

INSTRUCTION MANUAL

UCAM-550A

FAST DATA LOGGER

(FOR CONTROL COMMAND)

Thank you for purchasing KYOWA's product UCAM-550A Fast Data Logger.
Read this Instruction Manual carefully in order to make full use of the high performance capabilities of the product.
Do not use the product in methods other than described in this Manual.

In addition, this Manual only describes Control Command of the UCAM-550A.
For hardware, refer to the "Instruction Manual of the UCAM-550A Fast Data Logger (For Hardware)."

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CONTENTS

1 OUTLINE	1
2 TYPES OF VARIABLES	1
3 COMMUNICATION VIA LAN INTERFACE	2
3-1 SETTING THE UCAM-550A	2
3.2 SETTING THE PC	2
3.3 OUTLINE OF COMMUNICATION PROCEDURES	2
4 CONTROL COMMAND SEND/RECEIVE PROTOCOL	3
4-1 COMMAND PACKET (PC → UCAM-550A)	3
4-2 RESPONSE PACKET (UCAM-550A → PC)	4
4-3 UCAM-550A STATUS	5
5 CONTROL COMMAND	6
5-1 LIST OF CONTROL COMMANDS	6
5-2 WHETHER CONTROL COMMAND IS ENABLED OR DISABLED BASED ON UCAM-550A STATUS ..	7
5-3 LOADING UCAM-550A STATUS	8
5-4 LOADING SYSTEM INFORMATION (SYS)	8
5-5 STARTING MEASUREMENT (STA)	9
5-6 STOPPING MEASUREMENTS (STP)	10
5-7 LOADING MEASURED DATA (RDF)	11
5-8 BATCH SETTING/LOADING OF MEASURING CONDITIONS (MET)	13
5-9 SETTING MEASURING CONDITIONS (FUN)	16
5-10 SETTING/LOADING INITIAL VALUE (INI)	17
5-11 EXAMPLE OF ISSUING CONTROL COMMANDS	18
6 ERROR NUMBERS	20

NOTATIONS USED IN THE INSTRUCTION MANUAL

Informational Notes

- Related and reference items are enclosed with bracket quotation marks “ ”. In addition, header No. and header character string may be adopted. (“UCAM-550A FAST DATA LOGGER for Hardware” etc.)
- Personal Computer is denoted as the PC.
- Measuring units may be described with Model names.

Strain Unit	:	USS-51A/B
Voltage Unit	:	USV-51A/B
Thermocouple Unit	:	UST-51A/B

Precautions

The following messages are provided for reference purpose as necessary to attract your attention to information that requires special care when handling the UCAM-550A FAST DATA LOGGER (hereinafter referred to as the UCAM-550A).

- Examples of Notations

MEMO

Reference items required when handling the UCAM-550A.

1 OUTLINE

This Instruction Manual is to define commands through LAN interface between the UCAM-550A and the PC.

The UCAM-550A and the PC is connected via LAN, thereby enabling the PC to control the UCAM-550A with the commands.

In addition, for how to connect the UCAM-550A and the PC and for details of units, refer to the “UCAM-550A FAST DATA LOGGER for Hardware” when required.

When control command data (hereinafter referred to as the Command packet) is sent to the UCAM-550A from the PC, the UCAM-550A conducts the specified operation and processing and then, returns the response data (hereinafter referred to as the Response packet) to the PC.

The PC communicates with the UCAM-550A using API (Application Program Interface) called socket.

The socket is a communication API using the TCP/IP protocol and normally it is provided as OS or middleware package.

The PC sends the Command packet to the UCAM-550A using data transfer function of the socket and receives the Response packet from the UCAM-550A using data receiving function.

2 TYPES OF VARIABLES

This Chapter is to define various types of variables used in Command packet and Response packet.

Types of Variables	The Number of Bytes	Notation	Supplement
signed char	1	char	8-bit variable with sign
unsigned char	1	BYTE	8-bit variable without sign
signed short	2	short	16-bit variable with sign
unsigned short	2	WORD	16-bit variable without sign
signed long	4	long	32-bit variable with sign
unsigned long	4	DWORD	32-bit variable without sign
signed int64	8	INT64	64-bit variable with sign
unsigned int64	8	UINT64	64-bit variable without sign
Float	4	float	Single precision floating decimal point variable
Double	8	double	Double precision floating decimal point variable

MEMO

- This Instruction Manual is written based on the assumption that customers fully understand basic knowledge of softwares including PCs, TCP/IP communications, and programming languages. For details, refer to commercially available textbooks, etc.
- Assignment of variables with more than 2 bytes is in little endian format.
- Notation “0x****” on and after then denotes a hexadecimal value.

