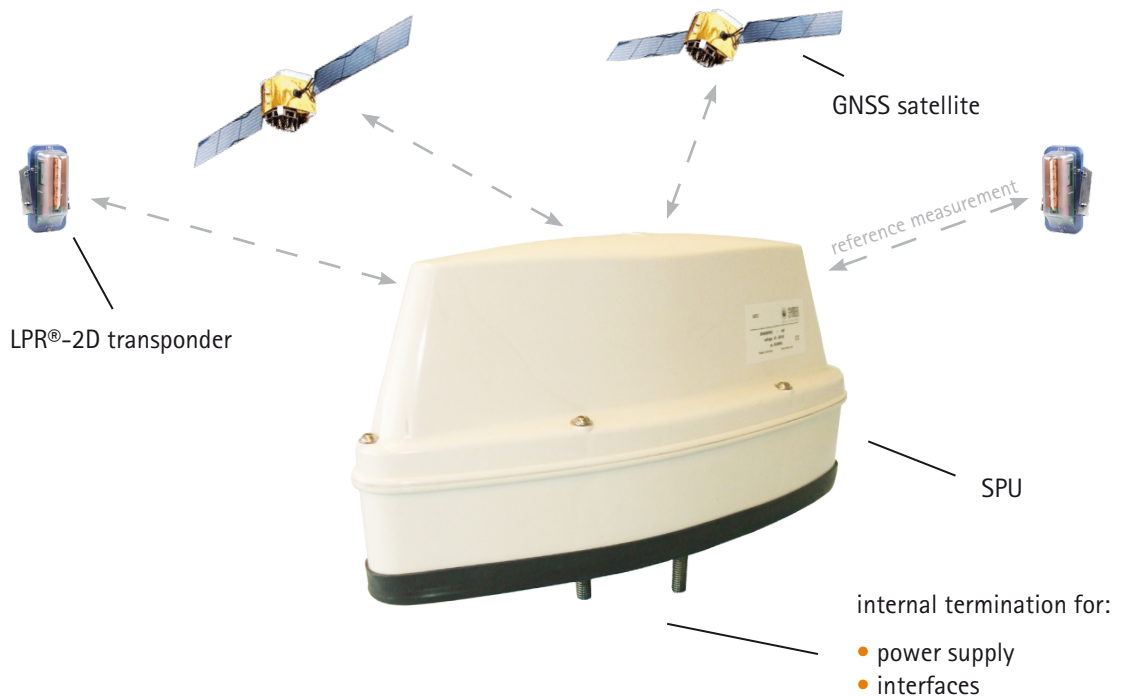


# Symeo Positioning Unit

## SPU (-L, -S, -SD, -LS)



### SPU (-L, -S, -SD, -LS)

#### Dynamic Acquisition of Indoor and Outdoor Vehicle Positions

- Precise 2D position with LPR<sup>®</sup> and/or GNSS
- Contactless position detection via radio technology
- Unlimited system range
- Works under dust, dirt and adverse weather
- Quick installation
- Retrofit on all existing equipment
- Maintenance-free

The SPU is a compact position measurement device with integrated antennas for permanent installation on a wide variety of vehicles and other moving devices. It is fully sealed and can withstand cleaning detergents and vehicle washing tunnels.

The device optionally utilizes Symeo's patented LPR<sup>®</sup> radar positioning technology (SPU-L), GNSS (SPU-S), D-GNSS (SPU-SD) or both technologies LPR<sup>®</sup>/GNSS combined (SPU-LS).

The wireless LPR<sup>®</sup> technology allows exact position measurement indoors and outdoors, even under challenging industrial conditions. The LPR<sup>®</sup> position is calculated based on the distance to fixed reference marks, so-called transponders. Transponders can easily be mounted at varying distances and height levels on existing walls, fences or pillars, making it a very flexible system. Location cells are usually composed of up to 6 transponders and a single cell can cover an area of up to 100.000 m<sup>2</sup> (approximately 300 m x 300 m). Based on the typical layout of the transponder network, even at a temporary loss of contact to some transponders, LPR<sup>®</sup> will still continue to provide dynamic position measurement with good quality.

The GNSS receiver option delivers outdoor location fixes, provided enough satellite signals are received with direct line of sight.

Due to the radio-based technology, the SPU determines reliable location data even under the influence of dust, dirt and adverse weather conditions. Position information can be transferred via the LPR<sup>®</sup> radio frequency, by using Ethernet/WiFi or an optional on-board GPRS/UMTS modem.



## Typical SPU applications



### Technical Data: SPU (-L, -S, -SD, -LS)

LPR® frequency range (SPU-L)	5.725-5.875 GHz, ISM-band
Measuring distance SPU to transponder (SPU-L)	up to 300 m
GNSS/D-GNSS receiver (SPU-S/SPU-SD)	L1, C/A Code, Glonass L1 FDMA, signal aquisition, cold: < 1 min, reacquisition, hot: < 1 s
System range (SPU-L, -S, -SD, -LS)	unlimited
Typical accuracy (SPU-L, -S, -SD)	LPR® (SPU-L): up to +/- 0.5 m*; D-GNSS (SPU-SD): up to +/- 1 m CEP**; GNSS (SPU-S): up to +/- 2.5 m CEP***
Repeat rate	LPR®: 20 Hz (internal); GNSS: 4 Hz
Voltage	10-36 V DC, ignition & steady plus
Power consumption	continuous operation: 10 W, stand-by: 1.5 W (avg. wake-up every 30 min, 30 s boot time), sleep: 100 mW (90 s boot time)
Ambient temperature	-30 °C to +70 °C
Protection class housing	IP65
Dimensions SPU (LxWxH); weight	358 x 120 x 174 mm; 1.5 kg
Dimensions transponder (LxWxH); weight	281 x 125 x 150 mm; 1 kg
Hardware interface	Ethernet TCP/IP, GPRS/UMTS (optional), LPR® Com (optional), WiFi (optional), CAN bus
Data interface	Symeo 2D protocol, custom formats (optional)
Status indication	LED
Connector type	cable gland, internal terminal block
Antennas (internal in the housing)	2x LPR®, 1x GNSS, 1x WiFi, 1x GPRS/UMTS (depending on options)
Compliance	CE, FCC, IC, ISO60950, ISO16750

\* provided that  $\geq 6$  LPR® transponders with required signal quality are available

\*\* provided that  $\geq 8$  GNSS satellites are received with unobstructed/uncorrupted signals (no multipath) with a GNSS base station according to Symeo specification (antenna cable and reference antenna) that provides GNSS correction signals to all GNSS receivers within a 5 km radius from the base station

\*\*\* provided that  $\geq 8$  GNSS satellites are received with unobstructed/uncorrupted signals (no multipath)

definition x meter CEP: 50% of all positions in a circle with radius x meter