

SECTION 5

FINS Commands

This section provides detailed descriptions of the FINS commands.

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5-1 Command Lists

5-1-1 FINS Commands

The following table lists the FINS commands.

Type	Command code		Name	Function
	MR	SR		
I/O memory area access	01	01	MEMORY AREA READ	Reads the contents of consecutive I/O memory area words.
	01	02	MEMORY AREA WRITE	Writes the contents of consecutive I/O memory area words.
	01	03	MEMORY AREA FILL	Writes the same data to the specified range of I/O memory area words.
	01	04	MULTIPLE MEMORY AREA READ	Reads the contents of specified non-consecutive I/O memory area words.
	01	05	MEMORY AREA TRANSFER	Copies the contents of consecutive I/O memory area words to another I/O memory area.
Parameter area access	02	01	PARAMETER AREA READ	Reads the contents of consecutive parameter area words.
	02	02	PARAMETER AREA WRITE	Writes the contents of consecutive parameter area words.
	02	03	PARAMETER AREA FILL (CLEAR)	Writes the same data to the specified range of parameter area words.
Program area access	03	06	PROGRAM AREA READ	Reads the UM (User Memory) area.
	03	07	PROGRAM AREA WRITE	Writes to the UM (User Memory) area.
	03	08	PROGRAM AREA CLEAR	Clears the UM (User Memory) area.
Operating mode changes	04	01	RUN	Changes the CPU Unit's operating mode to RUN or MONITOR.
	04	02	STOP	Changes the CPU Unit's operating mode to PROGRAM.
Machine configuration reading	05	01	CPU UNIT DATA READ	Reads CPU Unit data.
	05	02	CONNECTION DATA READ	Reads the model numbers of the device corresponding to addresses.
Status reading	06	01	CPU UNIT STATUS READ	Reads the status of the CPU Unit.
	06	20	CYCLE TIME READ	Reads the maximum, minimum, and average cycle time.
Time data access	07	01	CLOCK READ	Reads the present year, month, date, minute, second, and day of the week.
	07	02	CLOCK WRITE	Changes the present year, month, date, minute, second, or day of the week.
Message display	09	20	MESSAGE READ/CLEAR	Reads and clears messages, and reads FAL/FALS messages.
Access rights	0C	01	ACCESS RIGHT ACQUIRE	Acquires the access right as long as no other device holds it.
	0C	02	ACCESS RIGHT FORCED ACQUIRE	Acquires the access right even if another device already holds it.
	0C	03	ACCESS RIGHT RELEASE	Releases the access right that has been acquired.
Error log	21	01	ERROR CLEAR	Clears errors or error messages.
	21	02	ERROR LOG READ	Reads the error log.
	21	03	ERROR LOG POINTER CLEAR	Clears the error log pointer.

Type	Command code		Name	Function
	MR	SR		
File memory	22	01	FILE NAME READ	Reads file memory data.
	22	02	SINGLE FILE READ	Reads a specified length of file data from a specified position within a single file.
	22	03	SINGLE FILE WRITE	Writes a specified length of file data from a specified position within a single file.
	22	04	FILE MEMORY FORMAT	Formats (initializes) the file memory.
	22	05	FILE DELETE	Deletes specified files stored in the file memory.
	22	07	FILE COPY	Copies files from one file memory to another file memory in the same system.
	22	08	FILE NAME CHANGE	Changes a file name.
	22	0A	MEMORY AREA-FILE TRANSFER	Transfers or compares data between the I/O memory area and the file memory.
	22	0B	PARAMETER AREA-FILE TRANSFER	Transfers or compares data between the parameter area and the file memory.
	22	0C	PROGRAM AREA-FILE TRANSFER	Transfers or compares data between the UM (User Memory) area and the file memory.
	22	15	CREATE/DELETE DIRECTORY	Creates or deletes a directory.
Debugging	23	01	FORCED SET/RESET	Force-sets or force-resets bits, or releases force-set status.
	23	02	FORCED SET/RESET CANCEL	Cancels all bits that have been force-set or force-reset.

