AIVE

FLEXIBLE PARTS FEEDER

Basic manual

21th.Apr.2025. Rev2.0

AIM

1. Copyright and History

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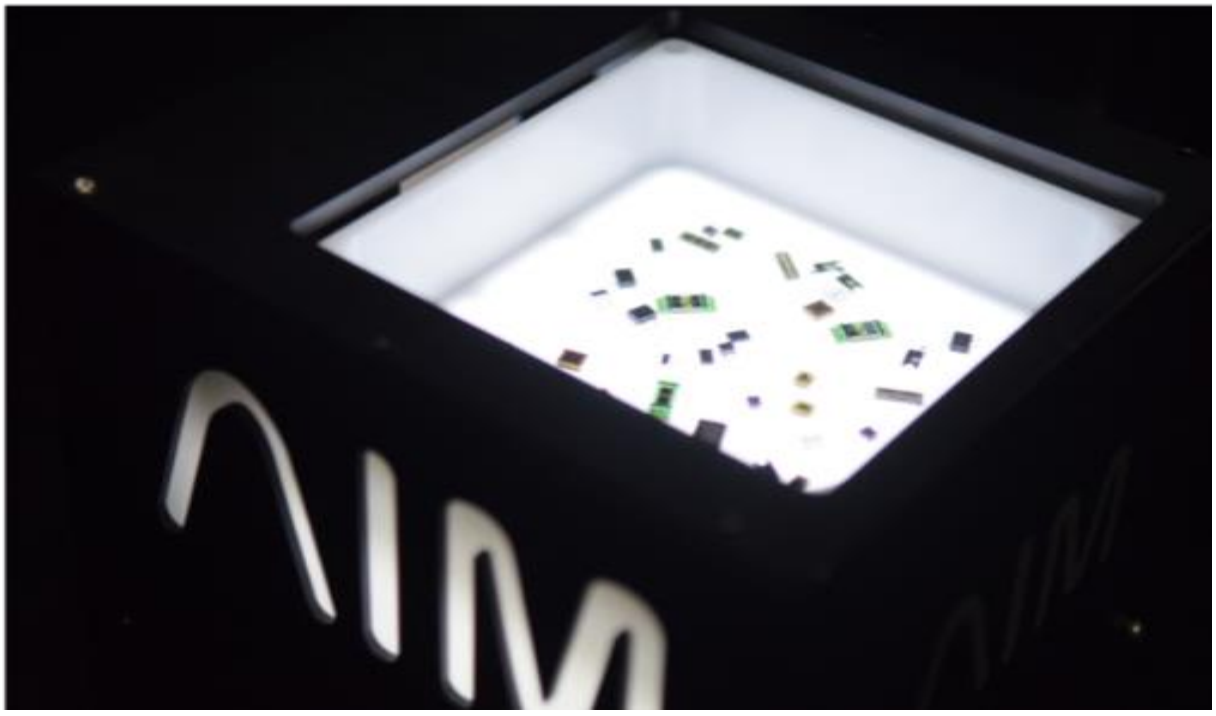
sales@aim-fa.com

2. Table of contents

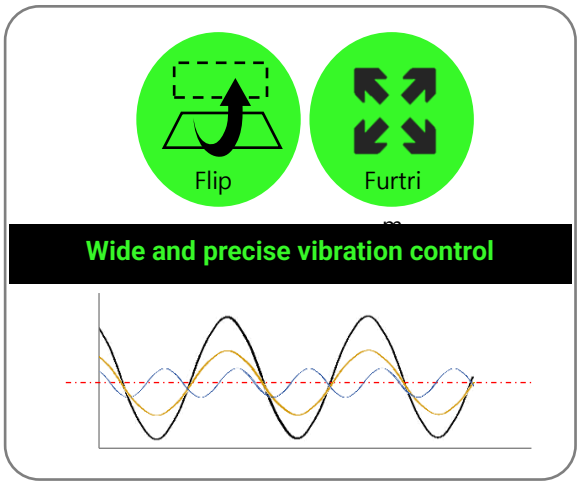
3. AIM®Introduction and Safety Features

3-1 Introduction to AIVE®

AIVE® feeder is a vibrating feeder, which can supply a wide range of components using a visionary industrial robot system. Parts can have various shapes and be made of different materials. For slippery, fragile or precise parts, please contact the technical office of AIM Co., Ltd. AIVE® feeders are not suitable for handling liquid products or flexible materials.
The AIVE® feeder consists of a square-shaped plastic box attached to the top of the vibrating generator and various board units. AIVE®'s plastic top can be selected according to the product being fed, the required material and thickness. You can also choose the colour you need for your product.

