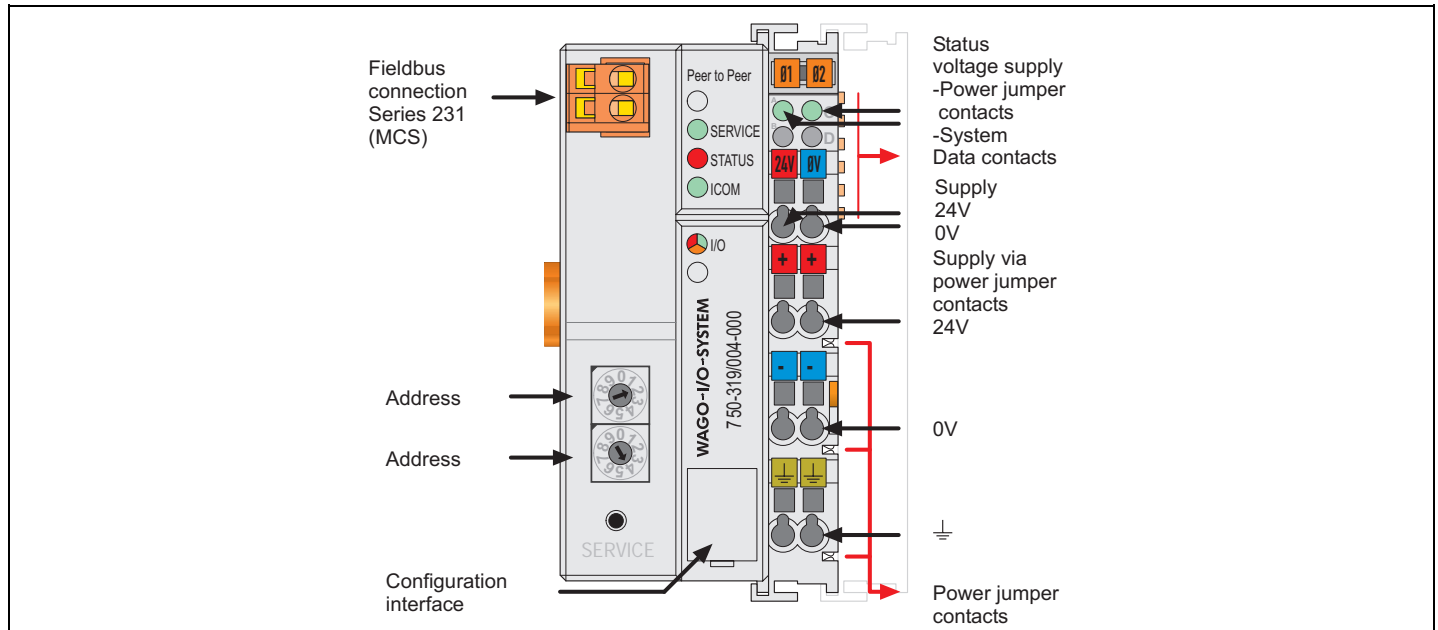


LON Data Exchange Coupler (Peer to Peer)

78 kbps, digital and analog signals

Technical Information



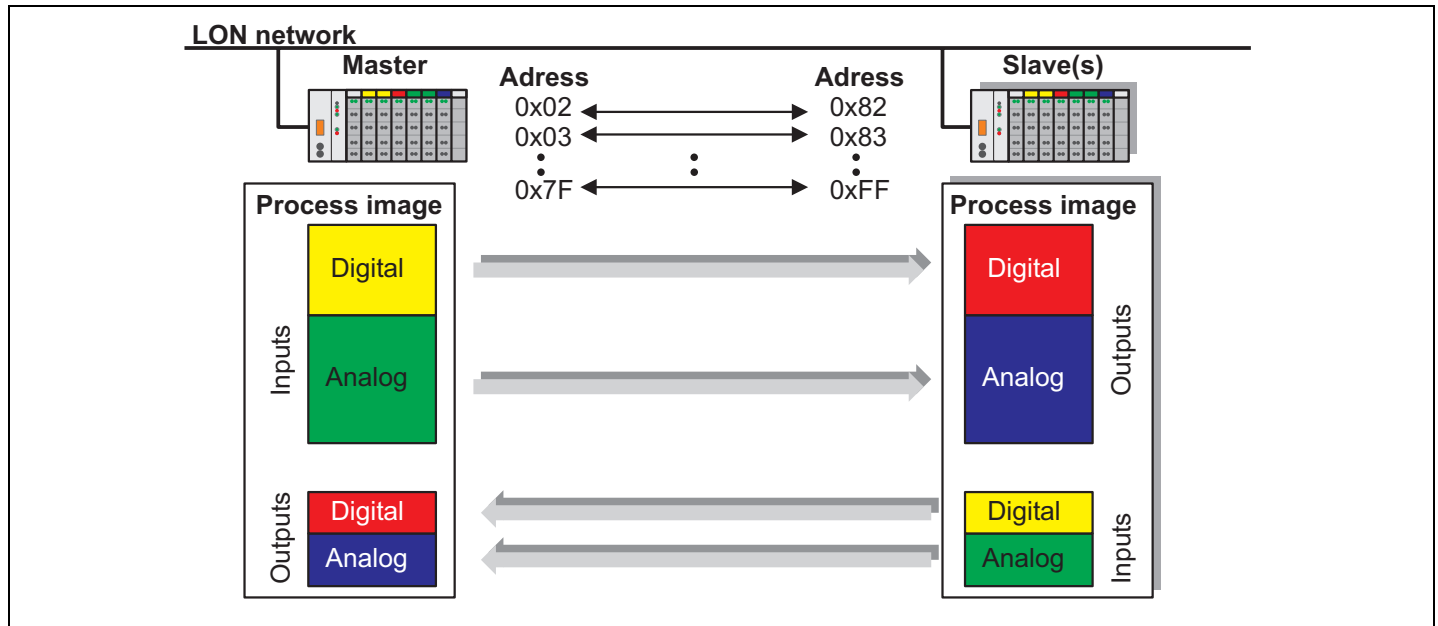
Description	Item No.	Pack. unit pcs																																						
Peer to Peer Coupler	750-319/004-000	1																																						
<p>Data exchange couplers transfers the input process image data to the output process image of the coupled nodes in order to transmit process data in a simple manner and at low cost. The data exchange coupler is a variant of the LON fieldbus coupler (LON = Local Operating Network). For further information about the architecture of an LON network please refer to the manual 759-123/000-002 WAGO TOPLON, Hardware Description (Note: This manual is <u>only</u> online available! http://www.wagotoplon.com).</p> <p>Applications:</p> <ul style="list-style-type: none"> • Peer to Peer one master and one slave • Broadcast one master and several slaves: <p>The allocation is made via the address selection: Master: 0x02 – 0x7F, Slave(s): 0x82 - 0xFF</p> <p>The coupler, together with I/O modules, forms a fieldbus node which is connected to all other nodes by means of a twisted wire pair. The coupler can also be integrated into existing LON networks if appropriate node addresses are available.</p> <p>The coupler automatically creates the process image using the data types and widths of the connected I/O modules. The input process image is transferred to the output process image of the partners.</p> <p>The monitoring system changes digital outputs to "off" and analog values to "0" if the connection to the coupled node is interrupted longer than 1 second.</p> <p>LON® is a registered trademark of Echelon Corporation.</p>																																								