3 COMMUNICATION VIA LAN INTERFACE

When controlling the UCAM-550A through LAN (TCP/IP), the PC is a TCP client and the UCAM-550A is the TCP server. The PC sends various requests such as connect, disconnect, data transfer, and data receive to the UCAM-550A and the UCAM-550A returns response to the above requests to the PC.

3-1 SETTING THE UCAM-550A

Since the TCP/IP is used, it is required to set enabled IP address, subnet mask, gateway address, etc. on the UCAM-550A side. When using a network that is closed only between the PC and UCAM-550A, users can freely set each of the addresses. However, when using the UCAM-550A by connection to the existing network, consult the Network Administrator in advance. For details, refer to the "UCAM-550A FAST DATA LOGGER for Hardware."

MEMO

Default LAN settings of the UCAM-550A are as follows.

- IP address : 192.168.5.50
- Subnet mask : 255.255.255.0
- Default gateway : 0.0.0.0

- The UCAM-550A can also obtain dynamic IP addresses such as DHCP.

3.2 SETTING THE PC

Create a control program using socket API on user's side. Since one communication port is used in the UCAM-550A, it is required to prepare one socket. The port No. is described as follows.

Port No.	Application
34568	For control commands

3.3 OUTLINE OF COMMUNICATION PROCEDURES

Socket API (function) provided on the PC side is used for sending and receiving Command and Response packets. For details, refer to the relevant API materials, etc. For details, refer to the relevant API materials, etc. In addition, for format of the Command or Response packets, see "4. CONTROL COMMAND SEND/RECEIVE PROTOCOL."

Outline of LAN communication procedures is described in the following.

- (1) Prepare a socket corresponding to port Nos. and set necessary optional, etc.
- (2) Send connection request to the UCAM-550A ("connect").
- (3) Send Command packet to the UCAM-550A through the socket ("send").
- (4) Receive Response packet to the UCAM-550A through the socket ("recv").
- (5) Repeat procedures in items 3) and 4) when necessary.
- (6) Send shutdown request to the UCAM-550A ("shutdown").
- (7) Release the socket.

4 CONTROL COMMAND SEND/RECEIVE PROTOCOL

4-1 COMMAND PACKET (PC → UCAM-550A)

This section describes format used for sending Command packet to the UCAM-550A from the PC.

The Command packet is composed of fixed length header section, fixed length command identifier, and variable length parameter section. According to the respective control commands, after constructing an appropriate Command packet, the Command packet is sent to the UCAM-550A from the PC.

- Format of the Command packet from the PC to the UCAM-550A is described in the following.

Header section (128 bytes fixed)	Command identifier (3 bytes fixed)	Parameter section (Variable length)
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Description of Items

- Header: Always add the following format header at the head of the control command.

When constructing a header section, after initializing the 128 bytes with “0x00 (null),” set the required items.

Item Name	Types of Variables	The Number of Bytes	Contents
Model name	char	20	UCAM-550A
The number of transferred bytes	DWORD	4	Command identifier + The number of parameter bytes
Reserved	char	104	
Total		128	

- Command identifier: Character string of ASCII code (3 uppercase characters)
- Parameter: When parameters are required for the command, additionally mention it just after the command.

4-2 RESPONSE PACKET (UCAM-550A → PC)

After sending the Command packet from the PC to the UCAM-550A, since the UCAM-550A returns the Response packet to the PC, the PC must receive the Response packet from the UCAM-550A. The Response packet is composed of fixed length header and variable length response data sections.

- Format of the Response packet from the UCAM-550A to the PC is described in the following.

Header section (128 bytes fixed)	Response parameter section (Variable length)
----------------------------------	--

Description of Items

- Header: Always add the following format header at the head of the Response packet.
After initializing the 128 bytes with “0x00 (null),” the required items are set as the header information.

Item Name	Types of Variables	The Number of Bytes	Contents
Model name	char	20	UCAM-550A
The number of transferred bytes	DWORD	4	The number of response parameter bytes
UCAM-550A status	DWORD	4	UCAM-550A status. See “4-3 UCAM-550A STATUS.”
Conducted commands	char	3	Conducted commands
BOX No.	BYTE	1	BOX numbers (1 to 98) of the UCAM-550A
FIFO information	DWORD	4	The maximum number of data that can be saved in the FIFO memory based on the current settings
Response parameter type	BYTE	1	The response parameter type that is described after the header section. 0(0x00): Only header section with no response data. The number of transferred bytes in the header section is 0. 1(0x01): Response parameter
Modes	BYTE	1	0: Master, 1: Slave
The number of output bytes of the measured data	BYTE	1	0: 4 bytes
The number of measuring CHs	BYTE	1	0 to 50 channels
Error No.	WORD	2	The latest error No. of the UCAM-550A
Reserved	char	86	0x00
Total		128	

4-3 UCAM-550A STATUS

The UCAM-550A status is stored in the header section of Response packet with 32-bit numeric values.

