



Norsat  
International Inc.



**Smallest. Lightest. Fastest.**

# ATOM Series

## BUCs & SSPAs

The Norsat ATOM Series offers small, light and extremely powerful Ku-Band and Ka-Band BUCs and SSPAs



# The Norsat Advantage

Founded in 1977, Norsat International Inc. is a leading provider of unique and customized communication solutions that enable the transmission of data, audio and video for remote and challenging applications. Norsat's products and services include leading-edge product design and development, production, distribution and infield support and service of flyaway satellite terminals, microwave components, antennas, and Radio Frequency (RF) conditioning products.

## SATCOM Microwave Products

Norsat delivers a broad portfolio of satellite communication components that are field proven and industry trusted. Norsat offers high performance solutions for the transmission and reception of satellite communications including:

LNBs	<b>BUCs / SSPAs</b>	REDUNDANCY SYSTEMS
BDCs	LNAs	FILTERS

## ATOM Series BUCs / SSPAs

The Norsat ATOM series of Ku-band and Ka-band block upconverters (BUCs) and solid state power amplifiers (SSPAs) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

### Applications well suited to the ATOM series include:

- COTM/COTP
- Portable VSAT
- CDL
- Airborne
- Radar
- TWTA Replacement

### ATOM Series BUCs with fans

RF Power (P1dB)	Volume (cubic inches)	Weight (lbs)	Power Consumption
Ku 25W	127	5.0	147W P1dB
Ku 40W	152	5.4	270W P1dB
Ku 50W	152	5.4	310W P1dB
Ku 100W	415	15.3	480W P1dB
Ku 250W	1081	33.2	880W P1dB
Ka 25W	176	6.3	150W P1in

## BUC Specification Table

	Ku-Band				Ku-Band
	25 W	40 W	50 W	100 W	250 W
Power Level (13.75-14.5 GHz)	25W P1dB	40W P1dB	50W P1dB	100W P1dB	250W Psat
Conversion Gain (typ std. band)	60dB	60dB	60dB	60dB	60dB
Gain Variation over any 40 MHz (max p-p)	2dB	2dB	2dB	1.5dB	1.5dB
Gain Variation over temp (max p-p)	3dB	3dB	3dB	3dB	3dB
Noise Figure	15dB	15dB	15dB	15dB	15dB
With Fan (standard configuration)					
Ambient Temperature	-40 to +60°C	-40 to +60°C	-40 to +60°C	-40 to +60°C	-40 to +60°C
Dimensions	6.5 x 3.2 x 6.1"	6.7 x 3.4 x 6.7"	6.7 x 3.4 x 6.7"	6.4 x 5.3 x 11.7"	12.5 x 13.0 x 6.65"
Weight	5.0 lbs (2.27 kg)	5.4 lbs (2.45 kg)	5.4 lbs (2.4 kg)	15.3 lbs (6.94 kg)	33.2 lbs (15.1 kg)
Power Consumption @ Psat	165W	305W	350W	540W	1010W
Power Consumption @ P1dB	147W	270W	310W	480W	880W
Without Fan (baseplate cooling configuration)					
Baseplate Temperature	-40 to +70°C	-40 to +70°C	-40 to +70°C	-40 to +70°C	TBD
Dimensions	5.3 x 3.2 x 3.3"	5.3 x 3.2 x 3.8"	5.3 x 3.2 x 3.8"	5.3 x 3.6 x 10.7"	TBD
Weight	3.5 lbs (1.59 kg)	3.9 lbs (1.77 kg)	3.9 lbs (1.77 kg)	10.0 lbs (4.54 kg)	TBD
Power Consumption @ P1dB	134W	245W	280W	455W	TBD

# BUC Specification Table

	Low Ku-Band (12.75-13.25 GHz)			Ka-Band
	14 W	28 W	56 W	25 W
Power Level	14W P1dB	28W P1dB	56W P1dB	25W Psat
Conversion Gain (typ std. band)	60dB	60dB	60dB	60dB
Gain Variation over any 40 MHz (max p-p)	2dB	2dB	2dB	1dB
Gain Variation over temp (max p-p)	3dB	3dB	3dB	4dB
Noise Figure	15dB	15dB	15dB	15dB
With Fan (standard configuration)				
Ambient Temperature	-40 to +60°C	-40 to +60°C	-40 to +60°C	-40 to +60°C
Dimensions	6.5 x 3.2 x 6.1"	6.7 x 3.4 x 6.7"	6.7 x 5.3 x 11.7"	7.1 x 3.6 x 6.8"
Weight	5 lbs (2.3 kg)	5.4 lbs (2.4 kg)	15.3 lbs (6.9 kg)	6.3 lbs (2.9 kg)
Power Consumption @ Psat	165W	305W	540W	200W
Power Consumption @ P1dB	147W	270W	480W	150W (P <sub>lin</sub> )
Without Fan (baseplate cooling configuration)				
Baseplate Temperature	-40 to +70°C	-40 to +70°C	-40 to +70°C	-40 to +70°C
Dimensions	5.3 x 3.2 x 3.3"	5.3 x 3.2 x 3.8"	5.3 x 3.6 x 10.7"	7.1 x 3.3 x 3.9"
Weight	3.5 lbs (1.59 kg)	3.9 lbs (1.77 kg)	10.0 lbs (4.54 kg)	4.4 lbs (2.0 kg)
Power Consumption @ P1dB	134W	245W	455W	138W

# SSPA Specification Table

	Ku-Band (13.75-14.5 GHz)				Ka-Band (29.0-31.0 GHz)
	25 W	40 W	50 W	100 W	25 W
Power Level	25W P1dB	40W P1dB	50W P1dB	100W P1dB	25W Psat
Conversion Gain (typ std. band)	50dB	50dB	50dB	50dB	50dB
Gain Variation over any 40 MHz (max p-p)	2dB	1.5dB	1.5dB	1.5dB	1.0dB
Gain Variation over temp (max p-p)	3dB	3dB	3dB	3dB	4dB
Noise Figure	18dB	18dB	18dB	18dB	15dB
With Fan (standard configuration)					
Ambient Temperature	-40 to +60°C	-40 to +60°C	-40 to +60°C	-40 to +60°C	-40 to +60°C
Dimensions	6.5 x 3.2 x 6.1"	6.7 x 3.4 x 6.7"	6.7 x 3.4 x 6.7"	6.4 x 5.3 x 11.7"	7.1 x 3.6 x 6.8"
Weight	4.5 lbs (2.04 kg)	5.4 lbs (2.45 kg)	5.4 lbs (2.45 kg)	15.3 lbs (6.94 kg)	6.3 lbs (2.9 kg)
Power Consumption @ Psat	155W	295W	340W	532W	200W
Power Consumption @ P1dB	140W	262W	300W	475W	150W Plin
Without Fan (baseplate cooling configuration)					
Baseplate Temperature	-40 to +70°C	-40 to +70°C	-40 to +70°C	-40 to +70°C	-40 to +70°C
Dimensions	5.3 x 3.2 x 3.3"	5.3 x 3.2 x 3.8"	5.3 x 3.2 x 3.8"	5.3 x 3.6 x 10.7"	7.1 x 3.3 x 3.9"
Weight	3.0 lbs (1.36 kg)	3.4 lbs (1.54 kg)	3.4 lbs (1.54 kg)	10.0 lbs (4.54 kg)	4.4 lbs (2.0 kg)
Power Consumption @ P1dB	125W	237W	372W	450W	138W

# Optional Configurations

ATOM Series BUCs and SSPAs are flexible enough for any application. Configuration options are available to meet application requirements. Below are some of the standard configurations available. Please see the “HOW TO ORDER” page for a list of all currently available options.

Option	Option Flag	Description	Where Available
Baseplate Cooling	C	Fanless model supporting external cooling system	All BUC, SSPA
Adjustable Group Delay	D	Phase-matched to efficiently provide very high RF output	100W BUC, SSPA
Ethernet Control	E	Ethernet M&C control	Ka-band BUC, SSPA
EMI / EMC Filter*	F	Additional EMI/EMC filtering	All BUC, SSPA
Internal Reference*	I	Auto - Sensing 10 MHz Internal Reference	All BUC
Low Voltage Operation*	L	Support for power as low as 12 VDC	25W BUC, SSPA
1275D Surge Protect	P	EMI filtering and surge protection	25/40/50W BUC, SSPA
SMA Input	S	SMA input connector	All Ku-band BUC, SSPA
Fast Switching*	W	Power management turns off amplifier in <1µsec when transmission not required	40/50/100W, SSPA
WR-62 Waveguide	X		Ku-band SSPA
3 Phase AC	Z	Integrated 3 phase 208 VAC power	100W BUC, SSPA

\* Included as standard in ATOM 25W Ka-band BUC, SSPA

# Available Accessories

ATOM accessories are available to streamline implementation of the unit on a system. If you require additional options, please contact Norsat for more details.

Accessory	Description
Adaptors	Convert Waveguide to SMA, TNC, N-Connector, K-Connector
Cables	M&C and power cables
PSUs	Power supplies tested to ensure compatibility with ATOM BUCs & SSPAs
1:1 Redundant Kits	Outdoor Redundant Kits available



# Environmental and Emissions Testing

Norsat has put the ATOM series of BUCs and SSPAs through a range of environmental and emissions testing to ensure that these products meet the high military specifications and requirements needed for applications such as airborne and Comms on the move.

Specification	Test	Requirement
RTCA/DO-160D	Temperature	Selection 4.5, Category A:1 Operation: 0°C to +55°C;Storage and Transit: up to 50,000ft
	Altitude	Selection 4.6.1, Operation up to 15,000ft; Storage and transit: up to 50,000ft
	Rapid Decompression	Selection 4.6.2, Category A:1 Rapid decompression conditions of 6,000 to 50,000ft
	Humidity	Selection 6, Category A: Operation: Above 95% R.H. at 50°C without condensation
	Operational Shock	Section 7, Para.7.2, Category B
	Crash Hazard	Section 7, Para.7.3, Category B
	Operation Vibration	Selection 8, Para. 8.5.2 and 8.7.2: Figure 8-1 curve B (1.48 Grms) and Figure 8-4 curve B1 (2.09 Grms)
RTCA/DO-160G	Temperature & Altitude	Selection 4, Category D2: Operation: -55°; Storage and Transit: up to 50,000ft
	Magnetic Effect	Section 15, Category A
	Lightning Induced Transient Susceptibility	Section 22, Category A3
	Icing/Freezing Rain	Section 24, Category A
	Electrostatic Discharge Control	Section 25, Category A
	Fire/Flammability	Section 26, Category C
MIL-STD-810F	Transportation Vibration	Method 514.5, Procedure I Category 1, Figure 514.5 C-1, Table 514.5c-VII (1.04, 0.504, 0.74Grms)
	Transit Drop	Method 516.5, Procedure IV, Table 516.5 - VI
MIL-STTD-810G	Acceleration	Method 513.5, Procedure I, II (aircraft) and III (Cargo transport)





MIL-STD-461F Test Method	Applicable (Air Force Aircraft) Limits	MIL-STD-461F Test Title
CE101	Figure CE101-4 Curve #2	Conducted Emissions, Power Leads, 30 Hz to 10 kHz
CE102	Figure CE102-1 Basic Curve with No Relaxation	Conducted Emissions, Power Leads, 10 kHz to 10 MHz
CS101	Figure CE102-1 Basic Curve with No Relaxation Power Limits: Figure CS101-2	Conducted Susceptibility, Power Leads, 30 kHz to 150 kHz
CS114	Current Limit: Figure CS114-1 Curve # 3 Equivalent Power Limit: >=6 dB above the calibration current limit	Conducted Susceptibility, Bulk Cable Injection, 10 kHz to 200 MHz
CS115	Rise and fall-times, Min. Duration, and Min.Current Limits: Figure CS115-1	Conducted Susceptibility, Bulk Cable Injection, Impulse Excitation
RE102	Figure RE102-3 Fixed Wing Internal < 25 meters Nose to Tail Limit Curve	Radiated Emissions, Electric Field, 10 kHz to 18 GHz



# BUC

## KA-BAND 25W

### ATOMBKA025



#### NORSAT ATOM SERIES BUCS

Compared to equivalent products, ATOM series BUCs are:

- *Up to 20% smaller*
- *Up to 50% lighter*
- *Internal isolation to provide reflected power protection*

The Norsat ATOM series of block upconverters (BUC) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

#### RF CONFIGURATIONS

##### Transmit Frequency

Military band	30.0 to 31.0 GHz
Commercial band 1	29.0 to 30.0 GHz

##### Input Frequency

Military band	1 to 2 GHz
Commercial band 1	950 to 1950 MHz

\* Custom within range

#### OPTIONS

##### The following items are standard:

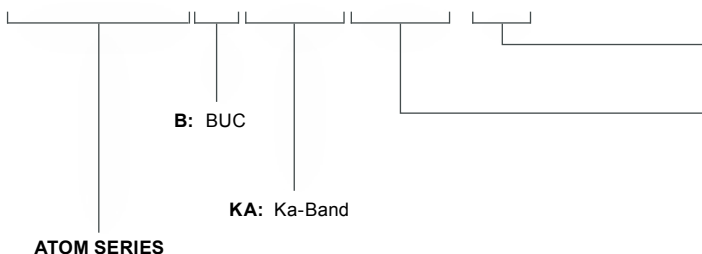
White paint, EMI/EMC Filter, Auto-Sensing Internal/External Reference, Low Voltage Operation, Fast Switching.

