Operation Panel

Setting Instruction Manual

1 Operation Panel Instruction

The operation Panel is divided with two areas（See Fig1-1）：LCD display areas and key words area. A wheel works with two directions can be found at the top right side of the Operation Panel.

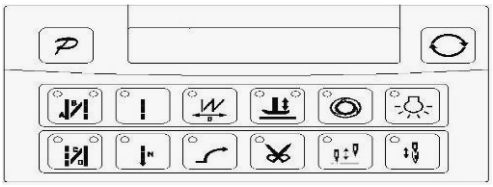


Fig.1-1

The LCD display areas are position in upper left of the whole operation panel. It including pattern, sewing mode, start/end back tacking, and foot lifter, stop-needles and trimming, and slow start operation set. The operation system automatically power on that HMI will a self-test, then all icons will flash once in the LCD display areas and only display the current settings of the system, the other did not choose that the icon will not be lighted, see figure 1-2.

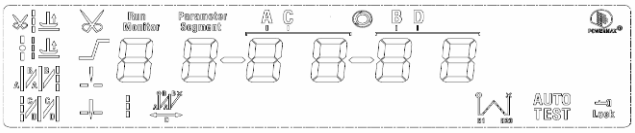


Fig.1-2

Operator panel for each key explanation see the table 1.

Table 1: Following form is the instruction of each key：

No	Appearance	Description
1		**Function key**：Confirm working, and work with other key.
2		**Cycle key**：Switch parameter position when change parameter；
3		**start back tacking key**：Every effective press the key once; round with single start back tacking, double start back tacking, four start back tacking and close start back tacking. The current status is displayed on the left of LCD. Detailed see "2.1.2 before and after sewing settings instruction.
4		**end back tacking key**：Every effective press the key once; round with single end back tacking, double end back tacking, four end back tacking and close end back tacking. The current status is displayed on the left of LCD. Detailed see "2.1.2 before and after sewing settings instruction.
5		**Free sewing mode key**：Every effective pushed the key once; the system selects free sewing mode. The free sewing status is displayed below LCD. Detailed see "2.1.1 model sets of sewing."

No	Appearance	Description
6		**Multi-segment sewing mode key:** Every effective pushed the key once; the system selects multi-segment sewing mode, pressed **P** key into the number of the needled setting. The multi-segment sewing status is displayed below LCD. Detailed see "2.1.1 model sets of sewing."
7		**W sewing mode key**：Every effective pushed the key once; the system selects W sewing mode. The **W** sewing status is displayed below LCD screen. Detailed see "2.1.1 model sets of sewing."
8		**Soft start key:** Select soft start function. It will show soft start status on top of LCD screen.
9		**Press foot lifting key:** Every effective pushed the key once; round with trimming after press foot lifting, sewing end press foot lifting and manual press foot lifting. The current status is displayed on top of LCD screen. Detailed see "2.1.4 press foot lifting set.
10		**Trimming key**：Select/Cancel automatic trimming. The trimming status is displayed on top of LCD screen. Detailed see "2.1.5 trimming set.
11		**One-Shot-Sewing key**：Select/Cancel one-Shot-Sewing, it is effective only into multi-segment sewing mode, when chose one-shot sewing, one-shot foot pedal can complete one needle of multi-segment sewing；The one-shot-sewing status is displayed on top of LCD screen. Detailed see "2.1.6 trigger set.
12		**Stop position key**：Select up/down stop position. The up/down stop position is displayed on top of LCD screen. Detailed see "2.1.7 stop position set. [Note: automatic trimming back, the system is always on the up of needle position.]
13		**Lamp key**：Select switch on/off lamp. When floodlights are light and HMI supply 5V lamp light.
14		**Stitch compensation key**：Start stitch compensation if press, stop stitch compensation if loose. LED at top left corner will light if stitch compensation.

2 Optional User Mode

2.1 Operator Mode

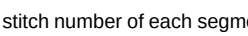
This mode is default mode of operator panel, operation panel enter this mode after it starts. Under this mode, two decimal points will move on the 6 pcs 8-segment LED,（8.8.8.8.8.8.） that means HMI is idle.

Note: During working, if long time without press button, HMI will change to idle status automatically, and will cancel the operation before.

