RM6(9904) Parameter List	Date	Version
	2018/04/23	2.0

General parameters (9904)

Func.	Name	Description	Range of Setting	Default
F_000	Software version	1：Software version code 2：Software checksum	—	
F_001	Control mode option	0：Bi-color energy-saving control mode (comparison mode) 1：Single hydraulic pump control mode 2：Hydraulic pump constant speed mode	0~2	1
F_002	Input signal filter option	This function can select the digital filtering ratio for VP, VF, IP, IF input signals.	1~10	5
F_003	Pressure signal rate	This function can adjust input pressure signal VP / IP to Max. 10V	0.00 ~5.00	1.00
F_004	Pressure signal bias	This function can adjust the zero point of input pressure signal VP / IP to 0V	-10.00 ~10.00	0.00
F_005	Flow rate signal rate	This function can adjust input flow rate signal VF / IF to Max. 10V	0.00 ~5.00	1.00
F_006	Flow rate signal bias	This function can adjust the zero point of input pressure signal VF / IF to 0V	-10.00 ~10.00	0.00
F_007	Left display	0：Pressure command 1：Flow rate command 2：VO1 output voltage 3：VO2 output voltage 4：VO1 command display value 5：Pressure signal 6：Flow rate signal 7：Terminal status	0~7	0
F_008	Right display			1
F_009	VO2 output functions	0：Input pressure signal 1：Input flow rate signal 2：Same as VO1 output 3：Hydraulic pump power(Pressure × Flow rate) 4：Constant output voltage 10VDC	0~4	2
F_010	Monitoring option	0：Voltage value 1：Scale value(By F_011；F_012 setting)	0~1	0
F_011	Max. pressure display	When the keypad in the monitor mode displays the pressure command and F_010 is set to “1”, the monitor will display the value corresponding to 10V of the pressure signal.	1~999	170
F_012	Max. flow rate display	When the keypad in the monitor mode displays the flow rate command and F_010 is set to “1”, the monitor will display the value corresponding to 10V of the flow rate signal.	1~999	100

RM6(9904) Parameter List	Date	Version
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Func.	Name	Description	Range of Setting	Default
F_013	VO1 monitoring option	0：Output voltage 1：Scale value (By F_014 setting)	0~1	0
F_014	VO1 Max. value	When the keypad in the monitor mode displays the output signal VO1 and F_014 is set to “1”, the keypad will display the value corresponding to the Max. output voltage 10V of VO1	0.1 ~400.0	60.0
F_015	Input setting of X1 terminal	Def0 (Weak): X1 ON, X2 OFF Def1 (Mid): X1 OFF, X2 OFF Def2 (Strong): X1 OFF, X2 ON 1：a contact 0：Disable -1：b contact ※Before switching the mode, please remove external connection keypad.	-1~1	1/1
F_016	Input setting of X2 terminal			
F_017~ F_026	Reserved	Reserved		

Bi-color energy-saving control mode (9904 comparison mode)

Func.	Name	Description	Range of Setting	Default
F_027	Pressure ratio	Comparison mode : When the pressure command > flow rate command, set the pressure ratio of hydraulic pump transfer function.	0.00 ~5.00	1.00
F_028	Pressure bias	Comparison mode : When the pressure command > flow rate command, set the pressure bias of hydraulic pump transfer function.	-10.00 ~10.00	0.00
F_029	Flow rate ratio	Comparison mode : When the flow rate command > pressure command, set the flow rate ratio of hydraulic pump transfer function.	0.00 ~5.00	1.00
F_030	Flow rate bias	Comparison mode : When flow rate command > pressure command, set the flow rate bias of hydraulic pump transfer function.	-10.00 ~10.00	0.00
F_031~ F_036	Reserved	Reserved		

RM6(9904) Parameter List	Date	Version
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Single hydraulic pump control mode (9904)

