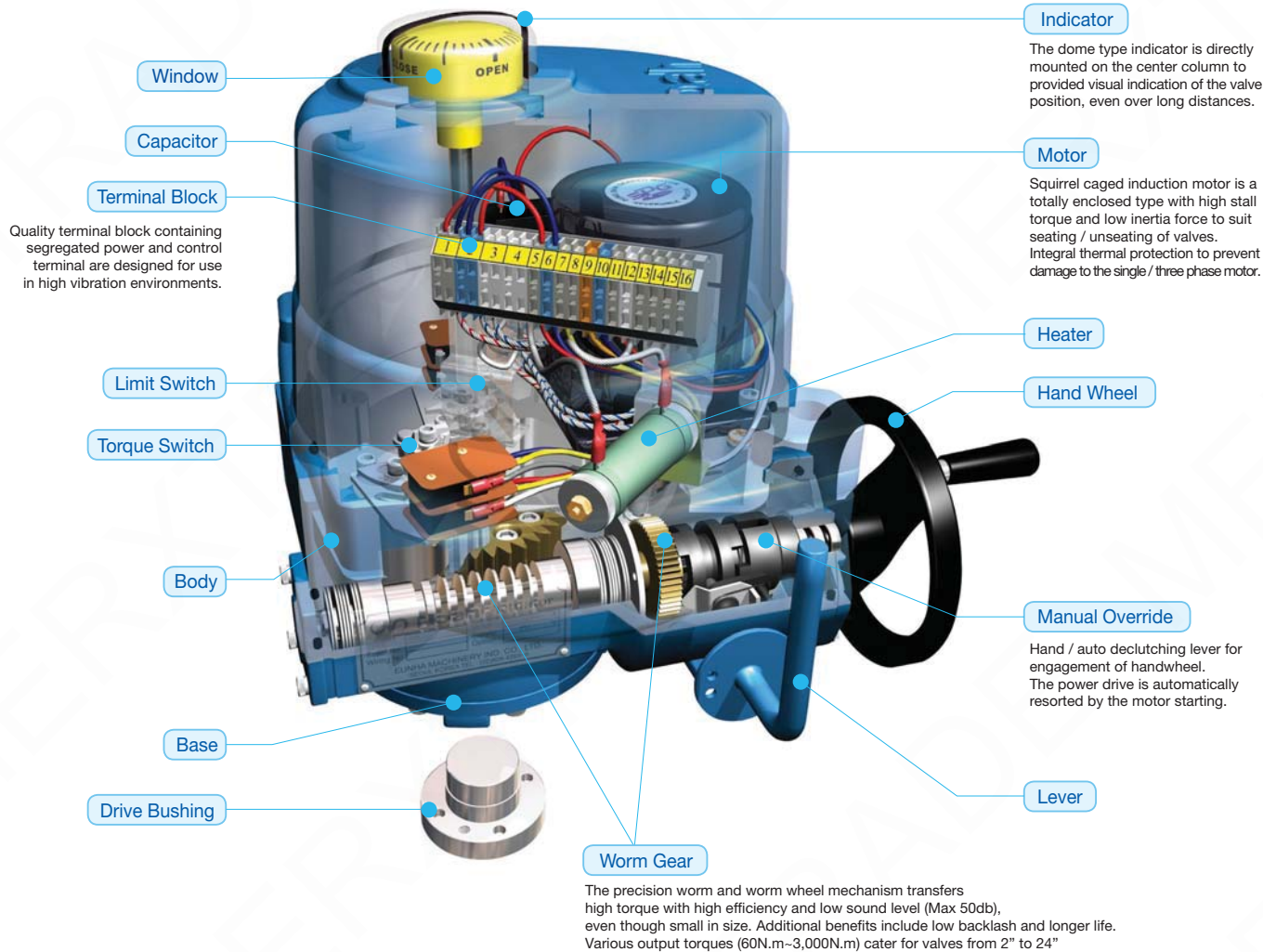


Electric Actuator "NA" Series



Configuration



FEATURES

- SEALING**
 Standard enclosure with o-ring sealing is watertight to IEC IP67, NEMA 4 and 6. The actuator is available with optional explosion proof enclosure.
- WIRING**
 Electric wiring of control circuit is standardized for single and three phase power supply in a single module. Multiple terminal contacts sufficiently cover additional requirements such as auxiliary contacts for interlocking and other options.
- COMPONENT ARRANGEMENT**
 Mechanical and electrical module can be separated easily to improve assembling, maintenance and alteration of electrical requirements. Actuator has enough internal space for optional accessories.
- HAND WHEEL**
 Size of hand wheel is designed for safe and efficient emergency manual operation.
- MANUAL OVERRIDE**
 Hand / auto declutching lever for hand wheel engagement. The power drive is automatically restored by motor start.
- ADAPTION**
 Base mounting is standard to ISO5211. Drive bushing is removable for machining to valve stem requirement. The actuator position on the valve can be selected for 4 positions by means of 4 bolt holes in the drive bushing.
- HEATER**
 A space heater inside the actuator prevents condensation due to temperature and weather changes. Standard 20W heater keeps all electrical components in the actuator clean and dry.
- LIMIT SWITCHES**
 The limit switch is activated by means of a simple and yet reliable cam mechanism mounted and driven by the center column. The valve position can be accurately and easily set with the simple adjustable switch mechanism. The set position is permanent and is not affected by over-travel resulting from manual operation.
- TORQUE SWITCHES**
 Cam activated torque switches are easily adjustable to provide over-load protection.
- SELF LOCKING**
 Rolled steel wormgear on aluminium bronze wormwheel self-locks to prevent valve back drive on control signal or power failure.