2.1.1 Sewing Mode Setup：

Free sewing mode: Press key, LED show as 0 - - - - - -, if press key, confirm the operation, 8-segment LED display will come back to idle, and LED on the top left side of key will light.

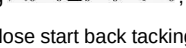
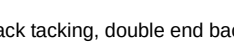
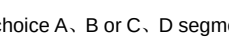
Multi-segment sewing mode: Press key, 8-segment LED will display 1 - - - 0 1

multi-segment sewing status。Use wheel to choice the N segment, and press key to confirm the operation and exit multi-segment sewing setup status, or press key to entry multi-segment sewing stitch number of each segment setup status  。When setup stitch number of each segment, press key can be used to choice the segments and wheel to setup the stitch number. After finish the setup, press key to confirm the operation and exit multi-segment sewing setup status. After confirmation, 8-segment LED display will come back to idle. LED on the top left side of key will light if switch on multi-segment sewing mode。

W sewing mode：Press key, 8-segment LED will display W sewing status,  。Press key can be used to choice A B D segment, and use wheel to choice stitches of each segment. After confirmation, press key, 8-segment LED display will come back to idle, and LED on the top left side of key will light.

2.1.2 start/end back tacking setup：

If Press key or key, LED will display start back tacking status or end back tacking status.

If press key, it round with single start back tacking  , double start back tacking  , quad start back  , close start back tacking  . If press key , it round with single end back tacking, double end back tacking, quad end back, close end back tacking（Fig omit）.Press key to choice A、B or C、D segment，and use wheel to choice stitches of each segment. After confirmation, press key, 8-segment LED display will come back to idle, and two Lends on start back tacking key and end back tacking key will light to show the status accordingly.

- When two Lends on key switch off（same with end back tacking key）, it means no back tacking;
- When LED on top left of key light, but on top right off（same with end back tacking key）, it means single back tacking;
- When LED on top left of key off, but on top right light（same with end back tacking key）, it means double back tacking;
- When two Lends on key light（same with end back tacking key）, it means quad back tacking;

2.1.3 Soft start setup：

Press key, entry into soft start status. If choice soft starts, the icon is lit in LCD areas. Press this key again to exit soft start status, the icon will off.

2.1.4 Press foot lifting key：

Use key to choice foot lifting status, total four different status, no automatic foot lifting, see ; automatic foot lifting after trimming, see ; automatic foot lifting if stop during sewing, see ; automatic foot lifting if trimming and stop during sewing, see . Use key to choice and LED on the top will show the status accordingly.

2.1.5 Trimming key：

Use key: select/non-select automatic trimming. LED on top left side of the trimming key will light if select automatic trimming, see, if no, LED off, see.

2.1.6 One-Shot-Sewing key

Use key: select/non-select one-shot-sewing. LED on top left side of the one-shot-sewing key will light if select one-shot-sewing during enable multi-segment, see；if no, LED off, see。

2.1.7 Stop position key

Use key: select up/down stop position. Press key repeat, between up /down stop position to switch. Choose need to stop position and stop press key to confirm. Stop position had compiled.

2.1.8 Lamp key：

Use key: select switch on/off lamp which was powered by the operation panel.

2.1.9 Stitch compensation key

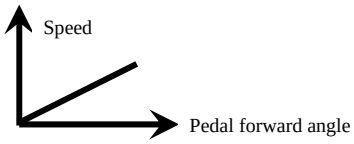
Use key: press this key to start stitch compensation. Compensation half needle or a half needle due to the press time. If you keep press that compensation needle always until release button.

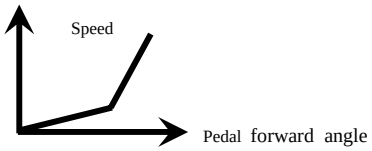
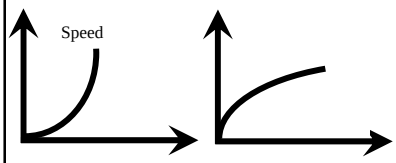
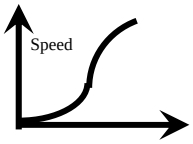
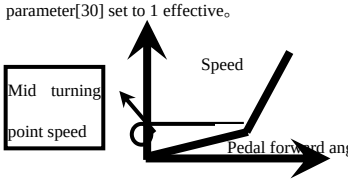
2.2 Technician Mode

