1.8M C & Ku-Band Rx/Tx Antenna

Series 1194

Technical Specifications

Electrical		Series 1194 C-Band		Series 1194 Ku-Band
Antenna Size		1.8 M (71 in.)		1.8 M (71 in.)
Operating Frequency (GHz)	Receive Transmit	3.625 - 4.20 GHz 5.85 - 6.425 GHz		10.95 - 12.75 GHz 13.75 - 14.50 GHz
Midband Gain (+/- .2 dB)	Receive Transmit	35.50 dBi 39.50 dBi		45.20 dBi 46.70 dBi
Antenna Noise Temperature 20° Elevation 30° Elevation		Linear 49 K 37 K	Circular 23 K 21 K	 38 K 35 K
Sidelobe Envelope, Co-Pol (dBi) $100\lambda / D < \theta \leq 20°$ $20° < \theta \leq 26.3°$ $26.3° < \theta \leq 48°$ $\theta > 48°$		 29 - 25 Logθ dBi -3.5 dBi 32 - 25 Logθ dBi -10 dBi (averaged)	 29 - 25 Logθ dBi -3.5 dBi 32 - 25 Logθ dBi -10 dBi (averaged)	 29 - 25 Logθ dBi -3.5 dBi 32 - 25 Logθ dBi -10 dBi (averaged)
Cross-Pol Isolation	Within B.P.E. Any Angle off Axis	-26 dB Max. -23 dB Max.		-30 dB Max. -25 dB Max.
VSWR		1.3:1 Max.		1.3:1 Max. Tx, 1.5:1 Max. Rx
Axial Ratio (circular)	Receive Transmit	1.4 VAR (2.95 dB) 1.3 VAR (2.28 dB)		
Feed Interface	Receive Transmit	CPR 229 F CPR 137 or Type N		Available in a variety of designs Available in a variety of designs

Mechanical	
Reflector Material	Glass Fiber Reinforced Polyester SMC
Antenna Optics	Prime Focus, Offset Feed
Mast Pipe Size	5" SCH 40 Pipe (5.56" OD) 141 mm.
Elevation Adjustment Range	5° to 90°, Continuous Fine Adjustment
Azimuth Adjustment Range	+/- 45° Fine, 360° Continuous
Shipping Specifications	C-Band: 245 lbs. (111 kg.) Ku-Band: 235 lbs. (106.5 kg.)

Environmental Performance		
Wind Loading	Operational Survival	50 mph (80 km/h) 125 mph (201 km/h)
Temperature	Operational Survival	-40° to 140° F (-40° to 60° C) -50° to 160° F (-46° to 71° C)
Rain	Operational Survival	1/2"/hr 2"/hr
Ice	Operational Survival	------ 1/2" radial
Atmospheric Conditions		Salt, Pollutants and Contaminants as Encountered in Coastal and Industrial Areas
Solar Radiation		360 BTU/h/ft2

GENERAL DYNAMICS
SATCOM Technologies

1500 Prodelin Drive • Newton, NC 28658 USA • Telephone: +1-828-464-4141 • Fax: +1-828-464-4147
Email: vsat@gdsatcom.com • Web Site: www.gdsatcom.com

1000-042 Rev. 6/14

Our Ref : TO8/0628/1124

24 November 1995

Mr. Gary R. Kanipe
Chairman
Chief Executive Officer
Prodelin Corporation
P.O. Box 368
1700 NE - Cable Drive
Conover, N.C. 28613

Dear Mr. Kanipe,

I am pleased to inform you that effective 24 November 1995, the Prodelin 1.8m 0.8 f/d SMC series number 1194 Ku-band antenna system consists of the following components :

Prodelin System Number Series 1194, 1.8M, 0.8 f/d SMC		
	With SHC	Without SHC
System :	1194 - 991	1194 - 990
Reflector	0179 - 431	0179 - 354
OMT	4080 - 062 Rev E (0800 - 145 boxed)	
39° Feed Horn	0183 - 478 (0800 - 1375 boxed)	
Feed Stabilizer	0800 - 1449	

is hereby granted formal approval as a Type Accepted to operate with AsiaSat 2 Ku-band transponder, subject to the mandatory requirement of Annex A2/1 and Customer's Network design at Appendix 1.0 of Annex A2/4 approved by AsiaSat.

....2/....

Asia Satellite Telecommunications Co. Ltd.
23-24/F, East Exchange Tower, 38-40 Leighton Road, Hong Kong
Telephone: (852) 2805 6666
Telex: 60345 ASAT HX Facsimile: (852) 2576 4111

■ Ku-band PLL LNB - Internal Reference (L.O. Stability: ±10 ppm) -
MODEL No. **NJR2835H/36H/37H/39H** series

< Features >

*** Low Noise Figure**
- Noise Figure: 0.8 dB

*** Low DC Current Drain**
- DC Current Drain: 200 mA

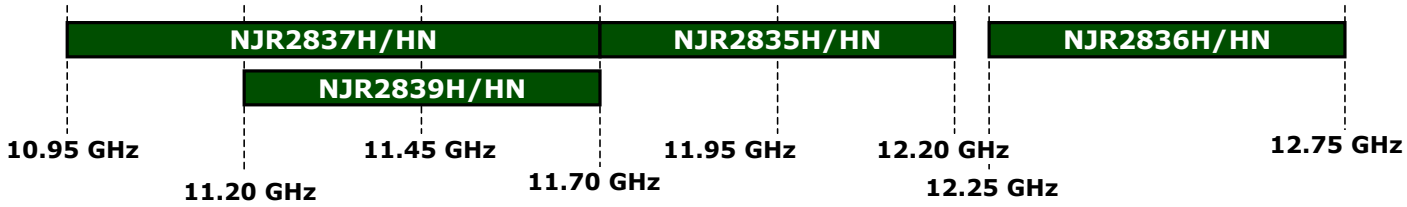
*** Small Size & Light Weight**
- Weight: 260 g

*** RoHS Compliance**

< Line-Up >

Model No.	RF Frequency	Local Frequency	IF Connector	Local Stability	IF Connector	Power Supply
NJR2837H	10.95 to 11.70GHz	10.00 GHz	950 to 1,700 MHz	+/- 10 ppm	F-type	+24 VDC (+12 to +24 VDC)
NJR2837HN					N-type	
NJR2839H	11.20 to 11.70 GHz	10.25 GHz	950 to 1,450 MHz		F-type	
NJR2839HN					N-type	
NJR2835H	11.70 to 12.20 GHz	10.75 GHz			F-type	
NJR2835HN					N-type	
NJR2836H	12.25 to 12.75 GHz	11.30 GHz	950 to 1,450 MHz		F-type	
NJR2836HN					N-type	

Frequency Matrix



■ Ku-band PLL LNB - Internal Reference (L.O. Stability: ±10 ppm) -

MODEL No. **NJR2835H/36H/37H/39H** series

< Specifications >

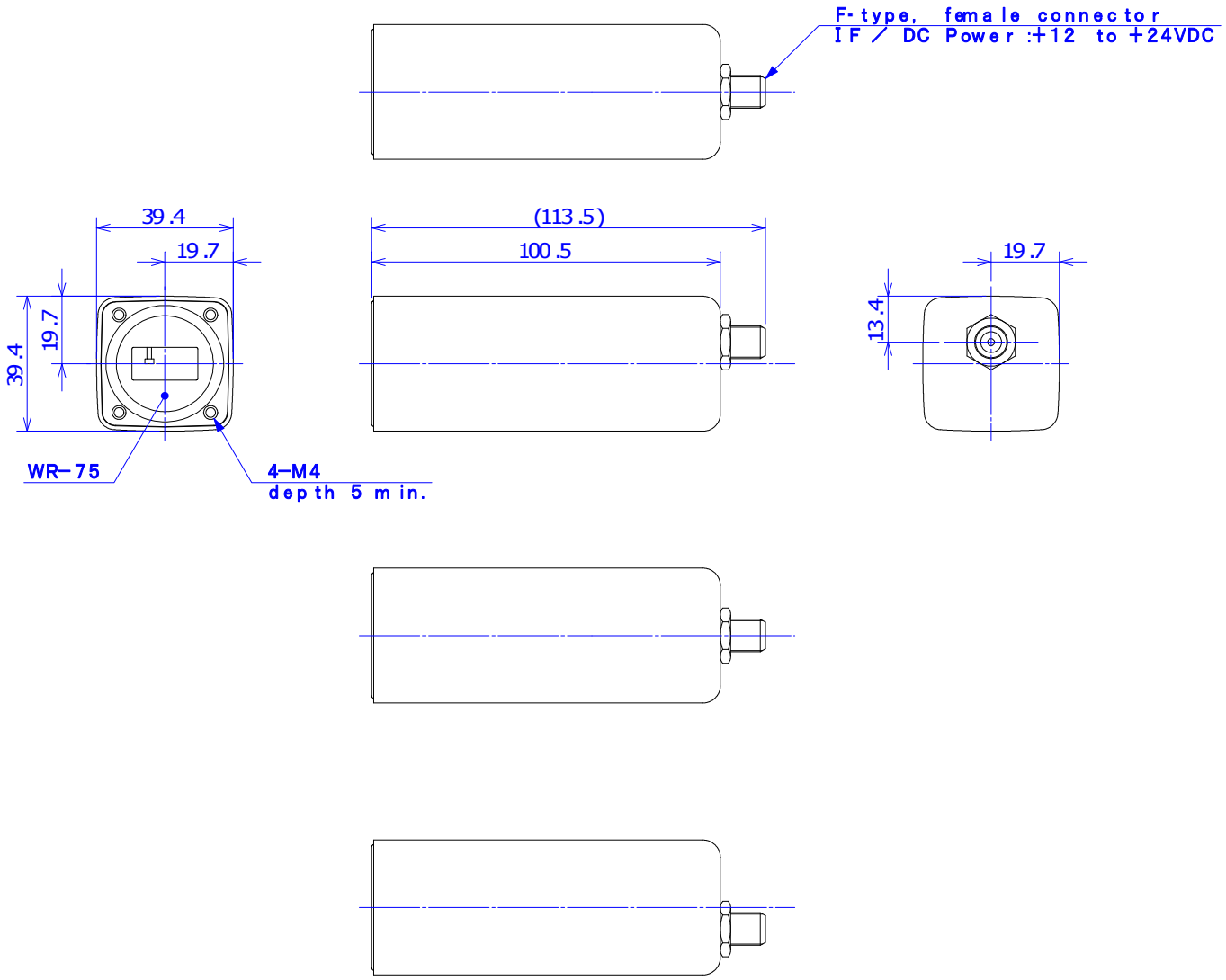
Item	Specifications
Input Interface	Waveguide, WR75 (with Groove)
Output Interface	N-type, female (50 ohm) [Model No.: NJR2835HN/36HN/37HN/39HN]
	F-type, female (75 ohm) [Model No.: NJR2835H/36H/37H/39H]
Noise Figure (Ta.: +25 C)	0.8 dB typ., 1.0 dB max.
Linear Gain (Ta.: +25 C)	60 dB typ., 55 dB min.
Local Stability	+/-10 ppm (Ta.: -40 to +60 C)
L.O. Phase Noise	-70 dBc/Hz typ. @ 100 Hz
	-80 dBc/Hz typ. @ 1 kHz
L.O. Leakage Level	-25 dBm max. at the IF Output Connector
	-60 dBm max. at the RF Input Flange
Spurious	a) -140 dBm max. at input, Fixed frequency spur, unrelated to test CW signal (Measured at specified IF band).
	b) -55 dBc max. with test CW signal -10 dBm IF output (Measured at specified IF band).
Input V.S.W.R.	2.5 : 1 typ.
Output V.S.W.R.	2.3 : 1 max.
Power Requirement	+24 VDC (+12 to +24 VDC)
Current Drain	200 mA max.
Temperature Range (ambient)	-40 to +60 C (operating), -40 to +80 C (storage)
Dimension & Housing	100.5 mm (L) x 40 mm (W) x 40 mm (H)
(without Interface Connectors)	[3.96" (L) x 1.57" (W) x 1.57" (H)]
Weight	260 g [0.57 lbs]

■ Ku-band PLL LNB - Internal Reference (L.O. Stability: ±10 ppm) -

MODEL No. **NJR2835H/36H/37H/39H** series

< Outline Drawing >

NJR2835H/36H/37H/39H



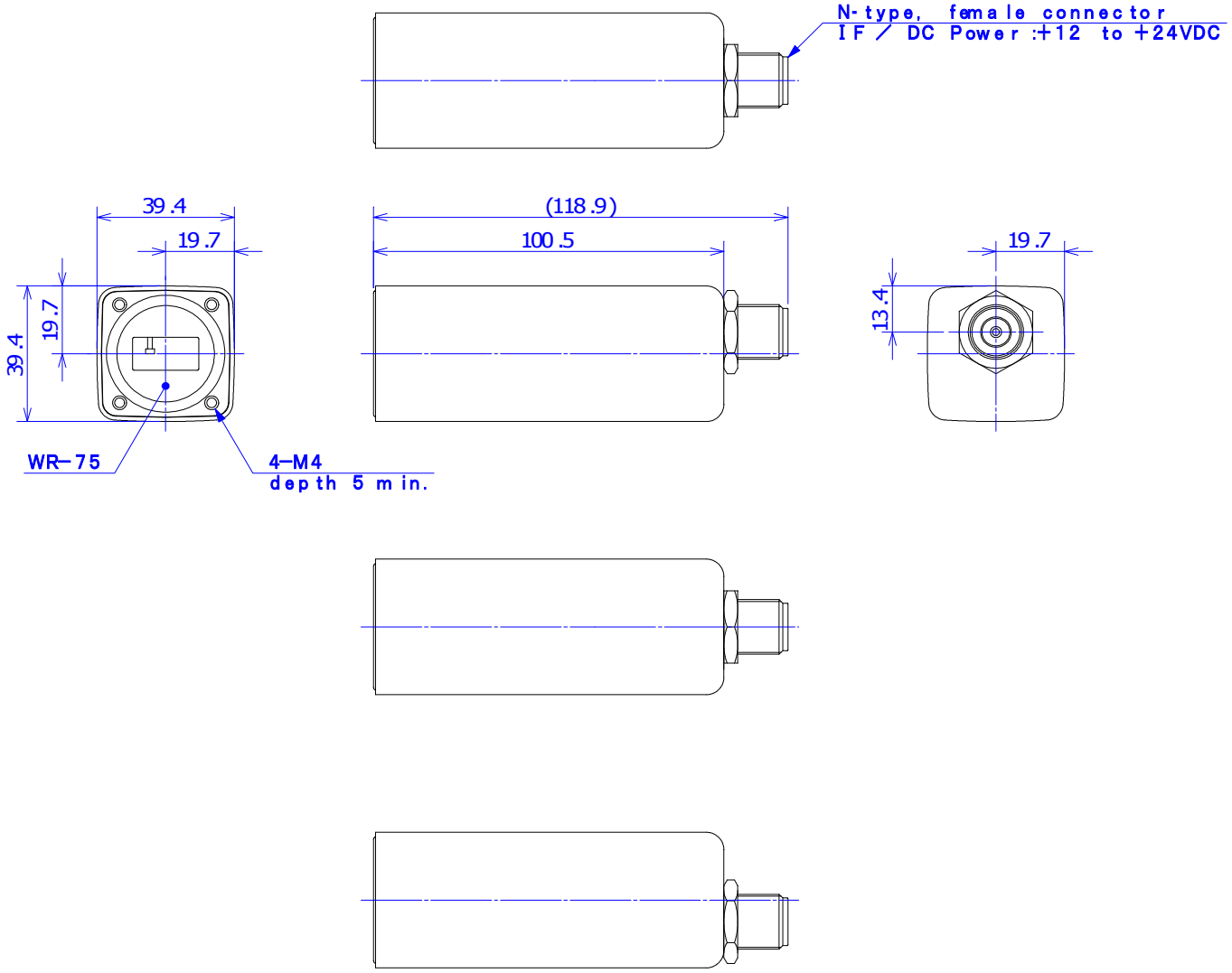
Unit: mm

■ Ku-band PLL LNB - Internal Reference (L.O. Stability: ±3 ppm) -

MODEL No. **NJR2835H/36H/37H/39H** series

< Outline Drawing >

NJR2835HN/36HN/37HN/39HN



Unit: mm

■ Universal/Standard Ku-band **8W** BUC

MODEL No. **NJT8318** series

< Features >

* High Temperature Operating

- Operation Guarantee Temperature Range: -40 to +75 degree C

* RF Frequency Line-up

- Universal Ku-band: 13.75 to 14.5 GHz
- Standard Ku-band: 14.0 to 14.5 GHz

* High Efficiency Output Power

(8W Model)

