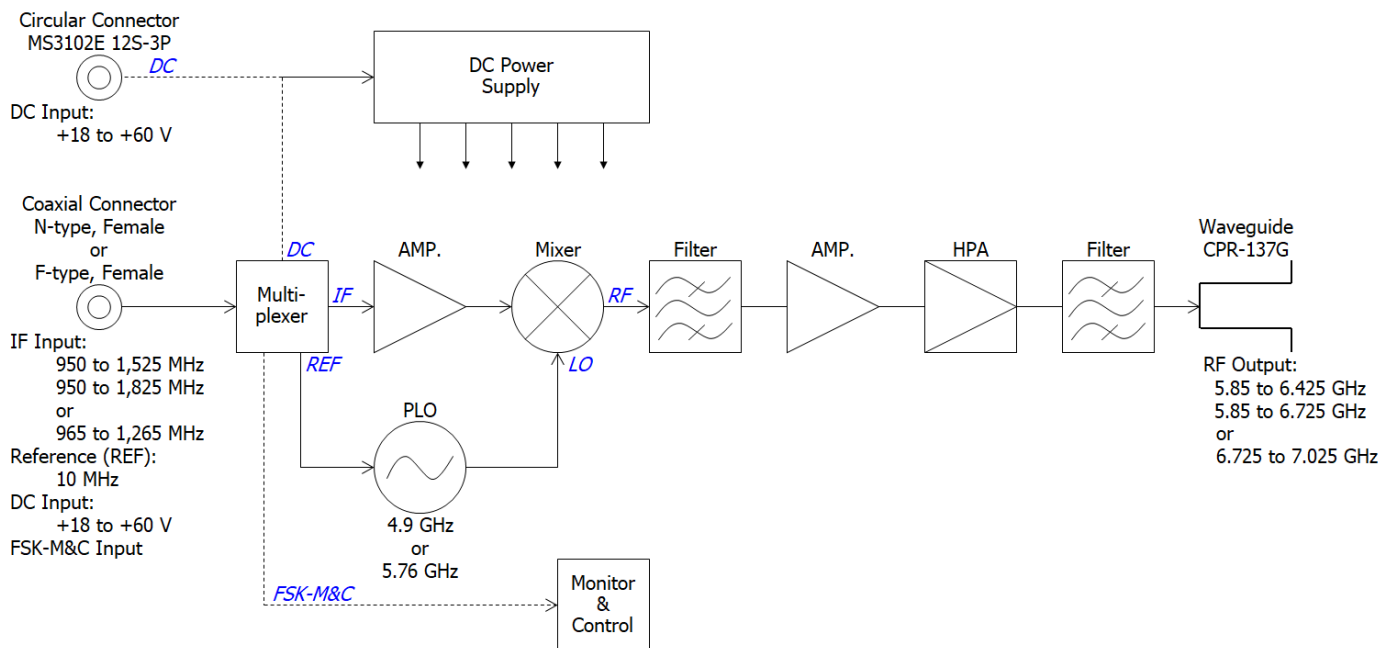
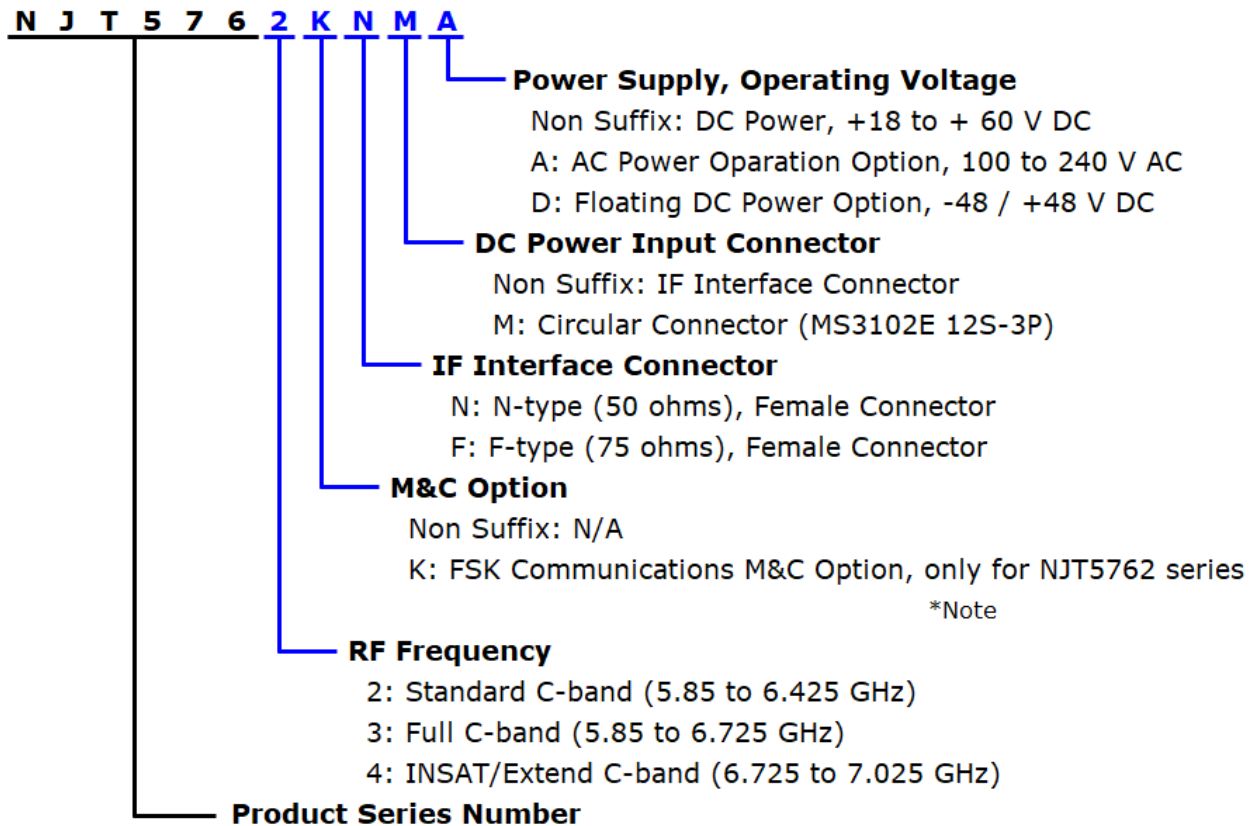


Fig.1 Functional Block Diagram

* Above Specifications are subject to change without notice.

Series Model Number

- Numbering System



*For AC Power Operation Option, an additional indoor 150W AC/DC PSU is enclosed and DC Power is supplied at IF connector of BUC from AC/DC PSU via IF cable.

*Circular Connector models shall apply DC voltage via only Circular Connector.

*Note: The availability of FSK communications M&C on NJT5763 and NJT5764 series shall be inquired to NISD.

* Above Specifications are subject to change without notice.

● Line-up

Model No.	RF Frequency	Local Frequency	IF Frequency	Output Power @ P1dB	Power Supply	M&C Option	IF Connector
NJT5762N	5.85 to 6.425 GHz Standard C-band	4.9 GHz	950 to 1,525 MHz	10W Linear (+40 dBm min.)	DC Power +18 to +60 V Input: IF Connector	N/A	N-type
NJT5762F					F-type		
NJT5762NM					DC Power +18 to +60 V Input: Circular Connector		N-type
NJT5762FM					F-type		
NJT5762NMD					Floating DC Power +48 / - 48 V Input: Circular Connector		N-type
NJT5762FMD					F-type		
NJT5762NA					AC Power Option Input: IF Connector		N-type
NJT5762FA					*Note		F-type
NJT5762KN					DC Power +18 to + 60 V Input: IF Connector	FSK M&C	N-type
NJT5762KF					F-type		
NJT5762KNM					DC Power +18 to +60 V Input: Circular Connector		N-type
NJT5762KFM					F-type		
NJT5763N	5.85 to 6.725 GHz Full C-band		950 to 1,825 MHz		DC Power +18 to + 60 V Input: IF Connector	N/A	N-type
NJT5763F					F-type		
NJT5763NM					DC Power +18 to +60 V Input: Circular Connector		N-type
NJT5763FM					F-type		
NJT5763NMD					Floating DC Power +48 / - 48 V Input: Circular Connector		N-type
NJT5763FMD					F-type		
NJT5763NA					AC Power Option Input: IF Connector		N-type
NJT5763FA					*Note		F-type
NJT5764N	6.725 to 7.025 GHz INSAT/Extend C-band	5.76 GHz	965 to 1,265 MHz		DC Power +18 to + 60 V Input: IF Connector	N/A	N-type
NJT5764F					F-type		
NJT5764NM					DC Power +18 to +60 V Input: Circular Connector		N-type
NJT5764FM					F-type		
NJT5764NMD					Floating DC Power +48 / - 48 V Input: Circular Connector		N-type
NJT5764FMD					F-type		
NJT5764NA					AC Power Option Input: IF Connector		N-type
NJT5764FA					*Note		F-type

*Note: AC power operation is achieved by additional Indoor 150W AC/DC Power Supply Unit (PSU).
DC power is supplied at IF connector of BUC from the 150W AC/DC PSU though IF coaxial cable. The 150W AC/DC PSU is enclosed in the shipping package of AC power option.

* Circular Connector models shall apply DC voltage via only Circular Connector.

* Above Specifications are subject to change without notice.

1. Electrical Specifications

#	Items	Specifications
1.1.	Output RF Frequency Range	
	<Model No. NJT5762 series>	5.85 to 6.425 GHz
	<Model No. NJT5763 series>	5.85 to 6.725 GHz
	<Model No. NJT5764 series>	6.725 to 7.025 GHz
1.2.	Input IF Frequency Range	
	<Model No. NJT5762 series>	950 to 1,525 MHz
	<Model No. NJT5763 series>	950 to 1,825 MHz
	<Model No. NJT5764 series>	965 to 1,265 MHz
1.3.	Maximum IF Input Level (without damage)	+13 dBm max.
1.4.	Conversion Type	Single, fixed L.O.
1.5.	L.O. Frequency	
	<Model No. NJT5762 series>	4.9 GHz
	<Model No. NJT5763 series>	4.9 GHz
	<Model No. NJT5764 series>	5.76 GHz
1.6.	Frequency Sense	Positive
1.7.	Output Power @ 1dB G.C.P. (P1dB)	+40 dBm min. over temperature
1.8.	IM3	@ total power ≤ +40 dBm - 3 dB
	<Model No. NJT5762 series>	-28 dBc typ., -26 dBc max.
	<Model No. NJT5763 series>	-24 dBc typ.
	<Model No. NJT5764 series>	-28 dBc typ.
1.9.	Linear Gain	64 dB nom., 58 dB min.
1.10.	Gain Variation over frequency @ fixed temperature	
	<Model No. NJT5762 series>	4 dBp-p max. over 575 MHz 2 dBp-p max. over 54 MHz
	<Model No. NJT5763 series>	5.5 dBp-p max. over 875 MHz 2.5 dBp-p max. over 54 MHz
	<Model No. NJT5764 series>	4 dBp-p max. over 300 MHz 2 dBp-p max. over 54 MHz
1.11.	Gain Stability over temperature @ fixed frequency	
	<Model No. NJT5762 series>	4 dBp-p max. 2 dBp-p typ.
	<Model No. NJT5763 series>	5 dBp-p max. 3 dBp-p typ.
	<Model No. NJT5764 series>	4 dBp-p max. 2 dBp-p typ.

* Above Specifications are subject to change without notice.

#	Items	Specifications
1.12.	Requirement for External Reference [Frequency] [Input Power] [Phase Noise]	10 MHz (sine-wave) -5 to +5 dBm @ Input port -120 dBc/Hz max. @ 100 Hz -130 dBc/Hz max. @ 1 kHz -140 dBc/Hz max. @ 10 kHz
1.13.	L.O. Phase Noise	-60 dBc/Hz max. @ 100 Hz -70 dBc/Hz max. @ 1 kHz -80 dBc/Hz max. @ 10 kHz -90 dBc/Hz max. @ 100 kHz -100 dBc/Hz max. @ 1MHz
1.14.	Spurious @ Pout = +40 dBm	
	<Model No. NJT5762 series> [In-band] [Receive-band] [Out-of-band]	-50 dBc max. @ 5.85 to 6.425 GHz -70 dBm max. @ 3.625 to 4.2 GHz -50 dBc max.
	<Model No. NJT5763 series> *Note 1 [In-band] [Receive-band] [Out-of-band]	-50 dBc max. @ 5.85 to 6.725 GHz -70 dBm max. @ 3.4 to 4.2 GHz -50 dBc max.
	<Model No. NJT5764 series> [In-band] [Receive-band] [Out-of-band]	-50 dBc max. @ 6.725 to 7.025 GHz -70 dBm max. @ 4.5 to 4.8 GHz -50 dBc max.
1.15.	Receive Band Noise Density	
	<Model No. NJT5762 series>	-87 dBm/4kHz max. @ 3.625 to 4.2 GHz
	<Model No. NJT5763 series>	-87 dBm/4kHz max. @ 3.4 to 4.2 GHz
	<Model No. NJT5764 series>	-87 dBm/4kHz max. @ 4.5 to 4.8 GHz
1.16.	Input Impedance	
	<N-type Model>	50 ohms nom
	<F-type Model>	75 ohms nom.
1.17.	Input V.S.W.R.	2 : 1 max.
1.18.	Output V.S.W.R.	2 : 1 max.
1.19.	Output Load V.S.W.R.	
	[Recommendation]	1.3 : 1 max.
	[Non Damage]	Infinite : 1

* Above Specifications are subject to change without notice.