5-1-2 FINS Command Restrictions

Type	Command code		Name	PC status					
	MR	SR		RUN mode	MON-ITOR mode	PRO-GRAM mode	Access right	UM read protection	DIP switch UM protection
I/O memory area access	01	01	MEMORY AREA READ	OK	OK	OK	OK	OK	OK
		02	MEMORY AREA WRITE	OK	OK	OK	OK	OK	OK
		03	MEMORY AREA FILL	OK	OK	OK	OK	OK	OK
		04	MULTIPLE MEMORY AREA READ	OK	OK	OK	OK	OK	OK
		05	MEMORY AREA TRANSFER	OK	OK	OK	OK	OK	OK
Parameter area access	02	01	PARAMETER AREA READ	OK	OK	OK	OK	OK	OK
		02	PARAMETER AREA WRITE	OK	OK	OK	Disabled	OK	Disabled
		03	PARAMETER AREA CLEAR	OK	OK	OK	Disabled	OK	Disabled

Type	Command code		Name	PC status					
	MR	SR		RUN mode	MON-ITOR mode	PRO-GRAM mode	Access right	UM read protection	DIP switch UM protection
Program area access	03	06	PROGRAM AREA READ	OK	OK	OK	OK	Disabled	OK
		07	PROGRAM AREA WRITE	Disabled	Disabled	OK	Disabled	OK	Disabled
		08	PROGRAM AREA CLEAR	Disabled	Disabled	OK	Disabled	OK	Disabled
Operating mode changes	04	01	RUN	OK	OK	OK	Disabled	OK	OK
		02	STOP	OK	OK	OK	Disabled	OK	OK
Machine configuration reading	05	01	CPU UNIT DATA READ	OK	OK	OK	OK	OK	OK
		02	CONNECTION DATA READ	OK	OK	OK	OK	OK	OK
Status reading	06	01	CPU UNIT STATUS READ	OK	OK	OK	OK	OK	OK
		20	CYCLE TIME READ	OK	OK	Disabled	OK	OK	OK
Time data access	07	01	CLOCK READ	OK	OK	OK	OK	OK	OK
		02	CLOCK WRITE	OK	OK	OK	Disabled	OK	OK
Message display	09	20	MESSAGE READ/CLEAR	OK	OK	OK	Disabled (MESSAGE CLEAR only)	OK	OK
Access rights	0C	01	ACCESS RIGHT ACQUIRE	OK	OK	OK	Disabled	OK	OK
		02	ACCESS RIGHT FORCED ACQUIRE	OK	OK	OK	OK	OK	OK
		03	ACCESS RIGHT RELEASE	OK	OK	OK	OK	OK	OK
Error log	21	01	ERROR CLEAR	OK	OK	OK	Disabled	OK	OK
		02	ERROR LOG READ	OK	OK	OK	OK	OK	OK
		03	ERROR LOG CLEAR	OK	OK	OK	OK	OK	OK
File memory	22	01	FILE NAME READ	OK	OK	OK	OK	OK	OK
		02	SINGLE FILE READ	OK	OK	OK	OK	OK	OK
		03	SINGLE FILE WRITE	OK	OK	OK	Disabled	OK	OK
		04	FILE MEMORY FORMAT	OK	OK	OK	Disabled	OK	OK
		05	FILE DELETE	OK	OK	OK	Disabled	OK	OK
		07	FILE COPY	OK	OK	OK	Disabled	OK	OK
		08	FILE NAME CHANGE	OK	OK	OK	Disabled	OK	OK
		0A	MEMORY AREA-FILE TRANSFER	OK	OK	OK	Disabled	OK	OK
		0B	PARAMETER AREA-FILE TRANSFER	OK (note 1)	OK (note 1)	OK	Disabled	OK	OK (note 1)
		0C	PROGRAM AREA-FILE TRANSFER	OK (note 2)	OK (note 2)	OK	Disabled	OK	Disabled (note 3)
		15	CREATE/DELETE DIRECTORY	OK	OK	OK	Disabled	OK	OK

Type	Command code		Name	PC status					
	MR	SR		RUN mode	MON-ITOR mode	PRO-GRAM mode	Access right	UM read protection	DIP switch UM protection
Debugging	23	01	FORCED SET/RESET	Disabled	OK	OK	OK	OK	OK
		02	FORCED SET/RESET CANCEL	Disabled	OK	OK	OK	OK	OK

- Note**
1. File-to-memory area transfers are not possible
 2. File-to-program area transfers are not possible
 3. Program area-to-file transfers are possible

5-1-3 End Codes

The following table lists the main codes and the sub-codes, which combine to form the end code (response code) returned for a FINS command. The probable cause and corrections for each error code are also given.

Depending on the command, the destination code will sometimes make a request of another node on a network. The other node is referred to as the third node.