The UCAM-550A status can be checked by this status.

0x00000001	: During measurements (AD conversion) available status, the target bit is 1.
0x00000002	: During measurements (AD converting), the target bit is 1.
0x00000004	: During command processions, the target bit is 1.
0x00000008	: During data receiving for update, the target bit is 1.
0x00000010	: Not in use
0x00000020	: Not in use
0x00000040	: Not in use
0x00000080	: Not in use
0x00000100	: Not in use
0x00000200	: Not in use
0x00000400	: Not in use
0x00000800	: Not in use
0x00001000	: During IP settings, etc. with keys on the UCAM-550A, the target bit is 1.
0x00002000	: During communication with the PC via LAN (socket open), the target bit is 1.
0x00004000	: Not in use
0x00008000	: Not in use
0x00010000	: Not in use
0x00020000	: Not in use
0x00040000	: Not in use
0x00080000	: Not in use
0x00100000	: Not in use
0x00200000	: Not in use
0x00400000	: Not in use
0x00800000	: Not in use
0x01000000	: Not in use
0x02000000	: Not in use
0x04000000	: Not in use
0x08000000	: Not in use
0x10000000	: Not in use
0x20000000	: Not in use
0x40000000	: Not in use
0x80000000	: If the UCAM-550A has an error, the target bit is 1.

5 CONTROL COMMAND

5-1 LIST OF CONTROL COMMANDS

UCAM-550A control available commands are listed in the following table.

Contents	Command Name	Ref. Page
Load system information	SYS	8
Batch setting /loading of measuring conditions (MET)	MET	13
Starting measurement	STA	9
Stopping measurement	STP	10
Load the measured data	RDF	11
Set measurement functions	FUN	16
Set initial value	INI	17

5-2 WHETHER CONTORL COMMAND IS ENABLED OR DISABLED BASED ON UCAM-550A STATUS

Depending on the UCAM-550A status, usable control commands may be restricted in some cases.
Whether conducting control commands is enabled or disabled are listed in the following table.

○ Enabled

×: Disabled

Contents	Command Name	Operation status of the UCAM-550A	
		Not measuring	Measuring
Starting measurement	STA*1)	○	×
Stopping measurement	STP*1)	○	○
Loading the measured data	RDF	○	○
Loading system information	SYS	○	○
Loading status information of the UCAM-550A	-	○	○
Setting/loading measurement functions			
(1) Setting measurement functions	FUN(1)	○	×
(2) Loading measurement functions	FUN(0)	○	○
Setting/loading initial value			
(1) Setting initial value	INI(1)	○	×
(2) Loading initial value	INI(0)	○	○
Batch setting/loading of measuring conditions			
(1) Batch setting of measuring conditions	MET(1)	○	×
(2) Batch setting of measuring conditions	MET(2)	○	×
(3) Batch setting of measuring conditions	MET(0)	○	○

MEMO

*1) The STA and STP commands are not available for slave UCAM-550A units regardless of their statuses.

5-3 LOADING UCAM-550A STATUS

Loads the status information of the UCAM-550A.

- Command: None (Set the number of transferred bytes of the header as 0 and send the only header section to the UCAM-550A.)
- Parameter: None
- Response data: None
 - Only the header section is sent from the UCAM-550A.
 - For details, refer to "4-3 UCAM-550A STATUS."

5-4 LOADING SYSTEM INFORMATION (SYS)

Loads the model names of the UCAM-550A, model names and version of the mounted measuring units.

- Command: SYS
- Parameter: See the following table.

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Command Name	SYS	char	3
2	Parameter 1	Loading basic information (0)	BYTE	1
Total number of transferred bytes				4

- Response parameter: See the following table.

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Response parameter 1	Model name (UCAM-550A)	char	20
2	Response parameter 2	Firmware version	char	20
3	Response parameter 3	FPGA version	char	20
4	Response parameter 4	BOX No. (1 to 98)	BYTE	1
5	Response parameter 5	Chassis size (50, 100)	BYTE	1
6	Response parameter 6	Unit information of No. 00 (0: Not installed, 1: USS-51A/B, 2: USV-51A/B, 3: UST-51A/B)	BYTE	1
7	Response parameter 7	Unit information of No. 01	BYTE	1
8	Response parameter 8	Unit information of No. 02	BYTE	1
9	Response parameter 9	Unit information of No. 03	BYTE	1
10	Response parameter 10	Unit information of No. 04	BYTE	1
11	Response parameter 11	Reserved	BYTE	5
12	Response parameter 12	Mode (0 : Master, 1 : Slave)	BYTE	1
13	Response parameter 13	Reserved	char	7
Total number of response parameter bytes				80

5-5 STARTING MEASUREMENT (STA)

Starts the measurement.

