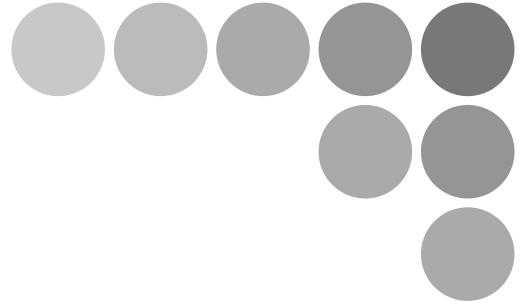


## Smart Sensor

ZFV-C



## Non-procedural Communication Command Reference

# Introduction

---

Thank you for purchasing the ZFV-C.

This manual provides reference information on non-procedural communication commands for the ZFV-C.

When using the ZFV-C, be sure to observe the following:

- The ZFV-C must be operated by personnel knowledgeable in electrical engineering.
- To ensure correct use, please read this manual thoroughly to deepen your understanding of the product.
- Please keep this manual in a safe place so that it can be referred to whenever necessary.

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## Setting the Communication Specifications

Change the settings of the controller communication specifications for non-procedural communication with the external device.



Use a USB cable or RS-232C cable to connect ZFV-C controllers to external devices.  
For the USB cable connection, download and install the USB driver beforehand.  
For the USB driver, please contact your OMRON representative.

- 1. Switch the controller to [MENU].**
- 2. Select [System2] - [Communication] to set the appropriate communication specifications for the external device.**
- 3. Switch the controller to [RUN]. (This executes the save.)**



Communication commands are accepted only in the RUN mode.

# Format

The format of non-procedural commands is as follows.

Example: Command to execute measurement    MEASURE command

\* Each character is output as an ASCII code.

M	E	A	S	U	R	E
---	---	---	---	---	---	---

The format of returned values changes depending on the command.

For a description of each command, refer to "List of Non-procedural Commands."

- SYSGET/DATAGET/BANKGET command

The returned value consists of left-aligned characters indicating the acquired value and a delimiter.

Example: The returned value is -30 mm.

-	3	0	CR
---	---	---	----

- VERGET command

The returned value is output in the following format:

Z	F	V	-	C	A	1	0		1	.	0	0	0	CR
---	---	---	---	---	---	---	---	--	---	---	---	---	---	----

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 Version

- Other commands

Either OK or ER is returned according to the result of the command.

The command was executed successfully:

O	K	CR
---	---	----

The command was not executed successfully or the setting was NG:

E	R	CR
---	---	----

The delimiter can be selected from the following three types:

CR/LF/CR+LF

## List of Non-procedural Commands

Command name	Format	Returned value	Description
BANKSET	BANKSET <bank No. (1 to 8)> <delimiter>	OK <delimiter>	Switches the current bank.
BANKGET	BANKGET<delimiter>	<bank No. (1 to 8)> <delimiter>	Acquires the current bank No.
MEASURE	M<delimiter>	OK <delimiter>	Executes measurement.
MEASURE /C	MEASURE /C or M /C<delimiter>	OK <delimiter>	Starts continuous measurement.
MEASURE /E	MEASURE /E or M /E<delimiter>	OK <delimiter>	Stops continuous measurement.
MEASURE /I	MEASURE /I or M /I<delimiter>	OK <delimiter>	Re-executes measurement on the currently displayed image.
DATASET	DATASET<unit No.> <parameter No.> <setting value> <delimiter>	OK <delimiter>	Sets the setting data (data of each bank).
DATAGET	DATAGET<unit No.> <parameter No.> <delimiter>	<acquired value> <delimiter>	Acquires the setting data (data of each bank).
BANKSAVE	BANKSAVE <bank No. (1 to 8)> <delimiter>	OK <delimiter>	Receives the bank data from the controller by XMODEM protocol.
BANKLOAD	BANKLOAD <delimiter>	OK <delimiter>	Sends the bank data to the controller by XMODEM protocol.
SYSSAVE	SYSSAVE<delimiter>	OK <delimiter>	Receives the system data from the controller by XMODEM protocol.
SYSLOAD	SYSLOAD<delimiter>	OK <delimiter>	Sets the system data to the controller by XMODEM protocol.
DATASAVE	DATASAVE<delimiter>	OK <delimiter>	Saves setting data to the controller (flash memory).
DATAINIT	DATAINIT<delimiter>	OK <delimiter>	Returns all controller setting data (contents of Flash memory) to their defaults.
VERGET	VERGET<delimiter>	ZFV-CA__ VERX.XXX	Acquires the version information of the controller.
KEYLOCK	KEYLOCK<lock status> <delimiter>	OK <delimiter>	Locks/unlocks the key switch. Lock status = 0: unlocked 1: locked
PASSCLR	PASSCLR<delimiter>	OK <delimiter>	Set the password for unlocking the key lock to "0000".
MEASCLR	MEASCLR<delimiter>	OK <delimiter>	Clears current and past measurement average values, measurement count and other measurement data.

