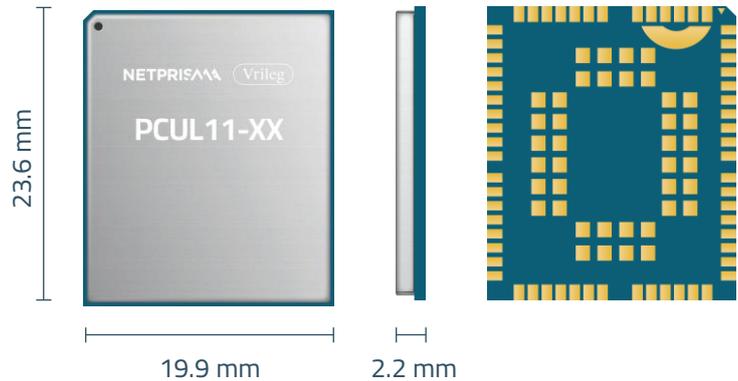


## PCUL11 Series

LTE Cat M1/ Cat NB2/  
EGPRS module



### Product features

- ▶ LTE Cat M1/Cat NB2/EGPRS module with ultra-low power consumption
- ▶ Easy migration from GSM/GPRS, UMTS/HSPA and LTE modules
- ▶ Integrated RAM/flash in the baseband chipset
- ▶ Comprehensive set of hardware-based security features
- ▶ Fast time-to-market: reference designs, evaluation tools and timely technical support minimize design-in time and development efforts
- ▶ Compact SMT form factor ideal for size-constrained applications
- ▶ Robust mounting and interfaces

The NetPrisma PCUL11 is a series of LPWA modules that support LTE Cat M1, Cat NB2 and EGPRS, along with integrated GNSS capabilities. Compliant with 3GPP Rel-14 standards, the module supports a comprehensive suite of hardware-based security features, allowing trusted applications to run directly on the Cortex A7 TrustZone engine.

The module supports data rates of up to 588 kbps downlink and 1119 kbps uplink under LTE Cat M1. With its integrated RAM/flash and ARM Cortex A7 processor running ThreadX, the PCUL11 boasts ultra-low power consumption, achieving significant reductions in PSM leakage (up to 70%) and eDRX current consumption (up to 85%) compared to previous models.

With a cost-effective SMT form factor, the module measures just 23.6 mm × 19.9 mm × 2.2 mm and simplifies the design process for integrators and developers, who can take full advantage of its low power consumption and mechanical durability.

The NetPrisma PCUL11 is suitable for various IoT applications, including wireless POS systems, smart metering, tracking devices and wearables.



LTE Cat M1 & Cat NB2



EGPRS



LGA form factor



Abundant protocols embedded



DFOTA



USB 2.0 interface



Enhanced AT commands



Ultra-low power consumption



Integrated RAM/flash in chipset

## PCUL11-LD

### Mechanical data

Region/operator	Global
Dimensions (mm)	23.6 × 19.9 × 2.2

### Temperature range

Operating temperature	-35 °C to +75 °C
Extended temperature	-40 °C to +85 °C

### Frequency bands

LTE-FDD	<b>Cat M1:</b> B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66/ 85 <b>Cat NB2:</b> B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 28/ 66/ 71/ 85
EGPRS (MHz)	GSM 850/ EGSM 900/ DCS 1800/ PCS 1900
GNSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS

### Data transmission

LTE-M data rate (kbps)	<b>Cat M1:</b> Max. 588 (DL)/ Max. 1119 (UL)
NB-IoT data rate (kbps)	<b>Cat NB2:</b> Max. 127 (DL)/ Max. 158.5 (UL) <b>Cat NB1:</b> Max. 32 (DL)/ Max. 70 (UL)
EDGE data rate (kbps)	Max. 296 (DL)/ Max. 236.8 (UL)
GPRS data rate (kbps)	Max. 107 (DL)/ Max. 85.6 (UL)

