



ALARIS
KUHNE

INSPIRING THE NEXT RF SOLUTION

+49 (0) 9293 - 800 640
sales@kuhne.alaris.tech
www.kuhne.alaris.tech
Scheibenacker 3, 95180 Berg,
Germany

Version 1.0

KU LNC 8085 C PRO2



Manual

Directors: Ian Duke/Gustav Wenhold
Reg no: HRB 3350 Hof, VAT-ID-No: DE 813343044, WEEEReg.-Nr. DE34186665

Kuhne electronic GmbH
Scheibenacker 3, 95180 Berg
Germany

A DIVISION OF

ALARIS
THE RF TECHNOLOGY GROUP



Specifications (Ta = 25 °C):

Type

KU LNC 8085 C PRO2

Frequency range (RF)
 Noise figure @ 18 °C
 Gain (switchable)
 Output IP3

800 ... 8500 MHz
 typ. 0.8 dB, max. 1.0 dB (IF amplifier enabled, LO frequency 7600, 7400)
 typ. 50 dB (high gain), typ. 37 dB (low gain) (LO frequency 7600, 7400)
 typ. +20 dBm (high gain), typ. +10 dBm (low gain)

Switchable LO, IF frequencies

Output frequency (LO 7200 MHz)
 Output frequency (LO 7400 MHz)
 Output frequency (LO 7600 MHz)
 Output frequency (LO 7800 MHz)
 LO accuracy @ 18 °C
 LO frequency stability (0 ... 40 °C)

800 ... 1300 MHz
 600 ... 1100 MHz
 400 ... 900 MHz
 200 ... 700 MHz
 +/- 1 kHz
 +/- 0.5 ppm

Phase noise @ 1840 MHz

@ 1 kHz
 @ 10 kHz
 @ 100 kHz

typ. -90 dBc/Hz
 typ. -94 dBc/Hz
 typ. -105 dBc/Hz

Operating parameters

Supply voltage
 Current consumption
 Power consumption

+9 ... 36 V DC
 typ. 250 mA @ 12V (IF amplifier enabled)
 typ. 3.0 W

Mechanics

Input connector / impedance
 Output connector / impedance
 Case
 Dimensions (mm)
 Weight

SMA-female, 50 ohms
 SMA-female, 50 ohms
 milled aluminium, IP43
 82 x 64 x 22
 typ. 230 g

Absolute ratings

Maximum RF input power
 Operating case temperature range

1 mW (0 dBm)
 -20 ... +55 °C

Features

- Low noise figure
- Large bandwidth
- Low phase noise oscillator
- High frequency stability of the oscillator due to 10 MHz reference input
- High linearity
- Antenna port protected against static discharge
- Small and light-weight to allow easy pole mounting
- Tri-colour LED indicates unit status and gain mode setting
- Overvoltage protection and reverse polarity protection
- Remote power supply via output connector

Applications

- Deep Space Communications

Recommended Pre-Amplification

- KU LNA 750850 A WG

Please note: The total gain of pre-amplifier + attenuator + converter should not exceed 60 dB. More information on page 7.