Performance

Type	Max Output Torque			Operating Time (90/sec)		Rated Current (A)						Motor		Duty Cycle (CSA)	Max Stem Dia	Handle Turns	Weight		
	Kg.m	N.m	in-lb	50Hz	60Hz	DC 24V	AC 110V	AC 220V	AC 230V	AC 240V	AC 380V	AC 440V	W	Class	S4 (%)	mm	kg	lb	
NA006	6	60	531	17	14	2.5	0.7	0.38	0.38	0.38	0.15	0.15	15	F	50	22	8.5	9	19.9
NA009	9	90	782	17	14	3.5	1.1	0.51	0.56	0.48	0.18	0.18	25	F	50	22	8.5	9	19.9
NA015	15	150	1302	20	17	4.5	1.6	0.75	0.75	0.75	0.3	0.3	40	F	50	22	10	11.5	25.4
NA019	19	190	1650	20	17	4.5	1.6	0.75	0.75	0.75	0.78	0.3	40	F	50	22	10	11.5	25.4
NA028	28	280	2431	24	20	6.5	1.6	0.75	0.75	0.8	0.32	0.32	40	F	50	32	12.5	14	30.9
NA038	38	380	3299	24	20	-	2.3	1.1	1.06	0.9	0.34	0.34	60	F	30	32	12.5	14	30.9
NA050	50	500	4340	24	20	-	3.5	1.2	1.2	1.1	0.47	0.47	90	F	25	32	12.5	14	30.9
NA060	60	600	5208	29	24	-	3.5	1.2	1.2	1.1	0.47	0.47	90	F	25	42	14.5	24	53
NA080	80	800	6944	29	24	-	3.8	1.8	1.8	1.8	0.75	0.75	180	F	25	42	14.5	24	53
NA100	100	1000	8680	29	24	-	4.0	2.0	2.0	2.0	0.85	0.85	180	F	25	42	14.5	24	53
NA150	150	1500	13020	87	72	-	3.5	1.2	1.2	1.1	0.47	0.47	90	F	25	75	43.5	60	132.3
NA200	200	2000	17360	87	72	-	3.8	1.8	1.8	1.8	0.75	0.75	180	F	25	75	43.5	60	132.3
NA250	250	2500	21700	87	72	-	4.0	2.0	2.0	2.0	0.85	0.85	180	F	25	75	43.5	60	132.3
NA300	300	3000	26039	116	96	-	4.0	2.0	2.0	-	0.85	0.85	180	F	25	75	43.5	60	132.3

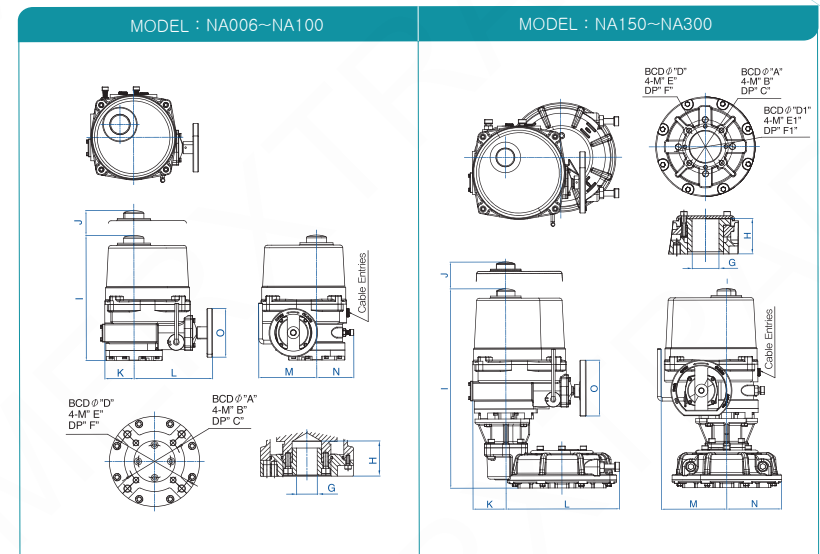
Standard Specification

Enclosure	Watertight Ingress Protection 67 Nema 4 and 6
Ambient Temperature	-20°C to +70°C , 150°C / 1hr (Option: -60°C, 400°C / 1hr)
Power Supply	110 / 220 VAC 50/60Hz , 380 / 440 VAC 50/60Hz Option : AC 24V , DC 24V
Torque Switches	2 Open / Close (Except NA006, NA009)
Limit Switches	2 Open / Close, 250VAC 15A Rating
Stall Protection	Built - in Thermal Protection (Open 150°C ± 5°C / Close 97°C ± 15°C)
Travel Angle	90±5°C
Indicator	Continuous Position Indicator
Manual Override	Hand / Auto Decoupling Mechanism
Self Locking	Provided by means of Worm Gearing
Mechanical Stops	External Adjustable Screws
Space Heater	20W
Conduit Entries	2-PF 3/4" , 2-NPT 3/4" , 2-M20 x 1.5 (Pitch)
Lubrication	Shell Gadus S2 V220 2
Material	Aluminium
Surface Treatment	Anodizing
External Coating	Polyester(TGIC-Free)

Optional Specification

E X P	Explosion Proof / Ex d IIB T4
IP68	Watertight Enclosure IP68 / 1bar 72h (KTL)
A L S	Auxiliary Open, Close Limit Switches
A T S	Auxiliary Open, Close Torque Switches
P I U	Potentiometer 1K Ohm
P C U	Proportional Control Unit / Input : DC 4-20mA, DC 1~5V, DC 2~10V / Output: DC 4-20mA
C P T	Current Position Transmitter
L C U	Local Control Unit
I M S	Integral Motor Starter (On-Off Action)
E X T	Travel Angle (120° , 135° , 180° , 270° , 300°)
D C M	Power Supply DC 24V (NA006~NA028)
Field-Bus	Profi-Bus, Mod-Bus, Can-Bus