<p>System Data</p> <table border="1"> <tr><td>Number of I/O nodes</td><td>64 without repeater 127 with repeater</td></tr> <tr><td>Transmission medium</td><td>Twisted pair</td></tr> <tr><td>Max. length of bus segment</td><td>free topology 500 m, bus topology 2700 m</td></tr> <tr><td>Topology</td><td>in accordance with LON specification</td></tr> <tr><td>Baud rate</td><td>78 kbps</td></tr> <tr><td>Bus connection</td><td>two pole male connector, series 231 (MCS) female connector (231-302) is included</td></tr> </table>			Number of I/O nodes	64 without repeater 127 with repeater	Transmission medium	Twisted pair	Max. length of bus segment	free topology 500 m, bus topology 2700 m	Topology	in accordance with LON specification	Baud rate	78 kbps	Bus connection	two pole male connector, series 231 (MCS) female connector (231-302) is included																										
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Supported I/O module inputs ^{*)} [data width]		Supported I/O module outputs ^{*)} [data width]	
750-400 [2 x 1 Bit]	2 DI 24 V DC 3.0 ms	750-501 [2 x 1 Bit]	2 DO 24 V DC 0.5 A
750-401 [2 x 1 Bit]	2 DI 24 V DC 0.2 ms	750-502 [2 x 1 Bit]	2 DO 24 V DC 2 A
750-405 [2 x 1 Bit]	2 DI 230 V AC	750-504 [4 x 1 Bit]	4 DO 24 V DC 0.5 A
750-406 [2 x 1 Bit]	2 DI 120 V AC	750-516 [4 x 1 Bit]	4 DO 24 V DC 0.5 A