- P1dB: +39 dBm min. over temperature
- Power Consumption: 80 W typ.
- IM3: -28 dBc @ Pout <= +36 dBm

* Monitor & Control Line-up

- FSK Communication M&C
- RS-232C Interface Serial M&C

* Smaller Size & Lighter Weight

- Dimension: 180 (L) x 130 (W) x 80 (H) mm
- Weight: 2.4 kg

< Line-Up >

Model No.	RF Frequency	Local Frequency	IF Frequency	Output Power @ P1dB	IF Connector	Power Supply	Port for Voltage Input	M&C Option
NJT8318N	14.0 to 14.5 GHz (Standard Ku-band)	13.05 GHz	950 to 1,450 MHz	8W Linear (+39dBm min.)	N-type	+18 to +60 V DC Power	IF Connector	N/A
NJT8318F					F-type			
NJT8318NM					N-type		MS Connector (IF Connector Option)	
NJT8318FM					F-type			
NJT8318NA					N-type	AC Power Option	IF Connector * Note 1	
NJT8318FA					F-type			
NJT8318NK					N-type	+18 to +60 V DC Power	IF Connector	FSK M&C
NJT8318FK					F-type			
NJT8318NMK					N-type		MS Connector (IF Connector Option)	
NJT8318FMK					F-type			
NJT8318NMR					N-type			RS-232C M&C
NJT8318FMR					F-type			
NJT8318NMRA					N-type	AC Power Option	IF Connector * Note 1	
NJT8318FMRA					F-type			
NJT8318UN	13.75 to 14.5 GHz (Universal Ku-band)	12.80 GHz	950 to 1,700 MHz		N-type	+18 to +60 V DC Power	IF Connector	N/A
NJT8318UF					F-type			
NJT8318UNM					N-type		MS Connector (IF Connector Option)	
NJT8318UFM					F-type			
NJT8318UNA					N-type	AC Power Option	IF Connector * Note 1	
NJT8318UFA					F-type			
NJT8318UNK					N-type	+18 to +60 V DC Power	IF Connector	FSK M&C
NJT8318UFK					F-type			
NJT8318UNMK					N-type		MS Connector (IF Connector Option)	
NJT8318UFMK					F-type			
NJT8318UNMR					N-type			RS-232C M&C
NJT8318UFMR					F-type			
NJT8318UNMRA					N-type	AC Power Option	IF Connector * Note 1	
NJT8318UFMRA					F-type			

* Note1) Additional indoor 150W AC/DC PSU is enclosed for AC Power Option and DC Power is supplied at IF connector of BUC from AC/DC PSU via IF cable.

*Note: The contents of this sheet are subject to change without notice.

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Microwave Components Division
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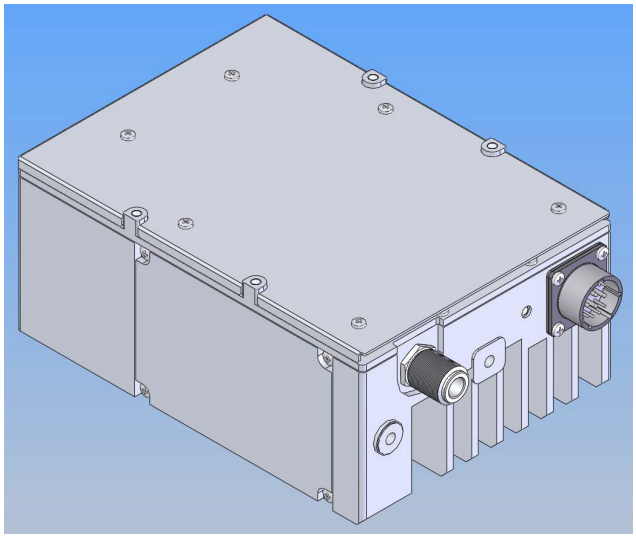
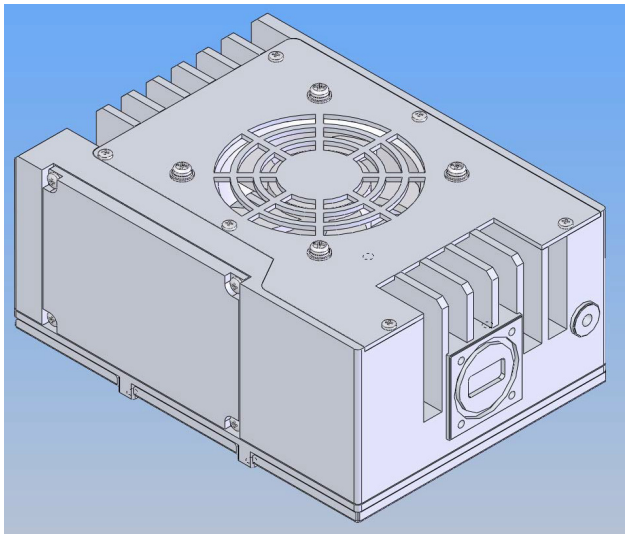
■ Universal/Standard Ku-band **8W** BUC

MODEL No. **NJT8318** series

< Overview >





< Specifications >

Item	Specifications
Output Power @ 1dB G.C.P. (P1dB)	+39 dBm min. over temperature
Linear Gain	65 dB nom., 59 dB min.
Gain Variation over frequency Standard Ku-band: Universal Ku-band:	 5 dBp-p max. over 500 MHz / 2 dBp-p max. over 36 MHz 5 dBp-p max. over 750 MHz / 2 dBp-p max. over 36 MHz
Gain Stability over temperature	2 dBp-p typ., 5 dBp-p max.
IM3	-28 dBc typ., -24 dBc max. @ total power ≦ Pout – 3dB
ACPR	-28 dBc typ. @ Pout ≦ Pout – 1dB
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. @ 1 MHz
Input V.S.W.R.	2 : 1 max.
Output V.S.W.R.	2 : 1 max.
DC Power Requirement (1) Voltage Range (2) Power Consumption @ No IF Signal @ P1dB	 +18 to +60 VDC 65 W typ. 80 W typ., 90 W max.
Mute	Shut off the HPA in case of L.O. unlocked or no 10 MHz reference signal
LED Indicator	GREEN: L.O. locked / RED: L.O. unlocked (or no 10 MHz reference signal)
M&C	< FSK Communication M&C > Interface: FSK Modulation Signal via IF connector Function: Power Monitor / TX On/Off Control / Alarm … etc < RS-232C Serial M&C > Interface: RS-232C Function: Power Monitor / TX On/Off Control / Alarm / Digital Step Attenuator … etc
Temperature Range (ambient) Operating: Storage:	 -40 to +75 C (Operation Guarantee) -40 to +55 C (Performance Guarantee) -40 to +75 C
Dimension & Housing	180 (L) x 130 (W) x 80 (H) mm [7.09” (L) x 5.12” (W) x 3.15” (H)] without interface connector and screws
Weight	2.4 kg [5.3 lbs]

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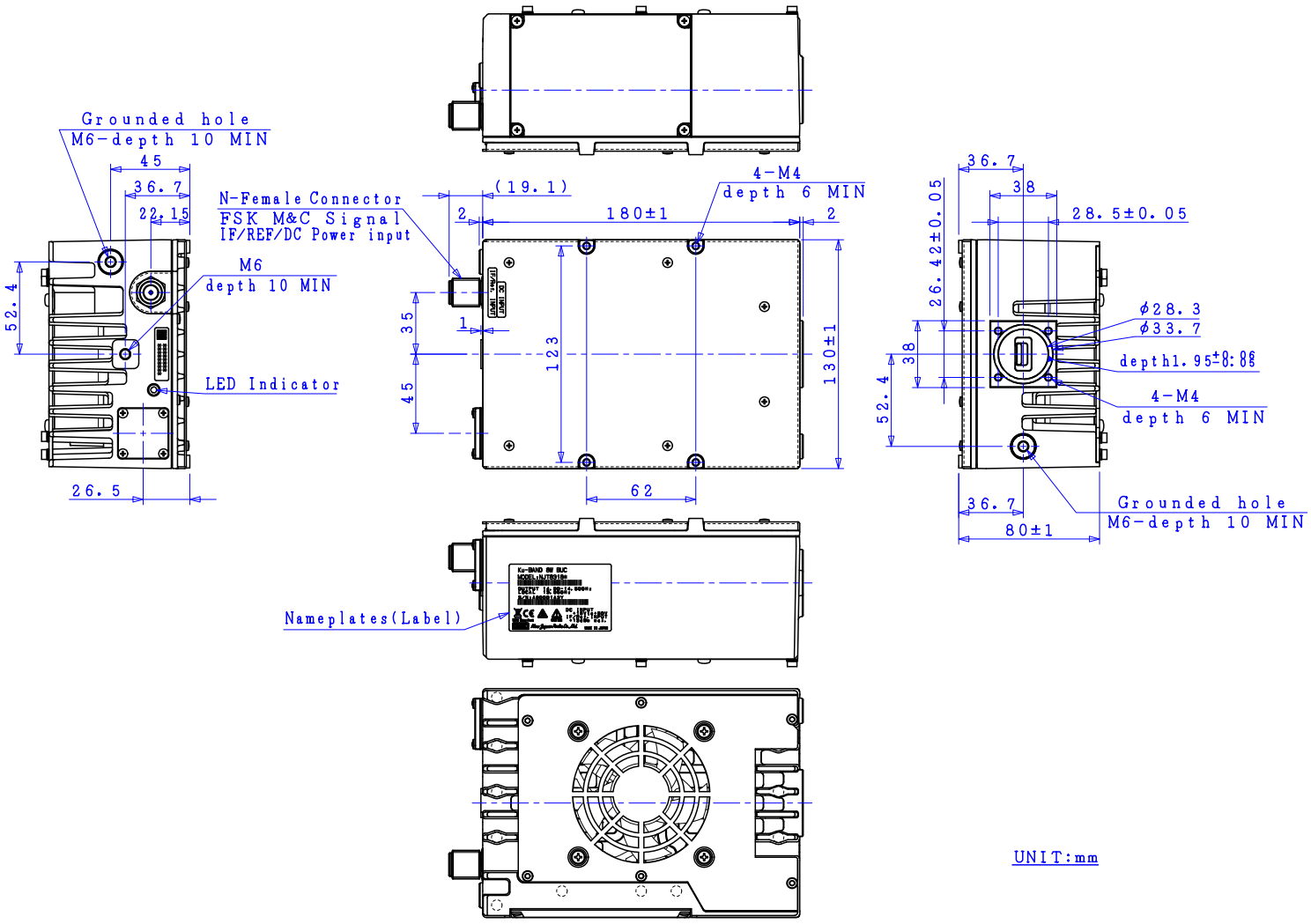
< Outline Drawing >

N-type, female Connector Model / DC Input: IF Connector



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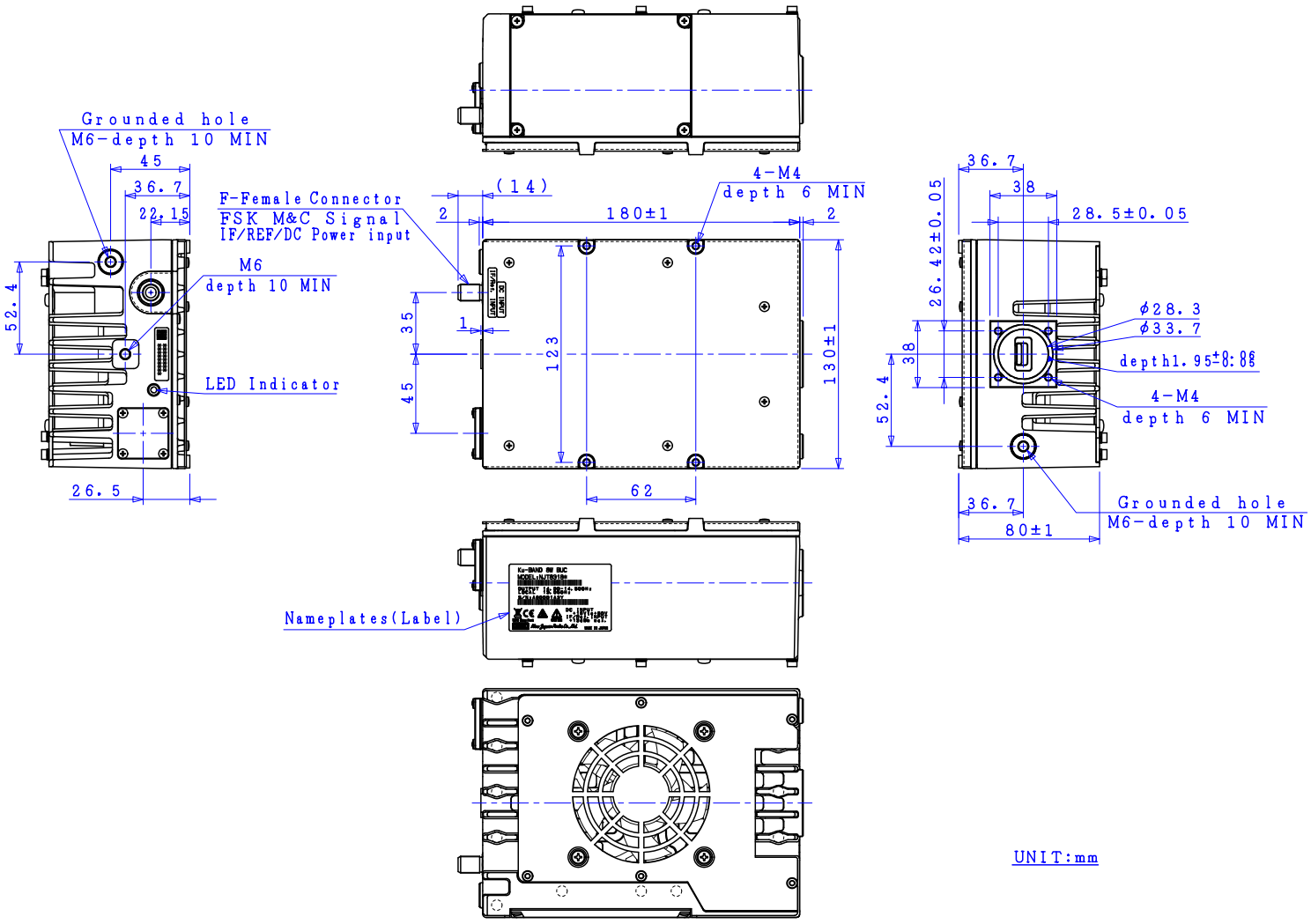
< Outline Drawing >