Func.	Name	Description	Range of Setting	Default
F_037	Flow rate ratio	Set the flow rate command ratio of hydraulic pump transfer function.	0.00 ~5.00	ES Mode
F_038	Flow rate bias	Set the flow rate command bias of hydraulic pump transfer function.	-10.00 ~10.00	ES Mode
F_039	Pressure compensation	Set the pressure compensation of hydraulic pump transfer function.	0.00 ~5.00	ES Mode
F_040	Command difference level	When the pressure command is over the flow rate command, and the difference between two commands is over the setting level, the difference will be automatically adjusted.	0.00 ~10.00	ES Mode
F_041	Command difference compensation	Set the compensation ratio of the command difference between pressure command and flow rate command.	0.00 ~5.00	ES Mode
F_042	Flow rate dynamic compensation	When the flow rate command is increased, set the flow-rate dynamic compensation ratio for dynamic responses.	0.00 ~10.00	ES Mode
F_043	Pressure dynamic compensation	When the pressure command is increased, set the pressure dynamic compensation ratio for dynamic responses.	0.00 ~10.00	ES Mode
F_044	Dead zone of dynamic compensation	This function can adjust the dead zone of dynamic compensation for dynamic responses.	0.01 ~10.00	ES Mode
F_045	Duration of dynamic compensation	Set the duration time of the dynamic compensation.	0.01 ~3.00	ES Mode
F_046	Sampling time of dynamic compensation	Set the signal sampling time of the dynamic compensation.	0~20	ES Mode
F_047	T.B.D	Reserved	—	
F_048	T.B.D	Reserved	—	
F_049	T.B.D	Reserved	—	
F_050	T.B.D	Reserved	—	
F_051~ F_055	Reserved	Reserved	—	
F_056	General parameter	0：Disable dEF 0：Default to factory setting “Default 0” : Weak dEF 1：Default to factory setting “Default 1” : Mid dEF 2：Default to factory setting “Default2” : Strong rd-EE：Digital keypad (KP-207) ← Read parameters from energy-saving board Wr-EE：Digital keypad (KP-207) → Write parameters to energy-saving board		

※Match up the output signal of injection-molding machine to adjust the standard DC 0~10V control signal of 9904 energy-saving card.

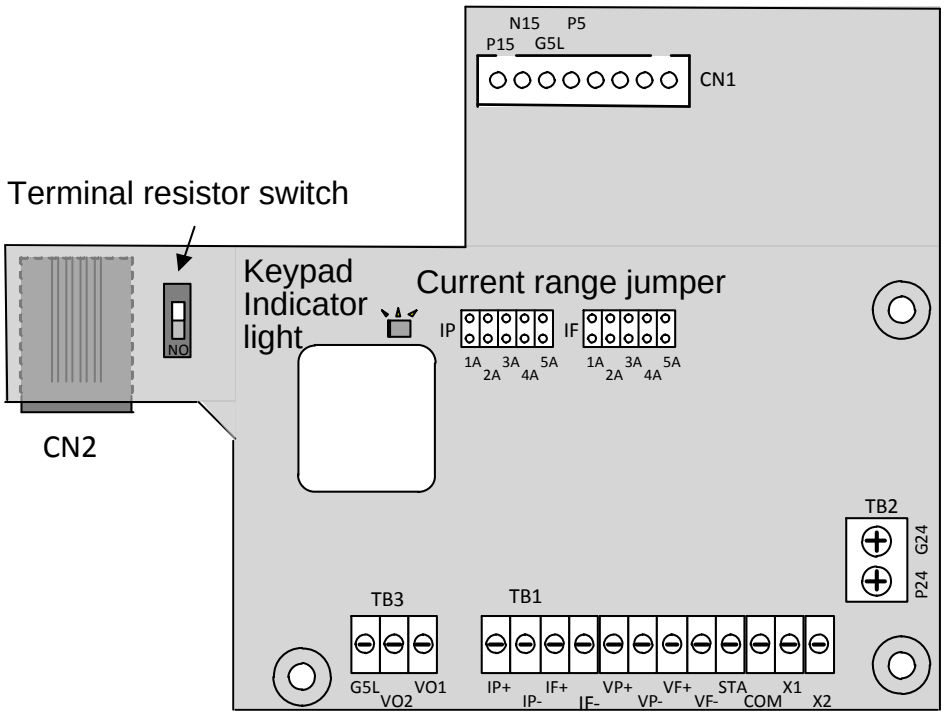
RM6(9904) Parameter List	Date	Version
	2018/04/23	2.0