Dimension



Type	NA006 NA009	NA015 NA019	NA028 NA038 NA050	NA060 NA080 NA100	NA150, NA200, NA250, NA300	
A	BCD70	BCD70	BCD102	BCD125	BCD125	
B	4-M8	4-M8	4-M10	4-M12	4-M12	
C	12	12	18	22	22	
Flange ISO5211	F07	F07	F10	F12	F12	
D	D1	-	BCD102	BCD125	BCD140	BCD140
E	E1	-	4-M10	4-M12	4-M16	4-M16
F	F1	-	15	18	22	25
Flange ISO5211	-	F10	F12	F14	F14	F16
Option	BCD82	BCD82	-	BCD102(F10)	-	
G(MAX)	Key	22	22	32	42	75
	Square	20	20	26	34	65
H	46	46	55	62	100	
I	270	274	321	362	554	
J	108	108	130	178	178	
K	55	70	75	92	92	
L	174	184	202	223	315	
M	120	139	149	192	192	
N	68	85	95	105	152	
O	102	102	125	155	170	
Cable Entries	2-PF3/4"	2-PF3/4"	2-PF3/4"	2-PF3/4"	2-PF3/4"	
	2-M20x1.5	2-M20x1.5	2-M20x1.5	2-M20x1.5	2-M20x1.5	
	2-NPT3/4"	2-NPT3/4"	2-NPT3/4"	2-NPT3/4"	2-NPT3/4"	

Optional

ALS (Auxiliary Limit Switches)

Provide dry contact signal to check valve's positions (cam switches structure).

ATS (Auxiliary Torque Switches)

Provide dry contact signal send to customer's panel as fault signal (cam switches structure).

CPT (Current Position Transmitter)

Combined with P.I.U and transfer output signal (DC 4-20mA) from P.I.U's value of resistance.

- Output Signal : DC 4-20mA



PCU (Proportional Control Unit)

Combined with P.I.U and control the valve's position proportionally by input signal and provide valve's position as their output signal.

- Input signal : DC 4-20mA / DC 1-5V / DC 2-10V
- Output signal : DC 4-20mA



PIU (Position Indication Unit)

Provide resistance value (0-1KΩ) according to valve's position.



LCU (Local Control Unit)

LCU can be installed either on the actuator or distantly by cable. It can be controlled conveniently as it consists of Local / Remote Switch, Open / Stop / Close Switch and LED Lamp



Field-Bus

Field-Bus can control 126pcs of electric actuators at the same time using communication hardware system based on PC.

(Profi-Bus, Mod-Bus, Can-Bus) For more information please contact EMICO.