- Command : STA
- Parameter: None

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Command	STA	char	3
Total number of transferred bytes				3

- Response parameter: 1 byte
 - 0 : Normally ended
 - 1 : Error(For details, see "6. ERROR No.")

MEMO

- The UCAM-550A starts the measurement based on the preset conditions.
- For the synchronous operation of the multiple UCAM-550A units, send the STP command to the master UCAM-550A only.

5-6 STOPPING MEASUREMENTS (STP)

Stops the measurement.

- Command: STP
- Parameter: None

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Command	STP	char	3
Total number of transferred bytes				3

- Response parameter: 1 byte
 - 0 : Normally ended
 - 1 : Error(For details, see "6. ERROR No.")

MEMO

- For the synchronous operation of the multiple UCAM-550A units, send the STP command to the master UCAM-550A only.
It is not required to send the STP command to the slave UCAM-550A units.

5-7 LOADING MEASURED DATA (RDF)

Loads the measured data.

The measured data is saved in the FIFO memory in the UCAM-550A.

If the FIFO memory becomes full, the UCAM-550A detects an error and stops the measurement.

Prevent the FIFO memory in the UCAM-550A from being filled, you should collect the measured data with the RDF command.

- Command: RDF
- Parameter: See the following table.

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Command	RDF	char	3
2	Parameter 1	Reserved	char	1
3	Parameter 2	The number of data/loading CH (0x0000: All data in the FIFO memory.)	DWORD	4
Total number of transferred bytes				8

MEMO

- The capacity of the FIFO memory is 40,000 bytes. (Example: Suppose the measuring units have 50 channels with 50 Hz, 40,000 bytes are equivalent to 4-second measured data.)
- $A \times B \times C \geq D$ where, A: Size (4 bytes)/data B: The number of measuring channels C: The number of measuring data that can be saved in the FIFO memory D: The capacity of FIFO memory
- Note that the upper limit value of the FIFO memory (=maximum value of the C) is included in the "FIFO information" of the header section in the response packet.

- Response parameter: Measured data

Total number of response parameter bytes = $A \times B \times C$

A: The number of measurements (the value of the parameter 2 in the RDF command)

B: The number of measurement channels (the number of measurement channels of the header section in the response packet)

C: The number of bytes/measured data (4 bytes)

After receiving the RDF command, the UCAM-550A outputs the measured data for transferring as follows.

Example 1: For transferring 3 measured data including 2 measured channels (CH1 and CH5) and FIFO memory data to the PC

CH1 data	CH5 data	CH1 data	CH5 data	CH1 data	CH5 data
----------	----------	----------	----------	----------	----------

Suppose 1 data is 4 bytes (float):

Total number of response parameter bytes: $3 \times 2 \times 4 = 24$ bytes

Example 2: When there is no data to be transferred in the FIFO memory or when the number of data/CH is less than that of the parameter 2 in the RDF command, the number of response parameter bytes is 0.

MEMO

- You can use the RDF command during measurements and immediately after measurements.
- The measured data is saved in the FIFO memory in the UCAM-550A.
- You need to obtain the measured data in the FIFO memory with the RDF command.
- When there is no data to be transferred in the FIFO memory or when the number of data/CH is less than that of the parameter 2 in the RDF command, the number of response parameters becomes 0 and the UCAM-550A transfers the header section of the response parameter.

5-8 BATCH SETTING/LOADING OF MEASURING CONDITIONS (MET)

Sets/loads measuring conditions together.

■ Command: MET

◆◆◆ When setting ◆◆◆

● Parameter: See the following table.