##### Available options include:

Baseplate Cooling, Ethernet M+C, 1275D Surge + Protect Filter.

#### HOW TO ORDER

## ATOMBKA025-M



<b>Band</b>	M - Military C - Commercial D - Dual Band
<b>Psat</b>	<b>025 - 25W</b> 050 - 50W

# KA-BAND 25W BUC-ATOMBKA025

## RF SPECIFICATIONS

<b>Output Power (Psat)</b>	44 dBm
<b>Output Power (P1in)</b>	> 41 dBm
<b>Phase Noise</b>	-72 dBc/Hz at 100 Hz -72 dBc/Hz at 1 KHz -82 dBc/Hz at 10 KHz -92 dBc/Hz at 100 kHz -102 dBc/Hz at 1 MHz
<b>Noise Figure</b>	15 dB
<b>Conversion Gain</b>	60 dB min
<b>Gain Variation over 40MHz</b>	+/- 0.5 dB
<b>Gain Variation over 500 MHz</b>	+/- 1.5 dB
<b>Gain Variation over 1000 MHz</b>	+/- 2.0 dB
<b>Gain Variation over temperature</b>	+/- 2 dB
<b>Spurious in Band</b>	-55 dBc
<b>Spectral Regrowth @ Plin</b>	-30 dBc
<b>3rd Order Intermod @ Plin</b>	-25 dBc

## ENVIRONMENTAL & PHYSICAL

<b>Operating Temperature</b>	-40 to +60°C (-40° to +140°F)
<b>Storage Temperature</b>	-54 to +105°C (-65° to +221°F)
<b>Outline Dimensions</b>	7.10 x 3.64 x 6.83"
<b>Weight</b>	2.9 kg (6.3 lbs)
<b>Enclosed accessories</b>	Screws, gasket, M&C mating connector, power mating connector

## POWER

<b>Input Voltage</b>	20 – 56 VDC
<b>Power Consumption</b>	200W @ Psat 150W @ P1in 25W muted
<b>Power Connector</b>	MIL-26482 Series 1 Shell size 12, 4 pins

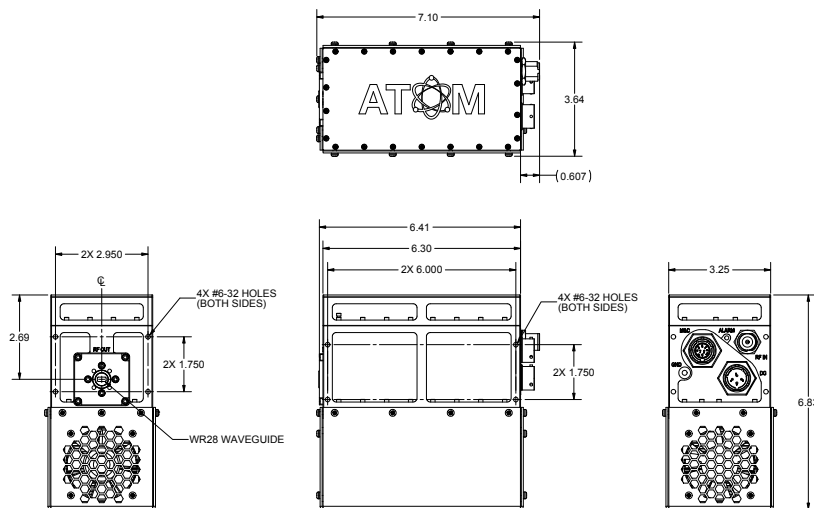
## MONITOR & CONTROL

<b>Discrete Mute Control Voltage ranges</b>	
Low	0 - 0.8 V
High	3.0 - 5.0 V
Fully programmable	
Mute enable can be high or low	
<b>Mute default can be enabled or disabled</b>	
<b>M&amp;C Connector</b>	MIL-26482 Series 1 Shell size 12, 10 pins
<b>M&amp;C Signaling</b>	RS-485, RS-232 or Ethernet

## INTERFACES

<b>Input VSRW</b>	1.5 : 1
<b>Output VSRW</b>	1.5 : 1
<b>RF Input Connector</b>	N (50 Ohm)
<b>RF Output Connector</b>	WR-28

## MECHANICAL DIAGRAM





# BUC

## KA-BAND 50W

### ATOMBKA050



### NORSAT ATOM SERIES BUCS

Compared to equivalent products, ATOM series BUCs are:

- *Up to 20% smaller*
- *Up to 50% lighter*
- *Internal isolation to provide reflected power protection*

The Norsat ATOM series of block upconverters (BUC) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

### RF CONFIGURATIONS

#### Transmit Frequency

Military band	30.0 to 31.0 GHz
Commercial band 1	29.0 to 30.0 GHz

#### Input Frequency

Military band	1 to 2 GHz
Commercial band 1	950 to 1950 MHz

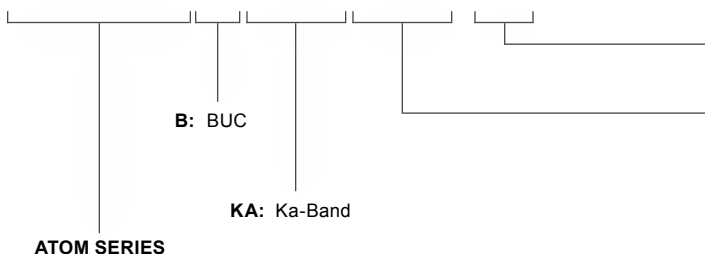
\* Custom within range

### OPTIONS

<b>Baseplate Cooling</b>	Fanless operation supporting external cooling systems
<b>Surge Protect</b>	1275D surge protection and EMI filtering
<b>Internal Reference</b>	Internal reference with auto-sensing
<b>AC Power</b>	AC power supply
<b>High Temperature</b>	For operations at 70°C

### HOW TO ORDER

## ATOMBKA050-M



<b>Band</b>	M- Military C- Commercial
<b>Psat</b>	025- 25W <b>050- 50W</b>



# KA-BAND 50W BUC-ATOMBKA050

## RF SPECIFICATIONS

<b>Output Power (typical)</b>	47 dBm
<b>Output Power (Plin)</b>	> 44 dBm
<b>Phase Noise</b>	-68 dBc/Hz at 100 Hz -72 dBc/Hz at 1 KHz -82 dBc/Hz at 10 KHz -92 dBc/Hz at 100 KHz -102 dBc/Hz at 1 MHz
<b>Noise Figure</b>	18 dB min.
<b>Conversion Gain</b>	60 dB
<b>Gain Variation over 40MHz</b>	+/- 1 dB p-p
<b>Gain Variation over 1000 MHz</b>	+/- 3.5 dB p-p
<b>Gain Variation over temperature</b>	+/- 2 dB
<b>Spurious in Band</b>	> 55 dBc
<b>Spectral Regrowth @ Plin</b>	-30 dBc
<b>3rd Order Intermod @ Plin</b>	-25 dBc

## INTERFACES

<b>Input VSRW</b>	1.5 : 1
<b>Output VSRW</b>	1.5 : 1
<b>RF Input Connector</b>	N (50 Ω)
<b>RF Output Connector</b>	WR-28

## MONITOR & CONTROL

<b>Discrete Mute Control Voltage ranges</b>	
Low	0 - 0.8 V
High	3.0 - 5.0 V
Fully programmable	
Mute enable can be high or low	
Mute default can be enabled or disabled	
<b>Thermal shutdown control threshold</b>	+85°C
<b>Temperature Monitor Accuracy</b>	± 3°C
<b>Monitor/Control Connector</b>	MIL-26482 Series 1 Shell size 12, 10 pins
<b>M&amp;C Connector (Ethernet)</b>	RJ-45
<b>M&amp;C Signaling</b>	RS-232, RS-485 or Ethernet

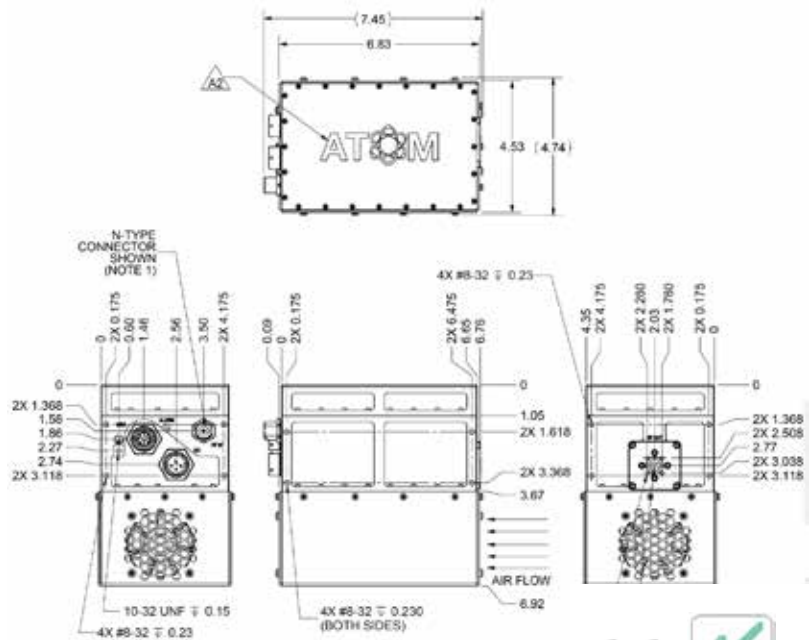
## ENVIRONMENTAL & PHYSICAL

<b>Operating Temperature</b>	-40 to +60°C (-40 to 140°F)
<b>Storage Temperature</b>	-54 to +105°C (-65° to +221°F)
<b>Outline Dimensions</b>	176 x 115 x 174 mm (6.9 x 4.5 x 6.9 in)
<b>Weight</b>	3.4 kg (7.5 lbs)
<b>Enclosed Accessories</b>	Screws, gasket, M&C mating connector, power mating connector

## POWER

<b>Input Voltage</b>	20 - 56 VDC
<b>AC Power Supply Option</b>	95-265 VAC, 50/60 Hz
<b>Power Consumption (DC)</b>	460W @ P1dB 300W @ Plin 30W muted
<b>Power Connector (DC)</b>	MIL-26482 Series 1
<b>Power Connector (AC)</b>	TBD

## MECHANICAL DIAGRAM





# BUC

## KU-BAND 25W

### ATOMBKU025



#### NORSAT ATOM SERIES BUCS

Compared to equivalent products, ATOM series BUCs are:

- *Up to 68% smaller and lighter*
- *Up to 60% more power efficient*
- *More flexible with RF and configuration options*

The Norsat ATOM series of block upconverters (BUC) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

#### RF CONFIGURATIONS

##### Transmit Frequency

Standard band	14.0 to 14.5 GHz
<i>LO Frequency</i>	13.05 GHz
Extended band	13.75 to 14.5 GHz
<i>LO Frequency</i>	12.8 GHz
Selectable band <i>*Custom within range</i>	12.25 to 18.0 GHz

##### Input Frequency

Standard band	950 to 1450 MHz
Extended band	950 to 1700 MHz

#### OPTIONS

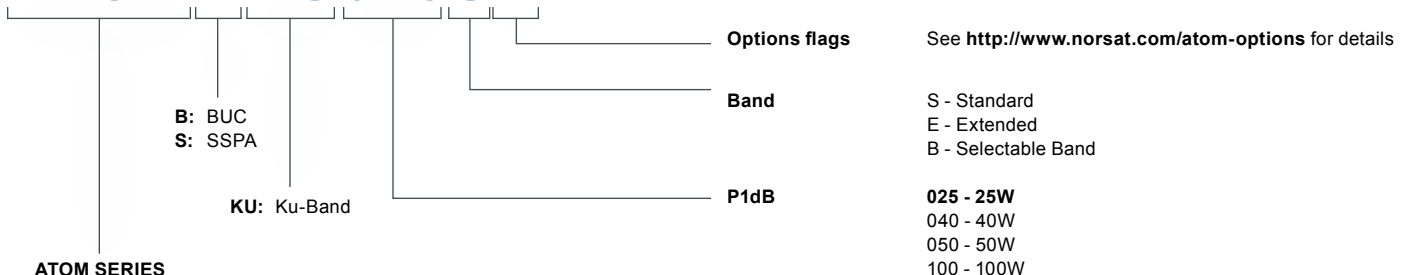
**The following items are standard:** White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power.

