



DENKI SEIGYO

DSWI SERIES



Industrial Wireless I/O System

Models

- **DSWI-T4DI-485** – Wireless I/O Transmitter
- **DSWI-R4DO-485** – Wireless I/O Receiver

Category

Industrial Wireless I/O Module

Wireless Remote I/O System

Industrial LoRa Communication

Product Overview

The **Denki Seigyo DSWI Series** Industrial Wireless I/O System provides a reliable solution for transmitting industrial digital signals without wiring.

Utilizing advanced **LoRa private wireless communication**, the system enables long-distance, interference-resistant communication between field devices and control panels, reducing installation cost and wiring complexity.

The DSWI Series consists of a **wireless transmitter** equipped with **4 digital inputs** and a **wireless receiver** with **4 digital outputs**. Integrated **RS-485 communication**, **LCD display**, **optical isolation**, and industrial-grade protection make the system suitable for factory automation, cranes, AGVs, conveyors, water treatment plants, mining, and remote monitoring applications.

The reference manual describes the system as a pre-paired point-to-point (P2P) wireless transmitter/receiver using LoRa private networking, with isolated I/O, LCD display, and industrial environmental protection.



Model Code Structure

Code	Meaning
DSWI	Denki Seigyo Wireless I/O
T / R	Transmitter / Receiver
4	4 Channels
DI / DO / AI / AO	Digital Input / Digital Output / Analog Input / Analog Output
485	RS-485 Communication

Example

DSWI-T4DI-485

Code	Description
DSWI	Denki Seigyo Wireless I/O
T	Wireless Transmitter
4	Four Channels
DI	Digital Inputs
485	RS-485 Communication

DSWI-R4DO-485

Code	Description
DSWI	Denki Seigyo Wireless I/O
R	Wireless Receiver
4	Four Channels
DO	Digital Outputs
485	RS-485 Communication

Product Series

Model	Description
DSWI-T4DI-485	Wireless Transmitter – 4 Digital Inputs + RS-485
DSWI-R4DO-485	Wireless Receiver – 4 Digital Outputs + RS-485



Key Features

- Long-range LoRa wireless communication
- Point-to-point (P2P) communication
- 4 Digital Inputs
- 4 Digital Outputs
- RS-485 communication interface
- LCD status display
- FHSS frequency hopping technology
- CRC data verification
- Optocoupler isolation
- Power isolation
- Industrial M12 waterproof connector
- SMA antenna interface
- DIN rail mounting
- Factory paired transmitter and receiver
- Plug-and-play operation
- Excellent anti-interference performance
- Industrial IP65 enclosure

Technical Specifications

Wireless Communication

Parameter	Specification
Communication Technology	LoRa Private Network
Frequency Band	470–510 MHz
Network Mode	Point-to-Point (P2P)
Communication Method	FHSS + TD
Transmission Distance	Up to 500 m (Line of Sight)
Maximum Link Budget	157 dB
RF Output Power	17 dBm
Antenna Gain	3 dBi
Polarization	Vertical
Communication Speed	2400 / 800 / 300 bps
Receiver Sensitivity	-126 / -130 / -140 dBm
Reset	Supported by both software and hardware

Input / Output

Transmitter (DSWI-T4DI-485)

Parameter	Specification
Digital Inputs	4
Input Type	Dry Contact / Passive Signal
Communication	Wireless + RS-485



Receiver (DSWI-R4DO-485)

Parameter	Specification
Digital Outputs	4
Alarm Output	1
Communication	Wireless + RS-485

Electrical Specifications

Parameter	Specification
Supply Voltage	18–30 VDC
Battery Version	12 VDC (Optional)
Current Consumption	<30 mA @24 VDC
Display	LCD
Electrical Isolation	Optocoupler Isolation
Surge Protection	4 kV Common Mode / 2 kV Differential
Protection	Reverse Connection Protected

Communication Interface

Parameter	Specification
Serial Interface	RS-485
Connector	M12 Waterproof Connector
Antenna Connector	SMA Female