## Parameter List (ZfV-C)

The following parameters can be acquired or set by the DATASET or DATAGET command.

"Common" parameters are common regardless of the currently selected item. Also, the parameters under "common" parameters differ according to the currently selected item.

### ■ Common

Unit No.	Parameter No.	Parameter	Setting range/output range	Remarks
0	36	Light brightness (left)	0 to 5	DATASET/DATAGET compatible
0	37	Light brightness (up)	0 to 5	
0	38	Light brightness (right)	0 to 5	
0	39	Light brightness (down)	0 to 5	

### ■ Search (SEARCH)/Match (MATCH)

Unit No.	Parameter No.	Parameter	Setting range/output range	Remarks
2	0	Judgment	-2: measurement off -1: NG 0: OK	DATAGET compatible
2	1	Measured value	0 to 100	
2	2	Measurement result maximum value	0 to 100	
2	3	Measurement result minimum value	0 to 100	
2	4	Measurement result average value	0 to 100	
2	20	Measurement count	0 to 9999999	
2	21	NG count	0 to 9999999	
2	22	NG occurrence ratio	0 to 99.999	
2	40	Threshold	0 to 100	DATASET/DATAGET compatible

■ Area 1 (AREA1)/Area 2 (AREA2)/Area 3 (AREA3)

Unit No.	Parameter No.		Parameter	Setting range/output range	Remarks	
2	0		Judgment	-2: measurement off -1: NG 0: OK	DATAGET compatible	
2	1		Measured value	0 to 999		
2	(Area 1/3) 4	(Area 2) 10	Measurement result maximum value	0 to 999		
2	(Area 1/3) 5	(Area 2) 11	Measurement result minimum value	0 to 999		
2	(Area 1/3) 6	(Area 2) 12	Measurement result average value	0 to 999		
2	20		Measurement count	0 to 9999999		
2	21		NG count	0 to 9999999		
2	22		Fault rate	0 to 99.999		
2	(Area 1/2) 36	(Area 3) 39	Upper limit value	0 to 999		DATASET/DATAGET compatible
2	(Area 1/2) 37	(Area 3) 40	Lower limit value	0 to 999		

■ Brightness (BRIGHT)

Unit No.	Parameter No.	Parameter	Setting range/output range	Remarks
2	0	Judgment	-2: measurement off -1: NG 0: OK	DATAGET compatible
2	1	Measured value (average density)	0 to 255	
2	2	Measured value (density deviation)	0 to 127	
2	3	Measured result (average density) maximum value	0 to 255	
2	4	Measured result (average density) minimum value	0 to 255	
2	5	Measured result (average density) average value	0 to 255	
2	6	Measured result (density deviation) maximum value	0 to 127	
2	7	Measured result (density deviation) minimum value	0 to 127	
2	8	Measured result (density deviation) average value	0 to 127	
2	20	Measurement count	0 to 9999999	
2	21	NG count	0 to 9999999	
2	22	Fault rate	0 to 99.999	



Unit No.	Parameter No.	Parameter	Setting range/output range	Remarks
2	37	Average density upper limit value	0 to 255	DATASET/DATAGET compatible
2	38	Average density lower limit value	0 to 255	
2	39	Density deviation upper limit value	0 to 127	
2	40	Density deviation lower limit value	0 to 127	

■ Color inspection (HUE)

Unit No.	Parameter No.	Parameter	Setting range/output range	Remarks
2	0	Judgment	-2: measurement off -1: NG 0: OK	DATAGET compatible
2	1	Measured value	0 to 509	
2	5	Measurement result maximum value	0 to 509	
2	6	Measurement result minimum value	0 to 509	
2	7	Measurement result average value	0 to 509	
2	20	Measurement count	0 to 9999999	
2	21	NG count	0 to 9999999	
2	22	Fault rate	0 to 99.999	
2	39	Threshold	0 to 509	DATASET/DATAGET compatible

■ Width (WIDTH)