**Available options include:** Baseplate Cooling, Surge + Protect Filter, SMA Input Connector, WR-62 Waveguide Output.

**Accessories:** Power supply, Bracket, Waveguides, Cables, Adaptors

#### HOW TO ORDER

## ATOMBKU025SX



# KU-BAND 25W BUC-ATOMBKU025

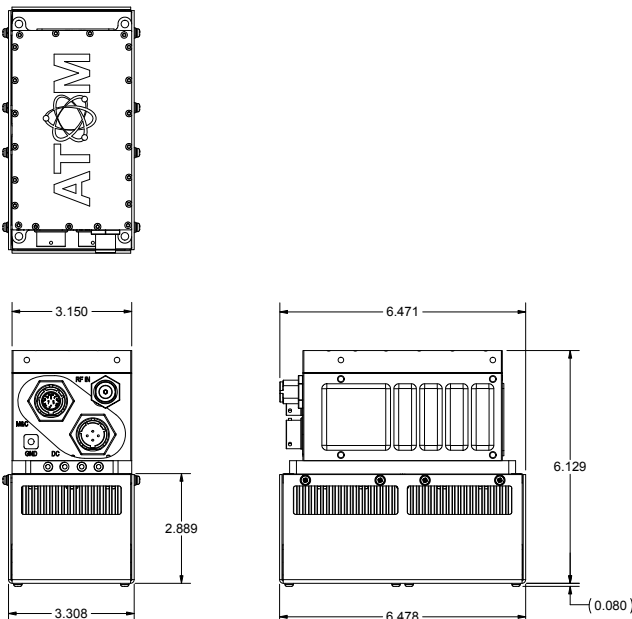
## RF SPECIFICATIONS

<b>Power Output (P1dB)</b>	25W
<b>Noise Figure</b>	15 dB
<b>Phase Noise</b>	-72 dBc/Hz at 1 KHz -82 dBc/Hz at 10 KHz -92 dBc/Hz at 100 kHz -102 dBc/Hz at 1 MHz
<b>Fwd Monitor (15 dB Range) @ CF</b>	±1.0 dB
<b>Conversion Gain</b>	60 dB min
<b>Gain Variation over operating band</b>	6 dB max p-p
<b>Gain Variation over any 40 MHz</b>	2 dB max p-p
<b>Gain Variation over temperature</b>	3 dB max p-p
<b>Input VSWR</b>	2.0:1
<b>Output VSWR</b>	2.0:1
<b>Spurious @ rated power</b>	-55 dBc
<b>AM/PM Conversion @2dB below power</b>	2.5°/dB rated
<b>2nd Harmonic @ 3dB below rated power</b>	-45 dBc

## MONITOR & CONTROL

<b>M&amp;C Interface</b>	RS-232 & RS-485
<b>M&amp;C Connector</b>	MIL-26482 Series 1 Receptacle, Shell Size 12, 10 Pins
<b>Mute Control</b>	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
<b>Low</b>	0.0 - 0.8V
<b>High</b>	3.0 - 5.0V
<b>Thermal Shutdown Temperature</b>	90°C (Accuracy ± 3°C)

## MECHANICAL DIAGRAM



## ENVIRONMENTAL & PHYSICAL

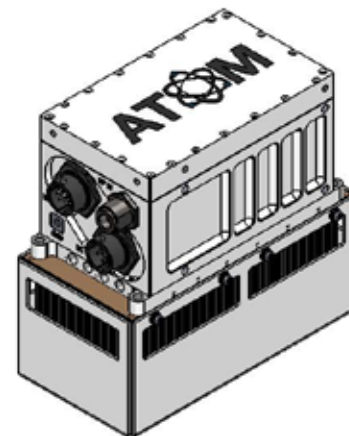
<b>Operating Temperature with fans</b>	-40 to +60°C (-40° to +140°F)
<b>Storage Temperature</b>	-54 to +80°C (-65° to + 176°F)
<b>Outline Dimensions</b>	170 x 86 x 157 mm (6.5 x 3.2 x 6.1")
<b>Weight</b>	2.3 kg (5.0 lbs)
<b>Enclosed Accessories</b>	Screws, gasket, M&C mating connector, power mating connector

## INTERFACES

<b>RF Input Connector</b>	N-Type
<b>RF Output Connector</b>	WR-75 (WR-62 above 15 GHz)

## POWER

<b>Input Voltage</b>	20 - 56 VDC
<b>Power Consumption with fans</b>	165W @ Psat (Typical) 126W @ 3dB backoff from P1dB 115W @ Quiescent (no signal input) 20W muted
<b>Power Connector</b>	MIL-26482 Series 1 receptacle Shell size 12, 4 pins





# BUC

## KU-BAND 40W

### ATOMBKU040



### NORSAT ATOM SERIES BUCS

Compared to equivalent products, ATOM series BUCs are:

- Up to 68% smaller and lighter
- Up to 60% more power efficient
- More flexible with RF and configuration options

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### RF CONFIGURATIONS

#### Transmit Frequency

Standard band	14.0 to 14.5 GHz
LO Frequency	13.05 GHz
Extended band	13.75 to 14.5 GHz
LO Frequency	12.8 GHz
Selectable band *Custom within range	12.25 to 18.0 GHz

#### Input Frequency

Standard band	950 to 1450 MHz
Extended band	950 to 1700 MHz

### OPTIONS

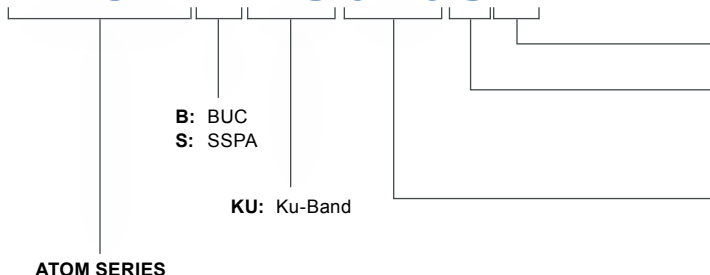
**The following items are standard:** White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power.

**Available options include:** Baseplate Cooling, Surge + Protect Filter, Fast Switching, SMA Input Connector, WR-62 Waveguide Output.

**Accessories:** Power Supply, Bracket, Waveguides, Cables, Adaptors.

### HOW TO ORDER

# ATOMBKU040SX



<b>Options flags</b>	See <a href="http://www.norsat.com/atom-options">http://www.norsat.com/atom-options</a> for details
<b>Band</b>	S - Standard E - Extended B - Selectable Band
<b>P1dB</b>	025 - 25W <b>040 - 40W</b> 050 - 50W 100 - 100W



# KU-BAND 40W BUC-ATOMBKU040

## RF SPECIFICATIONS

<b>Power Output (P1dB)</b>	40W
<b>Noise Figure</b>	15 dB
<b>Phase Noise</b>	-72 dBc/Hz at 1 KHz -82 dBc/Hz at 10 KHz -92 dBc/Hz at 100 KHz -102 dBc/Hz at 1 MHz
<b>Fwd Monitor (15 dB Range) @ CF</b>	± 1.0 dB
<b>Conversion Gain</b>	60 dB
<b>Gain Variation over operating band</b>	6 dB max p-p
<b>Gain Variation over any 40 MHz</b>	2 dB max p-p
<b>Gain Variation over temperature</b>	3 dB max p-p
<b>Input VSWR</b>	2.0:1
<b>Output VSWR</b>	2.0:1
<b>Spurious</b>	-55 dBc
<b>AM/PM Conversion @2dB below rated power</b>	2.5°/dB
<b>2nd Harmonic @ 3dB below rated power</b>	-45 dBc

## ENVIRONMENTAL & PHYSICAL

<b>Operating Temperature with fans</b>	-40 to +60°C (-40° to +140°F)
<b>Storage Temperature</b>	-54 to +80°C (-65° to + 176°F)
<b>Outline Dimensions</b>	170 x 86 x 170 mm (6.7" x 3.4" x 6.7")
<b>Weight</b>	2.4 kg (5.4lbs)
<b>Enclosed Accessories</b>	Screws, gasket, M&C mating connector, power mating connector

## INTERFACES

<b>RF Input Connector</b>	N Type
<b>RF Output Connector</b>	WR-75 (WR-62 above 15 GHz)

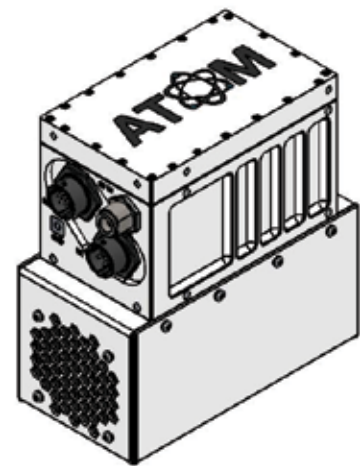
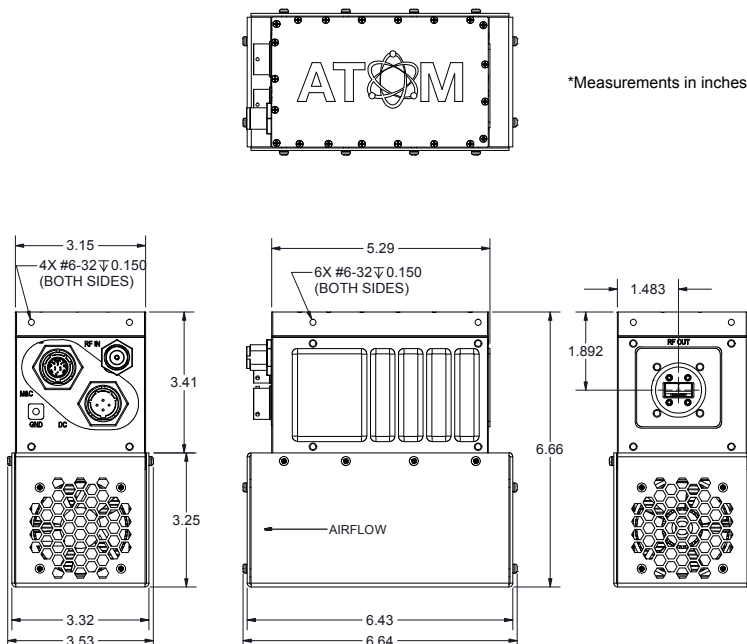
## MONITOR & CONTROL

<b>M&amp;C Interface</b>	RS-232 & RS-485
<b>M&amp;C Connector</b> 12, 10 Pins	MIL-26482 Series 1 Receptacle, Shell Size
<b>Mute Control</b>	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
<b>Low</b>	0.0 - 0.8V
<b>High</b>	3.0 - 5.0V
<b>Thermal Shutdown Temperature</b>	90°C (Accuracy ± 3°C)

## POWER

<b>Input Voltage</b>	20 - 56 VDC
<b>Power Consumption with fans</b>	305W @ Psat 270W @ P1dB 235W @ 3dB backoff from P1dB 210W @ Quiescent (no signal input) 25W muted
<b>Power Connector</b>	MIL-26482 Series 1 receptacle Shell size 12, 4 pins

## MECHANICAL DIAGRAM





# BUC

## KU-BAND 50W

### ATOMBKU050



### NORSAT ATOM SERIES BUCS

Compared to equivalent products, ATOM series BUCs are:

- *Up to 68% smaller and lighter*
- *Up to 60% more power efficient*
- *More flexible with RF and configuration options*

The Norsat ATOM series of block upconverters (BUC) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

### RF CONFIGURATIONS

#### Transmit Frequency

Standard band	14.0 to 14.5 GHz
<i>LO Frequency</i>	13.05 GHz
Extended band	13.75 to 14.5 GHz
<i>LO Frequency</i>	12.8 GHz
Selectable band <i>*Custom within range</i>	12.25 to 18.0 GHz

#### Input Frequency

Standard band	950 to 1450 MHz
Extended band	950 to 1700 MHz

### OPTIONS

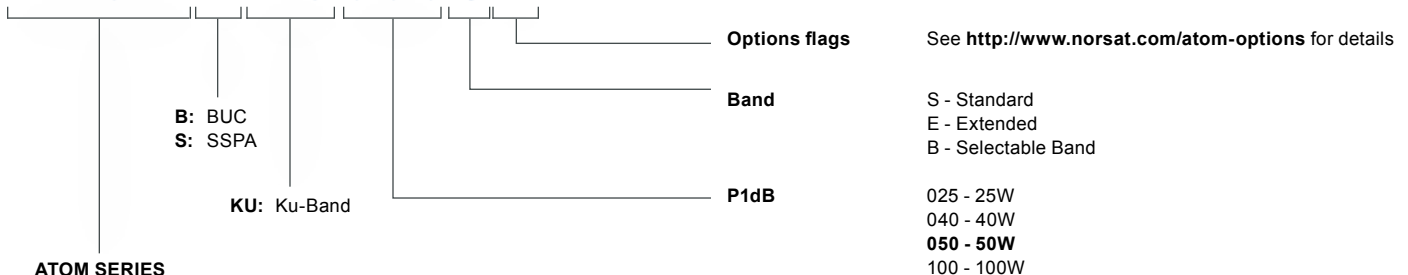
**The following items are standard:** White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power.

**Available options include:** Baseplate Cooling, Surge + Protect Filter, Fast Switching, SMA Input Connector, WR-62 Waveguide Output.