#	Items	Specifications
1.20.	DC Power Requirement	
	<DC Power Model> [Voltage Range] [DC Power Input] [Power Consumption]	+24 / +48 VDC (+18 to +60 VDC) Circular Connector / IF Connector ^{*Note 2} <u>for NJT5762 series</u> 65 W typ. @ No IF signal 69 W typ., 75 W max. @ Pout = +40 dBm <u>for NJT5763 series</u> 65 W typ. @ No IF signal 75 W typ., 85 W max. @ Pout = +40 dBm <u>for NJT5764 series</u> 65 W typ. @ No IF signal 73 W typ., 80 W max. @ Pout = +40 dBm
	<Floating DC Power Model> [Voltage Range] [Threshold Voltage] [Start-up Time] [DC Power Input] [Power Consumption]	+48 / -48 VDC (+/-38 to +/-55 VDC) Undervoltage Turn-on: 34 V typ. Overvoltage Turn-on: 56 V typ. Undervoltage Turn-off: 31 V typ. Overvoltage Turn-off: 59 V typ. 1 sec. typ. Circular Connector ^{*Note 2} <u>for NJT5762 series</u> 76 W typ., 83 W max. @ Pout = +40 dBm <u>for NJT5763 series</u> 83 W typ., 94 W max. @ Pout = +40 dBm <u>for NJT5764 series</u> 80 W typ., 90 W max. @ Pout = +40 dBm
	<AC Power Model> [Voltage Range]	100 to 240 VAC *Details are mentioned on Appendix of " <u>Indoor 150W AC/DC Power Supply Unit</u> ".
1.21.	Mute	Shut off the HPA in case of L.O. unlocked or no 10 MHz reference signal.
1.22.	LED Indicator	GREEN: LO locked RED: LO unlocked (or no 10 MHz reference signal)

* Above Specifications are subject to change without notice.

#	Items	Specifications
1.23.	Mute	Shut off the HPA in case of L.O. unlocked or no 10 MHz reference signal (or status of over temperature) *Note 3
1.24.	LED Indicator	GREEN: LO locked RED: LO unlocked (or no 10 MHz reference signal)
1.25.	Monitor and Control <FSK M&C Option> [Interface] [Functions] [Performance]	650kHz FSK Signal on IF Connector Monitor: Tx Output Power / Temperature / Tx Status / Alarm (Over temperature *Note3 / L.O. unlock) Control: Transmit On/Off Tx Output Power: Detector Range: 15 dB (up to P1dB) Reading Accuracy: +/- 1.0 dB *Details are mentioned on Appendix of “ <u>Specifications of Monitor & Control</u> ”.

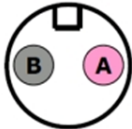
*Note1: The 2nd harmonics level of IF signal must be lower than -60 dBc at the IDU and IF signal source output.

*Note2: The circular connector models for DC power input shall apply DC voltage via only circular connector. Do not apply DC voltage on IF connector for the circular connector models to avoid the electrical damage and shock.

*Note3 In case of FSK communications M&C model, the unit will operate until status of over temperature which turn out at internal temperature of around 120 °C, and the Mute and Alarm will function at status of over temperature. After the Mute and Alarm of over temperature, the unit will automatically recover at internal temperature of around 75 °C.

* Above Specifications are subject to change without notice.

2. Mechanical Specifications

#	Items	Specifications
2.1.	Input Interface [IF Connector] [Circular Connector] [DC Power Input]	IF / Ref. / FSK M&C Signal / DC Power Input: <u>for N-type Model</u> Coaxial Connector , N-type Female - 50 ohms <u>for F-type Model</u> Coaxial Connector , F-type Female - 75 ohms DC Power Input: Model: MS3102E 12S-3P Mating connector: MS3106E 12S-3S [MS Connector /MIL-DTL-5015] Assignment: <u>for DC Power Model</u>  Pin A: +24/+48VDC Input / Prime Pin B: GND / Return <u>for Floating DC Power Model</u>  Pin A: DC Input (+) / Prime Pin B: DC Input (-) / Return IF Connector or Circular Connector ^{*Note4}
2.2.	Output Interface	Waveguide, CPR-137G (with Groove)
2.3.	Dimension & Housing without interface connectors and screws	219.5 (L) x 175 (W) x 99 (H) mm [8.64" (L) x 6.89" (W) x 3.90" (H)]
2.4.	Weight	3.2 kg typ. [7.0 lbs typ.]
2.5.	Cooling	Convection Air Cooling

*Note4: The circular connector models for DC power input shall apply DC voltage via only circular connector. **Do not apply DC voltage on IF connector for the circular connector models to avoid the electrical damage and shock.**

*Above Specifications are subject to change without notice.

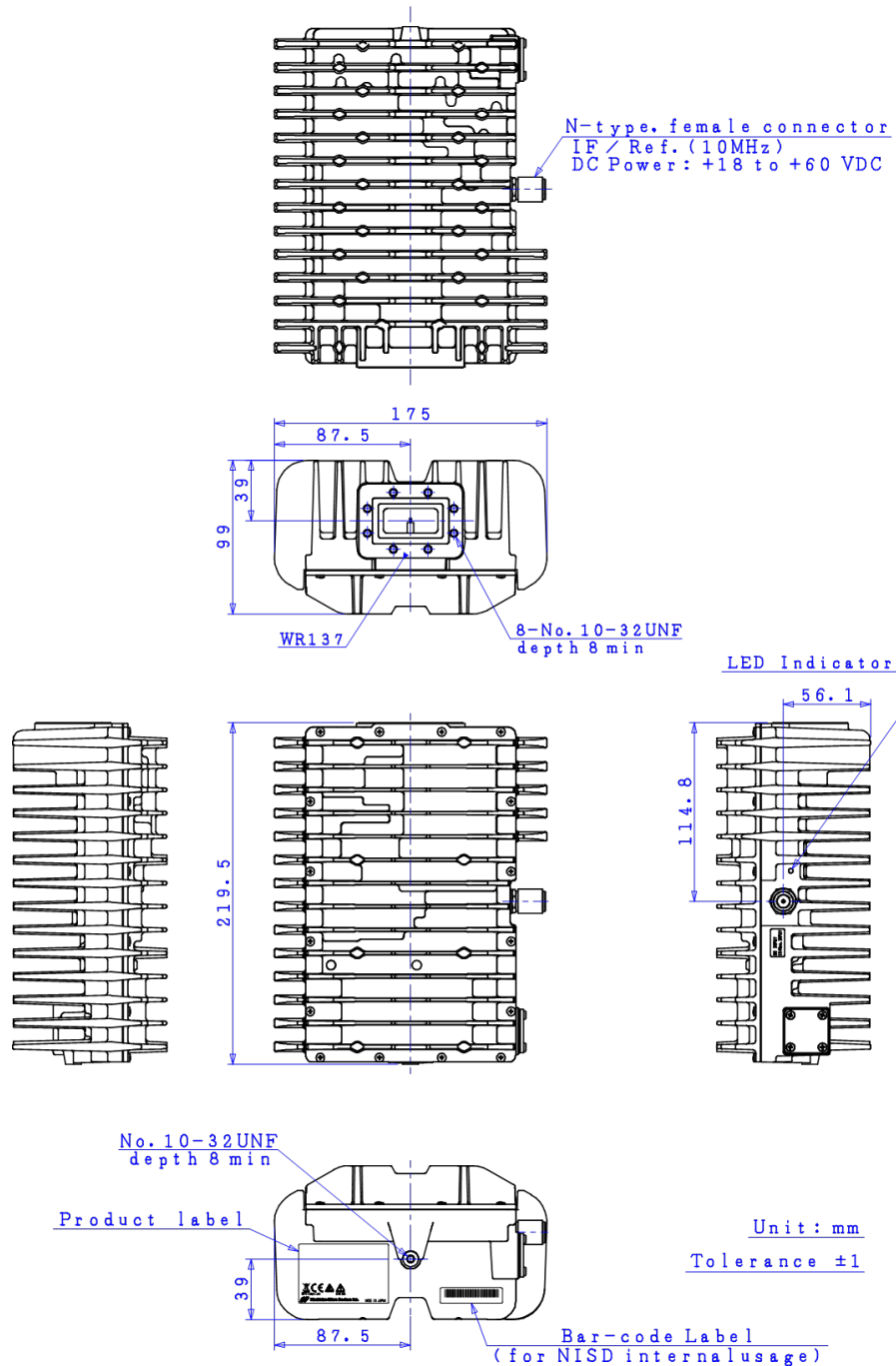
3. Environmental Specifications

#	Items	Specifications
3.1.	Temperature Range (Ambient) [Operating] [Storage]	-40 to +55 °C -40 to +75 °C
3.2.	Humidity	0 to 100 % RH
3.3.	Altitude	15,000 feet (4,572 m)
3.4.	Vibration (Survival)	5 G [49.03 m/s ²] (3 axis, 50 Hz to 2 kHz) 1 mm p-p (3 axis, 5 to 50 Hz)
3.5.	Shock (Survival)	30 G [294.20 m/s ²] (3 axis)
3.6.	Waterproof / Dustproof (IP Code Rating)	IP 67
3.7.	Regulations	EU Directive (CE Marking) RE - 2014/53/EU EMC - 2014/30/EU RoHS - 2011/65/EU + (EU)2015/863 Safety: EN62368-1, EN60950-22
3.8.	MTBF (by Method of Parts Count Reliability Prediction)	120,000 hours and more at +55 °C as Design Condition

* Above Specifications are subject to change without notice.

4. Outline Drawing

4.1. N-type, IF Connector DC Input Model (e.g. NJT5763N)

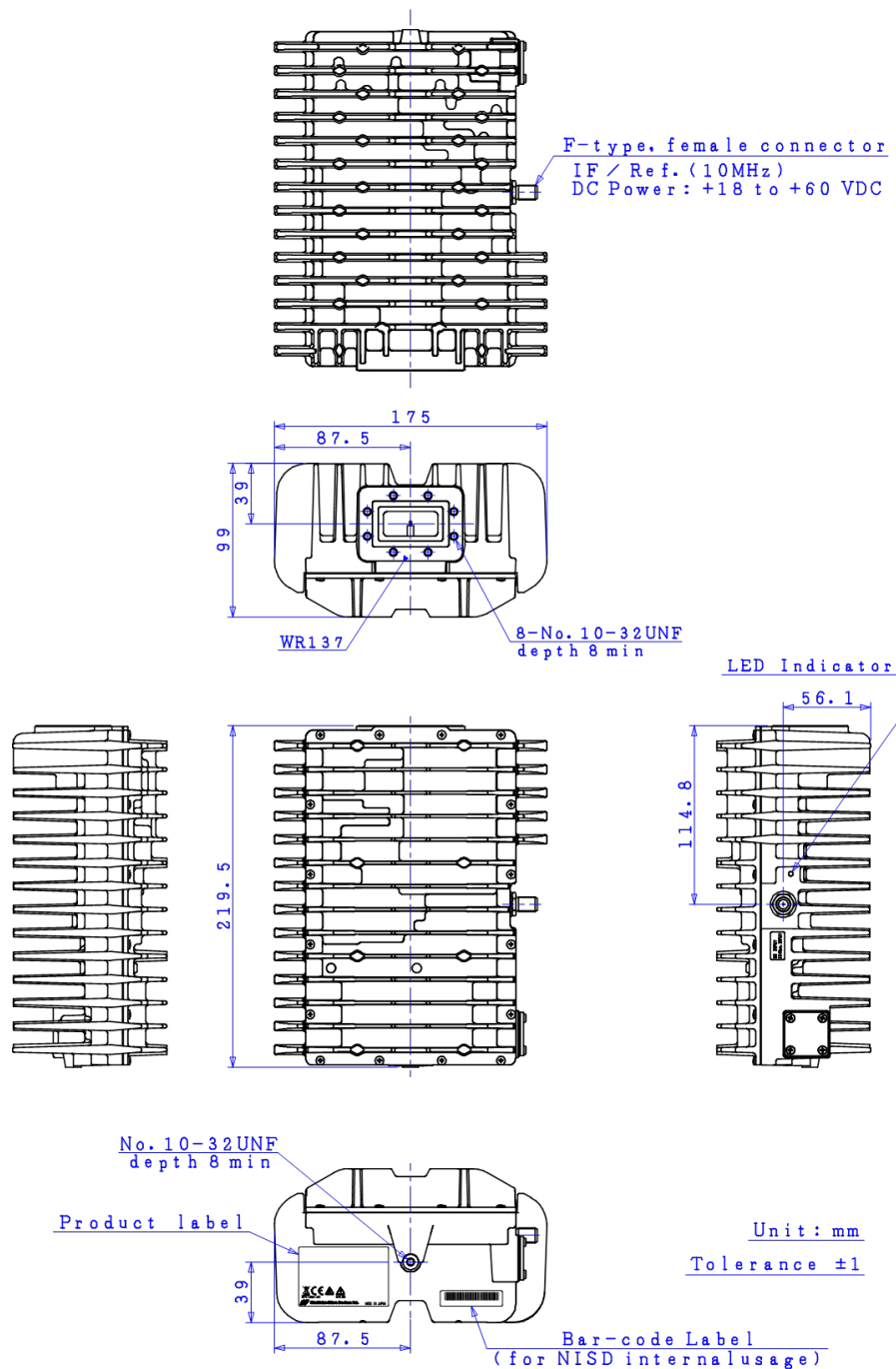


CAUTION

Items	Description
Hot Surface	Whole of body and heat sink is hot when this unit is powered, and even after power is disconnected until it is cooled down. Do not touch hot surface to avoid a burn hazard.
RF Radiation	A radiation hazard exists if this unit is operated with its RF signal output unterminated. Do not operate this unit without a load or termination attached to the RF signal output.