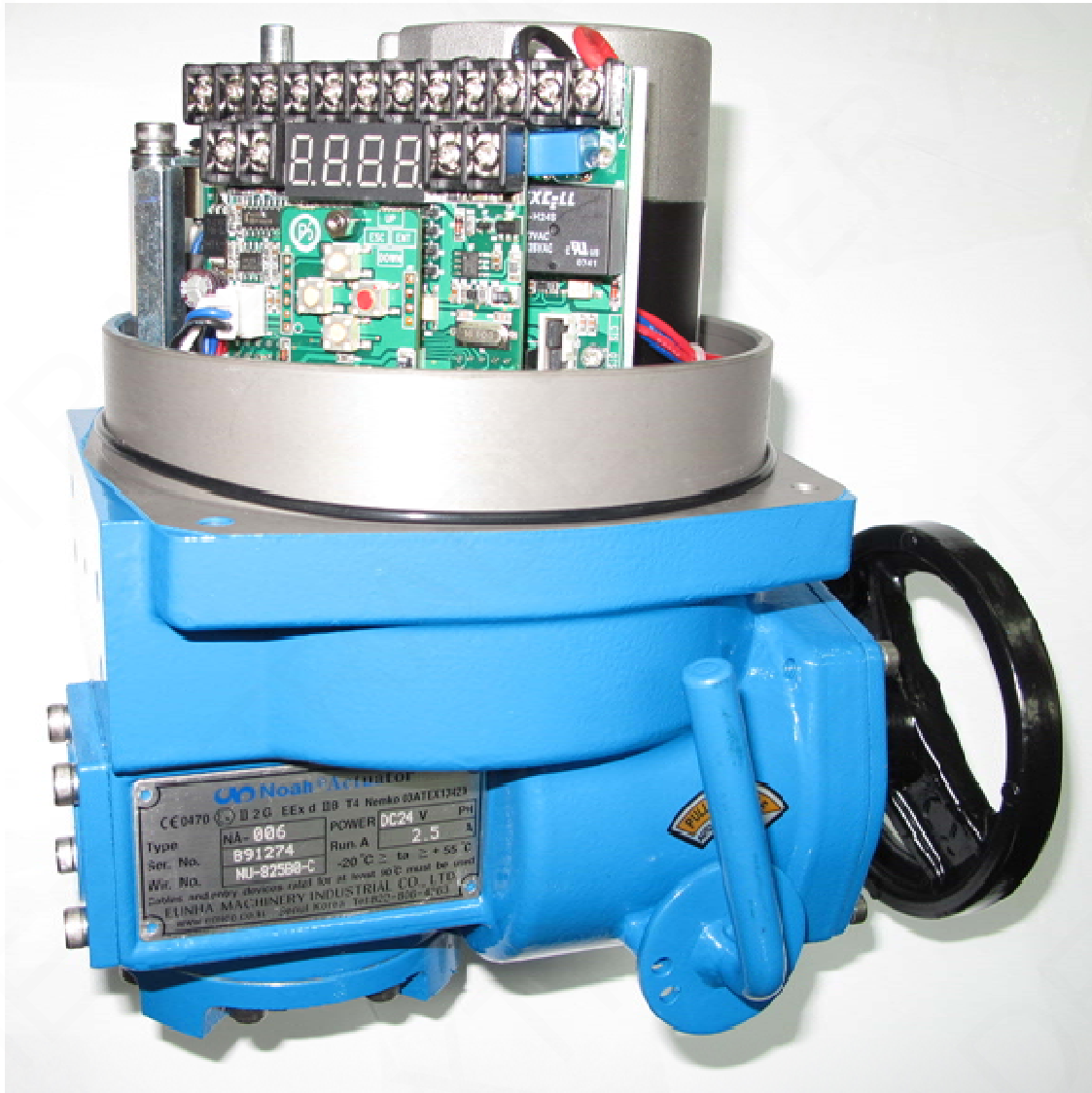
NA Integral Standard Specification

Main Power	110/220 VAC 50/60Hz , 380/440 VAC 50/60Hz	
Internal Control Power	24 VDC	
External Control Power	110 VAC, 24 VDC	
Torque Switches	2 Open / Close (Except NA006, NA009)	
Limit Switches	2 Open / Close, 250VAC 15A Rating	
Control Unit	1. Non Intrusive Push Buttons [Open/ Stop/ Close] 2. Non Intrusive Selector Switch [Remote / Off / Local] 3. Reversing Contactor 4. Phase Discriminator	
Position Indicator	Digital Display (0~100%)	
Remote Dry Contact (Max 250VAC 5A)	1. Full Open / Close 2. Opening / Closing 3. Open / Close Over Torque 4. Monitor (Remote / Local)	
Conduit Entries	Standard	1-PF 1" , 2-PF 3/4"
	Option	1-NPT 1" , 2-NPT 3/4" 1-M25 Pitch 1.5 , 2-M20 Pitch 1.5
Potentiometer	0 ~ 1 KΩ	
Lubrication	Shell Gadus S2 V220 2	
Consist of Materials	Aluminium	
Surface Treatment	Anodizing	
External Coating	Polyester(TGIC-Free)	

NA Integral Optional Specification

P C U	PCU enables the actuator to be controlled form a distance. Input: DC 4-20mA, DC 1~5V, DC 2~10V / Output: DC 4-20mA
C P T	CPT outputs signal by converting the actuator' s place value to ampere. Output Signal: DC 4-20mA
F D B	FDB is used when controlling actuators using communication hardware system based on PC. (Profi-Bus, Mod-Bus, Can-Bus) For more information please contact EMICO.

