

5 km

SHORTLINK®

Wireless short-range sensor network

- Up to 5 km / 3 mi transmission range
- No regular fees, low total cost of ownership
- Reliable data link even in worst-case scenarios
- Adaptable to any sensor or instrument
- Now up to 10 years battery life

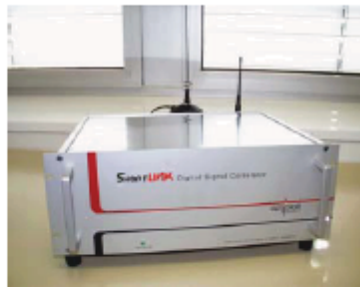
SHORTLINK[®]

... private wireless sensor network

- Ultra-low power consumption (lifetime-battery concept)
- Operating distance up to 5 km line-of-sight (LOS)
- Operating frequency 400-500 MHz, possible to run on ISM-band, 433 MHz
- Simple turnkey installation and long-term maintenance-free operation
- Easy integration into *DataEXPERT* data management system (data storage, alarm processing, visualization and reporting)
- Easy interface to external instruments or host processors

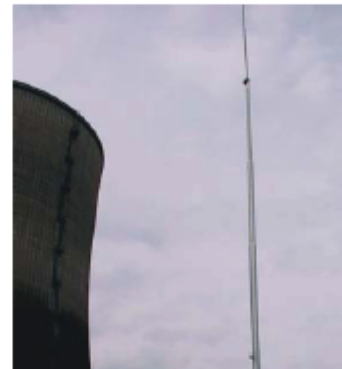


GammaTRACER with integrated radio module



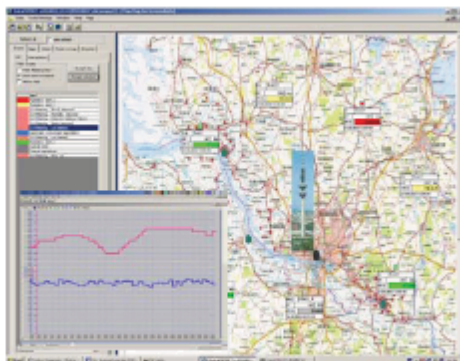
ShortLINK-Receiver with "in-house" antenna

max. 5 km



Outdoor "hi-gain" antenna on 8m mast

- Narrow-band phase-modulation
- High frequency stability (ultra-low drift crystal oscillator)
- Output power 10 mW
- Temperature range up to -40° C to +60 ° C



Data processing with **DATAEXPERT**

LAN, ISDN ...



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System Highlights

- ⇒ The **ShortLINK System** is a fully autonomous and private wireless network. It is designed to transmit online data from connected low-power sensors or instruments within an area of up to 5 km to a central station.
- ⇒ Unlike public cellular communication system standards (like GSM), **ShortLINK** is not dependant on the existence of an area covering cellular infrastructure.
- ⇒ **ShortLINK's** ultra-low power consumption enables applying battery-operated systems, thus no cabling equipment or solar panel is necessary. This offers a new dimension of flexibility concerning the location and moving of sensors.
- ⇒ Due to its ultra-long battery life up to 10 years and low operational cost, extremely cost-efficient sensor networks covering up to 5 km distance can be operated.
- ⇒ Delivered as a turnkey system, a set-up is possible within shortest time. Maintenance-free operation can be supposed for several years (guaranteed three years).
- ⇒ Flexible system set-up also as mobile monitoring system for emergency management (set-up time <15 min.)

System Components

The **ShortLINK** system is a wireless transceiver system designed for connecting low-power sensors or instruments by radio. An online measurement network based on **ShortLINK** technology consists of following components:

- the **ShortLINK** radio module which is connected to the sensor or instrument
- a mobile **ShortLINK** receiver including external antenna
- for high data security with automatic online systems a server computer with database and data management software is available (**DataEXPERT**)

ShortLINK is especially designed to cover a range up to 5 km line-of-sight (LOS). For longer distances up to typ. 100 km there is the wide-area **SkyLINK** radio system available. **SkyLINK** offers similar features as **ShortLINK**, but disposes of a highly sophisticated receiver technology which is necessary to cover large distances using as low transmission power as described here.

