O A C I S

Open **A**rchitecture **C**ontrol **I**ntegrated **S**ystem

How To Configure

Version 01.98

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CONTENTS

I. SYSTEM CONFIGURATION 3

A. Configuration Information 3

B. Axes 4

C. RS422 Ports 5

D. Analog Inputs 6

E. RS232 Ports 7

F. Encoder Inputs 12

II. LOCAL CONFIGURATION 13

III. CHANGE OACIS IP ADDRESS 14

A. Using Ethernet Communication 14

B. Using RS232 15

IV. ADMIN CONFIGURATION 16

A. User Configuration #1 16

B. Set OACIS 21

C. RS232 Port Com Test 21

D. LAN COM Test 22

APPENDIX #1: SERIAL COMMUNICATION EXAMPLE VIA RS232 PORT 25

APPENDIX #2: LAN (UDP) COMMUNICATION EXAMPLE 30

APPENDIX #3: OMRON G SERIES SERVO DRIVE SETTING 31

APPENDIX #4: OMRON G5 SERIES SERVO DRIVE SETTING 34

APPENDIX #5: MITSUBISHI MR-J3-A SERIES SERVO DRIVE SETTING 36

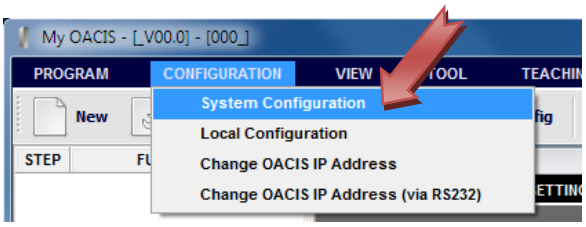
APPENDIX #6: MITSUBISHI MR-J4-A SERIES SERVO DRIVE SETTING 37

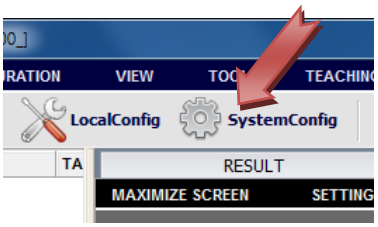
APPENDIX #7: PANASONIC MINAS A5-SERIES SERVO DRIVE SETTING 38

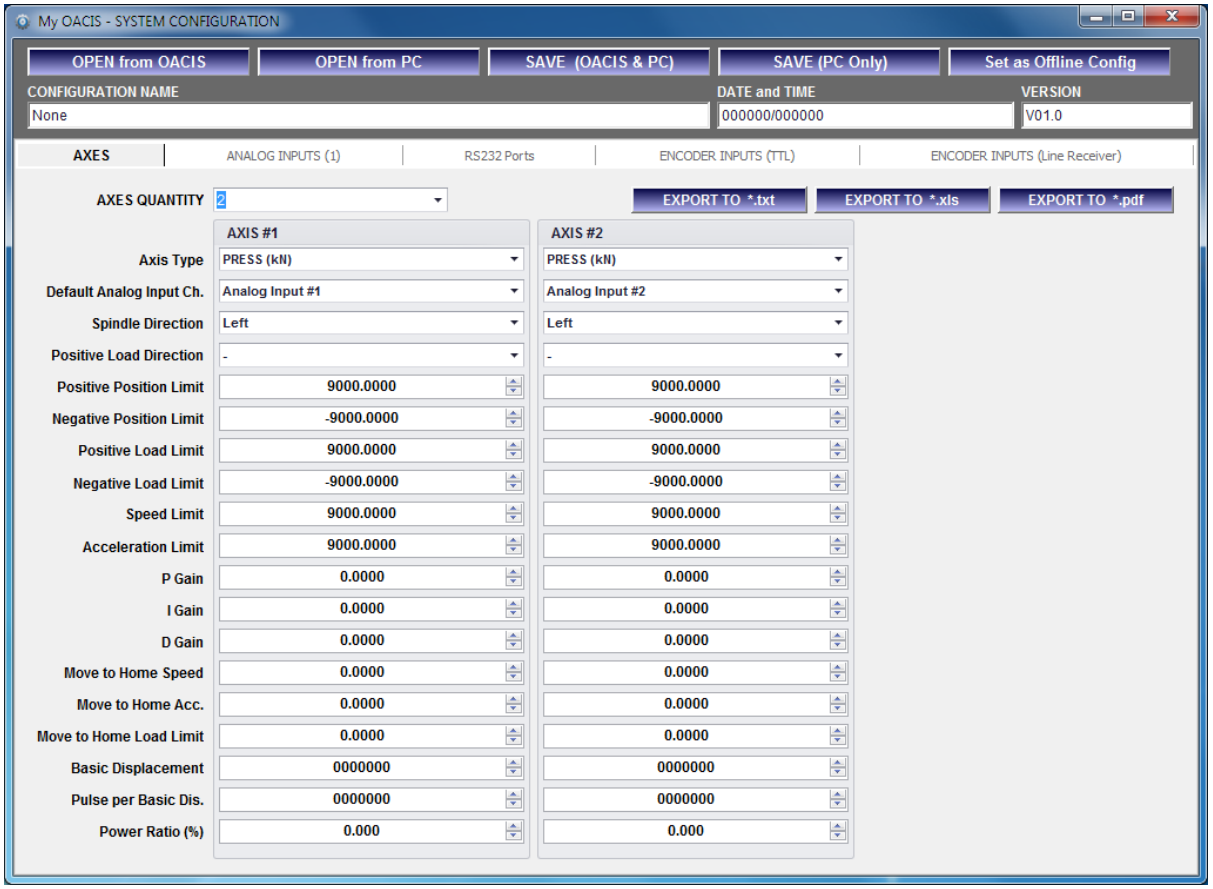
APPENDIX #8: PANASONIC MINAS A6-SERIES SERVO DRIVE SETTING 41

REVISION 42

I. SYSTEM CONFIGURATION







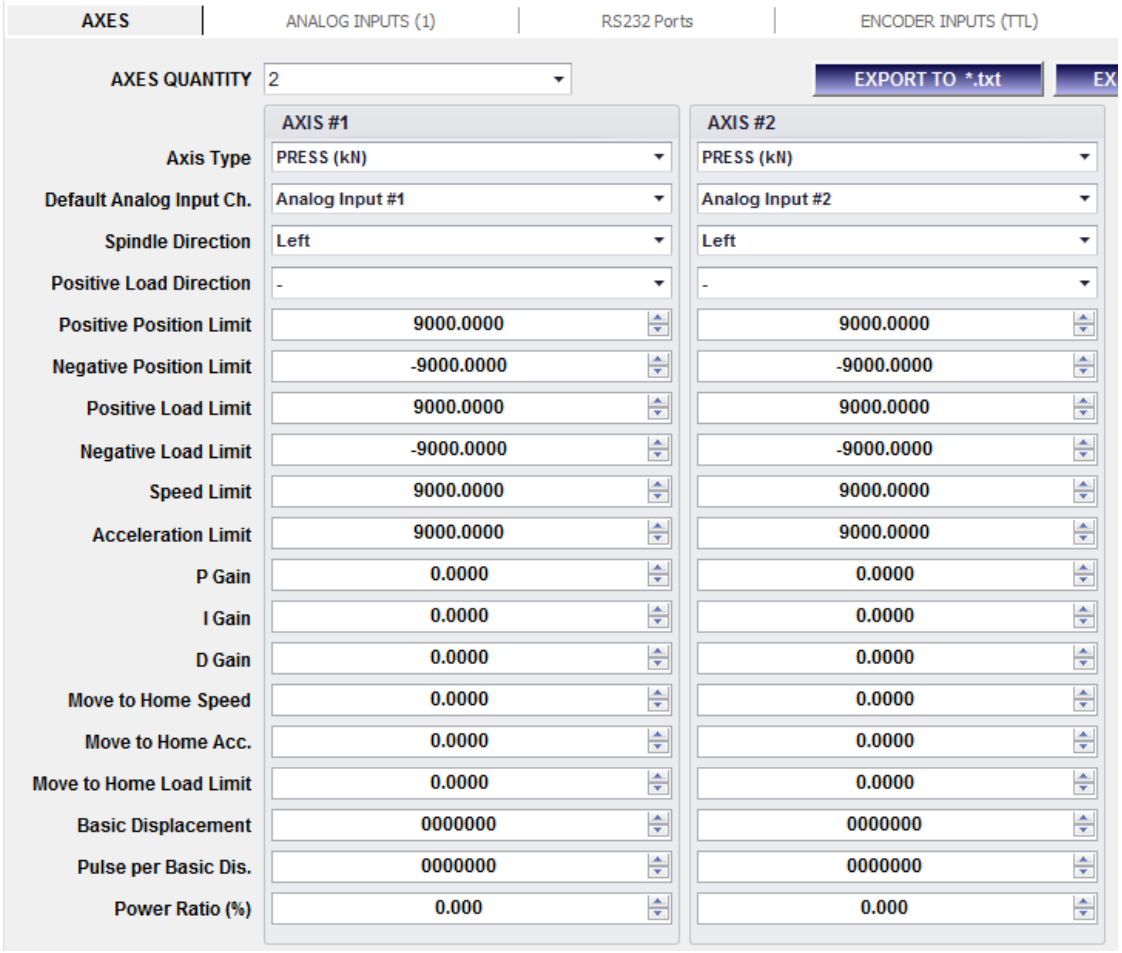
- **Open From OACIS:** Read from OACIS and show it on the screen.
- **Open From PC:** Open the selected configuration file (*.oac) and show it on the screen.
- **Save (OACIS & PC):** Download the updated configuration to the OACIS and save it in the local PC
- **Save (PC Only):** Save the updated configuration in the local PC.
- **Set as Offline Config:** Set the current configuration as offline configuration. You can edit program with offline condition based on this offline configuration
- **Export to:** You can export the configuration information to the specific text file, excel file or pdf file.

A. Configuration Information

- **Configuration Name**: The name of current configuration.
- **Date and Time**: It is automatically created
- **Version**: You can input configuration version. The format should be “V00.0”

B. Axes

: It is strongly recommended for you not to change these parameters. If you have any issues with the below parameters, you need to consult ATAinc first.

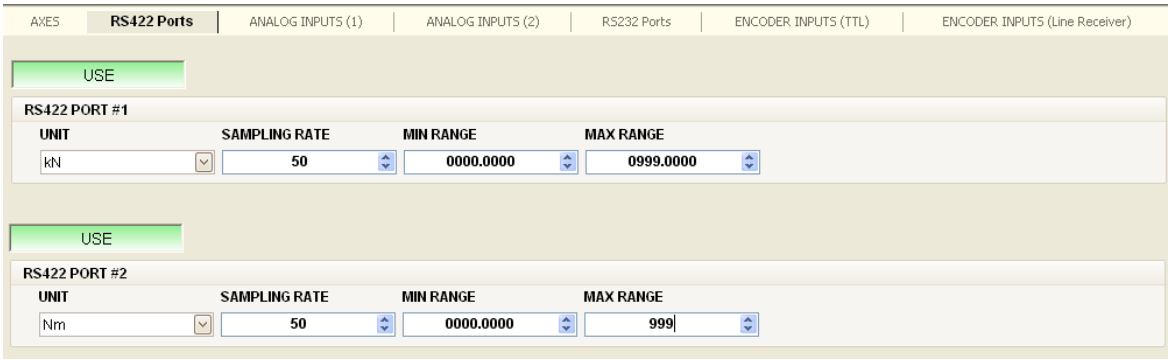


- **Axes Quantity**: Configured Axes quantity. It should be matched with physical integration.
- **Axis Type:**
  - **[PRESS (kN)]:** Servo press with linear movement. Force unit would be 'kN'. It has home, positive position limit and negative position limit signal. Default AI Channel need to be 'kN' as well.
  - **[NUT RUNNER #1 (With Only Home)]:** Servo spindle with angular movement. Force unit would be [Nm]. It has home, positive position limit and negative position limit signal.
  - **[NUT RUNNER #2 (Without Home and Limits)]:** Servo spindle with angular movement. Force unit would be 'Nm'. It does not have home, positive position limit and negative position limit signal. It means when you command "Homing" function, it sets current position as new home position.
  - **[NUT RUNNER #3 (With Only Limits)]:** Servo spindle with angular movement. Force unit would be [Nm]. It does not have home signal (it has positive position limit and negative position limit). It means when you command "Homing" function, it finds positive position limit and negative position limit and then move to middle position of two limits.
  - **[MICRO PRESS (kN)]:** It is special Servo Press with short stroke. Force unit would be 'kN'. Default AI Channel need to be 'kN' as well.
  - **[NUT RUNNER #4 (With Home and Limits)]:** Servo Spindle that has Home, Negative Limit and Positive Limit sensors.
  - **[PRESS (N)]:** Servo press with linear movement. Force unit would be 'N'. Default AI Channel need to be "N" as well.
  - **[PRESS (kgf)]:** Servo press with linear movement. Force unit would be 'kgf'. Default AI Channel need to be "kgf" as well.