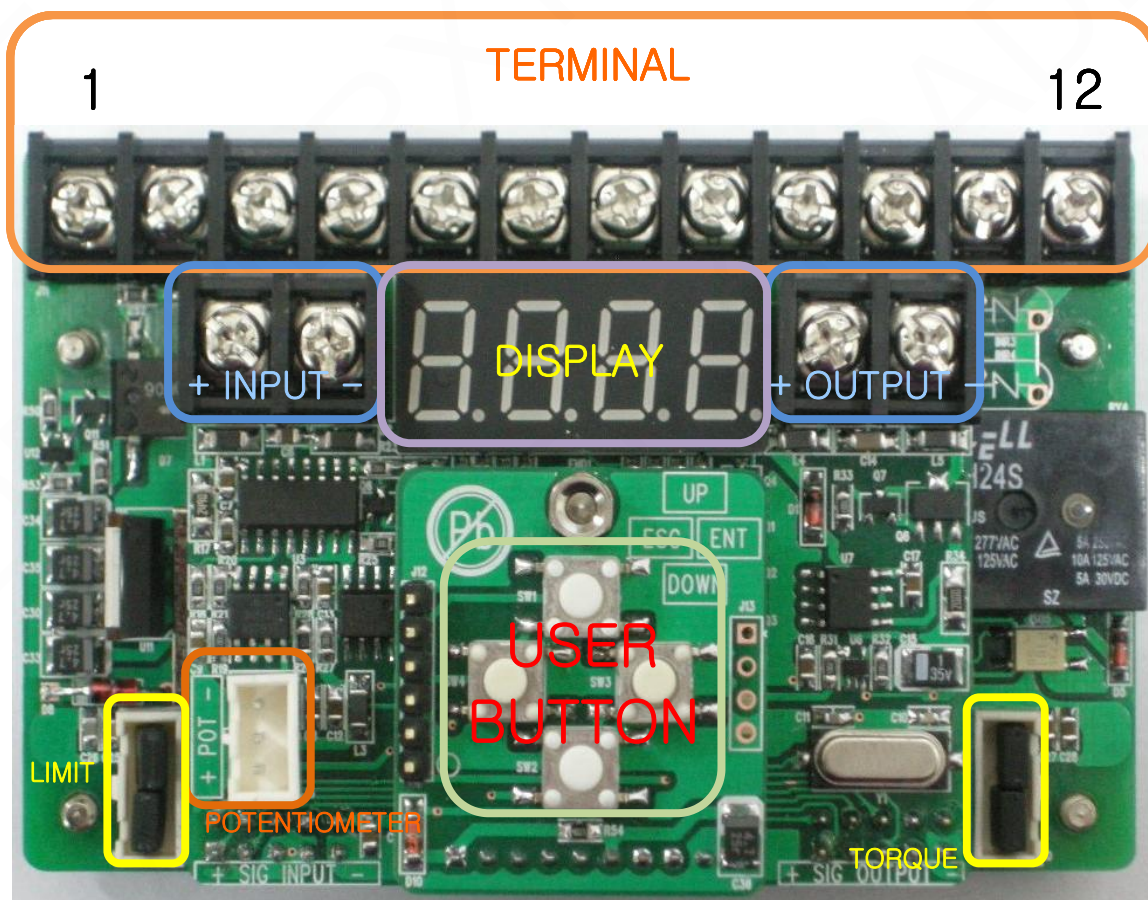
NAL – 1151 – E PCU MANUAL



1. SPECIFICATION

	DESCRIPTION	Unit
INPUT POWER	AC110/AC220V 60/50Hz , DC24V	
COMMAND SIGNAL	4~20mA DC (Default), 0~5V DC, 0~10V DC, 1~5V DC, 2~10V DC	
OUTPUT SIGNAL	4~20mA DC	mA
LOAD RESISTANCE	750Ω	Ω
VISUAL INDICATORS	7 Segment	
CALIBRATION METHOD	ASCN(Auto scan) Button	
OUTPUT CONTACT	Relay contact 5A 30V DC MAX. (Inductive Load)	V
USER ADJUSTABLE PARAMETERS	Delay Time : 0.1 ~ 9.9 Sec Dead Band : 0.1 ~ 9.9 % Fail operation (during loss of command signal) Select input signal AFULL Set or Clear	Sec %
RESOLUTION	Min 1/1,000	.000
AMBIENT TEMPERATURE	-10°C ~ +60°C	°C
AMBIENT HUMIDITY	90% RH MAX. (Non-Condensing)	%
DIELECTRIC STRENGTH	1,500V AC 1 MIN. (Input to Output to Power to Ground)	V
INSULATION RESISTANCE	500V DC 30MΩ MIN.	Ω

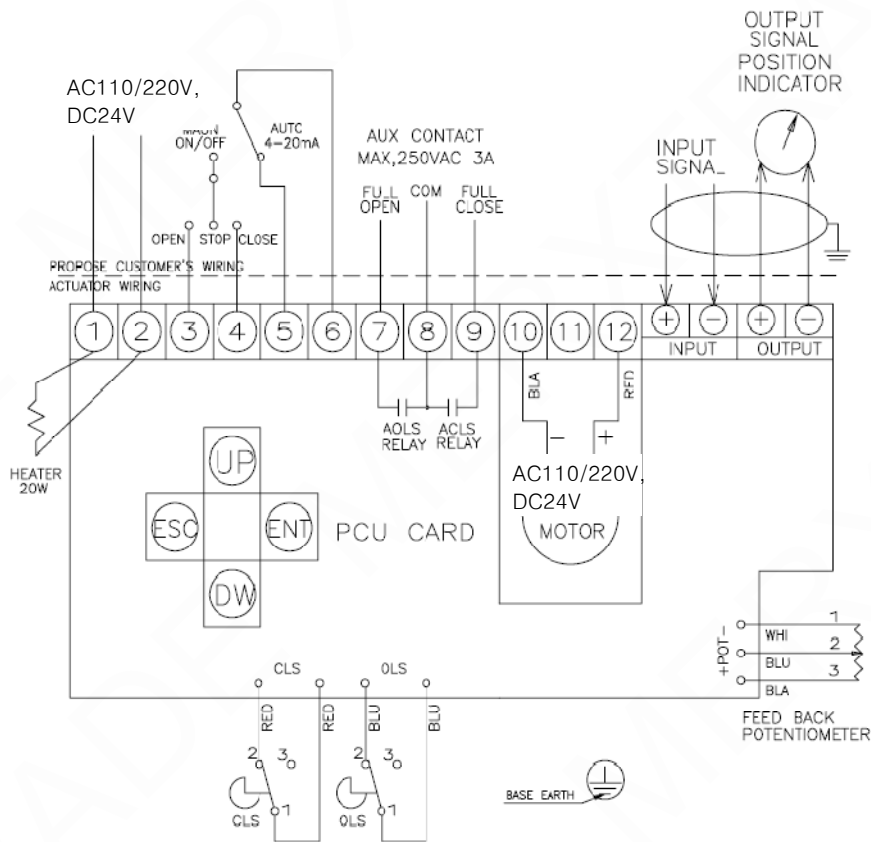
2. PCU BOARD INTERFACE



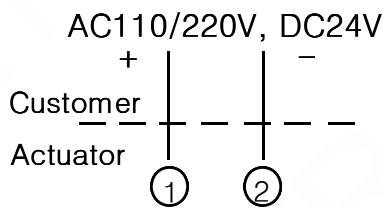
2 - 1. TERMINAL PIN NUMBER NAME

NO	NAME
1	Power Input +
2	Power Input -
3	Remote Open Signal
4	Remote Close Signal
5	Remote Auto Signal
6	Remote Signal Common (+24V Output)
7	Aux Open Limit Contact (Normal Open)
8	Aux Common Contact
9	Aux Close Limit Contact (Normal Open)
10	Motor Output -
11	Not Used
12	Motor Output +