* Above Specifications are subject to change without notice.

4.2. F-type, IF Connector DC Input Model (e.g. NJT5763F)



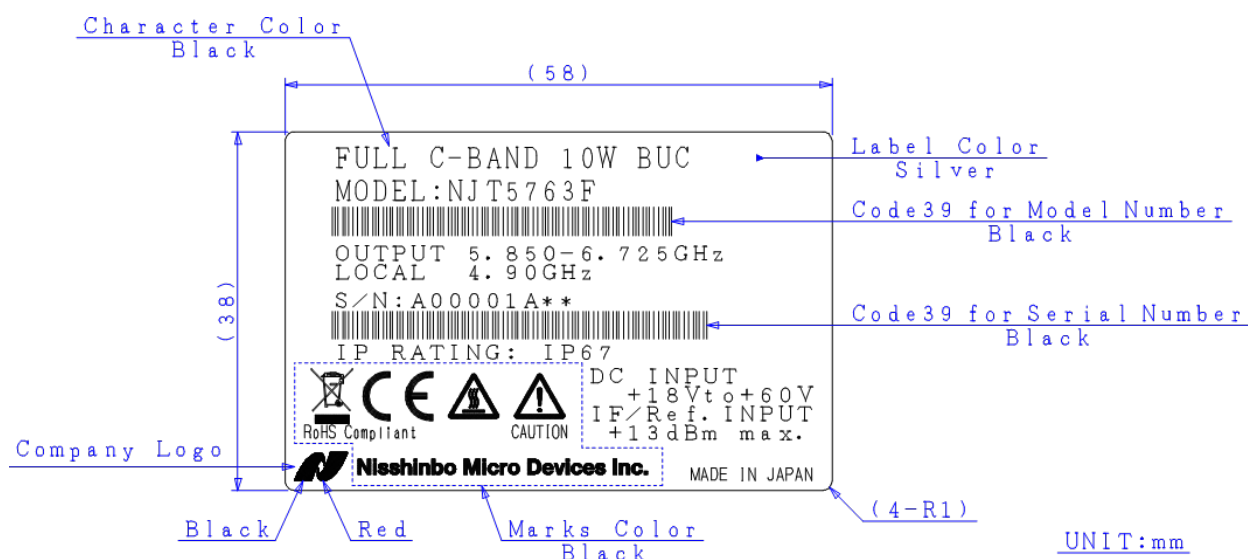
CAUTION

Items	Description
Hot Surface	Whole of body and heat sink is hot when this unit is powered, and even after power is disconnected until it is cooled down. Do not touch hot surface to avoid a burn hazard.
RF Radiation	A radiation hazard exists if this unit is operated with its RF signal output unterminated. Do not operate this unit without a load or termination attached to the RF signal output.

* Above Specifications are subject to change without notice.

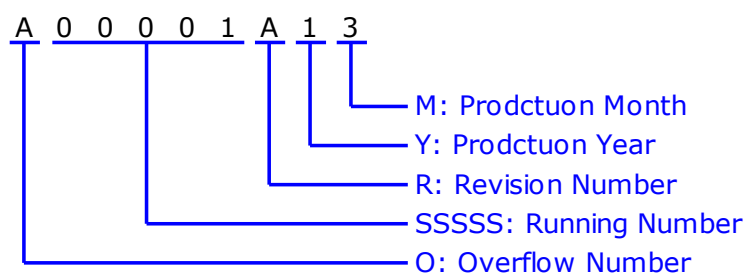
5. Label

5.1. Label Outline (e.g. NJT5763F)



5.2. Definitions

Serial Number (OSSSSSRYM) - ALPHANUMERIC (9 characters)



O: Overflow Number - ALPHABET (1 character)

"A" to "T" except "I" and "O", e.g.: A99999 ⇒ B00001

"V" to "Z": Specified Numbers

SSSSS: Running Number - NUMBER (5 digits)

"00001" to "99999"

R: Revision Number - ALPHABET (1 character)

"A" to "Z" except "I", "O", and "U"

Y: Production Year - NUMBER (1 digits)

"0" to "9", Last Digit of Calendar Number

e.g.: 2021:"1", 2022:"2", 2023:"3"....

M: Production Month - ALPHANUMERIC (9 characters)

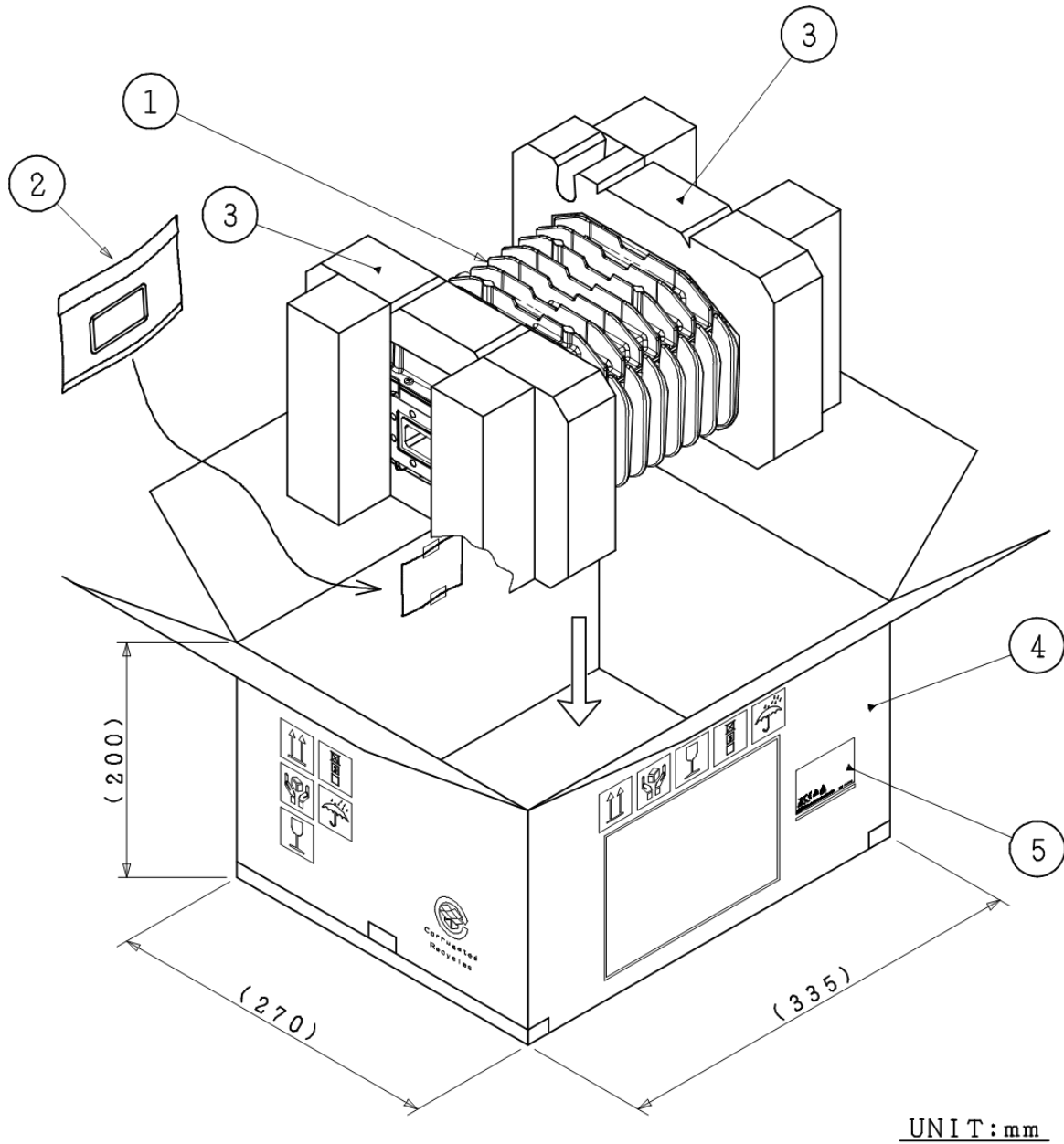
"1" to "9", "X" as October, "Y" as November, "Z" as December

* Above Specifications are subject to change without notice.

6. Package

6.1. Shipping Package

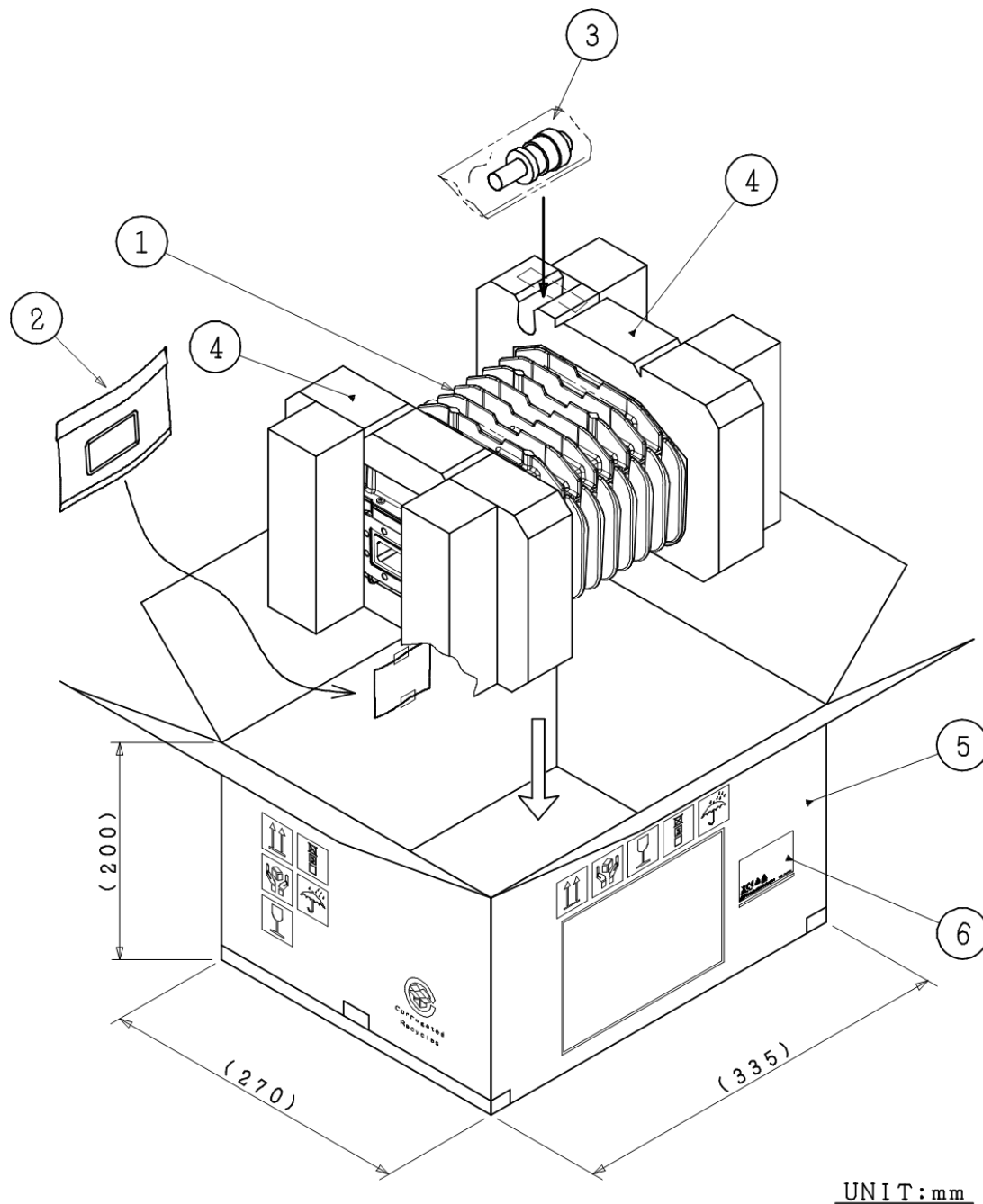
6.1.1. IF Connector DC Input Model



- ①: BUC
 ②: Accessory
 • O-RING
 ③: Polyethylene Foam For Package Cushioning
 ④: Corrugated Fibreboard (Double Wall)
 ⑤: Label

* Above Specifications are subject to change without notice.

