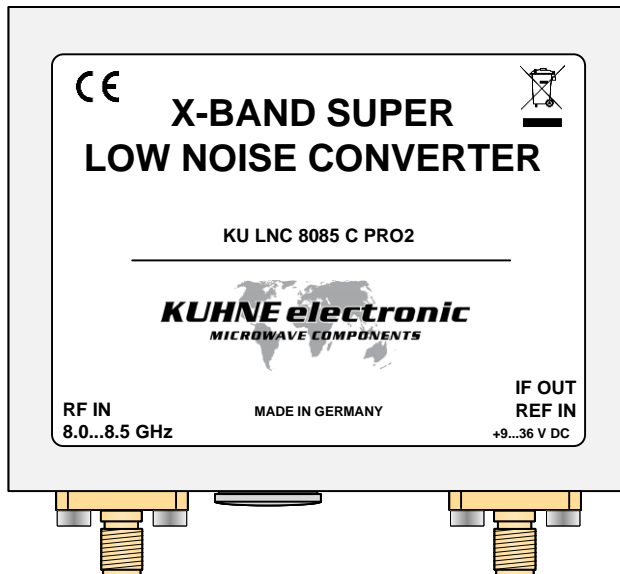


# KU LNC 8085 C PRO2



## Manual

## Specification

Frequency range (RF) RF input power	8000 ... 8500 MHz max. 1 mW (0 dBm)
Output frequency (IF)  Output IP3 (@Delta F: 1 MHz) P1dB Gain (switchable) Noise figure @ 18 °C	600 ... 1100 MHz (local oscillator 7400 MHz) 400 ... 900 MHz (local oscillator 7600 MHz)  typ. +20 dBm (high gain), typ. +10 dBm (low gain) typ. +11 dBm (high gain) typ. 50 dB (high gain), typ. 37 dB (low gain) (LO frequency 7600, 7400) typ. 0.8 dB, max. 1.0 dB (IF amplifier enabled, LO frequency 7600, 7400)
LO frequency (switchable) LO accuracy @ 18 °C LO frequency stability (0 ... 40 °C) External reference input (via IF connector) Phase noise @ 7600 MHz (internal TCXO)	7200 MHz, 7400 MHz, 7600 MHz, 7800 MHz +/- 1 kHz +/- 0.5 ppm 10 MHz / 2 ... 10 mW (sinewave signal), max. 2.0 Vpp @ 1 kHz: typ. -90 dBc/Hz @ 10 kHz: typ. -94 dBc/Hz @ 100 kHz: typ. -105 dBc/Hz
Operating case temperature range	-20 ... +55 °C
Supply voltage Current consumption Power consumption	+9 ... 36 V DC typ. 250 mA @ 12V (IF amplifier enabled) typ. 3.0 W
Input connector / impedance Output connector / impedance	SMA-female, 50 ohms SMA-female, 50 ohms
Dimensions (mm) Case Weight	82 x 64 x 22 milled aluminium, IP43 typ. 230 g

### 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.

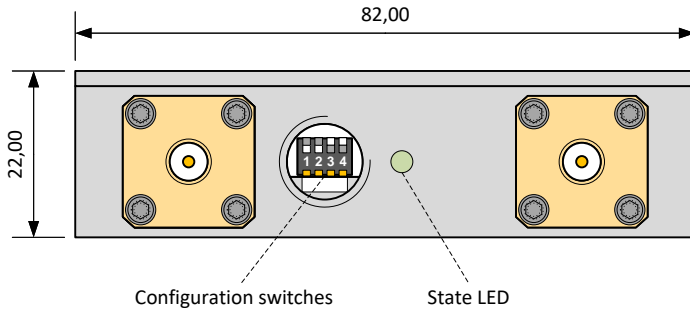
Sig \_\_\_\_\_

Products are only to be sold to competent companies or to radio amateurs with a licence.  
For operating high frequency modules legal instructions must be followed.