9904 Default value:

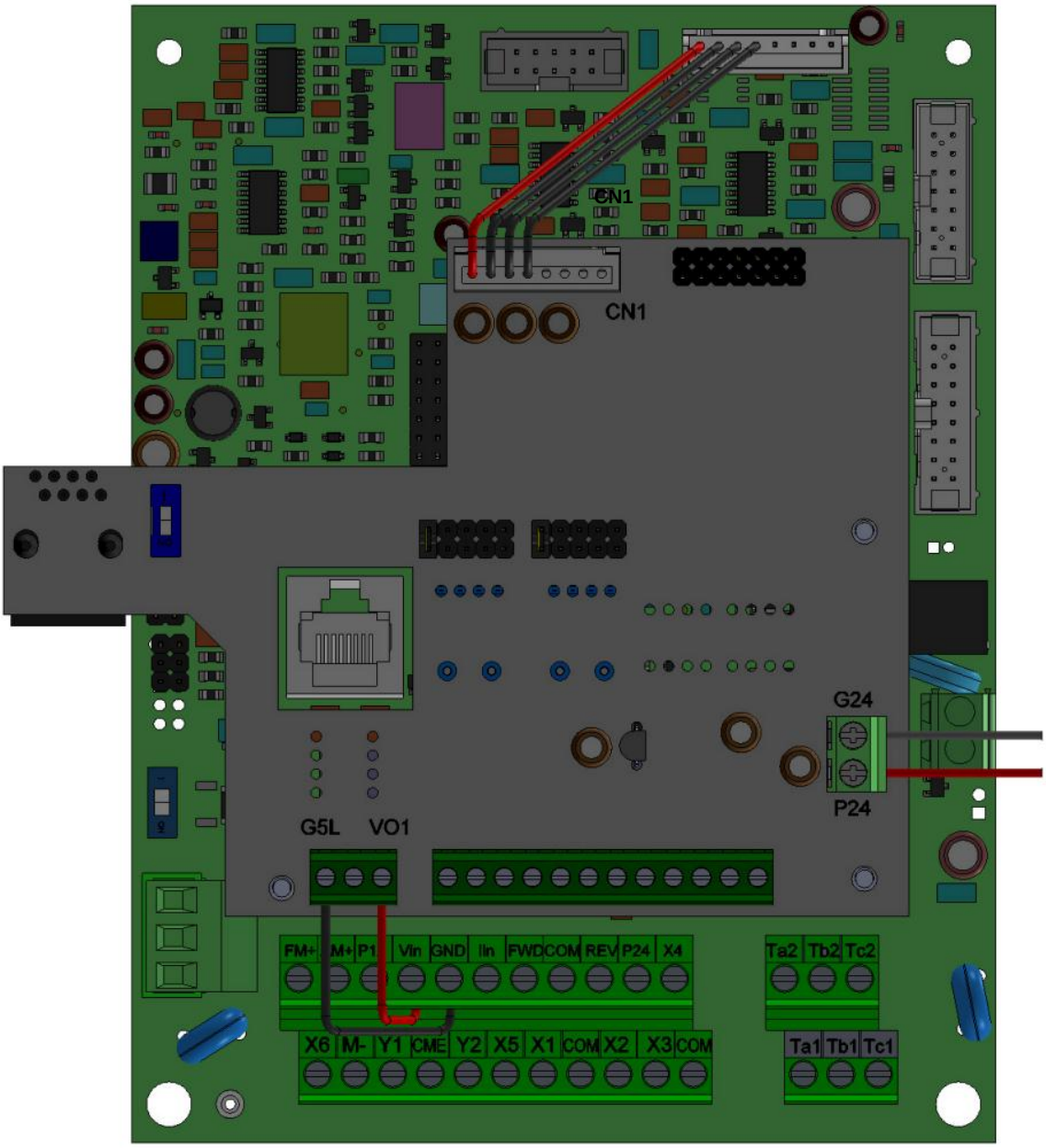
Func.	Name	Def (0) Weak	Def (1) Mid	Def (2) Strong
F_000	Software version			
F_001	Control mode option	1	1	1
F_002	Input signal filter option	5	5	5
F_003	Pressure signal gain	1.00	1.00	1.00
F_004	Pressure signal bias	0.00	0.00	0.00
F_005	Flow rate signal gain	1.00	1.00	1.00
F_006	Flow rate signal bias	0.00	0.00	0.00
F_007	Left display	0	0	0
F_008	Right display	1	1	1
F_009	VO2 output functions	2	2	2
F_010	Monitoring option	0	0	0
F_011	Max. pressure display	170	170	170
F_012	Max. flow rate display	100	100	100
F_013	VO1 monitoring option	0	0	0
F_014	VO1 Max. value	60.0	60.0	60.0
F_015	Input setting of X1 terminal	1	1	1
F_016	Input setting of X2 terminal	1	1	1
F_017~ F_026	Reserved			
F_027	Pressure ratio	1.00	1.00	1.00
F_028	Pressure bias	0.00	0.00	0.00
F_029	Flow rate ratio	1.00	1.00	1.00
F_030	Flow rate bias	0.00	0.00	0.00
F_031~ F_036	Reserved			
F_037	Flow rate ratio	1.00	1.00	1.00
F_038	Flow rate bias	2.00	2.50	3.50
F_039	Pressure compensation	0.10	0.15	0.25
F_040	Command difference level	0.10	0.10	0.10
F_041	Command difference compensation	0.30	0.00	0.00
F_042	Flow rate dynamic compensation	0.00	2.00	3.00
F_043	Pressure dynamic compensation	0.00	2.00	3.00
F_044	Dead zone of dynamic compensation	1.00	1.00	1.00
F_045	Duration of dynamic compensation	1.00	1.00	1.00
F_046	Sampling time of dynamic compensation	10	10	10
F_047~ F_055	Reserved			
F_056	General parameter			