6.1.2. Circular Connector DC Input Model



- ①: BUC
- ②: Accessory
 - O-RING
- ③: Accessory
 - MS mating connector
- ④: Polyethylene Foam For Package Cushioning
- ⑤: Corrugated Fibreboard (Double Wall)
- ⑥: Label

* Above Specifications are subject to change without notice.

6.2. Enclosed Accessories

6.2.1. IF Connector DC Input Model

- O-ring Gasket, Qty (1), Half-type, for Waveguide Flange
- Wrench Key, Qty (1), #10-32UNF, Hexagon
- Bolts, Qty (8), #10-32UNF L = 1/2", Hexagon Socket Head, SUS, for Waveguide Flange
- Spring Washers, Qty (8), SUS

6.2.2. Circular Connector DC Input Model

- O-ring Gasket, Qty (1), Half-type, for Waveguide Flange
- Wrench Key, Qty (1), #10-32UNF, Hexagon
- Bolts, Qty (8), #10-32UNF L = 1/2", Hexagon Socket Head, SUS, for Waveguide Flange
- Spring Washers, Qty (8), SUS
- Circular Connector, Qty (1), Mating Connector for DC Power Input, MS3106E 12S-3S [MS Connector /MIL-DTL-5015]

* Above Specifications are subject to change without notice.

7. Handling Precautions

7.1. DANGER



This statement indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Items	Description
Input Voltage	Only input a DC voltage within the range indicated in specifications. <u>Do</u> operate with the input voltage range indicated in specifications. When applying higher voltage than specifications (+60 V for DC Power Model or 56 V for Floating DC Power Model as maximum voltage in DC power requirement), it will not only cause this unit failure, but it may also result in <u>electric shock</u> and <u>fire</u> .
Disassembling	<u>Do not</u> disassemble the unit. Disassembling will not only cause this unit failure, but it may also result in <u>electric shock</u> .

7.2. WARNING



This statement indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Items	Description
RF Radiation	A radiation hazard exists if this unit is operated with its RF signal output unterminated. <u>Do not</u> operate this unit without a load or termination attached to the RF signal output.
Hot Surface	Whole of body and heat sink is hot when this unit is powered, and even after power is disconnected until it is cooled down. <u>Do not</u> touch hot surface to avoid a burn hazard.

7.3. CAUTION



This statement indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. The statement may also be used to indicate other unsafe practices or risks of property damage.

Items	Description
Pin assignment	<u>Do take care</u> polarities of Pin assignment for Circular Connector. When connection with wrong polarity (reverse connection of plus / minus) without Floating DC Power Model, the unit shall be broken.

* Above Specifications are subject to change without notice.

Items	Description
DC Input Connector	The circular connector models for DC power input shall apply DC voltage via only circular connector. <u>Do not</u> apply DC voltage on IF connector for the circular connector models to avoid the electrical damage and shock.
Disposal	This unit contains gallium arsenide (GaAs), classified as a harmful substance. To avoid danger, <u>do not</u> incinerate, crush, or chemically treat the unit in such a way that gases or dust are released. When disposing the unit, comply with all applicable laws and regulations and <u>do not</u> treat it as general industrial waste or household waste.

7.4. NOTE

! NOTE

This statement is used to notify of installation, operation, or maintenance information that is important, but not hazard-related.

Items	Description
Mounting	<u>Do not</u> block fins of this unit to keep the heat dissipation performance. Normally the unit should be mounted with long fins face up.
Grounding	To reduce the risk of damage or broken by lightning surge, whole system such as antenna system that the unit is installed should be grounded.
Torque Management	<u>Do not</u> tighten with excessive torque when attaching screws/bolts and connectors. The following value as tighten torque is recommended. ■ Screws/Bolts - #10-32UNF: 2.39 to 2.91 N·m ■ IF Connector (N-type / F-type): 0.68 to 1.13 N·m (3.92 N·m as maximum allowable torque. When over this torque, connector may be damaged.)
Weatherproof	The unit mounted in outdoor should be conducted with adequately weatherproof procedure. Do seal all of cable connection points from the connector to the cable sheath by usage of self-amalgamating tape. Ensure the waveguide connection is properly assembled with the supplied o-ring gasket as accessories. The o-ring gasket is half-type and it is assumed to connect the unit to a flat waveguide flange (no grooved waveguide flange).
Input Voltage	<u>Do</u> operate with the input voltage range indicated in specifications. Avoid applying more than the maximum voltage in this range (including ripple voltage) under any conditions.
Input IF Signal Power	<u>Do not</u> supply the input IF signal over the maximum level (+13 dBm), which is indicated on the product label.

* Above Specifications are subject to change without notice.

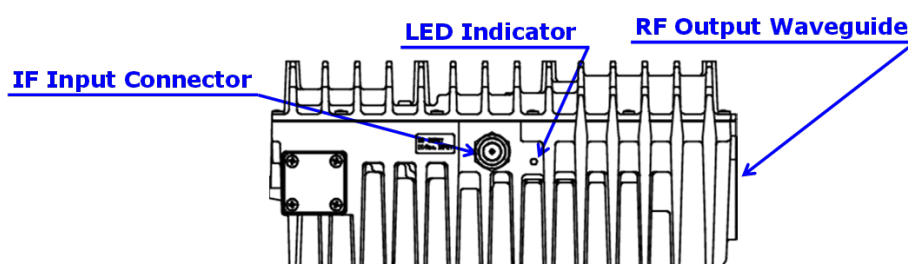
Items	Description
Input 10MHz Signal Power	The 10 MHz reference signal should be supplied with the range between -5 and +5 dBm with sine-wave for correctly operation. <u>Do not</u> supply the signal level of more than +13 dBm, which is indicated on the product label.
High Temperature Operation	It may cause damage and/or degradation of reliability / lifetime to operate the unit in a condition where the ambient temperature exceeds the maximum value, <u>+55 °C</u> , at operating temperature described in the specifications.
Vibration / Shock	When vibration and/or shock impact exceeding the conditions described in the specifications is applied, internal parts may be damaged.
Warranty	The unit is covered by a warranty for one(1) year following delivery unless otherwise stipulated in the contract or delivery conditions. Repairs may be possible under payment of charge even for the unit whose warranty period has expired. Opening, removing, disassembling and modifying any parts and components (including the product label, sealing tape and screws) without fan equipment will immediately void the warranty. In any case, the unit of invalid warranty cannot be repaired.

* Above Specifications are subject to change without notice.

8. Instructions Manual

8.1. Descriptions

This section describes the information of connectors and etc.



Items	Description	Purpose
RF Output Waveguide	Waveguide: WR-137 Flange: CPR-137G (with Groove)	The BUC transmits an RF signal of C-band (5.85 to 6.425 GHz, 5.85 to 6.725 GHz or 6.725 to 7.025 GHz) output with up to 10W (+40 dBm) linear as output power @ 1 dB G.C.P. (P1dB) via this waveguide.
IF Input Connector	F-type Female Coaxial Connector, 75 Ohms OR N-type Female Coaxial Connector, 50 Ohms	The BUC inputs an IF signal of L-band (950 to 1,525 MHz, 950 to 1,825 MHz or 965 to 1,265 MHz), and requires to supply +18 to +60 V DC power and a 10 MHz reference signal via this connector.
LED Indicator	GREEN: L.O. locked RED: L.O. unlocked	Alarm indicator of PLL unlock status for local oscillator. PLL is unlocked without a 10 MHz reference signal.

8.2. Connection and Installation

This section describes basic installation for the BUC.

8.2.1. Mounting Configuration

The Unit can be mounted with OMT or the waveguide filter of the satellite antenna.

When installing the BUC, the following guidelines should be complied:

- ✓ Check factors such as accessibility, cable connection and future expansion on the installation location.
- ✓ Plan for access to connector side of the BUC.
- ✓ Arrange the BUC with the fin face up or side.

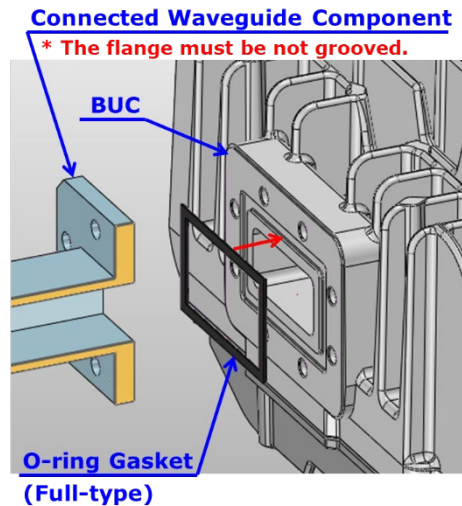
! NOTE

- ✓ Do not block fins of this unit to keep the heat dissipation performance.
Normally the BUC should be mounted with long fins face up or side to keep heat dissipation.

* Above Specifications are subject to change without notice.

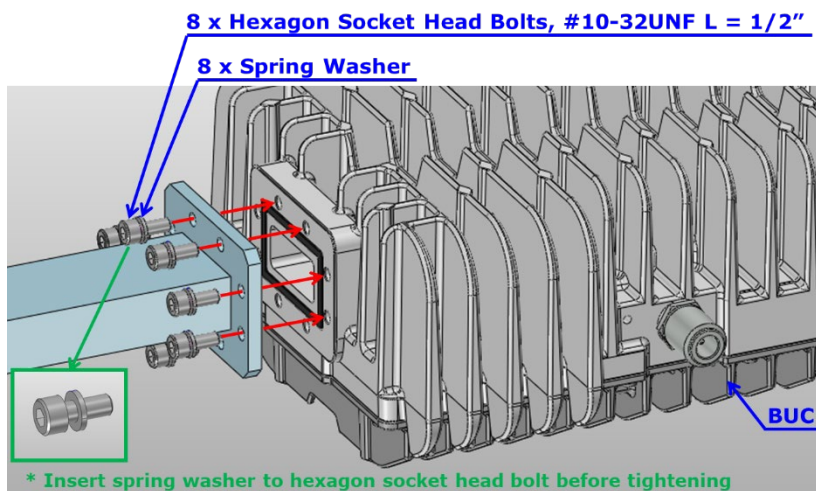
When mounting with the OMT or the waveguide filter, the following steps should be complied:

- Step 1: Verify that the groove on the waveguide flange for a gasket is clean.
- The enclosed gasket as accessories is full-type and it is assumed to connect the BUC to a flat waveguide flange (no grooved waveguide flange). Insert the gasket the groove as shown in the figure on the right.



- Step 2: Secure the OMT or the filter to the BUC by tightening the enclosed hexagon socket head bolts (#10-32UNF L = 1/2") with 2.39 to 2.91 N·m torque as shown in the figure below, when the thickness of the flange of the OMT or filter is assumed to be 4 to 7 mm. The enclosed washers as accessory must be inserted to bolts before tightening bolts.
- When the thickness is exceed 7 mm, the appropriate length screws or bolts based should be prepared on the table on the right.

Flange Thickness of OMT/Filter	Screw Length
4 to 7 mm [0.15" to 0.275"]	1/2"
7 to 10 mm [0.275" to 0.4"]	5/8"
10 to 13 mm [0.375" to 0.525"]	3/4"



! NOTE

- ✓ The BUC must be adequately weatherproofed to place in outdoor.
- Ensure that the waveguide joint is properly sealed with the enclosed o-ring gasket.

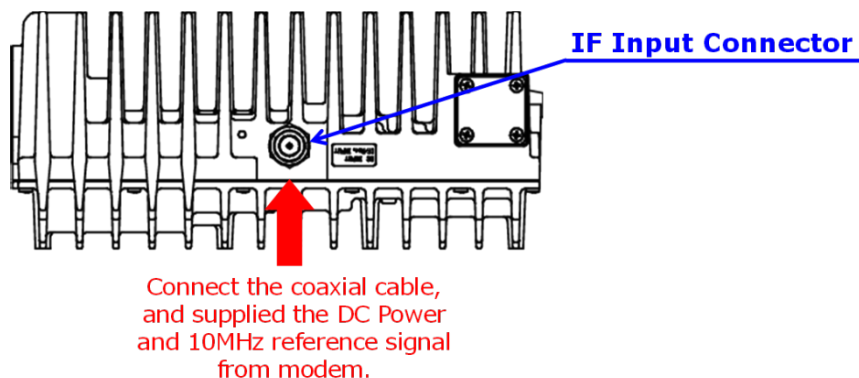
* Above Specifications are subject to change without notice.

8.2.2. Connecting Coaxial Cable

The BUC is connected the modem with a coaxial cable, and requires to supply +18 to +60 V DC power and a 10 MHz reference signal from the modem.

The connection of coaxial cable should be complied with the following steps:

- Step 1: Connect the coaxial cable with the N or F-type male connectors to the coaxial connector equipped with the BUC which is shown in the figure on the right below under 0.68 to 1.13 N·m tighten torque.



- Step 2: Use self-amalgamating tape to seal connector and cable entry points from the connector to the cable sheath.

Do not power on the modem before finishing all of steps of Connecting Coaxial Cable.