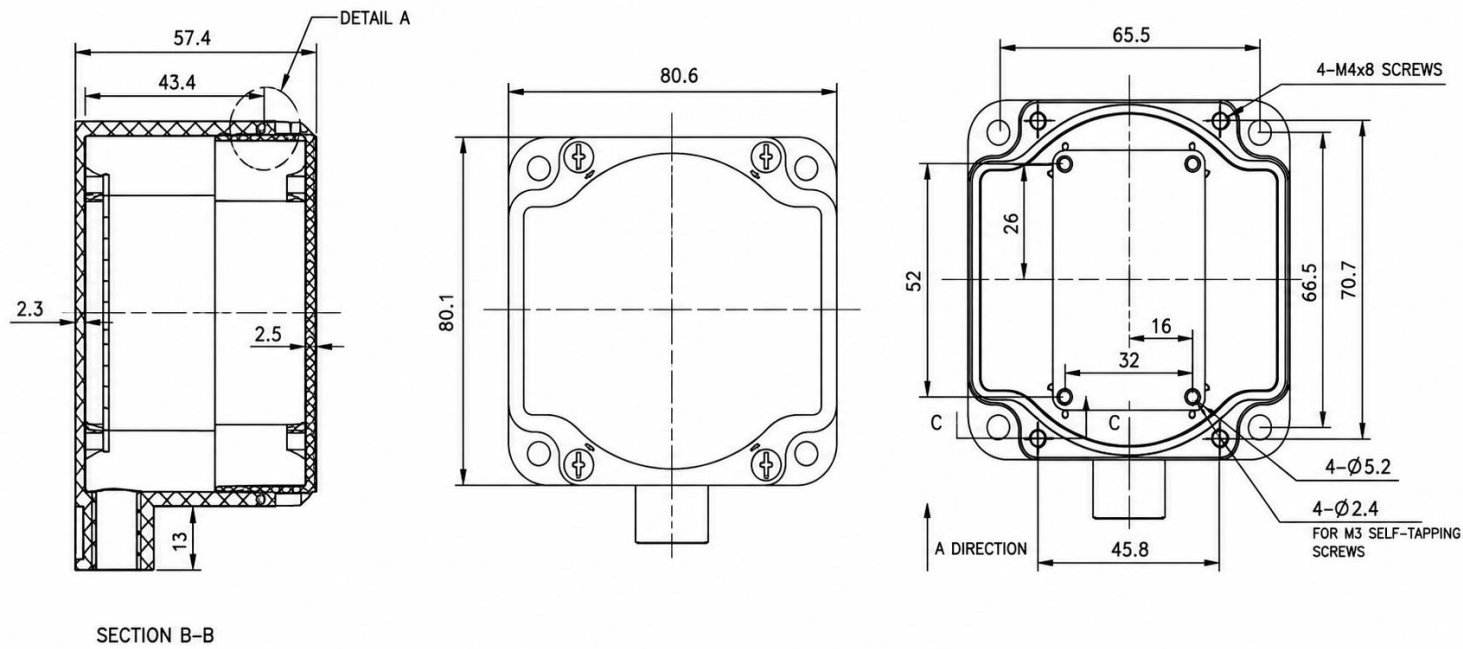
Environmental Specifications

Parameter	Specification
Operating Temperature	-30°C to +70°C
Humidity	≤95% RH (Non-condensing)
Protection Rating	IP65
Housing Material	Industrial PC

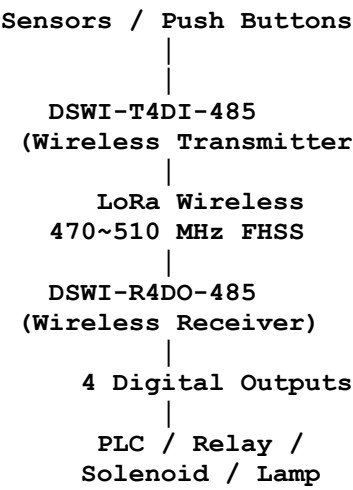


Mechanical Specifications

Parameter	Specification
Housing Size Transmitter & Receiver	80 × 80 × 65 mm
Antenna	Φ12*155mm
Mounting	DIN Rail
Housing Material	Industrial PC



System Architecture





PRODUCT CONFIGURATION INSTRUCTION MANUAL

FUNCTION

Working mode	P2P(SF7)	One-to-one mode	Transmit slave; receive master
IO configuration	Transmit 4 DI/Receive 5 DO	Display	LCD display

SAFETY

Hardware	RF power	Peak value is less than 0.1W, no interference with other equipment
	RF isolation	Double-layer filter circuit design, anti-interference of different frequency bands
	Electrical isolation	Power supply, communication, IO, etc. are all isolated
Software	Wireless encryption	CRC check
	Protocol architecture	Based on TD/CSMA/FHSS

INTERFACE

Antenna interface	SMA female	Antenna gain	3dBi	Antenna angle	Omnidirectional antenna
Inlet interface	M12 waterproof connector				

VOLTAGE AND CURRENT

Power supply method	DC12V Battery (Battery Transmitter)	18-30VDC (Powering the transmitter)	18-30VDC (Power supply receiver)
Working current	Full load < 60mA@12V	Full load < 30mA@24V	Full load < 30mA@24V
	Normal state < 5mA@12V	Normal state < 5mA@24V	Normal state < 5mA@24V
	Idle state < 1mA@12V	Idle state < 1mA@24V	Idle state < 1mA@24V

WORKING ENVIRONMENT AND CHARACTERISTICS

Surge protection	Common mode 4Kv/differential mode 2Kv	Humidity (non-condensing)	≤95%
Operating temperature (battery version)	Working temperature (battery version)	Working temperature (power supply version)	-30°C ~ +70°C
Protection level	IP65	Material	PC

Priority should be given to installing the antenna before powering on, and the screen should be lit up for normal operation;

Wireless transmitter and wireless receiver are paired and installed. The pairing program is completed by default before leaving the factory. The device ID is attached to the surface of the product and installed according to the corresponding point table; The spacing between antennas shall not be less than 50 centimeters.