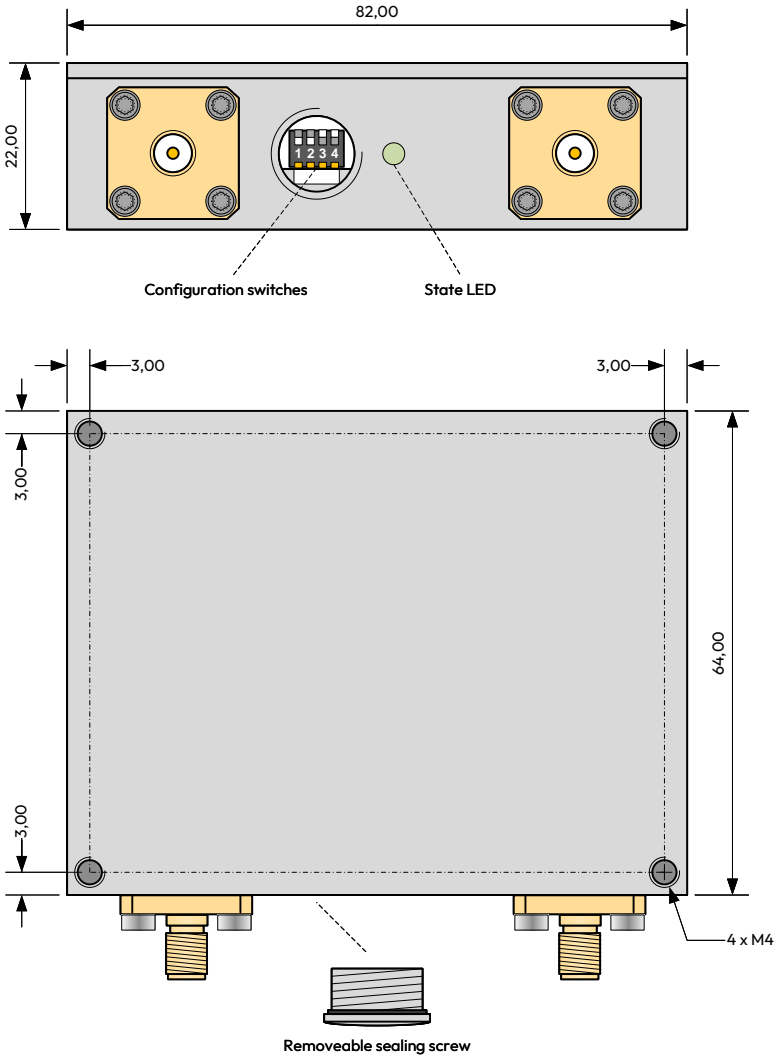
CE Konformität / CE Conformity

EMC directive 2014/30/EU
 Low voltage directive 2014/35/EU
 RoHS directive 2011/65/EU





Dimensions / Mounting holes





Configuration Switches / LED state

	↑ OFF	Switch 1 + 2 - (Local oscillator frequency)	Device Error
	↓ ON	Switch 3 - (Gain)	
		Switch 4 - (User local oscillator frequency)	

	↑ OFF	Switch 1 - OFF Switch 2 - OFF LO 7200 MHz IF 800 ... 1300 MHz		↑ OFF	Switch 1 - OFF Switch 2 - ON LO 7600 MHz IF 400 ... 900 MHz
	↓ ON			↓ ON	

	↑ OFF	Switch 1 - ON Switch 2 - OFF LO 7400 MHz IF 600 ... 1100 MHz		↑ OFF	Switch 1 - ON Switch 2 - ON LO 7800 MHz IF 200 ... 700 MHz
	↓ ON			↓ ON	

	↑ OFF	Switch 3 - OFF Low Gain	→	LED state Green	
	↓ ON				

	↑ OFF	Switch 3 - ON High Gain	→	LED state Blue	
	↓ ON				

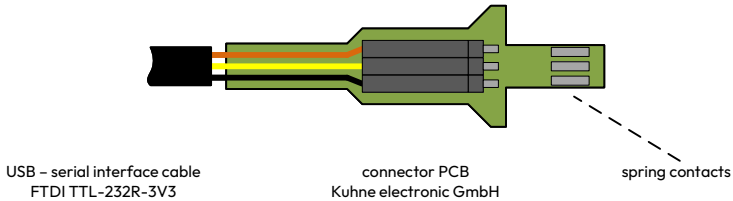
	↑ OFF	Switch 4 - OFF
	↓ ON	Local oscillator configuration with Switch 1+2

	↑ OFF	Switch 4 - ON
	↓ ON	Local oscillator configuration with Switch 1 + 2 disabled User defined local oscillator frequency is enabled

In the case that **Switch 4** is in position **ON** the user defined local oscillator frequency is activated. This user defined local oscillator frequency can be selected in the range from 6600 ... 8000 MHz and from 8500 ... 9900 MHz. The frequency step size of the oscillator frequency is 10 MHz. The user defined oscillator frequency can be programmed with a special programming cable.

For example the oscillator frequency can be chosen to 7460 MHz or 9290 MHz .

