

**WAGO → I/O → SYSTEM 750**

**Fieldbus Independent  
I/O Modules**

**SSI Transmitter Interface  
750-630**



**Manual**

Version 1.0.2

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Every conceivable measure has been taken to ensure the correctness and completeness of this documentation. However, as errors can never be fully excluded, we would appreciate any information or ideas at any time.

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We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally trademark or patent protected.

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# 1 Important Comments

To ensure fast installation and start-up of the units described in this manual, we strongly recommend that the following information and explanations are carefully read and abided by.

## 1.1 Legal Principles

### 1.1.1 Copyright

This manual is copyrighted, together with all figures and illustrations contained therein. Any use of this manual which infringes the copyright provisions stipulated herein, is not permitted. Reproduction, translation and electronic and photo-technical archiving and amendments require the written consent of WAGO Kontakttechnik GmbH & Co. KG. Non-observance will entail the right of claims for damages.

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### 1.1.2 Personnel Qualification

The use of the product detailed in this manual is exclusively geared to specialists having qualifications in PLC programming, electrical specialists or persons instructed by electrical specialists who are also familiar with the valid standards. WAGO Kontakttechnik GmbH & Co. KG declines all liability resulting from improper action and damage to WAGO products and third party products due to non-observance of the information contained in this manual.

### 1.1.3 Intended Use

For each individual application, the components supplied are to work with a dedicated hardware and software configuration. Modifications are only permitted within the framework of the possibilities documented in the manuals. All other changes to the hardware and/or software and the non-conforming use of the components entail the exclusion of liability on part of WAGO Kontakttechnik GmbH & Co. KG.

Please direct any requirements pertaining to a modified and/or new hardware or software configuration directly to WAGO Kontakttechnik GmbH & Co. KG.

## 1.2 Symbols



### **Danger**

Always abide by this information to protect persons from injury.



### **Warning**

Always abide by this information to prevent damage to the device.



### **Attention**

Marginal conditions must always be observed to ensure smooth operation.



### **ESD (Electrostatic Discharge)**

Warning of damage to the components by electrostatic discharge. Observe the precautionary measure for handling components at risk.



### **Note**

Routines or advice for efficient use of the device and software optimization.



### **More information**

References on additional literature, manuals, data sheets and INTERNET pages

## 1.3 Number Notation

Number Code	Example	Note
Decimal	100	normal notation
Hexadecimal	0x64	C notation
Binary	'100' '0110.0100'	Within ', Nibble separated with dots

## 1.4 Safety Notes



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### Warning

Switch off the system prior to working on bus modules!

In the event of deformed contacts, the module in question is to be replaced, as its functionality can no longer be ensured on a long-term basis.

The components are not resistant against materials having seeping and insulating properties. Belonging to this group of materials is: e.g. aerosols, silicones, triglycerides (found in some hand creams).

If it cannot be ruled out that these materials appear in the component environment, then additional measures are to be taken:

- installation of the components into an appropriate enclosure
  - handling of the components only with clean tools and materials.
- 



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### Attention

Cleaning of soiled contacts may only be done with ethyl alcohol and leather cloths. Thereby, the ESD information is to be regarded.

Do not use any contact spray. The spray may impair the functioning of the contact area.

The WAGO-I/O-SYSTEM 750 and its components are an open system. It must only be assembled in housings, cabinets or in electrical operation rooms. Access must only be given via a key or tool to authorized qualified personnel.

The relevant valid and applicable standards and guidelines concerning the installation of switch boxes are to be observed.

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### ESD (Electrostatic Discharge)

The modules are equipped with electronic components that may be destroyed by electrostatic discharge. When handling the modules, ensure that the environment (persons, workplace and packing) is well grounded. Avoid touching conductive components, e.g. gold contacts.

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## 1.5 Scope

This manual describes the Digital Input Module 750-630 SSI Transmitter Interface of the modular WAGO-I/O-SYSTEM 750.

Handling, assembly and start-up are described in the manual of the Fieldbus Coupler. Therefore this documentation is valid only in the connection with the appropriate manual.