F-type, female Connector Model / DC Input: IF Connector



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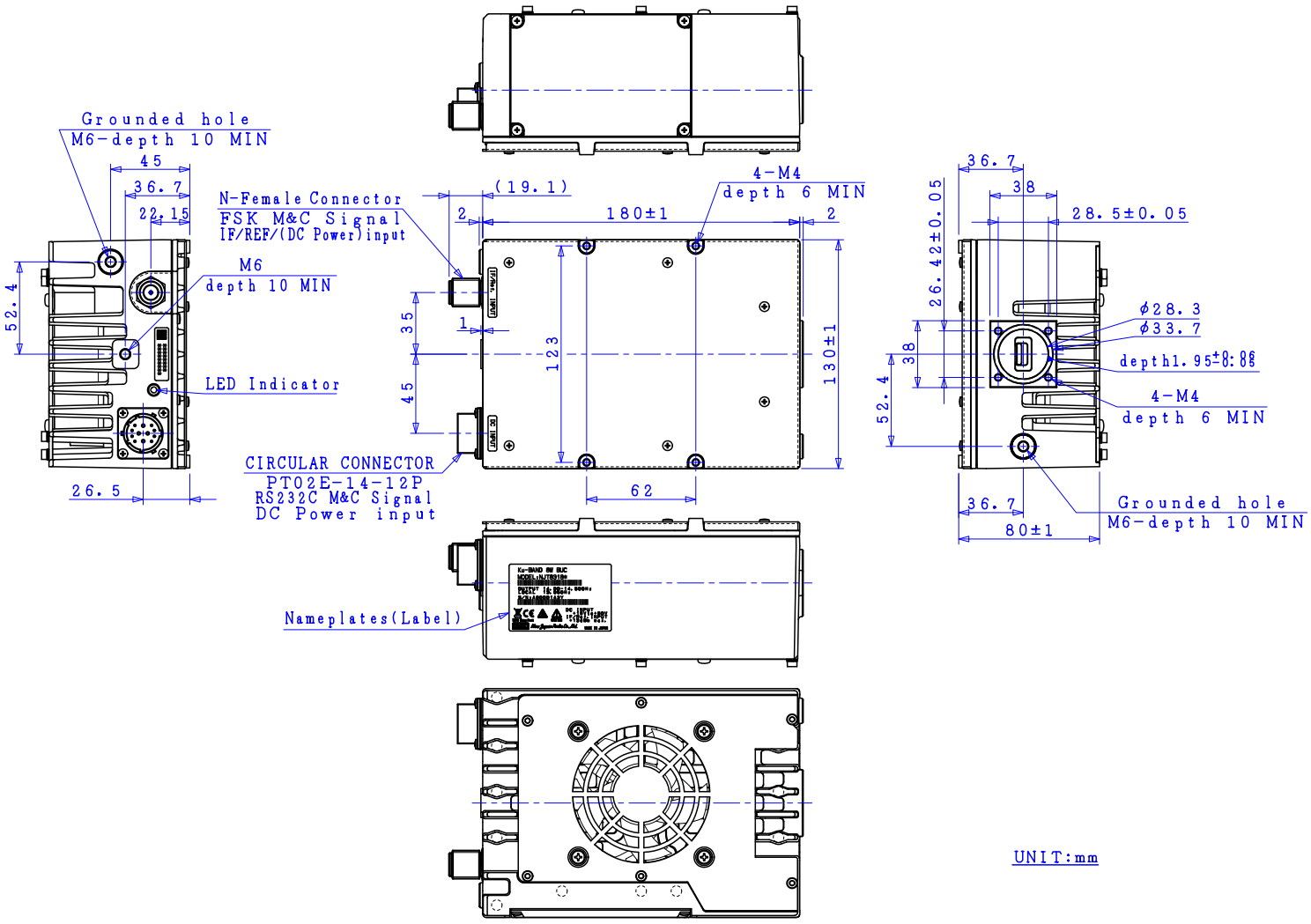
< Outline Drawing >

N-type, female Connector Model / DC Input: MS Connector



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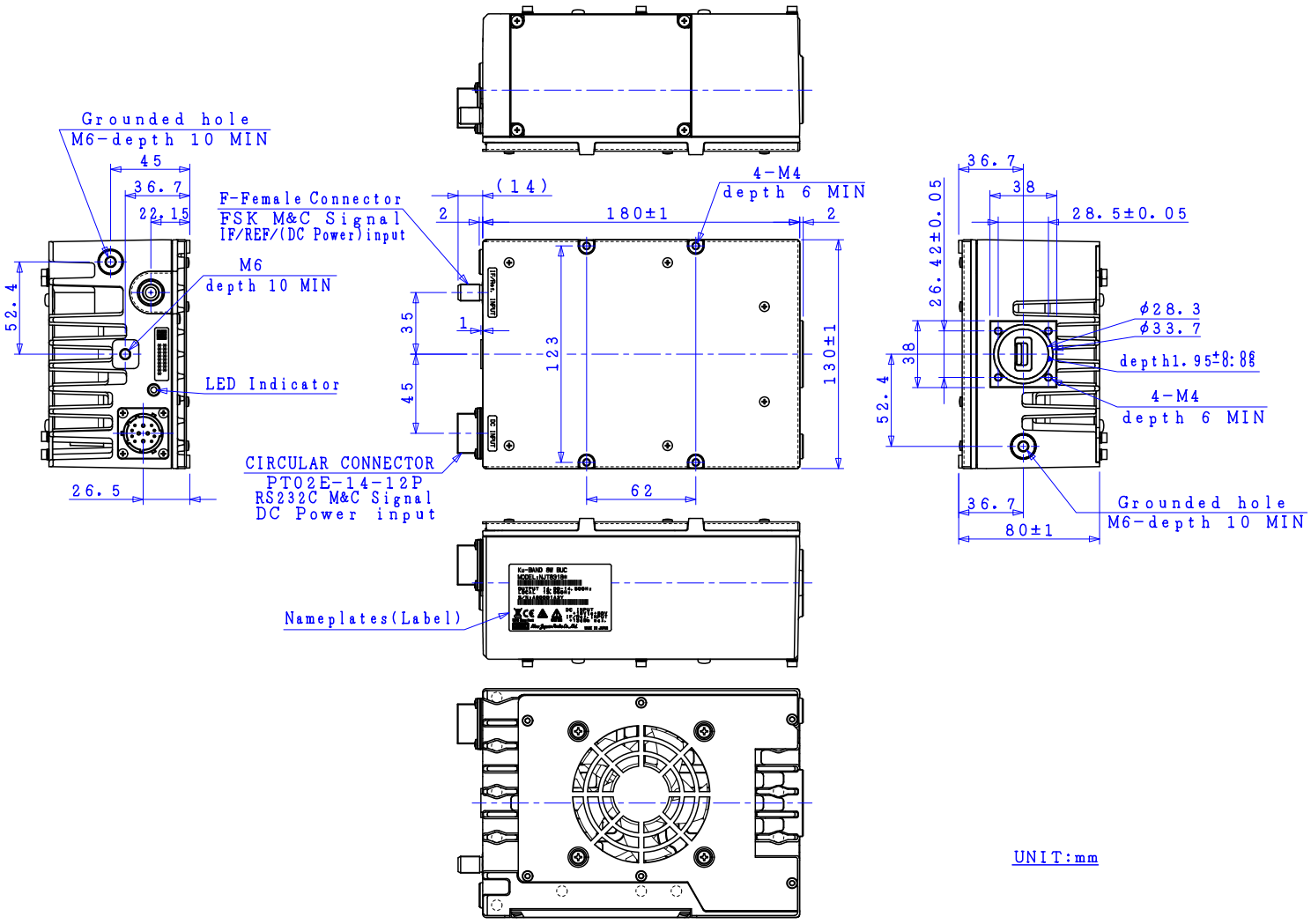
< Outline Drawing >

F-type, female Connector Model / DC Input: MS Connector



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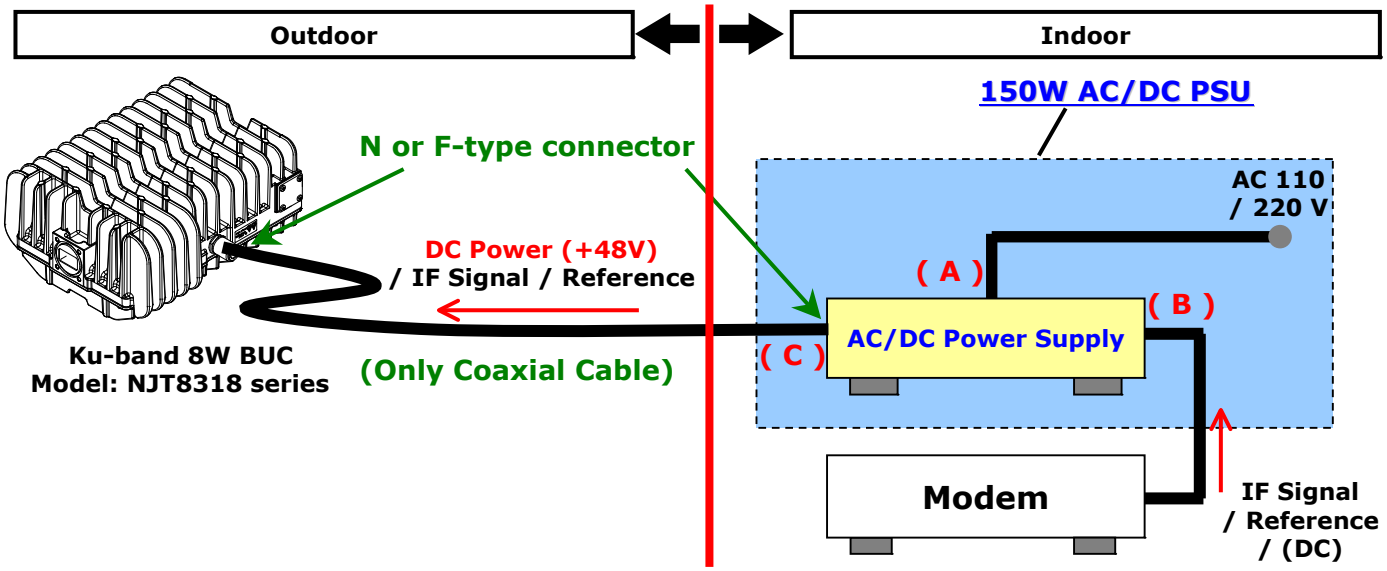
■ Universal/Standard Ku-band **8W** BUC

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

< Overview of AC Power Option >

- Interface -



- 150W AC/DC PSU -

*** The features of 150W AC/DC Power Supply Unit (PSU) is to provide the stable +48V DC power to operate Ku-band 8W BUCs, even if inner power supply of the modem is not capable enough to operate these BUCs.**

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

*** In addition, the aluminum housing with corrosion-proof treatment on the surface is employed with the box to use perfectly as the indoor unit.**

< Specifications >

Item	Specifications	
Interface	AC Input	IEC320-C14 inlet
	IF/Ref./(DC) Input	N-type, female (50 ohm) / F-type, female (75 ohm)
	IF/Ref./DC Output	N-type, female (50 ohm) / F-type, female (75 ohm)
Input AC Voltage Range	Rated Range	100 to 240 VAC
	Absolute Maximum Rating	90 to 264 VAC
Input AC Frequency Range	50 / 60 Hz	
Output Voltage / Power	+48 VDC +/- 10 % / 150 W max.	
Efficiency	80 % typical at 120 VAC, full load	
Power Factor	0.98 typical at 120 VAC, full load	
IF Frequency	950 to 1,700 MHz	
IF Insertion Loss	1 dB max.	
IF Input/Output VSWR	1.5 : 1 max.	
Standard	EN55022, EN55024, EN60950-1, EN61000-3-2/3, EN62311	
Temperature Range (ambient)	0 to +50 C (operating), -30 to +85 C (storage)	
Cooling	Forced Air by Fan	
Dimension & Housing	290 mm (W) x 230 mm (D) x 44 mm (H)	
(without Interface Connectors / Switch)	[11.41" (W) x 9.06" (D) x 1.73" (H)]	
Weight (without Cable)	1.6 kg [3.5 lbs]	
Accessories	Coaxial cable of 1 m, AC power cable of 1 m, 1U rack mount kit (Option)	

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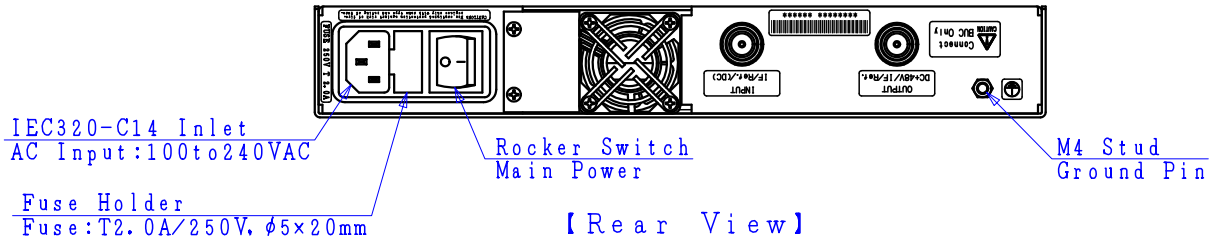
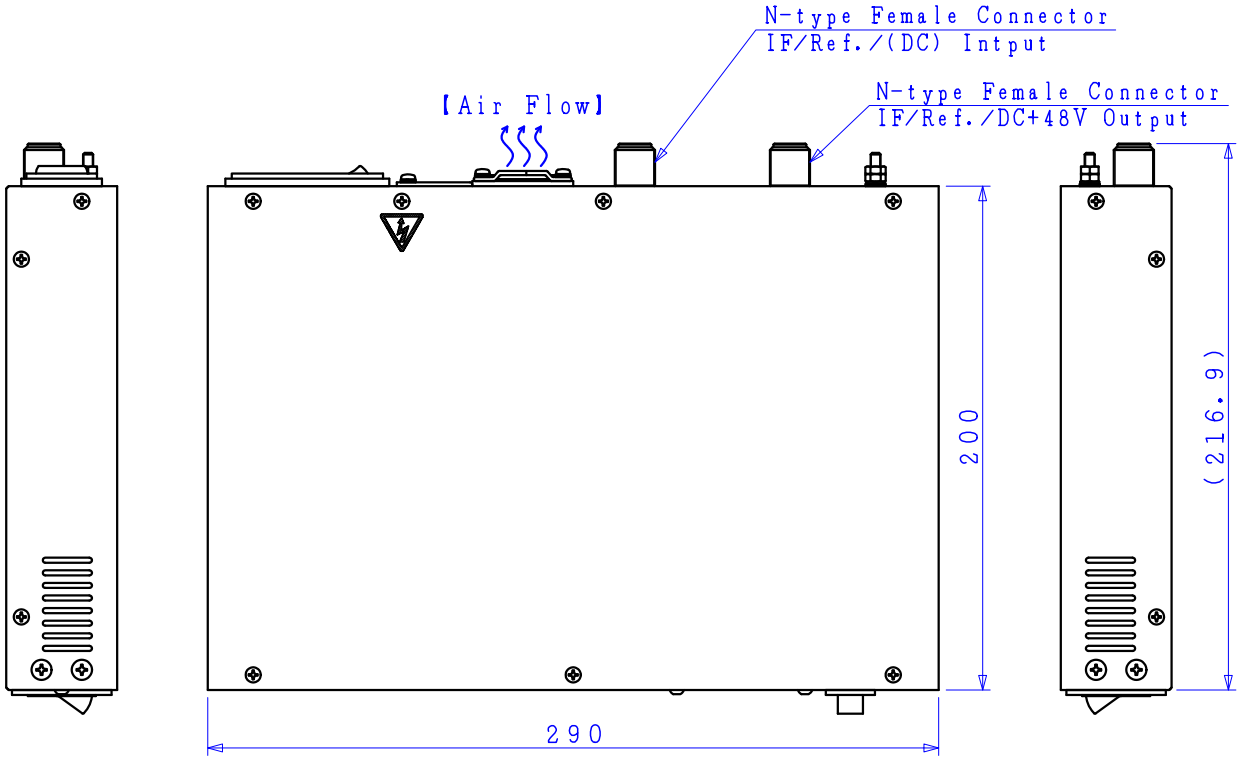
< Outline Drawing >