Unit No.	Parameter No.	Parameter	Setting range/output range	Remarks
2	0	Judgment	-2: measurement off -1: NG 0: OK	DATASET/DATAGET compatible
2	1	Measured value	0 to 999	
2	2	Measurement result maximum value	0 to 999	
2	3	Measurement result minimum value	0 to 999	
2	4	Measurement result average value	0 to 999	
2	20	Measurement count	0 to 9999999	
2	21	NG count	0 to 9999999	
2	22	Fault rate	0 to 99.999	
2	38	Upper limit value	0 to 999	
2	39	Lower limit value	0 to 999	

■ Position (POSITION)

Unit No.	Parameter No.	Parameter	Setting range/output range	Remarks
2	0	Judgment	-2: measurement off -1: NG 0: OK	DATAGET compatible
2	1	Measured value	0 to 468	
2	2	Measurement result maximum value	0 to 468	
2	3	Measurement result minimum value	0 to 468	
2	4	Measurement result average value	0 to 468	
2	20	Measurement count	0 to 9999999	
2	21	NG count	0 to 9999999	
2	22	Fault rate	0 to 99.999	
2	38	Threshold	0 to 468	DATASET/DATAGET compatible

■ Count (COUNT)

Unit No.	Parameter No.	Parameter	Setting range/output range	Remarks
2	0	Judgment	-2: measurement off -1: NG 0: OK	DATAGET compatible
2	1	Measured value	0 to 128	
2	2	Measurement result maximum value	0 to 128	
2	3	Measurement result minimum value	0 to 128	
2	4	Measurement result average value	0 to 128	
2	20	Measurement count	0 to 9999999	
2	21	NG count	0 to 9999999	
2	22	Fault rate	0 to 99.999	
2	38	Upper limit value	0 to 255	DATASET/DATAGET compatible
2	39	Lower limit value	0 to 255	

## ■ Character (CHARA1)/Character (CHARA2)

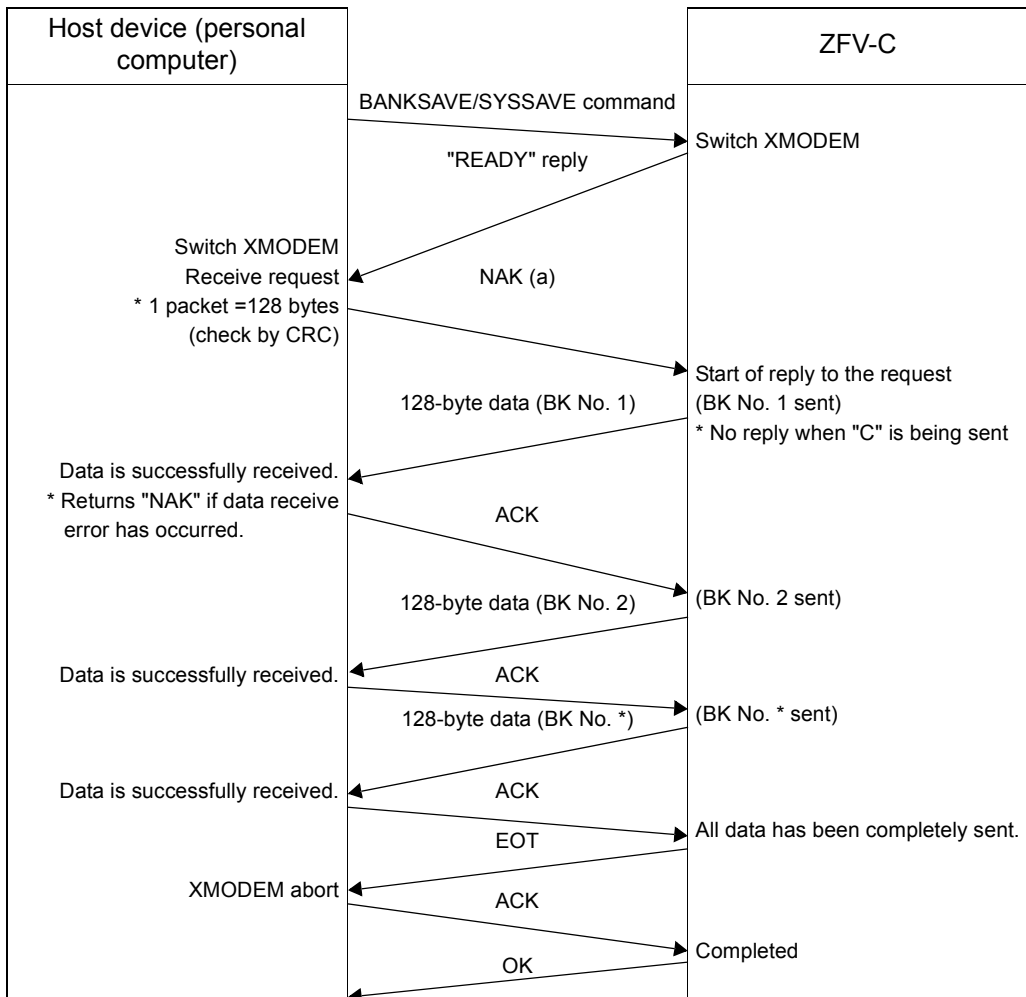
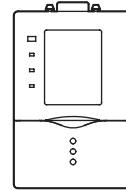
Unit No.	Parameter No.	Parameter	Setting range/output range	Remarks
2	0	Judgment	-2: measurement off -1: NG 0: OK	DATAGET compatible
2	1	Measured value	(CHARA1) 0 to 127 (CHARA2) 0 to 100	
2	2	Measurement result maximum value	(CHARA1) 0 to 127 (CHARA2) 0 to 100	
2	3	Measurement result minimum value	(CHARA1) 0 to 127 (CHARA2) 0 to 100	
2	4	Measurement result average value	(CHARA1) 0 to 127 (CHARA2) 0 to 100	
2	20	Measurement count	0 to 9999999	
2	21	NG count	0 to 9999999	
2	22	Fault rate	0 to 99.999	
2	(CHARA1) 38	Threshold	0 to 100	DATASET/DATAGET compatible
2	(CHARA2) 53	Threshold	0 to 100	