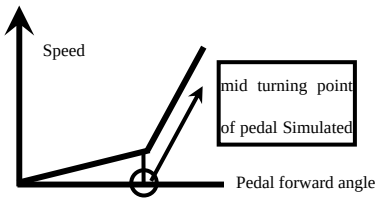
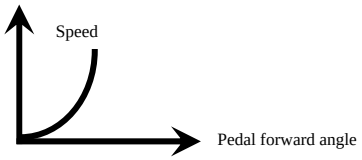
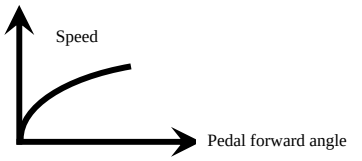
During HMI idle, first press key and press key, enter technician parameter setup status, and 6pcs 8-segment LED display as 0. 1.0.2.0.0.。The Wheel on the top left side can be used to change the value of the decimal position which is flash, and key used to change the flash position of the decimal, then change the parameter as you want. After confirmation of the change, you can choice to change other parameter, or use key to confirmation the change. HMI back to idle if no wheel, no press the key after regulate time.

Table 2: Technician mode parameter：

Parameter classification	Parameter High byte	Parameter Low byte	Default	Rang	Comment
speed	0	0	200	100~800	Minimum sewing speed
		1	3500	200~5000	Maximum sewing speed
		2	3500	200~5000	Maximum constant sewing speed
		3	3500	200~5000	Maximum manual back tacking speed
		4	200	100~800	Stitch compensation speed
		5	160	100~500	Trimming speed
		6	0	0 / 1	Soft start Mode setup: 0：Soft start only after trimming 1：Soft start after both trimming and stop

Parameter classification	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		7	2	1~9	Soft start stitch number
		8	200	100~800	Soft start speed
		9	20	1~20	System accelerate sensitivity （Direct drive transmission can be set up to a large value ； belt transmission don't set large value or too much noise and vibration. This parameter do not affect the electrical）
		A	20	1~20	System decelerate sensitivity （Direct drive transmission can be set up to a large value ； belt transmission don't set large value or too much noise and vibration. This parameter do not affect the electrical ）
		b	800	200~1200	Middle speed value(RPM)
		C	50	25~200	Low speed value(RPM)
Back tacking setup		0	1000	200~2200	Start back tacking speed
		1	1000	200~2200	End back tacking speed
		2	1000	200~2200	Continuous back tacking speed
		3	50	0~70	Start back tacking stitch compensation 1
		4	50	0~70	Start back tacking stitch compensation 2
		5	50	0~70	End back tracking stitch compensation 1
		6	50	0~70	End back tracking stitch compensation 2
		7	26	1~70	Continuous back tacking stitch compensation 1
		8	20	1~70	Continuous back tacking stitch compensation 2
		9	200	1～999	Auto back tacking segment stop setup(ms) CT time
		A	180	10~359	stitch compensation reference angle
					Pedal Curve mode setup: 0：Auto Calculated liner Curve（According to the highest speed automatic computation） 

Parameter classification	Parameter High byte	Parameter Low byte	Default	Rang	Comment
Pedal	3	0	2	0/1/2/3	1：Two segment liner Curve. (You shall be free to set slow start after fast or fast start after slow, the parameters "31" and "32" cooperate with use ） 
					2：Arithmetic Curve（ the parameters [33] cooperate with use） 
					3：S curve（the operate control is very well, slow start after fast ） 
		1	3000	200~4000	Two segment controls the speed slope：mid turning point speed RPM（two segment of turning point speed），the parameter[30] set to 1 effective。 
			800	0~1024	Two segment controls the speed slope： mid turning point of pedal Simulated value，the parameter[30] set to 1 effective, the value is between[38]and[39].