Main code	Subcode	Check point	Probable cause	Correction
00: Normal completion	00: Normal completion	---	---	---
	01: Service canceled	---	Service was cancelled.	Check the capacity of the destination area in the third node.
		Data link status	Service was cancelled.	Check the status of the data link.
01: Local node error	01: Local node not in network	Network status of local node	Local node is not participating in the network.	Connect the node to the network.
	02: Token timeout	Maximum node address	Token doesn't arrive.	Set the local node to within the maximum node address.
	03: Retries failed	---	Send was not possible during the specified number of retries.	Execute a communications test between the nodes and re-examine the system environment if it fails.
	04: Too many send frames	Number of enabled send frames	Cannot send because maximum number of event frames exceeded.	Check event execution on the network and reduce the number of events per cycle. Increase the maximum number of event frames.
	05: Node address range error	Node address	Node address setting error occurred.	Check the settings of the rotary switches to be sure that the address is within range and that each address is set only once in the same network.
	06: Node address duplication	Node addresses	The same node address has been set twice in the same network.	Change the address of one of the nodes with the same address.

Main code	Subcode	Check point	Probable cause	Correction
02: Destination node error	01: Destination node not in network	INS indicator on Unit	The destination node is not in the network.	Add the destination node to the network.
	02: Unit missing	Instruction control data	There is no Unit with the specified unit address.	Check the destination unit address.
	03: Third node missing	Instruction control data	The third node does not exist.	Check the unit address of the third node. Check the node address of the third node in the send data for CMND(490).
		Command data	Broadcasting was specified.	Specify only one node for the third node.
	04: Destination node busy	---	The destination node is busy.	Increase the number of retries or review the system so that the destination node does not receive so many messages.
	05: Response timeout	---	The message was destroyed by noise.	Increase the number of retries or test communications between nodes to see if there is too much noise.
		Instruction control data	The response monitor time is too short.	Increase the length of the response monitor time.
		Error history	The send/receive frame was discarded.	Take appropriate measures based on the error history.
03: Controller error	01: Communications controller error	Unit/Board indicators	An error occurred in the communications controller.	Take appropriate measures based on the operation manuals for the related Units/Boards.
	02: CPU Unit error	CPU Unit indicators at destination node	A CPU error occurred in the destination CPU Unit.	Clear the error from the CPU Unit based on its operation manuals.
	03: Controller error	Board indicators	A response was not returned because an error occurred in the Board.	Check network communications status and restart the Board. If the problem persists, replace the Board.
	04: Unit number error	Unit number	The unit number was set incorrectly.	Set the rotary switches correctly, being sure the unit numbers are within range and that each number is used only once.
04: Service unsupported	01: Undefined command	Command code	The Unit/Board does not support the specified command code.	Check the command code.
	02: Not supported by model/version	Unit model and version	The command cannot be executed because the model or version is incorrect.	Check the model number and version.
05: Routing table error	01: Destination address setting error	Routing table	The destination network or node address is not set in the routing tables.	Register the destination network and node in the routing tables.
	02: No routing tables	Routing table	Relaying is not possible because there are no routing tables.	Set routing tables in the source node, designation node, and relay nodes.
	03: Routing table error	Routing table	There is an error in the routing tables.	Set the routing tables correctly.
	04: Too many relays	Network configuration	An attempt was made to send to a network that was over 3 networks away	Reconstruct the networks or change the routing tables so that commands are sent within a range of 3 networks or less.

Main code	Subcode	Check point	Probable cause	Correction
10: Command format error	01: Command too long	Command data	The command is longer than the maximum permissible length.	Check the command format and correct the command data.
	02: Command too short	Command data	The command is shorter than the minimum permissible length.	Check the command format and correct the command data.
	03: Elements/data don't match	Command data	The designated number of elements differs from the number of write data items.	Check the number of elements and set data for each element.
	04: Command format error	Command data	An incorrect format was used.	Check the command format and correct the command data.
	05: Header error	Routing table	Either the relay table in the local node or the local network table in the relay node is incorrect.	Set the routing tables correctly.
11: Parameter error	01: Area classification missing	Memory area code in command data	The specified word does not exist in the memory area or there is no EM Area.	Check the memory areas and parameter codes in the command and correct the command data.
	02: Access size error	Access size specification in command data	The access size specification is incorrect or an odd word address is specified.	Check the memory areas and access size and correct the access size.
	03: Address range error	Starting address in command data	The start address in command process is beyond the accessible area.	Check the area being processed and set the correct range.
	04: Address range exceeded	Starting address and number of elements in command data	The end address in command process is beyond the accessible area.	Check the area being processed and set the correct range.
		Data link tables	The total number of words is beyond the limit.	Correct the data link tables.
	06: Program missing	Program number in command data	A non-existent program has been specified.	Check the program numbers and specify a valid one.
	09: Relational error	Command data	A large–small relationship in the elements in the command data is incorrect.	Check the command data and correct the relationship between the elements.
		Data link table	A node not set in the common link parameters is set as a refresh parameter.	Correct the data link tables.
	0A: Duplicate data access	I/O access in CPU Unit	Differential monitoring was specified during data tracing or data tracing was specified during differential monitoring.	Abort the current process or wait until it ends before executing the command.
		Data link tables	The same node address is specified more than once.	Correct the data link tables.
	0B: Response too long	Number of elements in command data	The response format is longer than the maximum permissible length.	Check the command format and correct the number of elements.
	0C: Parameter error	Parameters in command data	There is an error in one of the parameter settings.	Check the command data and correct the parameters.
		Data link table file	There is an error in the file.	Check the contents of the file.

