



# PRODUCT GUIDE

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ALL THE POWER YOU NEED

# LNAs & LNBs

SATCOM TTC · Earth observation · Government & Defence Lunar communication



A L L   T H E   P O W E R   Y O U   N E E D





## A B O U T U S

A **European technology leader** in different domains of the satellite communication value chain, from ground stations to aircraft and spacecraft communications systems. We specialise in radiofrequency, antennas and turnkey ground station solutions.

Ours is a business based on technologies developed over many years to meet customer needs. Excellent quality standards and product reliability are part of the company's identity. We invest a significant part of our turnover in R&D activities. We also work closely with the most important research centres across Europe including the **European Space Agency** and many others around the world.

We offer a range of **Low Noise Amplifiers (LNAs)** for satcom reception links, from S to Q band.

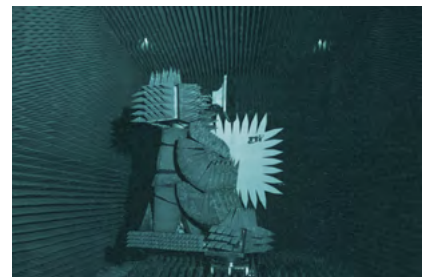
All units are fully tested in an environmental chamber and delivered with a complete factory acceptance test report. **Advanced design and construction** mean the equipment can be operated in the **toughest environments**. Exceptional performance combined with **reliability and cost effectiveness**. Turnkey solutions, including redundancy systems 1:1 or 1:2 with indoor remote control unit, are available upon request.

In addition, we have a wide product portfolio of **SSPAs/BUCs** for different frequency bands up to Q band.

## F A C I L I T I E S

Our headquarters in Santander in Spain is **over 4000m<sup>2</sup>** in size and has a **dedicated mass production area**. We have **state-of-the-art equipment and facilities** that allow us to undertake any technological challenge.

CLEAN ROOM BONDING ROOM RF & MICROWAVE LABORATORY ANECHOIC CHAMBER PRODUCTION AREA CRYOGENIC LABORATORY CLIMATIC CHAMBER



## C U S T O M E R B A S E

We work with a wide range of customers worldwide, market leaders in **AEROSPACE, SATCOM & SCIENCE**.

## AEROSPACE



THALES



## SATCOM



## SCIENCE



## Q U A L I T Y &amp; I N N O V A T I V E

**ISO 9001:2015** - Certified for the DESIGN, DEVELOPMENT, PRODUCTION & INTEGRATION OF TELECOMMUNICATIONS EQUIPMENT, with a multi-site certification covering all locations.



**INNOVATIVE SME STAMP** - Awarded the Innovative SME stamp from the Spanish Ministry of Science & Innovation for activity in R+D+i.



## I N D E X

- SATCOM -								
TELEMETRY, TRACKING & COMMAND (TTC)								
	TYPE	FREQ. BAND	NOISE TEMP.	INPUT VSWR	GAIN	INPUT PORT	CONFIGURATION	PAGE
S band								
	LNA	2.2-2.3 GHz	≤34 K	<1.4:1	>50 dB	CPR430G	Standalone	09
							1:2 redundancy system	11
							1:1 redundancy system	12
		2.2-2.3 GHz	≤35 K	<1.4:1	>50 dB	N (f)	Standalone	10
							1:2 redundancy system	13
							1:1 redundancy system	14
COMMERCIAL, GOVERNMENT & DEFENCE SATCOM								
	TYPE	FREQ. BAND	NOISE TEMP.	INPUT VSWR	GAIN	INPUT PORT	CONFIGURATION	PAGE
Ka band								
	LNA	20.2-21.2 GHz	≤110 K	≤1.5:1	>60 dB	WR42	Standalone	17
							1:2 redundancy system	19
							1:1 redundancy system	20
		17.7-20.2 GHz	≤130 K	≤1.6:1	>50 dB	WR42	Standalone	18
							1:2 redundancy system	19
							1:1 redundancy system	20
X band								
	LNA	8.0-8.5 GHz	≤50 K	<1.55:1	>55 dB	CPR112G	Standalone	23
							1:2 redundancy system	26
							1:1 redundancy system	27
		NEW 7.25-7.75 GHz	≤45 K	<1.5:1	>50 dB >55 dB >60 dB	CPR112G	Standalone	24
							1:2 redundancy system	26
							1:1 redundancy system	27
	LNB NEW 7.25-7.75 GHz	≤50 K	<1.55:1	>50 dB >55 dB	CPR112G	Standalone	25	
						1:2 redundancy system	26	
						1:1 redundancy system	27	
LOAD PULL & SATELLITE COMMUNICATIONS								
	TYPE	FREQ. BAND	NOISE TEMP.	INPUT VSWR	GAIN	INPUT PORT	CONFIGURATION	PAGE
Q band								
	LNA	37.5-42.5 GHz	≤225 K	<2.0:1	50 dB	UG-383/U	Standalone	31
							1:2 redundancy system	33
							1:1 redundancy system	34
	LNB	38-40 GHz	≤262 K	< 1.5:1	> 60 dB	UG-383/U	Standalone	32
							1:2 redundancy system	33
							1:1 redundancy system	34
RCU - Remote Control Unit for LNAs/LNBs								
	MODEL	OPERATION	CONFIGURATION				PAGE	
RCU								
	RCU	Up to 6 LNAs/LNBs	1:0, 1:1, 1:2 redundancy systems				37	

A sepia-toned photograph of a satellite ground station. In the foreground, several large parabolic satellite antennas are visible, mounted on complex metal structures. The antennas are pointed towards the sky. The background shows a flat, arid landscape with some low-lying vegetation and a range of hills or mountains in the distance. The sky is filled with soft, wispy clouds. The overall tone is warm and historical, characteristic of sepia prints.

SATCOM



## S BAND LNA/LNB RANGE FOR FOR TELEMETRY, TRACKING & COMMAND (TTC)

Using **cutting-edge technology**, the new S LNA family offers outstanding performance in outdoor operations

### INNOVATIVE TECHNOLOGY

State-of-the-art technology provides a very low noise figure at S band, with superior performance from a highly compact unit.