Terminal definition and outline of 9904 energy-saving card:

Type	Location	Mark	Terminal Explanation	Memo
Control signal output terminal	TB3	VO1	1st voltage output terminal.	Outputs are 0~10V, 10mA.
		VO2	2nd voltage output terminal.	
		G5L	VO1, VO2 common terminal (zero-volt)	
Control signal output wiring terminal	TB1	IP+	Pressure signal input (current type(+))	*Default value: 0~1A *Current type input in series.
		IP-	Pressure signal input (current type(−))	
		IF+	Flow rate signal input (current type(+))	
		IF-	Flow rate signal input (current type (−))	
		VP+	Pressure signal input (voltage type(+))	Input voltage range :0~10V Input resistance :15kΩ *Voltage source input in parallel.
		VP-	Pressure signal input (voltage type (−))	
		VF+	Flow rate signal input (voltage type (+))	
		VF-	Flow rate signal input (voltage type (−))	
		STA	Reserved	
		X1	Serving strength mode option terminal 1.	
		X2	Serving strength mode option terminal 2.	
		COM	Zero potential terminal	
Keypad connected terminal	CN2	CN2	KP-207 keypad connecting terminal.	



Connection of control board and 9904 energy-saving card:



Position：

1.9904-CN1(Flexible flat cable) connect to CN6(Flexible flat cable) position of control board