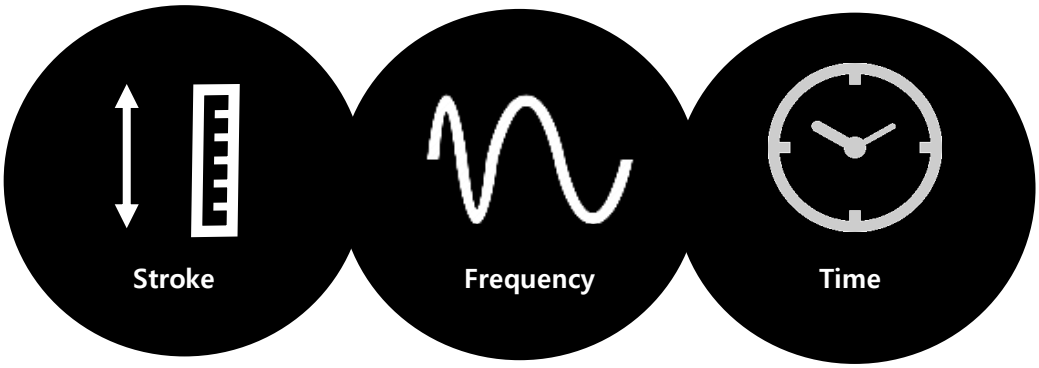


The picture above is the exterior of the AIVE® feeder. Since the vibrating platform is translucent, the camera can identify the silhouette of the plastic part.



AIVE® feeders are an essential component of robots and vision systems.

It is optimized for turning and spreading products with precise vibration.



Optimized data control

Vibration control in 0.1 mm, 1 Hz increments

- 3 Intuitive Data Controls
- PC automatic control, manual operation possible

3-2 AIVE® Safety Features

1) Temperature sensor of motor

It is set to 36°C, and if it exceeds this limit, an alarm code will be displayed and the motor will be cut off.

2) Peak limitation:

Motor maximum current time setting/forced shutdown if set time exceeds 4000mA, 1Sec

3) Motor stuck _temperature :

When the motor does not move by external force, it is forced to stop when the set timeout is exceeded.

What to do in an emergency

Press the E-Stop button (yellow background / red pushbutton) on all robots used together.

USE THE POWER OFF BUTTON ON THE SIDE OF THE AIVE.

This button disconnects the power to the feeder and follow the internal procedures of the company or organization regarding emergency situations.

When a fire occurs, CO2 is used to extinguish the fire.

4. AIVE® Appearance and Installation

4-1 AIVE® 2.2, Denomination

4-2 AIVE® Power Supply

Supply of power

The 24 VDC 5A power supply is supplied by the user.

notebook

USER must provide the power supply himself. We do not support this. The power cable and power supply must comply with the specifications mentioned in the following table.

Attention: Please **supply SMPS with 24V 5A or higher specification by yourself.**. Under-powered supplies can cause system problems and prevent equipment from functioning correctly.

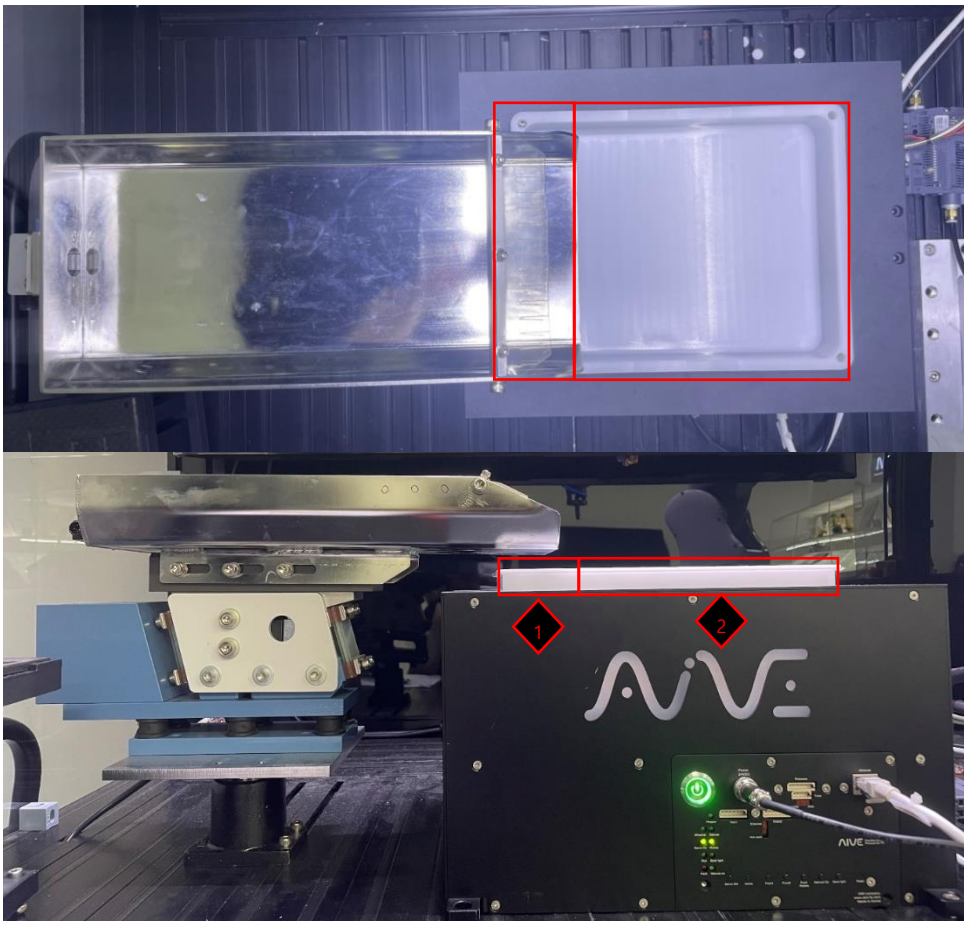
Power Cable

The power cable is included as standard, and the specifications of the connector are as follows.