### EFFICIENCY & RELIABILITY

Each unit is fully tested in an environmental chamber and delivered with a complete factory acceptance test report.

Advanced design and construction mean the equipment can be operated in the toughest environments.

Exceptional performance combined with reliability and cost effectiveness.

### CONFIGURABILITY

Several options to configure the product at factory are available, including gain, VSWR and noise temperature. Other port configurations, such as coaxial connector can also be supplied, upon request.



### KEY FEATURES

- \* TTC
- \* Superior performance
- \* High reliability & efficiency
- \* Ultra-low noise figure
- \* High gain & low ripple
- \* Low input & output VSWR
- \* Fault alarm
- \* Compact size & lightweight
- \* Weatherproof
- \* Wide operating temperature range
- \* Redundant configurations (1:1, 1:2, N:1)

# S BAND

## SATCOM: TTC

LNA - WG input port

34 K

2.2 - 2.3 GHz

PAGE 09



LNA - Coaxial input port

35 K

2.2 - 2.3 GHz

PAGE 10





ELECTRICAL

Operating frequency range	2.20-2.30 GHz
Noise temperature	<34 K
Noise figure	<0.48 dB
Input VSWR	<1.4:1
Output VSWR (50 Ω)	<1.5:1
Gain	>50 dB
Gain flatness	1 dB pp maxv
Gain variation over temperature	±1.5 dB
Output P1dB	>22 dBm
3 <sup>rd</sup> OIP	>30 dBm
Spurious	<-60 dBc

POWER SUPPLY & MONITORING

Input voltage	+12 to +28 VDC
Current consumption	<300 mA @15 VDC
Fault alarm circuitry	form-C contact closure

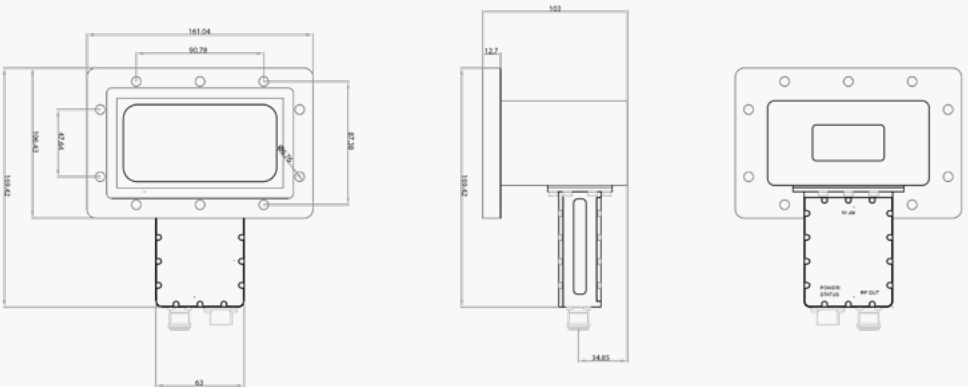
INTERFACES & PHYSICAL

Dimensions (L x W x H)	169 x 161 x 103 mm
Weight	1020 gr
Interfaces	RF input flange: CPR430G / N (f) RF output: N (f) DC & monitoring: PT02A10-5P

ENVIRONMENTAL

Operating temperature	-30 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Humidity	100 % condensing

OUTLINE  
DRAWING



Dimensions are in "mm" and after treatment  
Tolerance according to ISO 2768-f

+

OPTIONS

- \* Transmitter reject filter
- \* Coaxial connector
- \* Redundant systems 1:1, 2:1, N:1
- \* Indoor controller
- \* Extended temperature range:  
-40 °C, + 55 °C

CONTACT

sales@ttinorte.es  
www.ttinorte.com

NOTICE

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ELECTRICAL

Operating frequency range	2.20-2.30 GHz
Noise temperature	<35 K
Noise figure	<0.49 dB
Input VSWR	<1.4:1
Output VSWR (50 Ω)	<1.5:1
Gain	>50 dB / 55 dB
Gain flatness	1 dB pp maxv
Gain variation over temperature	±1.5 dB
Output P1dB	>22 dBm
3 <sup>rd</sup> OIP	>30 dBm
Spurious	<-60 dBc

POWER SUPPLY & MONITORING

Input voltage	+12 to +28 VDC
Current consumption	<300 mA @15 VDC
Fault alarm circuitry	Form-C contact closure

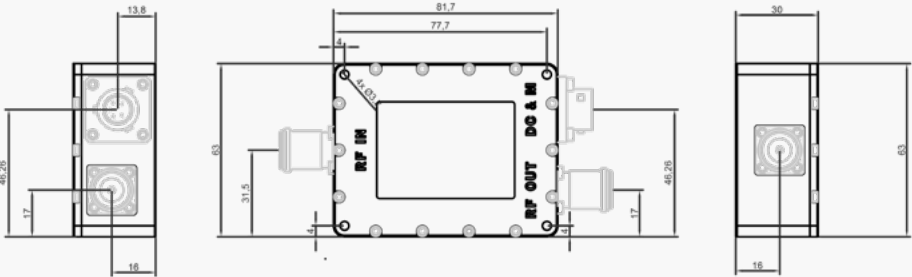
INTERFACES & PHYSICAL

Dimensions (L x W x H)	81.7 x 63 x 30 mm
Weight	315 gr
Interfaces	RF input flange: CPR430G / N (f) RF output: N (f) DC & monitoring: PT02A10-5P

ENVIRONMENTAL

Operating temperature	-30 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Humidity	100 % condensing

OUTLINE  
DRAWING



Dimensions are in "mm" and after treatment  
Tolerance according to ISO 2768-f

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## PARTS INCLUDED

Low noise amplifier	S band LNA (qty 3)
Redundancy WG & coaxial assembly outdoor kit	WG sections/adapters Coaxial components & RF cabling Dual WG/coax switches (qty 2)
Redundancy system controller	Rack mounting RCU 1U-high 19" sub rack (indoor) Ethernet port USB local port Dual internal power supply Cabling: AC cables (1.5 m long) (qty 2)
Standard outdoor plate	Mechanical plate & support Interface box DC/M&C cabling
Mating connectors	DC/M&C connector (LNA) DC/M&C connector (switches)