ShortLINK Radio Module

The **ShortLINK** radio module is a state-of-the-art radio component and serves for transmitting sensor data to the Data Center. The module incorporates a powerful micro-controller to handle data transfer, QA protocols and maintain data security. A FEC scheme (Forward Error Correction) improves transmission capability even under bad conditions. The use of sophisticated low-noise-amplifiers and selected ceramic filters ensure best high frequency characteristics.

The module can be integrated into an existing instrument or can be used as a separate external transceiver modem/data logger. A customer specific interface can be implemented.



UTP Unit – Universal Telemetry Platform

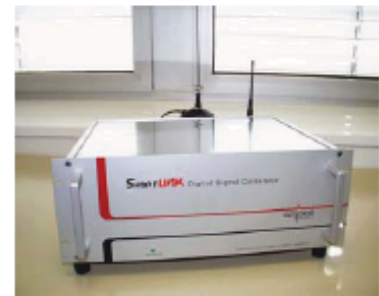
The **UTP** is an autonomous data logger with built-in transmitter module. The hermetically sealed weatherproof casing enables the use in harsh environments. The built-in battery provides power supply of up to 10 years. External devices like meteorological, hydrological or other sensors can be connected by analogue or digital inputs, as well as serial interface (RS232/ RS485). Also the power supply of external devices out of the **UTP's** battery is possible. The **UTP** can be powered externally, in case mains power is available. Various cycle times for data capture and transmission are possible as well as monitoring of alarm thresholds.





ShortLINK Receiver-Unit:

The Receiver-Unit incorporates the high-quality analogue receiver and an embedded PC with LAN connection to the PC/server. For distances up to 1 km a directly mounted antenna can be used. With external antenna and mast support an extended radio coverage up to 5 km can be obtained. The receiver rack is the heart of the ShortLINK system and is responsible for its excellent specifications. By combining the best components and methods of the analogue and the digital world the outstanding features were achieved.



Primary Data Center (PDC)

The PDC is a high-quality server computer holding all hardware and software components for a reliable automatic online measurement system. An integrated hardware-watchdog supervises the operating system. The MS SQL server is used as database for measurement and quality data. Acoustic and visual alarms are as well incorporated as a remote messaging system (SMS, FAX). For applications not requiring high data security a simple PC/laptop can be used.

DataEXPERT Software:

DataEXPERT is the heart of SkyLINK's automatic reliable ONLINE data management system. The system can handle different input sources and has flexible export functions. The DataEXPERT software has integrated modules for automatic processing and storage of incoming protocols, alarm processing including visual and acoustic alarm, automatic sensor and transmission link quality check, comfortable chart visualization and reporting functions

Data coming from a ShortLINK / SkyLINK wireless system is as well processed as data coming from manual input or by cable connection (RS232/485, Ethernet, ISDN).

Compare ShortLINK to other wireless technologies:

Compared to other wireless short-range technologies like Bluetooth (for very short distances) or Wireless LAN (up to 300 m) their performance strongly relate to line-of-sight conditions. Also the variety of ISM-band modems (typ. operating up to 300 m) depend on much higher power consumption. ShortLINK technology achieves far better results by using high-quality components and optimized standards applied on every stage of the complete system design.

Specifications	Standard	Optional
Type of communication / - modulation	Uni-directional transmission / 2PSK	
Network structure	Unlimited number of sensors to one or more central stations	
Protocol handling and security	ALOHA access scheme	
Error correction and verification of integrity	Adaptive FEC (Block code) and CRC error detection	
Frequency stability over temperature	typ. +/- 2 ppm	
Max. distance	up to 5 km, depending on individual landscape and antenna	
Standard carrier frequencies (acc. to license)	400 to 500 MHz	
Transmission rate	1200 Bd	
Operating temperature TX/RX	-20 ... +50°C / 0...+50°C	-40 ... +60°C / 0...+50°C

Customer Response

Please send detailed ShortLINK information. Please send detailed SkyLINK information.

Instit. / Comp.: _____

Department: _____ Title / Name: _____

Address: _____

Phone: _____ Fax: _____

E-Mail: _____



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