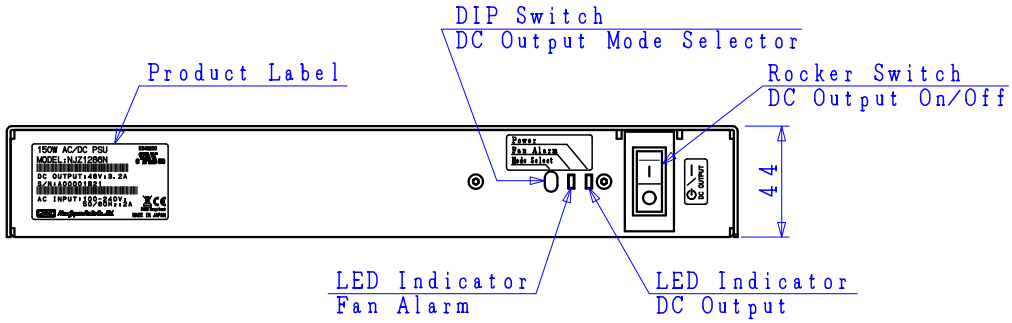
N-type, female Connector Model (AC/DC PSU)



【Rear View】



【Top View】



【Front View】

UNIT : mm

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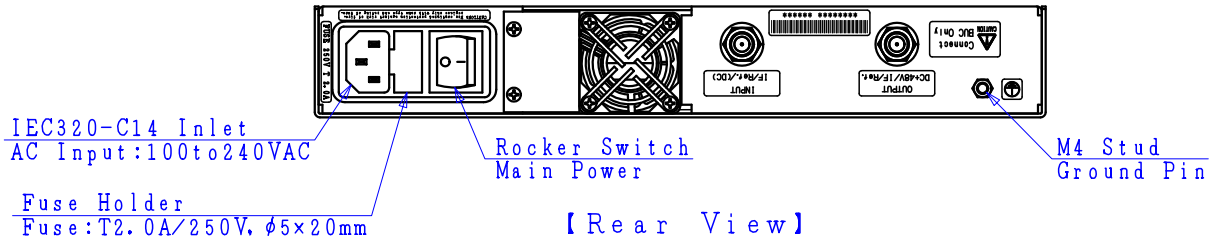
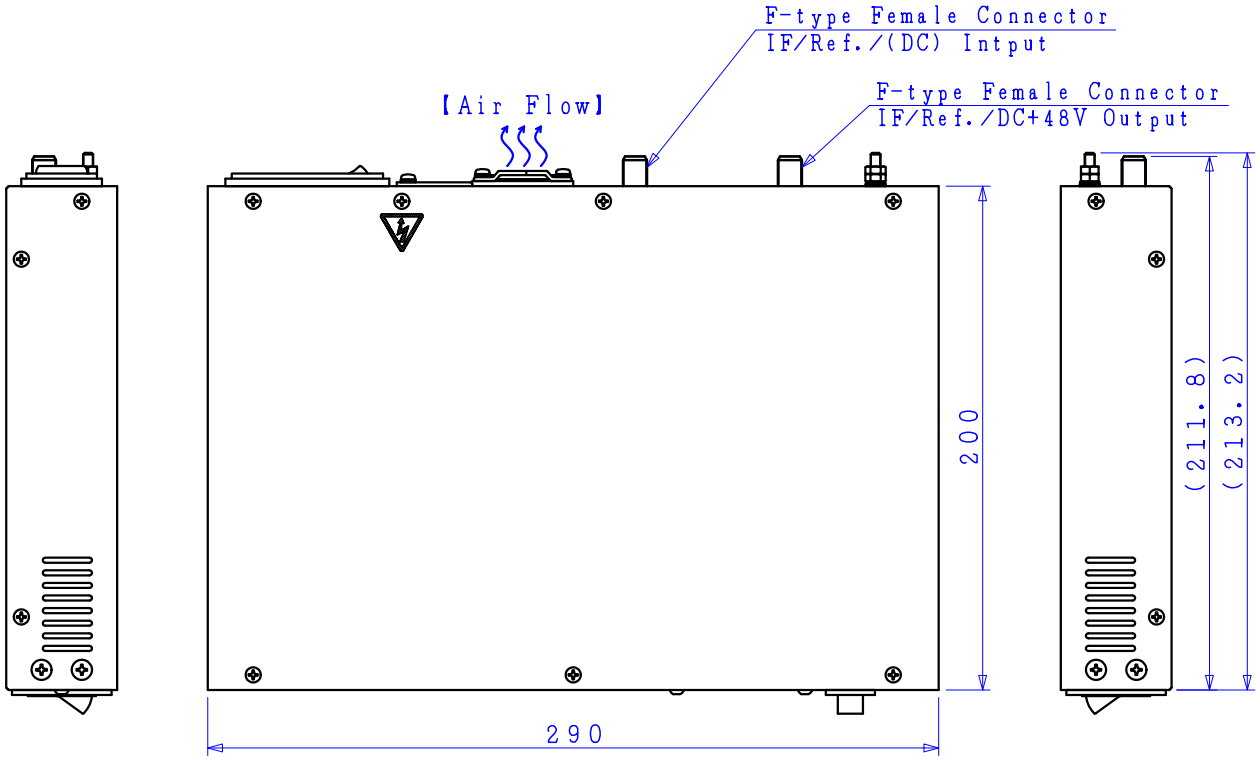
< Outline Drawing >

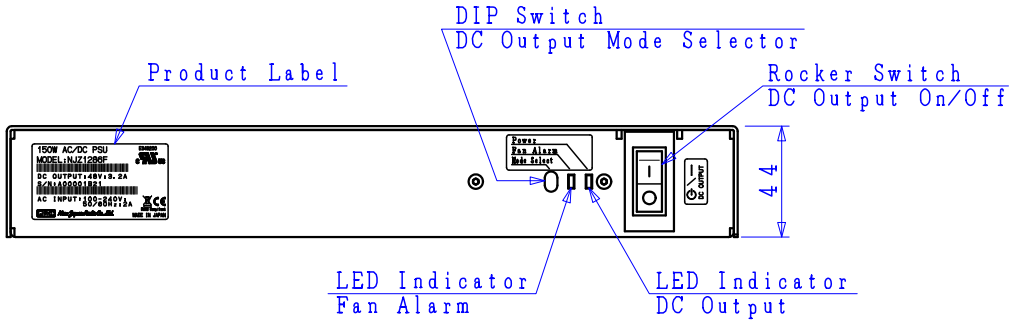
F-type, female Connector Model (AC/DC PSU)



【Rear View】



【Top View】



【Front View】

UNIT : mm

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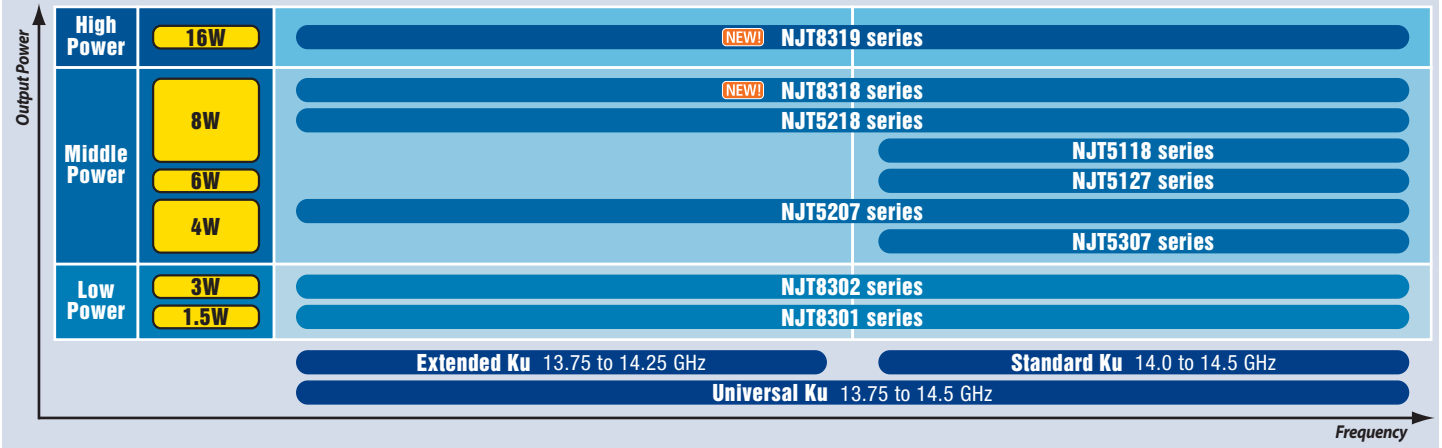
JRC New Japan Radio Co.,Ltd.

VSAT Products Line-up 2013-2014

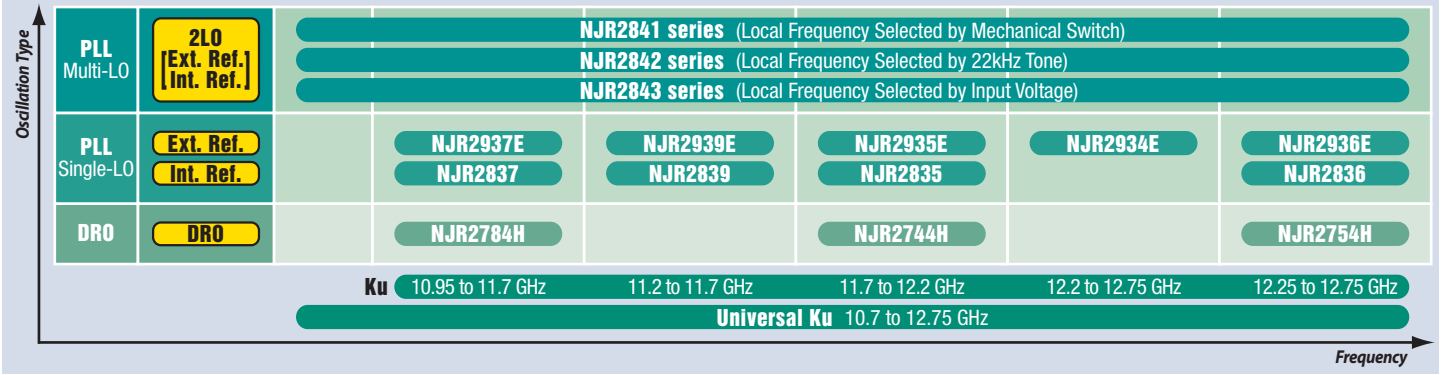
JRC PRODUCTS LINE-UP

VSAT PRODUCTS 2013-2014

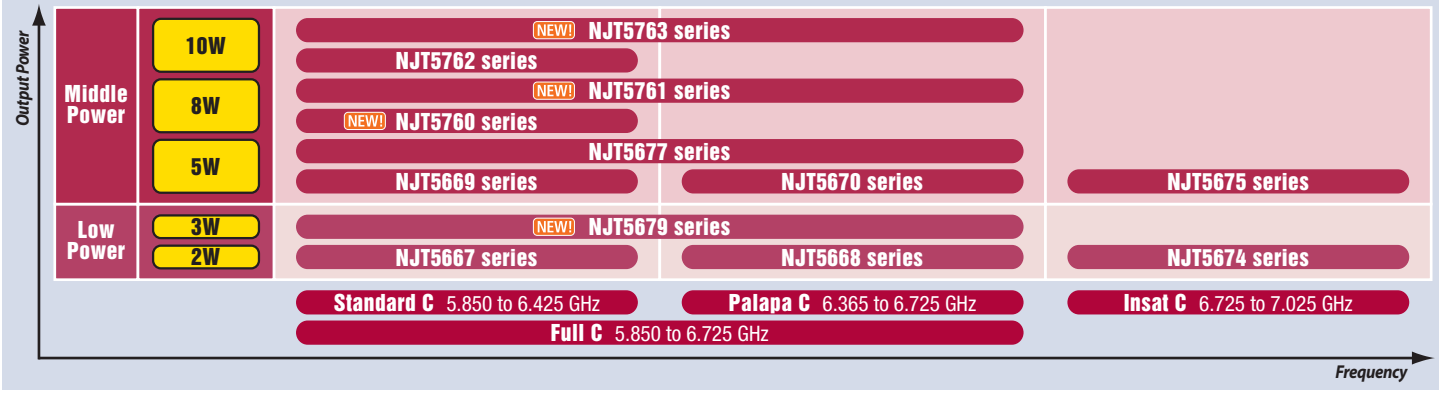
Ku-band BUC



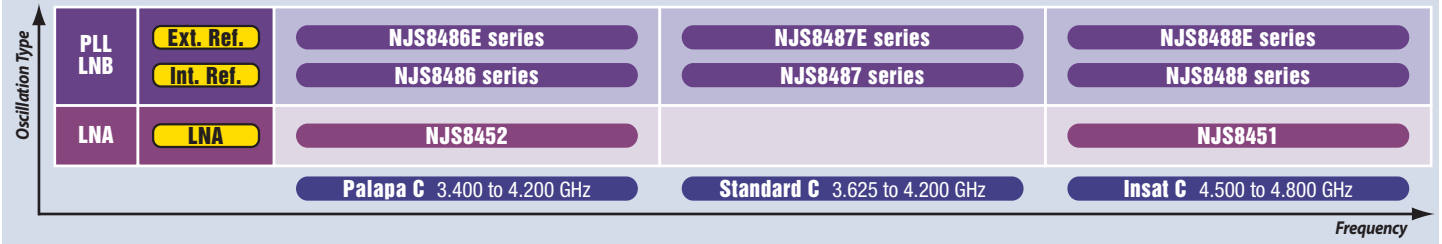
Ku-band LNB



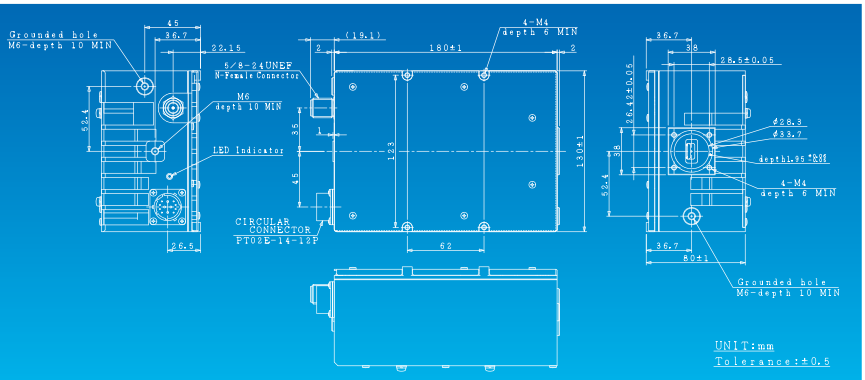
C-band BUC



C-band LNA/LNB



NEW Compact Ku-band 8W & 16W BUC: NJT8318 & NJT8319 series



High Efficiency & Low Distortion
(16W Model)
P1dB: +42 dBm min. over temperature
Power Consumption: 160 W
IM3: -28 dBc @ Pout <= +39 dBm
(8W Model)
P1dB: +39 dBm min. over temperature
Power Consumption: 80 W
IM3: -28 dBc @ Pout <= +36 dBm