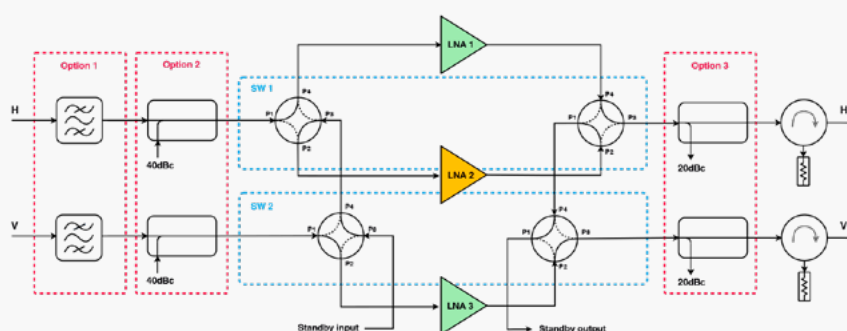
## KEY FEATURES

- \* Based on superior TTI's S LNA family
- \* Robust & reliable redundancy performance
- \* Standby ports for test
- \* Web interface for remote control
- \* Manual & automatic mode
- \* User-friendly configuration/operation
- \* Plug & play installation
- \* Weatherproof

## OPTIONS

- \* Outdoor redundancy system controller
- \* IDU-ODU system cables
- \* Output test coupler
- \* Input test coupler

## SYSTEM CONFIGURATION



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Low noise amplifier	S band LNA (qty 2)
Redundancy WG & coaxial assembly outdoor kit	WG sections/adapters Coaxial components & RF cabling Dual WG/coax switch (qty 1)
Redundancy system controller	Rack mounting RCU 1U-high 19" sub rack (indoor) Ethernet port USB local port Dual internal power supply Cabling: AC cables (1.5 m long) (qty 2)
Standard outdoor plate	Mechanical plate & support Interface box DC/M&C cabling
Mating connectors	DC/M&C connector (LNA) DC/M&C connector (switch)

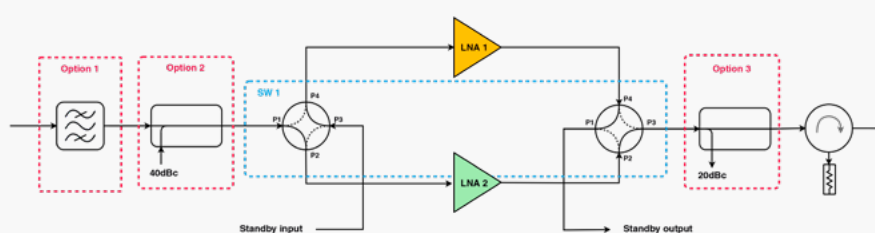
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## PARTS INCLUDED

Low noise amplifier	S band LNA (qty 3)
Redundancy coaxial assembly outdoor kit	Coaxial components / RF cabling / Adapters Dual coaxial switches (qty 2)
Redundancy system controller	Rack mounting RCU 1U-high 19" sub rack (indoor) Ethernet port USB local port Dual internal power supply Cabling: AC cables (1.5 m long) (qty 2)
Standard outdoor plate	Mechanical plate & support Interface box DC/M&C cabling
Mating connectors	DC/M&C connector (LNA) DC/M&C connector (switches)

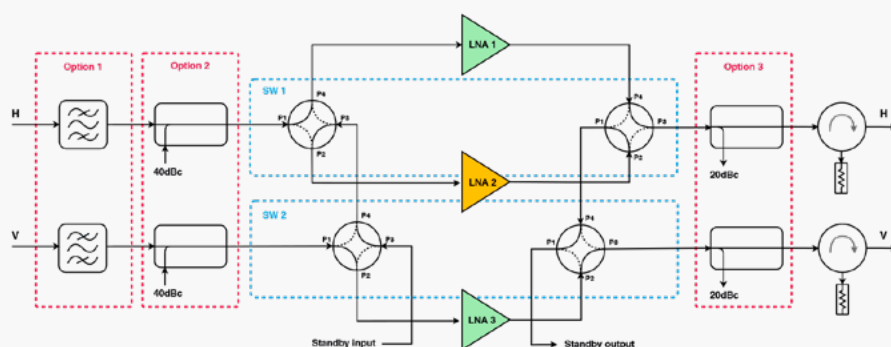
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Redundancy coaxial assembly outdoor kit	Coaxial components / RF cabling / Adapters Dual coaxial switch (qty 1)
Redundancy system controller	Rack mounting RCU 1U-high 19" sub rack (indoor) Ethernet port USB local port Dual internal power supply Cabling: AC cables (1.5 m long) (qty 2)
Standard outdoor plate	Mechanical plate & support Interface box DC/M&C cabling
Mating connectors	DC/M&C connector (LNA) DC/M&C connector (switch)

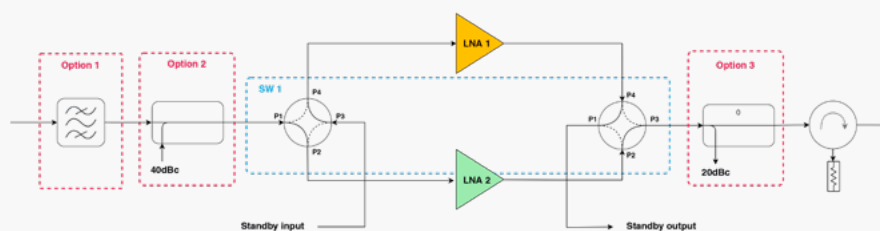
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SYSTEM CONFIGURATION



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## Ka/X BANDS LNA/LNB RANGE FOR COMMERCIAL GOVERNMENT & DEFENCE SATCOM

Using **cutting-edge technology**, the new Ka/X LNA/LNB family offers outstanding performance in outdoor operations

### INNOVATIVE TECHNOLOGY

State-of-the-art technology provides a very low noise figure at Ka/X bands with superior performance from a highly compact unit.

### EFFICIENCY & RELIABILITY

Each unit is fully tested in an environmental chamber and delivered with a complete factory acceptance test report.

Advanced design and construction mean the equipment can be operated in the toughest environments.

Exceptional performance combined with reliability and cost effectiveness.