Connector: K-12-2P, 3M

A : P24V, B : N0V

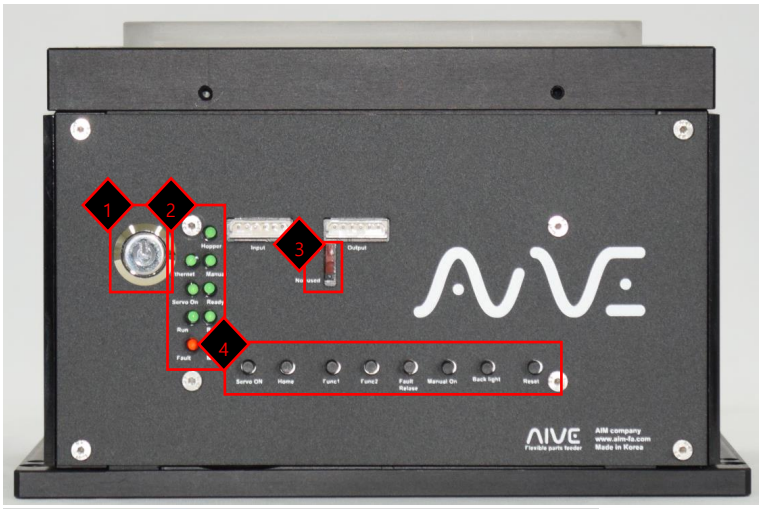
4-3 Installation of Feeder Hopper



Establish dead zones for product supply and define available areas

To increase reliability and efficiency in the product delivery process, set up a dead zone <1> where the product is supplied, and define the remaining areas as usable work areas <2>. Deadzone settings minimize variability and ensure a stable workflow, while in available areas, the robot's path is taken into account to ensure smooth product supply and operation.

4-4 AIVE® Interface Panel



1. Power on/off switch

Press the power switch to turn on and the feeder will be powered on.

2. Status IO / Presence Interface

- **Ethernet/Manual/Servo on**
- **Ready, Run, Fault**
- **Manual on**

3. Ethernet on/off switch

Ethernet

Not used (option added in the future)

4. Manual button / Manual action

- **Servo on/Home**
- **Func#1, Func#2**
- **Fault, Reset**
- **Manual on**
- **Back light**

5. Power supply

DC24V, 5A

Cable Specification : Connector: K-12-2P, 3M

A : P24V, B : N0V

6. Auto. Motor tune/ Firmware

Select Motor Mode

Auto: If you don't need a motor setting, you'll typically use Auto mode.

Motor tune: This mode is used to tune the motor. In most cases, the tuning is completed before the product is delivered.

Fimware: This is the port used for firmware updates.

7. LAN PORT

It is used to connect a LAN port to connect to a network.

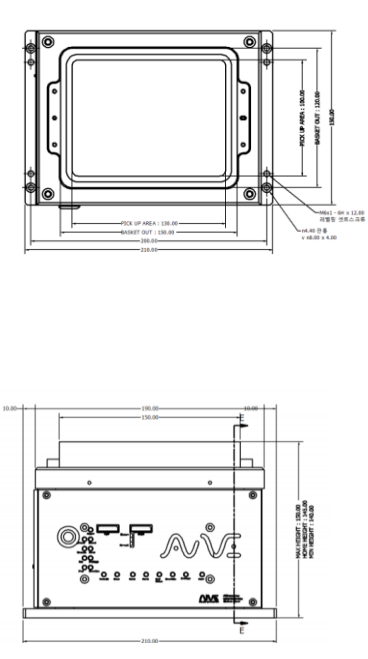
8. Input

input	1	A1
	2	A2
	3	A3
	4	STROBE
	5	SPARE
	6	GND

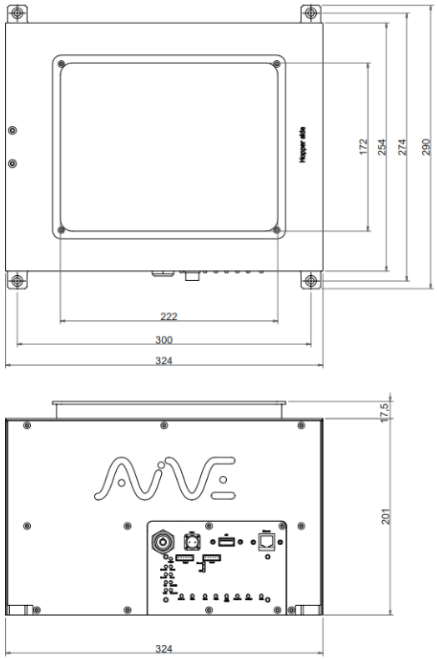
9. Output

Output	1	Fault
	2	Ready
	3	Busy
	4	Spare
	5	Spare
	6	GND

4-5 AIVE® Drawings and Specifications



AIVE 2.2



AIVE 3.0

General sepcification	
Power source	• DC24V / 5A
Vibration control	• Stroke ± 0.1 ~ 7.5mm Max 10 ~ 80Hz
Communication	• Ethernet(TCP/IP)
Convenience	• Manual mode Ethernet
Option	• Calibration plate Vibration plate
Manual mode	• State LED and buttons • Back light on/off • Home, Fault reset
PC communication	• Vibration setting • Test mode