- **Default Analog Input Ch.**
  - You can select one of analog signal.
  - It will be used for system protection like overload stop.
- **Spindle Direction**
  - [Right] or [Left]
  - Servo Motor direction in accordance with positive spindle movement.
- **Positive Load Direction**
  - [+] or [-]
  - Default Analog Input signal direction, while the axis moving in positive direction.
- **Positive Position Limit**
  - [mm] or [deg]
  - Positive Position Limit in program.
- **Negative Position Limit**
  - [mm] or [deg]
  - Negative Position Limit in program.
- **Positive Load Limit**
  - If the load is getting over this limit, OACIS will stop and shows “Overload” alarm.
- **Negative Load Limit**
  - If the load is getting below this limit, OACIS will stop and shows “Overload” alarm.
- **Speed Limit**
  - Speed Limit in program.
- **Acceleration Limit**
  - Acceleration Limit in program.
- **P, I, D gains**
  - Gains for controlling the axis.
- **Move to Home Speed**
  - Speed to be used with “Homing” command.
- **Move to Home Acc.**
  - Acceleration to be used with “Homing” command.
- **Move to Home Load Limit**
  - It is a maximum and minimum allowed load while the axis is homing.
  - It is absolute value of min and max load.
- **Basic Displacement, Pulse Per Basic Displacement and Power Ratio**
  - The values to be used to control the axis motion.

C. RS422 Ports

: It is used only for the Signal Amp supplied by ATAinc.

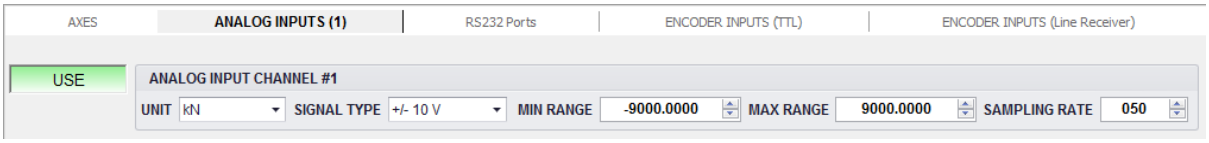


- **Unit**
  - [kN] or [Nm]

- You need to select one in accordance with the axis type.

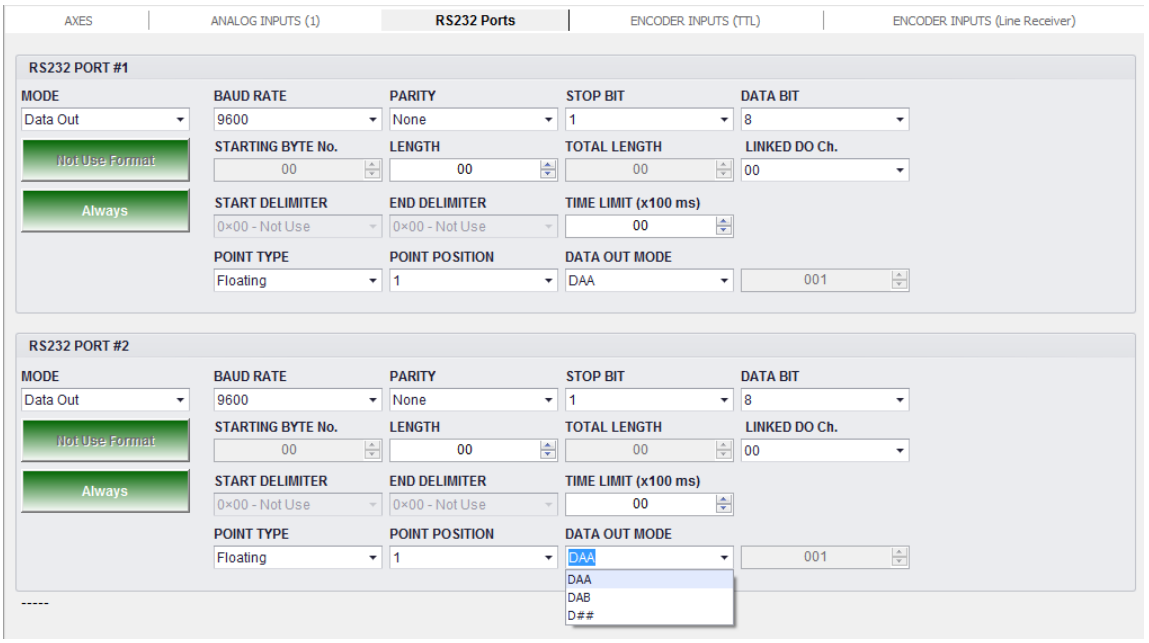
- **Sampling Rate**
  - 0 ~
  - Sampling Rate to acquire raw data. It is working like low pass filter. “0” means there is no filter.
- **Min Range**
  - The value matching with minimum analog signal. If the value range is from -100N to +100N with the analog signal range from -10V to +10V. This value would be -100.
- **Max Range**
  - The value matching with maximum analog signal. If the value range is from -100N to +100N with the analog signal range from -10V to +10V. This value would be 100.

D. Analog Inputs

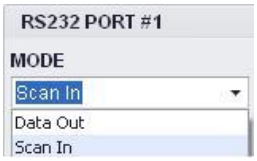


- **Unit**
  - [kN], [Nm], [Bar], [Mpa], [l/m], [RPM], [mm], [N], [kgf] or [Generic].
  - You need to select one in accordance with the physical signal type (Load, Torque, Pressure, Flow or Speed).
- **Signal Type**
  - [4 ~ 20mA] or [+/- 10V]
  - You need to select one in accordance with the signal type.
- **Sampling Rate**
  - 0 ~
  - Sampling Rate to acquire raw data. It is working like low pass filter. “0” means there is no filter.
- **Min Range**
  - The value matching with minimum analog signal.
- **Max Range**
  - The value matching with maximum analog signal.
- **Example #1**
  - Selected Signal Type: [4 ~ 20mA] / Min Range: -110 / Max Range: +100
  - 4mA -> -110 / 20mA -> +100
- **Example #2**
  - Selected Signal Type: [+/- 10V] / Min Range: -90 / Max Range: +120
  - -10V -> -90 / +10V -> +120

E. RS232 Ports



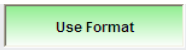
- Baud Rate, Parity, Stop Bit and Data Bit should be set properly.
- **[Scan In]** Mode or **[Data Out]** mode can be selected.



➢ It is not allowed to set both ports as [Scan In] mode.
➢ It is allowed to set both ports as [Data Out] mode.

1. [Scan In] Mode

: It is to be used to save the scanned information with test result. It will be connected with Barcode Scanner or any other device that could send serial number. [Use Format] or [Not Use Format] can be selected.

a. [Use Format]: 

: You can save the data per your configuration with “Use Format” option.

- **Starting Byte No**: It is a zero-based index. If you set it as 2, OACIS saves from 3rd byte of a received data.
- **Length**: Length of bytes to be saved with cycle results. Max Allowable “LENGTH” is 59.
- **Total Length**: Total length (bytes) to be received.
- **Linked DO Ch.**: Digital Output channel to be turned on for 1 second when OACIS receives proper data.
- **Start Delimiter**: The byte to be recognized as the beginning of data. You can select one of 0x00 ~ 0x7F.
- **End Delimiter**: The byte to be recognized as the end of data. You can select one of 0x00 ~ 0x7F.
- **Time Limit [x100ms]**: The elapsed time for OACIS to receive the data. If you input 5, it will be 500ms. The default (00) is 200 ms.
  i. The quantity of data that you can receive from an external device to OACIS is different per Baud Rate. If the baud rate is 9600 and the data size to receive is 20 symbols, time limit 1(100 ms) is enough to get 20 symbols. Because OACIS needs about 1 ms for 1 symbol of input data.

Example #1) Use "START DELIMITER" / **Not Use** "END DELIMITER"

➢ Configuration Setting

- Starting Byte No.: 2
- Length: 6
- Total Length: 10
- Start Delimiter: 'A'
- End Delimiter: Not Use(0x00)

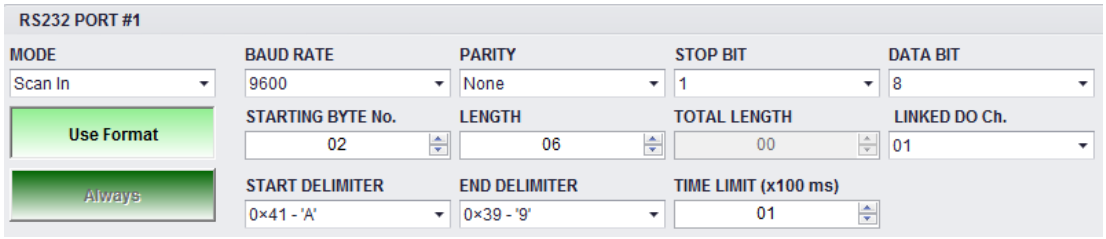
➢ Saved Data per Scanned Information

No.	Data to the OACIS	Received Data	Saved Data	Linked DO
1	A123456789	A123456789	234567	**ON**
2	CBA123456789	A123456789	234567	**ON**
3	CBA12345678	None	None	OFF
4	CBA1234567890123	A123456789	234567	**ON**
5	CBA123456789A0123	A123456789	234567	**ON**
6	CBA123456789A0123456789	A012345678	123456	**ON**
7	CBA12345678A90123	None	None	OFF

➢ Comments:

- **No. 1:** Total length is 10. Received data is 10 bytes of the data from the start delimiter 'A'. Starting byte No. is 2 and length is 6. Finally, OACIS saves '234567' which is 6 bytes of the received data excluding the first 2 bytes.
- **No. 3:** Scanned information is invalid because the size of data from start delimiter 'A' to the last byte '8' is 9 which is shorter than total length.
- **No. 6**: Last valid data 'A012345678' is to be selected as the received data. The starting byte No. is 2 and length is 6. Finally, '123456' is to be saved.

Example #2) Use "START DELIMITER" / **Use** "END DELIMITER"



➢ Configuration Setting

- Starting Byte No.: 2
- Length: 6
- Total Length: N/A
- Start Delimiter: 'A'
- End Delimiter: '9'

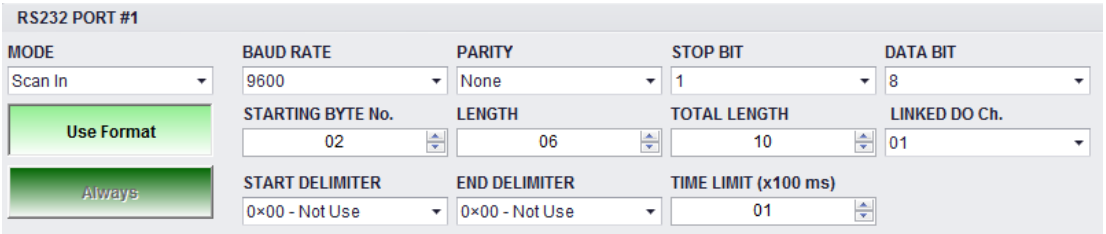
➢ Saved Data per Scanned Information

No.	Scanned Information	Received Data	Saved Data	Linked DO
1	A123456789	A123456789	234567	**ON**
2	CBA123456789	A123456789	234567	**ON**
3	CBA12345678	None	None	OFF
4	CBA12345678901 23	A123456789	234567	**ON**
5	CBA12345678A90123	A12345678A9	234567	**ON**
6	CBA1234567890A1234569	A1234569	234569	**ON**
7	CBA123456789012345A69	A69	9	**ON**
8	CBA1234567890123456A9	A123456789	234567	**ON**
9	CB1234567890123	None	None	OFF

➢ Comments:

- **No. 1:** Both start delimiter 'A' and end delimiter '9' are included in the received data 'A123456789'. Starting byte No. is 2 and length is 6. Finally, OACIS saves '234567' excluding the first 2 bytes.
- **No. 3:** Scanned information is invalid because end delimiter is missing
- **No. 6:** Last valid data 'A1234569' is to be selected as the received data. Starting byte No. is 2 and length is 6. '234569' is saved excluding 'A1'.
- **No. 8:** Last 'A9' is invalid because received data should be longer than starting byte No. The first valid data 'A123456789' is selected as the received data. OACIS saves '234567' excluding 'A1'.
- **No. 9**: Scanned information is invalid because start delimiter is missing.

Example #3) Not Use "START DELIMITER" / **Not Use** "END DELIMITER"



➢ Configuration Setting

- Starting Byte No.: 2
- Length: 6
- Total Length: 10
- Start Delimiter: Not Use(0x00)
- End Delimiter: Not Use(0x00)

➢ Saved Data per Scanned Information

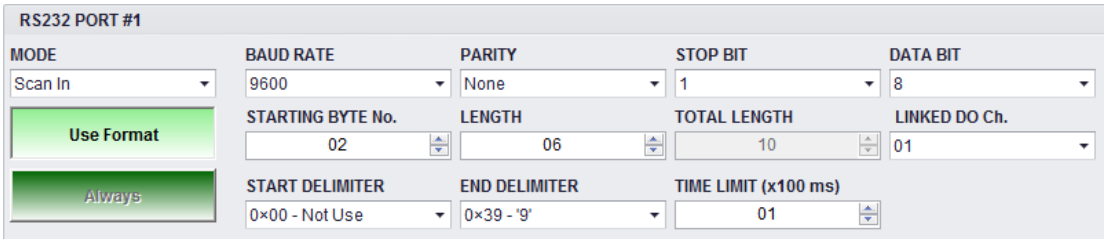
No.	Scanned Information	Received Data	Saved Data	Linked DO
1	A123456789	A123456789	234567	**ON**
2	CBA123456789	CBA1234567	A12345	**ON**
3	CBA123456 78	CBA1234567	A12345	**ON**
4	CBA1234567890123456	CBA1234567	A12345	**ON**

5	CBA1234567890123456789	8901234567	012345	**ON**
6	CBA123456	None	None	OFF

➢ Comments:

- **No. 2:** Total length is 10. Received data can be from the first byte to the 10th byte of the scanned information. Starting byte No. is 2 and length is 6. Finally, OACIS saves '234567' excluding 'A1'.
- **No. 4:** The first 10 bytes 'CBA1234567' is selected because the size of second term '890123456' is 9 which is invalid. 'A12345' is saved excluding 'CB'.
- **No. 5:** Last valid data of the scanned information is '8901234567'. So, OACIS saves '012345'.
- **No. 6:** Total length is 10. The size of scanned information is 9. It is invalid.