**Accessories:** Power Supply, Bracket, Waveguides, Cables, Adaptors.

### HOW TO ORDER

## ATOMBKU050SX



# KU-BAND 50W BUC-ATOMBKU050

## RF SPECIFICATIONS

<b>Power Output (P1dB)</b>	50W
<b>Noise Figure</b>	15 dB
<b>Phase Noise</b>	-72 dBc/Hz at 1 KHz -82 dBc/Hz at 10 KHz -92 dBc/Hz at 100 kHz -102 dBc/Hz at 1 MHz
<b>Fwd Monitor (15 dB Range) @ CF</b>	± 1.0 dB
<b>Conversion Gain</b>	60 dB min
<b>Gain Variation over operating band</b>	6 dB max p-p
<b>Gain Variation over any 40 MHz</b>	2 dB max p-p
<b>Gain Variation over temperature</b>	3 dB max p-p
<b>Input VSWR</b>	2.0:1
<b>Output VSWR</b>	2.0:1
<b>Spurious @ rated power</b>	-55 dBc
<b>AM/PM Conversion @2dB below</b>	2.5°/dB rated power
<b>2nd Harmonic @ 3dB below rated power</b>	-45 dBc

## ENVIRONMENTAL & PHYSICAL

<b>Operating Temperature with fans</b>	-40 to +60°C (-40° to +140°F)
<b>Storage Temperature</b>	-54 to + 80°C (-65° to + 176°F)
<b>Outline Dimensions</b>	170 x 86 x 170mm (6.7 x 3.4 x 6.7")
<b>Weight</b>	2.4kg (5.4 lbs)
<b>Enclosed Accessories</b>	Screws, gasket, M&C mating connector, power mating connector

## INTERFACES

<b>RF Input Connector</b>	N-Type
<b>RF Output Connector</b>	WR-75 (WR-62 above 15 GHz)

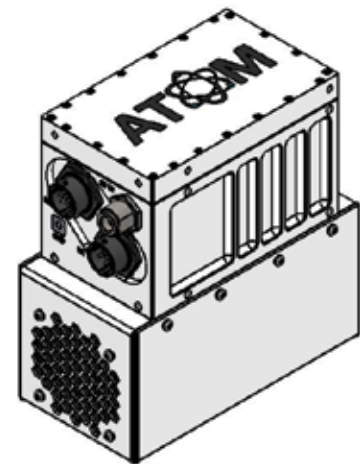
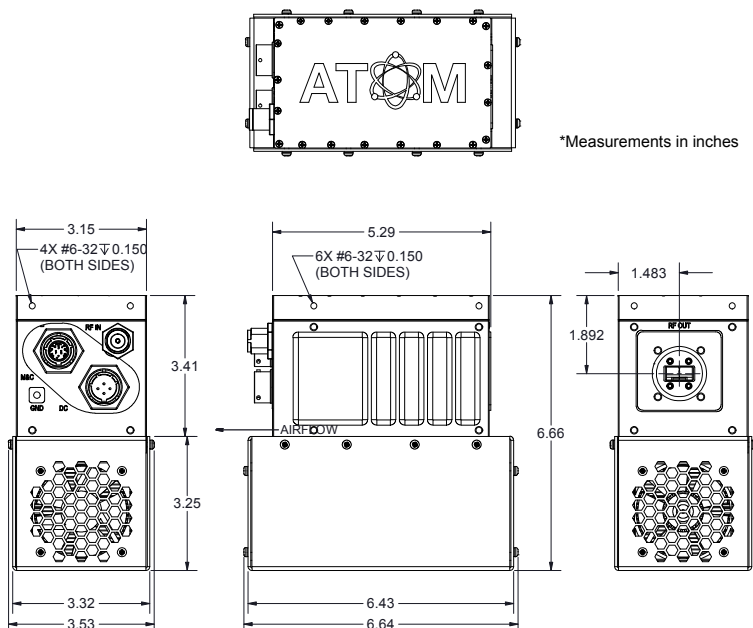
## MONITOR & CONTROL

<b>M&amp;C Interface</b>	RS-232 & RS-485
<b>M&amp;C Connector</b>	MIL-26482 Series 1 Receptacle, Shell Size 12, 10 Pins
<b>Mute Control</b>	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
<b>Low</b>	0.0 - 0.8V
<b>High</b>	3.0 - 5.0V
<b>Thermal Shutdown Temperature</b>	90°C (Accuracy ± 3°C)

## POWER

<b>Input Voltage</b>	20 - 56 VDC
<b>Power Consumption with fans</b>	350W @ Psat 310W @ P1dB 270W @ 3dB backoff from P1dB 240W @ Quiescent (no signal input) 25W muted
<b>Power Connector</b>	MIL-26482 Series 1 receptacle Shell size 12, 4 pins

## MECHANICAL DIAGRAM





# BUC

## KU-BAND 100W

### ATOMBKU100



#### NORSAT ATOM SERIES BUCS

Compared to equivalent products, ATOM series BUCs are:

- Up to 68% smaller and lighter
- Up to 60% more power efficient
- More flexible with RF and configuration options

The Norsat ATOM series of block upconverters (BUC) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

#### RF CONFIGURATIONS

##### Transmit Frequency

Standard band	14.0 to 14.5 GHz
LO Frequency	13.05 GHz
Extended band	13.75 to 14.5 GHz
LO Frequency	12.8 GHz
Selectable band *Custom within range	12.25 to 18.0 GHz

##### Input Frequency

Standard band	950 to 1450 MHz
Extended band	950 to 1700 MHz

#### OPTIONS

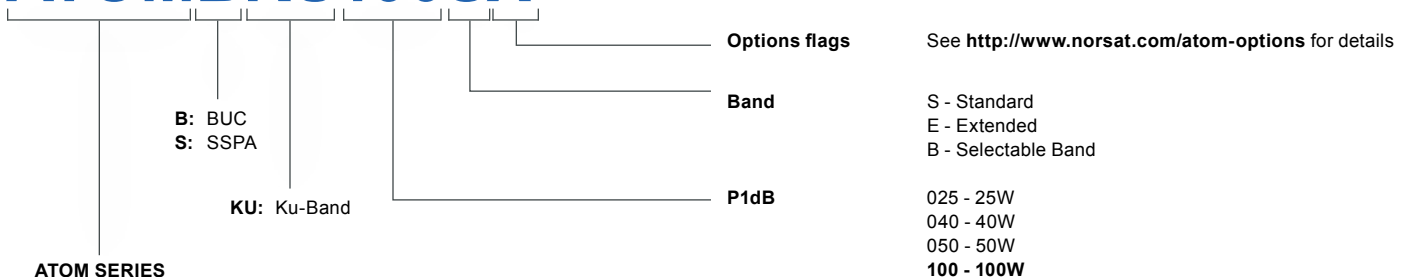
**The following items are standard:** White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power.

**Available options include:** Baseplate Cooling, EMI/EMC Filter, Surge+Protect Filter, Fast Switching, 3 Phase AC, SMA Input Connector, WR-62 Waveguide Output, Adjustable Group Delay

**Accessories:** Power Supply, Bracket, Waveguides, Cables, Adaptors.

#### HOW TO ORDER

## ATOMBKU100SX



# KU-BAND 100W BUC-ATOMBKU100

## RF SPECIFICATIONS

<b>Power Output (P1dB)</b>	100W
<b>Noise Figure</b>	15 dB
<b>Phase Noise</b>	-72 dBc/Hz at 1 KHz -82 dBc/Hz at 10 KHz -92 dBc/Hz at 100 kHz -102 dBc/Hz at 1 MHz
<b>Fwd Monitor (15 dB Range) @ CF</b>	± 1.0 dB
<b>Conversion Gain</b>	60 dB min
<b>Gain Variation over operating band</b>	6 dB max p-p
<b>Gain Variation over any 40 MHz</b>	1.5 dB max p-p
<b>Gain Variation over temperature</b>	3 dB max p-p
<b>Input VSWR</b>	2.0:1
<b>Output VSWR</b>	2.0:1
<b>Spurious @ rated power</b>	-50 dBc
<b>AM/PM Conversion @2dB below</b>	2.5°/dB rated power
<b>2nd Harmonic @ 3dB below rated power</b>	-45 dBc

## MONITOR & CONTROL

<b>M&amp;C Interface</b>	RS-485
<b>M&amp;C Connector</b>	MIL-26482 Series 1 Receptacle, Shell Size 12, 10 Pins
<b>Mute Control</b>	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
<b>Low</b>	0.0 - 0.8V
<b>High</b>	3.0 - 5.0V
<b>Thermal Shutdown Temperature</b>	90°C (Accuracy ± 3°C)

## ENVIRONMENTAL & PHYSICAL

<b>Operating Temperature with fans</b>	-40 to +60°C (-40° to +140°F)
<b>Storage Temperature</b>	-54 to + 80°C (-65° to + 176°F)
<b>Outline Dimensions</b>	297 L x 135 W 169 H mm (11.7 x 5.3 x 6.4" )
<b>Weight</b>	6.9 kg (15.3 lbs)
<b>Enclosed Accessories</b>	Screws, gasket, M&C mating connector, power mating connector

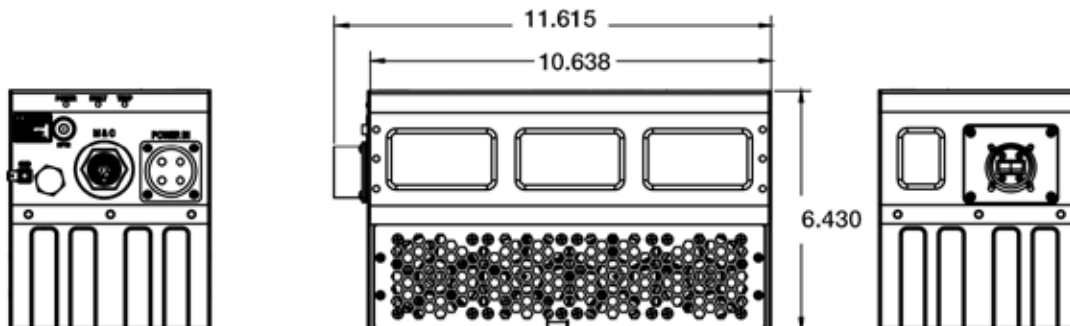
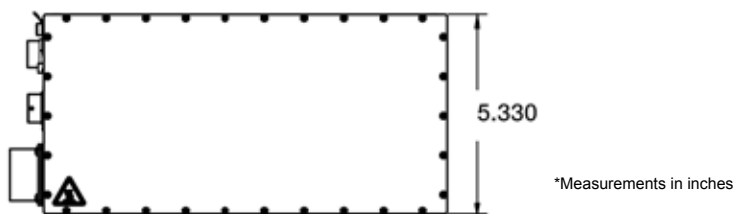
## INTERFACES

<b>RF Input Connector</b>	N Type
<b>RF Output Connector</b>	WR-75 (WR-62 above 15 GHz)

## POWER

<b>Input Voltage</b>	20 – 56 VDC
<b>Power Consumption with fans</b>	610W @Psat (Typical) 415W @ 3dB backoff from P1dB 375W @ Quiescent (no signal input) 60W muted
<b>Power Connector</b>	MIL-26482 Series 1 receptacle Shell size 12, 4 pins

## MECHANICAL DIAGRAM





# BUC

## KU-BAND 250W

### ATOMBKU250



#### NORSAT ATOM SERIES BUCS

Compared to equivalent products, ATOM series BUCs are:

- *Up to 68% smaller and lighter*
- *Up to 60% more power efficient*
- *More flexible with RF and configuration options*

The Norsat ATOM series of block upconverters (BUC) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

#### RF CONFIGURATIONS

##### Transmit Frequency

Standard band	14.0 to 14.5 GHz
Extended band	13.75 to 14.5 GHz
Selectable band *Custom within range	12.25 to 18.0 GHz

##### Input Frequency

Standard band	950 to 1450 MHz
Extended band	950 to 1700 MHz

#### OPTIONS

**The following items are standard:** White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power

**Available options include:** Baseplate Cooling, SMA Input Connector, WR-62 Waveguide Output, 1 Phase AC

**Accessories:** Power Supply, Bracket, Waveguides, Cables, Adaptors

# KU-BAND 250W BUC-ATOMBKU250

## RF SPECIFICATIONS

<b>Power Output (PSAT) (P1dB)</b>	250W Typical 200W Typical
<b>Noise Figure</b>	15 dB
<b>Phase Noise</b>	-72 dBc/Hz at 1 KHz -82 dBc/Hz at 10 KHz -92 dBc/Hz at 100 kHz -102 dBc/Hz at 1 MHz
<b>Fwd Monitor (15 dB Range) @ CF</b>	± 1.0 dB
<b>Conversion Gain</b>	60 dB min
<b>Gain Variation over operating band</b>	6 dB max p-p
<b>Gain Variation over any 40 MHz</b>	1.5 dB max p-p
<b>Gain Variation over temperature</b>	3 dB max p-p
<b>Input VSWR</b>	2.0:1
<b>Output VSWR</b>	2.0:1
<b>Spurious @ rated power</b>	-50 dBc
<b>AM/PM Conversion @2dB below</b>	2.5°/dB rated power
<b>2nd Harmonic @ 3dB below rated power</b>	-45 dBc

## INTERFACES

<b>RF Input Connector</b>	N-Type
<b>RF Output Connector</b>	WR-75 (WR-62 above 15 GHz)

## MONITOR & CONTROL

<b>M&amp;C Interface</b>	RS-485
<b>M&amp;C Connector</b>	MIL-26482 Series 1 Receptacle, Shell Size 12, 10 Pins
<b>Mute Control</b>	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
<b>Low</b>	0.0 - 0.8V
<b>High</b>	3.0 - 5.0V

## ENVIRONMENTAL & PHYSICAL

<b>Operating Temperature with fans</b>	-40 to +60°C (-40° to +140°F)
<b>Storage Temperature</b>	-54 to +80°C (-65° to +176°F)
<b>Outline Dimensions</b>	317.5 L x 330.2 W x 168.9 H mm (12.5" x 13.0" x 6.65")
<b>Weight</b>	15.06 kg (33.2 lbs)

## POWER

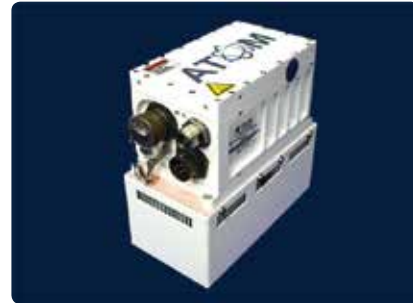
<b>Input Voltage</b>	20 - 56 VDC
<b>Power Consumption with fans</b>	1010W @ Psat 880W @ P1dB 775W @ 3dB backoff from P1dB 710W @ Quiescent (no signal input) 100W muted
<b>Power Connector</b>	MIL-26482 Series 1 receptacle Shell size 12, 4 pins



# BUC

## LOW KU-BAND 14W

### ATOMBKU014BCE



#### NORSAT ATOM SERIES BUCS

Compared to equivalent products, ATOM series BUCs are:

- Up to 68% smaller and lighter
- Up to 60% more power efficient
- More flexible with RF and configuration options

The Norsat ATOM series of block upconverters (BUC) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

#### RF CONFIGURATIONS

##### Transmit Frequency

Custom band 12.75 to 13.25 GHz

##### Input Frequency

Standard band 950 to 1450 MHz

#### OPTIONS

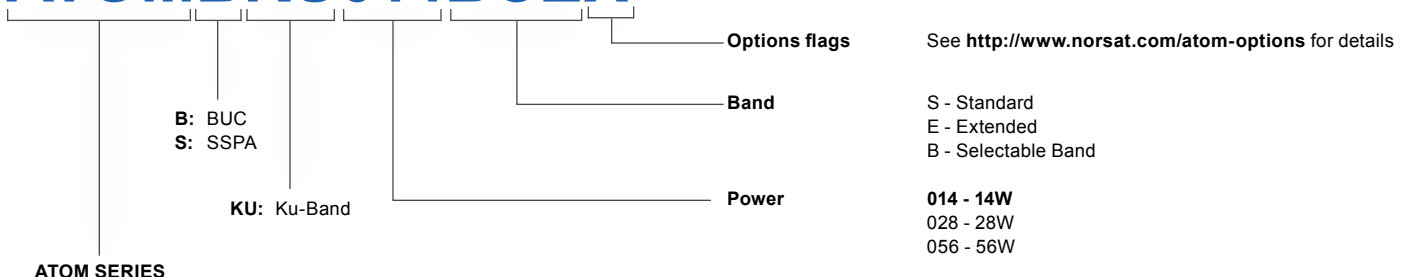
**The following items are standard:** White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power.