! NOTE

- ✓ The BUC must be adequately weatherproofed to place in outdoor.
Do seal all of cable connection points from the connector to the cable sheath by usage of self-amalgamating tape.

8.2.3. Connecting Ground Wire for Chassis Ground

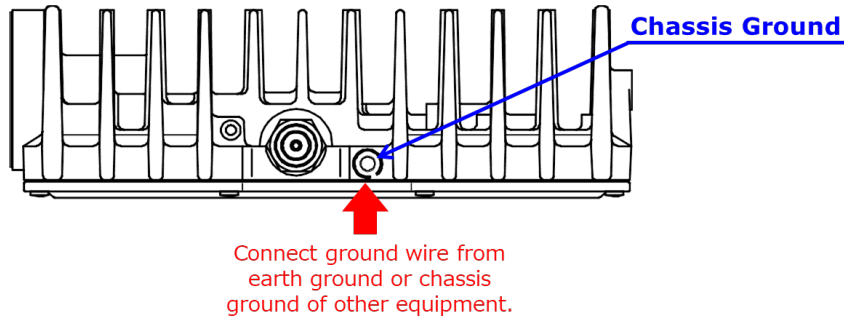
The BUC can be had the chassis ground of the other equipment (e.g. modem) in common.

Connecting wire for common chassis ground from the chassis ground of the other equipment should be complied with the following step:

- Tools Required: #2 Phillips screwdriver
Parts Required: #10-32UNF L = 1/2", Philips pan head screw, Qty (1)
#10 Spring Washer, Qty (1)

* Above Specifications are subject to change without notice.

Step: Connect the ground wire from earth ground or chassis ground of other equipment to the chassis ground with #10-32UNF L = 1/2" Philips pan head screw under 2.39 to 2.91 N·m tighten torque.



! NOTE

- ✓ To reduce the risk of damage or broken by lightning surge, the unit should be grounded by connecting the ground wire.

8.2.4. Start-up

Start-up will be immediately performed with the following step:

Step: Power on the modem and supply the DC voltage and 10 MHz reference from modem.

! DANGER

- ✓ Only input a DC voltage within the range indicated in specifications.
Do operate with the input voltage range between +18 and +60 V DC power.
 When applying higher voltage than specifications (+60 V as maximum voltage in DC power requirement), it will not only cause this unit failure, but it may also result in electric shock and fire.

! NOTE

- ✓ The 10 MHz reference signal should be supplied with the range between -5 and +5 dBm with sine-wave for correctly operation.
Do not supply the signal level of more than +10 dBm.
- ✓ Do not power on the modem before finishing all of steps of Connection and Installation.

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

This appendix mentions about Indoor 150W AC/DC Power Supply Unit (PSU) for AC power operation option.

Indoor 150W AC/DC Power Supply Unit(PSU)

Model No. NJZ1286 series

Input AC Voltage Range: 100 to 240 V

Output DC Power: 150 W

Output DC Voltage: +48 VDC

IF Interface: N-type / F-type, Female Connector

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

Scope

This Power Supply Unit(PSU) is intended for the satellite communication data uplink application in C-band and Ku-band.

The features of the PSU are to provide the stable +48V DC power to operate both C-band 10W and Ku-band 8W BUCs, even if the inner power supply of the modem is not capable enough to operate these BUCs.

The PSU, which is having enough power supply of 150W as well as having the bias-tee which enable to pass 10MHz reference signal and IF signal from the modem, is operated by AC Power and enable to operate these BUCs.

In addition the PSU complies with UL CERTIFICATION and EC DIRECTIVE and this housing can fit the 1U rack mount with optional kit.

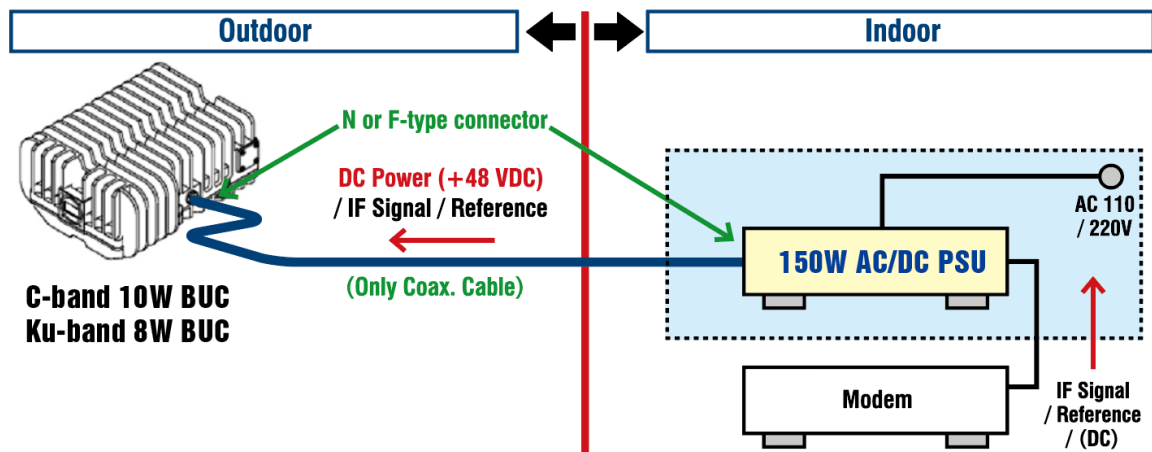


Fig.1 Connection Block Diagram

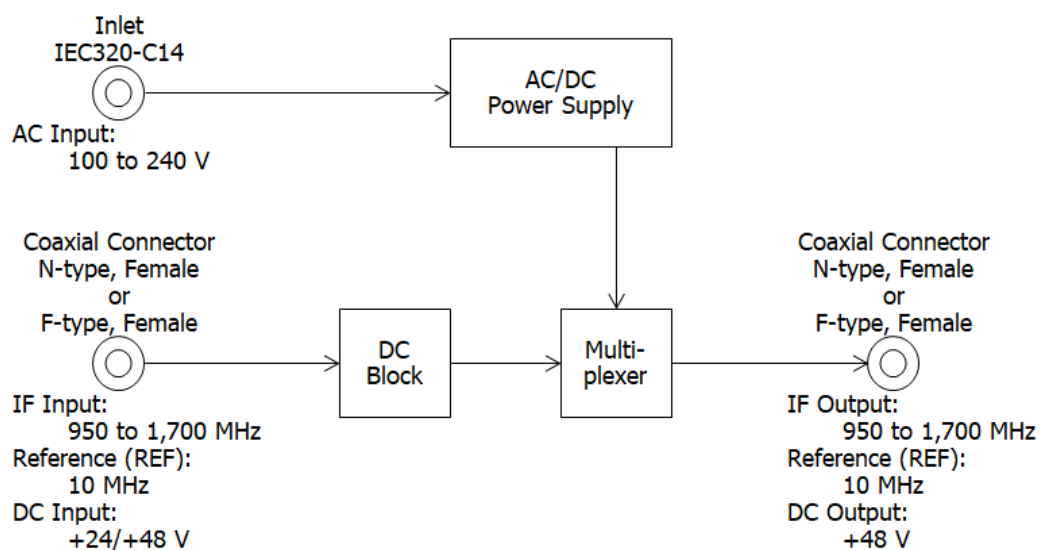


Fig.2 Functional Block Diagram

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

The features are

- Indoor power supply unit with up to 150 W and +48 V DC power output.
- Available regardless of Any Types of Modem.
- DC power output can be turned on/off by mechanical switch on the front panel.
- The mode of DC power output can be selected out of in the following mode options by DIP switch on the front panel.
 - Option 1: To keep supplying DC power regardless of modem output status
 - Option 2: To control power DC output on/off by synchronization of input DC voltage on/off from modem
- Directly connect the coaxial cable for IF signal, 10 MHz reference and DC power from modem.
- One Coaxial Cable Solution.
- Compatible with 1U rack-mount (Rack-mount option).

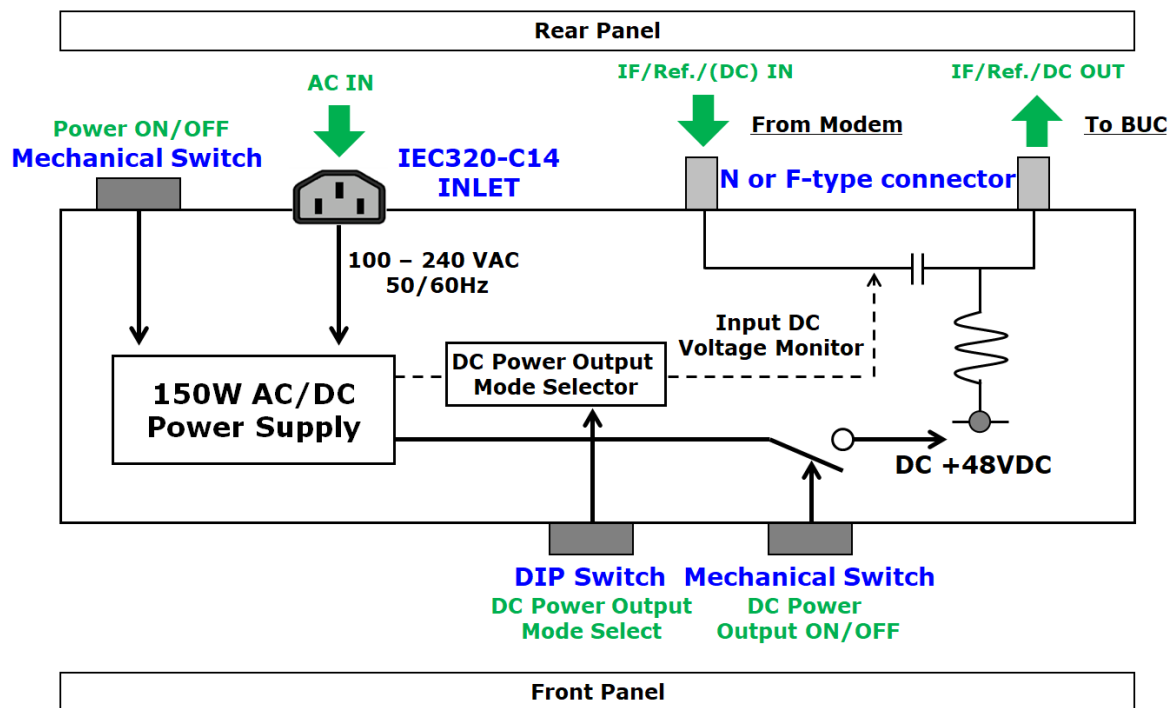


Fig.3 Interface Diagram

- Line-up

Model No.	IF Frequency	IF Connector
NJZ1286N	950 to 1,700 MHz	N-type
NJZ1286F		F-type

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

1. Electrical Specifications

#	Items	Specifications
1.1.	Input AC Voltage Range [Rated Range] [Absolute Maximum Rating]	100 to 240 VAC 90 to 264 VAC
1.2.	Input AC Frequency Range	50/60 Hz
1.3.	Maximum Input AC Apparent Power	200 VA
1.4.	Output Voltage	+48 VDC
1.5.	Output Voltage Accuracy	+/- 10 %
1.6.	Output Current Range	0 to 3.2 A
1.7.	Maximum Output Power	150 W
1.8.	Standby Mode Power <Condition> No Connect BUC No Output DC Power	10 W max.
1.9.	Efficiency	80 % typ. at 120 VAC, full load
1.10.	Power Factor	0.98 typ. at 120 VAC, full load
1.11.	Output ON/OFF Control	a) Rocker Switch on the Front Panel b) Mode of DC Power Output Option 1: To keep supplying Option 2: Synchronization with input DC voltage on/off
1.12.	IF Frequency Range	950 to 1,700 MHz
1.13.	IF Input/ Output Impedance <N-type Model> <F-type Model>	50 ohms nom 75 ohms nom.
1.14.	IF Input/ Output VSWR	2 : 1 max.
1.15.	IF Insertion Loss	1.5 dB max.
1.16.	Input DC Voltage Range at IF Input Interface	+24 / +48 VDC In case of option 2 in mode of DC power output, 50mA min. is needed from modem.
1.17.	Protection	● Internal Primary Current Fuse ● Short Protection
1.18.	LED Indicator [DC Output (Power)] [Fan Alarm]	GREEN: Supply a DC Power to BUC GREEN: Normal Condition RED: Abnormal Condition and Fan must be Replaced

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

2. Mechanical Specifications

#	Items	Specifications
2.1.	AC Input Interface	IEC320-C14 Inlet
2.2.	IF Input Interface Connector	
	<F-type Model>	F-type Female Connector, 75 ohms
	<N-type Model>	N-type Female Connector, 50 ohms
2.3.	IF Output Interface Connector	
	<F-type Model>	F-type Female Connector, 75 ohms
	<N-type Model>	N-type Female Connector, 50 ohms
2.4.	Cooling	Forced-air-cooled by Fan
2.5.	Dimension & Housing without interface connectors and switch	290 (W) x 200 (D) x 44 (H) mm [11.42" (W) x 7.87" (D) x 1.73" (H)]
2.6.	Weight	1.6 kg [3.5 lbs]

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit**3. Environmental Specifications**