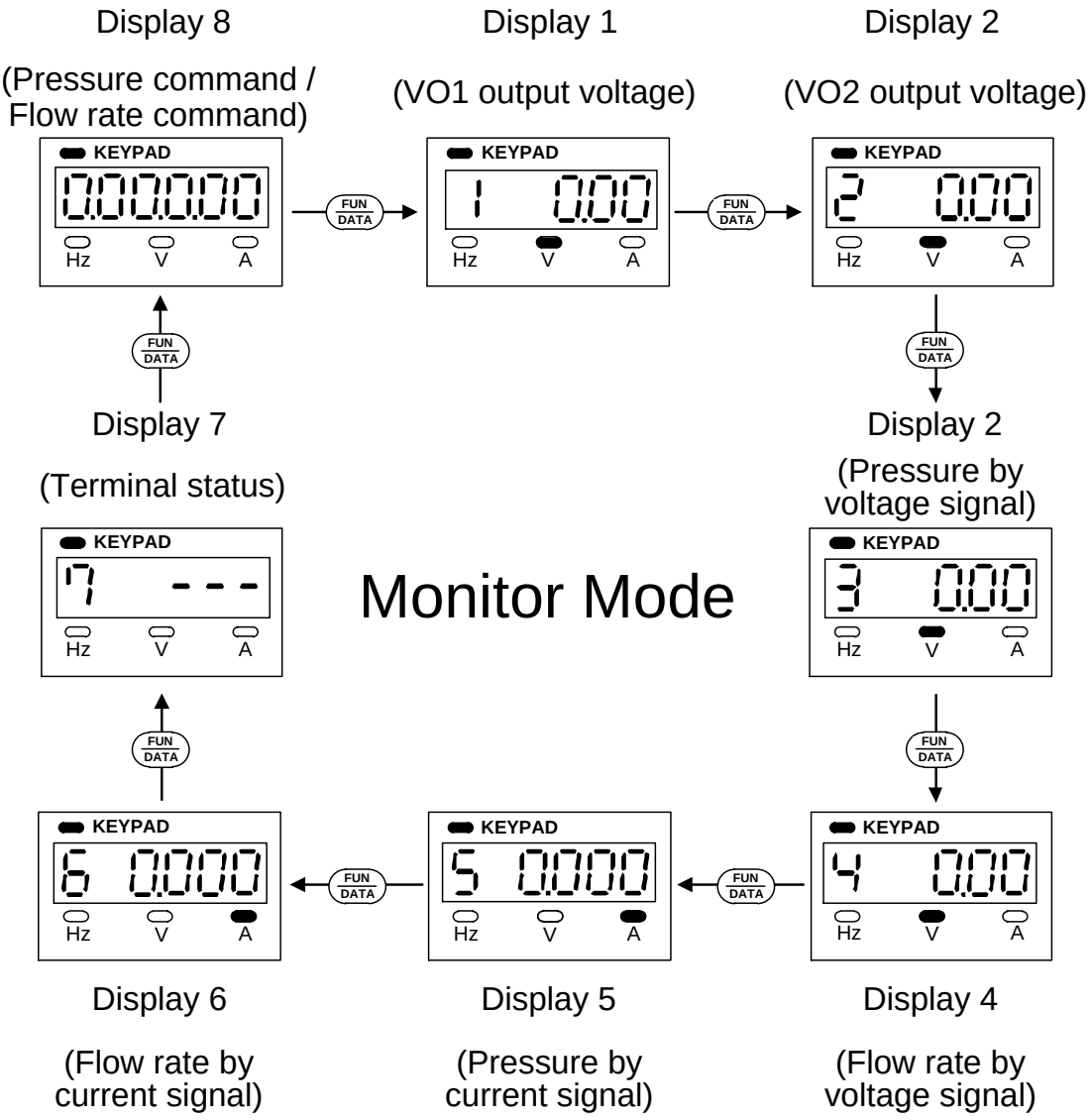
2.9904-VO1 connect to Vin position of control board

3.9904-G5L connect to GND position of control board

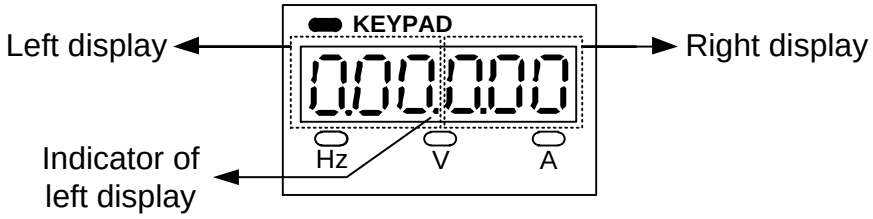
4.9904-P24 connect to +24 position of CN3 of power board

5.9904-G24 connect to GND position of CN3 of power board

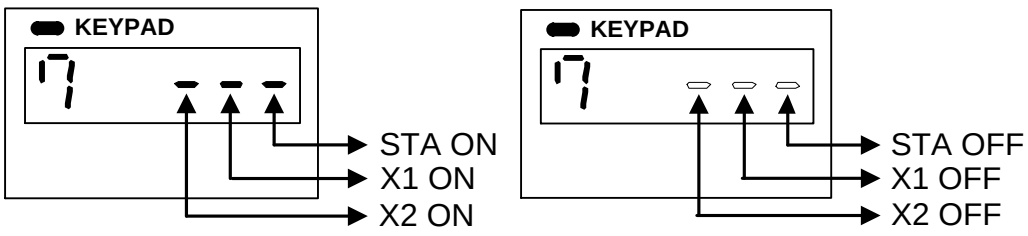
Description of monitor mode：



1.The explanation of display 8(Pressure command/Flow rate command)：



2.The explanation of display 7(Terminal status)：



Special functions description of 9904 energy-saving card：

※The occasion by setting special functions：

To match the pressure and flow rate signals of 9904 energy-saving card and injection-molding machine.