Main code	Subcode	Check point	Probable cause	Correction
20: Read not possible	02: Protected	---	The program area is protected.	Release protection from a Programming Device and then execute the command.
	03: Table missing	Table	A table has not been registered.	Register a table.
			There is an error in the table.	Correct the table.
	04: Data missing	---	The search data does not exist.	---
	05: Program missing	Program number in command data	A non-existing program number has been specified.	Check the program numbers and specify a valid one.
	06: File missing	File name and file device	The file does not exist at the specified file device.	Check the path and file name, and correct them.
	07: Data mismatch	Contents of memory being compared	A data being compared is not the same.	Check memory contents and use the correct data.
		---	A file read operation failed.	Check the contents of the file.
21: Write not possible	01: Read-only	---	The specified area is read-only.	If the area is protected using a switch setting, release protection and then execute the command. If the area is permanently read-only, the command cannot be executed.
	02: Protected Cannot write data link table	---	The program area is protected.	Release protection from a Programming Device and then execute the command.
		PC Setup	Writing is not possible because automatic data link table generation has been specified.	Change the PC Setup so that the data link tables can be manually written.
	03: Cannot register	Number of files in file device	The file cannot be created because the limit has been exceeded.	Delete any unnecessary files or create more file memory.
		Number of files open	The maximum number of files has already been opened for the system limit.	Close one or more files and then execute the command.
	05: Program missing	Program number in command data	A non-existing program number has been specified.	Check the program numbers and specify a valid one.
	06: File missing	File name	The file does not exist at the specified file device.	Correct the file name and then execute the command.
	07: File name already exists	File name	A file with the same name already exists in the specified file device.	Change the name of the file being written and then execute the command.
	08: Cannot change	Contents of memory being changed	The change cannot be made because doing so would create a problem.	---

Main code	Subcode	Check point	Probable cause	Correction
22: Not executable in current mode	01: Not possible during execution	---	The mode is incorrect.	Check the mode.
		Data link status	The data link is operating.	Check the status of the data links.
	02: Not possible while running	---	The mode is incorrect.	Check the mode.
		Data link status	The data links are active.	Check the status of the data links.
	03: Wrong PC mode	---	The PC is in PROGRAM mode.	Check the modes of the PC and computer.
	04: Wrong PC mode	---	The PC is in DEBUG mode.	Check the modes of the PC and computer.
	05: Wrong PC mode	---	The PC is in MONITOR mode.	Check the modes of the PC and computer.
	06: Wrong PC mode	---	The PC is in RUN mode.	Check the modes of the PC and computer.
23: No such device	07: Specified node not polling node	---	The specified node is not the polling node.	Check node functioning as the polling node for the network.
	08: Step cannot be executed	---	The mode is incorrect.	Check step status.
	01: File device missing	Unit configuration	The specified memory does not exist as a file device.	Mount memory or format EM as file memory.
	02: Memory missing	---	There is no file memory.	Check the file memory to see if it is mounted.
	03: Clock missing	---	There is no clock.	Check the model.
24: Cannot start/stop	01: Table missing	Data link tables	The data link tables have not been registered or they contain an error.	Set the data link tables.