No	Name	Contents		Types of Variables	The Number of Bytes	
1	Command	MET		char	3	
2	Parameter 1	Parameter mode (0: Load, 1: Response after settings 2: Set after responding) Set 1 or 2. *1)		BYTE	1	
3	Parameter 2	Reserved		char	60	
		BOX No. (1 to 98) *2)		BYTE	1	
		Chassis size (50, 100) *2)		BYTE	1	
		Unit information of No. 00 (0: Not installed, 1: USS-51A/B, 2: USV-51A/B, 3: UST-51A/B) *2)		BYTE	1	
		• *2)		•		
		Unit information of No. 04 *2)		BYTE	1	
		Reserved		char	5	
		Mode (0: Master, 1: Slave)		BYTE	1	
		Reserved		char	7	
		Total bytes of parameter 2			80	
4	Parameter 3	The number of output bytes/measured data (0:4 bytes)		BYTE	1	
		Timeout period for receiving data (sec) (0: 10 sec(default))		BYTE	1	
		Reference junction compensation (0: Internal, 1: External)		BYTE	1	
		Reserved		char	13	
		Total bytes of parameter 3			16	
5	Parameter 4	Measuring function (0: Original value mode, 1: Measured value mode)		BYTE	1	
		Sampling frequency (1: 1 Hz, 2: 2 Hz, 10: 10 Hz, 20: 20 Hz, 50: 50 Hz)		BYTE	1	
		Reserved		char	302	
		Total bytes of parameter 4			304	
6	Parameter 5	CH01	CH mode No. *3)		BYTE	1
			CH range No. *3)		BYTE	1
			Reserved		char	2
			CH initial value *4)		Float	4
			Reserved		char	24
			Total bytes of CH01			32
		•			•	
		Total bytes of CH50			32	
		Reserved			1600	
		Total bytes of parameter 5			3200	
Total number of transferred bytes					3604	

- Response parameter: 1 byte
0: Normally ended
-1: Error
(For details, see "6. ERROR No.")

*1) If you select the batch settings, the UCAM-550A send the response packets before/after the batch settings.

Parameter 1 = 1

After receiving the MET command, the UCAM-550A conducts the batch settings based on the received parameters, then send the response parameters. It may take 1 second to send the response packets.

Parameter 1 = 2

After receiving the MET command, the UCAM-550A sends the response packets and conducts the batch settings based on the received parameters.

For controlling one UCAM-550A or less than 5 UCAM-550A units, we recommend you to set 1 as the parameter 1.

For controlling multiple UCAM-550A units and efficient settings are required, we recommend you to set 2 as the parameter 1.

*2) When the unit information is different from the hardware configuration of the UCAM-550A, you will get the error No. 81).

*3) CH modes, CH mode numbers, and CH range numbers are described in the following table.

Unit	CH mode	CH mode No.	Available CH range No. 0x00(0) : Low range 0x01(1) : High range
For all units	Skip	0x00	
Strain unit (USS-51A/B)	1G120	0x10	0x00/0x01
	1G350	0x11	0x00/0x01
	2GA-D	0x20	0x00/0x01
	2GA-A	0x21	0x00/0x01
	4GA-A	0x40	0x00/0x01
	4G	0x41	0x00/0x01
	POT	0x30	0x01 (fixed)
Voltage unit (USV-51A/B)	V	0x50	0x01 (fixed)
Thermocouple unit (UST-51A/B)	TC/K	0x60	0x00/0x01
	TC/T	0x61	0x00 (fixed)
	TC/E	0x62	0x00/0x01
	TC/J	0x63	0x00/0x01
	TC/R	0x64	0x00 (fixed)

*4) If the CH initial value exceeds the preset measuring range, the UCAM-550A sends Error No. 81 (Erroneous parameter setting).

◆◆◆ When loading ◆◆◆

● Parameter: See the following table.

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Command	MET	char	3
2	Parameter 1	Parameter mode (0: Load, 1: Set) Set 0.	BYTE	1
Total number of transferred bytes				4

● Response parameter: See the following table.

No.	Name	Contents		Types of Variables	The Number of Bytes	
1	Response parameter 1	Model name (UCAM-550A)		char	20	
		Software version		char	20	
		FPGA version		char	20	
		BOX No. (1 to 98)		BYTE	1	
		Chassis size (50, 100)		BYTE	1	
		Unit information of No. 00 (0: Not installed, 1: USS-51A, 2: USV-51A/B, 3: UST-51A/B)		BYTE	1	
		.		.		
		Unit information of No. 04		BYTE	1	
		Reserved		char	5	
		Mode (0: Master, 1: Slave)		BYTE	1	
		Reserved		char	7	
		Total bytes of response parameter 1				80
2	Response parameter 2	The number of output bytes/measured data (0: 4 bytes)		BYTE	1	
		Timeout period for receiving data (sec) (0: 10 sec (default))		BYTE	1	
		Reference junction compensation (0: Internal, 1: External)		BYTE	1	
		Reserved		char	13	
		Total bytes of response parameter 2				16
3	Response parameter 3	Measuring function (0: Original value mode, 1: Measured value mode)		BYTE	1	
		Sampling frequency (1: 1 Hz, 2: 2 Hz, 10: 10 Hz, 20: 20 Hz, 50:50 Hz)		BYTE	1	
		Reserved		char	302	
		Total bytes of response parameter 3				304
4	Response parameter 4 (CH condition)	CH01	CH mode No.		BYTE	1
			CH range No.		BYTE	1
			Reserved		char	2
			CH initial value		Float	4
			Reserved		char	24
			Total bytes of CH01			
		.				.
		Total bytes of CH50				32
		Reserved				1600
Total bytes of response parameter 4				3200		
Total number of response parameter bytes					3600	