Parameter classification	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		2			
		3	2	1/2	Arithmetic Curve supplementary parameter: the parameter[30] set to 2 effective, 1: Square (the low speed control is very well, slow start after fast);  2: Square root (Responding speed is fast, fast start after slow); 
		4	150	0~1024	Pedal trimming position set, See 2-1. (the value is not higher than the parameter [30])
		5	300	0~1024	Press foot lifting, See 2-1. (the value is between[34]and[36].)
		6	460	0~1024	Pedal back mid position, see 2-1. (the value is between[35]and[37].)
		7	480	0~1024	Pedal step upon running position, see 2-1. (the value is between[36]and[38])
		8	680	0~1024	Pedal low speed running position (upper),see 2-1 (the value is between[37]and[39])

Parameter classification	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		9	960	0~1024	Pedal simulation the largest of value, see 2-1 （the value is not lower than the parameter [38]）
		A	100	0~800	Pedal pressure foot lifting confirm time
		b	0	0/1	Pedal return immediately in the trimming selection: 0:off 1:on
		C	1	0/1	Press foot lifting position of foot lifting function selection 0: no action 1: action
		d	1	0/1	Trimming position of foot lifting function selection 0: no action 1: action
custom setup	4	0	1	0/1	To find up needle position after Power on： 0: no action 1: action
		1	1	0/1	Automatically reinforcing functions chose ： （the machine head is not automatically reinforcing functions, the best way is prohibit） 0：prohibit 1：allow
		2	0	0/1	Back to sewing by hand when the function mode selection: 0：Juki mode. In sewing or in the end of the action 1：Brother mode. It acts only in sewing.
		3	0	0/1/2/3	Special Running Mode setup： 0：operator select 1：simple sewing mode 2：calculate initial angle of motor (do not uninstall strap) 3：calculate motor/machine head run rate mode (synchronizer, do not uninstall strap)
		4	0	0—31	Torque boost up at low speed : 0：no action 1~31：31 levels Torque boost up
		5	1	0/1	Stop pin mode： 0：Constant speed tackle mode (in the belt transmission, Parking is not precision)

Parameter classification	Parameter High byte	Parameter Low byte	Default	Rang	Comment
					1：back pull mode（PMX）
		6	100	0~800	Command button to fill half-needle time
		7	150	0~800	Command button to fill a needle time
Counter mode	5	0	1	1～100	stitch counting ratio value setup
		1	1	1～9999	stitch counting value setup
		2	0	0～4	stitch counter mode selection 0：not count 1：count up，reset after meeting counting value. 2：count down，reset after meeting zero. 3：count up，stop after meeting counting value. Must manual reset counting value. 4：count down，stop after meeting counting value. Must manual reset counting value.
		3	1	1～100	Trimming counting ratio value setup
		4	1	1～9999	Trimming counting value setup
		5	0	0～4	Trimming counter setup： 0：not count 1：count up，reset after meeting counting value. 2：count down，reset after meeting zero. 3：count up，stop after meeting counting value. Must manual reset counting value. 4：count down，stop after meeting counting value. Must manual reset counting value.
Operation mode	6	0	0	0	Run time reduction
		1	0	0/1/2	Translating Parameter 0：no action 1：Download parameters(the panel will parameter from panel to controller ） 2：Upload parameters (the panel will parameter from controller to panel)

Parameter classification	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		2	2000	1,2, XXXX	Restore storage parameter
		3	0	1,2	Backup current parameter as user parameter for restore (restore)
		Note: Above such “6x ”parameter to operate is not saved.			

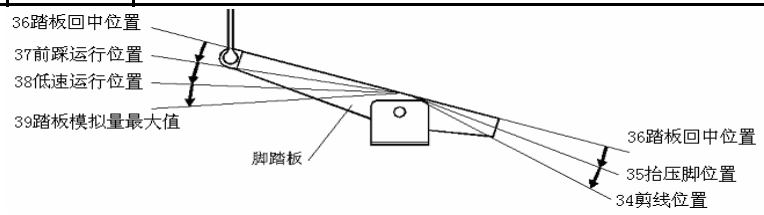


Fig2-1 Pedal action parameter the position of the diagram

2.3 Administrator Mode

1 During HMI idle, Press key and press key, enter administrator parameter setup status, and 6pcs 8-segment LED display as 3. 1.0. 1.8.8.。Wheel can be used to change the value of the decimal position which is flash, and key used to change the flash position of the decimal, then change the parameter as you want. After confirmation of the change, you can choice to change other parameter, or use key to confirmation the change. HMI back to idle if no wheel, no press the key after regulate time.

Table 3: Administrator mode parameter：

Parameter classification	Parameter High byte	Parameter Low byte	Default	Rang	Comment
Trimming mode	0	1	0	0～359	The end angles of trimming
		2	1	0/1/2/3/4/5/6	Mode selection for trimming sequence. 0: According to the【TS】 set angles is trimming, until up needle position to delayed【T2】time off. 1: According to the【TS】set angles is trimming, until【TE】set angles off. 2: According to the【TS】set angles is trimming, it delayed 【T2】set time off. 3:Down needle position signal delayed the【T1】set time is trimming, it delayed 【T2】set time off.