Main code	Subcode	Check point	Probable cause	Correction
25: Unit error	02: Parity or checksum error	Contents of memory being processed	The contents of memory contains an error.	Transfer the correct contents to memory.
	03: I/O setting error	I/O Unit configuration	The registered I/O tables do not agree with the actual I/O configuration.	Correct the I/O tables or the I/O configuration.
	04: Too many I/O points	Number of I/O in registered I/O tables	There are too many I/O points and remote I/O points registered.	Change the registered I/O table so that it is within the limit.
	05: CPU bus error	CPU bus line	An error occurred in data transfer between the CPU and a CPU Bus Unit.	Check Units, Boards, and cables to be sure they are connected correctly and then execute the ERROR CLEAR command.
	06: I/O duplication	Rack numbers, Unit numbers, and I/O addresses in PC Setup	The same number/address was set more than once.	Check the PC Setup and correct the numbers/addresses so that each is used only once.
	07: I/O bus error	I/O bus line	An error occurred in data transfer between the CPU and an I/O Unit.	Check Units, Boards, and cables to be sure they are connected correctly and then execute the ERROR CLEAR command.
	09: SYSMAC BUS/2 error	SYSMAC BUS/2 transmission path	An error occurred in data transfer on the SYSMAC BUS/2 line.	Check Units, Boards, and cables to be sure they are connected correctly and then execute the ERROR CLEAR command.
	0A: CPU Bus Unit error	CPU Bus Unit transmission path	An error occurred in data transfer for a CPU Bus Unit.	Check Units, Boards, and cables to be sure they are connected correctly and then execute the ERROR CLEAR command.
	0D: SYSMAC BUS No. duplication	Word settings	The same word is allocated more than once.	Check the I/O tables and correct the allocations.
	0F: Memory error	Status of memory being processed	A memory error has occurred in internal memory, a memory card, or EM file memory.	For internal memory, write the correct data and then execute the command. For a memory card or EM file memory, the file data has been destroyed. Execute the FILE MEMORY FORMAT command. If the problem persists, replace the memory.
	10: SYSMAC BUS terminator missing	---	Terminators have not been set.	Set the terminators correctly.

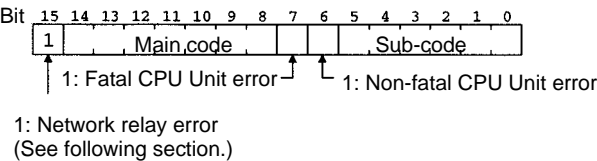
Main code	Subcode	Check point	Probable cause	Correction
26: Command error	01: No protection	Command protection for program area	The specified area is not protected.	An attempt was made to clear protection on an area that is not protected, i.e., there is no reason to clear protection.
	02: Incorrect password	---	An incorrect password has been specified.	Specify the correct password.
	04: Protected	---	The specified area is protected.	Clear protection from a Programming Device and then execute the command.
		Number of commands being executed	The node receiving the command is already processing 5 commands.	Wait for current processing to end or force the end of a current process and then execute the command.
	05: Service already executing	---	The service is being executed.	Wait for the service to end or force the end of the service and then execute the command.
	06: Service stopped	---	The service is not being executed.	If necessary, start the service.
	07: No execution right	LNK indicator on Unit/Board	The right to execute the service has not been obtained.	The local node is not in the data link. Execute the command from a node that is participating in the data link.
		---	A response was not returned because a buffer error occurred.	Restart the Board. If the problem persists, replace the Board.
	08: Settings not complete	Settings required before execution	The settings required before executing the service have not been made.	Make the required settings.
	09: Necessary items not set	Command data	The required elements have not been set in the command data.	Check the command format and set the required elements in the command data.
	0A: Number already defined	Action numbers and transition numbers of program in program area	The specified action/transition number has already been registered in a previous program.	Check the action/transition numbers to ones that are not being used and then execute the command.
	0B: Error will not clear	Cause of error being cleared	The cause of the error has not been removed.	Remove the cause of the error and then execute ERROR CLEAR.
30: Access right error	01: No access right	---	The access right is held by another device. (SFC online editing is being executed from another node or ACCESS RIGHT ACQUIRE or ACCESS RIGHT FORCE ACQUIRE has been executed by another node.)	Wait until the access right is released and then execute the command. ACCESS RIGHT ACQUIRE or ACCESS RIGHT FORCE ACQUIRE can be executed to obtain the access right, but this may adversely affect processing by the node that previously held the access right.
40: Abort	01: Service aborted	---	Service was aborted with ABORT command.	---

Note In addition to the above end codes, there are also three flags provided in the end code, i.e., bits 6, 7, and 15.

If bit 15 is ON, an error has occurred in a network relay operation.

If bit 6 or 7 is ON, and error has occurred in the destination CPU Unit. If this occurs, refer to the operation manuals for the CPU Unit where the error occurred

and remove the cause of the error.
The contents of the end code are shown in the following diagram.