5-9 SETTING MEASURING CONDITIONS (FUN)

Sets the measuring conditions of the UCAM-550A.

■ Command: FUN

◆◆◆ When setting ◆◆◆

- Parameter: See the following table.

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Command	FUN	char	3
2	Parameter 1	Parameter mode (1 : Set, 0 : Load) Set 1.	BYTE	1
3	Parameter 2	Measuring function (0 : Original value mode, 1 : Measured value mode)	BYTE	1
4	Parameter 3	Reserved	char	3
Total number of transferred bytes				8

- Response parameter: 1 byte
 - 0: Normally ended
 - 1: Error(For details, see "6. ERROR No.")

◆◆◆ When loading ◆◆◆

- Parameter : See the following table.

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Command	FUN	char	3
2	Parameter 1	Parameter mode (1 : Set, 0 : Load) Set 0.	BYTE	1
Total number of transferred bytes				4

- Response parameter: See the following table.

No	Name	Contents	Types of Variables	The Number of Bytes
1	Response parameter 1	Measuring function (0 : Original value mode, 1 : Measured value mode)	BYTE	1
2	Response parameter 2	Reserved	char	3
Total number of response parameter bytes				4

MEMO

- Original value mode: The UCAM-550A displays the absolute sensor's output as the measure value.
- Measured value mode: The UCAM-550A subtracts the initial value from the sensor's output and displays the relative value as the measured value.

5-10 SETTING/LOADING INITIAL VALUE (INI)

Sets/load the initial value of the UCAM-550A.

■ Command : INI

◆◆◆ When setting ◆◆◆

No	Name	Contents	Types of Variables	The Number of Bytes
1	Command	INI	char	3
2	Parameter 1	Parameter mode (1 : Set, 0 : Load) Set 1.	BYTE	1
3	Parameter 2	Initial value of CH01	Float	4
		•	•	•
		Initial value of CH50	Float	4
		Reserved	char	200
		Total bytes of parameter 2		400
Total number of transferred bytes				404

● Response parameter: 1 byte

0: Normally ended

-1: Error

(For details, see "6. ERROR No.")

MEMO

If the SKIP is selected as the CH mode, no initial value is set.

For subtracting the initial value in the measured value mode, do not select the SKIP as the CH mode.

◆◆◆ When loading ◆◆◆

No	Name	Contents	Types of Variables	The Number of Bytes
1	Command	INI	char	3
2	Parameter 1	Parameter mode (0 : Set, 0 : Load) Set 1.	BYTE	1
Total number of transferred bytes				4

● Response parameter : See the following table.

