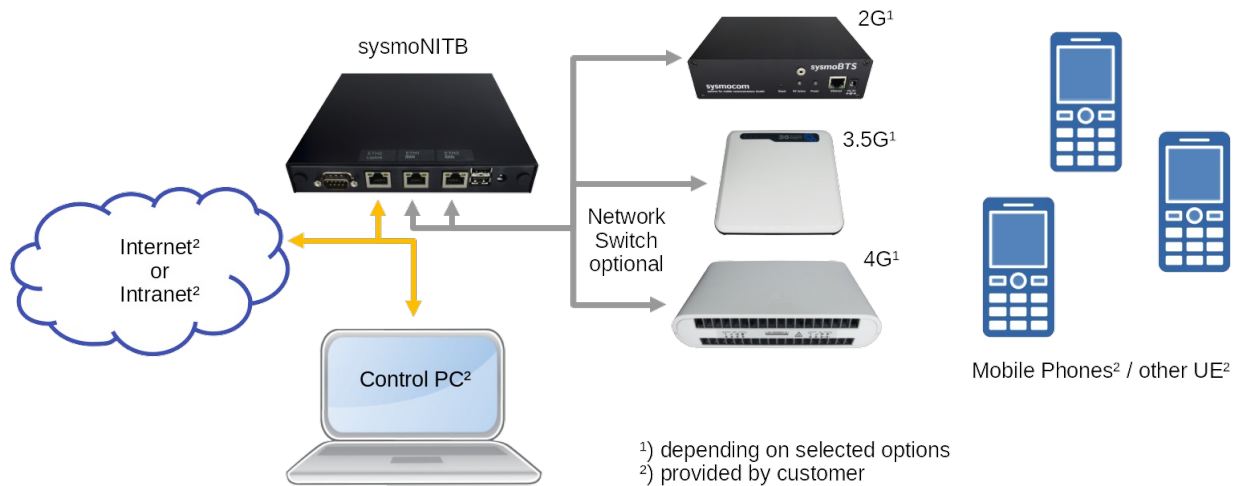


## Starting mobile networks with ease



### Bootstrap your mobile network(s!)

The sysmoNITB Starter Kit is our recommendation to start your mobile network without headaches. In combination with one or more base stations and our pre-configured software setup, you are able to start a mobile network in a very short time.

The sysmoNITB Starter Kit is suitable for a wide range of applications, including:

- IoT Testing for mobile solutions
- 2G, 3.5G or 4G related research and development
- Production testing of mobile terminal equipment
- Rapidly deployable mobile networks
- Private networks (PBX style use)
- In-building coverage/capacity extension
- Remote area mobile network deployments, utilizing any IP-based satellite back-haul service

Benefit from sysmocom's world-class experience in all areas of cellular networks from RAN to core network.

### Up and running in minutes

The **sysmoNITB Starter Kit** enables you to get quickly started and run a **completely autonomous network** without the need for any other components.

All you need to do in order to make calls, send SMS between your phones and use mobile data in this private mobile network is to

- unpack the starter kit
- unpack the base station(s)
- install Antennas and power supply for the base station(s)
- connect the sysmoNITB with the base station(s) and (if desired) the internet gateway
- insert the SIM cards into the cellphones or modems
- use the network
- perform protocol traces of any RAN/CN interface in the network

### CAUTION:

Mobile networks operate in licensed frequency spectrums. You may not operate this equipment "over the air" without having obtained a proper license from the regulatory authority of the country you want to operate the equipment in. Alternatively, you can use an RF shielded "faraday cage".

# sysmoNITB Starter Kit

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## The sysmoNITB Starter Kit includes

- One **sysmoNITB**
- One international power supply (110 to 240 V AC, 50/60Hz, EU/US/UK plug)



- 20 pre-provisioned SIM cards
- Fully installed + configured software image with **Osmocom** Software and (if 4G Option is selected) **Open5gs**
- Customer-specific factory configuration of network specific and SIM card specific parameters.
- 4 hours of remote support by sysmocom staff (e-mail based, remote login/configure)

## Select your basestations

Depending on the mobile network generation you want to support, you can combine the sysmoNITB Starter Kit with one of each<sup>1</sup> following base stations

- 2G BTS: **sysmoBTS 1002**
- 3.5G hNodeB: ip.access **nano3G**
- 4G eNodeB: Ericsson **RBS 6402**

After ordering you will receive a questionnaire where you can change several parameters. This questionnaire will be used by our engineering team to configure the sysmoNITB, the base stations and the SIM cards to provide a ready-to-run pre-configured system.

## Continuous updates

Customers of the sysmoNITB Starter Kit get access to the **Osmocom** Software latest builds. At your choice, you can install those future Updates to your sysmoNITB.

<sup>1</sup> While it is possible to combine the NITB with more than one base station from one generation, this is a custom setup.

## Ordering information

When ordering please refer to the exact order code to avoid misunderstandings.

Product	Order Code	Remark
sysmoNITB Starter Kit	sysmonitb-starter-kit	required
sysmoBTS 1002	sysmobts-1002	Option for 2G
nano3G	nano3g	Option for 3.5G
RBS 6402	rbs6402	Option for 4G
Network Switch 5 ports	network-switch	only needed if all three network options are ordered
AC mains connector type	eu uk us	Plug type for Power supplies: * EU (default) * UK * US

## Preconfiguration

The sysmoNITB Starter Kit will be pre-configured to your needs, if you like, with settings like:

- SIM Card Data (MNC, MCC)
- MSISDN
- RF settings
- Network Names

Please fill out and return the sysmoNITB Starter Kit questionnaire:

[https://sysmocom.de/downloads/sysmonitb\\_starter\\_kit\\_questionnaire.ods](https://sysmocom.de/downloads/sysmonitb_starter_kit_questionnaire.ods)

If you do not send us the questionnaire after ordering, we will assume the default settings.