Example #4) Not Use "START DELIMITER" / **Use** "END DELIMITER"



➢ Configuration Setting

- Starting Byte No.: 2
- Length: 6
- Total Length: N/A
- Start Delimiter: Not Use(0x00)
- End Delimiter: '9'

➢ Saved Data per Scanned Information

No.	Scanned Information	Received Data	Saved Data	Linked DO
1	A123456789	A123456789	234567	**ON**
2	CBA123456789	CBA123456789	A12345	**ON**
3	CBA12345678	None	None	OFF
4	CBA123456789012345678	CBA123456789	A12345	**ON**
5	CBA12345678909	CBA123456789	A12345	**ON**
6	CBA123456789019	019	9	**ON**
7	CBA123456789012349	012349	2349	**ON**

➢ Comments:

- **No. 2:** End delimiter is '9'. Received data is 'CBA123456789' from the first byte to the end delimiter. Starting byte No. is 2 and length is 6. Finally, OACIS saves '234567' excluding 'A1'.
- **No. 3:** Scanned data is invalid because end delimiter is missing.
- **No. 5:** Last '09' is invalid because received data should be longer than starting byte No. The first valid data 'CBA123456789' is selected as the received data. OACIS saves 'A12345' excluding 'CB'.
- **No. 7:** Last valid data '012349' is to be selected as the received data. Starting byte No. is 2 and length is 6. '2349' is saved excluding '01'.

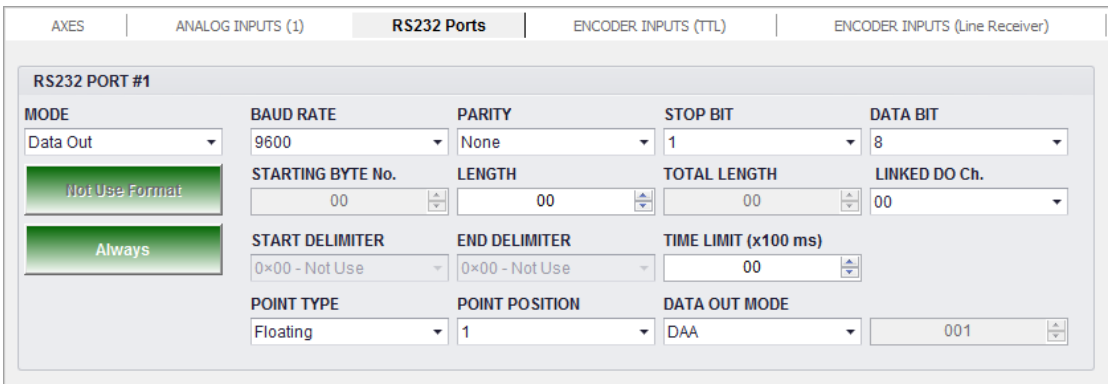
b. [Not Use Format]:

i. OACIS turns on the Linked DO whenever it receives the scanned information.
ii. OACIS saves the scanned information with test results.
iii. If "length" is longer than 59, OACIS saves only the first 59 bytes.

CAUTION

1. **All semicolons (;) in the received data are automatically converted into colons (:).**
2. **Semicolons can be used as delimiters, but they are also changed into colons in the received data.**
3. **Start delimiters and End delimiters cannot be assigned as the same value, except for Not Use (0x00).**

2. [Data Out] Mode



- It is to be used to communicate with external device like PLC.
- [Not Use Format]

a. Starting Byte No: N/A
b. Length: Data Length to be sent by OACIS. If you input 5. OACIS send out 5 results from Global Variable#1 to Global Variable#5 with scanned data (if there is no scan in, it would be "None").
c. [Always] or [Request Required]
  i. [Always]: Whenever the OACIS complete cycle, it sends out results per the above "Length" setting.
  ii. [Request Required]: The OACIS sends out results with proper request command. See the Appendix #1 for detailed communication protocol.
d. Total Length: N/A
e. Linked DO Ch.: N/A
f. Time Limit [x100ms]: The elapsed time for OACIS to receive the data. The default (00) is 200 ms.
  i. You may need to adjust the time limit according to the data to be sent into OACIS. If the baud rate is 9600 and the size of data to receive is 370 symbols, you should input over 4 (400ms). OACIS needs about 1 ms for 1 symbol of input data.
g. Point Type:
  i. [Floating] or [Fixed].
  ii. [Floating]: OACIS returns the results with "Floating Point" format.
  iii. [Fixed]: OACIS returns the results with "Fixed Point" format.
h. Point Position:
  i. It would be one of "1 ~ 8".

ii. If you set it as “3”. OACIS returns the result with “00000.000” format. If you set it as “6”, OACIS returns the result with “00.000000” format.

i. Data Out Mode: If you set as [Always], you can select “Data Out Mode” one of followings.

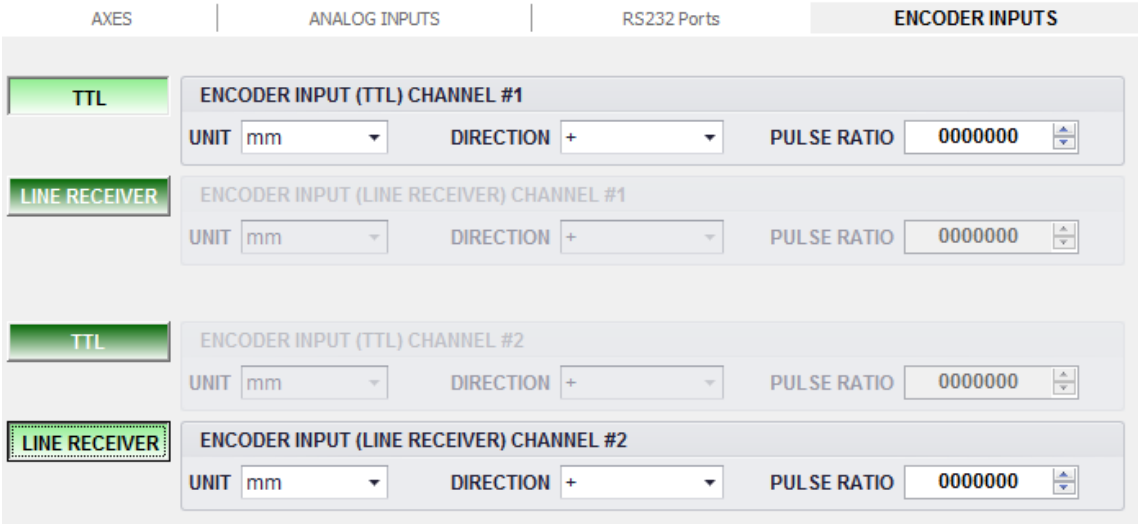
i. [DAA]: OACIS sends out all test results (see the Appendix #1 for more details)

ii. [DAB]: OACIS sends out all test results with Failure Mode and Date information. (see the Appendix #1 for more details)

iii. [D##] + [###]: OACIS sends out the selected four data. If you set [D##] + [001] and OACIS will send out first four data. (see the Appendix #1 for more details)

F. Encoder Inputs

: You can select Encoder Signal type [TTL] or [Line Receiver] based on physical signal. If you set [TTL Encoder Input #1] as “Use”, you can’t set [Line Receiver Encoder Input #1] as “Use”. One of them gets set as “Not Use” automatically.

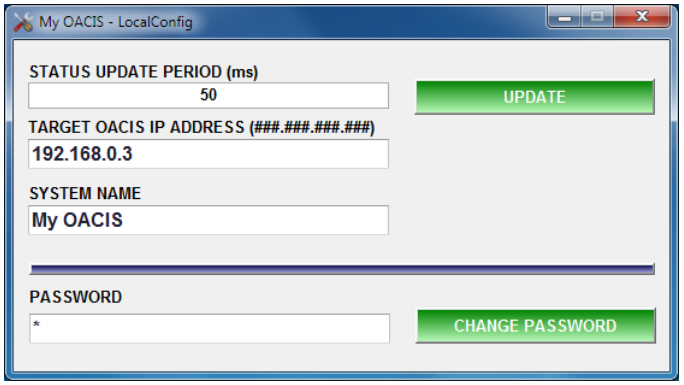


- **Type**
  - [TTL] or [LINE RECEIVER] per encoder input channel
- **Unit**
  - [mm] or [deg]
  - You need to select one in accordance with the physical signal type (Linear Encoder or Angular Encoder)
- **Direction**
  - [+] or [-]. If you set as [+], when the signal increase the value will be increased.
- **Pulse Ratio**
  - The pulse quantity to be matched with unit displacement (1 deg or 1mm). It is to be set by ATAinc.

II. LOCAL CONFIGURATION

: You can set several specific local parameters by using “Local Configuration”. Basically it has nothing to do with physical performance of OACIS controller.

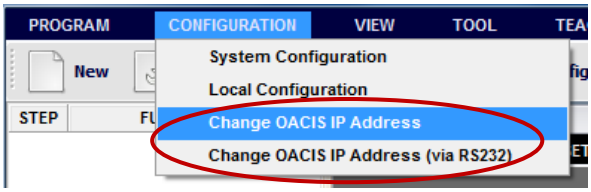
Menu Bar -> [CONFIGURATION]-[Local Configuration]



- **Status Update Period (ms):**
  - If you set it as 20, OACIScom is updating the status every 20ms. It has nothing to do with OACIS.
- **Target OACIS IP Address:**
  - The IP Address of target OACIS that you want to connect.
  - Default OACIS IP Address: 192.168.0.3
- **System Name:**
  - It will be used for main screen title.
- **Change Password.**
  - You can set new password.
  - Default Password: “1”

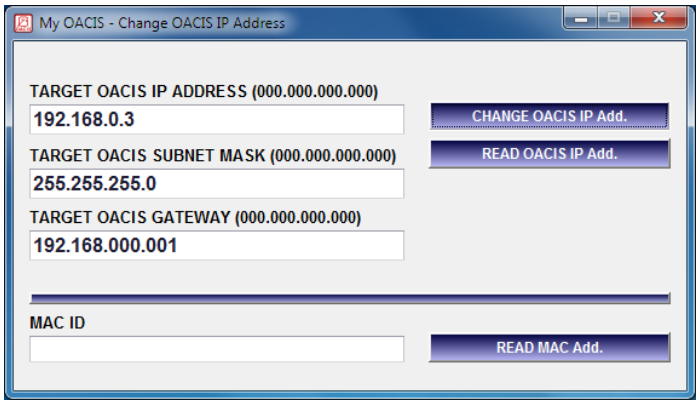
III. CHANGE OACIS IP ADDRESS

: There are two ways to change the OACIS IP Address. You can change the IP Address using LAN or RS232.



A. Using Ethernet Communication

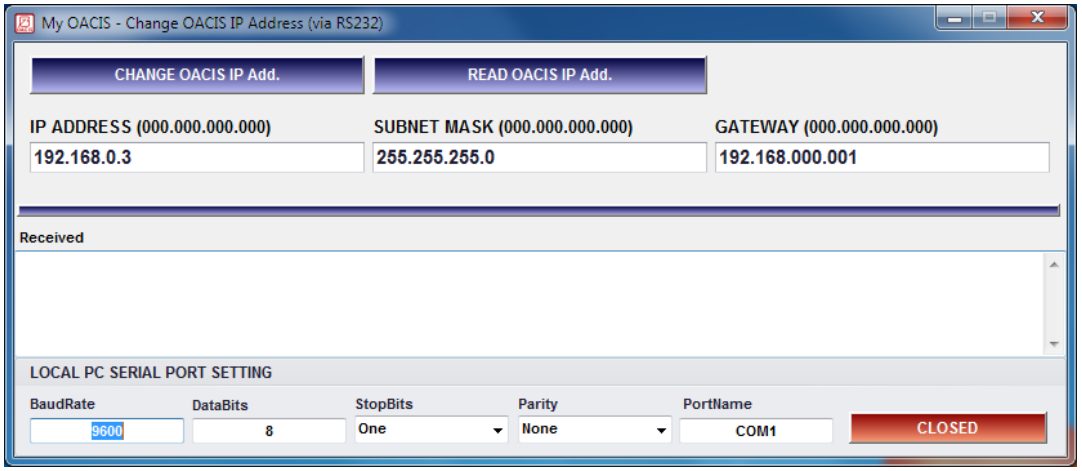
: Menu Bar -> [CONFIGURATION]-[Change OACIS IP Address]



- **Target OACIS IP Address:**
  - OACIS default IP Address is “192.168.0.3”.
  - You can input the New IP Address.
    1. “192.168.###.###” is recommended for local area network.
    2. “192.168.0.0” and “192.168.255.255” is normally not allowed
- **Target OACIS Subnet Mask:**
- **Target OACIS Gateway:**
- **You can change the IP Address by clicking “CHANGE OACIS IP Add.” Button.**
  - You may need to change the Target OACIS IP Address of Local Configuration and your PC’s IP Address depending on the new OACIS IP Address.
  - To change the IP Address via LAN communication, you may need to know current IP Address (Your PC should be connected to the target OACIS first). If you forgot the IP Address, you can change the IP Address via RS232 communication.