※Adjustment steps：

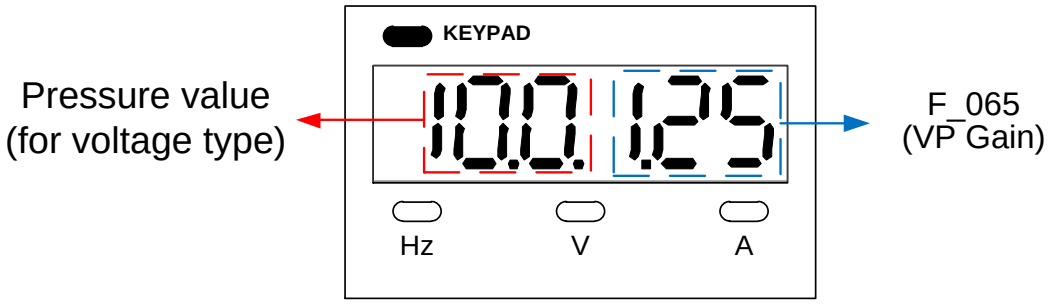
Connect the KP-207 keypad to CN2 socket of 9904 energy-saving card.

Step	Display
1.Press RUN and STOP/RESET keys in simultaneously.	0000
2.Press ▲ key.	0001
3.Press FUN/DATA key to enter function setting mode.	F_000
4.Press ▲ or ▼ key to select special functions.	F_057~F_073

※Correction steps of pressure and flow rate signals (for voltage type)：

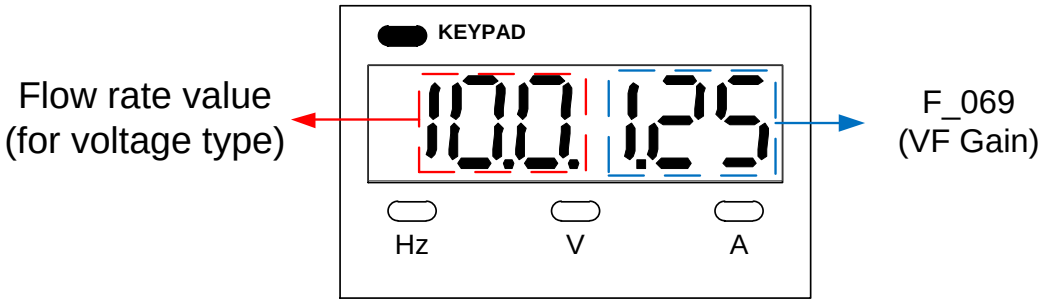
I. Adjustment of pressure signal (for voltage type)：

Adjust the pressure to the maximum value and the flow rate to minimum value for injection-molding machine. Select function F_065(VP Gain) and enter parameter setting mode to adjust the VP gain. The left display indicates the voltage signal and the right display indicates the adjustment value of VP gain. Adjust the F_065(VP Gain) value corresponding to the maximum value of left display(10.0) while driving the reciprocating screw.



II. Adjustment of flow rate signal (for voltage type)：

Adjust the flow rate to the maximum value and the pressure to minimum value for injection-molding machine. Select function F_069(VF Gain) and enter parameter setting mode to adjust the VF gain. The left display indicates the voltage signal and the right display indicates the adjustment value of VF gain. Adjust the F_069(VF Gain) value corresponding to the maximum value of left display(10.0) while driving the reciprocating screw.

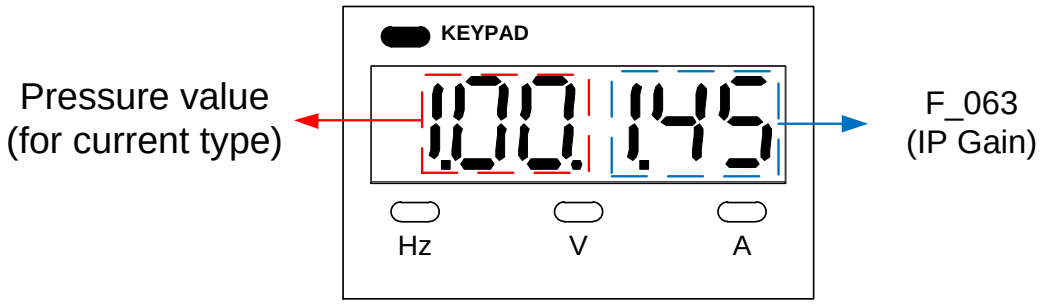


※Correction steps of pressure and flow rate signals (for current type)：

According to the pressure and flow rate specifications of injection-molding machine to select suitable current range jumper of 9904 energy-saving card. (default：1A)