Optional Connector PCB



Configure the user defined local oscillator frequency

- connect the USB – serial interface cable with your PC
- start a terminal program on your PC (for example „hterm“)
- choose the COM port of the USB – serial interface cable

```
BAUDRATE 9600
DATABITS 8
STOPBITS 1
NO FLOW CONTROL
```

- insert the connector PCB with connected USB – serial interface cable into the configuration slot the spring contact must show to the top cover of the down converter
- power up the down converter
- send „s“ with the terminal program to the converter to get the state of the converter

```
Kuhne electronic GmbH - KU LNC 8085 C PRO2

PLL locked
GAIN high
Selected LO frequency: 7400 MHz
User defined LO frequency: 7400 MHz
User defined LO frequency enabled
```

- send „7460LO“ with the terminal program to the converter to get set the user defined oscillator frequency to 1860 MHz
- power down the down converter
- remove the connector PCB

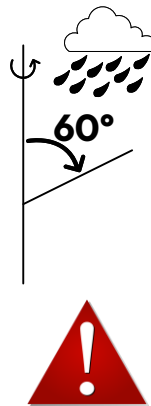
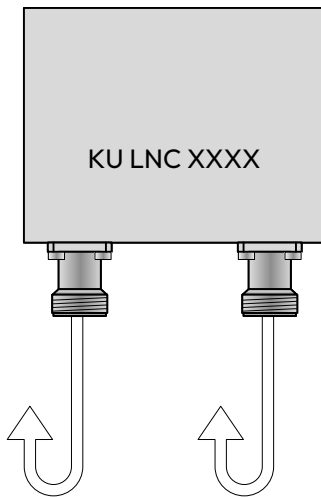
Mounting instructions

All LNCs from Kuhne electronic GmbH are labelled with at least protection class IP41 in accordance with DIN EN 60529, **unless a higher protection class is explicitly indicated in the valid specifications for the protection class on page 2.**

This provides information on the resistance of the unit against unwanted penetration of foreign bodies or moisture into the interior of the unit according to the following provision:

- Protected against granular solid foreign bodies (diameter ≥ 1 mm).
- Protection against falling spray up to 60° from vertical

The LNC modules have been designed with maximum protection against moisture. Nevertheless, water may enter the unit due to the design of the RF connectors, which is why some special features should be taken into account during installation.