B. Using RS232

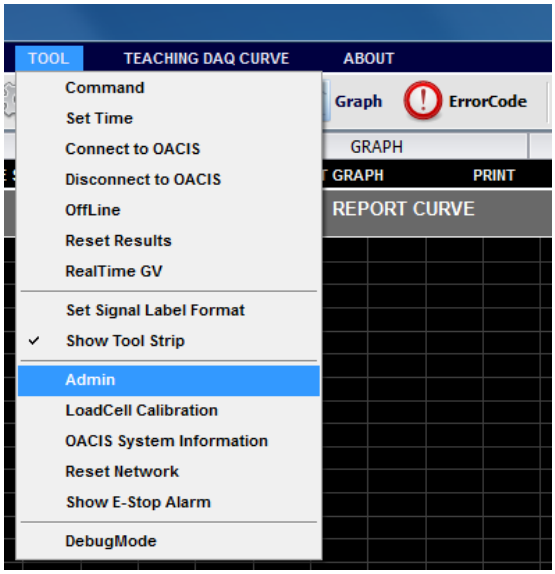
: Bar -> [CONFIGURATION]-[Change OACIS IP Address (via RS232)]



- You need to open your local PC serial com port first.
- Your local PC need to be connected to the target OACIS RS232 port that is configured as “Data Out” mode.
- Then, you can read and change the IP Address by clicking the buttons.

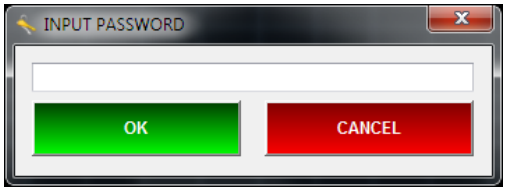
IV. ADMIN CONFIGURATION

: It allows you to do “Read System Version Information”, “Test RS232 Communication” and “Set User Configuration”.



Menu Bar -> [TOOL] - [Admin]

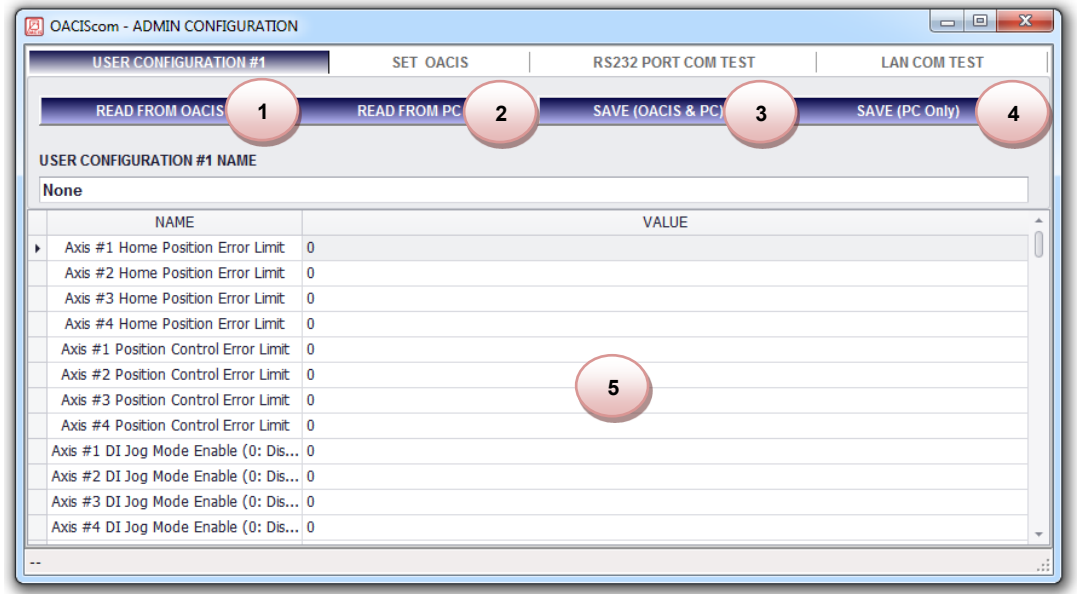
It requires Admin Password. The Password is “globaloacis”.



It has four Tabs. “USER CONFIGURATION #1”, “SET OACIS”, “RS232 PORT COM TEST” and LAN COM TEST.

A. User Configuration #1

: You can set the “USER CONFIGURATION #1” of the connected OACIS.



1. **READ FROM OACIS:** You can read User Configuration #1 from the connected OACIS.
2. **READ FROM PC:** You can read User Configuration #1 from the local PC.
3. **SAVE (OACIS & PC):** You can save the updated User Configuration #1 to the OACIS and local PC.
4. **SAVE (PC Only):** You can save the updated User Configuration #1 to the local PC.
5. **PARAMETERS:**
   - **Axis #1 Home Position Error Limit**: It specifies 'Home' and 'Program Home' Position Range. If the Axis is out of the range, OACIS requires homing.
     - Example: If you set 'Program Home' as 50 ('Home Position' should be 0) and you set 'Home Position Error Limit' as 0.2. In this case, OACIS specifies the Home Position range from -0.2 to +0.2 and Program Home Position range from +49.8 to +50.2. If the Axis deviates from the range, OACIS requires homing again.
   - **Axis #2 Home Position Error Limit:** See above.
   - **Axis #3 Home Position Error Limit:** See above.
   - **Axis #4 Home Position Error Limit:** See above.
   - **Axis #1 Position Control Error Limit**: It specifies position control error limit. While OACIS is running, if the deviation between actual position and target position is bigger than this limit, OACIS stop running and shows the proper error code.
   - **Axis #2 Position Control Error Limit:** See above.
   - **Axis #3 Position Control Error Limit:** See above.
   - **Axis #4 Position Control Error Limit:** See above.
   - **Axis #1 DI Jog Mode Enable**: If you set it as 1, you can enable the Axis DI Jog Mode. Then, you can move the Axis by turning on the Programmable Digital Input Signal (DI#13 and DI#14). Default value is 0 (Disable). See below table for more details on 'DI Jog Mode'.
   - **Axis #2 DI Jog Mode Enable:** See above.
   - **Axis #3 DI Jog Mode Enable:** See above.
   - **Axis #4 DI Jog Mode Enable:** See above.
   - **Axis #1 DI Jog Speed**: If the Axis DI Jog Mode is enabled, you can set the DI Jog Speed here.
   - **Axis #2 DI Jog Speed:** See above.
   - **Axis #3 DI Jog Speed:** See above.
   - **Axis #4 DI Jog Speed:** See above.
   - **Axis #1 System Home:** OACIS move all Axes to this position after every "Homing" sequence.
   - **Axis #2 System Home:** See above.
   - **Axis #3 System Home:** See above.
   - **Axis #4 System Home:** See above.
   - **Axis #1 Drive Type (0: OMRON, LS / 1: MITSUBISH):** You can configure your Servo Drive Type. "0" means OMRON or LS, "1" means MITSUBISH.
   - **Axis #2 Drive Type (0: OMRON, LS / 1: MITSUBISH):** See above.
   - **Axis #3 Drive Type (0: OMRON, LS / 1: MITSUBISH):** See above.
   - **Axis #4 Drive Type (0: OMRON, LS / 1: MITSUBISH):** See above.
   - **Axis #1 Jog Load Limit:** You can set Load Limit of Jog operation.
   - **Axis #2 Jog Load Limit:** You can set Load Limit of Jog operation.
   - **Axis #3 Jog Load Limit:** You can set Load Limit of Jog operation.
   - **Axis #4 Jog Load Limit:** You can set Load Limit of Jog operation.
   - **Axis #1 Move to Position Target Tolerance:** It specifies convergence criteria for the target position in the "Move to Position" step.
     - Example: If you set 'Target Position' as 50 and you set 'Move to Position Target Tolerance' as 0.005, Axis #1 moves until it arrives at the target window from 49.995 to 50.005. If you set it as 0, Axis #1 moves until the target position 50.
     - Unless Axis #1 can arrive at the target window even in 10 seconds, OACIS terminate the 'Move to Position' step.
   - **Axis #2 Move to Position Target Tolerance:** See above.

- **Axis #3 Move to Position Target Tolerance:** See above.
- **Axis #4 Move to Position Target Tolerance:** See above.
- **Home Signal Priority:** At least one of two, HOME OK and PROGRAM HOME OK should be turned on for OACIS to start a program. If OACIS uses both axis #1 and #2, OACIS normally determines the On/Off status of overall HOME OK and PROGRAM HOME OK via AND operation like examples below.

Axis #1		Axis #2		OACIS	
HOME OK	PROGRAM HOME OK	HOME OK	PROGRAM HOME OK	HOME OK	PROGRAM HOME OK
O	O	O	X	O	X
O	O	X	O	X	O
X	O	O	O	X	O
X	X	O	O	X	X

However, there is an exception for this rule. If the condition is the same as below, OAICS cannot start a program although both Axis #1 and #2 are in the startable condition.

Axis #1		Axis #2		OACIS	
HOME OK	PROGRAM HOME OK	HOME OK	PROGRAM HOME OK	HOME OK	PROGRAM HOME OK
O	X	X	O	X	X
X	O	O	X	X	X

In this case, we utilize the Home Signal Priority parameter. If you set the parameter as 0, OACIS follows Axis #1 condition. And if it is 1, it follows Axis #2 one.

Axis #1		Axis #2		OACIS			
HOME OK	PROGRAM HOME OK	HOME OK	PROGRAM HOME OK	0 (Default)		1	
				HOME OK	PROGRAM HOME OK	HOME OK	PROGRAM HOME OK
O	X	X	O	O	X	X	O
X	O	O	X	X	O	O	X

- **Stop Option:** OACIS has “Stop” signal. It is used to stop OACIS running for a while and resume it. But do not use this option as its safety circuit. Most of press machines are supposed to be equipped with their own safety circuits. This is not a hardware stop but only a software stop.
  - **0(default):** OACIS stops after on-going step is completely done and resumes at the next step.
  - **1:** OACIS stops on the spot. When it resumes, it restarts the on-going step.

  See the timing sequence manual.
  - **2:** It is the same as option 1 except that it restarts after resetting motor drive. For example, when you use program stop instead of E-stop in STO safety circuit, we recommend this option to use.
- **Program Execution Time:** OACIS can adjust program resume time with this option. It is normally used when the execution time is too short to save GVs Information after program end. If the execution time is shorter than GV saving time, you need to set program execution time as more than the saving time. The unit is a second.

  For example,
  - When setting 0 as program execution time option, it means minimum time from program start to resume.
  - When setting 1 as the option, it means delay time from program end to resume.

- **Program Start Mode:** OACIS has two means of starting a program. One is Handshake type that is controlled by external devices like PLC. The other is Pulse type that can be triggered by a simple input device like push button. Pulse type comes in handy when there is no external controller except for OACIS.
  - **0 (Handshake, default):** You should keep Program Start On until Program End signal turns on. Or an error will occur.
  - **1 (Pulse):** With a rising edge of Program Start Input Pulse, a program keeps running until Program End turns on. If you want to restart the program, start signal should be Off at the end of program.
- **Tare Axes Load After Homing (0:Not Applied/ 1:Only Axis1/ 2:Only Axis2 / 3:Axis1 & Axis2):** Axes load can vary a little bit on the press-installed circumstance like temperature or humidity. If users want to ignore the load variation and see a stable value close to zero, they can use this option.
  - **0 (Not Applied):** You can see the real load values of axes.
  - **1 (Only Axis #1, default):** OACIS tares the load of axis #1 every homing.
  - **2 (Only Axis #2):** OACIS tares the load of axis #2 every homing.
  - **3 (Only Axis #1 & #2):** OACIS tares the load of axis #1 & axis #2 every homing.
- **Fieldbus Config:** This option format is AABB.CCDD.
  - AA: Module Selection (00: EIP, ProfiNet / 01: CC Link)
  - BB: Return Axis Info : It is only for 1XC&2XC not for 1X&2X. If PLC wants to get real-time OACIS position and load values and displays them on HMI, this option can meet their request. For EIP / PN, FB#45 is StepNo.ErrorCode(Ex. 0013.0601 -> ErrorCode: 601 / StepNo: 13) and for CCLink, FB#45 is ErrorCode.StepNo (Ex. 0601.0013-> ErrorCode: 601 / StepNo: 13).
    -. 00: Not Use
    -. 01: FB#45: Current StepNo, FB#44: Axis1 Pos, FB#43: Axis1 Load, FB#42: Axis2 Pos, and FB#41: Axis2 Load
    -. 02: FB#45: StepNo.ErrorCode
    -. 03: FB#45: StepNo.ErrorCode(or ErrorCode.StepNo), FB#44: Axis1 Pos, FB#43: Axis1 Load, FB#42: Axis2 Pos, and FB#41: Axis2 Load
  - CC: Reserved
  - DD: Reserved
- **Fieldbus Module Config:** This option is only for CC-Link and the format is AABB.CCDD
  - AA: Reseved
  - BB: Reseved
  - CC: Node No (01, default)
  - DD: Baud Rate (02, default) It should be the same as CC-Link transmission rate.

Transmission rate/ mode setting switch	Set the module's transmission rate and operation state. (Default setting: 0)		
	No.	Transmission rate setting	Mode
	0	Transmission rate 156kbps	On-line
	1	Transmission rate 625kbps	
	2	Transmission rate 2.5Mbps	
	3	Transmission rate 5Mbps	
	4	Transmission rate 10Mbps	
	5	Transmission rate 156kbps	Line test When station NO. setting switch is 0: Line test 1 When station NO. setting switch is 1 to 64: Line test 2
	6	Transmission rate 625kbps	
	7	Transmission rate 2.5Mbps	
	8	Transmission rate 5Mbps	
	9	Transmission rate 10Mbps	
	A	Transmission rate 156kbps	Hardware test
	B	Transmission rate 625kbps	
	C	Transmission rate 2.5Mbps	
	D	Transmission rate 5Mbps	
	E	Transmission rate 10Mbps	
	F	Setting is inhibited.	