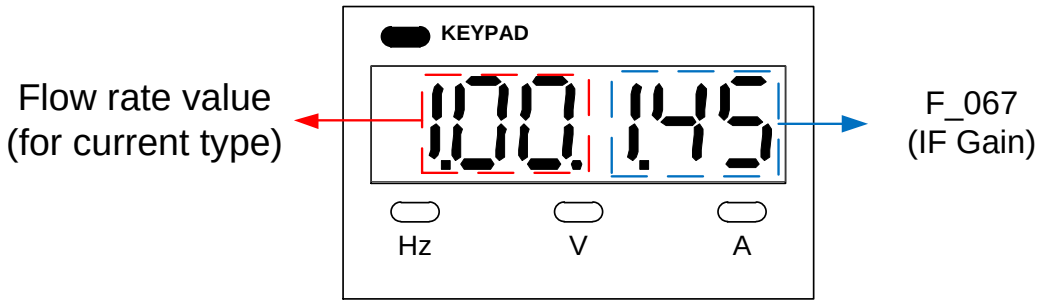
I. Adjustment of pressure signal (for current type)：

Adjust the pressure to the maximum value and the flow rate to minimum value for injection-molding machine. Select function F_063(IP Gain) and enter parameter setting mode to adjust the IP gain. The left display indicates the current signal and the right display indicates the adjustment value of IP gain. Adjust the F_063(IP Gain) value corresponding to the maximum value of left display(1.00) while driving the reciprocating screw.



II. Adjustment of flow rate signal (for current type)：

Adjust the flow rate to the maximum value and the pressure to minimum value for injection-molding machine. Select function F_067(IF Gain) and enter parameter setting mode to adjust the IF gain. The left display indicates the current signal and the right display indicates the adjustment value of IF gain. Adjust the F_067(IF Gain) value corresponding to the maximum value of left display(1.00) while driving the reciprocating screw.



Speical function list of 9904 energy-saving card：				
Func.	Name	Description	Range of Setting	Default
F_057	VO1 Output Gain	Adjust the output gain of VO1 signal.	0.00 ~ 5.00	1.00
F_058	VO1 Output Bias	Adjust the output bias of VO1 signal.	-10.00 ~ 10.00	0.00
F_059	VO2 Output Gain	Adjust the output gain of VO2 signal.	0.00 ~ 5.00	1.00
F_060	VO1 Output Bias	Adjust the output bias of VO2 signal.	-10.00 ~ 10.00	0.00
F_061	Reserved			
F_062	Reserved			
F_063	IP Gain (Analog input)	Adjust the gain of IP analog input terminal.	0.00 ~ 5.00	1.50
F_064	IP Bias (Analog input)	Adjust the bias of IP analog input terminal.	-9.9 ~ 9.9	—
F_065	VP Gain (Analog input)	Adjust the gain of VP analog input terminal.	0.00 ~ 5.00	1.05
F_066	VP Bias (Analog input)	Adjust the bias of VP analog input terminal.	-9.9 ~ 9.9	—
F_067	IF Gain (Analog input)	Adjust the gain of IF analog input terminal.	0.00 ~ 5.00	1.50
F_068	IF Bias (Analog input)	Adjust the bias of IF analog input terminal.	-9.9 ~ 9.9	—
F_069	VF Gain (Analog input)	Adjust the gain of VF analog input terminal.	0.00 ~ 5.00	1.05
F_070	VF Bias (Analog input)	Adjust the bias of VF analog input terminal.	-9.9 ~ 9.9	—
F_071	Priority of Flow Rate Level S	In comparison mode, when the setting value of flow rate is higher than this level, the output signal command by flow rate. When the setting value of flow rate is lower than this level, the higher setting value of either pressure and flow rate will be the reference for output signal.	0.01 ~ 10.00	5
F_072	Self-Test	0：Disable 1：Enable	—	0
F_073	Default Setting	0：Disable dEF 0：Default the customized parameter 1~4 to factory setting. dEF 1：Default special functions to factory setting values.	—	

RM5G(9904) Parameters List

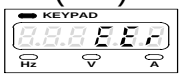
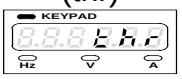
RM5G: 200/220/240V Low-voltage series (AC220V 50/60Hz Default)