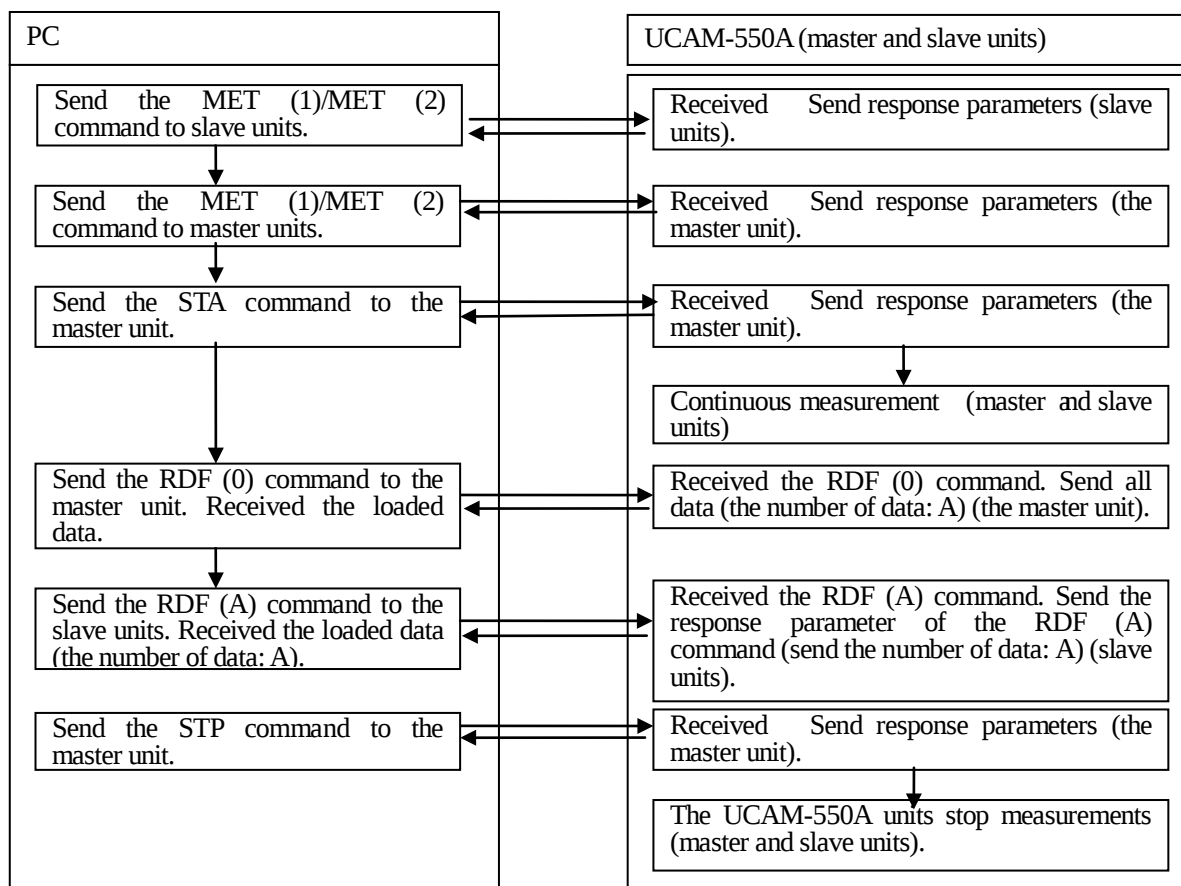
No	Name	Contents	Types of Variables	The Number of Bytes
1	Response parameter 1	Initial value of CH01	Float	4
		.	.	.
		Initial value of CH50	Float	4
		Reserved (CH51 to CH100)	char	200
Total number of response parameter bytes				400

MEMO

● When loading data, the UCAM-550A always sends the initial values regardless of CH modes.