Parameter classification	Parameter High byte	Parameter Low byte	Default	Rang	Comment
					4: Up needle position signal delayed the【T1】set time is trimming, it delay 【T2】 set time off, the most used in sewing machine. 5: Find down needle position signal after start tangent action to up needle position off. Then set the time delayed【T1】after【T2】set tangent time. (The most used for general car models, 【T1】and【T2】are set 0) 6: 【TS】 setting angle tangent action to up needle position off. Then set the time delayed T1 after T2 set tangent time
		3	10	5-359	The start angles 【TS】of trimming (relative down position of angle)
		4	120	10-359	The end angles 【TE】of trimming (relative down position of angle, Need to greater than the【TS】)
		5	10	1-999	Trimming start delay time T1（ms）
		6	60	1-999	Trimming end delay time T2（ms）
		7	30	1～999	Down needle stop trimming delay time D1
		8	90	1～9999	Down needle stop trimming continued time D2
		9	120	1～999	Down needle stop trimming restored time D3
		A	20	10-70	Trimming (Reserved)
	1	0	0	0/1/2/3/4/5/6	Mode selection for tension release sequence. 0: According to the【LS】set angles is tension release, until up needle position to delayed【L2】time off. 1: According to the【LS】set angles is tension release, until【LE】set angles off. 2: According to the【LS】set angles is tension release, it delayed 【L2】 time off. 3:Down needle position signal delayed the【L1】set time is tension release, it delayed 【L2】 time off.

Parameter classification	Parameter High byte	Parameter Low byte	Default	Rang	Comment
Tension release 、 Wiper and Clamp mode		1	30	5-359	4: Up needle position signal delayed the【L1】set time is tension release, it delay 【L2】 time off. 5: Find down needle position signal after start tension release action to up needle position off. Then set the time delayed【L1】after【L2】set tension release time. 6: 【LS】setting angle after tension release action to up needle position off. Then set the time delayed【L1】after【L2】 set tension release time
		2	300	10-359	The end angles of tension release（relative down position of angle, Need to greater than the system of parameters【11】）
		3	1	1-999	Tension release solenoid start delay timeT1（ms）
		4	10	1～999	Tension release solenoid up position delay time T2（ms）
		5	1	0/1	selection for Wiper function 0：off 1：on
		6	10	1～999	Clamp /Wiper delay time ms
		7	30	1～9999	Clamp /Wiper holding time ms
		8	50	1～999	Clamp /Wiper revert time ms
		9	1	0/1	Thread Clamp function： 0：off 1：on
		A	100	10-359	Clamp start angle
		b	190	11-359	Clamp end angle
		C	0	0～9999	Brow start delay
		d	50	1～9999	Brow continue time
Mode selection	3	1	0	0/1	The automatic test mode selection ： 0: order stitches 1: order time
		2	300	0~1000	The safety SW alarm confirm time ms(the same way does not distinguish between direct-drive safety SW and flat lock trim of protection SW)

Parameter classification	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		3	50	0 ~ 1000	The safety SW restore confirm time ms
		4	0	0 / 1	Motor rotation direction setup: 1：Forward 0：Reverse
Machine head parameter	4	0	1000	0 - 9999	motor/machine head run rate: 0.001 (if automatic calculation of motor/machine head run rate has done, the Parameter value in control box maybe different with that in HMI)
		2	0	0 - 359	Up needle position adjusted angle（compare to up position sensor position excursion）
		3	175	0 - 359	Down needle position mechanical angle
		4	200	0 - 800	Press down delay time(ms)

2.4 Monitor mode

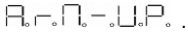
During HMI idle, Press key, then press key, entry monitor mode. Use the wheel can see monitor parameter, About the monitor parameter, please refer the sheet 4, HMI will back to idle if no wheel or no press the key in regulates time. Table 4: monitor mode parameter

