

# WagoLibEthernet\_01.lib

This library provides basic function blocks for TCP and UDP communication.

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# WagoLibEthernet\_01.lib

## TCP\_Client

WAGO-I/O-PRO CAA			
Category:			
Name:	TCP_Client		
Type:	Function	Function block	X    Program
Library name:	WagoLibEthernet_01.lib		
Usable for:	750-841(Release07),758-870(Release01)		
Input parameters:	Data type:	Comments:	
xOpenConnection	BOOL	Open connection to server	
sIPAddress	STRING	IP address of the server	
wPortNumber	WORD	Port number for communication.	
ptSendData	POINTER TO ARRAY[..] OF BYTE	Data to be transmitted	
diSendCount	DINT	Number of bytes to be transmitted.	
Output parameters:	Data type:		
xConnected	BOOL	Connetion to the server is establishec	
diError	DINT	16#8001 => No socket descriptor available 16#8002 => SysSockSend returns -1 16#8003 => Socket was "gracefully closed" 16#8004 => switching to none blocking mode fails 16#8005 => SysSockClose() returns FALSE 16#8006 => SysSockConnect() fails 16#8007 => SysSockSend() fails 16#8008 => error state machine 16#8009 => timeout while waiting for data from server due to no data or error	
Input and output parameters:	Data type:	Comments:	
xStartSend	BOOL	This variable starts the transmission of data tho the server. After execution the variable will be reset by the functionblock.	

<b>WAGO-I/O-PRO CAA</b>		
aReceiveBuffer	ARRAY[1..] OF BYTE	Receive buffer for data received from the server.
diReceiveCount	DINT	Number of bytes received.
<b>Functional description:</b>		
<p>This function block allows to establish a connection to a remote server using TCP protocol. After the connection is set up data may be send or received.</p> <p><b>Warning:750-841</b></p> <p><b>This function block may block. It is therefore strongly recommended to use the function block only in a seperate background task.</b></p> <p><b>Since the operating system on the IPC does not block by executing the connect command it is not necessary to use a background task.</b></p>		

## TCP\_Server

WAGO-I/O-PRO CAA			
Category:			
Name:	TCP_Server		
Type:	Function	Function block	X    Program
Library name:	WagoLibEthernet_01.lib		
Usable for:	750-841(Release07),758-870(Release01)		
Input parameters:	Data type:	Comments:	
xEnable	BOOL	Start the server	
wPortNumber	WORD	Port number for communication.	
tServerTimeOut	TIME	If the server does not receive data within this time the actual socket will be closed and a new socket will be opened.	
ptSendData	POINTER TO ARRAY[..] OF BYTE	Data to be transmitted	
diSendCount	DINT	Number of bytes to be transmitted.	
Output parameters:	Data type:		
xClientConnected	BOOL	A client is conncted to the server	
diError	DINT	16#0001 => Server is waiting for a client to set up connection  16#8001 => No socket descriptor available 16#8002 => SysSockSend returns -1 16#8003 => Socket was "gracefully closed" 16#8004 => switching to none blocking mode failed  16#8005 => SysSockClose() returns FALSE 16#8006 => SysSockConnect() fails 16#8007 => SysSockSend() fails  16#8008 => error state machine, close connection needed  16#8009 => timeout while waiting for data from client due to no data or error	

<b>WAGO-I/O-PRO CAA</b>		
<b>Input and output parameters:</b>	<b>Data type:</b>	<b>Comments:</b>
xStartSend	BOOL	This variable starts the transmission of data the the client. After execution the variable will be reset by the functionblock.
aReceiveBuffer	ARRAY[1..] OF BYTE	Receive buffer for data received from the client.
diReceiveCount	DINT	Number of bytes received.
<b>Functional description:</b>		
This function block allows to establish a connection from a remote client using TCP protocol. After the connection is setup data may be send or received.		

## UDP\_Client

WAGO-I/O-PRO CAA			
Category:			
Name:	UDP_Client		
Type:	Function	Function block	X Program
Library name:	WagoLibEthernet_01.lib		
Usable for:	750-841(Release07),758-870(Release01)		
Input parameters:	Data type:	Comments:	
xOpenSocket	BOOL	Open socket on the client	
sIP_Address	STRING	IP address of the server	
wPort	WORD	Port number for communication.	
diBytesToSend	DINT	Number of bytes to be transmitted. (0<x<=1472)	
ptSendBuffer	POINTER TO ARRAY[..] OF BYTE	Data to be transmitted	
Output parameters:	Data type:		
xSocket_Is_Open	BOOL	Socket opened on the client	
diErrorCode	DINT	16#8001 => No socket handle available  16#8002 => SysSockSend() failed; return value -1  16#8003 => SysSockSend() failed; return value 0  16#8004 => input diBytesToSend invalid	
Input and output parameters:	Data type:	Comments:	
xStartSend	BOOL	This variable starts the transmission of data tho the server. After execution the variable will be reset by the functionblock.	
aReceiveBuffer	ARRAY[1..] OF BYTE	Receive buffer for data received from the server.	
diReceiveCount	DINT	Number of bytes received.	

**Functional description:**

This function block allows to use UDP protocol to exchange data with any UDP server.

Data size is limited to 1472 Bytes due to the UDP protocol specification.

Transmitting is started by setting the variable xStartSend to True. This variable will be reset after the transmission.

If data is received the variable diReceiveCount will display the number of bytes.