### CONFIGURABILITY

Several options to configure the product at factory are available, including gain, VSWR and noise temperature. Other port configurations, such as coaxial connector can also be supplied, upon request.



### KEY FEATURES

- \* Satcom application
- \* Superior performance
- \* High reliability & efficiency
- \* Ultra-low noise figure
- \* High gain & low ripple
- \* Low input & output VSWR
- \* Fault alarm
- \* Compact size & lightweight
- \* Weatherproof
- \* Wide operating temperature range
- \* Redundant configurations (1:1, 1:2, N:1)

# Ka BAND

SATCOM: COMMERCIAL,  
GOVERNMENT & DEFENSE

20.2 - 21.2 GHz —————

LNA  
110 K  
PAGE 17



17.7 - 20.2 GHz —————

LNA  
130 K  
PAGE 18





## ELECTRICAL

Operating frequency range	20.2-21.2 GHz
Noise temperature	<110 K
Noise figure	<1.4 dB
Input VSWR	<1.5:1
Output VSWR (50 $\Omega$ )	<1.8:1
Gain	>50 dB
Gain flatness	2 dB pp max
Gain variation over temperature	$\pm 2$ dB
Output P1dB	>10 dBm
3 <sup>rd</sup> OIP	>20 dBm
Spurious	<-60 dBc

## POWER SUPPLY &amp; MONITORING

Input voltage	+12 to +28 VDC
Current consumption	<150 mA @15 VDC
Fault alarm circuitry	Form-C contact closure

## INTERFACES &amp; PHYSICAL

Dimensions (L x W x H)	45 x 25.5 x 60 mm
Weight	110 gr
Interfaces	RF input flange: WR42 RF output: K (f) DC & monitoring: PT02A10-5P

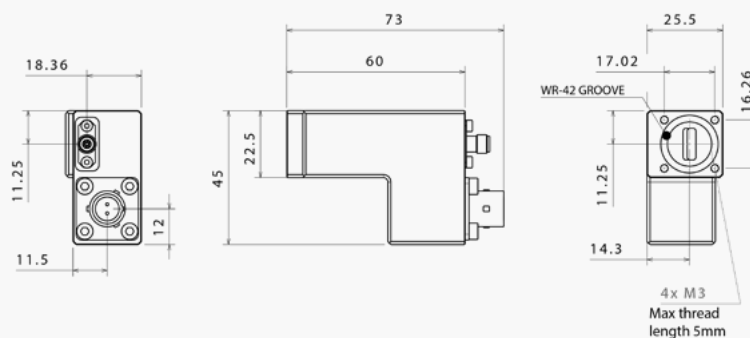
## ENVIRONMENTAL

Operating temperature	-30 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Humidity	100 % condensing



## OPTIONS

- \* Coaxial connector
- \* Redundant systems 1:1, 2:1, N:1
- \* Indoor controller
- \* Extended temperature range:  
-40 °C, + 55 °C

OUTLINE  
DRAWING

## CONTACT

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## OPTIONS

- \* Coaxial connector
- \* Redundant systems 1:1, 2:1, N:1
- \* Indoor controller
- \* Extended temperature range:  
-40 °C, + 55 °C

## ELECTRICAL

Operating frequency range	17.7-20.2 GHz
Noise temperature	<130 K
Noise figure	<1.6 dB
Input VSWR	<2.0:1
Output VSWR (50 Ω)	<1.8:1
Gain	>50 dB
Gain flatness	3 dB pp max
Gain variation over temperature	±2 dB
Output P1dB	>10 dBm
3 <sup>rd</sup> OIP	>20 dBm
Spurious	<-60 dBc

## POWER SUPPLY &amp; MONITORING

Input voltage	+12 to +28 VDC
Current consumption	<150 mA @15 VDC
Fault alarm circuitry	Form-C contact closure

## INTERFACES &amp; PHYSICAL

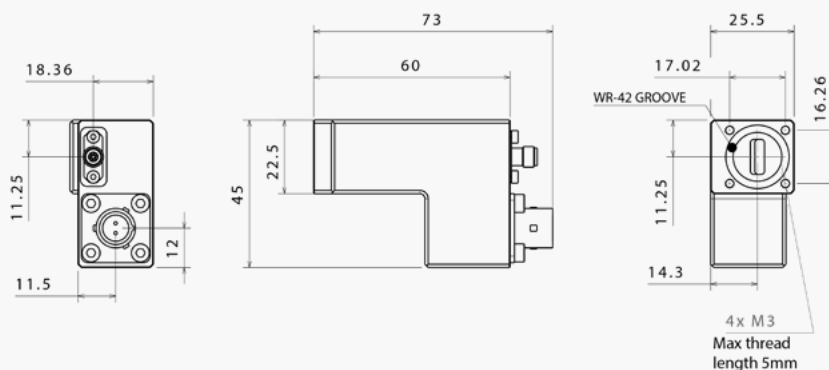
Dimensions (L x W x H)	50 x 100 x 35 mm
Weight	250 gr
Interfaces	RF input flange: WR42 RF output: K(f) DC & monitoring: PT02A10-5P

## ENVIRONMENTAL

Operating temperature	-30 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Humidity	100 % condensing

Ka

SATCOM

OUTLINE  
DRAWING

Dimensions are in "mm" and after treatment  
Tolerance according to ISO 2768-f

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## PARTS INCLUDED

Low noise amplifier	Ka band LNA (qty 3)
Redundancy WG & coaxial assembly outdoor kit	WG sections/adapters Coaxial components & RF cabling Dual WG/coax switches (qty 2)
Redundancy system controller	Rack mounting RCU 1U-high 19" sub rack (indoor) Ethernet port USB local port Dual internal power supply Cabling: AC cables (1.5 m long) (qty 2)
Standard outdoor plate	Mechanical plate & support Interface box DC/M&C cabling
Mating connectors	DC/M&C connector (LNA/LNB) DC/M&C connector (switches)