FSK Communications M&C Option

High Temperature Operating
Operation Guarantee Temperature Range: -40 to +75 °C

Smaller Size & Light Weight
Weight: 2.4 kg
Dimension: 180 x 130 x 80 mm

LED Indicator Equipped

NEW Full C-band BUC Line-up

10W BUC: NJT5763 series

High Efficiency Output Power
P1dB: +40 dBm min.
Power Consumption: 75 W
Compact Size & Light Weight
Weight: 3.2 kg
Dimension: 219.5 x 175 x 99 mm
LED Indicator Equipped

8W BUC: NJT5761 series

High Efficiency Output Power
P1dB: +39 dBm min.
Power Consumption: 64 W
Compact Size & Light Weight
Weight: 3.2 kg
Dimension: 219.5 x 175 x 99 mm
LED Indicator Equipped

5W BUC: NJT5677 series

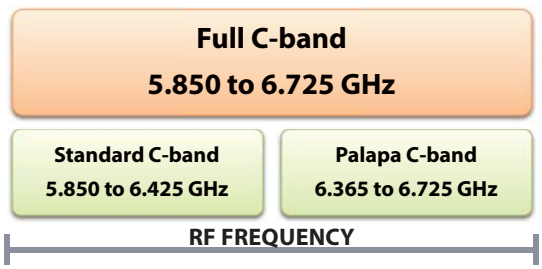
High Efficiency Output Power
P1dB: +37 dBm min.
Power Consumption: 48 W
Compact Size & Light Weight
Weight: 1.9 kg
Dimension: 190.6 x 160 x 59 mm
LED Indicator Equipped

3W BUC: NJT5679 series

High Efficiency Output Power
P1dB: +34 dBm min.
Power Consumption: 35 W
Compact Size & Light Weight
Weight: 1.9 kg
Dimension: 190.6 x 160 x 59 mm
LED Indicator Equipped

FULL C-BAND BUCs

The Full C-band BUCs can cover the two C-bands of Standard C-band: 5.850 to 6.425 GHz and Palapa C-band: 6.365 to 6.725 GHz as shown in illustration.



Applicable Models: NJT5677, NJT5679, NJT5761 and NJT5763 series

16W / 8W BUC : NJT8318 & NJT8319 series

16W BUC: NJT8319 series

	Model No.	RF Frequency	Local Frequency	IF Frequency	Output Power @ P1dB	IF Connector	M&C Function	AC Power Option	Power Supply	LED Indicator
NEW	NJT8319UN	13.75 to 14.50 GHz (Universal Ku-band)	12.80 GHz	950 to 1,700 MHz	+42 dBm min. (16W)	N-type	NA	NA	DC Power Input Port: IF Connector	Equipped
	NJT8319UF					F-type				
	NJT8319UNM					N-type			DC Power Input Port: MS Connector	
	NJT8319UFM					F-type				
NEW	NJT8319UNMA					N-type		Enclosed *Note2 Outdoor AC/DC PSU	DC Power Supplied by Outdoor AC/DC PSU	
NEW	NJT8319UFMA					F-type				
	NJT8319UNK					N-type	FSK Communications M&C *Note1	NA	DC Power Input Port: IF Connector	
	NJT8319UFK					F-type				
	NJT8319UNMK					N-type			DC Power Input Port: MS Connector	
	NJT8319UFMK					F-type				
NEW	NJT8319UNMKA					N-type		Enclosed *Note2 Outdoor AC/DC PSU	DC Power Supplied by Outdoor AC/DC PSU	
NEW	NJT8319UFMKA					F-type				
	NJT8319N	14.00 to 14.50 GHz (Standard Ku-band)	13.05 GHz	950 to 1,450 MHz		N-type	NA	NA	DC Power Input Port: IF Connector	
	NJT8319F					F-type				
	NJT8319NM					N-type			DC Power Input Port: MS Connector	
	NJT8319FM					F-type				
NEW	NJT8319NMA					N-type		Enclosed *Note2 Outdoor AC/DC PSU	DC Power Supplied by Outdoor AC/DC PSU	
NEW	NJT8319FMA					F-type				
	NJT8319NK					N-type	FSK Communications M&C *Note1	NA	DC Power Input Port: IF Connector	
	NJT8319FK					F-type				
	NJT8319NMK					N-type			DC Power Input Port: MS Connector	
	NJT8319FMK					F-type				
NEW	NJT8319NMKA					N-type		Enclosed *Note2 Outdoor AC/DC PSU	DC Power Supplied by Outdoor AC/DC PSU	
NEW	NJT8319FMKA					F-type				

*Note1: The detail is shown in section of "FSK COMMUNICATIONS M&C"
*Note2: The detail is shown in section of "OUTDOOR 200W AC/DC PSU"

8W BUC: NJT8318 series

	Model No.	RF Frequency	Local Frequency	IF Frequency	Output Power @ P1dB	IF Connector	M&C Function	AC Power Option	Power Supply	LED Indicator
NEW	NJT8318UN	13.75 to 14.50 GHz (Universal Ku-band)	12.80 GHz	950 to 1,700 MHz	+39 dBm min. (8W)	N-type	NA	NA	DC Power Input Port: IF Connector	Equipped
	NJT8318UF					F-type				
	NJT8318UNM					N-type			DC Power Input Port: MS Connector	
	NJT8318UFM					F-type				
NEW	NJT8318UNA					N-type		Enclosed *Note3 Indoor AC/DC PSU	DC Power Supplied by Indoor AC/DC PSU	
NEW	NJT8318UFA					F-type				
	NJT8318UNK					N-type	FSK Communications M&C *Note1	NA	DC Power Input Port: IF Connector	
	NJT8318UFK					F-type				
	NJT8318UNMK					N-type			DC Power Input Port: MS Connector	
	NJT8318UFMK					F-type				
NEW	NJT8318UNKA					N-type		Enclosed *Note3 Indoor AC/DC PSU	DC Power Supplied by Indoor AC/DC PSU	
NEW	NJT8318UFKA					F-type				
	NJT8318N	14.00 to 14.50 GHz (Standard Ku-band)	13.05 GHz	950 to 1,450 MHz		N-type	NA	NA	DC Power Input Port: IF Connector	
	NJT8318F					F-type				
	NJT8318NM					N-type			DC Power Input Port: MS Connector	
	NJT8318FM					F-type				
NEW	NJT8318NA					N-type		Enclosed *Note3 Indoor AC/DC PSU	DC Power Supplied by Indoor AC/DC PSU	
NEW	NJT8318FA					F-type				
	NJT8318NK					N-type	FSK Communications M&C *Note1	NA	DC Power Input Port: IF Connector	
	NJT8318FK					F-type				
	NJT8318NMK					N-type			DC Power Input Port: MS Connector	
	NJT8318FMK					F-type				
NEW	NJT8318NKA					N-type		Enclosed *Note3 Indoor AC/DC PSU	DC Power Supplied by Indoor AC/DC PSU	
NEW	NJT8318FKA					F-type				

*Note1: The detail is shown in section of "FSK COMMUNICATIONS M&C"
*Note3: The detail is shown in section of "INDOOR 150W AC/DC PSU"

NEW Standard Ku 16W: NJT8319 series
NEW Universal Ku 16W: NJT8319U series
NEW Standard Ku 8W: NJT8318 series
NEW Universal Ku 8W: NJT8318U series

Model Numbering System

N J T 8 3 1 9 U N M K A

- **Product Series Model Number**
- **Output Power @ 1dB G.C.P.:**
  - **19: +42.0 dBm (16W)**
  - **18: +39.0 dBm (8W)**
- **RF Frequency:**
  - **Non Suffix: Standard Ku-band (14.0 to 14.5 GHz)**
  - **U: Universal Ku-band (13.75 to 14.5 GHz)**
- **IF Interface Connector:**
  - **N: N-type (50 ohms), Female Connector**
  - **F: F-type (75 ohms), Female Connector**
- **DC Input Connector:**
  - **Non Suffix: IF Interface Connector**
  - **M: MS Connector**
- **M&C Function Option:**
  - **Non Suffix: N/A**
  - **K: FSK communications M&C Equipped**
- **AC Power Operating Option:**
  - **Non Suffix: N/A**
  - **A: Enclosed AC/DC PSU for BUC** *Note4

*Note4:
In case of 16W BUC: NJT8319 series, the enclosed unit is Outdoor 200W AC/DC PSU.
In case of 8W BUC: NJT8318 series, the enclosed unit is Indoor 150W AC/DC PSU.

16W / 8W BUC : NJT8318 & NJT8319 series

Specifications

Item	Specifications
Output Interface	Waveguide, WR 75 with Groove
Input Interface	Coax. Connector, N-type female (50 ohm) / F-type female (75 ohm)
Output Power @ 1 dB G.C.P.	+42 dBm min. over temperature : (16W) NJT8319 series +39 dBm min. over temperature : (8W) NJT8318 series
Conversion Gain	68 dB nom., 62 dB min. over temperature : (16W) NJT8319 series 65 dB nom., 59 dB min. over temperature : (8W) NJT8318 series
Requirement External Reference Signal	Input Port: IF Connector (combine reference with IF signal) Frequency: 10 MHz (sine-wave) Input Power: -5 to +5 dBm Phase Noise: -125 dBc/Hz @100Hz -135 dBc/Hz @1kHz -140 dBc/Hz @10kHz
Phase Noise (SSB)	-60 dBc/Hz @100Hz -70 dBc/Hz @1kHz -80 dBc/Hz @10kHz -90 dBc/Hz @100kHz -100 dBc/Hz @1MHz
Input V.S.W.R.	2.0 : 1 max. @ IF Frequency
Output V.S.W.R.	2.0 : 1 max. @ RF Frequency
Power Requirement	+36 to +60 VDC at BUC Input Port : (16W) NJT8319 series +18 to +60 VDC at BUC Input Port : (8W) NJT8318 series 90 to 264 VAC at Indoor/Outdoor AC/DC PSU: (AC Power Option) NJT8318NA / 18FA / 18NKA / 18FKA / 18UNA / 18UFA / 18UNKA / 18UFKA, NJT8319NMA / 19FMA / 19NMKA / 19FMKA / 19UNMA / 19UFMA / 19UNMKA / 19UFMKA
Power Consumption	160 W typ., 180 W max. : (16W) NJT8319 series 80 W typ., 90 W max. : (8W) NJT8318 series
Port for Voltage Input	**Same as IF Connector :** NJT8318N / 18F / 18NK / 18FK / 18UN / 18UF / 18UNK / 18UFK, NJT8319N / 19F / 19NK / 19FK / 19UN / 19UF / 19UNK / 19UFK MS Connector : NJT8318NM / 18FM / 18NMK / 18FMK / 18UNM / 18UFM / 18UNMK / 18UFMK, NJT8319NM / 19FM / 19NMK / 19FMK / 19UNM / 19UFM / 19UNMK / 19UFMK MS Connector supplied by Outdoor AC/DC PSU : NJT8319NMA / 19FMA / 19NMKA / 19FMKA / 19UNMA / 19UFMA / 19UNMKA / 19UFMKA IF Connector supplied by Indoor AC/DC PSU through IF Cable : NJT8318NA / 18FA / 18NKA / 18FKA / 18UNA / 18UFA / 18UNKA / 18UFKA
Temperature Range (ambient)	Operating : (Operation Guarantee) -40 to +75 °C (Performance Guarantee) -40 to +55 °C Storage : -40 to +75 °C
Cooling	Forced-air-cooling by FAN
Dimension (without Interface Connector and Screws)	(L) 180 × (W) 130 × (H) 80 mm [(L) 7.09" x (W) 5.12" x (H) 3.15"]
Weight	2.4 kg [5.3 lbs]

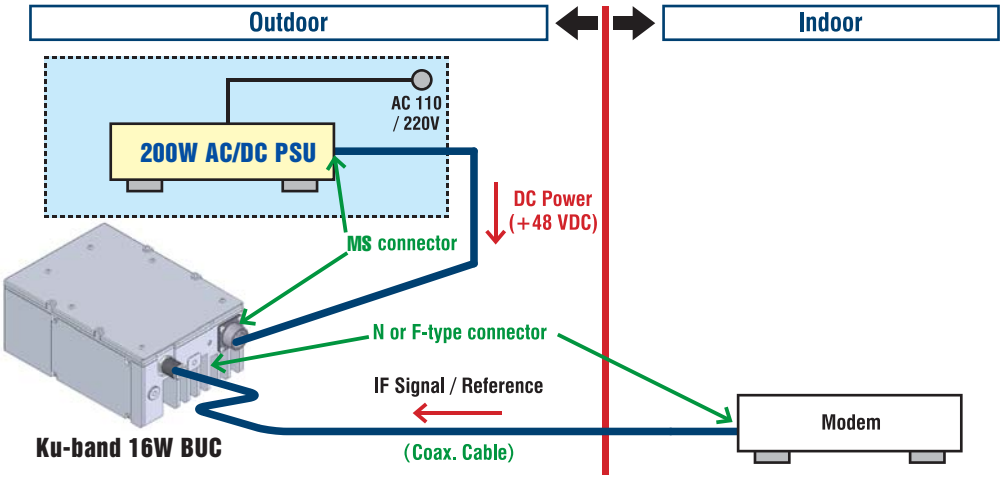
OUTDOOR 200W AC/DC PSU

The features of Outdoor 200W AC/DC Power Supply Unit (PSU) are to provide the stable +48V DC power to operate Ku-band 16W BUC, even if power supply of the equipment is not capable enough to operate the BUC. This unit employs the aluminum housing with corrosion-proof treatment on the surface and has air-sealing structure in order to use perfectly as the outdoor unit.
In addition, the outdoor AC/DC PSU complies with **EC DIRECTIVE**.