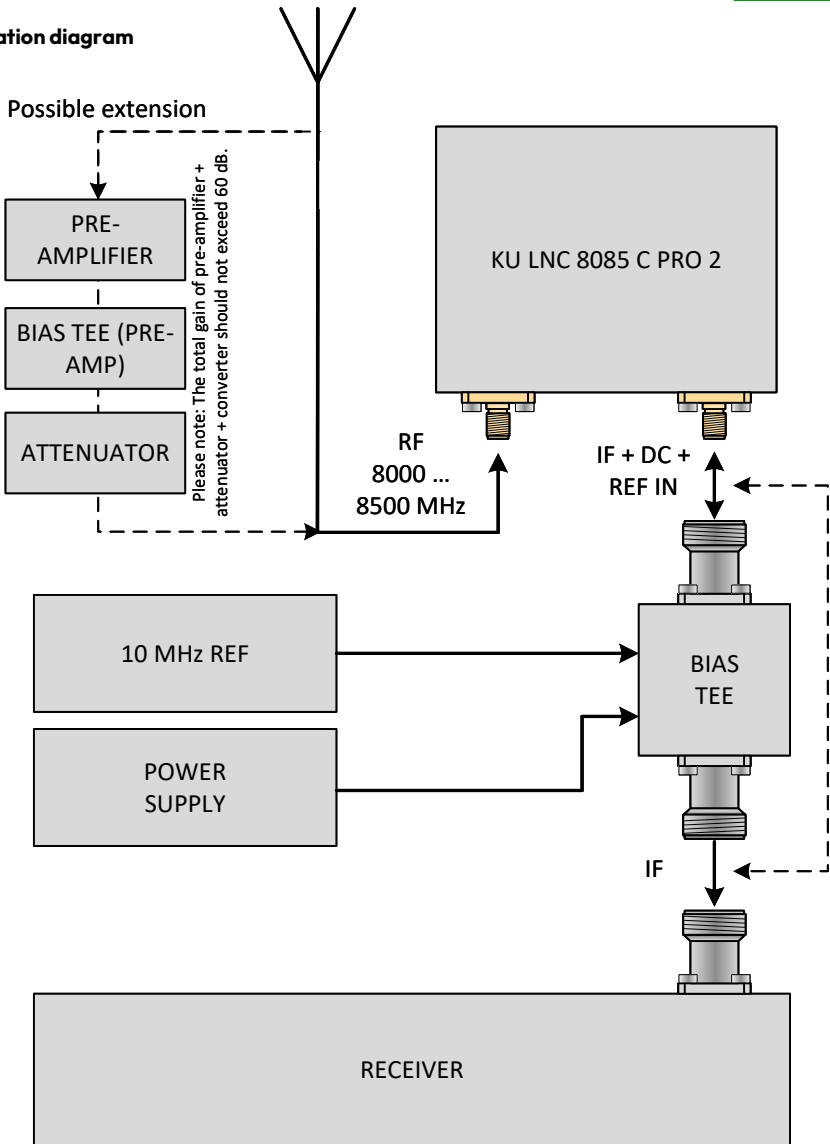


Mounting with the RF connectors vertically downwards

If possible, do not use cable connections with angled elbow connectors, but lead plugs out with a straight cable and a loop pointing downwards.

In the event of improper installation or handling that does not comply with our recommendations, Kuhne electronic reserves the right to exclude the warranty claim.

Application diagram



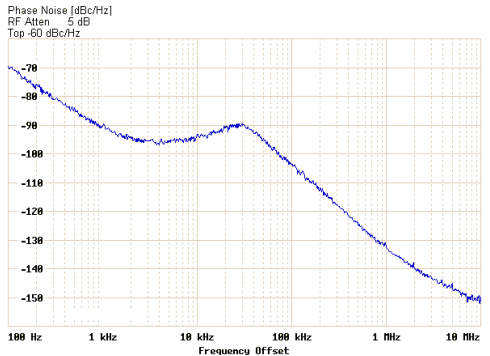
10 MHz reference input, Typical performance

An external 10 MHz reference frequency can be connected to the down converter to achieve highest frequency accuracy. When an external 10 MHz source is connected to the down converter, the internal reference oscillator automatically will be deactivated. Then, the frequency stability depends only on the reference frequency. The frequency of 10 MHz can be supplied by a highly stable OCXO, a reference oscillator of a frequency counter, a rubidium frequency standard or a GPS controlled frequency source. The output power range of the external reference source must be in the range from 2 to 10 mW on a 50 ohms load. If no 10 MHz reference frequency is available the down converter unit works with the frequency stability of the built-in TCXO. The reference frequency signal must be sine wave with low harmonics level. The reference frequency signal and its harmonics are on the IF cable and can be received from the receiver.

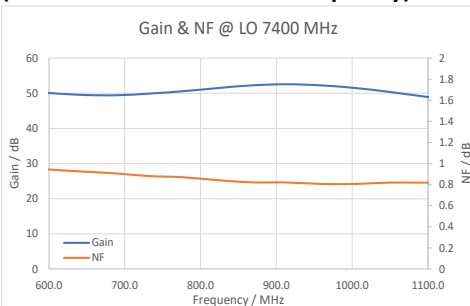
Recommended phase noise performance of the reference frequency source.

- 70 dBc/Hz @ 1 Hz
- 100 dBc/Hz @ 10 Hz
- 125 dBc/Hz @ 100 Hz
- 140 dBc/Hz @ 1 kHz
- 150 dBc/Hz @ 10 kHz
- 155 dBc/Hz @ 100 kHz

Typical phase noise at 7600 MHz local oscillator frequency:



Typical gain and noise figure (7400 MHz local oscillator frequency):



Typical gain and noise figure (7600 MHz local oscillator frequency):