750-402 [4 x 1 Bit]	4 DI 24 V DC 3.0 ms	750-512 [2 x 1 Bit]	2 DO 230V AC 2.0A/ Rel. 2NO
750-403 [4 x 1 Bit]	4 DI 24 V DC 0.2 ms	750-513 [2 x 1 Bit]	2 DO 230V AC 2.0A/ Rel. 2NO/Pot.Free
750-408 [4 x 1 Bit]	4 DI 24V DC 3.0ms/ Low-Side-Switch	750-514 [2 x 1 Bit]	2 DO 125V AC 0.5A/ Rel. 2CO/Pot.Free
750-409 [4 x 1 Bit]	4 DI 24V DC 0.2ms/ Low-Side-Switch	750-509 [2 x 1 Bit]	2 DO 230 V AC/DC 0.3 A solid state
750-410 [2 x 1 Bit]	2 DI 24V DC 3.0ms/ Proximity-Switch	750-530 [8 x 1 Bit]	8 DO 24 V DC
750-412 [2 x 1 Bit]	2 DI 48 V DC		
750-414 [4 x 1 Bit]	4 DI 5 V DC		
750-415 [4 x 1 Bit]	4 DI 24 V AC/DC		
750-430 [8 x 1 Bit]	8 DI 24 V DC 3.0 ms		
750-431 [8 x 1 Bit]	8 DI 24 V DC 0.2 ms		
750-452 [2 x 1 word]	2 AI 0-20 mA Diff.	750-552 [2 x 1 word]	2 AO 0-20 mA
750-454 [2 x 1 word]	2 AI 4-20 mA Diff.	750-554 [2 x 1 word]	2 AO 4-20 mA
750-453 [4 x 1 word]	4 AI 0-20 mA Single Ended	750-556 [2 x 1 word]	2 AO ± 10 V DC
750-455 [4 x 1 word]	4 AI 4-20 mA Single Ended	750-550 [2 x 1 word]	2 AO 0-10 V DC
750-465 [2 x 1 word]	2 AI 0-20 mA single ended	750-557 [4 x 1 word]	4 AO ± 10 V DC
750-466 [2 x 1 word]	2 AI 4-20 mA single ended	750-559 [4 x 1 word]	4 AO 0-10 V DC
750-456 [2 x 1 word]	2 AI ± 10 V DC Diff.		
750-457 [4 x 1 word]	4 AI ± 10 V DC Single Ended		
750-459 [4 x 1 word]	4 AI 0-10 V DC single ended		
750-467 [2 x 1 word]	2 AI 0-10 V DC single ended		
750-468 [4 x 1 word]	4 AI 0-10 V DC single ended		
750-460 [4 x 1 word]	4 AI (RTD)		
750-461 [2 x 1 word]	2 AI (RTD)		
750-462 [2 x 1 word]	2 AI Thermal (replaced with 750-469)		
750-469 [2 x 1 word]	2 AI Thermocouple/ K/ Diagn.		