	Parameter High byte	Parameter Low byte	unit	comment
Monitor status	1	0		Counter stitches
		1		Counter trimming
	2	0	V	DC Bus Voltage
		1	RPM	Motor speed
		2	0.01A	One phase current
		3	degree	Initial angle
		4	degree	Mechanical angle
		5	——	Sampling value of pedal voltage
		6	0.001	motor/machine head run ratio
		7	hour	Motor total run time
		8	——	Sampling value of potentiometer at machine head
	3	0 - 7	——	History Error Code Recorder 8

2.5 Wrong warning mode

If the HMI detects something wrong from controller, it will jump automatically to warning mode, and show error code by 8-segment.see  。During wrong warning mode, the user can set technician parameter change, administrator parameter and HMI parameter self-change or monitor mode. Exit these modes not back to idle but back to wrong warning mode. It will return normal status after fixing error and resetting power.

2.6 Safety switch warning mode

If HMI test safety switch warning, it will jump automatically to safety switch warning mode, see  . During wrong safety switch warning mode, the user can set technician parameter, administrator parameter and HMI parameter self-change or monitor mode. Exit these modes not back to idle but back to wrong warning mode.（It reunification with the switch input, does not distinguish between safety switch, scissors protection switch）

3 Operation after control system installation：

1、After control system installation, ‘automatic calculate motor/machine head run rate’ need work once. (because of machining precision, different plant have different effective radius of engine hand-wheel, even direct drive do not have 1:1“motor/machine head run rate”）。Entry technician parameter No.43, setup this parameter as 3. Press pedal forward, system work with middle speed about 10cycles and stop, the result of calculation save in control box. Then restore technician parameter No.43 to 0. If can confirmation the value of “motor/machine head run rate”，can setup administration parameter No.40 directly. Real “motor/machine head run rate” in control box can read by monitor parameter No.26.

2、New control system in the needle position stop no longer rely on sensor signal to determine the down-stop needle, but by administration parameter No.43, this parameter confirms the mechanical angle from down needle position to up needle position. Current mechanical angle can read by monitor parameter No.24, mechanical angle of up needle position is 0.（After power on , control system will work at least one time by up needle position to revise mechanical angle, for example: Round to up needle position. Value of “motor/machine head run rate” will effect the calculation of mechanical angle. Suggest adjust down needle position after confirm right “motor/machine head run rate”.

3、New control design used to 5 solenoid drive output. Each drive output can setup its function freely. Before use please confirm if the administrator 6x parameter setup the function of each driver output same as the connection with solenoid; and confirm administrator 7x 8x parameter, otherwise perhaps happen solenoid power not enough. （the default parameter is according to normal solenoid connection）

4 Control system restores storage parameter

4.1 Restore storage parameter for factory of control

Step 1: Under operator mode, press and keys, LCD Pd 0000; user require to type the passport.

Step 2: The Wheel can be used to change the value of the decimal position which is flash, and key used to change the flash position of the decimal, enter to the parameter【62】.

Step 3: The Wheel can be used to change the value of the decimal position which is flash, and key used to change the flash position of the decimal, to restore the values of the parameters.

Step 4: the parameter confirms correct, press key until the LED start flashing, release key, HMI and the whole system restore storage parameter.

4.2 Restore default user's own parameter

The parameter【63】of HMI can be used to set the customer's own parameters, following methods of operation ：

Step 1: Under operator mode, press and keys, LCD Pd 0000; user require to type the passport.

Step 2: The Wheel can be used to change the value of the decimal position which is flash, and key used to change the flash position of the decimal, enter to the parameter 【63】.

Step 3: The Wheel can be used to change the value of the decimal position which is flash, and key used to change the flash position of the decimal, to restore the values of the parameters.

Step 4: Press key keep 5 second, HMI and the whole system will the current parameter set restorethe user to customize storage parameter.

When the parameter cause to the control system error, the user can restore the custom of the parameters, the methods of operation as "4.1 Restore storage parameter for factory of control" .The parameter【62】 is changed 1or 2, Press key keep 5 second again, the system will restore the user to customize storage parameter.

Note：

1、 After power on, HMI only download operator mode parameter, but not technician and administrator parameter. If all parameter is needed, technician parameter 61 can used to download all current working parameter of HMI.

2、 If restore other parameter of HMI storage, technician 62 can be used to make it current working parameter, and download initiative.

3、 After single parameter modification, HMI will download the value that is different with old value of parameter.

4、 Recover default parameters, the system the best in the clear once again.