### Interfaces

(U)SIM	× 1 (1.8 V only)
UART	× 3
USB 2.0	× 1
PCM	× 1 (for VoLTE only)
I2C	× 1 (for VoLTE only)
Antenna	× 2
GPIO	× 9
GRFC	× 2

### SMS

Short message service	Point-to-point MO/MT SMS cell broadcast Text and PDU mode
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### Enhanced features

DFOTA	Supported
IoT platform access	AWS/ Azure

### Software features

Protocols	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ MQTT/ LwM2M/ CoAP/ IPv6
USB serial driver	<b>Windows</b> 8.1/10/11 <b>Linux</b> 2.6–6.7 <b>Android</b> 4.x–14.x
GNSS/ RIL driver	<b>Android</b> 4.x–14.x

### Certifications

Carrier	<b>America:</b> Verizon <sup>dev</sup> / AT&T <sup>dev</sup> / T-Mobile <sup>dev</sup> <b>Global:</b> GCF <sup>dev</sup> <b>North America:</b> PTCRB <sup>dev</sup> <b>America:</b> FCC <sup>dev</sup> <b>Canada:</b> IC <sup>dev</sup>
Regulatory	
Others	RoHS

### Electrical features

Supply voltage <sup>1</sup> (V)	3.3–4.3, typ. 3.8
Max output power (dBm)	Power Class 5, 21 @ LTE Bands
Power consumption @ PSM (µA)	3.9 <b>Sleep mode:</b> 1.89 @ DRX = 1.28 s 0.63 @ e-IDRX = 81.92 s
Power consumption @ LTE Cat M1 (mA)	<b>Idle mode:</b> 18.9 @ DRX = 1.28 s 18.2 @ e-I-DRX = 81.92 s <b>Active mode:</b> 193 @ 21 dBm, GNSS off
Power consumption @ LTE Cat NB1 (mA)	<b>Sleep mode:</b> 1.49 @ DRX = 1.28 s 0.67 @ e-IDRX = 81.92 s <b>Idle mode:</b> 14.8 @ DRX = 1.28 s 14.3 @ e-I-DRX = 81.92 s <b>Active mode:</b> 154 @ 21 dBm, GNSS off

<sup>1</sup>: Please refer to the hardware design manual to see more specific requirements for the power supply voltage.  
<sup>dev</sup>: Under development or in progress.

## PCUL11-LD1

### Mechanical data

Region/operator	Global
Dimensions (mm)	23.6 × 19.9 × 2.2

### Temperature range

Operating temperature	-35 °C to +75 °C
Extended temperature	-40 °C to +85 °C

### Frequency bands

LTE-FDD	<b>Cat M1 only:</b> B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66/ 85
GNSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS

### Data transmission

LTE-M data rate (kbps)	<b>Cat M1:</b> Max. 588 (DL)/ Max. 1119 (UL)
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### Interfaces

(U)SIM	× 1 (1.8 V only)
UART	× 3
USB 2.0	× 1
PCM	× 1 (for VoLTE only)
I2C	× 1 (for VoLTE only)
Antenna	× 2
GPIO	× 9
GRFC	× 2

### SMS

Short message service	Point-to-point MO/MT SMS cell broadcast Text and PDU mode
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### Enhanced features

DFOTA	Supported
IoT platform access	AWS/ Azure

### Software features

Protocols	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ MQTT/ LwM2M/ CoAP/ IPv6
USB serial driver	<b>Windows</b> 8.1/10/11 <b>Linux</b> 2.6–6.7 <b>Android</b> 4.x–14.x
GNSS/ RIL driver	<b>Android</b> 4.x–14.x

### Certifications

Carrier	<b>America:</b> Verizon <sup>dev</sup> / AT&T/ T-Mobile <sup>dev</sup>
Regulatory	<b>Global:</b> GCF <sup>dev</sup> <b>North America:</b> PTCRB <b>America:</b> FCC <b>Canada:</b> IC
Others	RoHS