- **Program Execution Time Option:** OACIS can adjust program execution time or delay time from program end to resume with this option.
  For example,
  - **0 (execution time, default):** OACIS adjusts minimum time from program start to resume. When taking option 0 and setting 2 sec as program execution time, it takes 2 sec to resume although cycle time is only 1 sec.
  - **1 (delay time):** It adjusts delay time from program end to resume. When taking option 1 and setting 2 sec as program execution time, it restarts 2 sec after program end.

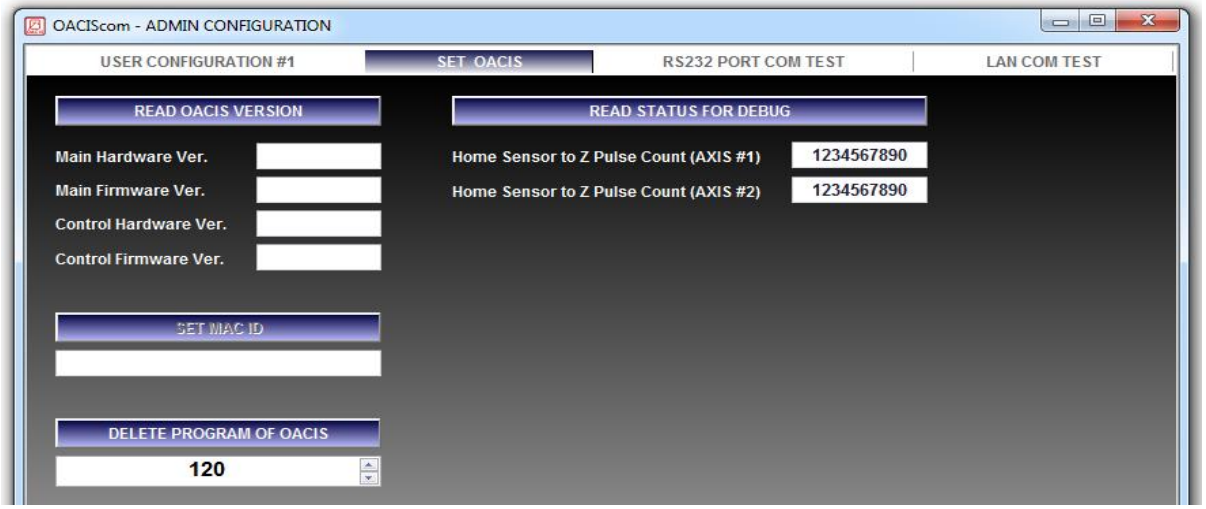
- **Homing Option:** When OACIS returns to home in the mode with their own home positions, it can move to system home or program home according to this option. Format of the option is ABCD.EFGH. D stands for Axis #1 and C for Axis #2.
  For example,
  - **0 (system home, default):** If you press “return home” button, the press moves to absolute home and then goes to system home.
  - **1 (program home):** If you press “return home” button, the press moves to absolute home and then goes to program home.

  For example,
  - 0001.0000 : When homing, finally axis #1 goes to program home and axis #2 goes to system home if there is axis #2.

- **Var 41 ~ Var 128: Reserved**

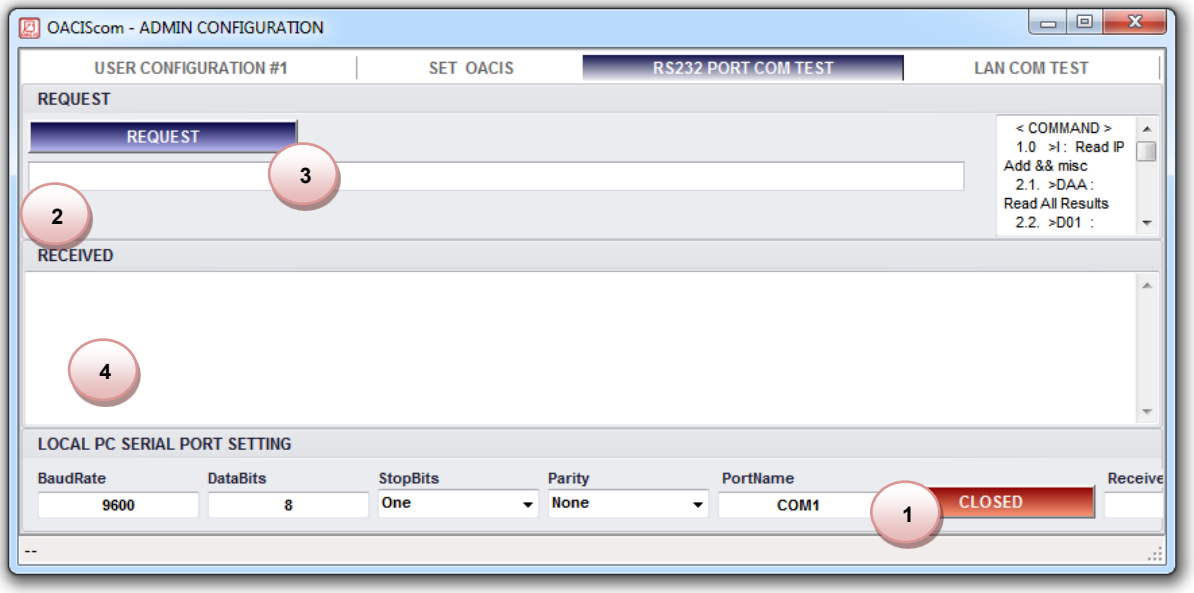
B. Set OACIS

: You can read System Information by clicking each button.



C. RS232 Port Com Test

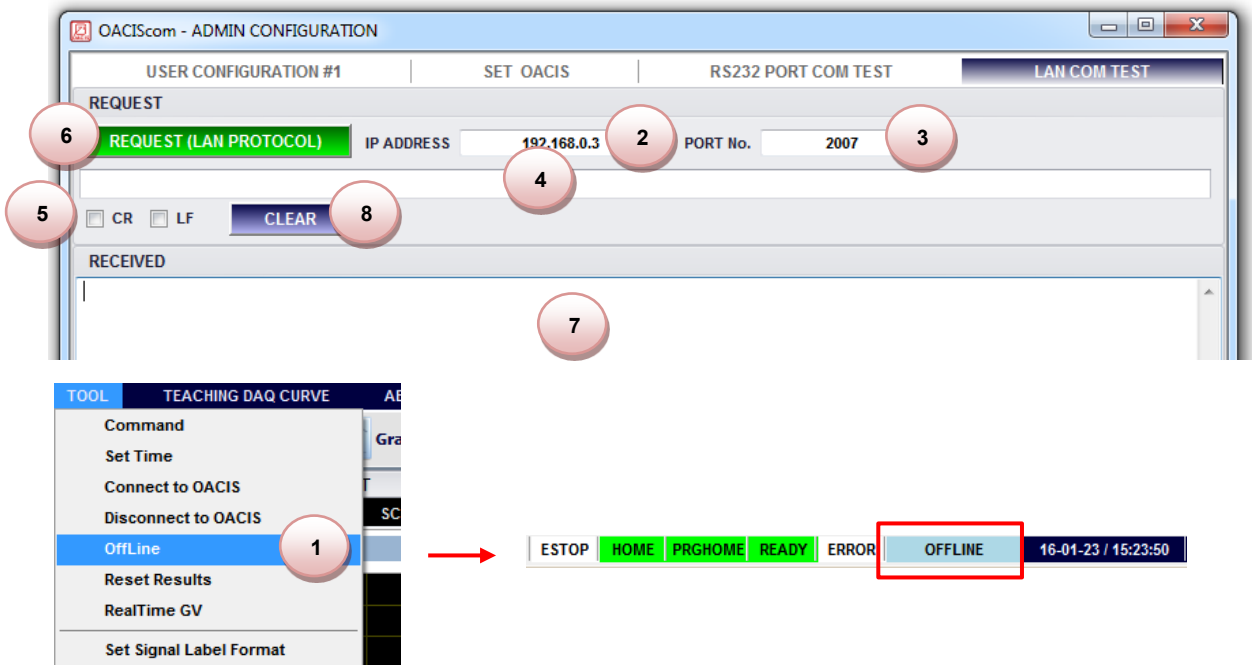
: You can test “RS232 Communication” with the connected OACIS.



1. Open the RS232 Com Port that connected to the OACIS. You may need to input proper Port Setting Parameters (Baud Rate / Data Bits / Stop Bits / Parity and Port Name)
2. Input the proper protocol that you want to test. Refer to the “Appendix #1” for detailed RS232 Com protocol.
3. Click the “REQUEST” button.
4. Then you can see the received information at the below text box.

D. LAN COM Test

: You can communicate with OACIS via LAN.



1. You have to check the OffLine on Tool menu before starting LAN COM test and then you can see turning into OFFLINE on the Status Strip at the bottom of OACIScom window.
2. You put your Target OACIS IP Address in IP ADDRESS
3. You can choose one from 2007, 2008, 2009 and 2010.
4. You write down a protocol you want.
5. Sometimes you need a control character like CR and LF.
6. You can send the protocol with this button.
7. Then you can see the received information at the text box below.
8. You can erase all the received information from the text box.

< How to jog the Axis by Hardwire instead of PC Command >

1. Set the Axis DI Jog Mode as Enable by setting the proper User Configuration #1 parameters as 1. (See above section C.5)
2. Set the proper DI Jog Speed (see above section C.5)
3. Verify hard-wiring of the Programmable Digital Input #5, 6 for OACIS-1X/1XC or DI #11, 12, 13, 14 for OACIS-2X/2XC.
4. DI #11 and #12 will be used to select Axis for OACIS-2X/2XC.
5. DI #5, 6(OACIS-1X/1XC) or DI #13, 14(OACIS-2X/2XC) will be used to move the Axis in positive direction or negative direction.
6. Programmable Digital Input Assignment for DI Jog Mode

OACIS-1X/1XC	**JOG COMMAND**			
Digital Input #	Stop	Advance	Retract	Stop
5	Off	On	Off	On
6	Off	Off	On	On

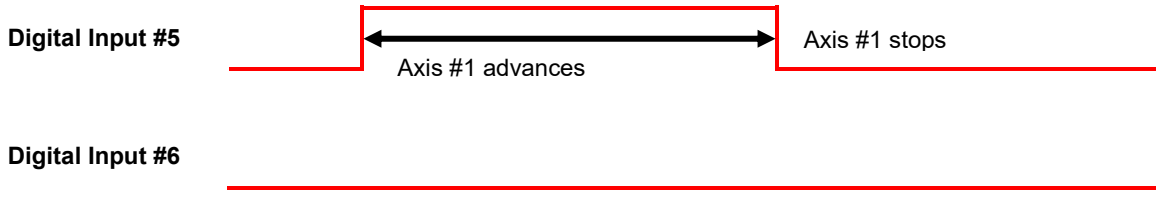
OACIS-2X/2XC	**AXIS SELECTION**			
Digital Input #	Axis 1	Axis 2	Axis 3	Axis 4
11	On	Off	On	Off
12	Off	On	On	Off
	JOG COMMAND			
Digital Input #	Stop	Advance	Retract	Stop
13	Off	On	Off	On
14	Off	Off	On	On

Example I: If you want to advance Axis #1 at the speed of 5mm/s for OACIS-1X.

1. Set User Config #1 Parameters as below and save it.

	Axis #4 Position Control Error Limit	0
▸	Axis #1 DI Jog Mode Enable (0: Disable / 1:Enable)	1
	Axis #2 DI Jog Mode Enable (0: Disable / 1:Enable)	0
	Axis #3 DI Jog Mode Enable (0: Disable / 1:Enable)	0
	Axis #4 DI Jog Mode Enable (0: Disable / 1:Enable)	0
	Axis #1 DI Jog Speed	5
	Axis #2 DI Jog Speed	0
	Axis #3 DI Jog Speed	0

2. Set Digital Inputs As below.

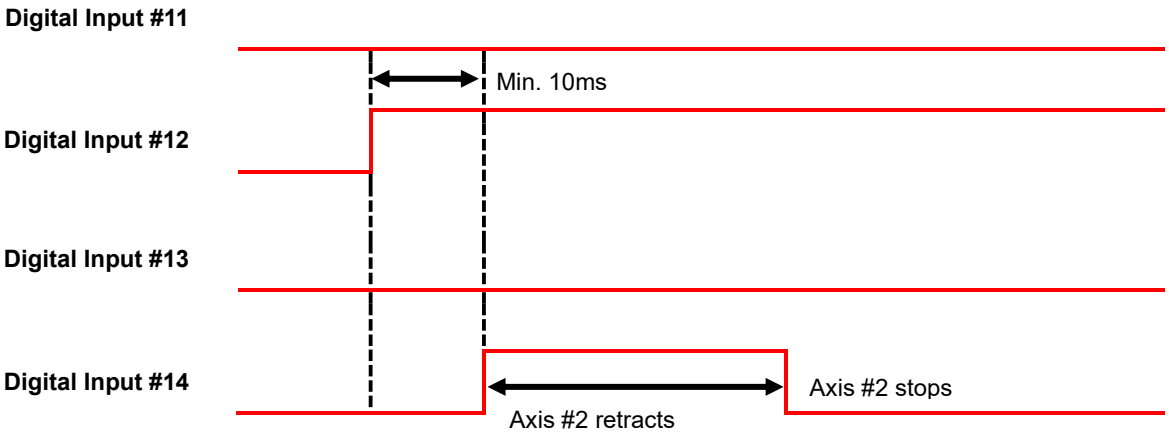


Example II: If you want to retract Axis #2 at the speed of 5mm/s for OACIS-2X.