Wireless transmitter



The four buttons circled in yellow on the panel are touch buttons that have been set at the factory and do not require configuration. They can be used to scroll up, down, return, and enter/confirm.



Wireless receiver



The four buttons circled in yellow on the panel are touch buttons that have been set at the factory and do not require configuration. They can be used to scroll up, down, return, and enter/confirm.

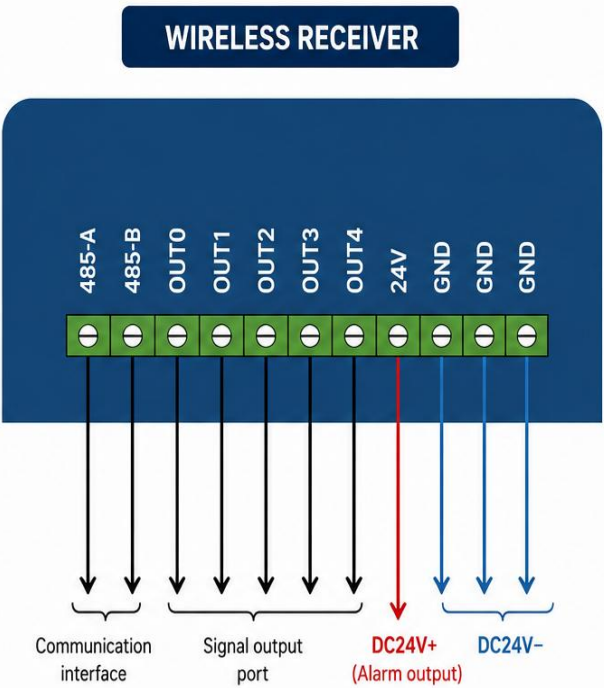
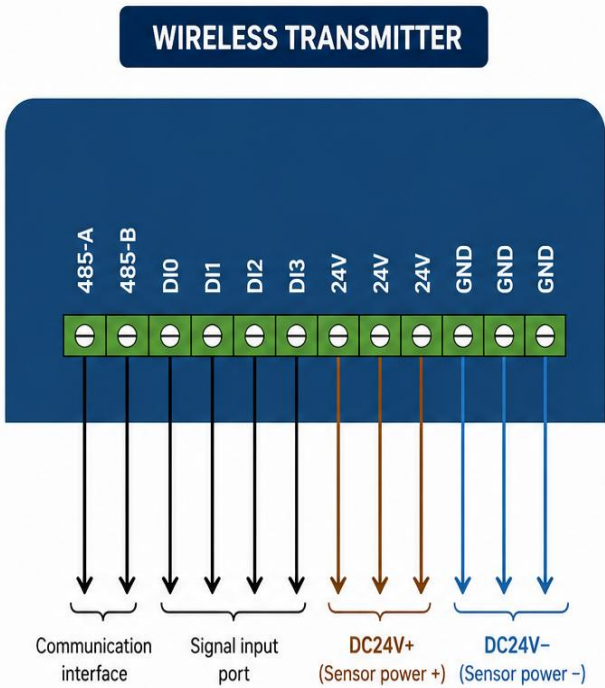
Transmitter rod antenna



3dBi adhesive rod omni directional antenna SMA (male needle) interface, length155mm, priority installation of antenna before power on.

Terminal Assignment

INTERNAL WIRING OF WIRELESS DEVICES





PAIRING POINT TABLE

Number	Transmitter		Receiver	Receiver	Pair Set (PS)	DI (Input)	DO (OUT) (Output)
	ID	Address	ID	Address			
1	1	11	1	1	1	0-3	0-3
2	2	21	2	2	2	0-3	0-3
3	3	31	3	3	3	0-3	0-3
N	N	N1	N	N	N	0-3	0-3

Attention: Passive signal output 2-wire to DI port and 24V

Applications

- Conveyor Systems
 - Crane Control
 - AGV Systems
 - Factory Automation
 - Machine Automation
 - Water Treatment Plants
 - Mining Industry
- Warehouse Automation
 - Remote I/O Expansion
 - Material Handling
 - Packaging Machines
 - Steel Plants
 - Industrial Monitoring
 - Process Automation

Ordering Information

Model	Type	I/O	Communication
DSWI-T4DI-485	Transmitter	4 Digital Inputs	LoRa + RS-485
DSWI-R4DO-485	Receiver	4 Digital Outputs	LoRa + RS-485

Product Summary

The **Denki Seigyo DSWI Series** Industrial Wireless I/O System provides dependable long-range wireless signal transmission for industrial automation. Combining **LoRa wireless communication, RS-485 networking, 4-channel digital I/O, LCD status display, industrial isolation, and IP65 protection**, the DSWI Series reduces wiring costs while delivering stable, interference-resistant communication for demanding factory environments. It is engineered for reliable performance in automation, material handling, utilities, and remote monitoring applications.