

# SR65 DI

## Wireless Digital Input Module



### Applications

- Wireless module that transmits the status (open/closed) of a connected dry contact.

### Features

- Integrated 868.3 MHz transmitter (transmissions conform to the EnOcean standard)
- Eliminate expenses for wiring plans, wire and conduit installation, electrician fees and other associated labor costs
- Eliminate placement errors (simply correct by moving sensor(s) to better location)
- Powered by a 3.6V lithium battery with an approximate operating life time of 5 to 10 years.
- Transmits the dry contact's status immediately upon change of state (open/closed).



**SR65 DI**

SR65 DI is a wireless module that has one digital input for dry contacts by which the switch status can be evaluated. This device communicates the status of the contact (opened/closed) via radio telegrams.

SR65 DI communicates with wireless-enabled controllers via radio telegrams in accordance with the EnOcean standard.

### Product Total Quality Commitment

All Distech Controls product lines are built to meet rigorous quality standards. Distech Controls is an ISO 9001 registered company. Distech Controls' products provide both the contractor and the end user with the flexibility of using "best-of-breed" products in system design.

## Transmitting Frequency

The sensors send event or time controlled telegrams to the receiver.

### Measuring Principle and Production of Telegram

A: Event Controlled

By actuating the learning button of the device, the internal microprocessor is woken up, the measuring value for temperature is detected and a telegram to the receiver is generated.

B: Time Controlled

The internal microprocessor is woken up within a time interval of approx. 1.6 minutes (T<sub>wake up</sub>) and the measuring value for temperature is detected. If the status of an input has changed since the last inquiry (temperature change > 2% (>0.8°C), a telegram is produced immediately. If the input value temperature remain unchanged compared with the previous telegrams, a telegram is automatically produced at the latest after expiration of the fixed sending time of approx. 16 minutes (T<sub>send</sub>).

Information: Temperature value

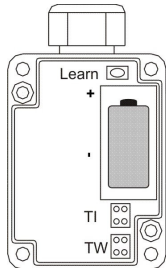
Telegram-Production: Time controlled

After a telegram is sent, regardless whether produced by status changes or after expiration of T<sub>send</sub>, the times T<sub>wake up</sub> and T<sub>intervall</sub> are re-started.



A telegram includes all information (temperature value etc....)

### Setting of Transmission Time



TW (Twake up)	TI (Tintervall)
=1	=1
=10	=10
=100	=100

### Manufacturer's Adjustment

T<sub>wake up</sub>: 100, T<sub>interval</sub>: 10

T<sub>send</sub> = 100sec. wake up x 10 interval = 1000sec. = approx. 16 Min.



The sending frequency has a direct influence on the operation energy available in the energy storage. Thus, it also affects the discharge time of the energy storage during running operation.

### Description Radio Telegram

ORG	7 dec. Always (EnOcean module type "4BS")
Data_byte1	Temperature -20...60°C, linear n=255...0
Data_byte0	Bit D3 Learn Button (0=Button pressed)
ID_Byte3	device identifier (Byte3)
ID_Byte2	device identifier (Byte2)
ID_Byte1	device identifier (Byte1)
ID_Byte0	device identifier (Byte0)

### Mounting Advice

The devices are supplied in an operational status.

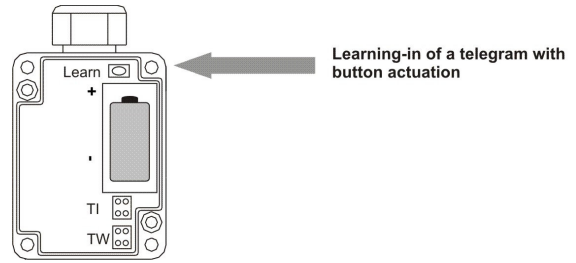
The module should be fixed to the smooth wall surface by means of rawl plugs and screws (accessory).

For an optimum location and receiving range, please see the "wireless information".

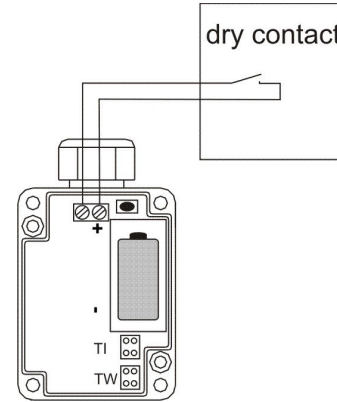
### Installation

In order to assure a correct evaluation of the measuring values by the receiver, it is necessary to have the devices learned by the receiver. This is done automatically by means of a "learn button" at the sensor or manually by input of the 32bit sensor ID and a special "learning procedure" between sender and receiver. The respective details are described in the corresponding software documentation of the receiver.

**The digital input may not be closed during the learn-in procedure by means of the learn button!**



Learning-in of a telegram with button actuation



dry contact

## Information on Wireless Sensors

### Transmission Range

As the radio signals are electromagnetic waves, the signal is damped on its way from the sender to the receiver. That is to say, the electrical as well as the magnetic field strength is removed inversely proportional to the square of the distance between sender and receiver ( $E \cdot H \sim 1/r^2$ ).