Specifications			
	AIVE2.2	AIVE3.0	AIVE4.0
Typical parts size	•0.5 ~ 20mm	•10 ~ 40mm	•25 ~ 80mm
Payload	•Total 412g •Basket 212g Parts 200g	•Total 617g •Basket 417g Parts 200g	•Total 908g •Basket 608g Parts 300g
Vibration platform	•110 x 140mm	•170 x 220mm	•230 x 306mm
Weight	•3.7Kg	•6Kg	•10Kg
Pick Hight	153.5mm	213.5mm	180.5mm
Maximum Hight	155.5mm	243.5mm	190.5mm

5. AIVE® Control

5-1 AIVE® Operation Principle

AIM performs a rapid vertical reciprocating motion while controlling precise position.

It moves back and forth by accelerating and decelerating at a certain position for smooth and precise vibration.

1) Motor on / Servo on

Activate the internal motor and encoder of the feeder.

Precision encoders have a resolution of 1 micrometer.

2) Stroke

It is the vertical travel distance up and down.

The unit is mm. Input up to 7.5 mm is possible.

For example, if it is 2mm, move 2mm up, 2mm down, and 4mm around Home.

3) Frequency

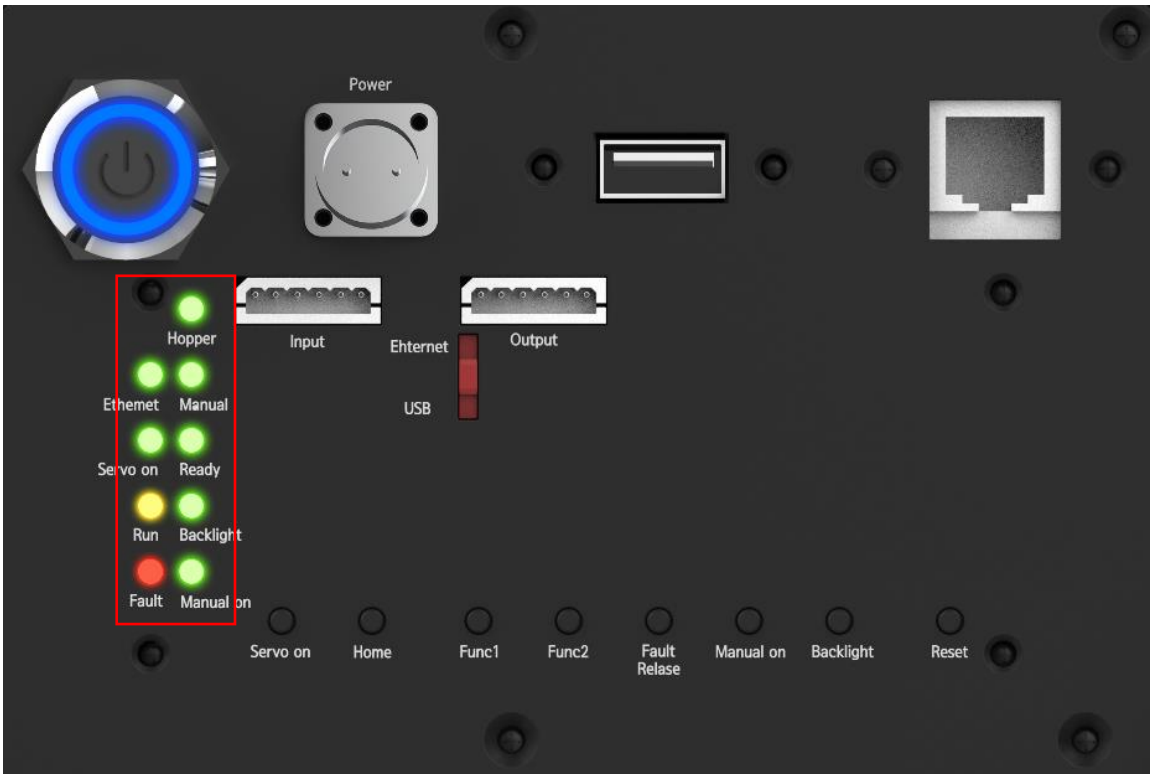
It is the frequency at which you repetitive motion is performed.

Max90Hz.

4) Time / Duration

The duration of the vibration.

5-2 AIVE® Status LED Window



Ethernet: Lights up when Ethernet is connected.

Manual : Turns on when Manual mode is enabled.

Servo on: Turns on when the motor is on.

Ready: The motor is turned on, Home is running, and the encoder is activated.

Run: The operation state in which the AIM vibrates.

Back light: The Back light is on.

Fault: Indicates an error condition.

