

# FALCOM Smart Antenna FSA01

High sensitivity GPS receiver and SARANTEL quadrifilar helix antenna in a single board solution

- SiRFstarIII - GSC3LTf chip
- High sensitivity for indoor fixes
- Extremely fast TTFF at low signal levels
- Integrated TCXO
- On chip 4 Mb FLASH + 4 MB ROM
- ARM7 baseband CPU
- GSW3 software support
- Quadrifilar Helix beamwidth > 120 °
- Right-hand circular polarized
- VSWR < 2.0:1
- Starter-kit included evaluation and configuration tool



## The FALCOM FSA01

The new product is a combination between a GPS-receiver from FALCOM based on the newest GPS-chip from SiRF and the Quadrifilar Helix antenna from Sarantel with in the dimension of the Sarantel Geohelix-S-antenna. The antenna is tightly integrated with other antennas, e. g. Bluetooth/GPS-receivers or GPS/GSM mobile phones. The orientation of the device is random.

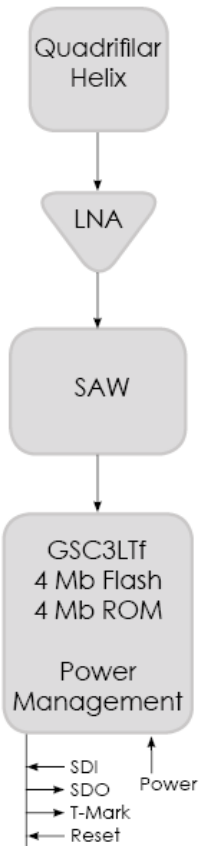
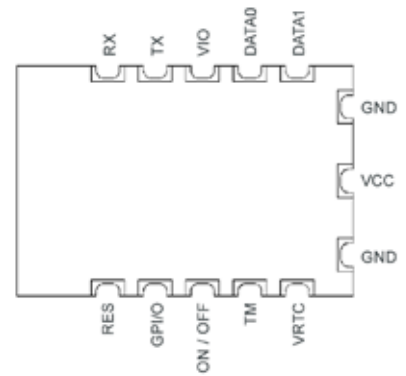
As a dielectrically loaded antenna, the complete device acts its own filter, attenuating signals from common GSM and ISM frequencies by as much as 30 dB without external filtering.

The integrated GPS-receiver is based on the newest GPS Navigation Engine from SiRF, the GSC3LTf. This chip contains the industry leading SiRFstarIII GPS DSP core in 90 nm process

technology operating at 1.2 V. 4 on-board voltage regulators and the integrated Power On Reset reduces solution footprint. The device contains also a LNA with a noise figure of 0,7 dB and a gain of 18 dB.

A SAW filter increase the attenuating against signals from GSM and ISM frequencies. Beside the integrated 4 Mb program flash for customized software, the GSC3LTf has a 4 Mb ROM available for masking stable firmware. The TCXO will a frequency stability of 0,5 ppm allows a sensitivity of -159 dbm. The small size, the high sensitivity and the power consumption from only 27 mA at 3,3 V (under 10 mA in Trickle Power Mode) providing manufactures of cellphones, PDAs and other portable and wireless devices a smaller design with extended battery life.

## Detail view and PIN out



## Technical specification

### GPS receiver

#### Time to first position (TTFF)

Hot start	< 4 sec average (23 dBHz sensitivity)
Warm start	< 35 sec average (28 dBHz sensitivity)
Cold start	< 45 sec average (16 dBHz sensitivity)

#### Sensitivity

Autonomous acquisition	-142 dBm
Tracking	-159 dBm

#### Receiver

Tracking	L1, CA code
Channel	20
Max. update rate	1 Hz
Protocol support	NMEA, SiRF binary

#### GPS-Datum

WGS-84

#### Processing core

Processor type	ARM7/TDMI, 90 nm, 1.2 V
FLASH	4 Mb
ROM	4 Mb

#### Electrical characteristics

Power supply	3.3 V - 5.5 V
Power consumption	90 mW (3.3 V) Full power 30 mW (3.3 V) Trickle power (1 sec)

#### Quadrifilar Helix

Frequency	1575.42 MHz
Gain	-3.5 dBic
Efficiency	23 % total spherical
Efficiency	45 % upper spherical
Beamwidth	120 degrees
VSWR	< 2.0 : 1

#### Dimensions (Antenna & GPS receiver)

Length	50.8 mm
Width	14.8 mm
Helix diameter	13.2 mm

#### Required space on customers application board

Length	23 mm
Width	16 mm

Note: Specifications and information given in this document are subject to change by FALCOM without notice.  
For latest product information see [www.falcom.de](http://www.falcom.de)

## Evaluation