CE

NEW **Outdoor 200W AC/DC PSU**

Overview



Specifications

Item	Specifications
Input AC Voltage Range	90 to 264 V
Input AC Power	300 VA max.
Output DC Voltage	+48 V typ.
Output DC Power Capacity	200 W max.
Efficiency / Power Factor	90 % / 0.9
Temperature Range (ambient)	Operating : -40 to +55 °C Storage : -40 to +75 °C
Dimension (without Interface Connector)	(L) 186 x (W) 133 x (H) 60 mm [(L) 7.32" x (W) 5.24" x (H) 2.36"]
Weight	1.6 kg [3.5 lbs]

Applicable Models:
NJT8319 series

8W BUC : NJT5118 & NJT5218 series

Model No.	RF Frequency	Local Frequency	IF Frequency	Output Power @ P1dB	IF Connector	AC Power Option	Power Supply	LED Indicator
NJT5218N	13.75 to 14.50 GHz (Universal Ku-band)	12.80 GHz	950 to 1,700 MHz	+39 dBm min. (8W)	N-type	NA	DC Power Input Port: IF Connector	Equipped
NJT5218F					F-type			
NJT5218NM					N-type		DC Power Input Port: MS Connector	
NJT5218FM					F-type			
NJT5218NA					N-type	Enclosed *Note5 Indoor AC/DC PSU	DC Power Supplied by Indoor AC/DC PSU	
NJT5218FA					F-type			
NJT5118N	14.00 to 14.50 GHz (Standard Ku-band)	13.05 GHz	950 to 1,450 MHz		N-type	NA	DC Power Input Port: IF Connector	
NJT5118F					F-type			
NJT5118NM					N-type		DC Power Input Port: MS Connector	
NJT5118FM					F-type			
NJT5118NA					N-type	Enclosed *Note5 Indoor AC/DC PSU	DC Power Supplied by Indoor AC/DC PSU	
NJT5118FA					F-type			

*Note5: The detail is shown in section of "INDOOR 150W AC/DC PSU"

Standard Ku 8W: NJT5118 series
Universal Ku 8W: NJT5218 series

Specifications

Item	Specifications
Output Interface	Waveguide, WR 75 with Groove
Input Interface	Coax. Connector, N-type female (50 ohm) / F-type female (75 ohm)
Output Power @ 1 dB G.C.P.	+39 dBm min. over temperature
Conversion Gain	59 dB min.
Requirement External Reference Signal	Input Port: IF Connector (combine reference with IF signal) Frequency: 10 MHz (sine-wave) Input Power: -5 to +5 dBm Phase Noise: -125 dBc/Hz @100Hz -135 dBc/Hz @1kHz -140 dBc/Hz @10kHz
Phase Noise (SSB)	-60 dBc/Hz @100Hz -70 dBc/Hz @1kHz -80 dBc/Hz @10kHz -90 dBc/Hz @100kHz -100 dBc/Hz @1MHz
Input V.S.W.R.	2.0:1 max. @ IF Frequency
Output V.S.W.R.	2.0:1 max. @ RF Frequency
Power Requirement	+18 to +60 VDC at BUC Input Port 90 to 264 VAC at Indoor AC/DC Box: (AC Power Option) NJT5118NA / 18FA, NJT5218NA / 18FA
Power Consumption	79 W typ., 90 W max. : (Standard Ku-band) NJT5118 series 79 W typ., 93 W max. : (Universal Ku-band) NJT5218 series
Port for Voltage Input	Same as IF Connector : NJT5118N / 18F, NJT5218N / 18F MS Connector : NJT5118NM / 18FM, NJT5218NM / 18FM IF Connector supplied by Indoor AC/DC PSU through IF Cable : NJT5118NA / 18FA, NJT5218NA / 18FA
Temperature Range (ambient)	Operating : -40 to +55 °C Storage : -40 to +75 °C
Dimension (without Interface Connector)	(L) 219.5 x (W) 175 x (H) 99 mm [(L) 8.64" x (W) 6.89" x (H) 3.90"]
Weight	3.2 kg [7.0 lbs]

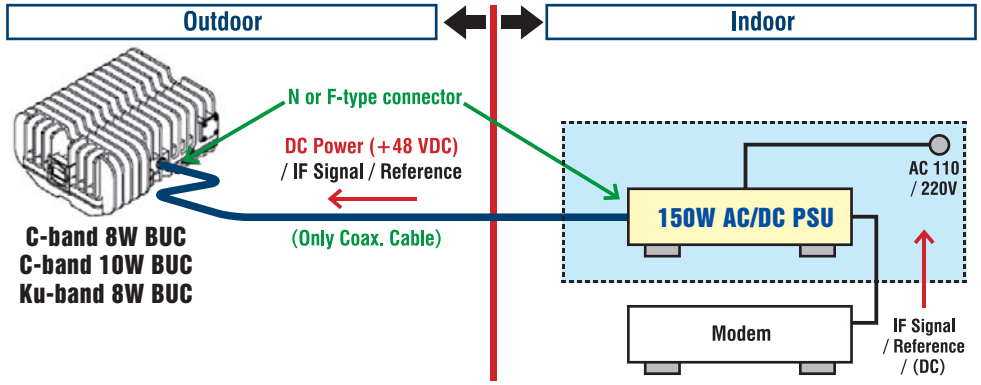
INDOOR 150W AC/DC PSU

The features of Indoor 150W AC/DC Power Supply Unit (PSU) are to provide the stable +48V DC power to operate both C-band 8W/10W and Ku-band 8W BUCs, even if inner power supply of the modem is not capable enough to operate these BUCs.
The indoor AC/DC 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 indoor AC/DC PSU complies with **UL CERTIFICATION** and **EC DIRECTIVE** and this housing can fit the 1U rack mount with optional kit.

Indoor 150W AC/DC PSU

Applicable Models:
NJT5118, NJT5218, NJT5760, NJT5761, NJT5762, NJT5763, and NJT8318 series

Overview



6W / 4W BUC : NJT5127, NJT5207 & NJT5307 series

Standard Ku 6W: NJT5127 series

Standard Ku 4W: NJT5307 series
Universal Ku 4W: NJT5207 series

6W BUC: NJT5127 series

Model No.	RF Frequency	Local Frequency	IF Frequency	Output Power @ P1dB	IF Connector	LED Indicator
NJT5127L	14.00 to 14.50 GHz (Standard Ku-band)	13.05 GHz	950 to 1,450 MHz	+37.8 dBm min. (6W)	N-type	Equipped
NJT5127FL					F-type	

4W BUC: NJT5207 & NJT5307 series

Model No.	RF Frequency	Local Frequency	IF Frequency	Output Power @ P1dB	IF Connector	LED Indicator
NJT5207N	13.75 to 14.50 GHz (Universal Ku-band)	12.80 GHz	950 to 1,700 MHz	+36 dBm min. (4W)	N-type	Equipped
NJT5207F					F-type	
NJT5307N	14.00 to 14.50 GHz (Standard Ku-band)	13.05 GHz	950 to 1,450 MHz		N-type	
NJT5307F					F-type	

Specifications

Item	Specifications
Output Interface	Waveguide, WR 75 with Groove
Input Interface	Coax. Connector, N-type female (50 ohm) / F-type female (75 ohm)
Output Power @ 1 dB G.C.P.	+37.8 dBm min. over temperature : (6W) NJT5127L / 27FL +36.0 dBm min. over temperature : (4W) NJT5207N / 07F, NJT5307N / 07F
Conversion Gain	56 dB min
Requirement External Reference Signal	Input Port: IF Connector (combine reference with IF signal) Frequency: 10 MHz (sine-wave) Input Power: -5 to +5 dBm Phase Noise: -125 dBc/Hz @100Hz -135 dBc/Hz @1kHz -140 dBc/Hz @10kHz
Phase Noise (SSB)	-60 dBc/Hz @100Hz -70 dBc/Hz @1kHz -80 dBc/Hz @10kHz -90 dBc/Hz @100kHz -100 dBc/Hz @1MHz
Input V.S.W.R.	2.0 : 1 max. @ IF Frequency
Output V.S.W.R.	2.0 : 1 max. @ RF Frequency
Power Requirement	+15 to +24 VDC : (6W) NJT5127L / 27FL +15 to +30 VDC : (4W) NJT5207N / 07F, NJT5307N / 07F
Power Consumption	63 W max. : (6W) NJT5127L / 27FL 37 W max. : (4W) NJT5207N / 07F, NJT5307N / 07F
Temperature Range (ambient)	Operating : -40 to +55 °C Storage : -40 to +75 °C
Dimension (without Interface Connector)	(L) 186.4 x (W) 167 x (H) 83 mm [(L) 7.33" x (W) 6.57" x (H) 3.27"] : (6W) NJT5127L / 27FL (L) 175.9 x (W) 143 x (H) 56.5 mm [(L) 6.93" x (W) 5.63' x (H) 2.22"] : (4W) NJT5207N / 07F, NJT5307N / 07F
Weight	2.4 kg [5.3 lbs] : (6W) NJT5127L / 27FL 1.7 kg [3.7 lbs] : (4W) NJT5207N / 07F, NJT5307N / 07F

3W / 1.5W BUC : NJT8301 & NJT8302 series

Standard Ku 3W: NJT8302 series
Universal Ku 3W: NJT8302U series
Standard Ku 1.5W: NJT8301 series
Universal Ku 1.5W: NJT8301U series

3W BUC: NJT8302 series

Model No.	RF Frequency	Local Frequency	IF Frequency	Output Power @ P1dB	IF Connector	LED Indicator
NJT8302UN	13.75 to 14.50 GHz (Universal Ku-band)	12.80 GHz	950 to 1,700 MHz	+34 dBm min. (3W)	N-type	NA
NJT8302UF					F-type	
NJT8302N	14.00 to 14.50 GHz (Standard Ku-band)	13.05 GHz	950 to 1,450 MHz		N-type	
NJT8302F					F-type	

1.5W BUC: NJT8301 series

Model No.	RF Frequency	Local Frequency	IF Frequency	Output Power @ P1dB	IF Connector	LED Indicator
NJT8301UN	13.75 to 14.50 GHz (Universal Ku-band)	12.80 GHz	950 to 1,700 MHz	+31 dBm min. (1.5W)	N-type	NA
NJT8301UF					F-type	
NJT8301N	14.00 to 14.50 GHz (Standard Ku-band)	13.05 GHz	950 to 1,450 MHz		N-type	
NJT8301F					F-type	

Specifications

Item	Specifications
Output Interface	Waveguide, WR 75 with Groove
Input Interface	Coax. Connector, N-type female (50 ohm) / F-type female (75 ohm)
Output Power @ 1 dB G.C.P.	+34 dBm min. over temperature : (3W) NJT8302N / 02F / 02UN / 02UF +31 dBm min. over temperature : (1.5W) NJT8301N / 01F / 01UN / 01UF
Conversion Gain	58 dB typ., 51 dB min. : (3W) NJT8302N / 02F / 02UN / 02UF 55 dB typ., 48 dB min. : (1.5W) NJT8301N / 01F / 01UN / 01UF
Requirement External Reference Signal	Input Port: IF Connector (combine reference with IF signal) Frequency: 10 MHz (sine-wave) Input Power: -5 to +5 dBm Phase Noise: -125 dBc/Hz @100Hz -135 dBc/Hz @1kHz -140 dBc/Hz @10kHz
Phase Noise (SSB)	-60 dBc/Hz @100Hz -70 dBc/Hz @1kHz -80 dBc/Hz @10kHz -90 dBc/Hz @100kHz -100 dBc/Hz @1MHz
Input V.S.W.R.	2.0 : 1 max. @ IF Frequency
Output V.S.W.R.	2.0 : 1 max. @ RF Frequency
Power Requirement	+12 to +30 VDC
Power Consumption	18 W typ., 23 W max. : (3W) NJT8302N / 02F / 02UN / 02UF 12 W typ., 14 W max. : (1.5W) NJT8301N / 01F / 01UN / 01UF
Temperature Range (ambient)	Operating : -40 to +55 °C Storage : -40 to +75 °C
Dimension (without Interface Connector)	(L) 91.55 x (W) 68 x (H) 42.5 mm [(L) 3.6" x (W) 2.68" x (H) 1.67"]
Weight	350 g [0.77 lbs]

Switchable 2LO PLL LNB [Internal & External Reference Type] : NJR2841, NJR2842 & NJR2843 series

Universal Ku 2LO PLL (Int. & EXt.):
NJR2841 series
NJR2842 series
NJR2843 series

Internal Reference Type

Model No.	RF Frequency	Local Frequency	IF Frequency	Local Frequency Selected by *Note6	Local Stability [-40 to +60 °C]	IF Connector
NJR2841L	Low Band: 10.70 to 11.70 GHz High Band: 11.70 to 12.75 GHz (Universal Ku-band)	Low Band: 9.75 GHz High Band: 10.60 GHz	Low Band: 950 to 1,950 GHz High Band: 1,100 to 2,150 GHz	Mechanical Switch	+/- 50 ppm	F-type
NJR2841LN					(+/- 500 kHz typ.)	N-type
NJR2841H					+/- 10 ppm	F-type
NJR2841HN					(+/- 100 kHz typ.)	N-type
NJR2841S					+/- 3 ppm	F-type
NJR2841SN					(+/- 30 kHz typ.)	N-type
NJR2842L				22kHz Tone	+/- 50 ppm	F-type
NJR2842LN					(+/- 500 kHz typ.)	N-type
NJR2842H					+/- 10 ppm	F-type
NJR2842HN					(+/- 100 kHz typ.)	N-type
NJR2842S					+/- 3 ppm	F-type
NJR2842SN					(+/- 30 kHz typ.)	N-type
NJR2843L				Input Voltage	+/- 50 ppm	F-type
NJR2843LN					(+/- 500 kHz typ.)	N-type
NJR2843H					+/- 10 ppm	F-type
NJR2843HN					(+/- 100 kHz typ.)	N-type
NJR2843S					+/- 3 ppm	F-type
NJR2843SN					(+/- 30 kHz typ.)	N-type

External Reference Type

Model No.	RF Frequency	Local Frequency	IF Frequency	Local Frequency Selected by *Note6	Local Stability [-40 to +60 °C]	IF Connector
NJR2841E	Low Band: 10.70 to 11.70 GHz High Band: 11.70 to 12.75 GHz (Universal Ku-band)	Low Band: 9.75 GHz High Band: 10.60 GHz	Low Band: 950 to 1,950 GHz High Band: 1,100 to 2,150 GHz	Mechanical Switch	Depends on External Reference	F-type
NJR2841EN						N-type
NJR2842E				22kHz Tone		F-type
NJR2842EN						N-type
NJR2843E				Input Voltage		F-type
NJR2843EN						N-type

*Note6: The detail is shown in section of "LOCAL FREQUENCY SELECTION"

Specifications

Item	Specifications
Input Interface	Waveguide, WR 75 with Groove
Output Interface	Coax. Connector, N-type female (50 ohm) / F-type female (75 ohm)
Noise Figure (at +25 °C)	0.8 dB
Conversion Gain (at +25 °C)	62 dB max., 48 dB min.
Requirement External Reference Signal (Only External Reference Type is specified)	Input Port: IF Connector (combine reference with IF signal) Frequency: 10 MHz (sine-wave) Input Power: -10 to 0 dBm Phase Noise: -135 dBc/Hz @100Hz -143 dBc/Hz @1kHz -145 dBc/Hz @10kHz
Phase Noise (SSB)	(Internal Reference Type) : -70 dBc/Hz @1kHz -75 dBc/Hz @10kHz -85 dBc/Hz @100kHz (External Reference Type) : -70 dBc/Hz @1kHz -75 dBc/Hz @10kHz -85 dBc/Hz @100kHz * Depends on Phase Noise of External Reference
Power Requirement	+10 to +24 VDC
Operating Current	170 mA max. : (Internal Reference Type) 200 mA max. : (External Reference Type)
Temperature Range (ambient)	Operating : -40 to +60 °C Storage : -40 to +80 °C
Dimension (without Interface Connector & Mechanical Switch)	(L) 83.2 x (W) 42 x (H) 42 mm [(L) 3.28" x (W) 1.65" x (H) 1.65"] : NJR2841 series (L) 83.2 x (W) 40 x (H) 40 mm [(L) 3.28" x (W) 1.57" x (H) 1.57"] : NJR2842 / NJR2843 series
Weight	210 g [0.46 lbs] : (F-type IF Connector) / 240 g [0.53 lbs] : (N-type IF Connector)