## 2 I/O Modules

### 2.1 Special Modules

#### 2.1.1 750-630 (/xxx-xxx) [SSI Transmitter Interface]

##### 2.1.1.1 Variations

Item-No.	Designation	Description
750-630	SSI/ 24Bit/ 125kHz/ Gray	SSI Transmitter Interface
750-630/000-001	SSI/ 24Bit/ 125kHz/ Bin	SSI Transmitter Interface
750-630/000-002	SSI/ 24Bit/ 250kHz/ Bin	SSI Transmitter Interface
750-630/000-004	SSI/ 24Bit/ 125kHz/ Gray/ Status	SSI Transmitter Interface
750-630/000-005	SSI/ 15Bit/ 125kHz/ Gray/ Status	SSI Transmitter Interface
750-630/000-006	SSI/ 24Bit/ 250kHz/ Gray	SSI Transmitter Interface
750-630/000-007	SSI/ 24Bit/ 83kHz/ Gray/ Status	SSI Transmitter Interface
750-630/000-008	SSI/ 25Bit/ 125kHz/ Gray	SSI Transmitter Interface
750-630/000-009	SSI/ 13Bit/ 250kHz/ Bin	SSI Transmitter Interface
750-630/000-011	SSI/ 25Bit/ 125kHz/ Bin	SSI Transmitter Interface
750-630/000-012	SSI/ 13Bit/ 125kHz/ Gray	SSI Transmitter Interface
750-630/000-013	SSI/ 29Bit/ 125kHz/ Bin	SSI Transmitter Interface
750-630/003-000	Variable configuration	SSI Transmitter Interface

##### 2.1.1.2 View

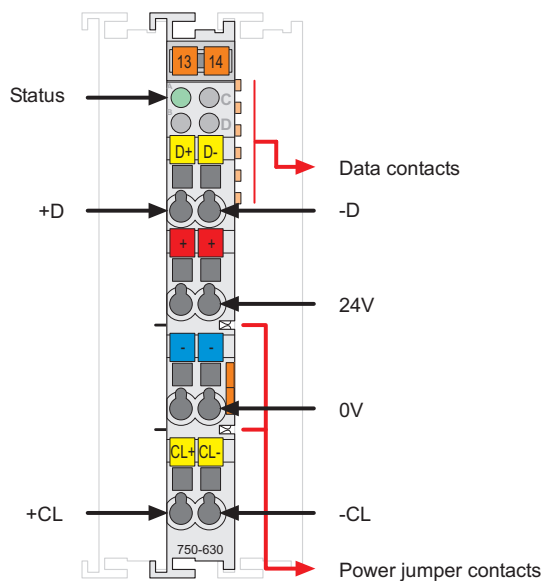


Fig. 2.1.1-2: SSI Transmitter Interface 750-630

g063000e

### 2.1.1.3 Description

This module is an SSI interface for the direct connection to an SSI transmitter.

The power supply for the transmitter is derived internally from the power jumper contacts.

After the interface has given a clock pulse to the sensor, the interface reads the incoming data and transmits it directly in the form of a data word into the process image of the PLC or PC. It is possible to factory adjust different operating modes, transfer frequencies and data widths by means of the control register.

The operational readiness of the module is indicated via a green function LED.

Any configuration of the specialty modules is possible when designing the fieldbus node. Grouping of module types is not necessary.

The field side supply voltage of 24 V for the output module is derived from adjacent I/O modules or from a supply module. The supply voltage for the field side is made automatically through the individual I/O modules by means of power jumper contacts.



#### **Attention**

The module has no power jumper contact for receiving and transmitting the ground (earth) potential. A supply module is required, if the adjacent modules need to be connected to the earth.

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#### **Warning**

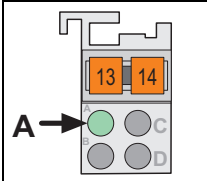
The maximum current of the internal power jumper contacts is 10 A. When configuring the system it is important not to exceed the maximum/sum current. However, if such a case should occur, another supply module must be added.