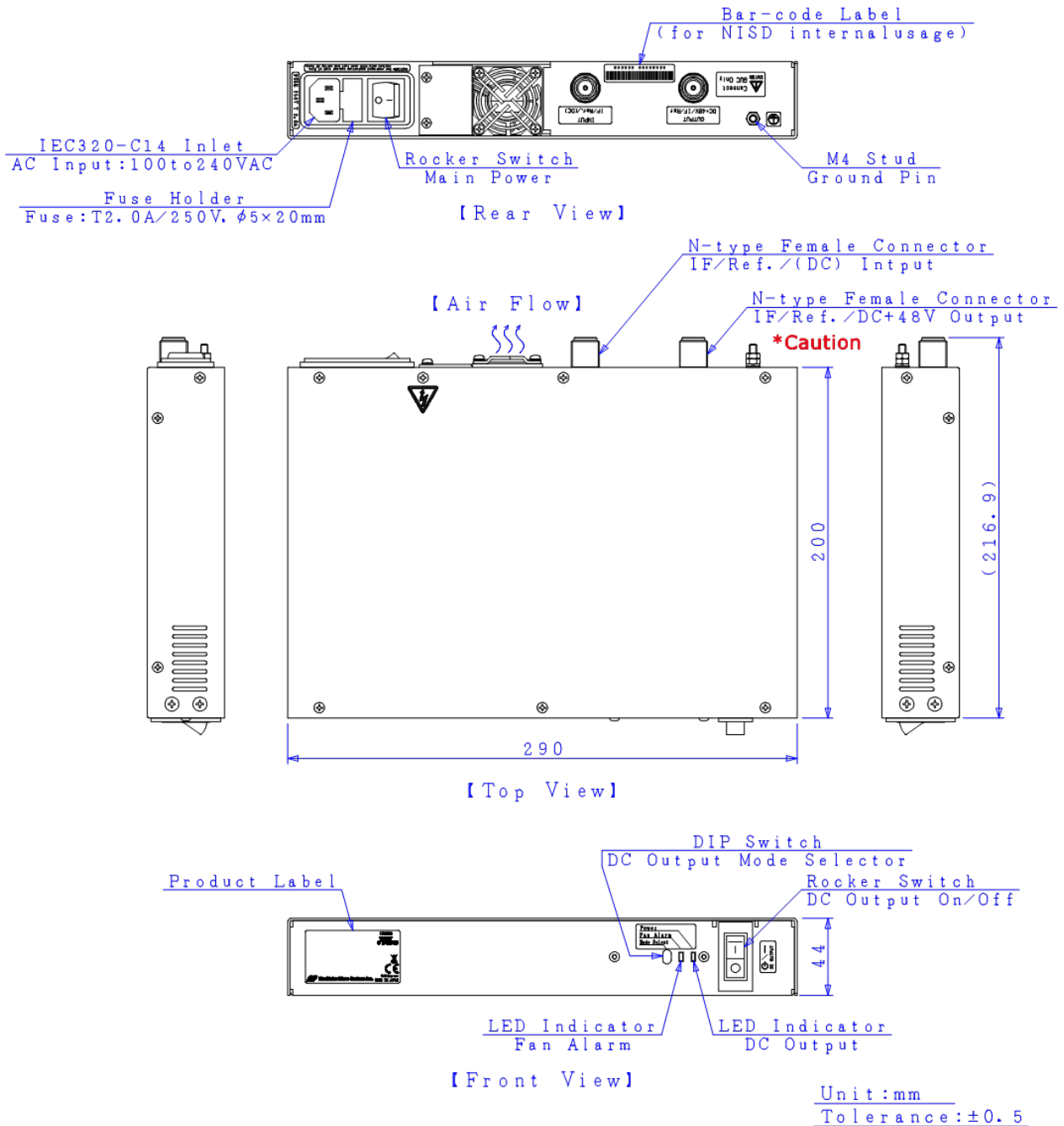
#	Items	Specifications
3.1.	Temperature Range (Ambient) [Operating] [Storage]	0 to +50 °C -30 to +85 °C
3.2.	Humidity [Operating] [Storage]	30 to 90 %Rh non-condensing 10 to 95 %Rh
3.3.	Vibration (Survival)	Non Operation 2 G [19.6 m/s ²] Constant (10 to 55 Hz, Sweep Time: 1 min., 3 axis, 1 hour)
3.4.	Shock (Survival)	20 G [196.1 m/s ²] (3 axis)
3.5.	Regulations	EU Directive (CE Marking) EMC - 2014/30/EU Low Voltage - 2014/35/EU RoHS - 2011/65/EU, (EU)2015/863 UL Citification
3.6.	Compliance Standard	EN 55022 EN 55024 EN 61000-3-2/3 EN 60950-1 / UL60950-1 EN 62311
3.7.	MTBF (by Method of MIL-HDBK-217F)	150,000 hours and more at +50 °C as Design Condition

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

4. Outline Drawing

4.1. N-type Model / NJZ1286N



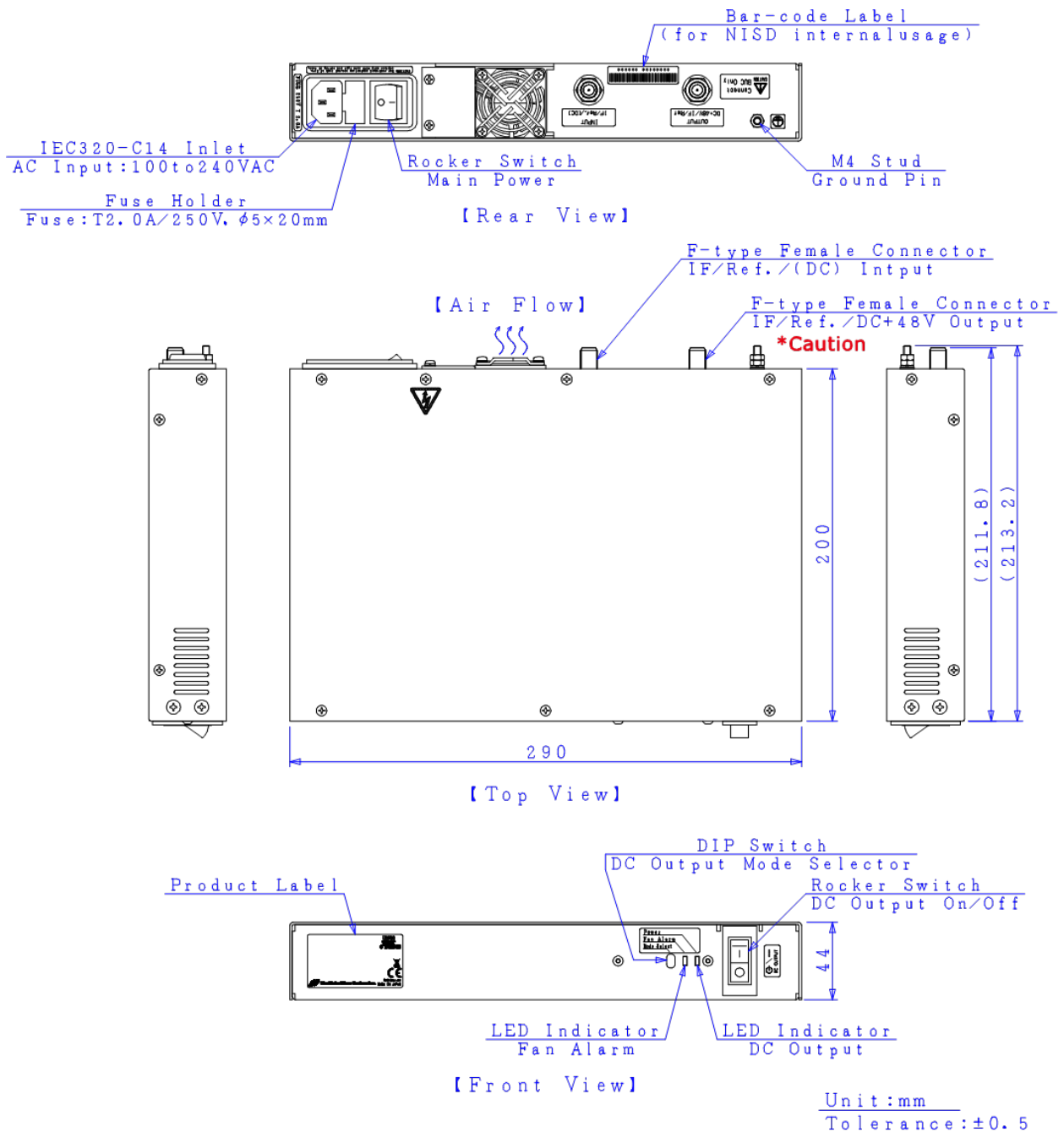
CAUTION

Items	Description
Connector Connection	DC power of +48 V voltage will output at IF output interface connector. Do not connect the other than cable connected from specified BUC. The connected equipment may be damaged when cable connecting modem, the BUC other than the specified BUC, or other equipment.

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

4.2. F-type Model / NJZ1286F



CAUTION

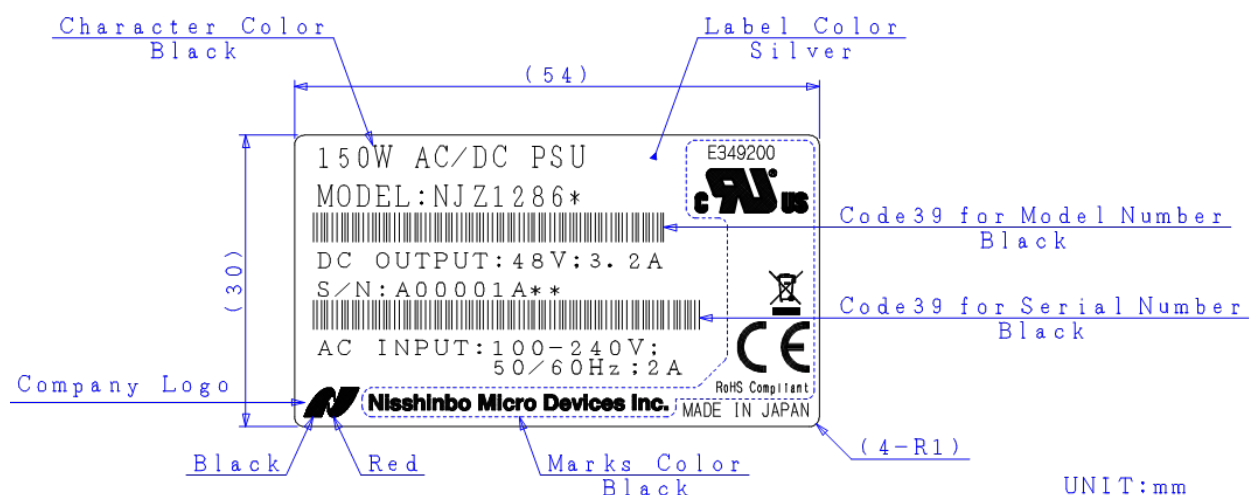
Items	Description
Connector Connection	DC power of +48 V voltage will output at IF output interface connector. Do not connect the other than cable connected from specified BUC. The connected equipment may be damaged when cable connecting modem, the BUC other than the specified BUC, or other equipment.

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

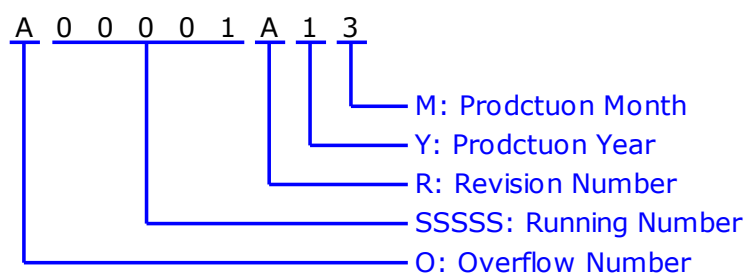
5. Label

5.1. Label Outline (e.g. NJZ1286 series)



5.2. Definitions

Serial Number (OSSSSSRYM) - ALPHANUMERIC (9 characters)



O: Overflow Number - ALPHABET (1 character)

"A" to "T" except "I" and "O", e.g.: A99999 ⇒ B00001

"V" to "Z": Specified Numbers

SSSSS: Running Number - NUMBER (5 digits)

"00001" to "99999"

R: Revision Number - ALPHABET (1 character)

"A" to "Z" except "I", "O", and "U"

Y: Production Year - NUMBER (1 digit)

"0" to "9", Last Digit of Calendar Number

e.g.: 2021:"1", 2022:"2", 2023:"3"....