Beside these natural transmission range limits, further interferences have to be considered: Metallic parts, e.g. reinforcements in walls, metalized foils of thermal insulations or metalized heat-absorbing glass, are reflecting electromagnetic waves. Thus, a so-called radio shadow is built up behind these parts.

It is true that radio waves can penetrate walls, but thereby the damping attenuation is even more increased than by propagation in the free field.

Penetration of radio signals:

Material	Penetration
Wood, gypsum, glass uncoated	90...100%
Brick, pressboard	65...95%
Reinforced concrete	10...90%
Metal, aluminum pasting	0...10%

For the practice, this means that the building material used in a building is of paramount importance for the evaluation of the transmitting range. For an evaluation of the environment, some guide values are listed:

Radio path range/-penetration:

Visual contacts: Typ. 30m range in passages, corridors, up to 100m in halls

Gypsum walls/wood: Typ. 30m range through max. 5 walls

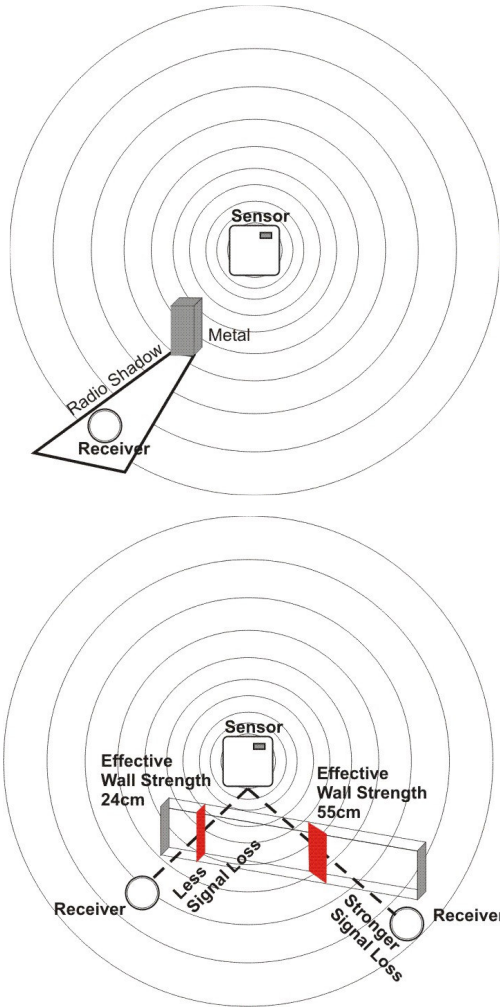
Brick wall/Gas concrete: Typ. 20m range through max. 3 walls

Reinforced concrete/-ceilings: Typ. 10m range through max. 1 ceiling

Supply blocks and lift shafts should be seen as a compartmentalization

In addition, the angle with which the signal sent arrives at the wall is of great importance. Depending on the angle, the effective wall strength and thus the damping attenuation of the signal changes. If possible, the signals should run vertically through the walling. Walling recesses should be avoided.

## Information on Wireless Sensors



### Other Interference Sources

Devices that also operate with high-frequency signals, e.g. computer, audio-/video systems, electronic transformers and ballasts etc. are also considered as an interference source. The minimum distance to such devices should amount to 0,5m.

### Find the Device Positioning by Means of the Field Strength Measuring Instrument – EPM 100

EPM 100 is a mobile tool for measuring and indicating the received field strength (RSSI) of the EnOcean telegrams and disturbing radio activity at 868.3 MHz. It supports electrical installers during the planning phase and enables them to verify whether the installation of EnOcean transmitters and receivers is possible at the positions planned.

It can be used for the examination of interfered connections of devices, already installed in the building.

Proceeding for determination of mounting place for wireless sensor/ receiver:

Person 1 operates the wireless sensor and produces a radio telegram by key actuation

By means of the displayed values on the measuring instrument, person 2 examines the field strength received and determines the optimum installation place, thus.

### High-Frequency Emission of Wireless Sensors

Since the development of cordless telephones and the use of wireless systems in residential buildings, the influence of radio waves on people's health living and working in the building have been discussed intensively. Due to missing measuring results and long-term studies, very often great feelings of uncertainty have been existed with the supporters as well as with the critics of wireless systems.