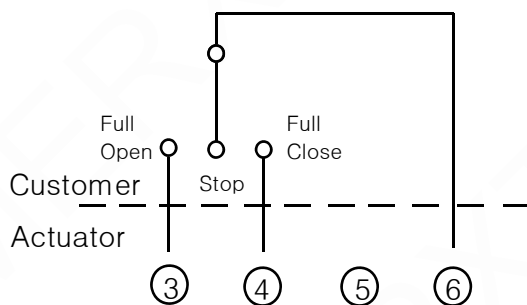
2 - 2. WIRING

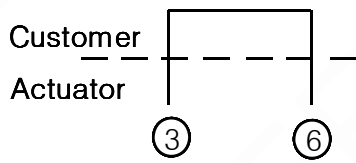


2 - 2 - 1. MAIN POWER WIRING

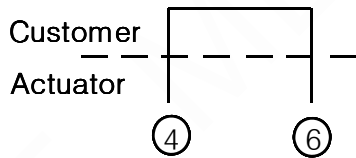
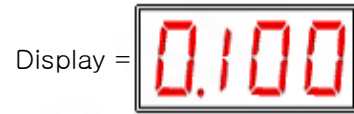


2 - 2 - 2. MANUAL CONTROL (ON/OFF ACTION) WIRING

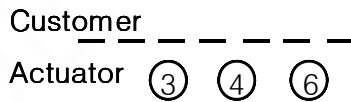
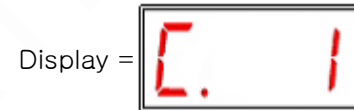