1. Set User Config #1 Parameters as below and save it.

Axis #4 Position Control Error Limit	0
Axis #1 DI Jog Mode Enable (0: Disable / 1:Enable)	0
Axis #2 DI Jog Mode Enable (0: Disable / 1:Enable)	1
Axis #3 DI Jog Mode Enable (0: Disable / 1:Enable)	0
Axis #4 DI Jog Mode Enable (0: Disable / 1:Enable)	0
Axis #1 DI Jog Speed	0
Axis #2 DI Jog Speed	5
Axis #3 DI Jog Speed	0
Axis #4 DI Jog Speed	0

2. Set Digital Inputs As below.



APPENDIX #1: SERIAL COMMUNICATION EXAMPLE VIA RS232 PORT

A. <Data Out Mode>

1. Read IP Address, Subnet Mask, Gateway and Machine ID
   - **Request: “>I” + LF**
   - **Response: "IP;192.168.000.002;SUB;255.255.255.000;GATE;192.168.000.001;MAC; 00.08.DC.00.00.00" + CR**
     - IP Address: 192.168.000.002
     - Subnet Mask: 255.255.255.000
     - Gateway: 192.168.000.001
     - Mac ID: 00.08.DC.00.00.00

2. Read All Test Result
   - **Request: “>DAA” + LF**
   - **Response: "GV;AA;+0000.0001;+0000.0002;+0000.0003;123456789;" + CR**
     - You may set [Length] as 3 at the System Configuration.
     - +0000.0001: The value of Global Variable #1
     - +0000.0002: The value of Global Variable #2
     - +0000.0003: The value of Global Variable #3
     - 123456789: Scanned Information

3. Read All Test Result with Failure Mode and Test Time.
   - **Request: “>DAB” + LF**
   - **Response: "GV;AB;+0000.0001;+0000.0002;+0000.0003;123456789;01;120116010101;" + CR**
     - You may set [Length] as 3 at the System Configuration.
     - +0000.0001: The value of Global Variable #1
     - +0000.0002: The value of Global Variable #2
     - +0000.0003: The value of Global Variable #3
     - 123456789: Scanned Information
     - 01: Failure Mode (Status Binary)
     - 120116010101: Test Time (YYMMDDHHMMSS)

4. Read Real-time Results with Failure Mode and Test Time.
   - **Request: “>DAF;001;003;111;” + LF**
     - Read from GV001 to GV003
     - 111: 1 (Barcode) + 1(Failure Mode) + 1(Time). 1 means required, 0 means not required.
     - If you want to read from GV #13 to GV #20 with Barcode without Failure Mode and Time, the request packet is to be “>DAF;013;020;100;” + LF.
   - **Response: "GV;AF;+0000.0001;+0000.0002;+0000.0003;123456789;01;120116010101;" + CR**
     - +0000.0001: The value of Global Variable #1
     - +0000.0002: The value of Global Variable #2
     - +0000.0003: The value of Global Variable #3
     - 123456789: Scanned Information
     - 01: Failure Mode (Status Binary)
     - 120116010101: Test Time (YYMMDDHHMMSS)

5. Read Real-time Global Variables Randomly with Floating Point Type.
   - **Request: “>DRD;” + Total Quantity of GVs + “;” + GV No + “;” GV No + “;” + … + LF**
     - Read Global Variables in the order that you want.
     - The type of values is floating point.
     - Total Quantity of GVs: The total number of Global Variables to be read. You can read 120 Global Variables at one go. It should be 3 digits such as 005, 022 and 060.
     - GV No: You can assign randomly the order of Global Variables. But the number of every GV

No should be the same as Total Quantity of GVs.

- **Response: "GV; + Total Quantity of GVs + ";" + GV No + ";" + GV Value + ";" + … + CR**
  - Ex1. If you want to get GV1, GV2, GV5, GV7 and GV8,
    - ✓ Request: ">DRD;005;01;02;05;07;08;" + LF (0x0A)
    - ✓ Response: "GV;005;01;+0001.0000;02;+0002.0000;05;+0005.0000;07;+0007.0000;08; +0008.0000;" + CR (0x0D)
  - Ex2. If you want to get GV7, GV2, GV80, GV40, GV32 and GV2,
    - ✓ Request: ">DRD;006;07;02;80;40;32;02;" + LF (0x0A)
    - ✓ Response: "GV;006;07;+0007.0000;02;+0002.0000;80;+0080.0000;40;+0040.0000;32; +0032.0000;02;+0002.0000;" + CR (0x0D)
  - Ex3. If you want to get GV101, GV110, GV107, GV19, GV10,
    - ✓ Request: ">DRD;005;a1;b0;a7;19;10;" + LF (0x0A)
    - ✓ Response: "GV;005;a1;+0101.0000;b0;+0110.0000;a7;+0107.0000;19;+0019.0000;10; +0010.0000;" + CR (0x0D)

6. Read Real-time Global Variables Randomly with Floating or Fixed Point Type.

- **Request: ">DRF;" + Total Quantity of GVs + ";" + GV No + ";" GV No + ";" + … + LF**
  - DRF protocol is all the same as DRD except for the type of values
  - DRF can choose the type of their values as floating point or fixed point by setting it on drop-down point type menu of RS232 ports in System Config
- **Response: "GV; + Total Quantity of GVs + ";" + GV No + ";" + GV Value + ";" + … + CR**

7. Read 4 Global Variables from 1st Global Variable.

- **Request: ">D01" + LF**
- **Response: "GV;01;+0000.0001;+0000.0002;+0000.0003;+0000.0004;" + CR**
  - +0000.0001: The value of Global Variable #1
  - +0000.0002: The value of Global Variable #2
  - +0000.0003: The value of Global Variable #3
  - +0000.0004: The value of Global Variable #4

8. Read 4 Global Variables from 2nd Global Variable.

- **Request: ">D02" + LF**
- **Response: "GV;02;+0000.0002;+0000.0003;+0000.0004;+0000.0005;" + CR**
  - +0000.0002: The value of Global Variable #2
  - +0000.0003: The value of Global Variable #3
  - +0000.0004: The value of Global Variable #4
  - +0000.0005: The value of Global Variable #5

9. Read 4 Global Variables from 100th Global Variable.

- **Request: ">Da0" + LF**
- **Response: "GV;a0;+0000.0100;+0000.0101;+0000.0102+0000.0103;" + CR**
  - +0000.0100: The value of Global Variable #100
  - +0000.0101: The value of Global Variable #101
  - +0000.0102: The value of Global Variable #102
  - +0000.0103: The value of Global Variable #103

10. Read 4 Global Variables from 110th Global Variable.

- **Request: ">Db0" + LF**
- **Response: "GV;b0;+0000.0100;+0000.0101;+0000.0102+0000.0103;" + CR**
  - +0000.0110: The value of Global Variable #110
  - +0000.0111: The value of Global Variable #111
  - +0000.0112: The value of Global Variable #112
  - +0000.0113: The value of Global Variable #113

11. Read Scanned Information only (from the Last Cycle Result)

- **Request: “>DEE” + LF**

  Response: "GV;EE;123456789;" + CR
  - 123456789: Scanned Information

12. Read Scanned Information only (from the Last Scanned)

- **Request: “>S” + LF**
- **Response: "SD;123456789;" + CR**
  - 123456789: Scanned Information per configuration.

13. Read real-time values of Positions, Analog Inputs and Encoders

- **Request: “>RP1” + LF**
  - The protocol command is consist of a Header(>R) and a Sub Header(P1, P2, A1, A2, E1, E2 and AA)
  - P1: Axis1 Position, P2: Axis2 Position, A1: AI#1, A2: AI#2, E1: EI #01, E2: EI #02
  - AA: All of P1, P2, A1, A2, A3, A4, A5, A6, E1 and E2.
- **Response: “<RP1;” + Real-time Value + “;” + CR**
  - Ex1. If you want to read the value of analog input #1.
    - ✓ Request: “>RA1” + LF (0x0A).
    - ✓ Response: “<RA1;+0000.0000;” + CR (0x0D).
  - Ex2. If you want to read the value of encoder #2.
    - ✓ Request: “>RE2” + LF (0x0A).
    - ✓ Response: “<RE2;+0000.0000;” + CR (0x0D).
  - Ex3. If you want to read all of them,
    - ✓ Request: “>RAA” + LF (0x0A).
    - ✓ Response: “<RAA;+0000.0001;+0000.0002;+0000.0003;+0000.0004;+0000.0005;+0000.0006;+0000.0007;+0000.0008;+0000.0009;+0000.0010;” + CR (0x0D).

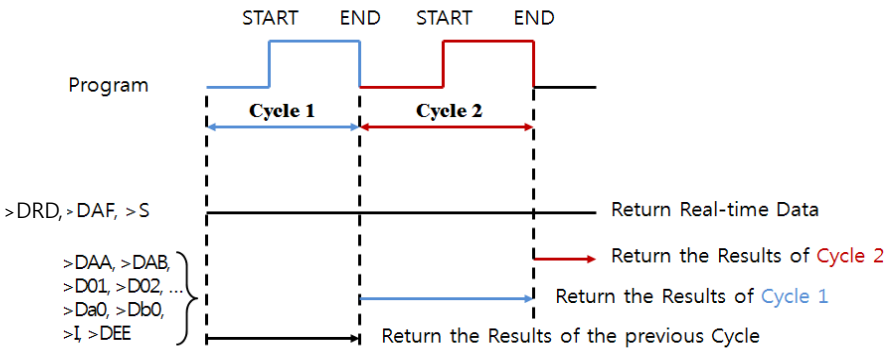
14. Set GV: You can set the selected Global Variables as the specific value.

- **Request: “>GV1;” + Length + GV No + “;” + GV Value + “;” + … + LF**
- **Response: Same as Request String except for End Terminator (CR)**
  - Ex1. If you want to set GV1 and GV2 as 1 and 2 respectively,
    - ✓ Request: “>GV1;002;01;+0001.0000;02;+0002.0000;” + LF (0x0A).
    - ✓ Response: “<GV1;002;01;+0001.0000;02;+0002.0000;” + CR (0x0D).
  - Ex2. If you want to set GV100 and GV101 as 100 and 101 respectively,
    - ✓ Request: “>GV1;002;a0;+0100.0000;a1;+0101.0000;” + LF (0x0A).
    - ✓ Response: “<GV1;002;a0;+0100.0000;a1;+0101.0000;” + CR (0x0D).

15. Set Serial Number: You can set the serial number of the part.

- **Request: “>SN1;” + Serial Number + “;” + LF**
- **Response: “<SN1;” + CR**
  - Ex1. If you want to set the serial number as “123456789”,
    - ✓ Request: “>SN1;123456789;” + LF (0x0A).
    - ✓ Response: “<SN1;” + CR (0x0D).
  - Ex2. If you want to set the serial number as “abcdefg”,
    - ✓ Request: “>SN1;abcdefg;” + LF (0x0A).
    - ✓ Response: “<SN1;” + CR (0x0D).

※ **Timing Sequence**


START
END
START
END
Program
Cycle 1
Cycle 2
>DRD, >DAF, >S
Return Real-time Data
Return the Results of Cycle 2
>DAA, >DAB,
>D01, >D02, ...
>Da0, >Db0,
>I, >DEE
Return the Results of Cycle 1
Return the Results of the previous Cycle

B. <Scan In Mode>

1. Example #1 (with [USE FORMAT])
   - Scanned Information: 123456789
   - Configuration Setting
     - Starting Byte No: 0
     - Length: 6
     - Total Length: 9
   - Saved Information: 123456
   - Linked DO turned on.
2. Example #2 (with [USE FORMAT])
   - Scanned Information: 123456789
   - Configuration Setting
     - Starting Byte No: 1
     - Length: 6
     - Total Length: 9
   - Saved Information: 234567
   - Linked DO turned on.
3. Example #3 (with [USE FORMAT])
   - Scanned Information: 123456789
   - Configuration Setting
     - Starting Byte No: 3
     - Length: 6
     - Total Length: 8
   - Saved Information: None (because scanned information is longer than Total Length)
   - Linked DO not be turned on.
4. Example #4 (with [USE FORMAT])
   - Scanned Information: 123456789012
   - Configuration Setting
     - Starting Byte No: 1
     - Length: 6
     - Total Length: 9
   - Saved Information: 234567
   - Linked DO turned on.
5. Example #5 (with [NOT USE FORMAT])
   - Scanned Information: 123456789012
   - Configuration Setting
     - Starting Byte No: N/A
     - Length: N/A
     - Total Length: N/A
   - Saved Information: 123456789012 (Max Allowed Length is 59)
   - Linked DO turned on.

APPENDIX #2: LAN (UDP) COMMUNICATION EXAMPLE

A. You can get the required data through LAN Communication. Protocol for LAN communication is exactly same as RS232 Protocol.

B. You have to use UDP protocol (not TCP/IP).

C. OACIS UDP server Port Number: 2007 ~2010

1. The LAN socket to each Port Number is supposed to be set differently.
2. If you want to connect multi devices to the OACIS, you have to use different port number. Max 4 devices are allowed.
   a. Socket 1 : Port 2007 = OACIS ↔ OACIScom (Dedicated)
   b. Socket 2 : Port 2008 = OACIS ↔ Device 1
   c. Socket 3 : Port 2009 = OACIS ↔ Device 2
   d. Socket 4 : Port 2010 = OACIS ↔ Device 3

D. It is strongly recommended that each external device should have a different port number.
When 2 or more external devices with the same Port number request communications to OACIS, data omission problems might happen.