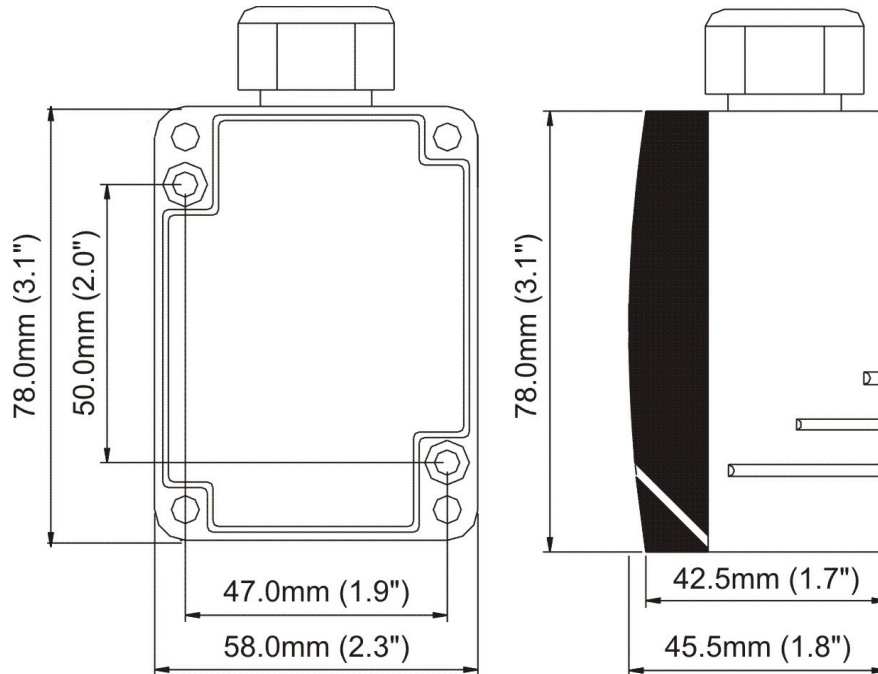
A measuring expert's certificate of the institute for social ecological research and education (ECOLOG) has now confirmed that the high-frequency emissions of wireless keys and sensors based on EnOcean technology are considerably lower than comparable conventional keys.

Thus, it is good to know, that conventional keys do also send electromagnetic fields, due to the contact spark. The emitted power flux density ( $W/m^2$ ) is 100 times higher than with wireless sensors, considered over the total frequency range. In addition, a potential exposition by low-frequency magnet fields, emitted via the wires, is reduced due to wireless keys. If the radio emission is compared to other high-frequency sources in a building, such as DECT-telephones and basis stations, these systems are 1500 times higher-graded than wireless keys.

## Optional Accessories

D+S	1 Set (each 2 pieces) raw plugs and screws
LS14250	Battery Easy Sens (1.1Ah, 3.6V, .5AA). For optional use as a battery-powered sensor.

## Product Specifications



Power		Features	
Power Supply	Lithium Battery 3.6V/1.1Ah; Type LS14250 Approx. 5-10 year operating time depending on intentional component aging and self discharge	Digital Input	2-wire dry contact: max. current – 0.5mA; Max. resistance - 1000Ω
Protection	IP65 according to EN60529	Electromagnetic Compatibility	
Environmental		CE -Conformity	89/336/EEG Electromagnetic compatibility R&TTE 1999/5/EC Radio and Telecommunications Terminal Equipment Directive
Operating Temperature	-25°C to 65°C; -13°F to 149°F	Standards	ETSI EN 301 489-1: 2001-09 ETSI EN 301 489-3: 2001-11 ETSI EN 61000-6-2: 2002-08 ETSI EN 300 220-3: 2000-09
Storage Temperature	-25°C to 65°C; -13°F to 149°F	FCC	ID: S3N-SRXX This device complies with Part 15 of the FCC rules
Relative Humidity	0 to 70% Non-condensing		
General			
Technology	EnOcean, STM		
Transmitting Frequency	868.3 MHz		
Approx. Transmitting Range:	30m / 98.4' in buildings, 300m / 984.3' in free propagation		
Measuring Value Detection	Every 100 seconds		
Sending Interval	Immediately with a contact state change or every 16 minutes		
Enclosure			
Material (Bottom part)	PA6 (ASA)		
Color	White		
Dimensions overall	58.0mm x 78.0mm x 45.5mm (2.3" x 3.1" x 1.8")		
Shipping Weight	0.11kg (0.24lbs)		



- The general registration for the radio operation is valid for all EU-countries as well as for Switzerland.
- Operation is subject to the following two conditions:
  - This device may not cause harmful interference
  - This device must accept any interference received, including interference that may cause undesired operation.



- Changes or modifications made to this equipment not expressly approved by Distech Controls may void the FCC authorization to operate this equipment.
- The installation and assembly of electrical equipment may only be performed by a skilled electrician.
- The modules must not be used in any relation with equipment that supports, directly or indirectly, human health or life or with applications that can result in danger for people, animals or real value.

**Specifications subject to change without notice.**

Distech Controls logo is a trademark of Distech Controls Inc.; LONMARK is a registered trademark of Echelon Corporation.  
Niagara<sup>AX</sup> Framework is a trademark of Tridium, Inc. EnOcean is a registered trademark of EnOcean GmbH.



05DI-DSSR65D-11

SR65 DI

Distech Controls, Inc.  
Tel. toll-free North America: 1-800-404-0043  
Tel. international: 1-450-444-9898  
www.distech-controls.com  
sales@distech-controls.com