M: Production Month - ALPHANUMERIC (1 character)

"1" to "9", "X" as October, "Y" as November, "Z" as December

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

6. Package

6.1. Shipping Package

6.1.1. Only PSU

Pictorial Marking for handling of Goods



THIS WAY UP



HANDLE WITH CARE



FRAGILE



LAYERS LIMIT:5



KEEP DRY

①:150W AC/DC PSU

②:Accessory

・AC power cable of 2m

③:Accessory

・Cushioning pad(4 pieces)

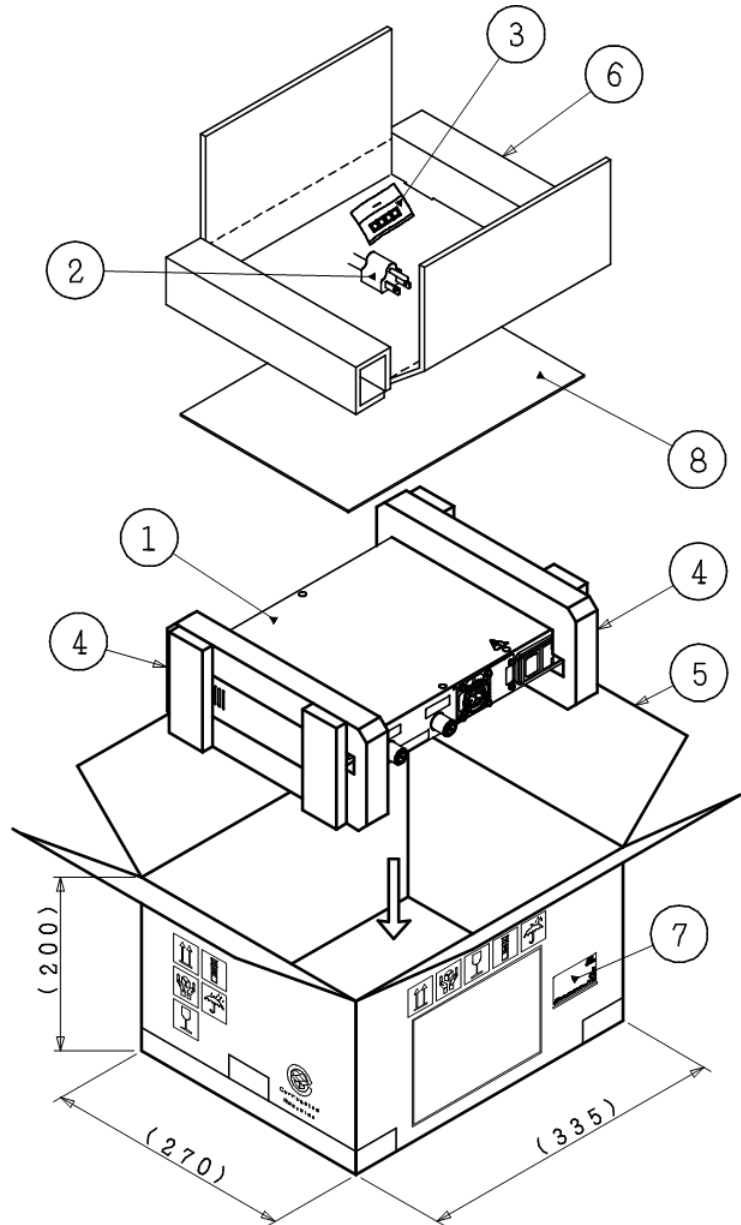
④:Polyethylene Foam For Package Cushioning

⑤:Corrugated Fiberboard(Double Wall)

⑥:Corrugated Fiberboard(Single Wall)

⑦:Label

⑧:User's Manual

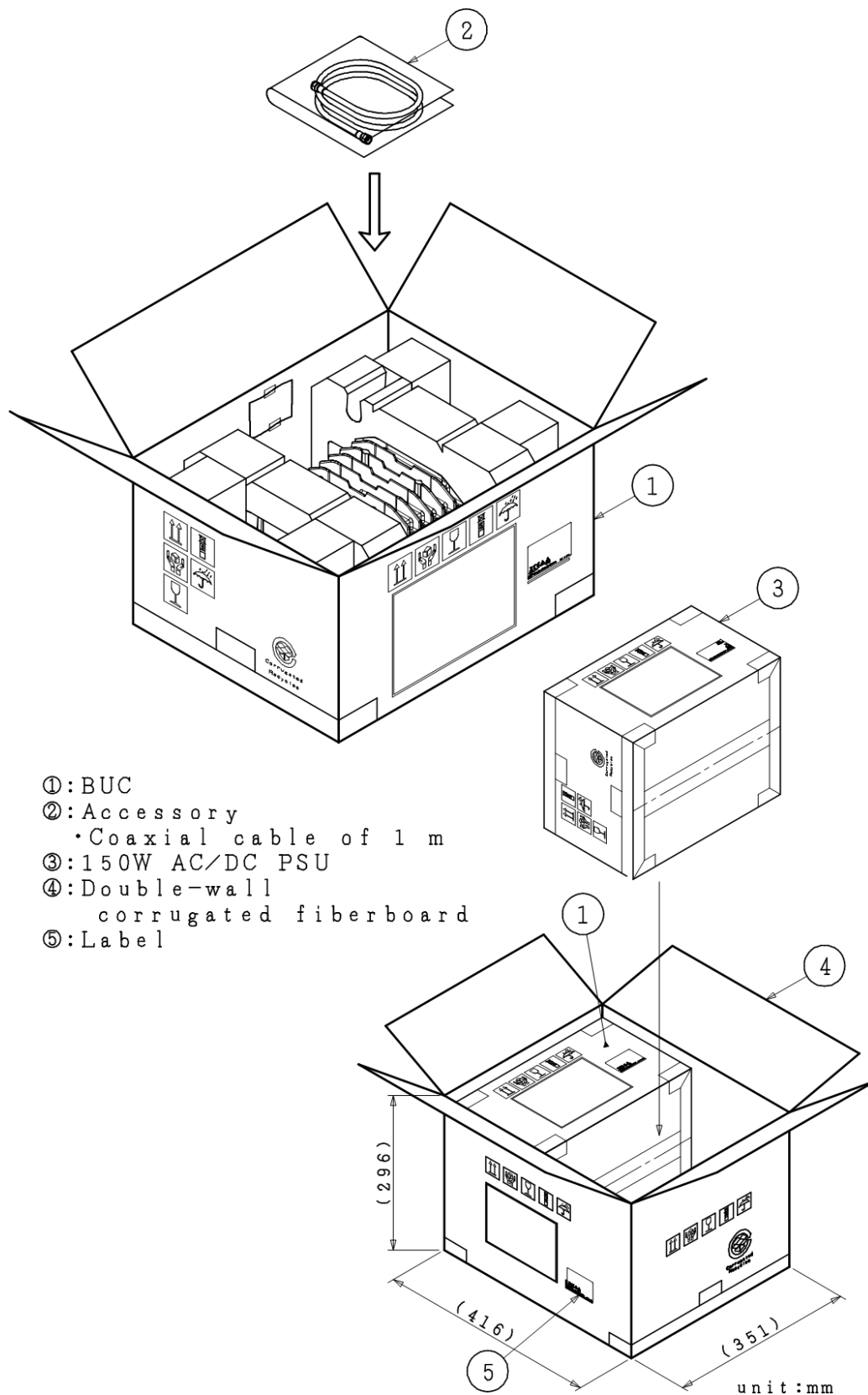


UNIT:mm

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

6.1.2. Combination with BUC (Package with PSU and BUC)



* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

6.2. Enclosed Accessories

6.2.1. Only PSU

- AC Power Cable, Qty (1), Length: 2 m, IEC320-C13 Socket and American Plug assembled.
- Cushioning Pad, Qty (4)

6.2.2. Combination with BUC (Package with PSU and BUC)

- AC Power Cable, Qty (1), Length: 2 m, IEC320-C13 Socket and American Plug assembled.
- Cushioning Pad, Qty (4)
- Coaxial Cable, Qty (1), Length: 1 m, NJZ1290AC2 or NJZ1290AC3

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

7. Handling Precautions

7.1. DANGER



This statement indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Items	Description
Input Voltage	Only input a DC voltage within the range indicated in specifications. <u>Do</u> operate with the input voltage range between +100 and +240 V AC power with 50/60 Hz of AC frequency. When applying higher voltage than specifications (+264 V as absolute maximum rating), it will not only cause this unit failure, but it may also result in <u>electric shock</u> and <u>fire</u> .
Disassembling	<u>Do not</u> disassemble the unit. Disassembling will not only cause this unit failure, but it may also result in <u>electric shock</u> .

7.2. CAUTION



This statement indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. The statement may also be used to indicate other unsafe practices or risks of property damage.

Items	Description
Fan Cycling	<u>Do not</u> insert finger into the fan in every case and time to avoid injury also <u>do not</u> insert any objects into the fan. Keep any objects away from the fan. Incorrect usage may cause injury to self or others.
Connector Connection	DC power of +48 V voltage will output at IF output interface connector. <u>Do not</u> connect the other than cable connected from specified BUC. The connected equipment may be damaged when cable connecting modem, the BUC other than the specified BUC, or other equipment.

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

7.3. NOTE

! NOTE

This statement is used to notify of installation, operation, or maintenance information that is important, but not hazard-related.

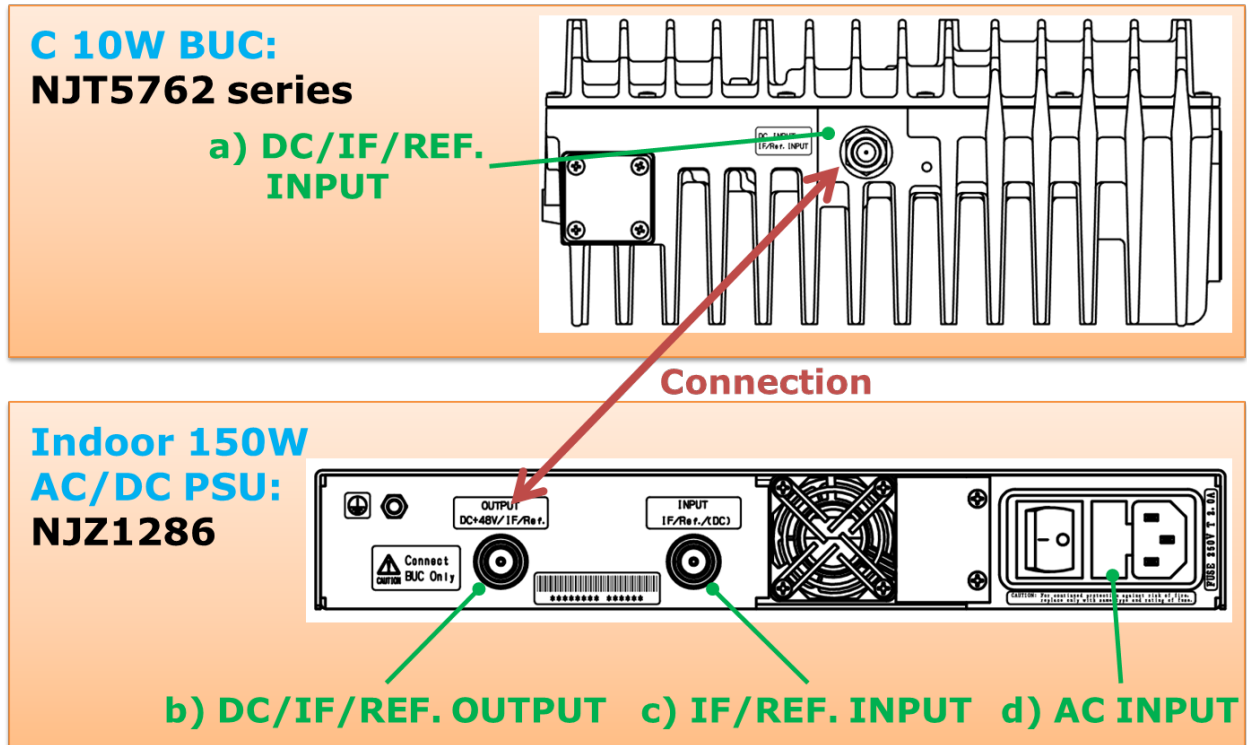
Items	Description
Grounding	To reduce the risk of damage or broken by lightning surge and the risk of electric shock, the unit should be grounded by connecting the ground wire.
Torque Management	<u>Do not</u> tighten with excessive torque when attaching connectors. The following value as tighten torque is recommended. ■ IF Connector (N-type / F-type): 0.68 to 1.13 N·m
Input Voltage	<u>Do</u> operate with the input voltage range between +100 and +240 V AC power. Avoid applying more than the maximum voltage in this range under any conditions.
Input IF/10MHz Signal Power	<u>Do not</u> supply both IF and 10 MHz reference input signal of more than +13 dBm.
High Temperature Operation	It may cause damage and/or degradation of reliability / lifetime to operate the unit in a condition where the ambient temperature exceeds the maximum value, <u>+50 °C</u> , at operating temperature described in the specifications.
Vibration / Shock	When vibration and/or shock impact exceeding the conditions described in the specifications is applied, internal parts may be damaged.
Fan Maintenance	The fan has its lifetime. The fan is to be replaced with a new one at appropriate interval. The recommendation interval of replacement is five(5) years.
Warranty	The unit is covered by a warranty for one(1) year following delivery unless otherwise stipulated in the contract or delivery conditions. Repairs may be possible under payment of charge even for the unit whose warranty period has expired. Opening, removing, disassembling and modifying any parts and components (including the product label, sealing tape and screws) without fan equipment will immediately void the warranty. In any case, the unit of invalid warranty cannot be repaired.

* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

8. Basic Connection Overview

8.1. Connection Overview between BUC and PSU



* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

9. Option Parts

Contact to following email address, when option parts are needed.

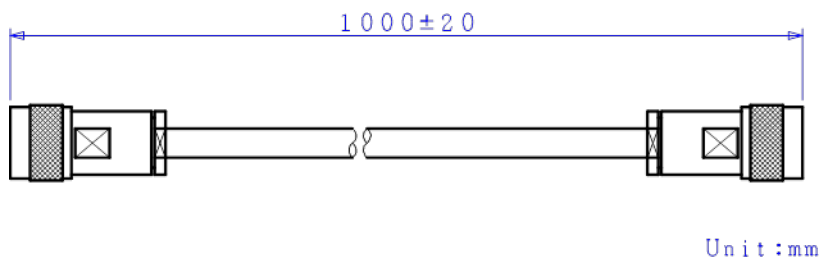
Email: nisd_mcsales@nisshinbo.co.jp

9.1. Coaxial Cable

9.1.1. N-type Coaxial Cable - P/N: NJZ1290AC2

Connection Cable between Modem and NJZ1286N (150W AC/DC PSU)

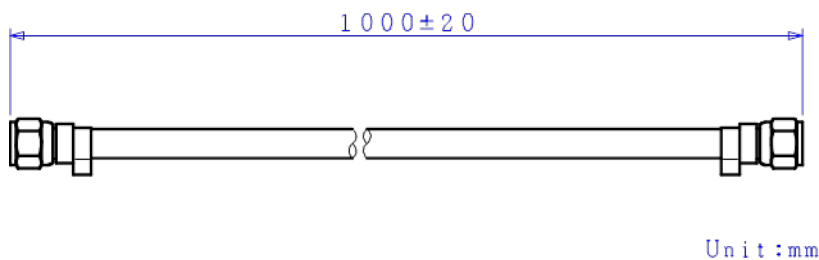
- ✓ Length: 1m
- ✓ Two(2) N-type male connectors assembled
- ✓ Insertion Loss: 1.5 dB max. @ 1,700MHz



9.1.2. F-type Coaxial Cable - P/N: NJZ1290AC3

Connection Cable between Modem and NJZ1286F (150W AC/DC PSU)

- ✓ Length: 1m
- ✓ Two(2) F-type male connectors assembled
- ✓ Insertion Loss: 1.5 dB max. @ 1,700MHz

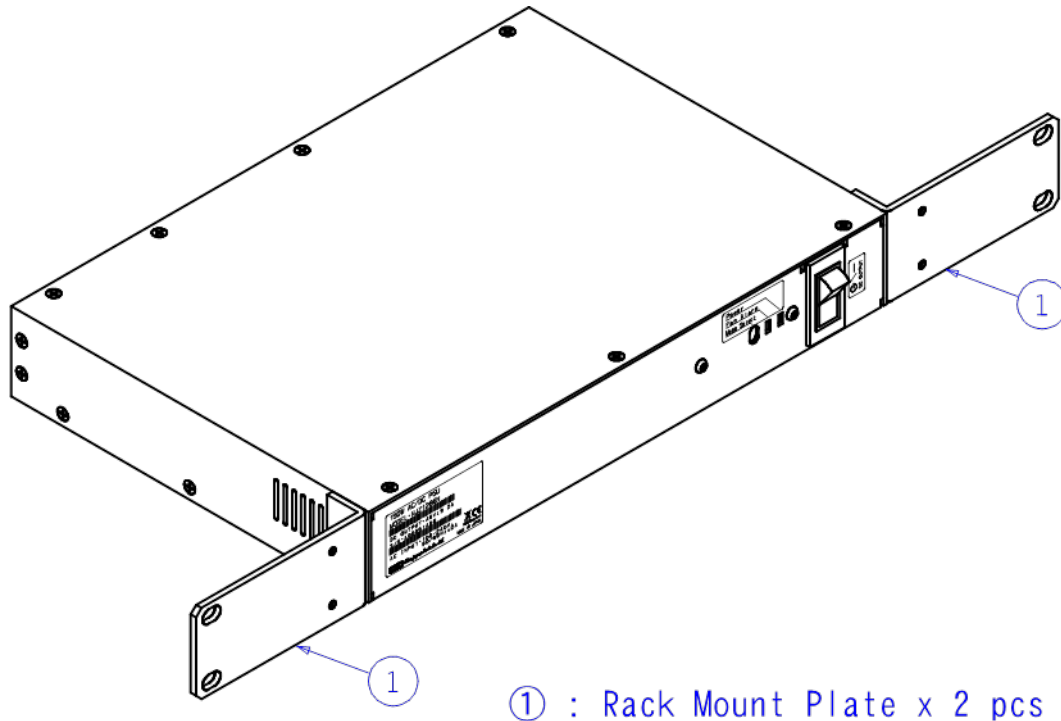


* Above Specifications are subject to change without notice.

Appendix Indoor 150W AC/DC Power Supply Unit

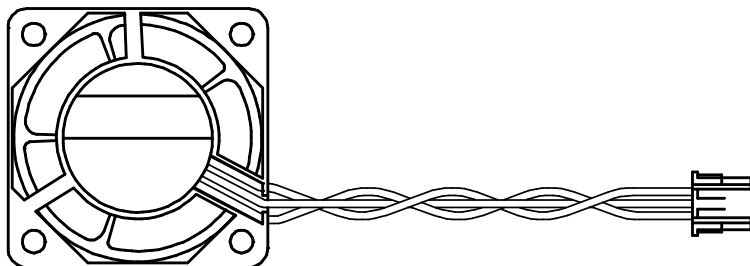
9.2. Rack Mount Kit - P/N: NJZ1286RM

This option part is to mount the PSU to the 19-inch rack.



9.3. Replacement Fan - P/N: NJZ1286FK

This option part is to replace the cooling fan on the rear panel.



! NOTE

✓ Instructions of the PSU should refer the Datasheet and/or Instruction Manual of NJZ1286 series.

* Above Specifications are subject to change without notice.

Appendix Specifications of Monitor & Control

This appendix mentions about specifications of monitor & control for FSK communications M&C option.

Rev. 3.0

Issued on June 14, 2013

Specifications of Monitor & Control (M&C) for C-band 10W BUC: NJT5762 series

* Above Specifications are subject to change without notice.

Appendix Specifications of Monitor & Control

1. Interface Specifications

1.1. FSK Communications M&C

- | | |
|-------------------------|---|
| (1) Physical Interface | IF Connector: N-type or F-type, female
Combine with IF signal and 10MHz Reference signal |
| (2) Transmitter Outputs | |
| a. Frequency | 650 kHz +/- 5% |
| b. FSK deviation | +/-60 kHz nom. (+60 kHz mark) |
| c. Deviation tolerance | +/-50 kHz min., +/-70 kHz max. |
| d. Output Level | -10 dBm nom. |
| e. Output impedance | 50 Ω |
| f. Start Tone | 710 kHz (mark) / 10ms min |
| (3) Receiver Inputs | |
| a. Locking range | $\pm$ 32.5 kHz |
| b. Input impedance | 50 Ω |
| c. Input Sensitivity | -15 dBm min. |

2. Transmission Protocol

- | | |
|-------------------|---|
| a. Operation Mode | Binary |
| b. Transfer Rate | 9600 bit/s |
| c. Data Format | 1 start bit, 8 data bits, 1 stop bit, No Parity |

ST	D0	D1	D2	D4	D5	D6	D7	SP
----	----	----	----	----	----	----	----	----

Transmit $\longrightarrow$

The least significant bit (LSB) is sent first.

ST:	Start bit
D0:	Data(LSB)
---	---
D7:	Data(MSB)
SP:	Stop bit

- | | |
|--------------------------|---------------|
| d. Maximum Response Time | 50 ms |
| e. Message Rate | 1 every 20 ms |

* Above Specifications are subject to change without notice.

Appendix Specifications of Monitor & Control

3. Packet Format

- a. Data Packet Length 7 Bytes
- b. Byte Configuration

Byte	Command (IDU to BUC)	Response (BUC to IDU)
1 st	BUC Address ^{*1}	BUC Address ^{*2}
2 nd	Command	Data Byte 1
3 rd	Data Byte 1	Data Byte 2
4 th	Data Byte 2	Data Byte 3
5 th	Data Byte 3	Data Byte 4
6 th	Data Byte 4	Data Byte 5
7 th	Checksum ^{*3}	Checksum ^{*3}

*1: Initial setting of a BUC address is 0x01.

*2: Responder address is shifted left by 4 bits.

*3: Algebraic sum of bytes 1 through 6.

Note: Spare bytes are always filled with 0xAA (10101010).

4. Command & Response Message Structure

The BUC status is stored to internal EEPROM.

The last BUC state is stored to internal EEPROM, so when the BUC is re-turned DC power on again, the state is reproduced last BUC condition.

4.1. Command Message Structure (IDU to BUC)

a. Request Status

This command can acquire output power level, alarm status, BUC class, and temperature etc.

Byte	Name	Description	Value
1 st	Address	BUC Address	0x01 (to 0x0F)
2 nd	Command	Request Status	0x01
3 rd	Data Byte 1	Not used	0xAA (Fixed)
4 th	Data Byte 2	Not used	0xAA (Fixed)
5 th	Data Byte 3	Not used	0xAA (Fixed)
6 th	Data Byte 4	Not used	0xAA (Fixed)
7 th	Checksum	Algebraic sum of bytes 1 - 6	

e.g.)

0x01	0x01	0xAA	0xAA	0xAA	0xAA	CHK
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* Above Specifications are subject to change without notice.

Appendix Specifications of Monitor & Control

b. Set Transmit On/Off State

This command can set a state of transmit on and transmit off

Byte	Name	Description	Value
1 st	Address	BUC Address	0x01 (to 0x0F)
2 nd	Command	Set Transmit On/Off	0x02
3 rd	Data Byte 1	Transmit On/Off	Tx Off: 0x00 Tx On: 0x01
4 th	Data Byte 2	Not used	0xAA (Fixed)
5 th	Data Byte 3	Not used	0xAA (Fixed)
6 th	Data Byte 4	Not used	0xAA (Fixed)
7 th	Checksum	Algebraic sum of bytes 1 - 6	

e.g.)

0x01	0x02	0x01	0xAA	0xAA	0xAA	CHK
------	------	------	------	------	------	-----

4.2. Response Message Structure (BUC to IDU)

a. Request Status

Byte	Name	Description	Value
1 st	Address	BUC Address shifted left by 4 bits	0x10 (to 0xF0)
2 nd	Level Byte 1	MS byte of Tx Output Power Monitor	*1
3 rd	Level Byte 2	LS byte of Tx Output Power Monitor	
4 th	Temperature	Temperature in deg. C	*2
5 th	Status Byte 1 *3	Bit 0: Temperature Out-of-Range	1: Fail 0: Normal
		Bit 1: PLL Out-of-Lock	1: Fail 0: Normal
		Bit 2: Checksum Error	1: Error 0: Normal
		Bit 3: Transmit On/Off Status	1: Tx On 0: Tx Off
		Bits 4-7: BUC Power Class	0x1 to 0xA
6 th	Status Byte 2 *4	Bits 0-3: Not used	0xA (Fixed)
		Bits 4-7: Software Version	0x0 to 0xF
7 th	Checksum	Algebraic sum of bytes 1 - 6	

e.g.)

0x10	0x0F	0x0A	0xD8	0x48	0x1A	CHK
------	------	------	------	------	------	-----

* Above Specifications are subject to change without notice.

Appendix Specifications of Monitor & Control

*1: Data Field Definition for Tx Output Power

Output power is the number which changed hexadecimal data into the decimal number and was divided by 100.

e.g.)

Output Power Data
 Level Byte 1 is 0x0F }
 Level Byte 2 is 0x0A } 0x0F0A → +38.50 dBm

*2: Data Field Definition for Temperature

Temperature data is from -128 °C to +127 °C in two's complement (1 °C step).

e.g.) Byte of Temperature is 0xD8 → 11011000 = -40 °C

Byte of Temperature is 0xFF → 11111111 = -1 °C

Byte of Temperature is 0x40 → 01000000 = 64 °C

*3: Data Field Definition for Status Byte 1

e.g.) Status Byte 1 is 0x48 → 01001000

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	1	0	0	1	0	0	0
8W BUC Power Class Refer to following table				Tx On Transmit On/Off Status	Normal Checksum Error	Normal PLL Out-of-Lock	Normal Temperature Out-of-Range

Table: BUC Power Class

Value	0x1	0x2	0x3	0x4	0x5	0x6	0x7	0x8	0x9	0xA
Power Class	2W	4W	5W	8W	10W	16W	20W	25W	40W	60W

*4: Data Field Definition for Status Byte 2

e.g.) Status Byte 2 is 0x1A → Firmware Version Ver.1

b. Set Transmit On/Off State

i) In case of FSK Communications M&C

The BUC responds the same message as 'Request Status' after the BUC set the transmit on/off state in accordance with the command message

e.g.)

0x10	0x0F	0x0A	0xD8	0x48	0x1A	CHK
------	------	------	------	------	------	-----

* Above Specifications are subject to change without notice.