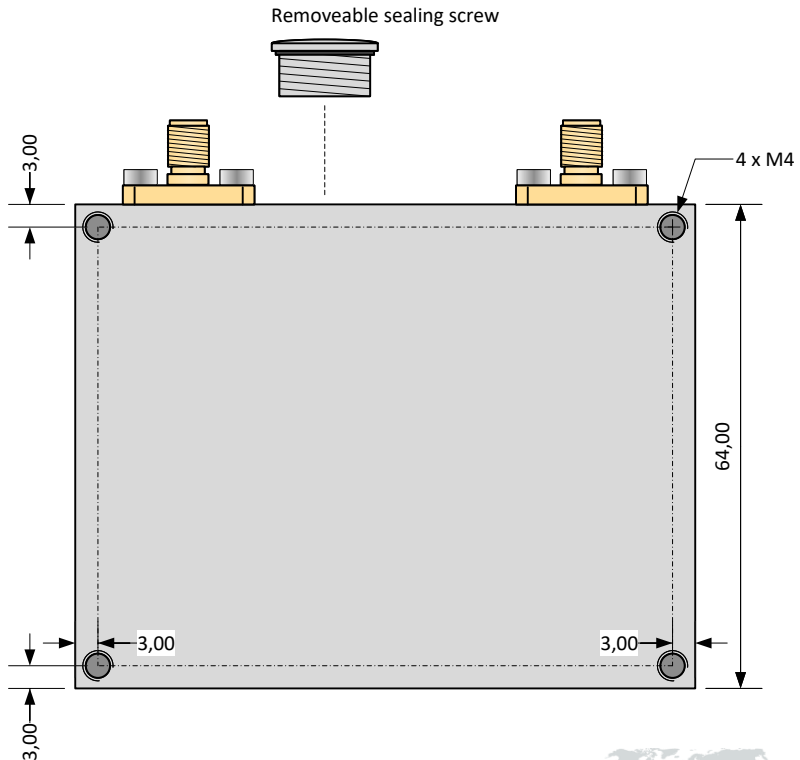
QS \_\_\_\_\_

**Dimensions / Mounting holes**

**Front view**

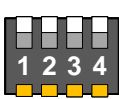


**Bottom view**



## Configuration Switches / State LED

### Overview



↑ OFF  
↓ ON

Switch 1 + 2 - (Local oscillator frequency)

Switch 3 - (Gain)

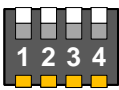
Switch 4 - (User local oscillator frequency)

Device Error

State LED  
Red



### Switch 1 + 2: Preset LO

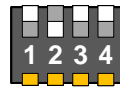


↑ OFF  
↓ ON

Switch 1 – OFF

Switch 2 – OFF

LO 7200 MHz  
IF 800 ... 1300 MHz

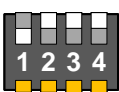


↑ OFF  
↓ ON

Switch 1 – OFF

Switch 2 – ON

LO 7600 MHz  
IF 400 ... 900 MHz

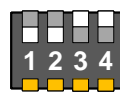


↑ OFF  
↓ ON

Switch 1 – ON

Switch 2 – OFF

LO 7400 MHz  
IF 600 ... 1100 MHz



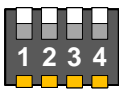
↑ OFF  
↓ ON

Switch 1 – ON

Switch 2 – ON

LO 7800 MHz  
IF 200 ... 700 MHz

### Switch 3: (Low-/High-) Gain switch



↑ OFF  
↓ ON

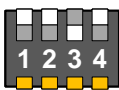
Switch 3 – OFF

Low Gain



State LED

Green



↑ OFF  
↓ ON

Switch 3 – ON

High Gain

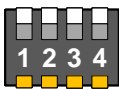


State LED

Blue



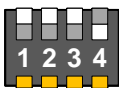
### Switch 4: User defined local oscillator frequency



↑ OFF  
↓ ON

Switch 4 – OFF

Local oscillator configuration with Switch 1 + 2



↑ OFF  
↓ ON

Switch 4 – ON

Local oscillator configuration with Switch 1 + 2 disabled  
User defined local oscillator frequency is enabled

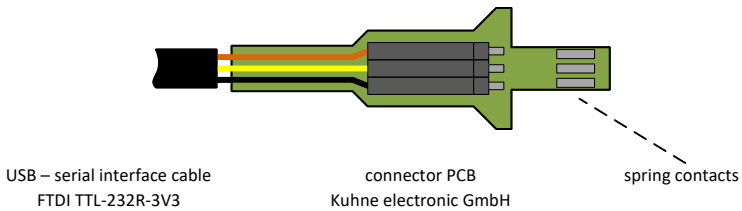
In the case that **Switch 4** is in position **ON** the user defined local oscillator frequency is activated.

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 7460 MHz

```
New LO frequency 7460 MHz accepted
```

- power down the down converter
- remove the connector PCB

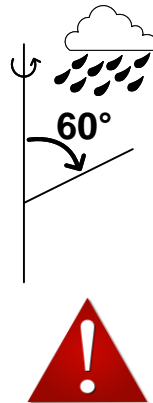
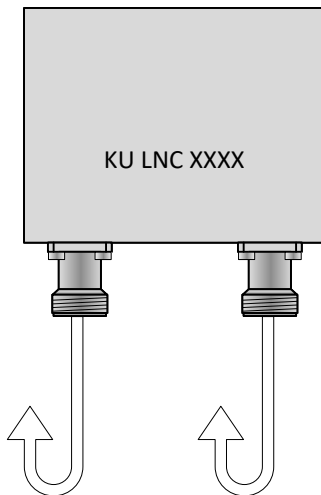
## Mounting instructions

All LNCs of Kuhne electronic GmbH are marked with protection class **IP43** according to **DIN EN 60529**.