**Available options include:** Baseplate Cooling, Surge + Protect Filter, SMA Input Connector, WR-62 Waveguide Output.

**Accessories:** Power supply, Bracket, Waveguides, Cables, Adaptors

#### HOW TO ORDER

## ATOMBKU014BCEX





# LOW KU-BAND 14W BUC-ATOMBKU014BCE

## RF SPECIFICATIONS

<b>Power Output (P1dB)</b>	14W min
<b>Noise Figure</b>	15 dB
<b>Phase Noise</b>	-72 dBc/Hz at 1 KHz -82 dBc/Hz at 10 KHz -92 dBc/Hz at 100 kHz -102 dBc/Hz at 1 MHz
<b>Fwd Monitor (15 dB Range) @ CF</b>	±1.0 dB
<b>Conversion Gain</b>	60 dB min
<b>Gain Variation over operating band</b>	8 dB max p-p
<b>Gain Variation over any 40 MHz</b>	2 dB max p-p
<b>Gain Variation over temperature</b>	3 dB max p-p
<b>Input VSWR</b>	2.0:1
<b>Output VSWR</b>	2.0:1
<b>Spurious @ rated power</b>	-50 dBc
<b>AM/PM Conversion @2dB below power</b>	3.5°/dB rated
<b>2nd Harmonic @ 3dB below rated power</b>	-45 dBc

## MONITOR & CONTROL

<b>M&amp;C Interface</b>	RS-232 & RS-485
<b>M&amp;C Connector</b>	MIL-26482 Series 1 Receptacle, Shell Size 12, 10 Pins
<b>Mute Control</b>	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
<b>Low</b>	0.0 - 0.8V
<b>High</b>	3.0 - 5.0V
<b>Thermal Shutdown Temperature</b>	90°C (Accuracy ± 3°C)

## ENVIRONMENTAL & PHYSICAL

<b>Operating Temperature with fans</b>	-40 to +60°C (-40° to +140°F)
<b>Storage Temperature</b>	-54 to +80°C (-65° to + 176°F)
<b>Outline Dimensions</b>	170 x 86 x 157 mm (6.5 x 3.2 x 6.1")
<b>Weight</b>	2.3 kg (5.0 lbs)
<b>Enclosed Accessories</b>	Screws, gasket, M&C mating connector, power mating connector

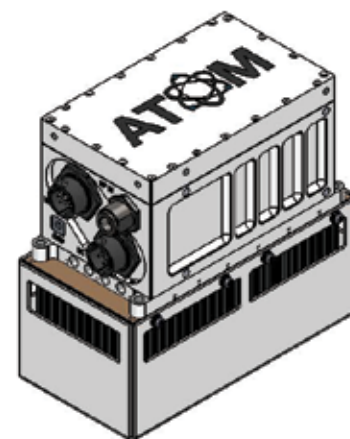
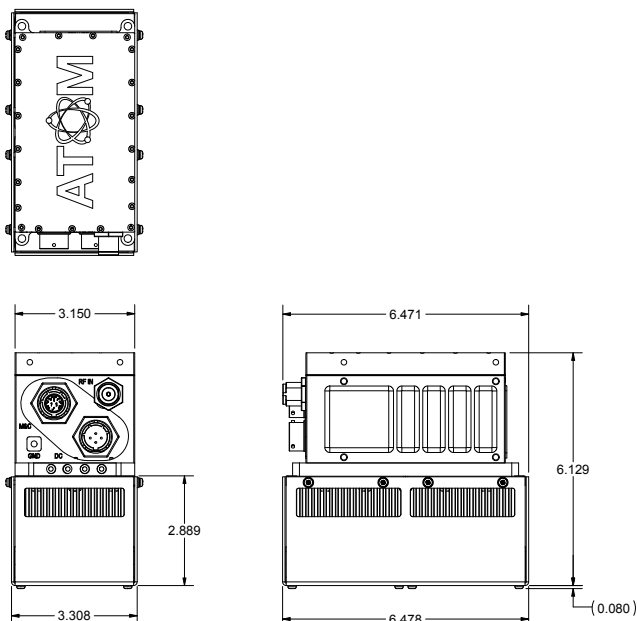
## INTERFACES

<b>RF Input Connector</b>	N-Type
<b>RF Output Connector</b>	WR-75 (WR-62 above 15 GHz)

## POWER

<b>Input Voltage</b>	20 - 56 VDC
<b>Power Consumption with fans</b>	165W @ Psat 147W @ P1dB 126W @ 3dB backoff from P1dB 115W @ Quiescent (no signal input) 20W muted
<b>Power Connector</b>	MIL-26482 Series 1 receptacle Shell size 12, 4 pins

## MECHANICAL DIAGRAM





# BUC

## LOW KU-BAND 28W

### ATOMBKU028BCE



### NORSAT ATOM SERIES BUCS

Compared to equivalent products, ATOM series BUCs are:

- *Up to 68% smaller and lighter*
- *Up to 60% more power efficient*
- *More flexible with RF and configuration options*

The Norsat ATOM series of block upconverters (BUC) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

### RF CONFIGURATIONS

#### Transmit Frequency

Custom band 12.75 to 13.25 GHz

#### Input Frequency

Standard band 950 to 1450 MHz

### OPTIONS

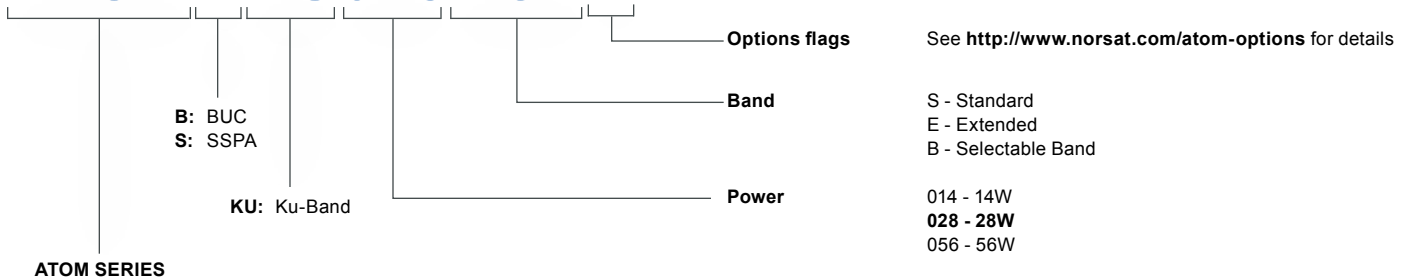
**The following items are standard:** White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power.

**Available options include:** Baseplate Cooling, Surge + Protect Filter, SMA Input Connector, WR-62 Waveguide Output.

**Accessories:** Power supply, Bracket, Waveguides, Cables, Adaptors

### HOW TO ORDER

## ATOMBKU028BCEX



# LOW KU-BAND 28W BUC-ATOMBKU028BCE

## RF SPECIFICATIONS

<b>Power Output (P1dB)</b>	28W min
<b>Noise Figure</b>	15 dB
<b>Phase Noise</b>	-72 dBc/Hz at 1 KHz -82 dBc/Hz at 10 KHz -92 dBc/Hz at 100 kHz -102 dBc/Hz at 1 MHz
<b>Fwd Monitor (15 dB Range) @ CF</b>	±1.0 dB
<b>Conversion Gain</b>	60 dB min
<b>Gain Variation over operating band</b>	8 dB max p-p
<b>Gain Variation over any 40 MHz</b>	2 dB max p-p
<b>Gain Variation over temperature</b>	3 dB max p-p
<b>Input VSWR</b>	2.0:1
<b>Output VSWR</b>	2.0:1
<b>Spurious @ rated power</b>	-50 dBc
<b>AM/PM Conversion @2dB below power</b>	3.5°/dB rated
<b>2nd Harmonic @ 3dB below rated power</b>	-45 dBc

## ENVIRONMENTAL & PHYSICAL

<b>Operating Temperature with fans</b>	-40 to +60°C (-40° to +140°F)
<b>Storage Temperature</b>	-54 to +80°C (-65° to + 176°F)
<b>Outline Dimensions</b>	170 x 86 x 170 mm (6.5 x 3.2 x 6.7")
<b>Weight</b>	2.4 kg (5.4 lbs)
<b>Enclosed Accessories</b>	Screws, gasket, M&C mating connector, power mating connector

## INTERFACES

<b>RF Input Connector</b>	N-Type
<b>RF Output Connector</b>	WR-75 (WR-62 above 15 GHz)

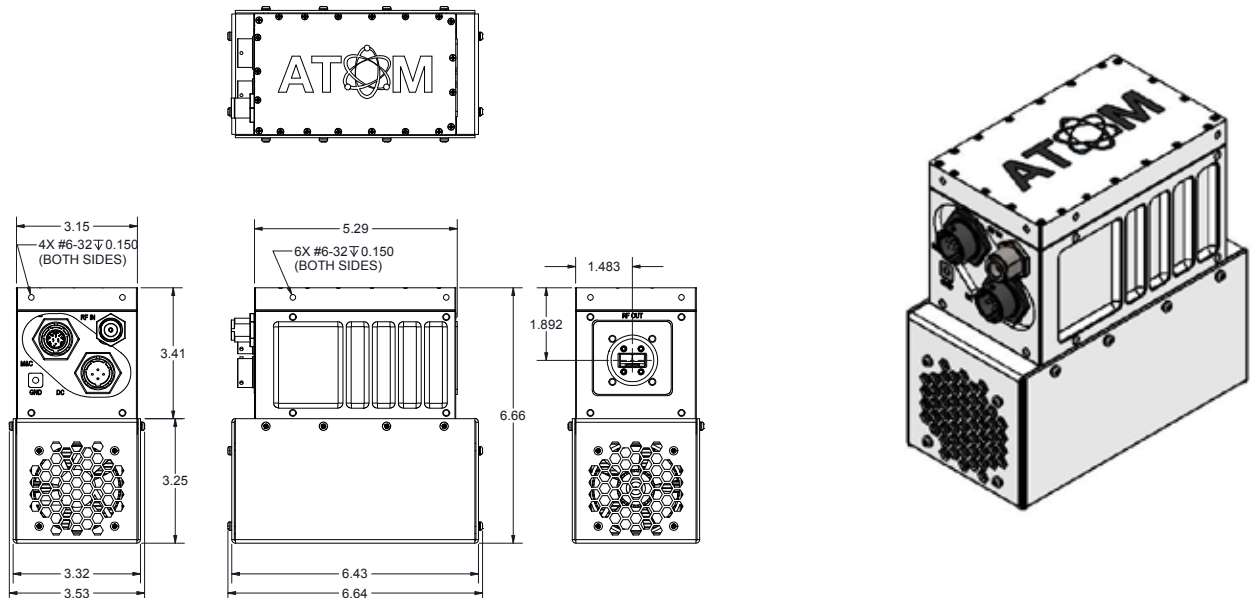
## MONITOR & CONTROL

<b>M&amp;C Interface</b>	RS-232 & RS-485
<b>M&amp;C Connector</b>	MIL-26482 Series 1 Receptacle, Shell Size 12, 10 Pins
<b>Mute Control</b>	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
<b>Low</b>	0.0 - 0.8V
<b>High</b>	3.0 - 5.0V
<b>Thermal Shutdown Temperature</b>	90°C (Accuracy ± 3°C)

## POWER

<b>Input Voltage</b>	20 - 56 VDC
<b>Power Consumption with fans</b>	305W @ Psat 270W @ P1dB 235W @ 3dB backoff from P1dB 210W @ Quiescent (no signal input) 25W muted
<b>Power Connector</b>	MIL-26482 Series 1 receptacle Shell size 12, 4 pins

## MECHANICAL DIAGRAM





# BUC

## LOW KU-BAND 56W

### ATOMBKU056BCE



### NORSAT ATOM SERIES BUCS

Compared to equivalent products, ATOM series BUCs are:

- Up to 68% smaller and lighter
- Up to 60% more power efficient
- More flexible with RF and configuration options

The Norsat ATOM series of block upconverters (BUC) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

### RF CONFIGURATIONS

#### Transmit Frequency

Custom band 12.75 to 13.25 GHz

#### Input Frequency

Standard band 950 to 1450 MHz

### OPTIONS

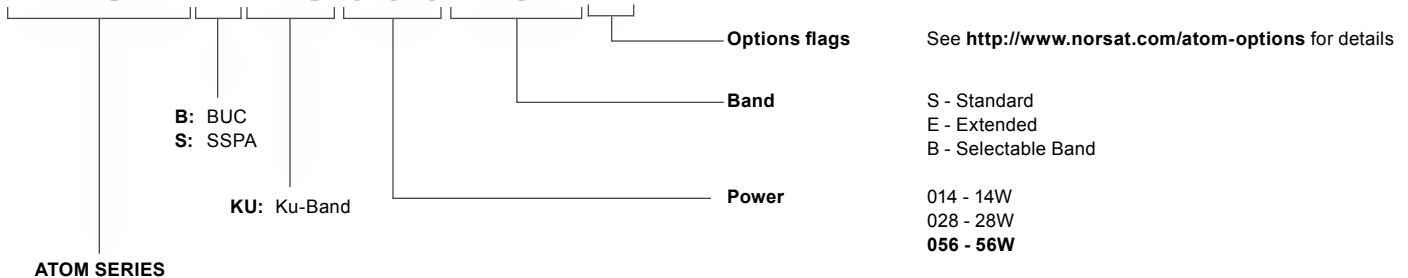
**The following items are standard:** White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power.