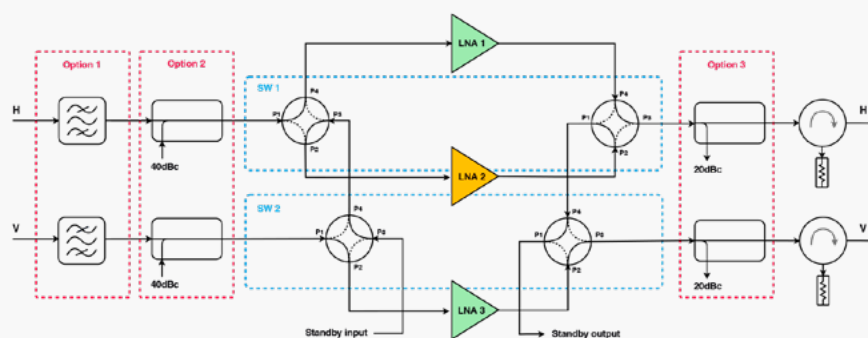
## KEY FEATURES

- \* Based on superior TTI's Ka LNA family
- \* Robust & reliable
- \* Standby ports for test
- \* Web interface for remote control
- \* Manual and automatic mode
- \* User-friendly configuration/operation
- \* Plug & play installation
- \* Weatherproof

## OPTIONS

- \* Outdoor redundancy system controller
- \* IDU-ODU system cables
- \* Input transmitter reject filter
- \* Output test coupler
- \* Input test coupler

## SYSTEM CONFIGURATION



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## KEY FEATURES

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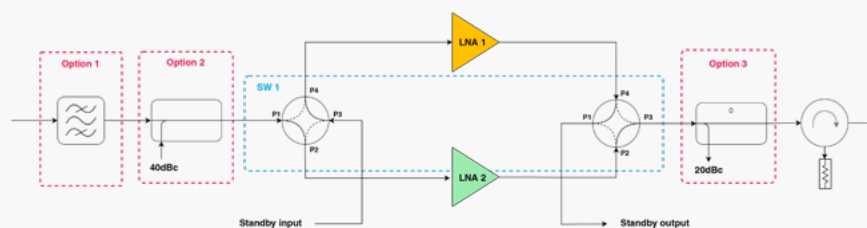
## OPTIONS

- \* Outdoor redundancy system controller
- \* IDU-ODU system cables
- \* Input transmitter reject filter
- \* Output test coupler
- \* Input test coupler

## PARTS INCLUDED

Low noise amplifier	Ka band LNA (qty 2)
Redundancy WG & coaxial assembly outdoor kit	WG sections/adapters Coaxial components & RF cabling Dual WG/coax switch (qty 1)
Redundancy system controller	Rack mounting RCU 1U-high 19" sub rack (indoor) Ethernet port USB local port Dual internal power supply Cabling: AC cables (1.5 m long) (qty 2)
Standard outdoor plate	Mechanical plate & support Interface box DC/M&C cabling
Mating connectors	DC/M&C connector (LNA) DC/M&C connector (switch)

## SYSTEM CONFIGURATION



Ka

SATCOM

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A L L   T H E   P O W E R   Y O U   N E E D

# X BAND

## SATCOM: GOVERNMENT & DEFENSE

8.0 - 8.5 GHz —————

LNA  
50 K  
PAGE 23



7.25 - 7.75 GHz —————

**NEW !**

LNA  
45 K  
PAGE 24



7.25 - 7.75 GHz —————

**NEW !**

LNB  
50 K  
PAGE 25





## OPTIONS

- \* Coaxial connector
- \* Redundant systems 1:1, 2:1, N:1
- \* Indoor controller
- \* Extended temperature range:  
-40 °C, + 55 °C

## ELECTRICAL

Operating frequency range	8.0-8.5 GHz
Noise temperature	<50 K
Noise figure	<0.69 dB
Input VSWR	<1.55:1
Output VSWR (50 Ω)	<1.3:1
Gain	>50 dB / 55 dB / 60 dB
Gain flatness	1 dB pp max
Gain variation over temperature	±1.5 dB
Output P1dB	>17 dBm
3 <sup>rd</sup> OIP	>21 dBm
Spurious	<-60 dBc

## POWER SUPPLY &amp; MONITORING

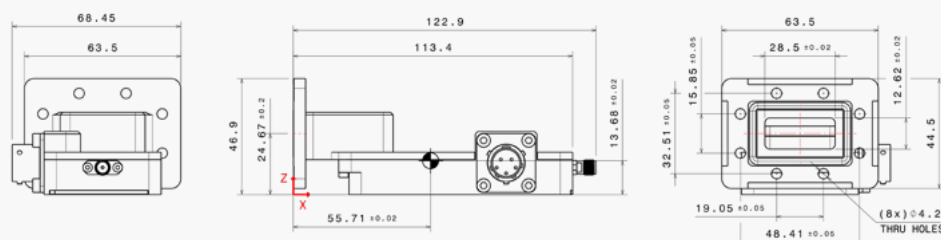
Input voltage	+12 to +28 VDC
Current consumption	<200 mA @12 VDC
Fault alarm circuitry	Form-C contact closure

## INTERFACES &amp; PHYSICAL

Dimensions (L x W x H)	101.2 x 65.8 x 46.6 mm
Weight	240 gr
Interfaces	RF input flange: CPR112G RF output: SMA (f) DC & monitoring: PT02A10-5P

## ENVIRONMENTAL

Operating temperature	-30 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Humidity	100 % condensing

OUTLINE  
DRAWING

Dimensions are in "mm" and after treatment  
Tolerance according to ISO 2768-f

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## OPTIONS

- \* Coaxial connector
- \* Redundant systems 1:1, 2:1, N:1
- \* Indoor controller
- \* Extended temperature range:  
-40 °C, + 55 °C

## ELECTRICAL

Operating frequency range	7.25-7.75 GHz
Noise temperature	<45 K
Noise figure	<0.626 dB
Input VSWR	<1.5:1
Output VSWR (50 Ω)	<1.4:1
Gain	>50 dB / 55 dB / 60 dB
Gain flatness	1 dB pp max
Gain variation over temperature	±1.5 dB
Output P1dB	>20 dBm
3 <sup>rd</sup> OIP	>25 dBm
Spurious	<-60 dBc

## POWER SUPPLY &amp; MONITORING

Input voltage	+12 to +28 VDC
Current consumption	<200 mA @12 VDC
Fault alarm circuitry	Form-C contact closure