LOCAL FREQUENCY SELECTION

In case of the products of Switchable 2LO PLL LNB, the following three methods to switch local frequency can be chosen by the customer

- Mechanical Switch
- 22kHz Tone On/Off
- Input Voltage High/Low

Specification of Local Switch

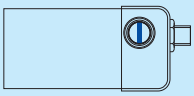
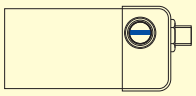
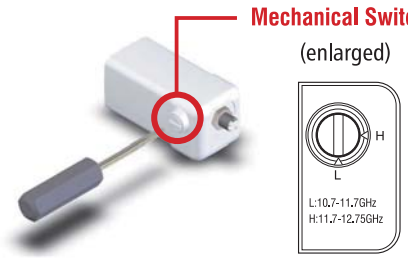
	RF Frequency	
	Low Band (10.7 to 11.7 GHz)	High Band (11.7 to 12.75 GHz)
Mechanical Switch	Initial Set 	
22kHz Tone On/Off	Tone Level: 0 to 0.2 Vp-p	Tone Level: 0.4 to 0.8 Vp-p
Input Voltage High/Low	Voltage: +10 to +14 VDC	Voltage: +15.5 to +24 VDC

Image of Mechanical Switch



Applicable Models: NJR2841, NJR2842 and NJR2843 series

PLL LNB [Internal & External Reference Type] : NJR2835 & NJR2935E series

Ku PLL (Int): NJR2835 series
Ku PLL (Ext): NJR2935E series

Internal Reference Type: NJR2835 series

Model No.	RF Frequency	Local Frequency	IF Frequency	Local Stability [-40 to +60 °C]	IF Connector
NJR2837H	10.95 to 11.70 GHz	10.00 GHz	950 to 1,700 MHz	+/- 10 ppm	F-type
NJR2837HN				(+/- 100 kHz typ.)	N-type
NJR2837S				+/- 3 ppm	F-type
NJR2837SN				(+/- 30 kHz typ.)	N-type
NJR2837U				+/- 1 ppm	F-type
NJR2837UN				(+/- 10 kHz typ.)	N-type
NJR2839H	11.20 to 11.70 GHz	10.25 GHz	950 to 1,450 MHz	+/- 10 ppm	F-type
NJR2839HN				(+/- 100 kHz typ.)	N-type
NJR2839S				+/- 3 ppm	F-type
NJR2839SN				(+/- 30 kHz typ.)	N-type
NJR2839U				+/- 1 ppm	F-type
NJR2839UN				(+/- 10 kHz typ.)	N-type
NJR2835H	11.70 to 12.20 GHz	10.75 GHz	950 to 1,450 MHz	+/- 10 ppm	F-type
NJR2835HN				(+/- 100 kHz typ.)	N-type
NJR2835S				+/- 3 ppm	F-type
NJR2835SN				(+/- 30 kHz typ.)	N-type
NJR2835U				+/- 1 ppm	F-type
NJR2835UN				(+/- 10 kHz typ.)	N-type
NJR2836H	12.25 to 12.75 GHz	11.30 GHz	950 to 1,450 MHz	+/- 10 ppm	F-type
NJR2836HN				(+/- 100 kHz typ.)	N-type
NJR2836S				+/- 3 ppm	F-type
NJR2836SN				(+/- 30 kHz typ.)	N-type
NJR2836U				+/- 1 ppm	F-type
NJR2836UN				(+/- 10 kHz typ.)	N-type

External Reference Type: NJR2935E series

Model No.	RF Frequency	Local Frequency	IF Frequency	Local Stability [-40 to +60 °C]	IF Connector
NJR2937E	10.95 to 11.70 GHz	10.00 GHz	950 to 1,700 MHz	Depends on External Reference	F-type
NJR2937EN					N-type
NJR2939E	11.20 to 11.70 GHz	10.25 GHz	950 to 1,450 MHz		F-type
NJR2939EN					N-type
NJR2935E	11.70 to 12.20 GHz	10.75 GHz	950 to 1,450 MHz		F-type
NJR2935EN					N-type
NJR2934E	12.20 to 12.75 GHz	11.25 GHz	950 to 1,500 MHz		F-type
NJR2934EN					N-type
NJR2936E	12.25 to 12.75 GHz	11.30 GHz	950 to 1,450 MHz		F-type
NJR2936EN					N-type

Specifications

Item	Specifications
Input Interface	Waveguide, WR 75 with Groove
Output Interface	Coax. Connector, N-type female (50 ohm) / F-type female (75 ohm)
Noise Figure (at +25 °C)	0.8 dB
Conversion Gain (at +25 °C)	60 dB typ.
Requirement External Reference Signal (Only NJR2935E series are specified)	Input Port: IF Connector (combine reference with IF signal) Frequency: 10 MHz (sine-wave) Input Power: -10 to 0 dBm Phase Noise: -135 dBc/Hz @100Hz -143 dBc/Hz @1kHz -145 dBc/Hz @10kHz
Phase Noise (SSB)	(Internal Reference Type) NJR2835 series : -70 dBc/Hz @100Hz -80 dBc/Hz @1kHz (External Reference Type) NJR2935E series : -75 dBc/Hz @100Hz -80 dBc/Hz @1kHz -85 dBc/Hz @10kHz * Depends on Phase Noise of External Reference
Power Requirement	+12 to +24 VDC
Operating Current	200 mA max.
Temperature Range (ambient)	Operating : -40 to +60 °C Storage : -40 to +80 °C
Dimension (without Interface Connector)	(L)100.5 x (W) 40 x (H) 40 mm [(L) 3.96" x (W) 1.57" x (H) 1.57"]
Weight	260 g [0.57 lbs]

DRO LNB : NJR2744 series

Ku DRO: NJR2744 series

Model No.	RF Frequency	Local Frequency	IF Frequency	Local Stability [-40 to +60 °C]	IF Connector
NJR2784H	10.95 to 11.70 GHz	10.00 GHz	950 to 1,700 MHz	+/- 900 kHz	F-type
NJR2744H	11.70 to 12.20 GHz	10.75 GHz	950 to 1,450 MHz		F-type
NJR2754H	12.25 to 12.75 GHz	11.30 GHz	950 to 1,450 MHz		F-type

Specifications

Item	Specifications
Input Interface	Waveguide, WR 75 with Groove
Output Interface	Coax. Connector, F-type female (75 ohm)
Noise Figure (at +25 °C)	0.8 dB
Conversion Gain (at +25 °C)	55 dB
Phase Noise (SSB)	-65 dBc/Hz @1kHz -90 dBc/Hz @10kHz -110 dBc/Hz @100kHz
Power Requirement	+12 to +24 VDC
Operating Current	110 mA max.
Temperature Range (ambient)	Operating : -40 to +60 °C Storage : -40 to +80 °C
Dimension (without Interface Connector)	(L) 82.2 x (W) 40 x (H) 40 mm [(L) 3.24" x (W) 1.57" x (H) 1.57"]
Weight	210 g [0.46 lbs]

DECLARATION OF EC DIRECTIVE

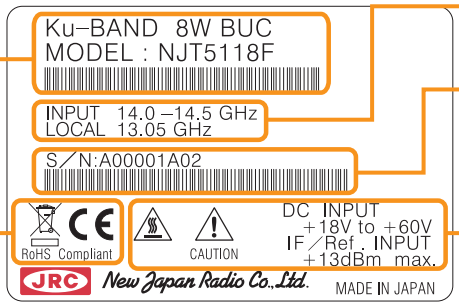
New Japan Radio Co., Ltd. declare that all of the BUCs and LNBs are in compliance with the regulations which standard are required for EMC directive 2004/108/EC and Reduction of Hazardous Substance (RoHS) directive 2011/65/EU.

PRODUCT LABEL

The common product label with following format is employed for both of all LNBs and BUCs manufactured by New Japan Radio Co., Ltd.

BUC Label Format:

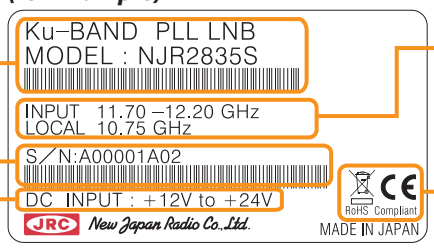
(for Example)



- Product Name
- Model Number
- Model Number Bar-code [CODE 39]
- WEEE Logo
- RoHS Compliant
- CE Marking
- RF Frequency
- Local Frequency
- Serial Number
- Serial Number Bar-code [CODE 39]
- DANGER:
  - * High Temperature
- CAUTION:
  - * DC Input Voltage Range
  - * Maximum IF/Ref. Input Level

LNB Label Format:

(for Example)



- Product Name
- Model Number
- Model Number Bar-code [CODE 39]
- Serial Number
- Serial Number Bar-code [CODE 39]
- DC Input Voltage Range
- RF Frequency
- Local Frequency & Stability
- WEEE Logo
- RoHS Compliant
- CE Marking

Applicable Models: All models of LNB and BUC

MUTE FUNCTION

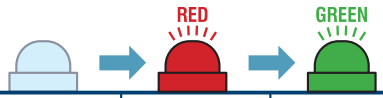
Mute function which shut off the HPA function due to local unlocked or no 10MHz reference signal is equipped for all BUCs.

Applicable Models: All models of BUC

LED INDICATOR

BUC products integrated with LED Indicator show normal or abnormal conditions.

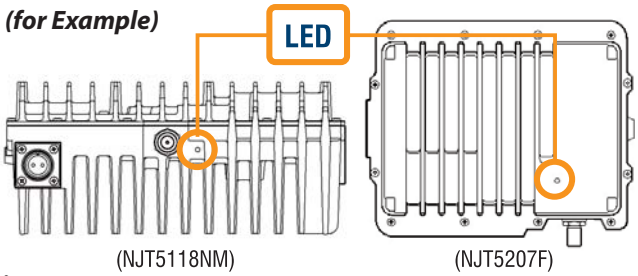
Status Chart



DC Power	OFF	ON	ON
10 MHz Reference Signal	OFF	OFF or LO unlocked	ON "Normal"

LED Location

(for Example)



(NJT5118NM) (NJT5207F)

Applicable Models: All models of BUC except NJT8301/02 series

GENERAL PRECAUTIONS

Use the following safety instructions and guidelines and to help protect the products from potential damage and to help ensure your own personal safety.

BUCs Instructions:

CAUTION Sealing Film

DO NOT remove the film on the waveguide when the unit has it. If the film is removed, it may lose the performance of waterproof.

CAUTION Cover

DO NOT open the cover.
Although the unit is completely waterproof, if the cover is opened, the warranty will become invalid.

CAUTION Product Label

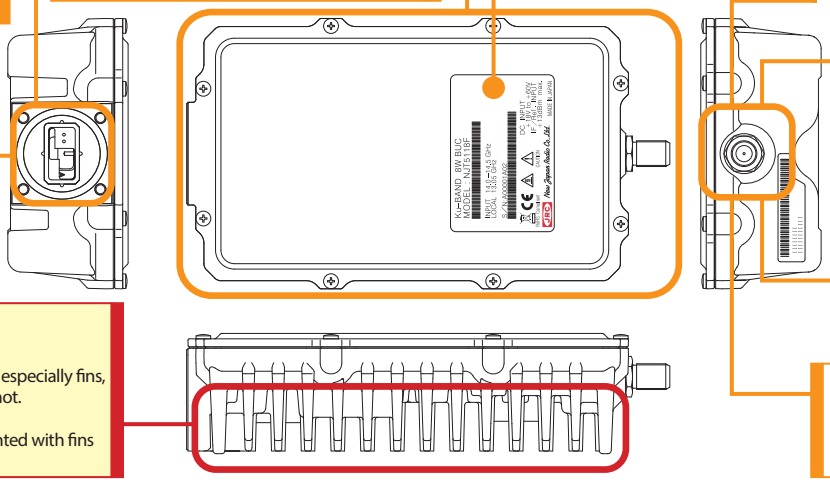
DO NOT remove the label. This is for our QA traceability

CAUTION Connector

Connect the IF cable with 0.68 to 1.13 N•m torques.

CAUTION WG Filter

DO NOT touch the filter in the waveguide.
The filter is used for Rx-band rejection. If the filter is damaged or dirty, it may not reject a sufficient quantity of false Rx-bands and could damage BUC internals.



CAUTION Input Voltage

Apply DC voltage within the range indicated on product label. BUCs are operated at the input voltage of +12 to +30VDC, +15 to +24VDC, +15 to +30VDC, +18 to +60VDC, or +36 to +60VDC.

CAUTION Input IF Level

DO NOT supply IF signal over the maximum level indicated on product label of +10 or +13 dBm.

WARNING Fins

Warning: DO NOT touch the body, especially fins, when the product is running. It is hot.
DO NOT block the fins.
Normally the BUC should be mounted with fins face up.

CAUTION 10MHz Reference

Supply 10MHz reference signal within the range of -5 to +5 dBm.

LNBs Instructions:

CAUTION Sealing Film

DO NOT remove the film on the waveguide when the unit has it. If the film is removed, it may lose the performance of waterproof.

CAUTION Cover

DO NOT open the cover.
Although the unit is completely waterproof, if the cover is opened, the warranty will become invalid.

CAUTION Product Label

DO NOT remove the label. This is for our QA traceability

CAUTION Connector

Connect the IF cable with 0.68 to 1.13 N•m torques.

CAUTION Input RF Level

DO NOT supply RF signal over the absolute maximum rating of -10 dBm @ CW or +10 dBm @ Pulse.

CAUTION Input Voltage

Apply DC voltage within the range indicated on product label.
LNBs are operated at the input voltage of +10 to +24VDC, +12 to +24VDC, or +12 to +28VDC.

QUALITY & ENVIRONMENTAL MANAGEMENT

The New Japan Radio group strives to contribute to quality and the environment by maintaining and improving two management systems which are positioned as part of quality management and environmental management.
In order to facilitate quality management and environmental management, we declare the Quality and Environmental Vision as the superior guidelines for the New Japan Radio group. Moreover, basic quality/environmental policies are also set at each company where activities focusing on the improvement and management of quality and the environment are being carried out.

QUALITY POLICY

The New Japan Radio Group provides products and services meeting quality expectations of society and customers by ingenious technologies and originality of all the members.

NEW JAPAN RADIO COMPANY QUALITY & ENVIRONMENTAL POLICY

ENVIRONMENTAL POLICY

The New Japan Radio Group recognizes that protecting the global environment is a significant universal subject to ensure sustainable growth, since we work together for the sake of environmental conservation in all fields of manufacturing, sales, and service of semiconductor and microwave products.