750-610 [2 Bit]	24 V DC sup. mod. w. fuse + diag.	General information / Note: 1) All passive types of potential supply or separation module can be used. 2) The status byte supplied by the I/O modules is not taken into consideration.	
750-611 [2 Bit]	230 V AC sup. mod. w. fuse + diag.		
750-622 [2, 4, 6 or 8 Bit]	Binary spacer module 24 V DC		

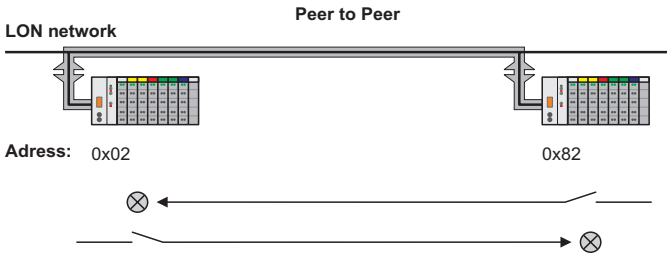
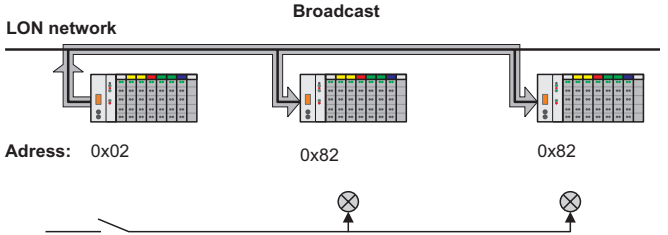
***) This I/O list does not claim to be complete, technical changes are reserved.**

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Technical Information

Engineering information	Application examples
<p>Process image</p> <p>The process image (PI) is automatically based on the data exchange coupler. The PI is divided into an input and an output zone and each zone into analog (word or byte) or digital signals (bit).</p> <p>The analog signals are entered in the process image in the sequence in which they are installed in the nodes, followed by the digital signals.</p> <p>Each connected I/O module requires a zone in the process image in accordance with the data width.</p> <p>Always ensure that the node configuration of the output module of the coupling partner is a mirror image of the process image.</p> <p>For example for a 4 channel digital input module either a 4 channel digital output module is required or two 2 channel digital output modules.</p> <p>If the intended configuration results in gaps in the process image, these gaps can be closed using the "binary wildcard module", Part No. 750-622.</p> <p>Broadcast applications</p> <p>For broadcast applications (1 master with multiple slaves), it is not possible to use the master for output functions. In this case the outputs would be written with values from several inputs (number of slaves).</p> <p>System supply</p> <p>All internal system supply modules can be used to ensure the required supply voltages to the field units.</p> <p>The internal system supply modules with diagnosis, 750-610 and 750-611 use 2 bits in the input area of the process image, a fact which may have to be taken into consideration when configuring the coupling partners.</p>	<p>Signal transmission</p> <p>The serial transmission of a large number of measured values replaces the classic parallel wiring. The wiring work and thus the installation costs are thereby reduced.</p>  <p>Signal marshalling</p> <p>This application offers the same advantages as simple point-to-point signal transmission with the option of distributing the signals to various targets.</p> 

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Signal transmission time	Structures																														
<p>Analog and binary signals have differing signal transmission times when transmitting to coupler partners, depending upon the size of the network and the sum of the signals to be transmitted within the network.</p> <p>Examples for signal transmission times for the following network configurations:</p> <p><u>Example 1:</u></p> <table border="0"> <tr> <td>Network</td> <td>1 master, 1 slave</td> </tr> <tr> <td>Master node structure</td> <td>62 digital inputs 4 channel</td> </tr> <tr> <td>Slave node structure</td> <td>62 digital outputs 4 channel</td> </tr> <tr> <td>Signal transmission times:</td> <td></td> </tr> <tr> <td>Digital signals</td> <td>< 200 ms</td> </tr> </table> <p><u>Example 2:</u></p> <table border="0"> <tr> <td>Network</td> <td>1 master, 3 slaves</td> </tr> <tr> <td>Master node