## INTERFACES &amp; PHYSICAL

Dimensions (L x W x H)	101.2 x 65.8 x 46.6 mm
Weight	240 gr
Interfaces	RF input flange: CPR112G RF output: SMA (f) DC & monitoring: PT02A10-5P

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Storage temperature	-40 °C to +85 °C
Humidity	100 % condensing

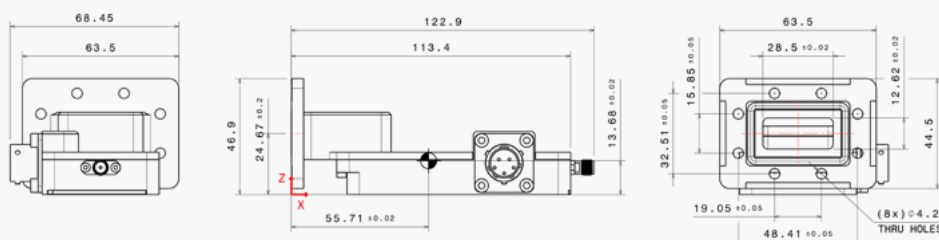
## CONTACT

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## NOTICE

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OUTLINE  
DRAWING

Dimensions are in "mm" and after treatment  
Tolerance according to ISO 2768-f



ELECTRICAL

Output frequency range	950-1450 MHz
Operating frequency range	7.25-7.75 GHz
OL frequency	6.3 GHz
Noise temperature	<50 K
Noise figure	<0.69 dB
Input VSWR	<1.55:1
Output VSWR (50 Ω)	<1.4:1
Gain	>50 dB / 55 dB
Gain flatness	1 dB pp max
Gain variation over temperature	±1.5 dB
Output P1dB	>20 dBm
3 <sup>rd</sup> OIP	>30 dBm
Phase noise	-65 dBc/Hz @100 Hz
	-85 dBc/Hz @1 kHz
	-90 dBc/Hz @10 kHz
	-100 dBc/Hz @100 kHz
	-125 dBc/Hz @1 MHz
External references input frequency	10 MHz supplied through output connector
External references input power	0 dB ±5 dB
Image rejection	>30 dB
Spurious	<-60 dBc

POWER SUPPLY & MONITORING

Input voltage	+12 to +28 VDC
Current consumption	<320 mA @12 VDC
Fault alarm circuitry	Form-C contact closure

INTERFACES & PHYSICAL

Dimensions (L x W x H)	180 x 80 x 60 mm
Weight	350 gr
Interfaces	RF input flange: CPRI12G
	RF output: SMA (f) / N (f)
	DC & monitoring: PT02A10-5P

ENVIRONMENTAL

Operating temperature	-30 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Humidity	100 % condensing

+

OPTIONS

- \* Coaxial connector
- \* Redundant systems 1:1, 2:1, N:1
- \* Indoor controller
- \* Extended temperature range:  
-40 °C, + 55 °C

CONTACT

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## KEY FEATURES

- \* Based on superior TTI's X LNA/ LNB family
- \* Robust & reliable
- \* Standby ports for test
- \* Web interface for remote control
- \* Manual & automatic mode
- \* User-friendly configuration/ operation
- \* Plug & play installation
- \* Weatherproof

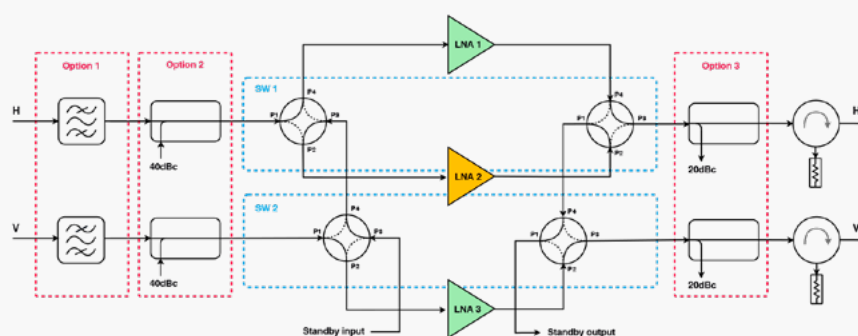
## OPTIONS

- \* Outdoor redundancy system controller
- \* IDU-ODU system cables
- \* Input transmitter reject filter
- \* Output test coupler
- \* Input test coupler

## PARTS INCLUDED

Low noise amplifier	X band LNA/LNB (qty 3)
Redundancy WG & coaxial assembly outdoor kit	WG sections /adapters Coaxial components & RF cabling Dual WG/coax switches (qty 2)
Redundancy system controller	Rack mounting RCU 1U-high 19" sub rack (indoor) Ethernet port USB local port Dual internal power supply Cabling: AC cables (1.5 m long) (qty 2)
Standard outdoor plate	Mechanical plate & support Interface box DC/M&C cabling
Mating connectors	DC/M&C connector (LNA/LNB) DC/M&C connector (switches)

## SYSTEM CONFIGURATION



## CONTACT

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## NOTICE

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## PARTS INCLUDED

Low noise amplifier	X band LNA/LNB (qty 2)
Redundancy WG & coaxial assembly outdoor kit	WG sections / adapters Coaxial components & RF cabling Dual WG/coax switch (qty 1)
Redundancy system controller	Rack mounting RCU 1U-high 19" sub rack (indoor) Ethernet port USB local port Dual internal power supply Cabling: AC cables (1.5 m long) (qty 2)
Standard outdoor plate	Mechanical plate & support Interface box DC/M&C cabling
Mating connectors	DC/M&C connector (LNA/LNB) DC/M&C connector (switch)



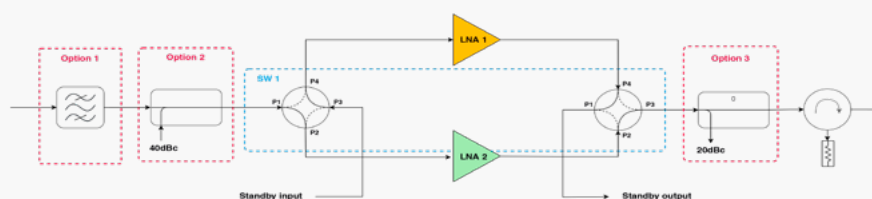
## KEY FEATURES

- \* Based on superior TTI's X LNA/LNB family
- \* Robust & reliable
- \* Standby ports for test
- \* Web interface for remote control
- \* Manual & automatic mode
- \* User-friendly configuration/operation
- \* Plug & play installation
- \* Weatherproof