APPENDIX #3: OMRON G SERIES SERVO DRIVE SETTING

Note: If you changed Servo Drive due to some reasons without ATA's support, you may need to confirm and modify the settings per the below table before you run any operation of OACIS otherwise you can damage the system.

Para. No	Contents	Range	Unit	Default	Setting for OACIS
Pn02	Control Mode Selection	0 to 6	-	0	**2**
Pn0B	Operation Switch When Using Absolute Encoder	0 to 2	-	0	**1**
Pn14	Torque Command Filter Time Constant	0 to 2500	0.01ms	80	**0**
Pn50	Speed Command Scale	10 to 2000	(r/min)/V	300	**500* (or 450)**
Pn56	the Speed Limit in Torque Control Mode	−20000 to 20000	r/min	50	**5,000** (or 4,500)**
Pn5B	Torque Command/Speed Limit Selection	0 or 1	-	0	**1**
Pn5C	Torque Command Scale	10 to 100	0.1 V/100%	30	**34**

Note *: It depends on Servomotor's max speed. 500 for max 5,000 rpm ServoMotor / 450 for max 4,500 rpm Servo Motor

Note **: It depends on Servomotor's max speed. 5,000 for max 5,000 rpm ServoMotor / 4,500 for max 4,500 rpm Servo Motor

**** You may use default value for the below parameters. But you need to confirm.***

Para. No	Contents	Range	Unit	Default	Setting for OACIS
Pn04	Drive Prohibit Input Selection	0 to 2	-	1	**1**
Pn44	Encoder Divider Numerator Setting	0 to 32767	-	2500	**2,500**
Pn45	Encoder Divider Denominator Setting	0 to 32767	-	0	**0**
Pn5D	Torque Output Direction Switch	0 or 1	-	0	**0**
Pn5E	No. 1 Torque Limit	0 to 500	%	300	**300**

Please refer to the below description on how to modify the parameters. Below descriptions were captured from OEM's' manual. You can download the proper manual from ATA or OMRON's website.

http://atainc.com/en/Support/Download01.html

Setting and Checking Parameters

■ Overview

Use the following procedure to set or check parameters.

- •Go to Parameter Setting Mode. Press the Data key, and then press the Mode key once.
- •Set the parameter number (Pn□□) using the Increment and Decrement keys.
- •Display the parameter setting by pressing the Data key.
- •Change the parameter setting using the Increment, Decrement, and Shift keys.
- •Save the changed setting to memory and return to the parameter number display by pressing the Data key.

■ Operating Procedures

Displaying Parameter Setting Mode

PR02G keys	Front panel keys	Display example	Explanation
		r 0	The default display is displayed.
DATA	DATA	Un_SPd.	Press the Data key to display Monitor Mode.
		Pn_r00.	Press the Mode key to display Parameter Setting Mode.

Setting the Parameter Number

PR02G keys	Front panel keys	Display example	Explanation
		Pn_ 07.	Set the number of the parameter to be set or checked.

Displaying Parameter Settings

PR02G keys	Front panel keys	Display example	Explanation
		Pn_ 07.	The parameter number will be displayed.
DATA	DATA	3.	Press the Data key. The setting of the parameter will be displayed.

Changing Parameter Settings

• The following operation is not required if you are only checking a parameter setting.

PR02G keys	Front panel keys	Display example	Explanation
		3.	The present setting will be displayed.
		5.	Use the Shift, Increment, and Decrement keys to change the setting. The Shift key is used to change the digit.

Saving the New Setting to Memory and Returning to the Parameter Number Display

• The following operation is not required if you are only checking a parameter setting.

PR02G keys	Front panel keys	Display example	Explanation
DATA	DATA	5.	Press the Data key. The new parameter setting will be saved and the parameter number will be displayed again.

Parameter Write Mode

Settings changed in Parameter Setting Mode must be saved to EEPROM. To do so, the following procedure must be performed.

1. Saving Changed Settings

Key operation	Display example	Explanation
	EE_SEt	Press the Mode key to display Parameter Write Mode.
	EEP -.	Press the Data key to enter Parameter Write Mode.
	EEP --.	Press the Increment key for 5 s or longer.
	------.	The bar indicator will increase.
	StArt	Writing will start. (This display will appear only momentarily.)
	F inish.	This display indicates a normal completion. In addition to the "Finish," either "Reset" or "Error" may be displayed. If "Reset" is displayed, writing has been completed normally, but some of the changed parameters will be enabled only after the power has been turned OFF and ON again. Turn OFF the Servo Drive power supply and then turn it ON again. "Error" is displayed if there is a writing error. Write the data again.

APPENDIX #4: OMRON G5 SERIES SERVO DRIVE SETTING

Note: If you changed Servo Drive due to some reasons without ATA's support, you may need to confirm and modify the settings per the below table before you run any operation of OACIS otherwise you can damage the system.

Para. No	Contents	Range	Unit	Default	SETTING For OACIS
Pn001	**Control Mode Selection** 0 : Position control(pulse train command) 1 : Speed control(analog command) **2 : Torque control(analog command)** 3 : Mode 1:Position control, Mode 2: Speed control 4 : Mode 1 : Position control, Mode 2: Torque control 5 : Mode 1: Speed control, Mode 2: Torque control 6 : Fully-closed control	0 to 6	-	0	**2**
Pn317	**Torque Command/ Speed Limit Selection** 0 : Analog input 1 (TREF1)/Pn321 1 : Analog input 2 (TREF2)/Analog input(VLIM) 2 : Analog input 1 (TREF1)/Pn321,Pn322	0 to 2	-	0	**1**
Pn013	**No. 1 Torque Limit**	0 to 500	%	500	**300**

**** You may use default value for the below parameters. But you need to confirm.***

Para. No	Contents	Range	Unit	Default	SETTING For OACIS
Pn011	**Encoder Dividing Numerator**	1 to 262,144	-	2500	**2500**
Pn015	**Operation Switch when Using Absolute Encoder** 0 : Use as absolute encoder. **1 : Use as incremental encoder.** 2 : Use as absolute encoder but ignore multi-rotation counter overflow.	0 to 2	-	1	**1**
Pn071	**Speed Command/Torque Command Input Overflow Level Setting** Use this parameter to set the overflow level for Speed Command Input (REF: CN1 pin 14) or Torque Command Input (TREF1: CN1 pin 14) using voltage after offset adjustment. Excessive analog input (alarm code 39) will not be detected if this parameter is set to 0.	0 to 100	0.1V	0	**0**
Pn104	**Torque Command Filter Time Constant**	0 to 2,500	0.01ms	84	**-**
Pn302	**Speed Command Scale**	0 to 2,000	(r/min)/V	500	**500**
Pn319	**Torque Command Scale**	10 to 100	0.1 V /100%	30	**-**
Pn320	**Torque Output Direction Switch** 0 : Direction of motor torque: The +command indicates the forward direction as viewed from the shaft end. 1 : Direction of motor torque: The +command indicates the reverse direction as viewed from the shaft end.	0 or 1	-	0	**0**
Pn321	**Speed Limit Value Setting**	0 to 20,000	r/min	50	**-**
Pn503	**Encoder Dividing Denominator**	0 to 262,144	-	0	**0**
Pn504	**Drive Prohibition Input Selection** 0 : Forward drive prohibition input and reverse drive prohibition input enabled. 1 : Forward drive prohibition input and reverse drive prohibition input disabled. 2 : Forward drive prohibition input and reverse drive prohibition input enable.	0 to 2	-	1	1

APPENDIX #5: MITSUBISHI MR-J3-A SERIES SERVO DRIVE SETTING

Note: If you changed Servo Drive due to some reasons without ATA's support, you may need to confirm and modify the settings per the below table before you run any operation of OACIS otherwise you can damage the system.

Para. No	Contents	Range	Unit	Default	SETTING for OACIS
PA01	**Selection of control mode** 0000 : Position control mode 0001 : Position control mode and speed control mode 0002 : Speed control mode 0003 : Speed control mode and torque control mode **0004 : Torque control mode** 0005 : Torque control mode and position control mode	0000 to 0005	-	0000	**0004**
PA04	**Using Electromagnetic brake interlock (MBR)** 0 : Output device assigned with parameter No. PD14 **1 : Electromagnetic brake interlock (MBR)**	0000 to 0001	-	0000	**0001**
PA15	**Encoder Output Pulse (Pulse/Revolution)**	0 to 2,500	pulse/rev	4,000	**12,000**
PC12	**Analog speed limit maximum speed**	1 to 50,000	r/min	0	**6,000**

APPENDIX #6: MITSUBISHI MR-J4-A SERIES SERVO DRIVE SETTING

Note: If you changed Servo Drive due to some reasons without ATA's support, you may need to confirm and modify the settings per the below table before you run any operation of OACIS otherwise you can damage the system.

Para. No	Contents	Range	Unit	Default	SETTING for OACIS
PA01	**Selection of control mode** 0000 : Position control mode 0001 : Position control mode and speed control mode 0002 : Speed control mode 0003 : Speed control mode and torque control mode **0004 : Torque control mode** 0005 : Torque control mode and position control mode	1000 to 1005	-	1000	**1004**
PA15	**Encoder Output Pulse (Pulse/Revolution)**	0 to 4,194,304	pulse/rev	4,000	**12,000**
PC12	**Analog speed limit maximum speed**	1 to 50,000	r/min	0	**6,000**
PD24	**Using Electromagnetic brake interlock (MBR)** 00 : Always Off 02 : RD 03 : ALM 04 : Always Off **05 : MBR (Electromagnetic brake interlock)** 06 : DB 07 : VLC 08 : WNG 09 : BWNG 0A : Always Off 0B : VLC 0C : ZSP 0D : MTTR 0F : Always Off 10 : Always Off 11 : Always Off	0000 to 0011	-	0000	**0005**

APPENDIX #7: PANASONIC MINAS A5-SERIES SERVO DRIVE SETTING

Note: If you changed Servo Drive due to some reasons without ATA's support, you may need to confirm and modify the settings per the below table before you run any operation of OACIS otherwise you can damage the system.

Para. No	Contents	Range	Unit	Default	SETTING for OACIS
Pr0.01	**Control mode setup** 0 : Position(1st mode) 1 : Velocity(1st mode) **2 : Torque(1st mode)** 3 : Position(1st mode), Velocity(2nd Mode) 4 : Position(1st mode), Torque(2nd Mode) 5 : Velocity(1st mode), Torque(2nd Mode) 6 : Full-closed(1st mode)	0 to 6	-	0	**2**
Pr0.11	**Output pulse counts per one motor revolution**	0 to 262,144	-	2,500	**10,000**
Pr0.13	**1st torque limit**	0 to 500	%	500	**300**
Pr3.17	**Selection of torque command** 0 : Analog input 1, Parameter value **1 : Analog input 2, Analog input 1** 2 : Analog input 1, Parameter value	0 to 2	-	0	**1**

**** You may use default value for the below parameters. But you need to confirm.***

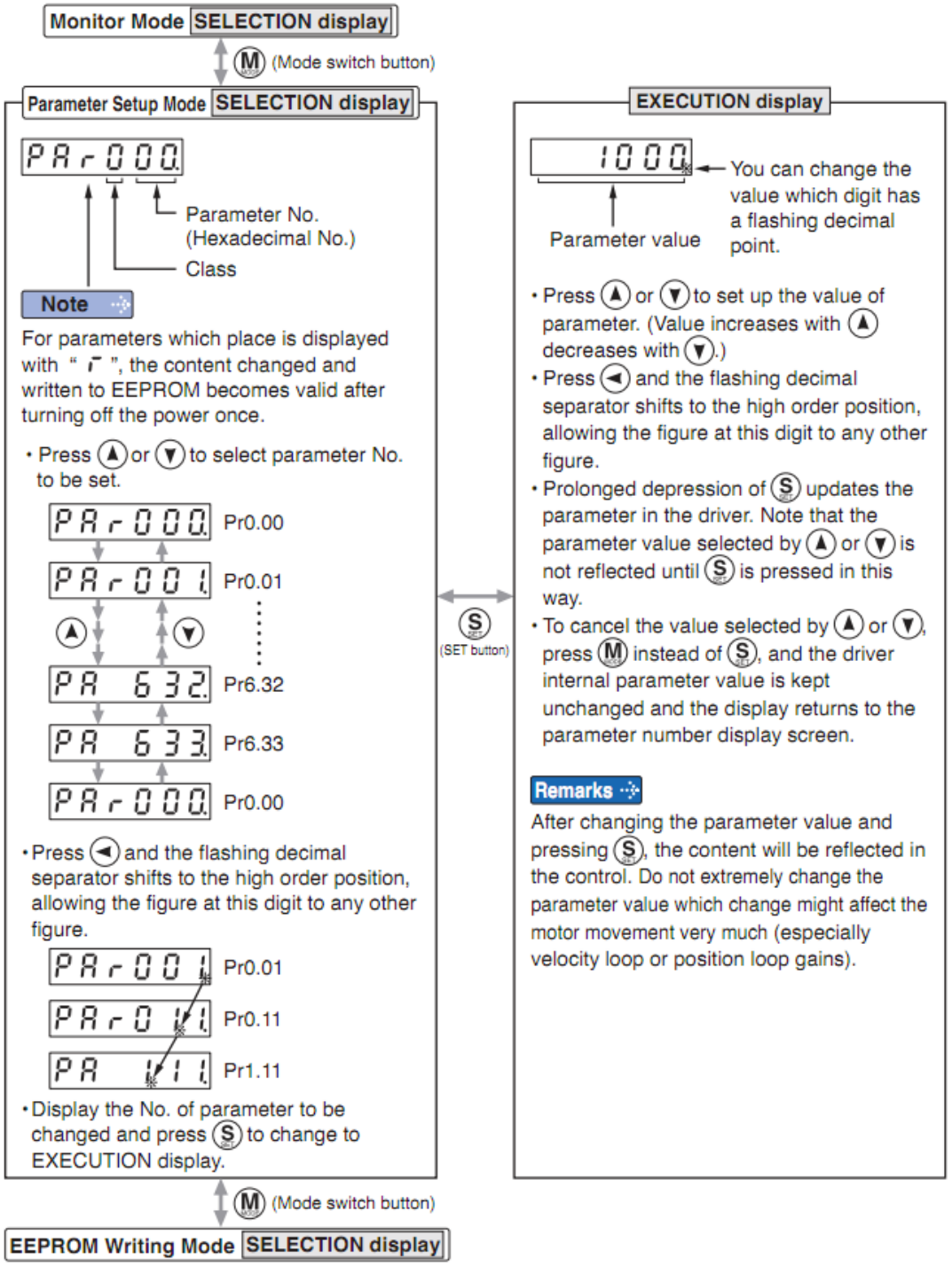
Para. No	Contents	Range	Unit	Default	SETTING for OACIS
Pr0.15	**Absolute encoder setup**	0 to 2	-	1	**1**
Pr3.19	**Input gain of Torque Command**	10 to 100	0.1 V /100%	30	**-**
Pr3.20	**Torque Output Direction Switch** 0 : Direction of motor torque: The +command indicates the forward direction as viewed from the shaft end. 1 : Direction of motor torque: The +command indicates the reverse direction as viewed from the shaft end.	0 or 1	-	0	**0**
Pr5.03	**Denominator of pulse output division**	0 to 262,144	-	0	**0**
Pr5.04	**Over-travel inhibit input setup** 0 : POT → Inhibit positive direction travel NOT → Inhibit negative direction travel **1 : Disable POT, NOT** 2 : POT or NOT input activates Err38.0 Run-inhibition input protection	0 to 2	-	1	**1**