Actuator Full Open

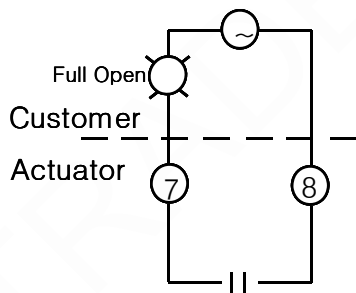


Actuator Full Close

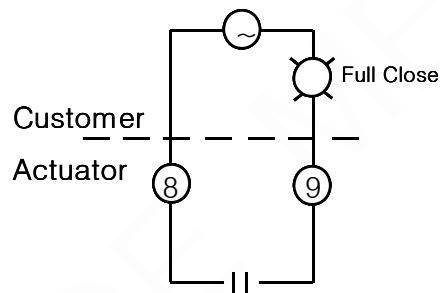


Actuator Stop

2 - 2 - 3. VOLT FREE OPEN, CLOSE CONTACT WIRING

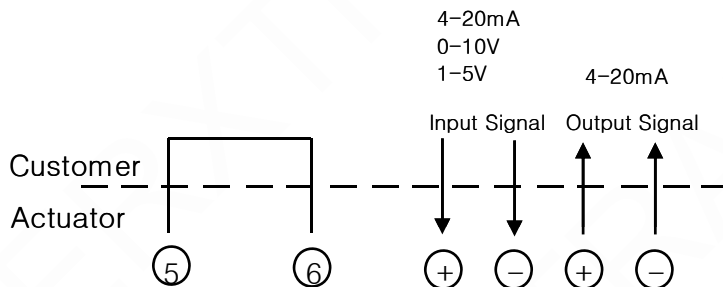


Full Open Relay

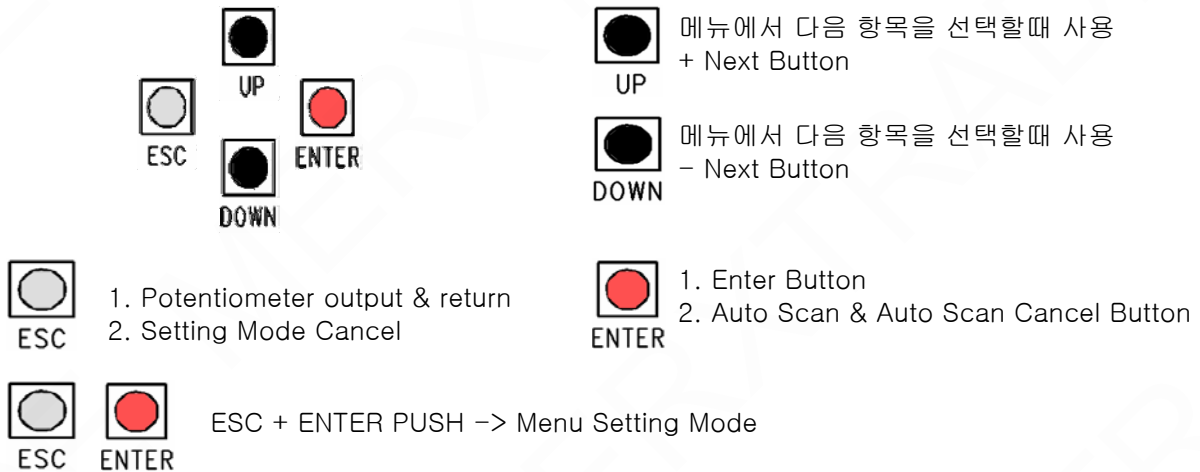


Full Close Relay

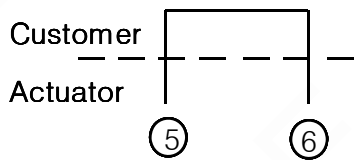
2 - 2 - 4. MODULATING CONTROL WIRING



3. SETTING TOOL (USER BUTTON OPERATING)



3 - 1. AUTO SCAN



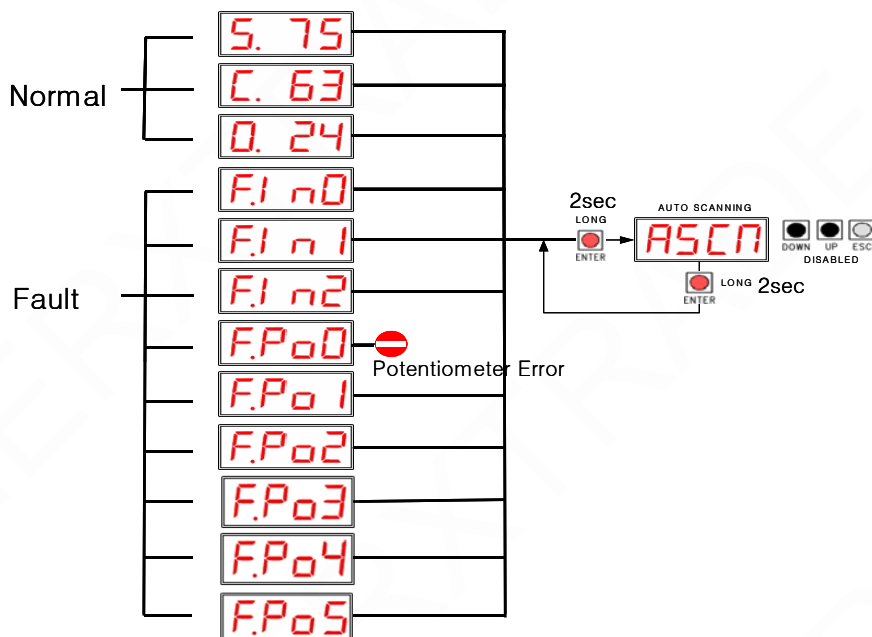
Contact #5 & #6 should be wired for setting mode.

3 - 1 - 1. ACTUATOR FULL CLOSE

3 - 1 - 2. POTENTIOMETER CHECK





3 - 1 - 3. AUTO SCAN MODE



3 - 1 - 4. SIGNAL INPUT



4-20mA, 0-10V, 1-5V → Actuator Action

3 - 2. MENU MODE



 2sec push → Menu Setting Mode

4. MENU (DISPLAY & SETTING)

4 - 1. MENU MODE

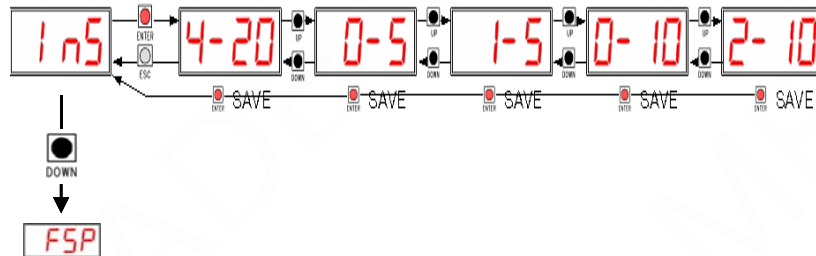


 2sec push → Menu Setting Mode



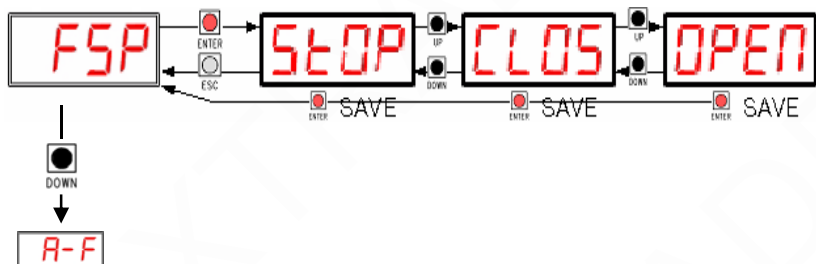
Input Select
Standard Setting : 4 - 20mA

Setting Mode Menu

NO.	INPUT
4-20	4 - 20mA
0-5	0 ~ 5V
1-5	1 ~ 5V
0-10	0 ~ 10V
2-10	2 ~ 10V



Fail Safe Position Select
Fail Close, Fail Open Setting
Standard Setting : Stop



A-F

Actuator A Full Select
Standard Setting : Full

Setting Mode Menu

NO.	MODE
FULL	Full
NOR	Normal



Full : Input low than 4.3mA, Full Close
Input Over than 19.7mA Full Open

Normal : Input 4mA, Full Close
Input 20mA, Full Open



d-r

d-r

Actuator Direction Select
Standard Setting : Normal

Setting Mode Menu

NO.	MODE
NOR	Normal
RES	Reverse



Normal : CW

Reverse : CCW



tYPE

tYPE

Actuator Type Select
Standard Setting : Quarter Turn

Setting Mode Menu

NO.	MODE
NA-Q	Quarter Turn
NA-L	



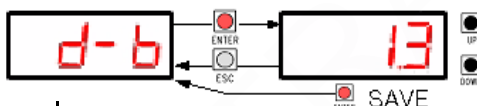
Quarter Turn : Limit Setting



d-b

d-b

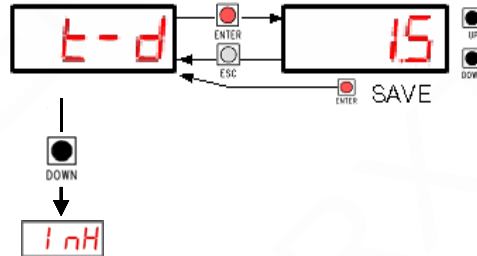
Actuator Dead Band Setting
Dead Band Setting Range : 0.1 ~ 6.1%
Standard Setting : 1%



t-d

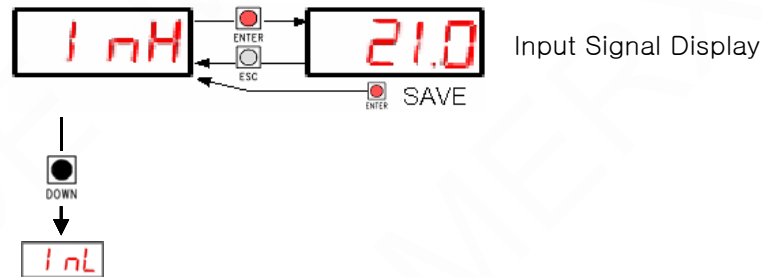
t-d

Actuator Starting Time Delay Setting
Actuator Starting Time Delay Setting Range : 0 ~ 10sec
Standard Setting : 1sec