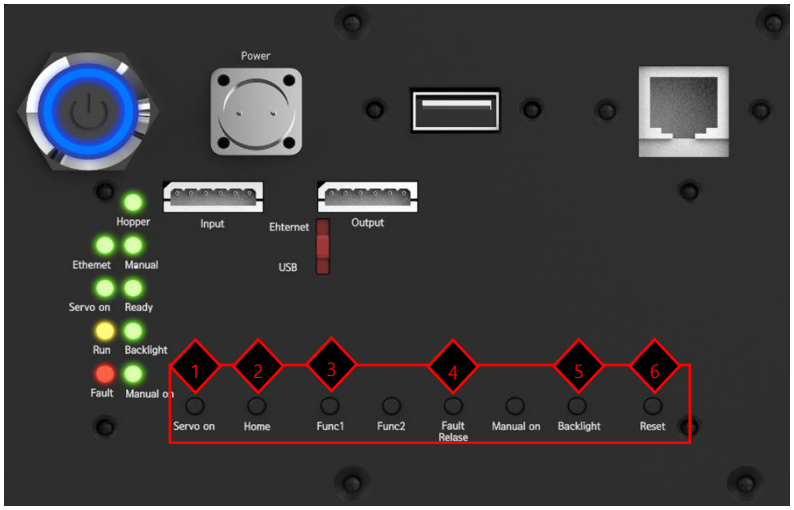
Manual: Manual mode is enabled.

5-3 AIVE® Manual Control

It is a function that can be operated manually using the operation panel on the side of AIVE.

Power is supplied, the power switch is turned on, and the operation is possible. How Digital IO controls and

The same.



1. Serve on: Press for 2~3 seconds to activate Serve on, turn off the power switch and turn it on, it will move to the home position with auto.

2. Home : Moves to the home position once.

3. Func#1, Func#2: Perform an operation using the specified parameters.

It behaves the same as Digital IO. Parameters are available via the AIVE pc program.

4. Fault Release : Disable the error signal.

If you do not receive feedback from Serve on, Home, or connect, or if the motor does not work,

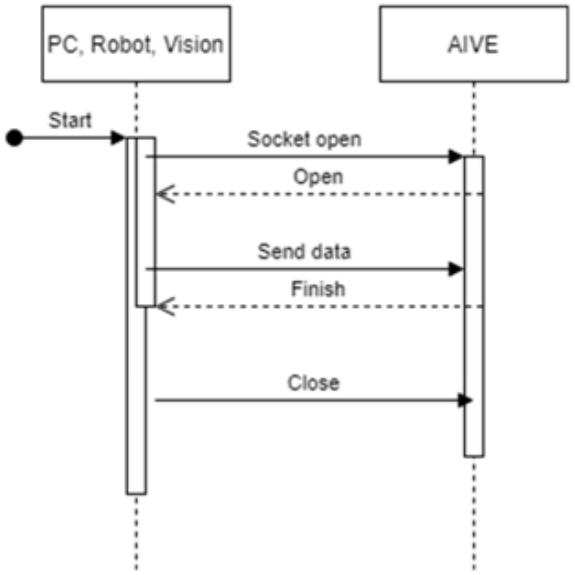
5.Back light: Turn on/off the internal light of AIVE.

6. Reset: You can reset all the memory settings set by the user on the control port.

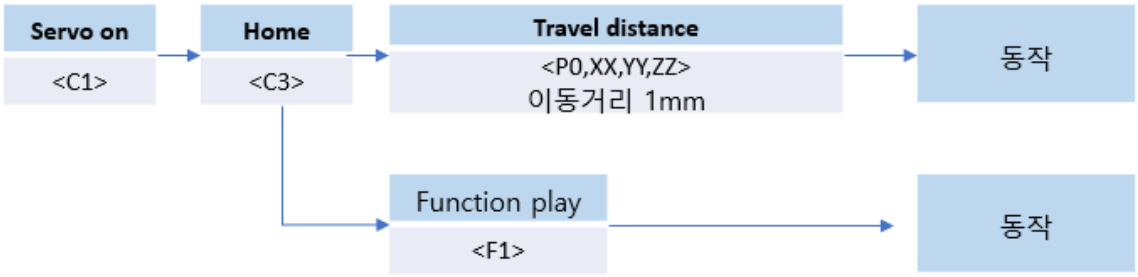
5-4 AIVE® Ethernet Control

AIM offers a wide range of features over Ethernet.

통신 절차



프로그램 예제



Servo On and Home are automatically executed when AIVE power is turned on.

(The Auto Home function is enabled by default, and it is unlocked by pressing and holding the Servo On button on the interface board.)

Servo ON, home position <P0,xx,yy,zz> command is sent when transmitted.