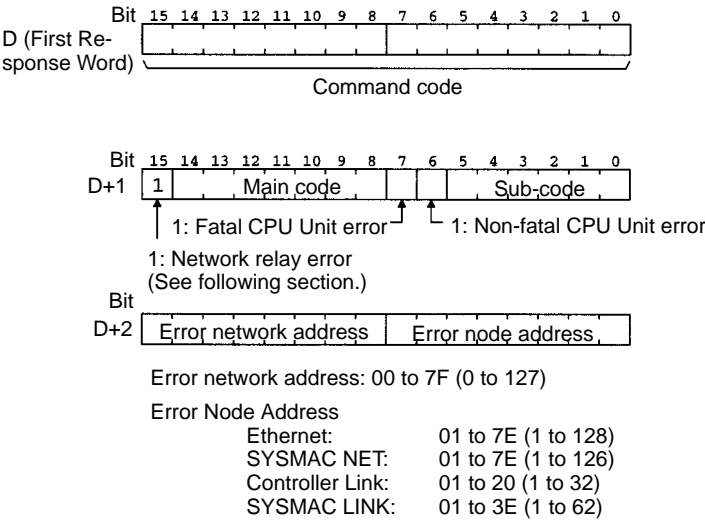
Handling Network Relay Errors

**SEND(090) and
RECV(098)**

Check the path the command took using the routing tables. Check the end code and take appropriate measures for the relay node where the error occurred.

CMND(490)

The location of the relay error can be determined by using the data returned as the response data for the instruction, as shown in the following diagram. Use this information to determine the node where the error occurred and take appropriate measures



5-2 Designating Command Parameters

5-2-1 Designating I/O Memory (Variable) Area Addresses

When reading from and writing to the I/O memory (variable) area, designate I/O memory area addresses as described below.

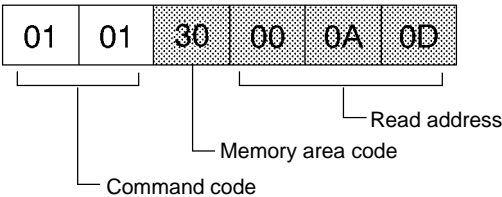
I/O memory designation involves the designation of the memory area code and the address within the memory area code.

- Memory area codes are designated in one byte (two digits hexadecimal), as shown in the table in 5-2-2 I/O Memory Address Designations.

- Addresses within memory area codes consist of a total of three bytes (six digits hexadecimal). Of these, two bytes (four digits hexadecimal) designate the word and one byte (two digits hexadecimal) designates the bit.

I/O memory address designation		Memory area code	Address within memory area code	
			Word	Bit
4 bytes (8 digits hexadecimal)	⇒	1 byte (2 digits hex)	2 bytes (4 digits hex)	1 byte (2 digits hex)
Memory area code + word + bit, in order		Set by classification (CIO, WR, etc.). Note: Also possible with forced status.	From 0000 hex (Upper limit depends on memory area code.)	00 to 0F hex Note: Always 00 hex for word address and Timer/Counter Completion Flags.
Example Bit 13 of CIO 0010: 30000A0D hex		Example CIO: 30 hex	Example 0010: 000A in hexadecimal	Example Bit 13: 0D in hexadecimal

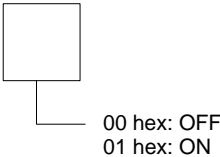
Example: I/O memory reading
Bit 13 of CIO 0010, i.e., CIO 001013, is read.



Element Data Configurations

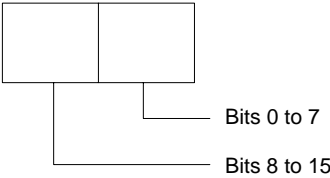
Bit Designations

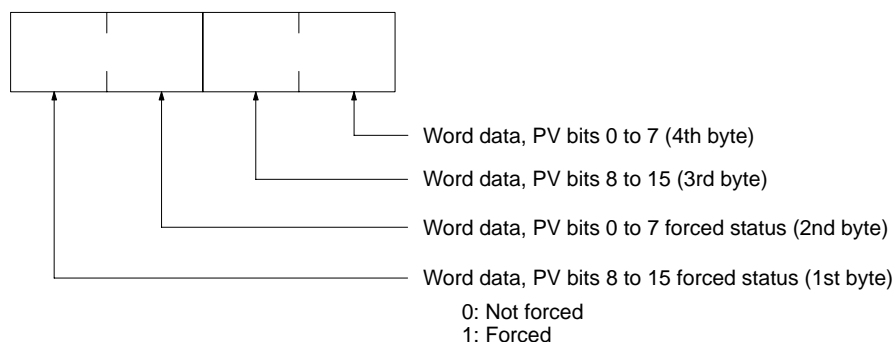
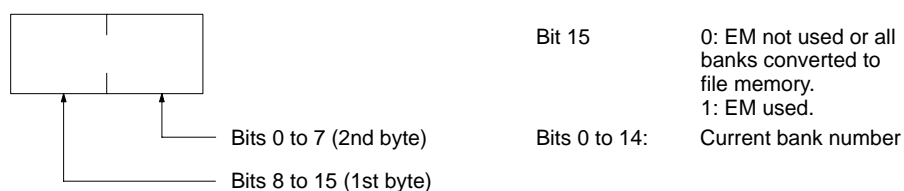
When bits are designated, each bit is considered a single element. The data for the element is expressed in one byte (ON: 01 hex; OFF: 00 hex). When data is written, this byte is transmitted. When data is read, this byte is returned.