QUALITY & ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATION

ISO 9001 : 2000

Registration Date: November 25,1994
Last Renewal Date: January 10, 2009
Certification Number: JQA-0686
Certification Organization: JQA (*)

(*) JQA: Japan Quality Assurance Organization

ISO 14001 : 2004

Registration Date: December 17, 2004
Last Renewal Date: January 13, 2009
Certification Number: JQA-EM4431
Certification Organization JQA

CAUTION

1. New Japan Radio Co., Ltd. (NJR) strives to produce reliable and high quality microwave components. NJR's microwave components are intended for specific applications and require proper maintenance and handling. To enhance the performance and service of NJR's microwave components, the devices, machinery or equipment into which they are integrated should undergo preventative maintenance and inspection at regularly scheduled intervals. Failure to properly maintain equipment and machinery incorporating these products can result in catastrophic system failures.
2. To ensure the highest levels of reliability, NJR products must always be properly handled. The introduction of external contaminants (e.g. dust, oil or cosmetics) can result in failures of microwave components.
3. NJR offers a variety of microwave components intended for particular applications. It is important that you select the proper component for your intended application. You may contact NJR's sales office or sales representatives, if you are uncertain about the products listed in the catalog and the specification sheets.
4. Special care is required in designing devices, machinery or equipment, which demand high levels of reliability. This is particularly important when designing critical components or systems whose foreseeable failure can result in situations that could adversely affect health or safety. In designing such critical devices, equipment or machinery, careful consideration should be given to, amongst other things, their safety design, fail-safe design, back-up and redundancy systems, and diffusion design.
5. The products listed in the catalog and specification sheets may not be appropriate for use in certain equipment where reliability is critical or where the products may be subjected to extreme conditions. You should consult our sales office or sales representatives before using the products in any of the following types of equipment.
   * Aerospace Equipment
   * Equipment Used in the Deep Sea
   * Power Generator Control Equipment (nuclear, steam, hydraulic)
   * Life Maintenance Medical Equipment
   * Fire Alarm/Intruder Detector
   * Vehicle Control Equipment (automobile, airplane, railroad, ship, etc.)
   * Various Safety Equipment
6. NJR's products have been designed and tested to function within controlled environmental conditions. Do not use products under conditions that deviate from methods or applications specified in the catalog and specification sheets. Failure to employ NJR's products in the proper applications can lead to deterioration, destruction or failure of the products. NJR shall not be responsible for any bodily injury, fires or accidents, property damage or any consequential damages resulting from the misuse or misapplication of its products. PRODUCTS ARE SOLD WITHOUT WARRANTY OF ANY OF KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.
7. The product specifications and descriptions listed in the catalog and brochure are subject to change at any time, without notice.

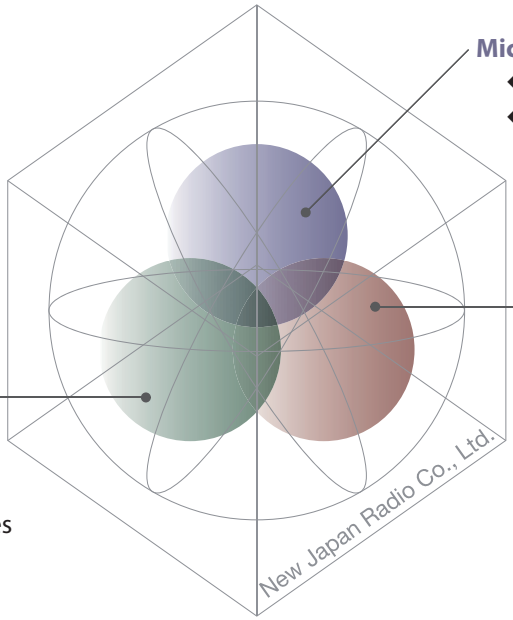
NEW JAPAN RADIO COMPANY PROFILE

New Japan Radio Co., Ltd. (NJR) was founded in 1959, as the progeny of Japan Radio Co., Ltd., and has emerged as pioneer in microwave and semiconductor technologies in Japan.
Since then, NJR has devoted their own technologies to develop the products.
Now, under the concept of "***μ & μ***" development which means the convergence of "Microelectronics" and "Microwave" to expand their technology, NJR sets to meet demands of the ubiquitous age.
NJR has three business segments:

- Semiconductor devicWes
- Microwave application products
- Microwave tubes and radar components

Creating a future through the convergence of "Microelectronics" and "Microwave" (***μ & μ***)

Microwave & Microelectronics



Microwave Tubes and Radar Components
- Electron tubes and peripheral devices
- Electron guns and cathodes

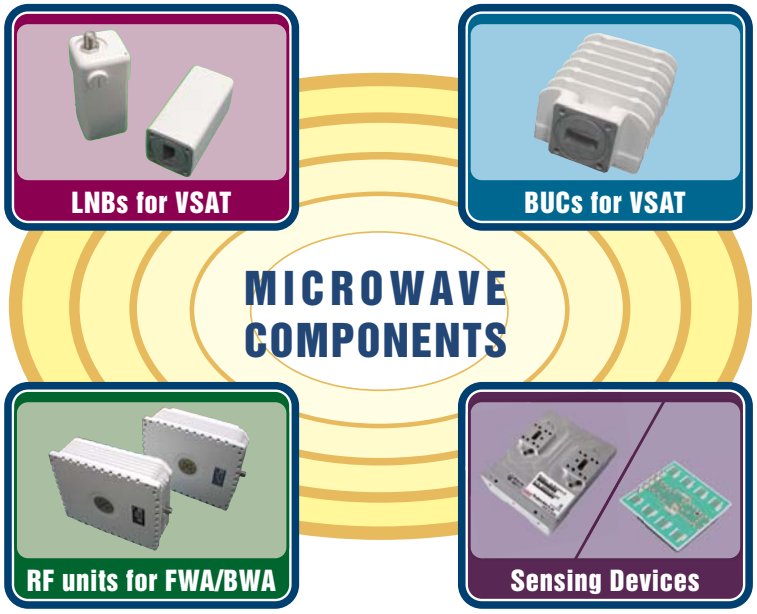
Microwave Application Products
- Components for Satellite Communications
- Sensor components

Semiconductor Devices
- MOS ICs
- Bipolar ICs
- Microwave & Optoelectronic Devices

Microwave Components (MC) Division is one of divisions engaged in NJR which has kept supplying reliable components, created through the concept of "***μ & μ***", in microwave fields.
Components which MC Division has been supplying are as shown below.

- LNBs for VSAT
- BUCs and Transceiver for VSAT
- RF units for FWA/BWA
- Sensing devices for security, safety, saving energy, and etc (Doppler module and FMCW radar modules)

MC Division will keep complying with any requirements to be brought from the market.



JRC New Japan Radio Co.,Ltd.

Microwave Components Division

1-1, Fukuoka 2-chome, Fujimino-city
SAITAMA, 356-8510 JAPAN
Phone: +81-49-278-1270
Fax: +81-49-278-1234
email: mcsales@njr.co.jp
http://mc.njr.co.jp

Evolution X5 Series Satellite Router

High-speed, High-performance IP Broadband Connectivity

Designed specifically to support business-critical applications, the Evolution X5 is a next-generation satellite router ideally suited for broadband applications such as enterprise connectivity, cellular backhaul, maritime, secure banking, and other mobile applications.

The Evolution X5 features iDirect's highly efficient implementation of the DVB-S2 standard with Adaptive Coding and Modulation (ACM) on the outbound carrier. Along with deterministic MF-TDMA technology and 2D 16-State FEC on the inbound, the Evolution X5 maximizes the efficiency of satellite capacity to enable new opportunities.

Greater Flexibility

The Evolution X5 offers dual-mode operation between iNFINITI TDM or DVB-S2/ACM on the outbound, providing more flexibility for network design and bandwidth optimization. Whether initially deploying a DVB-S2 network or starting off with an iNFINITI network that is capable of being upgraded to an Evolution DVB-S2 network in the future, the Evolution X5 adapts to a customer's changing requirements.

With over-the-air software licensing features that can add data encryption and spread spectrum capabilities, operators are allowed even more flexibility to customize the Evolution X5 to meet their technical and budget requirements.

Increased Efficiency with Superior Quality of Service

iDirect's sophisticated Group QoS advanced traffic prioritization dynamically balances the demands of different applications according to their needs and bandwidth availability, across multiple sites and user sub-networks. When combining the Group QoS feature set with DVB-S2/ACM, service providers can increase DVB-S2 efficiency gains by combining multiple small networks into a single, larger carrier. Additional configurations, service pricing models, and reporting capabilities allow service providers to translate ACM benefits into new revenue-generating service offerings.

Greater Mobility

Leading spread spectrum technology enables use of ultra small and phased-array antennas on aircrafts, ships, and land based vehicles. The Evolution X5 is fully enabled for iDirect's Global Network Management System (GNMS) and Automatic Beam Switching (ABS) technology allowing for a seamless network with truly global coverage.

The Evolution X5's high-stability oscillator allows for operating in environments with steep temperature changes, making it ideal for outdoor or mobile applications like cellular backhaul and maritime.

Simple, Intuitive Network Management

The Evolution X5 Series is easily configured, monitored, and controlled through the iVantage™ network management system, a complete suite of software-based tools for configuring, monitoring and controlling networks from one location.

Features

- Supports topologies: Star and SCPC-return* upstream channels
- Two modes of operation: iNFINITI and DVB-S2/ACM outbound
- Next-generation, extemely efficient 2D 16-State inbound coding
- Advanced QoS and traffic prioritization
- Optional Spread Spectrum waveform technology supports very small antennas
- Optional AES 256-bit encryption

Evolution X5
Satellite Router

Configuration

Network Topology	Star (DVB-S2/ACM or iNFINITI TDM Outbound; MF-TDMA or SCPC-Return* Inbound)	
	Downstream DVB-S2 (iNFINITI TDM)	*Upstream* MF-TDMA
Modulation	QPSK, 8PSK, 16APSK (BPSK, QPSK, 8PSK)	BPSK, QPSK, 8PSK
FEC	LDPC, 1/4 – 8/9 (Turbo, 0.495 – 0.879)	Turbo, 0.431 – 0.793 2D 16-State**, 1/2 - 6/7
Max. Symbol Rate	45 Msps (15 Msps)	7.5 Msps
Max. Info Rate	150 Mbps[1] (21 Mbps[2])	11.8 Mbps[3]
Max. Carrier IP Data Rate	138 Mbps[1] (20 Mbps[2])	10.8 Mbps[3]
Max. Remote IP Data Rate	30 Mbps[1] (17Mbps[2])	7.5 Mbps[3]
	Notes: [1]16APSK 8/9 FEC [2]QPSK, .879 FEC	*[3]QPSK .793 FEC*
	Maximum downstream and upstream data rates cannot be achieved simultaneously Maximum rates are achieved under optimal conditions and with unlimited NMS	
Spread Spectrum Factor (Max Rate Mcps)		Up to 7.5 Mcps Spreading Factors: 1,2,4,8,16
Eb/No	For full list please refer to the latest iDirect Link Budget Analysis Guide	

Interfaces

SatCom Interfaces	TX Out: Type-F, 950–1700 MHz, +7dBm/-35dBm RX In: Type-F, 950–2150 MHz, -5dBm (max) composite/ -125+10*log(Fsym)dBm (min) single carrier Software controllable 10 MHz reference on TX Out and TX In ports
BUC IFL Interface	+24V, max. 70W, (120W PSU) (please refer to X5 Installation Manual for full list of supported BUCs)
LNB IFL Interface	+19V/+14V (Nominal), 500mA max 22KHz DiSEqC tone
Data Interfaces	LAN: Single 10/100, 802.1q VLAN RS-232: RJ45 (Console connection)
Protocols Supported	TCP, UDP, ACL, ICMP, IGMP, RIP Ver2, Static Routes, NAT, DHCP, DHCP Helper, Local DNS Caching, OpenAMIP, cRTP and GRE
Security	AES Link Encryption (256-bit)***
Traffic Engineering	Group QoS, QoS (Priority Queuing and CBWFQ), Strict Priority Queuing, Application Based QoS, Minimum CIR, CIR (Static and Dynamic), Rate Limiting
Other Features	Built-in Automatic Uplink Power, Frequency and Timing Control, Authentication, Spread Spectrum***

Mechanical/Environmental

Size	W 11.5 in (29.2 cm) x D 9.9 in (25.1 cm) x H 2 in (5.1cm)
Weight	4.4 lbs (1.99 Kg)
Operating Temperature	0˚ to +50˚C (32˚ to +122˚F) at Sea Level with temperature gradient of 1˚C per 1 min 0˚ to +45˚C (32˚ to +113˚F) at 10,000 Feet with temperature gradient of 1˚C per 1 min For ODU power consumption <70W (please refer to X5 Installation Manual for details)
Humidity Max	90% non-condensing humidity
Input Voltage	100–240 VAC Universal Input, 2A, 50–60 Hz
Radio Standards	EN 301-428 v1.3.1 — Ku-Band System Level Specification EN 301-443 v1.3.1 — C-Band System Level Specification
Safety Standards	Complies with IEC 60950, EN 60950-1, UL 60950-1, CSA C22.2 No.60950-1-03
Emission Standard	Complies with EN 55022 Class B, FCC Part 15 Class B, CISPR 22 Class B, EN 61000-3-2, EN 61000-3-3
EMC/Immunity Standard	Complies with EN 55024, EN 301-489-1, EN 301-489-12, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
Certification	FCC, CE, and RoHS Compliant

*Subject to future software release **In DVB-S2 mode ***Optional

Specifications are subject to change without notice

iDirect • 13865 Sunrise Valley Drive, Herndon, VA 20171 • Tel: +1 703.648.8000 +1 866.345.0983 • www.idirect.net

iDIRECT

EC - Declaration of Conformity

Manufacturer/Responsible Person:	iDirect Technologies Inc. Logi Balasingam
Address:	13865 Sunrise Valley Drive Herndon, VA 20171 USA
Declares that the Product:	
Type:	VSAT System
Model:	iDirect eVolution X5 Series Satellite Router
Intended Use:	Very Small Aperture Terminal (VSAT) System

Complies with the essential requirements of Article 3 of the R&TTE 1999/5/EC Directive, if used for its intended use and that the following standards has been applied:

1. Health (Article 3.1a of the R&TTE Directive)

Applied Standard(s):	**DIN, VDE 0848 Part 1 (2000-08), 1999/519/EC (1999-07) which refersto ICNIRP Guidelines, FCC OET Bullet No. 65, Edition 97-01, August 1997**
Issue:	**August 2, 2001**

2. Safety (Article 3.1a of the R&TTE Directive)

Applied Standard(s):	**IEC/EN 60950-1: 1st Edition 2001** **UL 60950-1: 2003 & CAN/CSA-C22.2 No. 60950-1-03**
Issue:	**Aug., 2001, July 2002, Nov 2003, Feb 2005**

3. Electro Magnetic Compatibility (Article 3.1b of the R&TTE Directive)

Applied Standard(s):	**Emissions: EN55022:1998+A1:2000+A2:2003; Class B** **FCC Part 15.107(b), 15.109(g), Class B** **EN61000-3-2:2000,** **EN61000-3-3:1995 +A1:2001**
	Immunity: EN55024:2001
	Immunity: EN61000-4-2:1995 +A1:1998+A2:2001, **EN61000-4-3:2002, EN61000-4-4:1995,** **EN61000-4-5:1995 +A1:1996,** **EN61000-4-6:1996 +A1:2001,** **EN61000-4-8:1995,** **EN61000-4-11:2001**
	VSAT System : ETSI EN 301-489-1 v1.8.1, **ETSI EN 301-489-12 v1.2.1**

4. Efficient use of the Radio Frequency Spectrum (Article 3.2 of the R&TTE Directive)

Applied Standard(s):	**ETSI EN 301- 428 v1.3.1 – Ku Band VSAT System Level** **ETSI EN 301- 443 v1.3.1 – C Band VSAT System Level**
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