# Acquiring/Sending Data

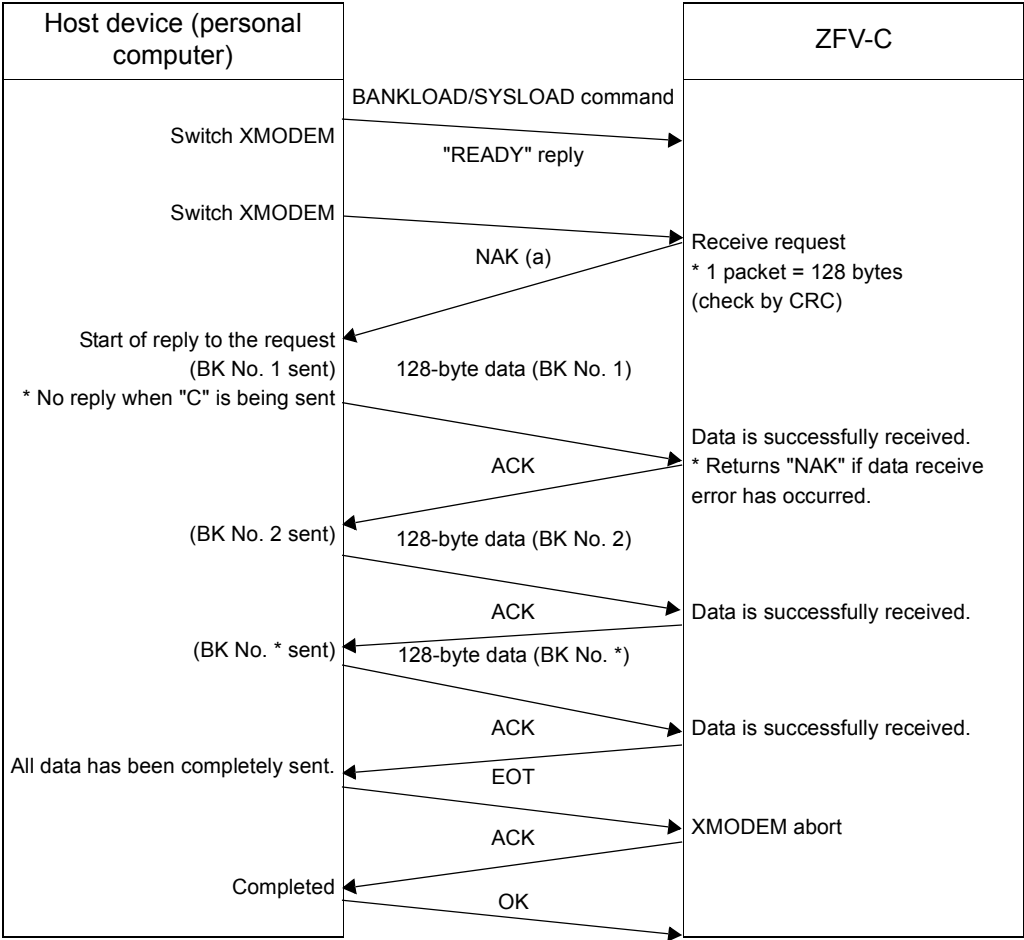
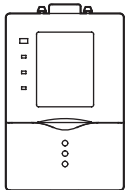
## ● Flow of XMODEM communication