## UDP\_Server

WAGO-I/O-PRO CAA			
Category:			
Name:	UDP_Server		
Type:	Function	Function block	X Program
Library name:	WagoLibEthernet_01.lib		
Usable for:	750-841(Release07),758-870(Release01)		
Input parameters:	Data type:	Comments:	
xOpenSocket	BOOL	Open a socket on the server	
wPort	WORD	Port number for communication.	
DiBytesToSend	DINT	Number of bytes to be transmitted. (0<x0=1472)	
ptSendBuffer	POINTER TO ARRAY[..] OF BYTE	Data to be transmitted	
Output parameters:	Data type:		
xSocket_Is_Open	BOOL	Socket is opened	
diErrorCode	DINT	16#8001 => No socket descriptor available 16#8002 => SysSockSend() failed 16#8003 => no client address available 16#8004 => input diBytesToSend invalid 16#8005 => SysSockBind() returns FALSE	
Input and output parameters:	Data type:	Comments:	
xStartSend	BOOL	This variable starts the transmission of data the the client. After execution the variable will be reset by the functionblock.	
AReceiveBuffer	ARRAY[1..] OF BYTE	Receive buffer for data received from the client.	
DiReceiveCount	DINT	Number of bytes received.	



**Functional description:**

This function block allows to use UDP protocol to exchange data with any UDP client.

Data size is limited to 1472 Bytes due to the UDP protocol specification.

Transmitting is started by setting the variable xStartSend to True. This variable will be reset after the transmission.

Transmitting needs the address of the client. This address is received by the first datagram from the client. Therefore transmitting data needs at least one telegram from the client. Error code 0x8002 will be displayed if no client address is available.

If data is received the variable diReceiveCount will display the number of bytes.

## TCP\_Client3

WAGO-I/O-PRO CAA			
Category:			
Name:	TCP_Client3		
Type:	Function	Function block	X    Program
Library name:	WagoLibEthernet_01.lib		
Usable for:	750-88x(>Release08)		
Input parameters:	Data type:	Comments:	
xOpenConnection	BOOL	Open connection to server	
sIPaddress	STRING	IP address of the server	
wPortNumber	WORD	Port number for communication.	
udiKeepAliveProbes	UDINT	Number of not acknowledged Keep Alive telegrams after which the connection will be marked as broken	
diKeepAliveTimeout	DINT	Within this time the response is expected	
diKeepAliveIntervall	DINT	Time intervall to send Keep Alive telegrams	
ptSendData	POINTER TO ARRAY[..] OF BYTE	Data to be transmitted	
diSendCount	DINT	Number of bytes to be transmitted.	
Output parameters:	Data type:		
xConnected	BOOL	Connetion to the server is establishec	
diError	DINT	16#8001 => No socket descriptor available 16#8002 => SysSockSend returns -1 16#8003 => Socket was "gracefully closed" 16#8004 => switching to none blocking mode fails 16#8005 => SysSockClose() returns FALSE 16#8006 => SysSockConnect() fails 16#8007 => SysSockSend() fails 16#8008 => error state machine 16#8009 => timeout while waiting for data from server due to no data or error	

<b>WAGO-I/O-PRO CAA</b>		
<b>Input and output parameters:</b>	<b>Data type:</b>	<b>Comments:</b>
xStartSend	BOOL	This variable starts the transmission of data to the server. After execution the variable will be reset by the functionblock.
aReceiveBuffer	ARRAY[1..] OF BYTE	Receive buffer for data received from the server.
diReceiveCount	DINT	Number of bytes received.
<b>Functional description:</b>		
<p>This function block allows to establish a connection to a remote server using TCP protocol. After the connection is set up data may be send or received.</p> <p>The Keep Alive functionality is supported by this function block.</p>		

## TCP\_Server3

WAGO-I/O-PRO CAA			
Category:			
Name:	TCP_Server3		
Type:	Function	Function block	X    Program
Library name:	WagoLibEthernet_01.lib		
Usable for:	750-88x(>Release08)		
Input parameters:	Data type:	Comments:	
xEnable	BOOL	Start the server	
wPortNumber	WORD	Port number for communication.	
udiKeepAliveProbes	UDINT	Number of not acknowledged Keep Alive telegrams after which the connection will be marked as broken	
diKeepAliveTimeout	DINT	Within this time the response is expected	
diKeepAliveIntervall	DINT	Time intervall to send Keep Alive telegrams	
tServerTimeOut	TIME	If the server does not receive data within this time the actual socket will be closed and a new socket will be opened.	
ptSendData	POINTER TO ARRAY[..] OF BYTE	Data to be transmitted	
diSendCount	DINT	Number of bytes to be transmitted.	
Output parameters:	Data type:		
xClientConnected	BOOL	A client is conncted to the server	

<b>WAGO-I/O-PRO CAA</b>		
diError	DINT	16#0001 => Server is waiting for a client to set up connection 16#8001 => No socket descriptor available 16#8002 => SysSockSend returns -1 16#8003 => Socket was "gracefully closed" 16#8004 => switching to none blocking mode failed 16#8005 => SysSockClose() returns FALSE 16#8006 => SysSockConnect() fails 16#8007 => SysSockSend() fails 16#8008 => error state machine, close connection needed 16#8009 => timeout while waiting for data from client due to no data or error
<b>Input and output parameters:</b>	<b>Data type:</b>	<b>Comments:</b>
xStartSend	BOOL	This variable starts the transmission of data the the client. After execution the variable will be reset by the functionblock.
aReceiveBuffer	ARRAY[1..] OF BYTE	Receive buffer for data received from the client.
diReceiveCount	DINT	Number of bytes received.
<b>Functional description:</b>		
This function block allows to establish a connection from a remote client using TCP protocol. After the connection is setup data may be send or received. The Keep Alive functionality is supported by this function block.		