Please refer to the below description on how to modify the parameters. Below descriptions were captured from OEM's' manual. You can download the proper manual from ATA or Panasonic's website.
http://industrial.panasonic.com/ww/i_e/25000/motor_fa_e/motor_fa_e.html

2 Preparation

15. How to Use the Front Panel

Parameter Setup Mode

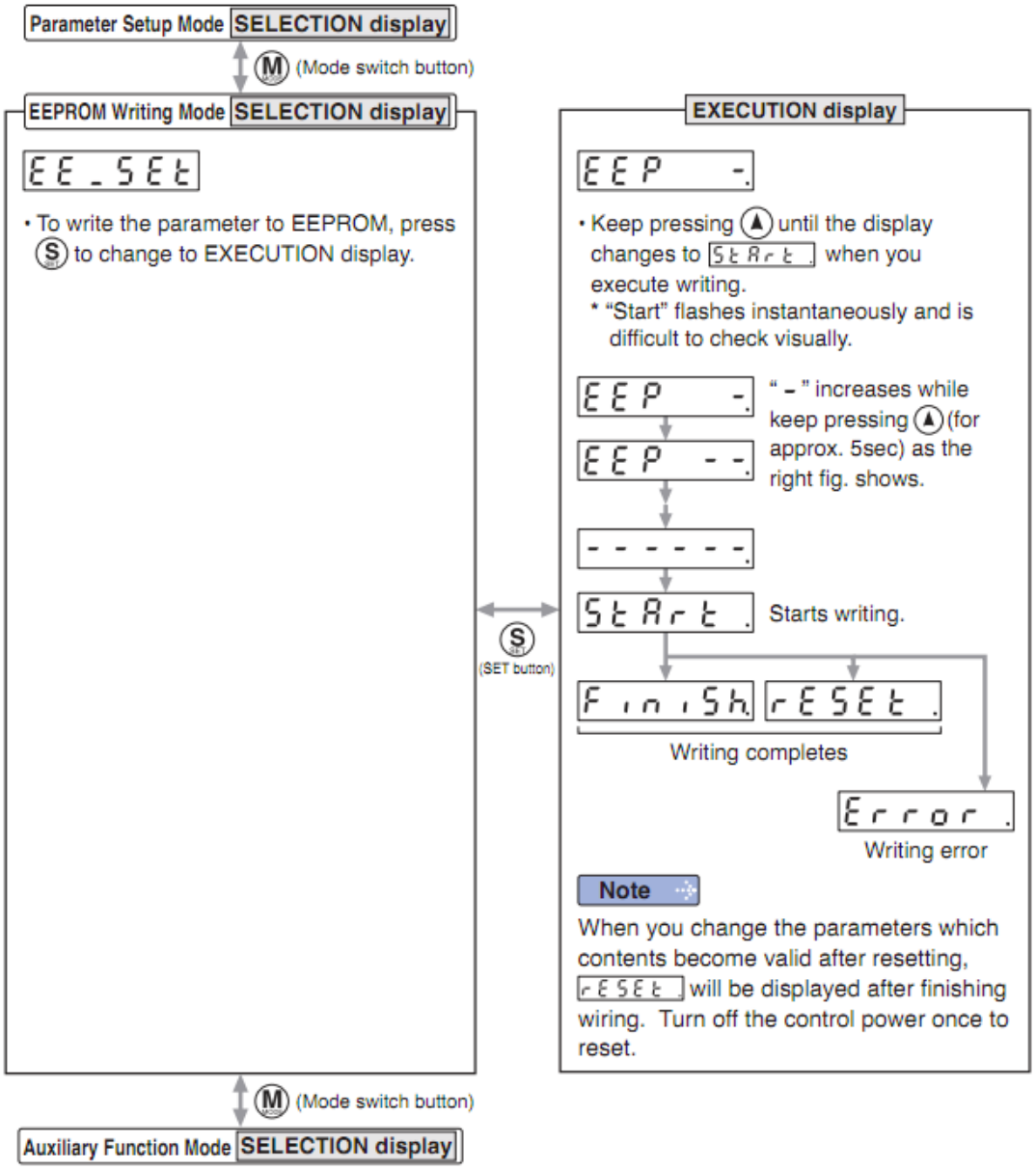


Note

- After setting up parameters, return to SELECT mode, referring to structure of each mode (P.2-88).
- Each parameter has a limit in number of places for upper-shifting.

15. How to Use the Front Panel

EEPROM Writing Mode



Caution

1. When writing error occurs, make writing again. If the writing error repeats many times, this might be a failure.
2. Don't turn off the power during EEPROM writing. Incorrect data might be written. If this happens, set up all of parameters again, and re-write after checking the data.
3. When the error defined by Err11.0 "Under voltage protection of control power supply" occurs, Error. is displayed indicating that no writing is made to EEPROM.

ATA INC Assembly, Test & Analysis

APPENDIX #8: PANASONIC MINAS A6-SERIES SERVO DRIVE SETTING

Note: If you changed Servo Drive due to some reasons without ATA's support, you may need to confirm and modify the settings per the below table before you run any operation of OACIS otherwise you can damage the system.

Para. No	Contents	Range	Unit	Default	SETTING for OACIS
Pr0.01	**Control mode setup** 0 : Position(1st mode) 1 : Velocity(1st mode) **2 : Torque(1st mode)** 3 : Position(1st mode), Velocity(2nd Mode) 4 : Position(1st mode), Torque(2nd Mode) 5 : Velocity(1st mode), Torque(2nd Mode) 6 : Full-closed(1st mode)	0 to 6	-	0	**2**
Pr0.11	**Output pulse counts per one motor revolution**	0 to 262,144	-	2,500	**10,000**
Pr0.13	**1st torque limit**	0 to 500	%	500	**300**
Pr3.02	**Input gain of speed command**	10 to 2,000	-	500	**600**
Pr3.17	**Selection of torque command** 0 : Analog input 1, Parameter value **1 : Analog input 2, Analog input 1** 2 : Analog input 1, Parameter value	0 to 2	-	0	**1**

**** You may use default value for the below parameters. But you need to confirm.***

Para. No	Contents	Range	Unit	Default	SETTING for OACIS
Pr0.15	**Absolute encoder setup**	0 to 2	-	1	**1**
Pr3.19	**Input gain of Torque Command**	10 to 100	0.1 V /100%	30	**-**
Pr3.20	**Torque Output Direction Switch** 0 : Direction of motor torque: The +command indicates the forward direction as viewed from the shaft end. 1 : Direction of motor torque: The +command indicates the reverse direction as viewed from the shaft end.	0 or 1	-	0	**0**
Pr5.03	**Denominator of pulse output division**	0 to 262,144	-	0	**0**
Pr5.04	**Over-travel inhibit input setup** 0 : POT → Inhibit positive direction travel NOT → Inhibit negative direction travel **1 : Disable POT, NOT** 2 : POT or NOT input activates Err38.0 Run-inhibition input protection	0 to 2	-	1	**1**

REVISION

v1.00: Engineering Released

v1.30 (Feb. 21, 2011)

- Correct RS232 Protocol (“>D02”: read 4 GVs from 2nd GV / Complying with firmware v1.9 or later)

v1.40 (Feb. 21, 2012)

- Added RS232 Protocol: >DAB / >Da0 / >Db0

- Added LAN Communication Protocol (Appendix #2)

- Added RS232 Port Data Out Mode option (Section #I.E)

- Added OMRON SERVO DRIVE Setting (Appendix #3)

v1.50 (Mar. 07, 2012)

- Added Section III (Admin Configuration)

v1.60 (Apr. 20, 2012)

- Section III, Change OACIS IP Address, Added

- Scan In mode description Updated.

v1.70 (May. 20, 2013)

- Appendix RS232 Protocol “Set GV” and “Set Serial Number” Added.

- Section IV.C, User Config1 Updated.

v1.71 (July. 08, 2013)

- Appendix #4, #5 Added

v1.72 (October. 03, 2013)

- Press (N) Axis type Added

v1.73 (December. 08, 2013)

- Appendix RS232 Protocol “>DAF” Added

- Timing Sequence of Appendix RS232 Protocol in <Data Out Mode> Added

- Move to Position Target Tolerance in User Configuration #1 Added

- Panasonic MINAS A5-SERIES SERVO DRIVE Setting Added

v1.74 (December. 08, 2013)

- Appendix 2.C.1 is Updated

v1.75 (Jan. 24, 2014)

- Start Delimiter, End Delimiter, Time Limit In <RS232 Ports> Added

- Appendix 2.C.1 ~ 3 updated

- Panasonic MINAS A5-SERIES SERVO DRIVE Setting Updated

v1.77 (Feb. 24, 2014)

- Document Format Updated

v1.78 (Jun. 17, 2014)

- Document Format Updated

v1.79 (Oct. 15, 2014)

- “Headers & Footers” Format Updated

v1.80 (Oct. 28, 2014)

- Image Size & Resolution Updated.

v1.81 (Feb. 14, 2015)

- Explanation of “Starting Byte No.” Updated.

- DRD protocol in <APPENDIX #1> Added.

v1.82 (Apr. 11, 2015)

- Image updated. Home Signal Priority and Stop Option Added.

v1.83 (Jun. 16, 2015)

- Contents page Revised.

v1.84 (Jul. 21, 2015)

- Jog mode for OACIS-1x Added.
- Press(kgf) in Axis Type of System Configuration Added.
- Generic and kgf in AI Unit of System Configuration Added.

v1.85 (Aug. 18, 2015)

- Encoder Inputs in System Configuration Updated.

v1.86 (Oct. 04, 2015)

- RP1, RP2, RA1, RA2, RE1, RE2 and RAA protocols in <APPENDIX #1> Added.
- Program Execution Time in User Configuration #1 Added.
- Program Start Mode in User Configuration #1 Added.

v1.87 (Jan. 24, 2016)

- LAN COM TEST in User Configuration #1 Added
- Downsized “All contents”

v1.88 (Apr. 29, 2016)

- Appendix 5 Added

v1.89 (Jun. 27, 2016)

- Time Limit in RS232 Ports in I.E Revised

v1.90 (Aug. 04, 2016)

- Explanation of User Configuration #1 in IV.A Revised

v1.91 (Dec. 28, 2016)

- PD No. of MR-J4-A Series in Appendix #6 Revised

v1.92 (Apr. 8, 2017)

- Misspelling in IV Revised

v1.93(Aug. 24, 2017)

- Added >DRD in Appendix #1 – Timing sequence

v1.94(Aug. 10, 2018)

- PANASONIC MINAS A6-Series in Appendix #8 Added
- Page format Updated

v1.95(Oct. 15, 2019)

- How to jog the Axis by Hardwire with OACIS-1XC/2XC in User Configuration #1 updated
- Tare Axes Load After Homing in User Configuration #1 Added
- Appendix RS232 Protocol “>DRD” Updated
- Appendix RS232 Protocol “>DRF” Added
- Fieldbus Config in User Configuration #1 Added
- Fieldbus Module Config in User Configuration #1 Added

v1.96(Sep. 11, 2020)

- Program Execution Time Option (#40) in User Configuration #1 Added
- Fieldbus Config Options in User Configuration #1 Added

v1.97(Feb. 18, 2021)

- Homing Option (#41) in User Configuration #1 Added

v1.98(May 12, 2021)

- Stop Option 2 in User Configuration #1 Added