5-11 EXAMPLE OF ISSUING CONTROL COMMANDS

(1) Basic control procedures for starting and stopping measurements



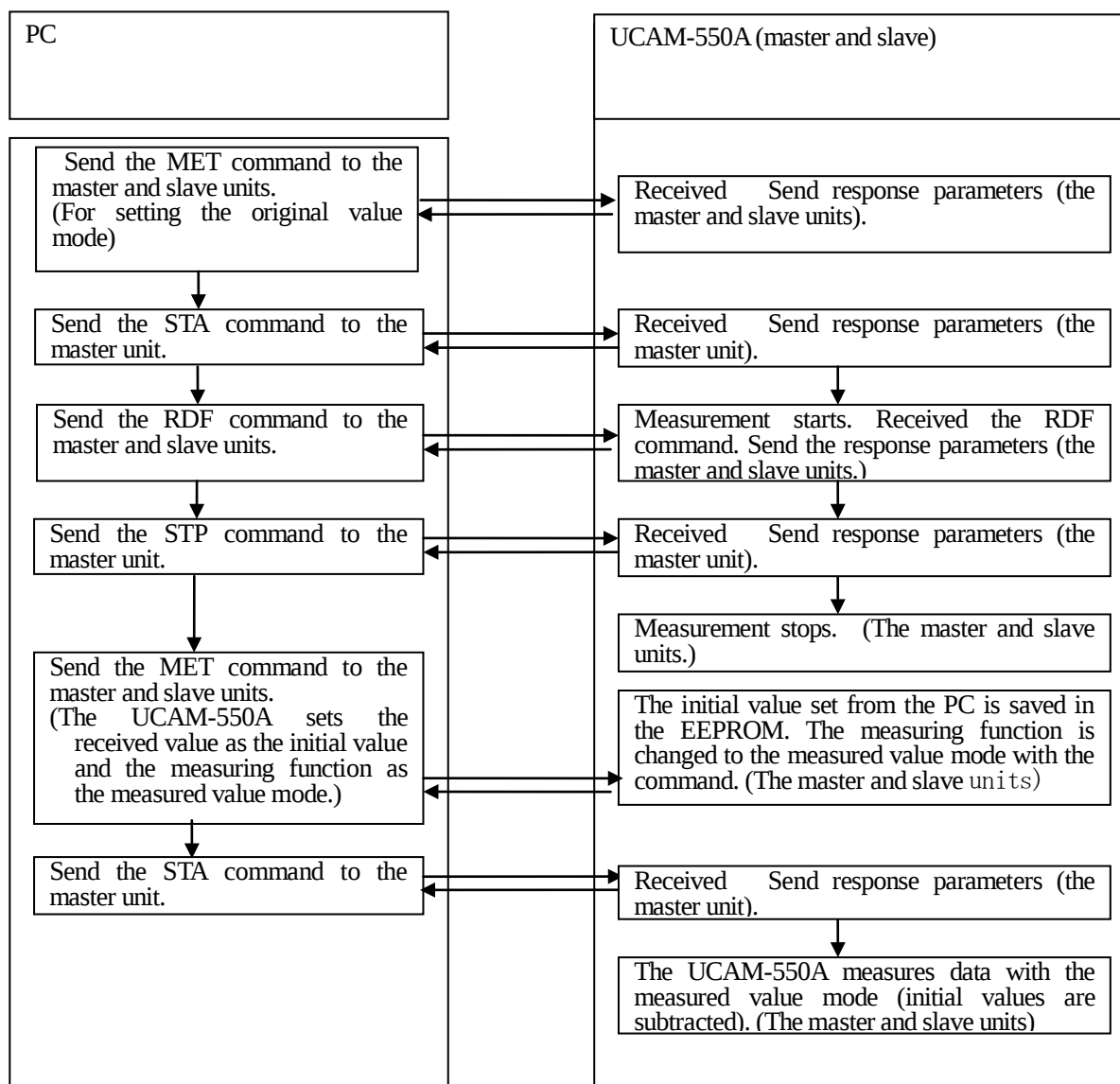
Commands and procession

Command Name	Procession
MET	Batch setting of measuring conditions. (MET(1)/MET(2)) Batch setting of measuring conditions. (MET(0)) See "5-8 BATCH SETTING/LOADING MEASURING CONDITIONS (MET)."
STA	Starts measurements. See "5-5 STARTING MEASUREMENT (STA)."
RDF	Loads measured data. RDF (A) A: The number of data (when A=0, the UCAM-550A transfer all data. when A < the number of all data, transfers no data.) See "5-7 LOADING MEASURED DATA (RDF)."
STP	Stops measurements. See "5-6 STOPPING MEASUREMENTS (STP)."

MEMO

- Be sure to set the same measuring function (original value mode or measured value mode) to the master and slave units.

(2) Procedures for obtaining initial values and setting measured value mode



Commands and procession

Command Name	Procession
MET	Batch setting of measuring conditions. (MET(1)/MET(2)) Batch setting of measuring conditions. (MET(0)) See "5-8 BATCH SETTING/LOADING OF MEASURING CONDITIONS (MET)."
STA	Starts measurements. See "5-5 STARTING MEASUREMENT (STA)."

MEMO

- Be sure to set the same measuring function (original value mode or measured value mode) to the master and slave units.
- You can set the measuring function (original value mode/measured value mode) with the FUN command. For details, see "5-9 SETTING MEASURING CONDITIONS (FUN)."
- You can set/load the initial value with the INI command. For details, see "5-10 SETTING MEASURING CONDITIONS (FUN)."

6 ERROR NUMBERS

You can verify whether or not the error is occurring by checking the UCAM-550A status in the header section of every command. Check the contents by checking the error No.

For clearing the error No., receive the header section of the response packet again.

(For details, see 5 CONTROL COMMAND.)

Error No.	Error	Troubleshooting
80	Undefined command is used.	● The received command (three characters) is undefined. → Check the programs.
81	Erroneous parameter setting	● The command code is correct but the succeeding parameter is faulty. → Check the programs.
82	Receive timeout error	● The required time for receiving data from the first packet to the last packet (=size) of the command exceeded the preset timeout period. → Check the programs.
85	Receive buffer overflow	● The UCAM-550A received 40128 bytes or more packets at once. → You need to send packets (including the header section) within 40128 bytes at once. Check the programs.
90	Context error	→ See "5-2 WHETHER CONTROL COMMAND IS ENABLED OR DISABLED BASED ON UCAM-550A STATUS."
91	FIFO overflow	● FIFO memory has overflowed. → Rewrite the programs to shorten the sending interval of the RDF command.
99	Hardware error - UCAM-550A is not available.	→ Turn OFF and ON the UCAM-550A again. If the problem still occurs even after corrective action is taken, contact KYOWA or our representatives.