

CipSendPlcMemory

A Function Block (FB) to SEND a block of data from one Omron PLC to another Omron PLC using Ethernet/IP (EIP) Units.

Operation is similar to PLC ladder SEND instruction, but using Common Industrial Protocol (CIP) rather than Omron FINS protocol. This means that a remote PLC can be accessed by IP address only and no FINS addresses need be set (FINS Networks and FINS Nodes). This provides an advantage in that it can overcome the FINS IP Conversion table limit (stored in EIP Unit) of 32 FINS nodes. Manual FINS IP tables are required if the IP Subnet is not Class C (255.255.255.0) – used for Auto Allocation of FINS Node to IP conversion.

The FB is written in Structured Text and can be used on CJ1/CS1 (V4 upwards) and all CJ2 PLC's.

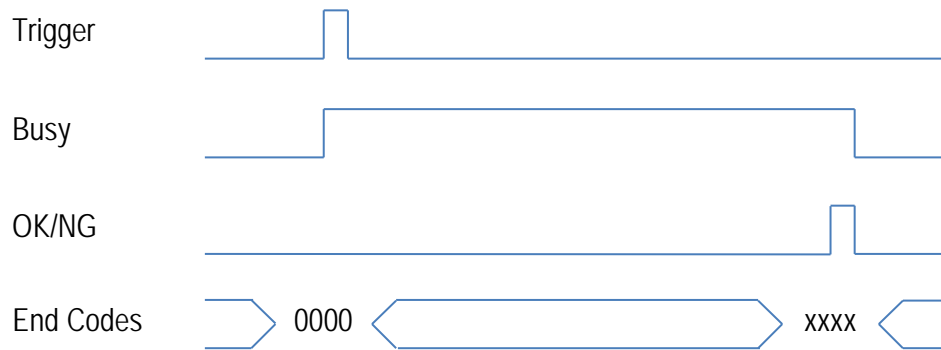
It can only be used with Ethernet/IP units (EIP). At time of writing this refers to CS1W-EIP21 (V1, V2 & V3), CJ1W-EIP21 (V1, V2 & V3), CJ2H-CPU6x-EIP and CJ2M-CPU3x.

The FB always assumes communication is to V2/V3 EIP unit, but if an invalid response is received, the the FB will attempt to send a V1 EIP message. Therefore V1 EIP units will respond slower than V2/3 units.

It will not function with ETN Ethernet units.

Function Block Parameter Name	Data Type	Details of function
<i>Inputs into Function Block</i>		
EN	BOOL	Enables FB. Trigger with pulse and use Busy Output to maintain own processing.
RemoteMemoryArea	WORD	Memory Area to Write to in remote device Set P_DM, P_CIO, etc. from Cx-Programmer defined types
RemoteStartAddress	UINT	Start Address at Memory Area to write to in Remote device. 0 -> max size of area at remote node
NoofWdsToProcess	UINT	Number of Words to Process (send). Max 100 words in one concurrent block. For more than 100 words, then multiple blocks are sent (beware of data concurrency)

Function Block Parameter Name	Data Type	Details of function
IP_Adr1	UINT	IP Address Octet 1 1..255
IP_Adr2	UINT	IP Address Octet 2 0..255
IP_Adr2	UINT	IP Address Octet 3 0..255
IP_Adr2	UINT	IP Address Octet 4 1..255
EipUnitId	UINT	EIP Unit ID SIOU number set on rotary switch (0x0->0xF) (0->15)
<i>Outputs from Function Block</i>		
ENO	BOOL	Always SET during execution of FB
Busy	BOOL	FB Busy Status. Use this flag to latch EN operation.
OK	BOOL	Completed OK
NG	BOOL	Completed with Failure (No Good). See Error/EndCodes
EndCode	WORD	End Code 0= No error For other values see FINS error codes (Manual W342)
CipEndCode	WORD	CIP specific End Code from partner Refer to EIP manual
SettingError	WORD	Setting Error in parameters 0x0000=No Error 0x0001=IP Address 0x0002=Memory Area invalid
<i>In/Out from Function Block</i>		
LocalPlcData	WORD[..]	Array of data to send out from local PLC memory. Specify the first address here