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The module 750-630 and its variations can be used with all couplers/controllers of the WAGO-I/O-SYSTEM 750 (except for the economy types 750-320, -323, -324 and -327).

This description is valid from hardware and software version XXXX3A05... and up. The version is specified in the manufacturing number, which is part of the lateral marking on the module.

2.1.1.4 Display Elements

 <p>Fig. 2.1.1-1: Display Elements g063002x</p>	LED	Channel	State	Function
	A green	Status	off	Watchdog Timer Overflow * * The green LED goes off if no process data is transmitted by the fieldbus coupler / controller for 100 ms.
on	Normal operation			

2.1.1.5 Schematic Diagram

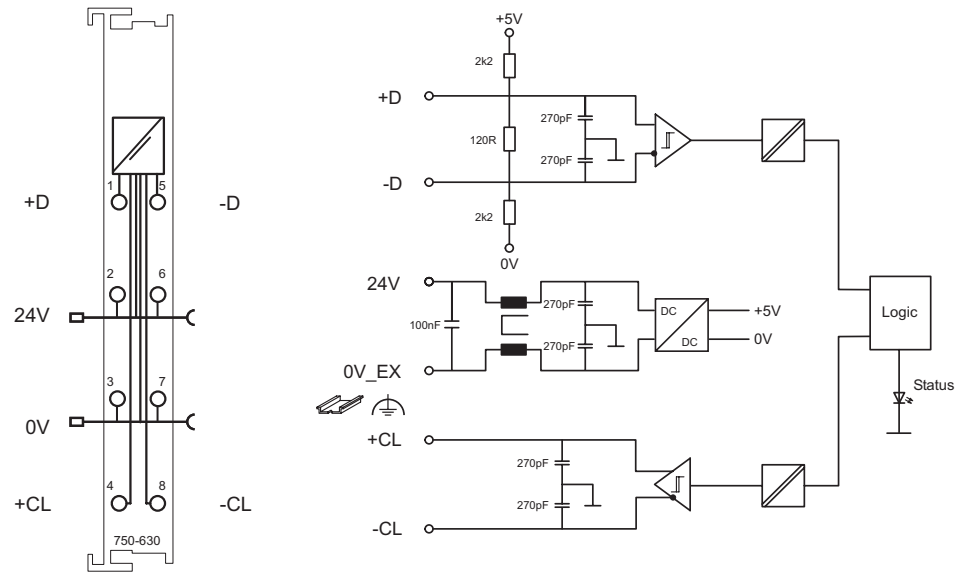






Fig. 2.1.1-2: SSI Transmitter Interface 750-630

g063001e

2.1.1.6 Technical Data

Module Specific Data		
Transmitter connection	Inputs: + D, -D, Outputs: +CL, -CL	
Current consumption <sub>typ.</sub> (internal)	85 mA	
Voltage via power jumper contacts	DC 24 V (-15 % ... +20 %)	
Transmission rate	125 kHz (max. 1 MHz)	
Serial Input	max. 32 bit width (adjustable)	
Signal output (+CL, -CL)	differential signal (RS 422)	
Signal input (+D, -D)	differential signal (RS 422)	
Code	Gray / Bin	
Internal bit width	1 x 32 bits (24 bit used, 8 bit reserved) 2 x 8 bits control/status (option)	
Isolation	500 V (System/Supply)	
Dimensions W x H* x L * from upper edge of 35 DIN rail	12 mm x 64 mm x 100 mm	
Weight	ca. 55 g	
Approvals (cf. Chapter 2.2 of the Coupler/Controller Manual)		
	cUL <sub>US</sub> (UL508)	
	cUL <sub>US</sub> (UL1604)	Class I Div2 ABCD T4A
	KEMA	II 3 G EEx nA II T4
	Conformity Marking	



**More Information**

Detailed references to the approvals are listed in the document "Overview Approvals WAGO-I/O-SYSTEM 750", which you can find on the CD ROM ELECTRONICC Tools and Docs (Item-No.: 0888-0412)

or in the internet under:

[www.wago.com](http://www.wago.com) → Documentation → WAGO-I/O-SYSTEM 750 → System Description

### 2.1.1.7 Process Image

Using the I/O module 750-630, a 5 byte input and output process image can be transferred to the fieldbus coupler / controller via one logical channel. The data received by the transmitter are stored in 3 input bytes (D0 ... D2). Neither the input byte (D3) and four output bytes (D0 ... D3) nor the control byte (C0) are used. The status byte (S0) indicates transmitter or cable errors (only versions 750-630/000-004, /000-005 and /000-007).