**Available options include:** Baseplate Cooling, Surge + Protect Filter, SMA Input Connector, WR-62 Waveguide Output.

**Accessories:** Power supply, Bracket, Waveguides, Cables, Adaptors

### HOW TO ORDER

# ATOMBKU056BCEX



# LOW KU-BAND 56W BUC-ATOMBKU056BCE

## RF SPECIFICATIONS

<b>Power Output (P1dB)</b>	56W min
<b>Noise Figure</b>	15 dB
<b>Phase Noise</b>	-72 dBc/Hz at 1 KHz -82 dBc/Hz at 10 KHz -92 dBc/Hz at 100 kHz -102 dBc/Hz at 1 MHz
<b>Fwd Monitor (15 dB Range) @ CF</b>	±1.0 dB
<b>Conversion Gain</b>	60 dB min
<b>Gain Variation over operating band</b>	8 dB max p-p
<b>Gain Variation over any 40 MHz</b>	2 dB max p-p
<b>Gain Variation over temperature</b>	3 dB max p-p
<b>Input VSWR</b>	2.0:1
<b>Output VSWR</b>	2.0:1
<b>Spurious @ rated power</b>	-50 dBc
<b>AM/PM Conversion @2dB below power</b>	3.5°/dB rated
<b>2nd Harmonic @ 3dB below rated power</b>	-45 dBc

## MONITOR & CONTROL

<b>M&amp;C Interface</b>	RS-485
<b>M&amp;C Connector</b>	MIL-26482 Series 1 Receptacle, Shell Size 12, 10 Pins
<b>Mute Control</b>	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
<b>Low</b>	0.0 - 0.8V
<b>High</b>	3.0 - 5.0V
<b>Thermal Shutdown Temperature</b>	90°C (Accuracy ± 3°C)

## ENVIRONMENTAL & PHYSICAL

<b>Operating Temperature with fans</b>	-40 to +60°C (-40° to +140°F)
<b>Storage Temperature</b>	-54 to +80°C (-65° to + 176°F)
<b>Outline Dimensions</b>	297 L x 135 W 169 H mm (11.7 x 5.3 x 6.4" )
<b>Weight</b>	6.9 kg (15.3 lbs)
<b>Enclosed Accessories</b>	Screws, gasket, M&C mating connector, power mating connector

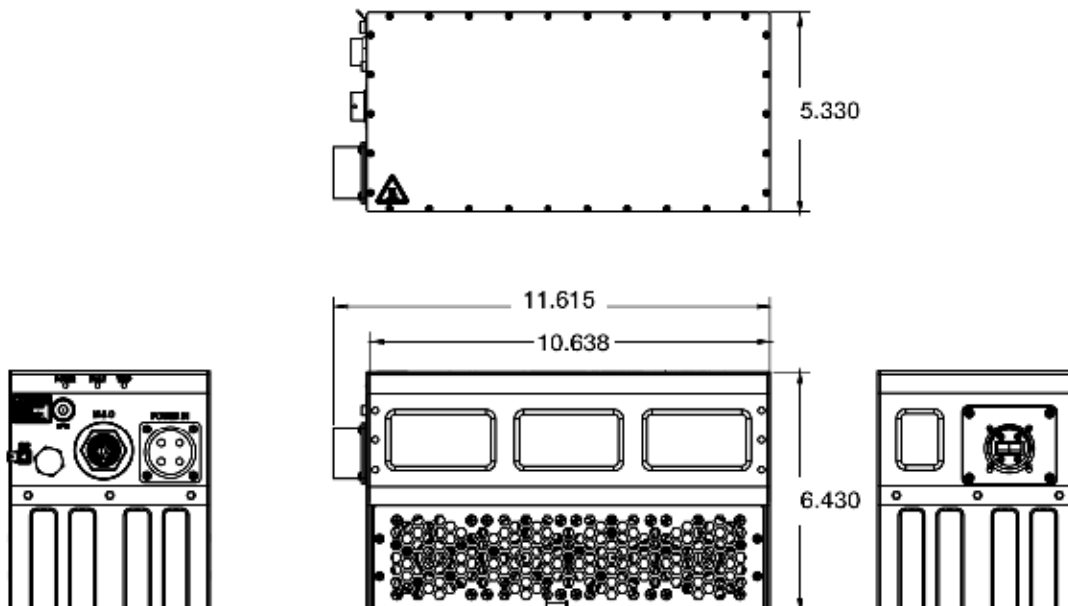
## INTERFACES

<b>RF Input Connector</b>	N-Type
<b>RF Output Connector</b>	WR-75 (WR-62 above 15 GHz)

## POWER

<b>Input Voltage</b>	20 - 56 VDC
<b>Power Consumption with fans</b>	540W @Psat 480W @ P1dB 415W @ 3dB backoff from P1dB 375W @ Quiescent (no signal input) 60W muted
<b>Power Connector</b>	MIL-26482 Series 1 receptacle Shell size 12, 4 pins

## MECHANICAL DIAGRAM





# SSPA

## KA-BAND 25W

### ATOMSKA025



#### NORSAT ATOM SERIES SSPAS

Compared to equivalent products, ATOM series SSPAs are:

- *Up to 20% smaller*
- *Up to 50% lighter*
- *Internal isolation to provide reflected power protection*

The Norsat ATOM series of solid state power amplifiers (SSPA) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

#### RF CONFIGURATIONS

##### Transmit Frequency

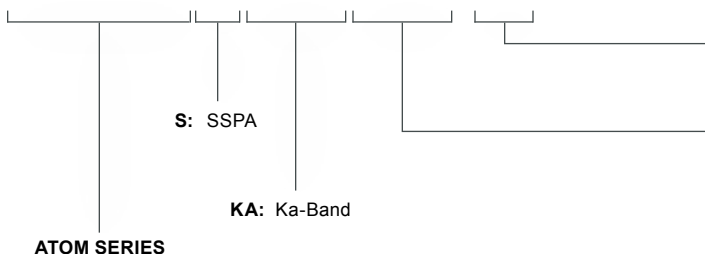
Military band	30.0 to 31.0 GHz
Commercial band 1	29.0 to 30.0 GHz
Custom – Specified within Bandwidth	

#### OPTIONS

<b>Baseplate Cooling</b>	Fanless operation supporting external cooling systems
<b>Ethernet</b>	Ethernet, M&C signaling

#### HOW TO ORDER

## ATOMSKA025-M



<b>Band</b>	M - Military C - Commercial S - Specified Bandwidth
<b>Psat</b>	<b>025 - 25W</b>

# KA-BAND 25W SSPA-ATOMSKA025

## RF SPECIFICATIONS

<b>Output Power (Psat)</b>	44 dBm
<b>Output Power (Plin)</b>	> 41 dBm
<b>Phase Noise</b>	-66 dBc/Hz at 100 Hz -76 dBc/Hz at 1 KHz -86 dBc/Hz at 10 KHz -96 dBc/Hz at 100 KHz -106 dBc/Hz at 1 MHz
<b>Noise Figure</b>	15 dB
<b>Conversion Gain</b>	50 dB typ.
<b>Gain Variation over 40MHz</b>	+/- 0.5 dB
<b>Gain Variation over 500 MHz</b>	+/- 1.5 dB
<b>Gain Variation over 1000 MHz</b>	+/- 2.0 dB
<b>Gain Variation over temperature</b>	+/- 2 dB
<b>Spurious in Band</b>	-55 dBc
<b>Spectral Regrowth @ Plin</b>	-30 dBc
<b>3rd Order Intermod @ Plin</b>	-25 dBc

## ENVIRONMENTAL & PHYSICAL

<b>Operating Temperature</b>	-40 to +60°C (-40° to +140°F)
<b>Storage Temperature</b>	-54 to +105°C (-65° to +221°F)
<b>Outline Dimensions</b>	7.10 x 3.64 x 6.83"
<b>Weight</b>	2.9 kg (6.3 lbs)
<b>Enclosed Accessories</b>	Screws, gasket, M&C mating connector, power mating connector

## POWER

<b>Input Voltage</b>	20 – 56 VDC
<b>Power Consumption</b>	200W @ Psat 150W @ Plin 25W muted
<b>Power Connector</b>	MIL-26482 Series 1 Shell size 12, 4 pins

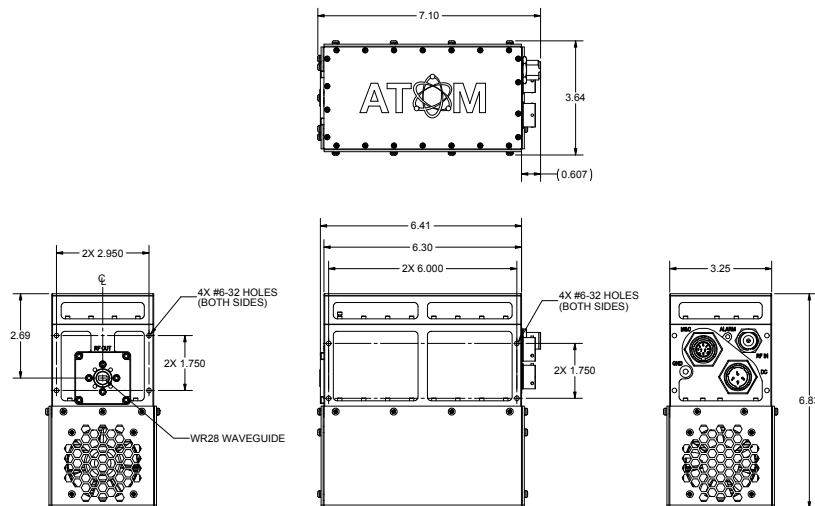
## MONITOR & CONTROL

<b>Discrete Mute Control Voltage ranges</b>	
Low	0 - 0.8 V
High	3.0 - 5.0 V
Fully programmable	
Mute enable can be high or low	
<b>Mute default can be enabled or disabled</b>	
<b>M&amp;C Connector</b>	MIL-26482 Series 1 Shell size 12, 10 pins
<b>M&amp;C Signaling</b>	RS-485, RS-232 or Ethernet

## INTERFACES

<b>Input VSRW</b>	1.5 : 1
<b>Output VSRW</b>	1.9 : 1
<b>RF Input Connector</b>	2.92 mm
<b>RF Output Connector</b>	WR-28

## MECHANICAL DIAGRAM





## SSPA

### KU-BAND 25W

### ATOMSKU025



#### NORSAT ATOM SERIES SSPAS

Compared to equivalent products, ATOM series SSPAs are:

- Up to 68% smaller and lighter
- Up to 60% more power efficient
- More flexible with RF and configuration options

The Norsat ATOM series of solid state power amplifiers (SSPA) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

#### OPTIONS

**The following items are standard:**

White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power.

**Available options include:**

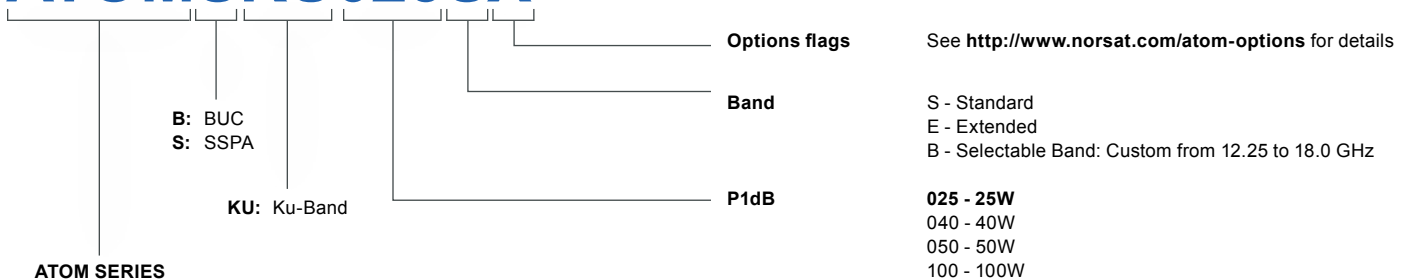
Baseplate Cooling, Surge + Protect Filter, SMA Input Connector, WR-62 Waveguide Output.