Timing**Precautions**

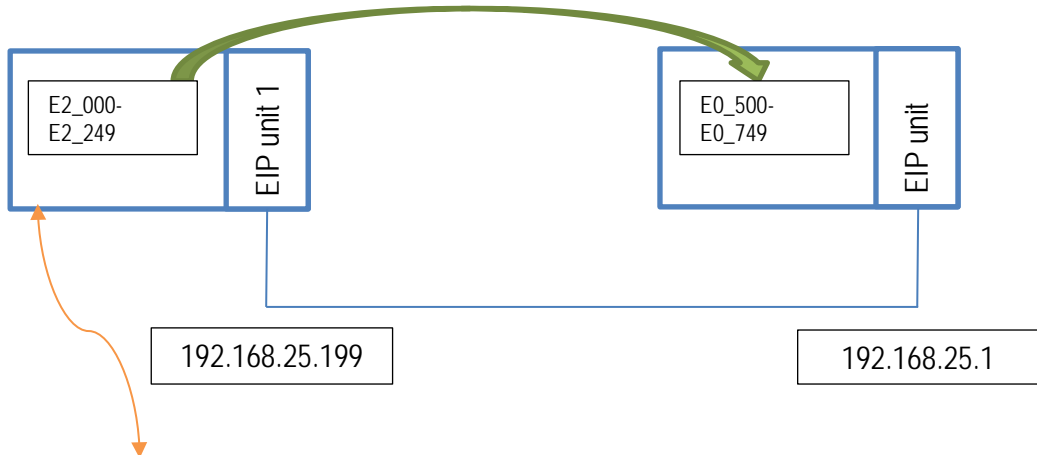
NB. Max Size of data to Process is limited to remote PLC memory, but will always be sent in 100 word blocks (beware data concurrency).

For example if 250 words are to be sent, then the FB will send as 2 packets of 100 words and 1 packet of 50 words. If data changes during transfer, then concurrency of data between packets can't be guaranteed.

NB. Do not modify FB input variable values until the Busy flag has turned off. Incorrect operation may occur.

Example use of Function block, used within ladder:-

Example:
Send 250 words from E2_0 to E2_500 at 192.168.25.1



Send a block of data (length NoofWdsToProcess) starting at LocalPicData (in this PLC) to a remote PLC at P_Adr (1.2.3.4) and RemoteMemoryArea (e.g. P_CIO, P_DM, etc) with starting address RemoteStartAddress via Ethernet/IP Unit Number (EipUnitId)
NB Max Size of data to Process is limited to remote PLC memory, but will always be sent in 100 word blocks (beware data concurrency)

Cip_SEND		CpSendPlcMemory			
TriggerCipSend	(BOOL) EN	OEE-UK	(BOOL) END		
CipSendBusy	(WORD) RemoteMemoryArea		(BOOL) Busy	CipSendBusy	
P_EM0 EM0 Area Parameter	(UINT) RemoteStartAddress		(BOOL) OK	CipOK	
&500	(UINT) NoofWdsToProcess		(BOOL) NG	CipNG	
&250	(UINT) P_Adr1		(WORD) EndCode	CipEndCode	
&192	(UINT) P_Adr2		(WORD) CipEndCode	CipCipEndCode	
&168	(UINT) P_Adr3		(WORD) SettingError	CipSettingError	
&25	(UINT) P_Adr4				
&1	(UINT) EipUnitId				
&1					
E2_0	(WORD[1]) LocalPicData	—	LocalPicData	E2_0	

RSET
TriggerCipSend Bit

Reference Manuals

W465 Ethernet/IP Units Operation Manual

W342 CS/CJ/CP/NSJ Communication Commands Reference Manual

Revision History		
V1.00	25 May 2012	Original Production
V1.01	14 October 2015	Modification to 1) Allow PC locales that use comma (',') as decimal place (corrects Cx-Programmer compile failure). 2) Remove FINS network Node use. This resolves issues when multiple coms cards are used on one backplane and this FB does not use the lowest numbered unit ID.