Processing the status byte via the coupler / controller is optional, which means that accessing or parsing the status information depends on the fieldbus system.



#### Attention

The representation of the process data of some I/O modules or their variations in the process image depends on the fieldbus coupler/-controller used. Please take this information as well as the particular design of the respective control/status bytes from the section "Fieldbus Specific Design of the Process Data" included in the description concerning the process image of the corresponding coupler/controller.

Input data		Output data	
S0	Status byte	C0	Control byte
D0	Process data byte 0 (LSB)	D0	0 (reserved)
D1	Process data byte 1	D1	0 (reserved)
D2	Process data byte 2 (MSB)	D2	0 (reserved)
D3	0 (reserved)	D3	0 (reserved)

Control byte C0							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	0	0	0	0	0	0	0

0 reserved

Status byte S0							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	ERROR	0	0	0	0	FRAME_ E	SSI_IN_ E

- ERROR      A general error has occurred. This bit is set in a FRAME or SSI-IN error has occurred.
  
- FRAME\_E    An invalid data frame has occurred, i.e. the data frame is not terminated with zero (possibly a wire breakage on clock lines).
  
- SSI\_IN\_E    The SSI input of the module has low level when no data transfer is taking place. (SSI has swapped no power supply or wire breakage at the SSI data inputs D+ or D- or data lines).
  
- 0            reserved

### 2.1.1.8 Adjustable Variation 750-630/003-000

The serial interface module 750-630/003-000 may be parameterized with the software tool **WAGO-I/O-CHECK 2** (Item-No.: 759-302).

The presetting is Baud rate: 9600 baud, data bits: 8, Parity: none, stop bits: 1. In this mode of operation the module has the same behavior and also the same process values as the base module 750-630. If another mode of operation is selected by changing the parameters, then the module behaves according to the variation with the selected mode of operation.

The parameter dialog box in **WAGO I/O CHECK 2** offers selection fields for the available settings of this I/O module.

The following description is valid for software version 41.

Select box	Available settings	
Baudrate	1,0 MHz / 250,0kHz / 125,0 kHz* / 100,0 kHz / 83,0 kHz / 71,0 kHz / 62,5 kHz	
PI-Length	0 Byte ... 24 Byte* ... 32 Byte (numeric input box)	
Var. Frame Length	Not used*	Variable data frame not active
	1 Byte / ... / 32 Byte	Variable data frame length for the data exchange between module and SSI Transmitter Interface
Output format	Standard	(see mapping-tables in the coupler- / controller-manual)
	Alternative*	(see mapping-tables in the coupler- / controller-manual)
Synchronous Operation	Disable*	Synchronous operating mode of the SSI Transmitter Interface not active
	Enable	Synchronous operating mode of the SSI Transmitter Interface active The data is sent synchronously with the read cycle of the internal data bus.
Gray-Dualcode Conversion	Disable	Gray-Dualcode conversion not active
	Enable*	Gray-Dualcode conversion active
Single-Turn Evaluation	Disable*	Single-Turn evaluation not active
	Enable	Single-Turn evaluation active (13 Bit)
Frame Error	Disable	Frame error not active
	Enable*	Frame error active After the last valid bit, a check is made whether a zero signal is sent by the data line.

Select box	Available settings	
Power Fail Bit	Disable*	Power fail bit not active
	Enable	Power fail bit active

\* default setting



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### More Information

Detailed Information about the parameterizing this module can be found in the manual for the software tool **WAGO-I/O-CHECK 2** or in the Internet under: [www.wago.com](http://www.wago.com).

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