## OPTIONS

- \* Outdoor redundancy system controller
- \* IDU-ODU system cables
- \* Input transmitter reject filter
- \* Output test coupler
- \* Input test coupler

## SYSTEM CONFIGURATION



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A L L   T H E   P O W E R   Y O U   N E E D

## Q BAND LNA/LNB RANGE FOR LOAD PULL & SATELLITE COMMUNICATIONS

Using **cutting-edge technology**, the new Q LNA/LNB family offers outstanding performance in outdoor operations

### INNOVATIVE TECHNOLOGY

State-of-the-art technology provides a very low noise figure at Q band with superior performance from a highly compact unit.

### EFFICIENCY & RELIABILITY

Each unit is fully tested in an environmental chamber and delivered with a complete factory acceptance test report.

Advanced design and construction mean the equipment can be operated in the toughest environments.

Exceptional performance combined with reliability and cost effectiveness.

### CONFIGURABILITY

Several options to configure the product at factory are available, including gain, VSWR and noise temperature. Other port configurations, such as coaxial connector can also be supplied, upon request.



### KEY FEATURES

- \* Satcom & load-pull applications
- \* Superior performance
- \* High reliability & efficiency
- \* Ultra-low noise figure
- \* High gain & low ripple
- \* Low input & output VSWR
- \* Fault alarm
- \* Compact size & lightweight
- \* Weatherproof
- \* Wide operating temperature range
- \* Redundant configurations (1:1, 1:2, N:1)

# Q BAND

## SATCOM & LOAD PULL

37.5 - 42.5 GHz —————

LNA  
225 K  
PAGE 31



38 - 40 GHz —————

LNB  
262 K  
PAGE 32







## OPTIONS

- \* Coaxial connector
- \* Redundant systems 1:1, 2:1, N:1
- \* Indoor controller
- \* Extended temperature range:  
-40 °C, + 55 °C

## TECHNICAL SPECIFICATIONS

Q LNA

37.5-42.5 GHz

225K

## ELECTRICAL

Operating frequency range	37.5-42.5 GHz
Noise temperature	<225 K / <290 K
Noise figure	<2.5 dB / <3.0 dB
Input VSWR	<2.0:1 / <1.3:1
Output VSWR (50 Ω)	<2.0:1 / <1.3:1
Gain	>50 dB / >40 dB
Gain flatness	2 dB pp max / 3 dB pp max
Gain variation over temperature	±2 dB
Output P1dB	>5 dBm
3 <sup>rd</sup> OIP	>15 dBm
Spurious	<-60 dBc

## POWER SUPPLY &amp; MONITORING

Input voltage	+12 to +24 VDC
Current consumption	<75 mA @12 VDC
Fault alarm circuitry	Form-C contact closure

## INTERFACES &amp; PHYSICAL

Dimensions (L x W x H)	145 x 70 x 40 mm
Weight	500 gr
Interfaces	RF input flange: UG-383/U RF output: UG-383/U DC & monitoring: PT02A10-5P

## ENVIRONMENTAL

Operating temperature	-30 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Humidity	100 % condensing

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## OPTIONS

- \* Coaxial connector
- \* Redundant systems 1:1, 2:1, N:1
- \* Indoor controller
- \* Extended temperature range:  
-40 °C, + 55 °C

## ELECTRICAL

Output frequency range	950-1950 MHz
Operating frequency range	38-39 GHz / 39-40 GHz
OL frequency	37.05 GHz / 38.05 GHz
Noise temperature	<262 K
Noise figure	<2.8 dB
Input VSWR	<1.55:1
Output VSWR (50 Ω)	<2.0:1
Gain	>60 dB
Gain flatness	3 dB pp max
Gain variation over temperature	±2 dB
Output P1dB	>10 dBm
3 <sup>rd</sup> OIP	>20 dBm
Phase noise	-62 dBc/Hz @100 Hz -72 dBc/Hz @1 kHz -82 dBc/Hz @10 kHz -92 dBc/Hz @100 kHz -102 dBc/Hz @1 MHz
External references input frequency	10 MHz
External references input power	0 dB ±3 dB
Spurious	<-60 dBc

## POWER SUPPLY &amp; MONITORING

Input voltage	+12 to +24 VDC
Current consumption	<350 mA @12 VDC / <175 mA @24 VDC
Fault alarm circuitry	Form-C contact closure (option)

## INTERFACES &amp; PHYSICAL

Dimensions (L x W x H)	145 x 70 x 40 mm
Weight	500 gr
Interfaces	RF input flange: UG-383/U IF output: N (f) DC: supplied through IF port Monitoring: EGG.OT.309.CLL External reference: SMA (f)

## ENVIRONMENTAL

Operating temperature	-30 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Humidity	100 % condensing

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## NOTICE

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## PARTS INCLUDED

Low noise amplifier	Q band LNA/LNB (qty 3)
Redundancy WG Assembly Outdoor Kit	WG sections from LNA/LNB inputs/outputs to WG switches WG loads WG switches (qty 4)
Redundancy system controller	Rack mounting RCU 1U-high 19" sub rack (indoor) Ethernet port USB local port Dual internal power supply Cabling: AC cables (1.5 m long) (qty 2)
Mating connectors	AC/M&C connector (LNA/LNB) M&C connector (switches)
Standard outdoor plate	Mechanical plate