When you capture image data by entering this command, image data is acquired and sent by XMODEM communication. The communication flow is as follows:

Data acquisition to personal computer from ZFV-C  
(issue of SYSSAVE command)



Data transmission to ZFV-C from personal computer  
(issue of SYSLOAD command)



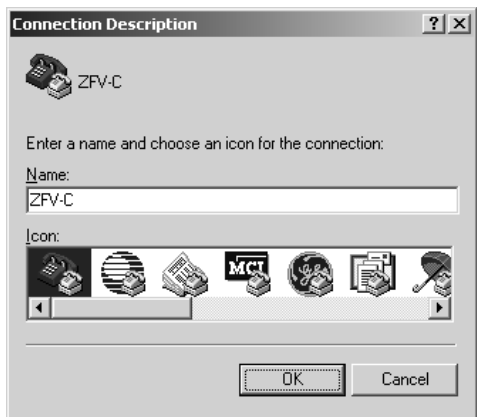
## Example of Usage

The following describes an example procedure to communicate by non-procedural commands using Windows standard tool HyperTerminal.

### 1. Start up HyperTerminal.

HyperTerminal is located under [Program]-[Accessory]-[Communication].

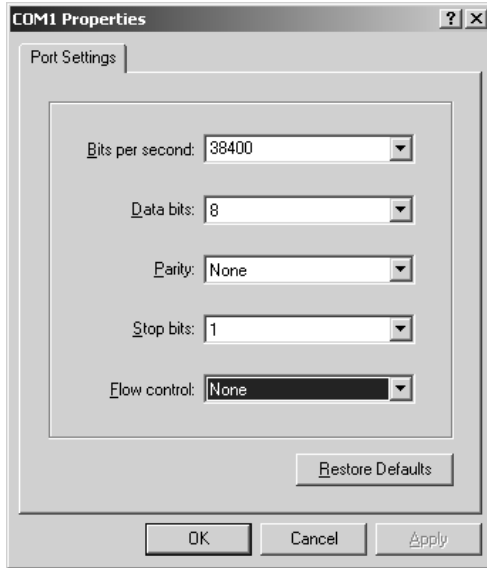
(1) Enter an appropriate project name.



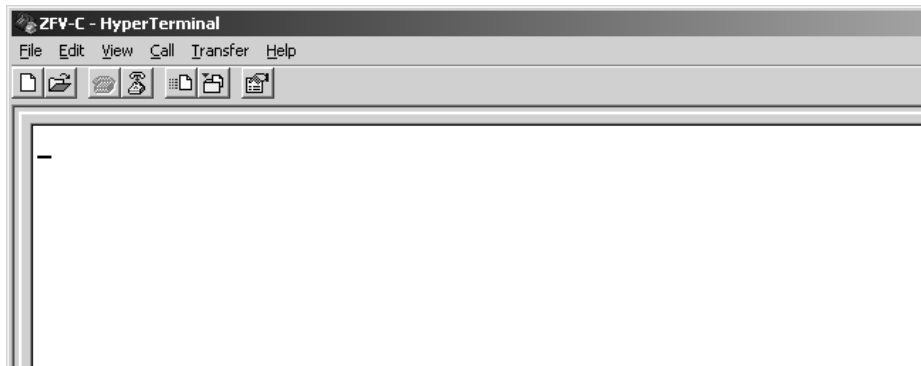
(2) Select the COM port connected to the ZFV-C in the Connect using field.



(3) Set the communication conditions.