### Electrical features

Supply voltage <sup>1</sup> (V)	2.6–4.8, typ. 3.3
Max output power (dBm)	Power Class 5, 21 @ LTE bands
Power consumption @ PSM (µA)	4
Power consumption @ LTE Cat M1 (mA)	<b>Sleep mode:</b> 1.7 @ DRX = 1.28 s 0.577 @ e-I-DRX = 81.92 s <b>Idle mode:</b> 20 @ DRX = 1.28 s 19.57 @ e-I-DRX = 81.92 s <b>Active mode:</b> 210 @ 21 dBm, GNSS off

<sup>1</sup>: Please refer to the hardware design manual to see more specific requirements for the power supply voltage.  
<sup>dev</sup>: Under development or in progress.

## PCUL11-LD2

### Mechanical data

Region/operator	Global
Dimensions (mm)	23.6 × 19.9 × 2.2

### Temperature range

Operating temperature	-35 °C to +75 °C
Extended temperature	-40 °C to +85 °C

### Frequency bands

LTE-FDD	<b>Cat M1:</b> B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66/ 85 <b>Cat NB2:</b> B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 28/ 66/ 71/ 85
GNSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS

### Data transmission

LTE-M data rate (kbps)	<b>Cat M1:</b> Max. 588 (DL)/ Max. 1119 (UL) <b>Cat NB2:</b> Max. 127 (DL) Max. 158.5 (UL) <b>Cat NB1:</b> Max. 32 (DL) Max. 70 (UL)
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### Interfaces

(U)SIM	× 1 (1.8 V only)
UART	× 3
USB 2.0	× 1
PCM	× 1 (for VoLTE only)
I2C	× 1 (for VoLTE only)
Antenna	× 2
GPIO	× 9
GRFC	× 2

### SMS

Short message service	Point-to-point MO/MT SMS cell broadcast Text and PDU mode
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### Enhanced features

DFOTA	Supported
IoT platform access	AWS/ Azure

### Software features

Protocols	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ MQTT/ LwM2M/ CoAP/ IPv6
USB serial driver	<b>Windows</b> 8.1/10/11 <b>Linux</b> 2.6–6.7 <b>Android</b> 4.x–14.x
GNSS/ RIL driver	<b>Android</b> 4.x–14.x

### Certifications

Carrier	<b>America:</b> Verizon <sup>dev</sup> / AT&T <sup>dev</sup> / T-Mobile <sup>dev</sup>
Regulatory	<b>Global:</b> GCF <sup>dev</sup> <b>North America:</b> PTCRB <sup>dev</sup> <b>America:</b> FCC <sup>dev</sup> <b>Canada:</b> IC <sup>dev</sup>
Others	RoHS

### Electrical features

Supply voltage <sup>1</sup> (V)	2.6–4.8, typ. 3.3
Max output power (dBm)	Power Class 5, 21 @ LTE Bands
Power consumption @ PSM (µA)	3.9
Power consumption @ LTE Cat M1 (mA)	<b>Sleep mode:</b> 1.68 @ DRX = 1.28 s 0.549 @ e-I-DRX = 81.92 s <b>Idle mode:</b> 21.2 @ DRX = 1.28 s 20.6 @ e-I-DRX = 81.92 s <b>Active mode:</b> 212 @ 21 dBm, GNSS off
Power consumption @ LTE Cat NB1 (mA)	<b>Sleep mode:</b> 1.55 @ DRX = 1.28 s 0.592 @ e-IDRX = 81.92 s <b>Idle mode:</b> 16.8 @ DRX = 1.28 s 16.4 @ e-I-DRX = 81.92 s <b>Active mode:</b> 162 @ 21 dBm, GNSS off

<sup>1</sup>: Please refer to the hardware design manual to see more specific requirements for the power supply voltage.  
<sup>dev</sup>: Under development or in progress.