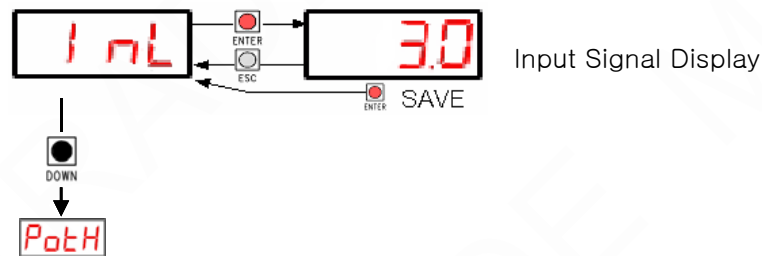
1 nH

Input discretion Setting (SPAN setting)
ex) 21mA Full Open -> 21mA Input -> ENTER



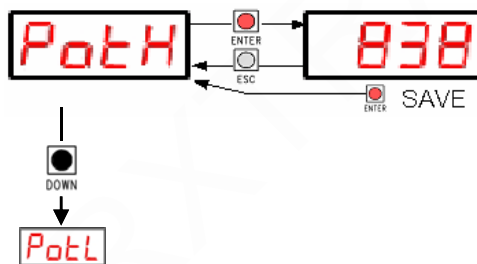
1 nL

Input discretion Setting (ZERO setting)
ex) 3mA Full Close -> 3mA Input -> ENTER



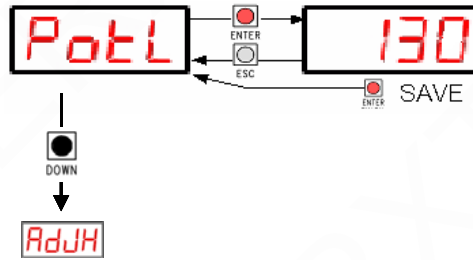
PotH

Potentiometer Setting (Manual Open Setting)
Actuator Full Open is resistance discretion Setting



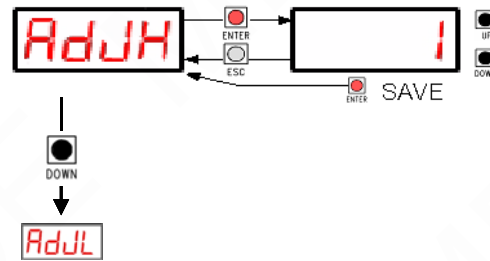
PotL

Potentiometer Setting (Manual Close Setting)
Actuator Full Close is resistance discretion Setting



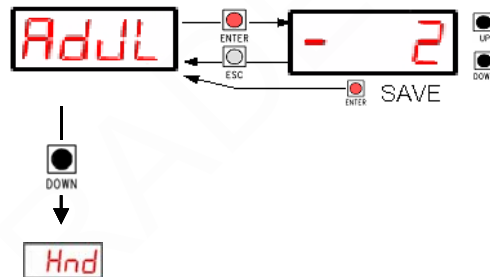
AdJH

4-20mA Output SPAN Setting (Down & Up Button One Push -> ±0.06mA)
ex) Output 20.2mA -> DOWN -> 20mA



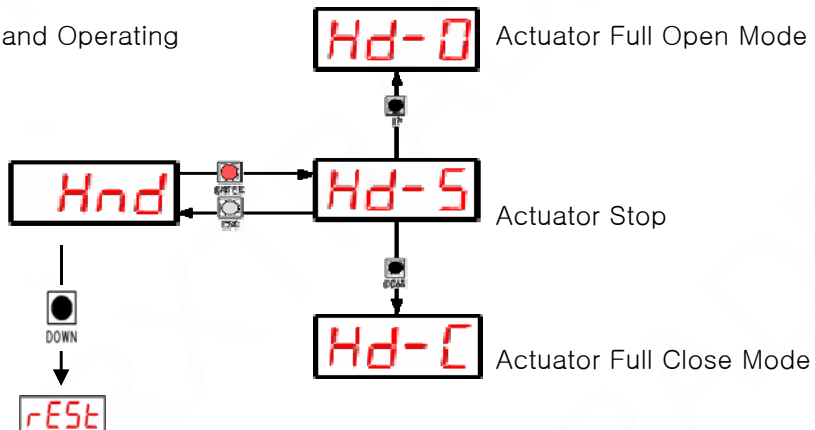
AdJL

4-20mA Output SPAN Setting (Down & Up Button One Push -> ±0.06mA)
ex) Output 4.2mA -> DOWN -> 4mA

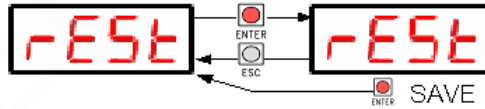


Hnd

Hand Operating



Actuator Setting Reset



4 – 2. FAULT LED DISPLAY

Absence of input signal

Input signal is lower than 3mA

Input signal is higher than 21mA

Actuator is not connected (COM : Blue Line) in Potentiometer.

Over Full Close (Close Limit Switch Over)

Over Full Open (Open Limit Switch Over)

Potentiometer's two wire(white & black) reverse connected it should need to exchange (white -> black, black -> white)

Actuator is not connected (-Line : White Line) in Potentiometer.

Actuator is not connected (+Line : Black Line) in Potentiometer.

Actuator Open Over Torque.

Actuator Close Over Torque.