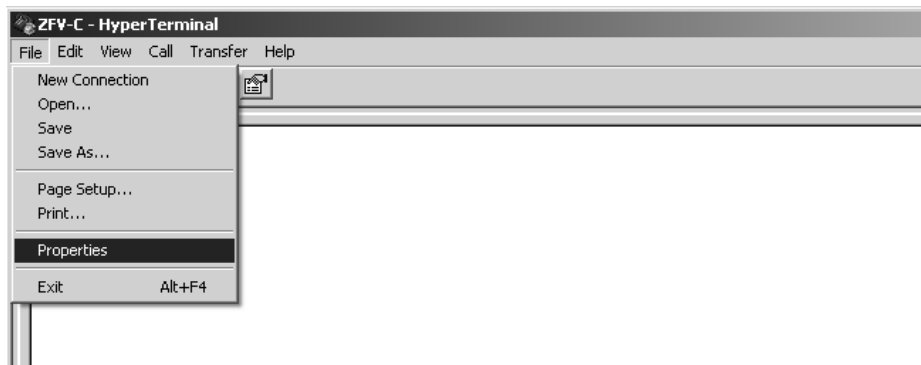


(4) HyperTerminal is started up.

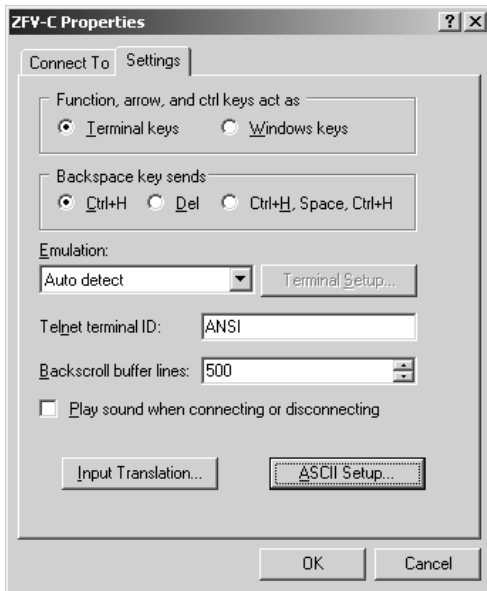


**2. To facilitate command transactions, set echo and other communication conditions.**

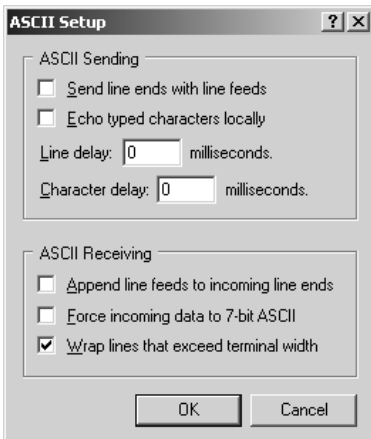
(1) Open [Property].



(2) Select the Settings tab, and then ASCII Setup.



(3) Mark the following checkboxes, and click OK to complete the setting.



### 3. Set the communication conditions for the ZFV-C.

(1) Set [System2]-[Communication] to match the above settings.

### 4. Switch the ZFV-C to the RUN mode.

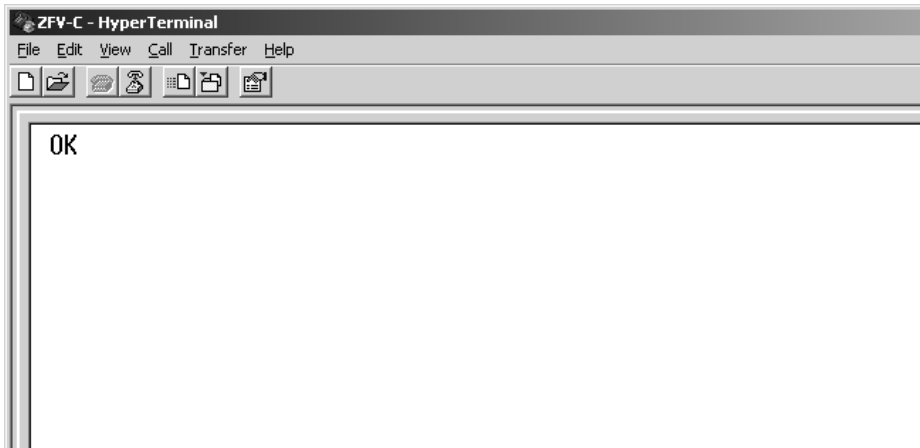
### 5. Execute non-procedural communication.



(1) Enter a command, and then press the return key.



(2) The returned value corresponding to the command is returned from the controller.



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## Revision History

Revision code	Date	Revised contents
01	January 2006	Original production
02	May 2006	Function added as per software version upgrade (Ver1.30)

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