Word Designations

When words are designated, each word is considered a single element. The data for the element is expressed in two bytes. Bits 0 to 15 correspond to bits 0 to 15 of each word. When data is written, these two bytes are transmitted for each word. When data is read, these two bytes are returned.



Word Data With Forced Status Data, Present Value (4 Bytes)**Current EM Bank Number (2 Bytes)****5-2-2 I/O Memory Address Designations**

Area		Data type	CS1 mode			CV mode			Length per element
			Memory area code (hex)	Memory area address	Memory address	Memory area code (hex)	Memory area address	Memory address	
CIO Area	CIO	Bit	30	CIO 000000 to CIO 614315	000000 to 17FF0F	00	CIO 000000 to CIO 255515	000000 to 09FB0F	1
Work Area	WR		31	W00000 to W51115	000000 to 01FF0F	---	---	---	
Holding Bit Area	HR		32	H00000 to H51115	000000 to 01FF0F	---	---	---	
Auxiliary Bit Area	AR		33	A00000 to A44715 (read only)	000000 to 01BF0F	00	A00000 to A44715 (read only)	0B0000 to 0CBF0F	
				A44800 to A95915 (read/write)	01C000 to 03BF0F		A44800 to A95915 (read/write)	0CC000 to 0EBF0F	
CIO Area	CIO	Bit with forced status	70	CIO 000000 to CIO 614315	000000 to 17FF0F	40	CIO 000000 to CIO 255515	000000 to 09FB0F	1
Work Area	WR		71	W00000 to W51115	000000 to 01FF0F	---	---	---	
Holding Bit Area	HR		72	H00000 to H51115	000000 to 01FF0F	---	---	---	
CIO Area	CIO	Word	B0	CIO 0000 to CIO 6143	000000 to 17FF00	80	CIO 0000 to CIO 2555	000000 to 09FB00	2
Work Area	WR		B1	W000 to W511	000000 to 01FF00	---	---	---	
Holding Bit Area	HR		B2	H000 to H511	000000 to 01FF00	---	---	---	
Auxiliary Bit Area	AR		B3	A000 to A447 (read only)	000000 to 01BF00	80	A000 to A447 (read only)	0B0000 to 0CBF00	
				A448 to A959 (read/write)	01C000 to 03BF00		A448 to A959 (read/write)	0CC000 to 0EBF00	

Area		Data type	CS1 mode			CV mode			Length per element
			Memory area code (hex)	Memory area address	Memory address	Memory area code (hex)	Memory area address	Memory address	
CIO Area	CIO	Word with forced status	F0	CIO 0000 to CIO 6143	000000 to 17FF00	C0	CIO 000000 to CIO 255515	000000 to 09FB00	4
Work Area	WR		F1	W000 to W511	000000 to 01FF00	---	---	---	
Holding Bit Area	HR		F2	H000 to H511	000000 to 01FF00	---	---	---	
Timer Area	TIM	Completion Flag	09	T0000 to T4095	000000 to 0FFF00	01	T0000 to T2047 (T0000 to T1023)	000000 to 07FF00 (000000 to 03FF00)	1
Counter Area	CNT			C0000 to C4095	800000 to 8FFF00		C0000 to C2047 (C0000 to C1023)	080000 to 0FFF00 (080000 to 0BFF00)	
Timer Area	TIM	Completion Flag with forced status	49	T0000 to T4095	000000 to 0FFF00	41	T0000 to T2047 (T0000 to T1023)	000000 to 07FF00 (000000 to 03FF00)	1
Counter Area	CNT			C0000 to C4095	800000 to 8FFF00		C0000 to C2047 (C0000 to C1023)	080000 to 0FFF00 (080000 to 0BFF00)	
Timer Area	TIM	PV	89	T0000 to T4095	000000 to 0FFF00	81	T0000 to T2047 (T0000 to T1023)	000000 to 07FF00 (000000 to 03FF00)	2
Counter Area	CNT			C0000 to C4095	800000 to 8FFF00		C0000 to C2047 (C0000 to C1023)	080000 to 0FFF00 (080000 to 0BFF00)	
DM Area	DM	Bit	02	D000000 to D3276715	000000 to 7FFF0F	---	---	---	1
	DM	Word	82	D00000 to D32767	000000 to 7FFF00	82	D00000 to D32767	000000 to 7FFF00	2

