

Number of Bytes to Send/Receive

Send the number of bytes to be sent or the number of bytes to receive. When the transfer has been completed, the actual number of bytes that have been sent or received will be written here.

Send/Receive Data Address

Specify the address of the first word to send or the address of the first word where data is to be received. Always set the bit number to 00 hexadecimal.

Offset	15	8	7	0
+6	Area designation		Leftmost 2 digits of word address	
+7	Rightmost 2 digits of word address		Bit number (always 00 Hex)	

The following specifications can be used.

Area		Word address	Area designation (hexadecimal)	Word address (hexadecimal)
CIO, HR, and AR Areas	CIO	0000 to 6143	B0	0000 to 17FF
	HR	H000 to H511	B2	0000 to 01FF
	AR	A448 to A959	B3	01C0 to 03BF
DM Area	DM	D00000 to D32767	82	0000 to 7FFF

Response Codes

When processing of a request has been completed for socket services executed using Socket Service Request Switches, a response code will be stored in the Response Code word in the Socket Service Parameter Area. The following response codes will be stored depending on the service that was requested.

UDP Socket Open Request

Response code	Meaning
0000	Normal end
0105	Local IP address setting error.
1100	UDP socket number is not 1 to 8 or local UDP port number is 0.
110C	Request Switch turned ON during other processing.
220F	Specified socket is already open.
2211	Unit is busy; cannot execute.
2606	Specified socket is already open as TCP socket; cannot open UDPsocket.
2607	Specified Socket Service Parameter Area is already being used for another socket.
0049	The same UDP port number has been specified more than once (EADDRINUSE).
0081	The specified socket was closed during open processing.

UDP Socket Receive Request

Response code	Meaning
0000	Normal end
0302	CPU Unit error; cannot execute.
1100	Number of bytes to receive is not in allowable range.
1101	The area designation of the Send/Receive Data Address is not inallowable range.
1103	The bit number in the Send/Receive Data Address is not 00.
110C	Request Switch turned ON during other processing.
220F	Specified socket is already processing a receive request.
2210	The specified socket is not open.
2211	Unit is busy; cannot execute service.
2607	Specified Socket Service Parameter Area is already being used foranother socket.
0080	Receive request timed out.
0081	The specified socket was closed during reception processing.

UDP Socket Send Request

Response code	Meaning
0000	Normal end
0302	CPU Unit error; cannot execute.
1100	Number of bytes to send is not in allowable range or the remote IPaddress is 0.
1101	The area designation of the Send/Receive Data Address is not inallowable range.
1103	The bit number in the Send/Receive Data Address is not 00.
110C	Request Switch turned ON during other processing.
220F	Specified socket is already processing a send request.
2210	The specified socket is not open.
2211	Unit is busy; cannot execute.
2607	Specified Socket Service Parameter Area is already being used foranother socket.
003E	Internal buffer cannot be obtained due to high reception traffic (ENOBUFS).
004C	The network ID is incorrect or the remote IP address is incor-rect(EADDRNOTAVAIL)
004E	The network ID is not in the IP router table, router settings are incorrect, or the remote IP address is incorrect (ENETUNREACH).
0051	The router settings are incorrect or the remote IP address is incor-rect (EHOSTUNREACH).
0081	The specified socket was closed during send processing.

UDP Socket Close Request

Response code	Meaning
0000	Normal end
0302	CPU Unit error; cannot execute.
2210	The specified socket is not open.
2607	Specified Socket Service Parameter Area is already being used foranother socket.

TCP Socket Passive Open Request

Response code	Meaning
0000	Normal end
0105	Local IP address setting error.
1100	TCP socket number is not 1 to 8 or local TCP port number is 0.
110C	Request Switch turned ON during other processing.
220F	Specified socket is already open or already processing an openrequest.
2211	Unit is busy; cannot execute.
2606	Specified socket is already open as UDP socket; cannot open TCPsocket.
2607	Specified Socket Service Parameter Area is already being used foranother socket.
0045	Error in communications with remote node (ECONNABORTED).
0049	The same TCP port number has been specified more than once(EADDRINUSE).
004A (See note.)	Error (ECONNREFUSED).
004B (See note.)	Error in communications with remote node (ECONNRESET).
0053	Error in communications with remote node (ETIMEDOUT) or remotenode does not exist.
0080	Open request timed out.
0081	The specified socket was closed during open processing.
0082	Connection could not be established with specified remote node.

Note These response codes will be returned only on large, multilevel networks.

TCP Socket Active Open Request

Response code	Meaning
0000	Normal end
0105	Local IP address setting error.
1100	TCP socket number is not 1 to 8 or local TCP port number is 0.
110C	Request Switch turned ON during other processing.
220F	Specified socket is already open or already processing an openrequest.
2211	Unit is busy; cannot execute.
2606	Specified socket is already open as UDP socket; cannot open TCPsocket.
2607	Specified Socket Service Parameter Area is already being used foranother socket.
000D	Remote IP address parameter error (EACCES).
0045	Error in communications with remote node (ECONNABORTED).
0049	The same port number has been specified more than once (EADDRINUSE).
004B (See note.)	Error in communications with remote node (ECONNRESET).
004C	Remote IP address parameter error (EADDRNOTAVAIL).Wrong parameter designation.An attempt was made to set the local TCP port of the local node toActive Open.
0053	Communications error with remote node (ETIMEDOUT).No remote node.
0081	The specified socket was closed during open processing.