## Limitations

There are some limitations in terms of supported features – it could happen, that these issues will be addressed in future versions of osmocom/Open5GS:

- No Support for NB-IoT / LTE-M
- No active handover for data between networks – limited support for CCO/NACC is available → the UE keeps the same PDP context on network change (expected 2Q/2024)
- No inter-RAT voice calls or handover (they work within a given RAT).
- No 4G voice support (VoLTE)
- CSFB from 4G to 2G/3G does not work due to limitations with Ericsson RBS 6402

# sysmoNITB Starter Kit

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## Specification of sysmoNITB



<b>Size (W x H x D)</b>	168 x 28 x 160 mm
<b>Weight</b>	450 g
<b>Basestation Interfaces</b>	2* RJ45 Ethernet (1000-Base-Tx)
<b>External Interface</b>	RJ45 Ethernet (1000-Base-Tx)
<b>Serial Interface</b>	DB-9 RS-232
<b>CPU / SoC</b>	1 GHz dual-core 64bit AMD G series T40E
<b>Input Voltage</b>	12V DC, maximum 12W
<b>Cooling</b>	Passive
<b>Internal Memory</b>	2 GB RAM, 16 GB Flash (SSD)
<b>Operating System</b>	Debian GNU/Linux
<b>Op. Temperature</b>	0 to 50 °C

## Specification of sysmoBTS 1002



<b>Network Generation</b>	2.75G / GSM, GPRS, EDGE
<b>Size (W x H x D)</b>	165 x 125 x 45 mm
<b>Weight</b>	770g
<b>RF Input (SMA)</b>	<ul style="list-style-type: none"> <li>• GSM 850/900/1800/1900 (quad-band uplink band)</li> <li>• Sensitivity: -100 dBm (exceeding 3GPP TS 05.05 pico BTS requirements)</li> </ul>
<b>RF Output (SMA)</b>	<ul style="list-style-type: none"> <li>• GSM 850/900/1800/1900 (downlink band)</li> <li>• Max. output power: (850/900): 22 dBm GMSK, 18 dBm 8PSK (1800/1900): 25 dBm GMSK, 20 dBm 8PSK</li> </ul>
<b>Frequency Synchronization</b>	Built in OXCO, calibration against public GSM networks
<b>CPU / SoC</b>	TI Davinci (ARM926 @ 405 MHz + DSP @ 804 MHz)
<b>Input Voltage</b>	5 V (DC), 10W (typ.), 13W (max.)
<b>Cooling</b>	Passive
<b>Internal Memory</b>	128 Mbyte SLC NAND Flash, 128 Mbyte DDR2 SDRAM
<b>Network Interface</b>	RJ45 Ethernet (100-Base-Tx)
<b>Number of Transceivers</b>	1 TRX / 8 timeslots
<b>Supported timeslot configurations</b>	CCCH, CCCH+SDCCH/4, SDCCH/8, TCH/F, TCH/H, PDTCH, CBCH
<b>Ciphering</b>	A5/0, A5/1, A5/2 and A5/3
<b>GPRS/EGPRS</b>	built-in PCU with Gb-over-IP interface
<b>Max. concurrent calls</b>	14 (TCH/H on 7 timeslots)
<b>Max. simultaneous SMS</b>	60 (7*SDCCH/8 + 1*SDCCH/4)
<b>Operating System</b>	Embedded Linux (Poky based)

# sysmoNITB Starter Kit

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## Specification of ip.access nano3G



<b>Network Generation</b>	3.5G / UMTS+HSDPA
<b>Size (W x H x D)</b>	168 x 160 x 30 mm
<b>Weight</b>	275 g
<b>Network Interface</b>	RJ45 Ethernet (100-Base-Tx)
<b>RF Output (internal Antenna)</b>	<ul style="list-style-type: none"><li>• UMTS Bands 2 and 5 (1900 / 850)</li><li>• Max. output power: 20mW</li></ul>
<b>Frequency Synchronization</b>	NTP (requires access to public or private NTP server; not included)
<b>Simultaneous Users</b>	8
<b>Op. Temperature</b>	0 to 40 °C
<b>Input Voltage</b>	9 V (DC), 8W
<b>Cooling</b>	Passive

## Specification of Ericsson RBS 6402



<b>Network Generation</b>	4G / LTE
<b>Model</b>	KRD 901 060/83 Wall Mount
<b>Size (W x H x D)</b>	280 x 167 x 62 mm
<b>Weight</b>	2.5kg
<b>Bands</b>	B2 B4 B7 B25 B252 B255 (1900, 2100, 2600, 5200, 5700)
<b>RF Output (internal Antenna)</b>	Up to 2x250 mW per module (total 4x250 mW)
<b>Frequency Synchronization</b>	GPS via external Receiver (included)
<b>Network Interface</b>	RJ45 Ethernet (1000-Base-Tx)
<b>Op. Temperature</b>	0 to 40 °C
<b>Input Voltage</b>	PoE, Injector included
<b>Cooling</b>	Passive

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