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  $\geq 1$  mm).**
- **Protection against falling spray up to  $60^\circ$  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.

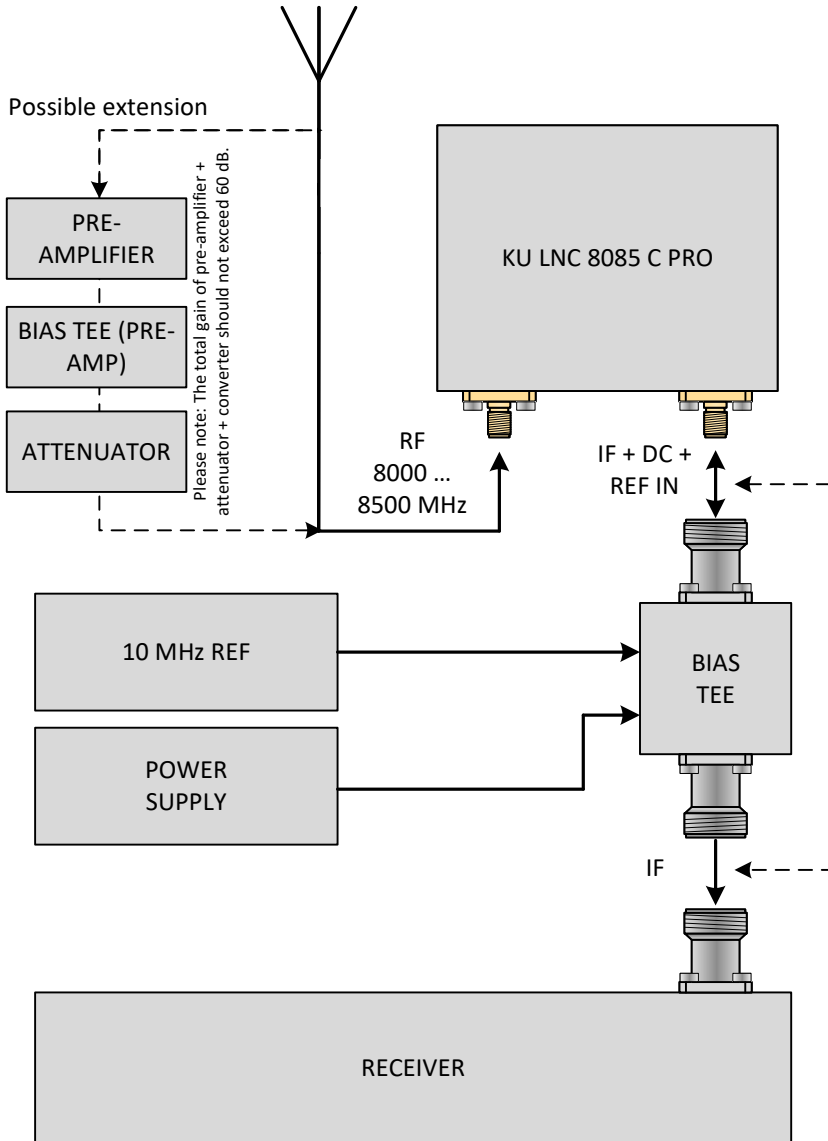


**Mounting with the RF connectors vertically downwards**

**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

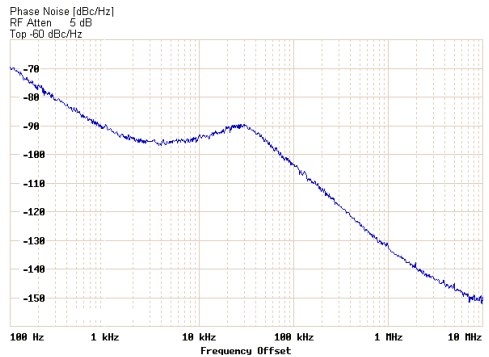
### 10 MHz reference input

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.

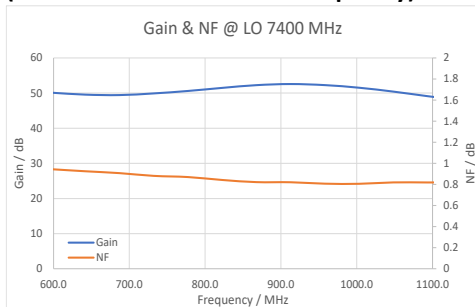
Recommended phase noise performance of the reference frequency source.

- 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):