Note These response codes will be returned only on large, multilevel networks.

TCP Socket Receive Request

Response code	Meaning
0000	Normal end
0302	CPU Unit error; cannot execute.
1100	Number of receive bytes not in allowable range.
1101	The area designation of the Send/Receive Data Address is not inallowable range.
1103	The bit number in the Send/Receive Data Address is not 00.
110C	Request Switch turned ON during other processing.
220F	Specified socket is already processing a receive request.
2210	Specified socket has not been connected.
2211	Unit is busy; cannot execute.
2607	Specified Socket Service Parameter Area is already being used foranother socket.
0045 (See note.)	Error in communications with remote node (ECONNABORTED).
0053	Error in communications with remote host (ETIMEDOUT).
0080	Receive request timed out.
0081	The specified socket was closed during receive processing.

Note These response codes will be returned only on large, multilevel networks.

TCP Socket Send Request

Response code	Meaning
0000	Normal end
0302	CPU Unit error; cannot execute.
1100	Number of bytes to send not in allowable range.
1101	The area designation of the Send/Receive Data Address is not inallowable range.
1103	The bit number in the Send/Receive Data Address is not 00.
110C	Request Switch turned ON during other processing.
220F	Specified socket is already processing a send request.
2210	The specified socket is not been connected.
2211	Unit is busy; cannot execute.
2607	Specified Socket Service Parameter Area is already being used foranother socket.
0020	Connection with remote socket broken during send (EPIPE).
003E	Internal buffer cannot be obtained due to high reception traf-fic(ENOBUFS).
0045 (See note.)	Error in communications with remote node (ECONNABORTED).
004A	Error in communications with remote node (ECONNREFUSED).
004E (See note.)	Remote IP address parameter error (ENETUNREACH).
0053 (See note.)	Error in communications with remote node (ETIMEDOUT).
0081	The specified socket was closed during send processing.

TCP Socket Close Request

Responsecode	Meaning
0000	Normal end
0302	CPU Unit error; cannot execute.
2210	The specified socket is not been connected.
2607	Specified Socket Service Parameter Area is already being used for another socket.

Note These response codes will be returned only on large, multilevel networks.

Note For details, refer to SECTION 6 Socket Services in the *Ethernet Units Construction of Applications Operation Manual (Cat. No. W421-E1)*.

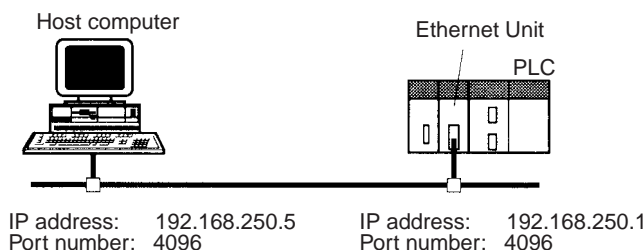
6-6-7 Socket Application Example

TCP/IP Communications Programming Example

The following programming example illustrates transferring 100 bytes of data between an Ethernet Unit and a host computer using TCP/IP communications.

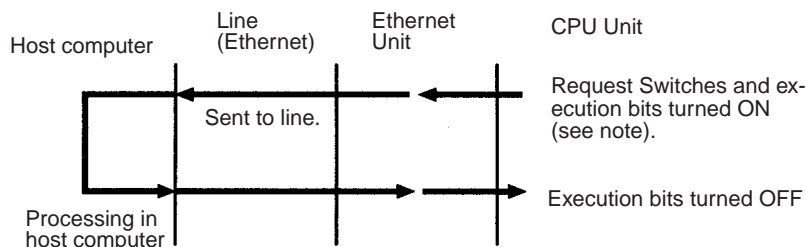
System Configuration

The programming example uses the following system configuration. For the TCP connection, the Ethernet Unit uses a passive open and the host computer uses an active open.



Data Flow

The data will flow between the CPU Unit, Ethernet Unit, and host computer as shown in the following diagram.



Note Here, "execution bits" refer to W0.00 to W0.03, which are used in the ladder diagram to control execution of communications.

Basic Operations

- W0.00 is turned ON to request opening a TCP socket from the Ethernet Unit.
- W0.01 is turned ON to request closing the TCP socket from the Ethernet Unit.
- W0.02 is turned ON to request sending data from the Ethernet Unit. Data (100 bytes) is sent beginning at D00000.
- W0.03 is turned ON to request receiving data from the Ethernet Unit. The data that is received (100 bytes) is stored beginning at D01000.
- One of the bits between W1.00 and W1.03 will turn ON if an error occurs. Refer to 6-7-5 Socket Service Request Switches for information on errors.