**Accessories:**

Power supply, Bracket, Waveguides, Cables, Adaptors

#### HOW TO ORDER

## ATOMSKU025SX





# KU-BAND 25W SSPA-ATOMSKU025

## RF SPECIFICATIONS

Frequency Band (GHz)	13.0-13.75	13.75-14.5	14.5-15.0	15.0-16.0	16.0-16.5	16.5-17.5
<i>*For Selectable Band units, specifications are only guaranteed for one band.</i>						
Rated Power Output (P1dB)	20W	25W	25W	20W	16W	10W
Noise Figure in-band	18 dB	18 dB	18 dB	18 dB	18 dB	18 dB
Fwd Monitor (15 dB Range) @ CF	±1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB
Gain (min)	50 dB	50 dB	50 dB	46 dB	45 dB	40 dB
Gain variation over operating band	8 dB max p-p	6 dB max p-p	6 dB max p-p	7 dB max p-p	7 dB max p-p	10 dB max p-p
Gain variation over any 40 MHz	2 dB max p-p	2 dB max p-p	2 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p
Gain variation over temperature	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p
Gain variation over time	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day
Input VSWR	1.5:1	1.5:1	1.5:1	1.5:1	2.0:1	2.0:1
Output VSWR	2.0:1	2.0:1	2.0:1	2.0:1	2.3:1	2.3:1
w/optional output isolator (derate power by 0.4 dBm)	1.4:1	1.4:1	1.4:1	1.4:1	1.4:1	1.4:1
Spurious @ rated power	-60 dBc	-60 dBc	-60 dBc	-60 dBc	-60 dBc	-60 dBc
AM/PM Conversion @2dB below rated power	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB
2nd Harmonic @ 3dB below rated power	-45 dBc	-45 dBc	-45 dBc	-45 dBc	-45 dBc	-45 dBc
3rd order IMD @ 3dB max. backoff from rated power	-25 dBc	-25 dBc	-25 dBc	-25 dBc	-25 dBc	-25 dBc

## POWER

Input Voltage	20 – 56 VDC
Power Consumption with fans	155W @ Psat 140W @ P1dB 118W @ 3dB backoff from P1dB 110W @ Quiescent (no signal input) 20W muted
Power Connector	MIL-26482 Series 1 receptacle Shell size 12, 4 pins

\*Optional AC Power Supply

## ENVIRONMENTAL & PHYSICAL

Operating Temperature with fans	-40° to +60°C (-40° to +140°F)
Storage Temperature	-54° to +80°C (-65° to 176°F)
Outline Dimensions	170 x 86 x 157 mm (6.5 x 3.2 x 6.1")
Weight	2 kg (4.5 lbs)
Humidity	100% condensing

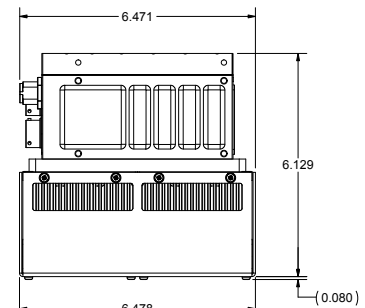
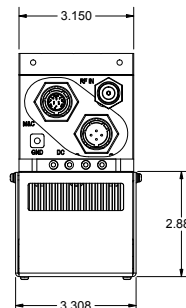
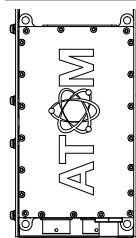
## INTERFACES

RF Input Connector	N-Type
RF Output Connector	WR-75 (WR-62 above 15.5 GHz)

## MONITOR & CONTROL

M&C Interface	RS-232 & RS-485
M&C Connector	MIL-26482 Series 1 Receptacle, Shell Size 12, 10 Pins
Mute Control	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
Low	0.0 - 0.8V
High	3.0 - 5.0V
Thermal Shutdown Temperature	90°C (Accuracy ± 3°C)

## MECHANICAL DIAGRAM





# SSPA

## KU-BAND 40W

### ATOMSKU040



### NORSAT ATOM SERIES SSPAS

Compared to equivalent products, ATOM series SSPAs are:

- Up to 68% smaller and lighter
- Up to 60% more power efficient
- More flexible with RF and configuration options

The Norsat ATOM series of solid state power amplifiers (SSPA) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

### OPTIONS

**The following items are standard:**

White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power.

**Available options include:**

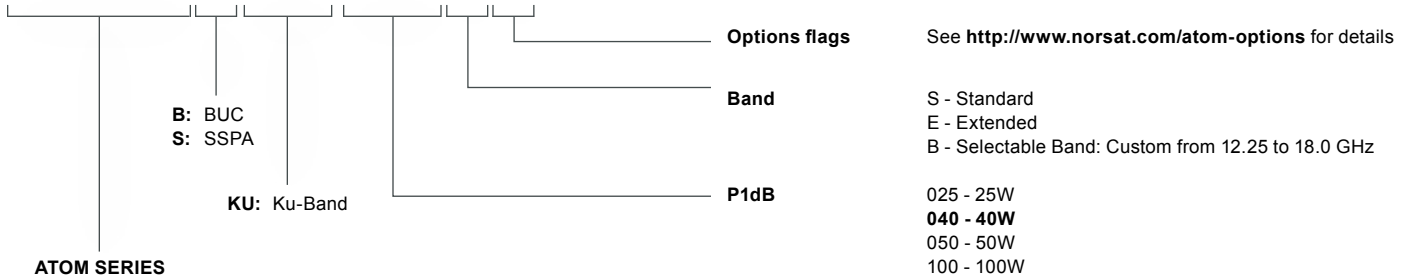
Baseplate cooling, Surge + Protect Filter, Fast switching, SMA Input Connector, WR-62 Waveguide Output.

**Accessories:**

Power Supply, Bracket, Waveguides, Cables, Adaptors.

### HOW TO ORDER

# ATOMSKU040SX



# KU-BAND 40W SSPA-ATOMSKU040

## RF SPECIFICATIONS

Frequency Band (GHz)	13.0-13.75	13.75-14.5	14.5-15.0	15.0-16.0	16.0-16.5	16.5-17.5
<i>*For Selectable Band units, specifications are only guaranteed for one band.</i>						
Rated Power Output (P1dB)	35W	40W	40W	35W	30W	20W
Noise Figure in-band	18 dB	18 dB	18 dB	18 dB	18 dB	18 dB
Fwd Monitor (15 dB Range) @ CF	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB	±1.0 dB
Gain (min)	50 dB	50 dB	50 dB	46 dB	45 dB	40 dB
Gain Variation over operating band	8 dB max p-p	6 dB max p-p	6 dB max p-p	7 dB max p-p	7 dB max p-p	10 dB max p-p
Gain Variation over any 40 MHz	2 dB max p-p	1.5 dB max p-p	1.5 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p
Gain Variation over temperature	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p
Gain Variation over time	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day
Input VSWR	1.5:1	1.5:1	1.5:1	1.5:1	2.0:1	2.0:1
Output VSWR w/optional output isolator (derate power by 0.4 dBm)	2.0:1 1.4:1	2.0:1 1.4:1	2.0:1 1.4:1	2.0:1 1.4:1	2.3:1 1.4:1	2.3:1 1.4:1
Spurious	-60 dBc	-60 dBc	-60 dBc	-60 dBc	-60 dBc	-60 dBc
AM/PM Conversion @2dB below rated power	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB
2nd Harmonic @ 3dB below rated power	-45 dBc	-45 dBc	-45 dBc	-45 dBc	-45 dBc	-45 dBc
3rd order IMD @ 3dB max. backoff from rated power	-25 dBc	-25 dBc	-25 dBc	-25 dBc	-25 dBc	-25 dBc

## POWER

Input Voltage	20 – 56 VDC
Power Consumption with fans	295W @ Psat 262W @ P1dB 227W @ 3dB backoff from P1dB 205W @ Quiescent (no signal input) 25W muted
Power Connector	MIL-26482 Series 1 receptacle Shell size 12, 4 pins

\*Optional AC Power Supply

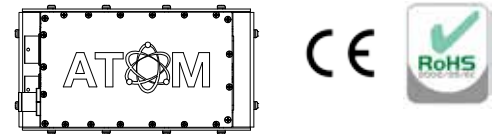
## ENVIRONMENTAL & PHYSICAL

Operating Temperature with fans	-40° to +60°C (-40° to +140°F)
Storage Temperature	-54° to + 80°C (-65° to 176°F)
Outline Dimensions	170 x 86 x 170 mm (6.7 x 3.4 x 6.7")
Weight	2.4 kg (5.4 lbs)
Humidity	100% condensing

## INTERFACES

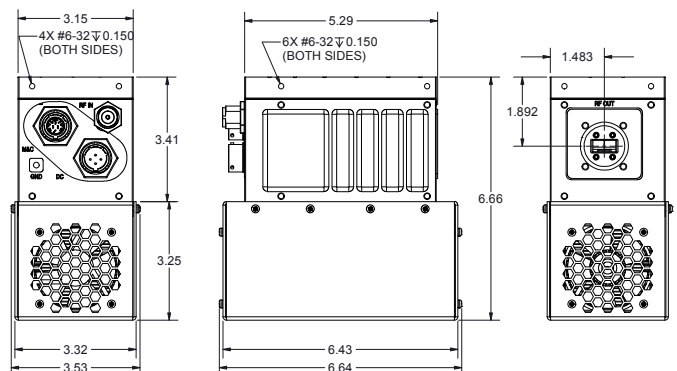
RF Input Connector	N-Type
RF Output Connector	WR-75 (WR-62 above 15.5 GHz)

## MECHANICAL DIAGRAM



## MONITOR & CONTROL

M&C Interface	RS-232 & RS-485
M&C Connector	MIL-26482 Series 1 Receptacle, Shell Size 12, 10 Pins
Mute Control	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
Low	0.0 - 0.8V
High	3.0 - 5.0V
Thermal Shutdown Temperature	90°C (Accuracy ± 3°C)



\*Measurements in inches



# SSPA

## KU-BAND 50W

### ATOMSKU050



### NORSAT ATOM SERIES SSPAS

Compared to equivalent products, ATOM series SSPAs are:

- Up to 68% smaller and lighter
- Up to 60% more power efficient
- More flexible with RF and configuration options

The Norsat ATOM series of solid state power amplifiers (SSPA) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

### OPTIONS

**The following items are standard:**

White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power.

**Available options include:**

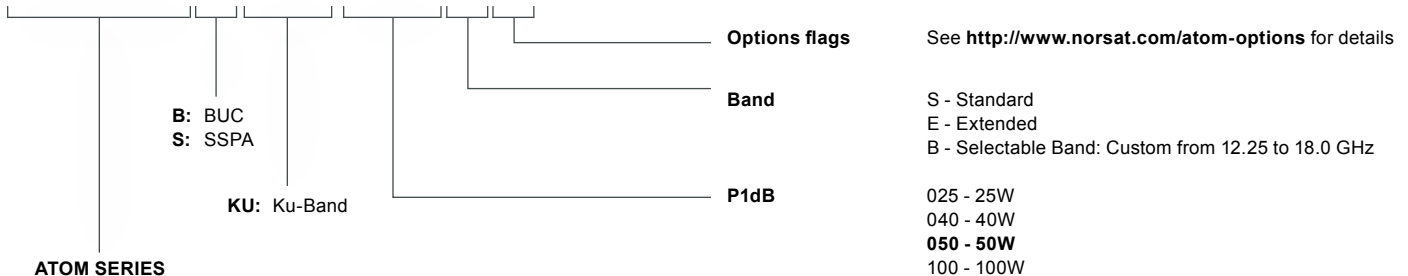
Baseplate cooling, Surge + Protect Filter, Fast switching, SMA Input Connector, WR-62 Waveguide Output.

**Accessories:**

Power Supply, Bracket, Waveguides, Cables, Adaptors.