No.	Parameter	Setting Value	Parameter Description
1	F_134	dEF 50 dEF 60	Default the factor setting 50/60Hz (Restore the factor setting to all parameters)
2	F_001	0	“Start” command by FWD/REV terminals
3	F_002	0	Frequency command by the analog input terminal
4	F_019	10	Primary acceleration time
5	F_020	5	Primary deceleration time
6	F_027	0.4	Secondary acceleration time (adjustment based on the operation requirement)
7	F_028	2.5	Secondary deceleration time (adjustment based on the operation requirement)
8	F_033	8	Starting boost voltage (Over 100HP, Setting value = 6)
9	F_034	50/60	Base frequency (based on the motor specification)
10	F_035	220	Base voltage (based on the motor specification)
11	F_040	1.0	Analog input Vin gain (adjustment based on the operation requirement)
12	F_043	0.3	Frequency lower limit
13	F_047	0	Filtering range setting of analog input signals
14	F_048	Based on the motor current	Motor rated current (based on the motor rated current spec)
15	F_049	Based on the motor current	Motor no-load current (1/3 of the motor rated current)
16	F_058 （Y1, CME）	4	Frequency detection
17	F_060 （Ta1, Tc1）	11	Error signal detection
18	F_062	0.0	Range of frequency detection
19	F_063	12	Level of frequency detection
20	F_081	3	Switching frequency setting (adjustment based on the operation requirement)
21	F_095	220	Power source voltage setting (based on the actual power source voltage)
22	F_131 （Ta1, Tc1）	-3	Zero speed detection

RM5G: 380/415/440/460/480 High-voltage series (AC380V 50/60Hz Default)

No.	Parameter	Setting Value	Parameter Description
1	F_134	dEF 50 dEF 60	Default the factor setting 50/60Hz (Restore the factor setting to all parameters)
2	F_001	0	“Start” command by FWD/REV terminals
3	F_002	0	Frequency command by analog input terminal
4	F_019	10	Primary acceleration time
5	F_020	5	Primary deceleration time
6	F_027	0.4	Secondary acceleration time (adjustment based on the operation requirement)
7	F_028	2.5	Secondary deceleration time (adjustment based on the operation requirement)
8	F_033	12	Starting boost voltage (Over 100HP, Setting value = 10)
9	F_034	50/60	Base frequency (based on the motor specification)
10	F_035	380	Base voltage (based on the motor specification)
11	F_040	1.0	Analog input Vin gain (adjustment based on the operation requirement)
12	F_043	0.3	Frequency lower limit
13	F_047	0	Filtering range setting of analog input signals
14	F_048	Based on the motor current	Motor rated current (based on the motor rated current spec)
15	F_049	Based on the motor current	Motor no-load current (1/3 of the motor rated current)
16	F_058 （Y1, CME）	4	Frequency detection
17	F_060 （Ta1, Tc1）	11	Error signal detection
18	F_062	0.0	Range of frequency detection
19	F_063	12	Level of frequency detection
20	F_081	3	Switching frequency setting (adjustment based on the operation requirement)
21	F_095	380	Power source voltage setting (based on the actual power source voltage)
22	F_131 （Ta1, Tc1）	-3	Zero speed detection

Error Trip Messages of Drive

Display	Description	Display	Description
(EEr) 	EEPROM error	(OLO) 	System overload
(AdEr) 	A/D converter error	(thr) 	External fault
(SC) 	Fuse open	(PAdF) 	Keypad interruption during copy
(LE1) 	Under voltage during operation	-	-
(OC) 	Drive over current	-	-
(GF) 	Grounding fault	-	-
(OE) 	Over voltage	-	-
(OH) 	Drive overheating	-	-
(OL) 	Motor overload	-	-
(OL1) 	Drive overload	-	-

Warning Messages of Drive

*When the drive displays below messages, drive will stop output. If the abnormal condition is removed, the drive will auto-restart.

Display	Description	Display	Description
(LE) 	Power source under voltage	-	-
(bb) 	Drive output interruption	-	-
(Fr) 	Coast to stop	-	-
(db) 	Over voltage at stop	-	-
(PrEr) 	Software fault	-	-
(Err_00)  (Err_01) 	Err_00: Keypad cable trip. (before connecting) Err_01: Keypad cable trip. (connected)	-	-
(dtF) 	Direction command error	-	-
(Wr_F) 	Different software version inter-copy	-	-