Communication Protocols

command	STX	Mode	Data	ETX	example	Explanation
On	<	C1	-	>	<C1>	Servo on
Off	<	C2	-	>	<C2>	Servo off
HOME	<	C3	-	>	<C3>	HOME
Reset + Home	**<**	**C4**	**-**	**>**	**<C4>**	**Reset + Home**
Motion Play	**<**	**P0**	**,XX,YY,ZZ**	**>**	**<P0,22,20,03>**	
Motion SAVE1	**<**	**P1**	**,XX,YY,ZZ**	**>**	**<P1,22,20,03>**	**Motion save as F1**
Motion SAVE2	**<**	**P2**	**,XX,YY,ZZ**	**>**	**<P2,02,80,10>**	**Motion save as F2**
Motion1 play	**<**	**F1**	**-**	**>**	**<F1>**	**Play Function 1**
Motion2 play	**<**	**F2**	**-**	**>**	**<F2>**	**Play Function 2**
Light On	**<**	**L1**	**-**	**>**	**<L1>**	**LED On**
Light Off	**<**	**L2**	**-**	**>**	**<L2>**	**LED Off**
Function read	**<**	**R**	**-**	**>**	**<R>**	**READ F1 AND F2**
Motor check	**<**	**S**	**-**	**>**	**<S>**	**Motor status check**

Power ON when Servo Auto ON

Auto Home when not in use, you need to move the home position to <C4>

<C1>, <C2>, <C3> are recommended for maintenance, and <C4> is recommended for general users

<P0,22,20,03> → 22mm distance, 20Hz, 300ms vibration

<L1>: Backlight ON / <L2>: Backlight OFF

<R> : Query the saved Function 1 and 2 settings

<S> : Check motor status (READY, Busy, etc.)

Command Response List

Command Separation	explanation	Example response	Remarks
<C1>	Driver ON	FAULT	The command was sent normally, but a FAULT response was returned.
<C2>	Driver OFF	OK FAULT	The command was sent normally, but a FAULT response was returned.
<C3>	Go to Home	OK	Move to Home Location
<C4>	Reset + Auto Home	OK	No response on FAULT\r VPD NOACK
<P0>	Distance/Vibration/Time Play	OK or FAULT_NotHome	Home error if not complete
<P1> or <P2>	Save Motion (1/2)	OK	-
<F1> or <F2>	Saved Motion Execution	OK or FAULT_NotHome	Home error if not complete
<L1> or <L2>	Backlight LED ON/OFF	OK	-
<S>	Health check	INB : READY INB : BUSY INB : FAULT INB : NOK	Current interface state output
<R>	Stored Value Inquiry	Respond with multiple lines P0: 1.2mm,12Hz,1300msec P1: 1.2mm,12Hz,1300msec P2: 1.2mm,12Hz,1300msec	Current setpoint state output

Errors and Special Responses

condition	Response	Remarks
Command error	No response	When an undefined command is received
Receiving action commands in the incomplete state	FAULT_NotHome	-
Complete the action	DONE	When Fault_wait_flag processing is complete
Receiving Commands While Busy	BUSY	When the interface status is BUSY.

5-5 Recommended Specification Parameters of AIVE®

AIVE 2.2

distance	cycle
STROKE(mm)	Hz
01~03	80
04~06	55
07~09	45
10~15	30
16~25	25
26~30	20
31~40	20
41~50	15
50~75	10

AIVE 3.0

distance	cycle
STROKE(mm)	Hz
01~03	80
04~06	55
07~09	45
10~12	35
13~15	25
16~25	20
26~30	20
31~40	15
41~50	10

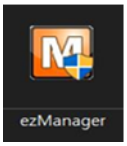
41~75	8

For all of the above parameters, the operating time is 300ms ~3000ms .

5-7 AIVE® IP Change

Install ezManager

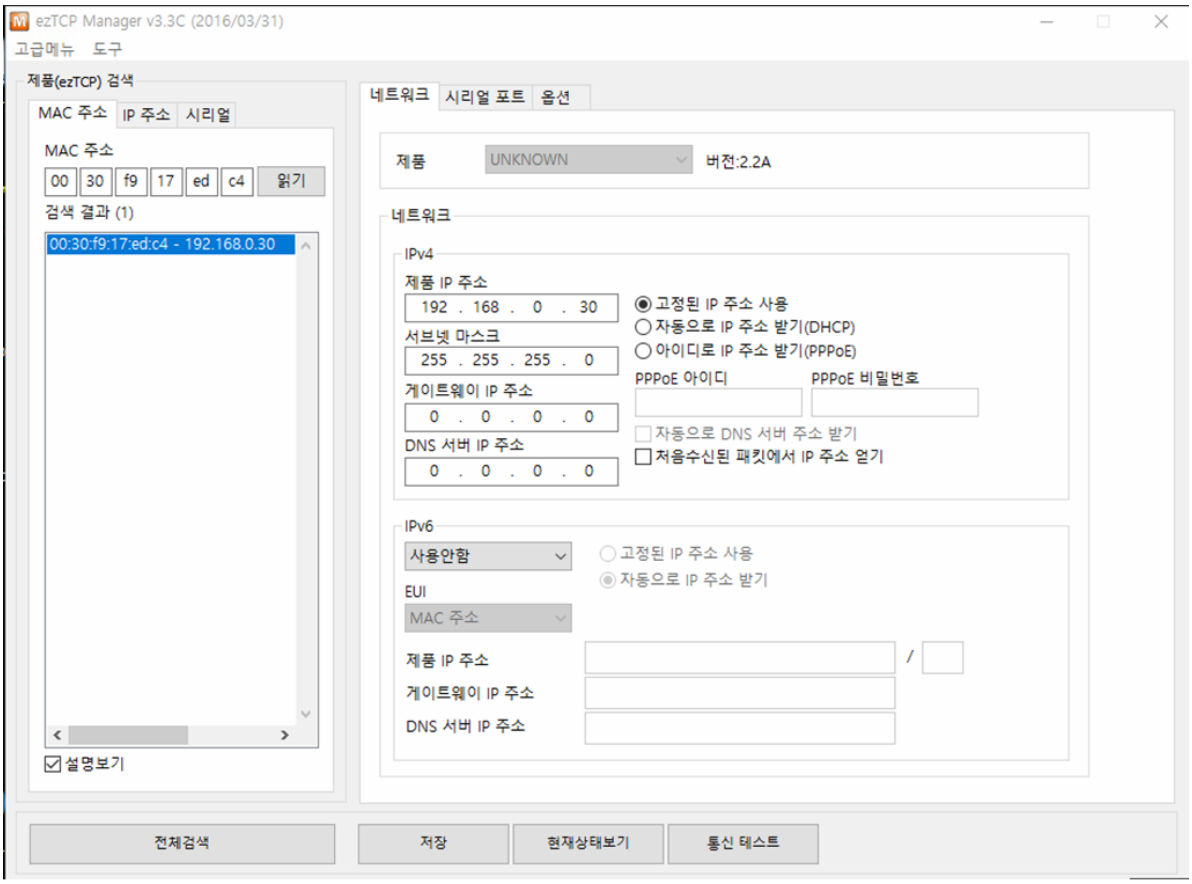
Users can use the program by installing the installation file provided by AIM