### HOW TO ORDER

# ATOMSKU050SX



# KU-BAND 50W SSPA-ATOMSKU050

## RF SPECIFICATIONS

Frequency Band (GHz)	13.0-13.75	13.75-14.5	14.5-15.0	15.0-16.0	16.0-16.5	16.5-17.5
<i>*For Selectable Band units, specifications are only guaranteed for one band.</i>						
Rated Power Output (P1dB)	40W	50W	50W	40W	35W	20W
Noise Figure in-band	18 dB	18 dB	18 dB	18 dB	18 dB	18 dB
Fwd Monitor (15 dB Range) @ CF	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB
Gain (min)	50 dB	50 dB	50 dB	46 dB	45 dB	40 dB
Gain Variation over operating band	8 dB max p-p	6 dB max p-p	6 dB max p-p	7 dB max p-p	7 dB max p-p	10 dB max p-p
Gain Variation over any 40 MHz	2 dB max p-p	1.5 dB max p-p	1.5 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p
Gain Variation over temperature	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p
Gain Variation over time	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day
Input VSWR	1.5:1	1.5:1	1.5:1	1.5:1	2.0:1	2.0:1
Output VSWR	2.0:1	2.0:1	2.0:1	2.0:1	2.3:1	2.3:1
w/optional output isolator (derate power by 0.4 dBm)	1.4:1	1.4:1	1.4:1	1.4:1	1.4:1	1.4:1
Spurious	-60 dBc	-60 dBc	-60 dBc	-60 dBc	-60 dBc	-60 dBc
AM/PM Conversion @2dB below rated power	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB
2nd Harmonic @ 3dB below rated power	-45 dBc	-45 dBc	-45 dBc	-45 dBc	-45 dBc	-45 dBc
3rd order IMD @ 3dB max. backoff from rated power	-25 dBc	-25 dBc	-25 dBc	-25 dBc	-25 dBc	-25 dBc

## POWER

Input voltage	20 – 56 VDC
Power Consumption with fans	340W @ Psat 300W @ P1dB 260W @ 3dB backoff from P1dB 235W @ Quiescent (no signal input) 25W muted
Power Connector	MIL-26482 Series 1 receptacle Shell size 12, 4 pins

## INTERFACES

RF Input Connector	N-Type
RF Output Connector	WR-75 (WR-62 above 15.5 GHz)

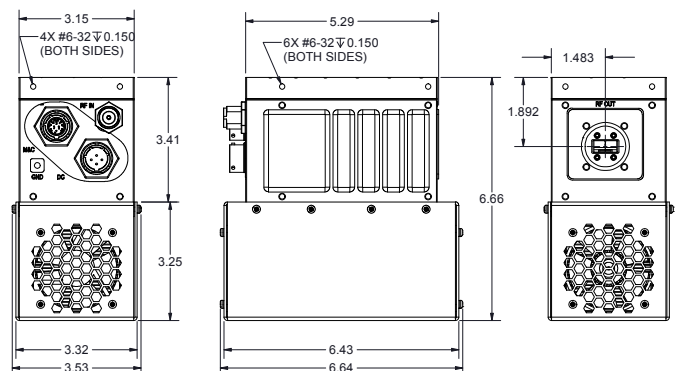
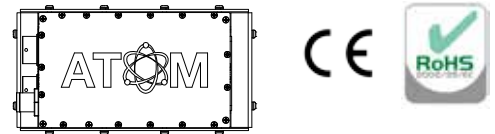
## MONITOR & CONTROL

M&C Interface	RS-232 & RS-485
M&C Connector	MIL-26482 Series 1 Receptacle, Shell Size 12, 10 Pins
Mute Control	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
Low	0.0 - 0.8V
High	3.0 - 5.0V
Thermal Shutdown Temperature	90°C (Accuracy ± 3°C)

## ENVIRONMENTAL & PHYSICAL

Operating Temperature with fans	-40° to +60°C (-40° to +140°F)
Storage Temperature	-54° to + 80°C (-65° to 176°F)
Outline Dimensions	170 x 86 x 170 mm (6.7 x 3.4 x 6.7")
Weight	2.4 kg (5.4 lbs)
Humidity	100% condensing

## MECHANICAL DIAGRAM



\*Measurements in inches



# SSPA

## KU-BAND 100W

### ATOMSKU100



#### NORSAT ATOM SERIES SSPAS

Compared to equivalent products, ATOM series SSPAs are:

- Up to 68% smaller and lighter
- Up to 60% more power efficient
- More flexible with RF and configuration options

The Norsat ATOM series of solid state power amplifiers (SSPA) are among the smallest, lightest, and most energy efficient transmitters available. The high efficiency of ATOM reduces power consumption significantly, delivering considerable operational cost savings over the lifetime of the device.

#### OPTIONS

**The following items are standard:**

White paint, N-Type input connector, WR-75 waveguide output, Fan cooling, DC Power.

**Available options include:**

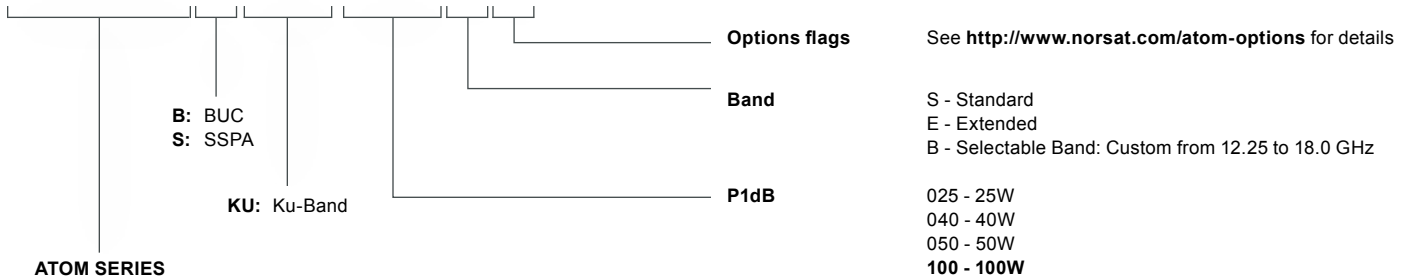
Baseplate Cooling, EMI/EMC Filter, Surge+Protect Filter, Fast Switching, 3 Phase AC, SMA Input Connector, WR-62 Waveguide Output

**Accessories:**

Power Supply, Bracket, Waveguides, Cables, Adaptors.

#### HOW TO ORDER

## ATOMSKU100SX



# KU-BAND 100W SSPA-ATOMSKU100

## RF SPECIFICATIONS

Frequency Band (GHz)	13.0-13.75	13.75-14.5	14.5-15.0	15.0-16.0	16.0-16.5	16.5-17.5
<i>*For Selectable Band units, specifications are only guaranteed for one band.</i>						
Rated Power Output (P1dB)	80W	100W	100W	80W	72W	40W
Rated Power Output (Psat)	95W	120W	120W	95W	85W	48W
Noise Figure in-band	18 dB	18 dB	18 dB	18 dB	18 dB	18 dB
Fwd Monitor (15 dB Range) @ CF	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB
Gain (min)	50 dB	50 dB	50 dB	46 dB	45 dB	40 dB
Gain Variation over operating band	8 dB max p-p	6 dB max p-p	6 dB max p-p	7 dB max p-p	7 dB max p-p	10 dB max p-p
Gain Variation over any 40 MHz	2 dB max p-p	1.5 dB max p-p	1.5 dB max p-p	2 dB max p-p	3 dB max p-p	3 dB max p-p
Gain Variation over temperature	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p	3 dB max p-p
Gain Variation over time	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day	0.5 dB/day
Input VSWR	1.5:1	1.5:1	1.5:1	1.5:1	2.0:1	2.0:1
Output VSWR	2.0:1	2.0:1	2.0:1	2.0:1	2.3:1	2.3:1
w/optional output isolator (derate power by 0.4 dBm)	1.4:1	1.4:1	1.4:1	1.4:1	1.4:1	1.4:1
Spurious	-60 dBc	-60 dBc	-60 dBc	-60 dBc	-60 dBc	-60 dBc
AM/PM Conversion @2dB below rated power	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB	2.5°/dB
2nd Harmonic @ 3dB below rated power	-45 dBc	-45 dBc	-45 dBc	-45 dBc	-45 dBc	-45 dBc
3rd order IMD @ 3dB max. backoff from rated power	-25 dBc	-25 dBc	-25 dBc	-25 dBc	-25 dBc	-25 dBc

## POWER

Input voltage	20 – 56 VDC
Power Consumption with fans	532W @ Psat 475W @ P1dB 410W @ 3dB backoff from P1dB 375W @ Quiescent (no signal input) 60W muted
Power Connector	AMPHENOL 10-194922P 4 Pins

## ENVIRONMENTAL & PHYSICAL

Operating Temperature with fans	-40° to +60°C (-40° to +140°F)
Storage Temperature	-54° to + 80°C (-65° to 176°F)
Outline Dimensions	297 x 135 x 169 mm (11.7 x 5.3 x 6.4")
Weight	7 kg (15.3 lbs)
Humidity	100% condensing
Altitude	24,384 m (80,000 ft)

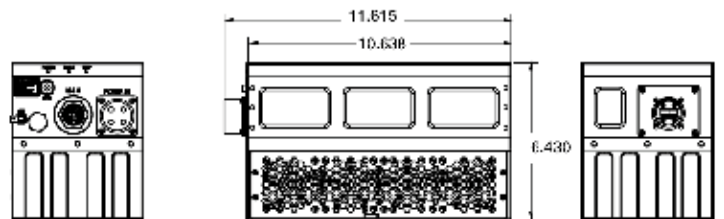
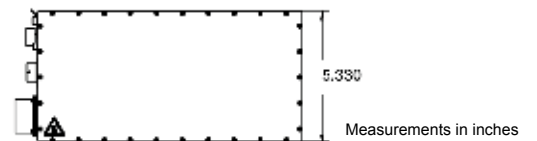
## INTERFACES

RF Input Connector	N-Type
RF Output Connector	WR-75 (WR-62 above 15.5 GHz)

## MONITOR & CONTROL

M&C Interface	RS-485
M&C Connector	MIL-26482 Series 1 Receptacle, Shell Size 12, 10 Pins
Mute Control	Fully configurable (mute enable: high or low, mute default: enabled or disabled)
Low	0.0 - 0.8V
High	3.0 - 5.0V
Thermal Shutdown Temperature	90°C (Accuracy ± 3°C)

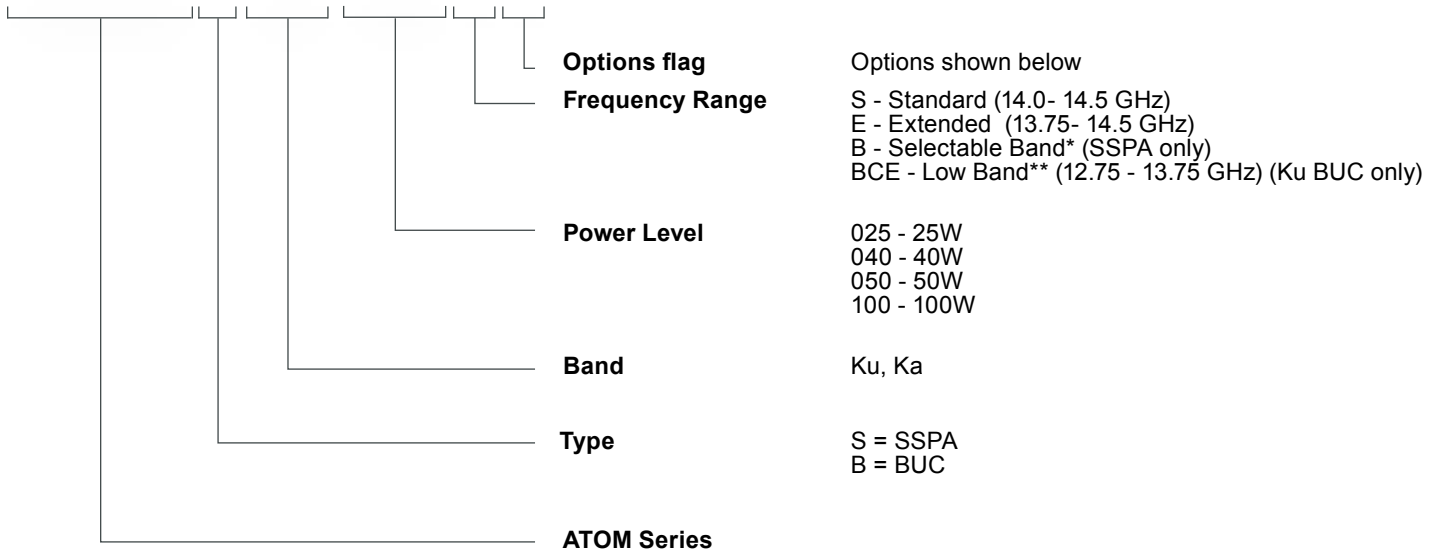
## MECHANICAL DIAGRAM





# How to Order Details

## ATOMSKU025SX



Ku OPTIONS

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C (Baseplate cooled)

---

D (Adjustable group delay, 100W only)

---

F (EMI/EMC Filter)<sup>\*\*\*</sup>

---

L (Low voltage operation, 25W only)

---

P (Surge protected, 25W/40W/50W only)

---

S (SMA input)

---

W (Fast switching)

---

X (WR62 Waveguide output, SSPA only)

---

Z (3 Phase AC power, 100W only)

Ka OPTIONS

---

C (Baseplate cooled)

---

E (Ethernet M&C)

---

P (1275D Surge protected)

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\* Selectable band frequencies are a specific subset within the 12.5-18.0 GHz range. Contact Norsat for details on frequency range options.

\*\* Low band Power Levels (14W / 28W / 56W)

\*\*\* May impact housing size

- Standard Color is White (other color options include: Norsat Tan, Dark Tan, and Green)
- Standard L-Band Input is an N-Connector
- Standard WG Output is WR75
- Fan Cooling
- DC Power





**Notes:**



## Notes:



## CONTACT

**Norsat International Inc.**  
110-4020 Viking Way  
Richmond, BC  
V6V 2L4 Canada

**TEL +1 604 821 2800**  
**FAX +1 604 821 2801**  
**sales@norsat.com**  
**www.norsat.com**



**Norsat**  
International Inc.

**North America**  
+ 1 800 644 4562

**Asia Pacific**  
+ 1 604 821 2813

**Europe, Middle East & Africa**  
+ 44 1522 730 800

**South America**  
+ 1 604 821 2835

**Online**  
sales@norsat.com  
www.norsat.com