structure</td> <td>20 analog inputs 2 channel</td> </tr> <tr> <td>Slave node structure</td> <td>20 analog outputs 2 channel</td> </tr> <tr> <td>Signal transmission times:</td> <td></td> </tr> <tr> <td>Analog signal</td> <td>< 400 ms</td> </tr> </table> <p><u>Example 3:</u></p> <table border="0"> <tr> <td>Network</td> <td>2 Master, 2 Slaves</td> </tr> <tr> <td>Master node structure</td> <td>10 analog inputs 2 channel 10 analog outputs 2 channel</td> </tr> <tr> <td>Slave node structure</td> <td>10 analog input 2 channel 10 analog outputs 2 channel</td> </tr> <tr> <td>Signal transmission times:</td> <td></td> </tr> <tr> <td>Analog signal</td> <td>< 400 ms</td> </tr> </table> <p>For networks with a larger number of nodes and configuration than those mentioned above note that the signal transmission times might increase due to the transmission rate of 78 kbps.</p> <p>In all cases the maximum network size is only limited by the LON specification.</p>	Network	1 master, 1 slave	Master node structure	62 digital inputs 4 channel	Slave node structure	62 digital outputs 4 channel	Signal transmission times:		Digital signals	< 200 ms	Network	1 master, 3 slaves	Master node structure	20 analog inputs 2 channel	Slave node structure	20 analog outputs 2 channel	Signal transmission times:		Analog signal	< 400 ms	Network	2 Master, 2 Slaves	Master node structure	10 analog inputs 2 channel 10 analog outputs 2 channel	Slave node structure	10 analog input 2 channel 10 analog outputs 2 channel	Signal transmission times:		Analog signal	< 400 ms	<p>Line</p> <p>max. 2700 m</p> <p>105 Ω</p> <p>105 Ω</p> <p>Star</p> <p>52 Ω</p> <p>$\sum L_n \leq 500 \text{ m}$</p>
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Fault detection					
<p><u>"Status" LED</u></p> <p>The program in the coupler checks the node configuration after start up. A possible error found is displayed by the flashing of the "Status" LED.</p> <p>The "Status" LED flashes at two different frequencies to allow the error type and the error location to be read off in the node.</p> <p>The following flash codes are included in the software for the "Status" LED:</p>			<p><u>"ICOM" LED</u></p> <p>If analog or digital input modules are incorporated in the node then the internal bus is cyclically scanned and the "ICOM" LED flashes. The LED signals the existence of a communication between the modules.</p> <p>If only output modules are connected to the node the "ICOM" LED only flashes once after a power on, because with the first cycle the module type is detected and no further cyclical interrogation of the output module is necessary.</p> <p>The following flash codes are included in the software for the "ICOM" LED:</p>		
Error	"Status" LED		Node structure	"ICOM" LED	
	Fast flashing (appr. 2 Hz)	Slow flashing (appr. 1 Hz)		Fast flashing (appr. 10 Hz)	Slow flashing (appr. 4 Hz)
Not a WAGO code	3 times	Error position 1 ... 64	Analog inputs		X
Unknown module type	4 times	Error position 1 ... 64	Digital inputs	X	
I/O module is not supported	5 times	Error position 1 ... 64	Analog and digital inputs	X	
			Analog and/or digital output		
<p>Cause: WAGO module type could not be found in the saved data structure. I/O module is not supported by this application.</p>			Analog inputs and optional outputs		X
receive several times wrong data telegram for analog outputs	3 times	0	Digital inputs and optional outputs	X	
receive several times wrong data telegram for digital outputs	2 times	0			