ezManager 아이콘

IP Settings

Preparation: Connect the LAN cable to the ave and turn it on. Then, connect it to your PC via a LAN cable.



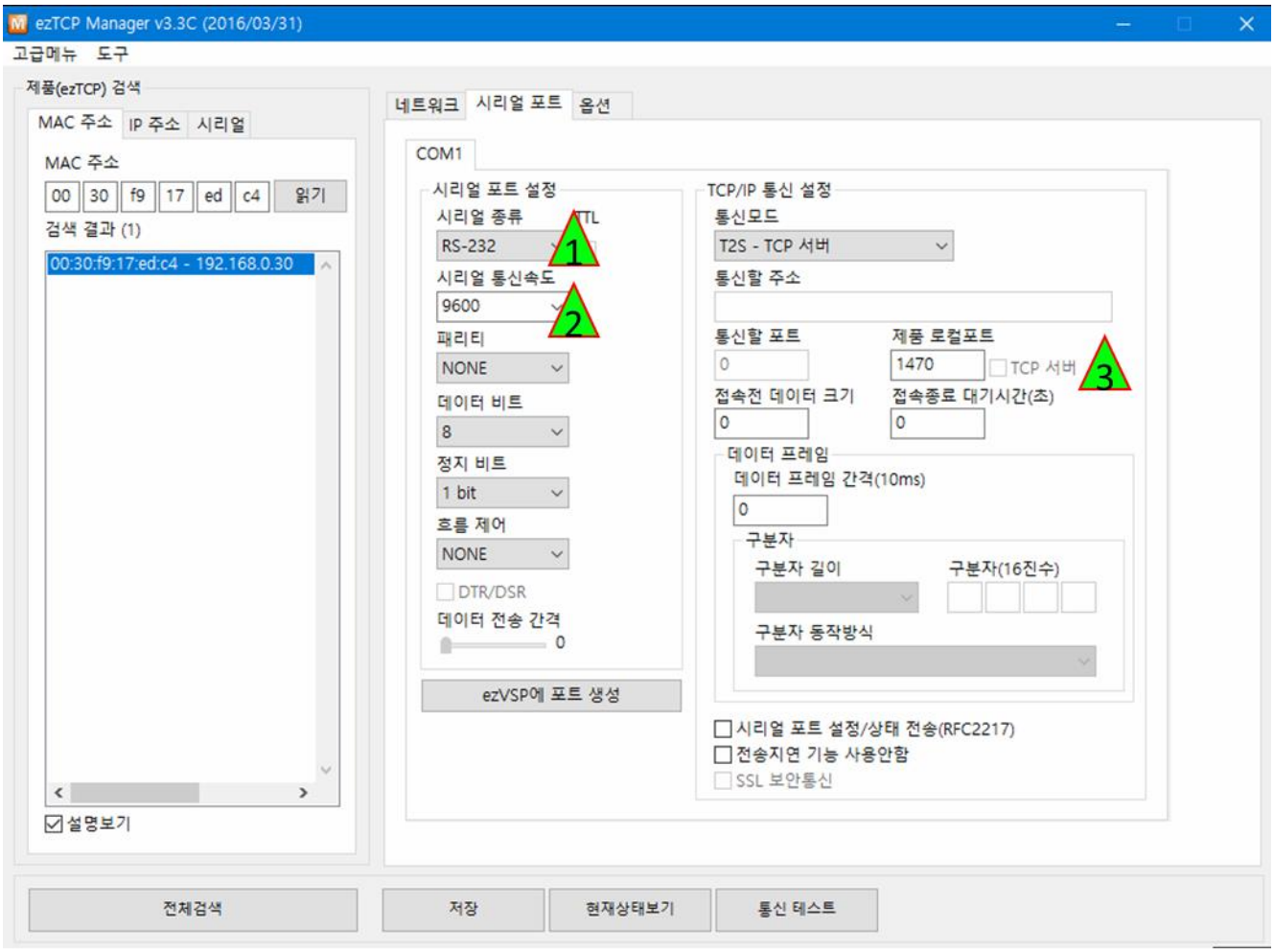
1 전체검색 버튼 누르기

2 IP입력 (PC와 3자리 번지와 동일해야 합니다.) Default 192.168.0.30

3 서브네트 마스크 255.255.255.0

4 시리얼포트 설정으로 가기

Communication Preferences



1 시리얼 종류 RS232선택

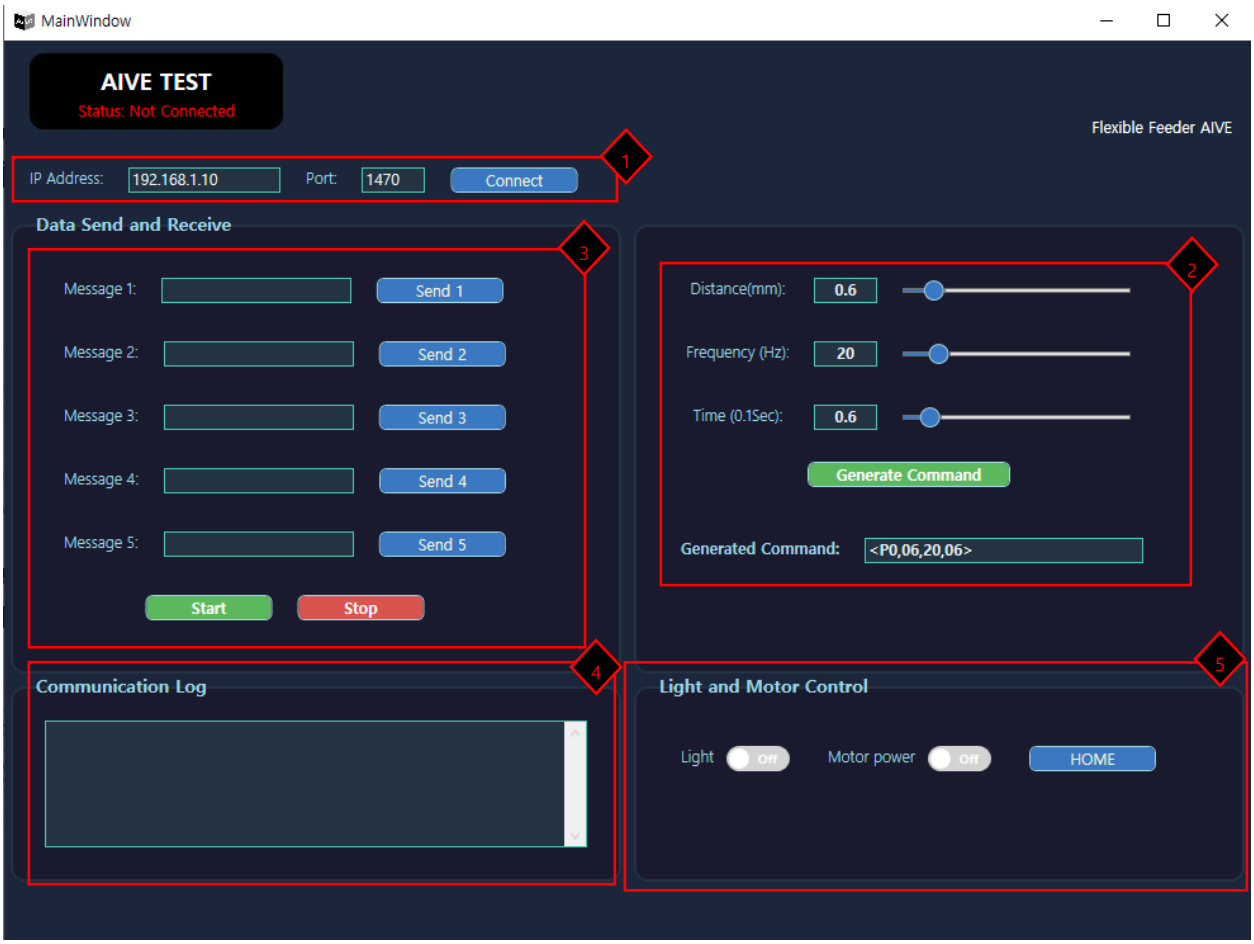
2 시리얼 통신속도 9600

3 로컬포트 (TCP/IP) Default 1470

5-8 AIVE TEST PROGRAM

Users can use the installation file provided by AIM after double-clicking and dragging the program to the desktop

AaveTest Icon



1. Enter the IP of the AIVE you set in ez Manager.

When connecting, you can check the status value in the upper Status.

2. Generate commands of mm,hz,sec.

3. Paste the generated command into Message.

Send1 sends command Start Stop Continuous execution / stop

4. Real-time LOG

5. Light On/Off, Motor power On/Off, Home button