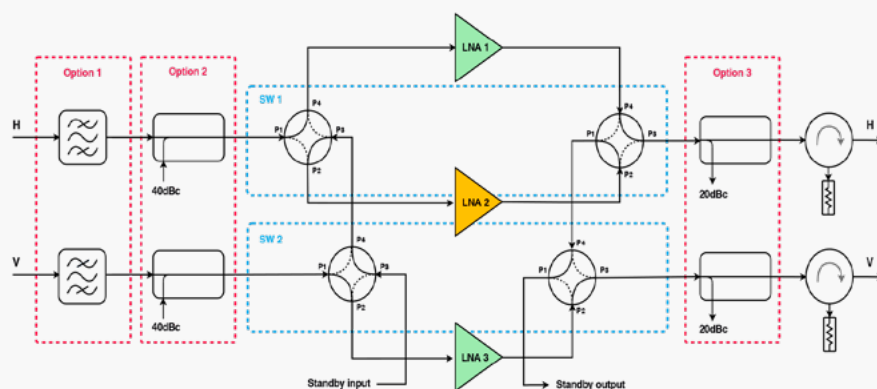
## KEY FEATURES

- \* Based on Q band LNA/LNB
- \* Robust redundancy performance
- \* Web interface for remote control
- \* Manual and automatic mode
- \* User-friendly configuration/operation
- \* Plug & Play installation
- \* Weatherproof

## OPTIONS

- \* Outdoor redundancy system controller
- \* System cables
- \* Input transmitter reject filter
- \* Output test coupler
- \* Input test coupler

## SYSTEM CONFIGURATION



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## PARTS INCLUDED

Low noise amplifier	Q band LNA/LNB (qty 3)
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Mating connectors	AC/M&C connector (LNA/LNB) M&C connector (switches)
Standard outdoor plate	Mechanical plate

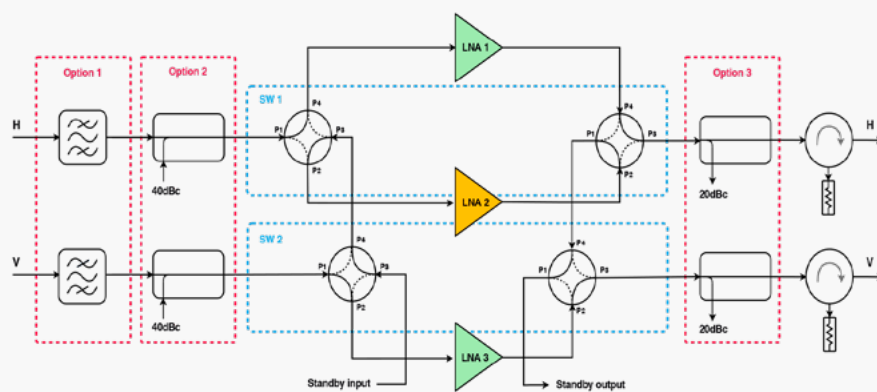
## KEY FEATURES

- \* Based on Q band LNA/LNB
- \* Robust redundancy performance
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- \* Weatherproof

## OPTIONS

- \* Outdoor redundancy system controller
- \* System cables
- \* Input transmitter reject filter
- \* Output test coupler
- \* Input test coupler

## SYSTEM CONFIGURATION



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## REMOTE MONITORING & CONTROL UNIT FOR THE NEW GENERATION OF LNAs/LNBs

Using universal protocols, the unit **remotely monitors and controls redundant LNAs/LNBs configurations** for outdoor operation

### CONFIGURABILITY

Field configurable for managing and controlling a **variety of redundancy applications**: 1:2 - 1:1 - dual 1:1 - 1:0 among others.

### OPERATIVITY

Full remote capability for M&C up to 6 LNAs/LNBs and 4 switches configured in the system through **TCP/IP web interface embedded in the RCU**.

Front **panel touch screen** offers quick and user-friendly local operation displaying live performance indicators in the **LCD**.

### COMMUNICATION PROTOCOL

Communication with the system by **USB (local interface)**, RS485 (4 wire or 2 wire) serial ports or Ethernet sockets with two ports, by default 7001 and 8001.

### REDUNDANT SUPPLY

Dual internal power supply working in redundancy maintain RCU performance when one power supply fails.



## KEY FEATURES

- \* Management of redundant configurations (1:1, 2:1, dual 1:1)
- \* Management of standalone units
- \* User-friendly touch panel LCD for local control
- \* RS485, USB & Ethernet interfaces
- \* Embedded web interface
- \* Fault & alarms interfaces
- \* Redundant power supply
- \* Rack mounting (2RU height)

# RCU

## M&C LNA/LNB SYSTEMS

Remote Control Unit

Redundant systems

INDOOR

PAGE 37







## OTHER FEATURES

- \* Simple operation & maintenance
- \* Periodic firmware upgrades

## OPTIONS

- \* SNMP protocol

## CONTACT

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www.ttinorte.com

## NOTICE

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## TECHNICAL SPECIFICATIONS

## LOCAL INTERFACES

Controls	Status display	Status LEDs
Local/Remote	<b>Alarms</b> Current consumption	<b>Power On</b>
Manual/Automatic	Summary fault	<b>Alarms</b> Summary Fault
Waveguide switches	<b>Monitoring</b> Current consumption	PSU Alarm
Set alarm threshold	Voltage	<b>Local / Remote</b>
Fault reset		<b>Monitoring</b> Current consumption
		Voltage

## REMOTE INTERFACES

### Communication

RS485	ASCII Command under proprietary packet format
USB (type A)	ASCII Command under proprietary packet format
ETH (RJ45)	ASCII Command under proprietary packet format
	Web interface
	SNMP interface (optional)

### M&C

Form-C contacts (RCU)	Summary Fault
	Summary Alarm

### Supply

AC line (2 inputs)	IEC320 inlet
--------------------	--------------

## OPERATING CONFIGURATIONS

1:1 Systems	1:1 redundant LNAs/LNBs (single or dual)
1:2 Systems	1:2 redundant LNAs/LNBs
Tracking unit	LNA/LNB
Standalone unit	LNA/LNB

## ENVIRONMENTAL

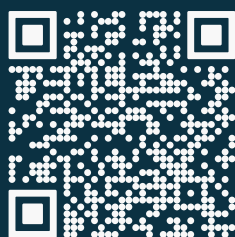
Size	483 x 88 x 305 mm - 19" rackmount, 12" deep, 2U height
Weight	3.5 Kg
Supply	90-264 VAC, 50-60 Hz
Operating Temperature	0 °C to +55 °C
Storage Temperature	-40 °C to +85 °C
Humidity	10-95 % Non-Condensing

A L L   T H E   P O W E R   Y O U   N E E D









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