Area		Data type	CS1 mode			CV mode			Length per element
			Memory area code (hex)	Memory area address	Memory address	Memory area code (hex)	Memory area address	Memory address	
EM Area	EM (Bank 0 to C)	Bit	20 to 2C	E0_000000 to E0_3276715 to EC_0000000 to EC_3276715	000000 to 7FFF0F	---	---	---	1
	EM (Bank 0 to C)	Word	A0 to AC	E0_00000 to E0_32767 to EC_00000 to EC_32767	000000 to 7FFF00 to 000000 to 7FFF00	90 to 97	E0_00000 to E0_32767 to E7_00000 to E7_32767	000000 to 7FFF00 to 000000 to 7FFF00	2
	EM (Current bank)	Word	98	E00000 to E32767	000000 to 7FFF00	98	E00000 to E32767	000000 to 7FFF00	2
	EM (Current bank No.)	EM (Current bank No.)	BC	---	0F0000	9C	---	000600	2
Task Flag	TK	Bit	06	TK0000 to TK0031	000000 to 001F00	---	---	---	1
	TK	Status	46	TK0000 to TK0031	000000 to 001F00	---	---	---	1
Index Register	IR	PV	DC	IR00 to IR15	010000 to 010F00	---	---	---	4
Data Register	DR	PV	BC	DR00 to DR15	020000 to 020F00	9C	DR0 to DR2	000300 to 000500	2

Area	Data type	CS1 mode			CV mode			Length per element
		Memory area code (hex)	Memory area address	Memory address	Memory area code (hex)	Memory area address	Memory address	
Clock Pulses	Bit	07	1-min clock pulse	000000	---	---	---	1
			1-s clock pulse	000100				
			0.2-s clock pulse	000200				
			0.1-s clock pulse	000300				
			0.02-s clock pulse	000400				
Condition Flags	Bit		Error Flag (ER)	100000				
			Carry Flag (CY)	100100				
			Greater Than Flag (>)	100200				
			Equals Flag (=)	100300				
			Less Than Flag (<)	100400				
			Negative Flag (N)	100500				
			Overflow Flag (OF)	100600				
			Underflow Flag (UF)	100700				
			Greater Than or Equals Flag (>=)	100800				
			Not Equal Flag (<>)	100900				
			Less Than or Equals Flag (<=)	100A00				
			Always OFF Flag (ON)	100E00				
			Always ON Flag (OFF)	100F00				
			Access Error Flag	200100		---	---	1

Note The only current EM bank that can be read with FINS commands is the current EM bank that is set at the end of the cycle.

Examples

Example	Designation	Address within memory area code		
		Memory area code	Address within memory area code	
CIO 0010	B0000A00 Hex	B0 Hex	000A Hex	00 Hex
CIO 001013 (bit 13 of CIO 0010)	30000A0D Hex	30 Hex	000A Hex	0D Hex
W010	B1000A00 Hex	B1 Hex	000A Hex	00 Hex
W01013 (bit 13 of W010)	31000A0D Hex	31 Hex	000A Hex	0D Hex
H010	B2000A00 Hex	B2 Hex	000A Hex	00 Hex
H01013 (bit 13 of H010)	32000A0D Hex	32 Hex	000A Hex	0D Hex
CIO 001013 (bit 13 of CIO 0010), with forced status	70000A0D Hex	70 Hex	000A Hex	0D Hex
CIO 0010, with forced status	F0000A0D Hex	F0 Hex	000A Hex	0D Hex
T0010 Completion Flag	09000A00 Hex	09 Hex	000A Hex	00 Hex
D00010 value	82000A00 Hex	82 Hex	000A Hex	00 Hex
E_3_00010 value	A3000A00 Hex	A3 Hex	000A Hex	00 Hex
Current EM bank 00010 value	98000A00 Hex	98 Hex	000A Hex	00 Hex

Volume Labels and File Names

Volume labels are names registered in file memory. File names consist of 12 bytes, as shown below. Be sure to follow this configuration when designating a file name by means of command parameters.

8 bytes	1 byte	3 bytes
Volume label/file name	2E	Extension

Delimiter

Start the volume label/file name in the most-significant bytes and then use spaces (ASCII 20) for the rest of the bytes if not all bytes are required.

It is not permissible to specify 00 (hex) or E5 (hex) at the beginning of a file name. (Codes of 00 Hex or E5 Hex means “erased” in DOS.) It is also not permissible to specify 7E Hex (–) at the first and second characters (consecutive) of a file name.

If a file name has no extension, the period (2E hex) can also be omitted. In that case, both the 2E Hex and the extension must be filled with 20 Hex.