



# JKA STAGER CONTROLLER SERVICE MANUAL

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## 1. General Introduction

1.1 JKA stager controller is the product developed on the basis of advanced technology. It is widely being applied in various water treatment fields as Filtration System, Water Conditioning, Softening System and Desalination Systems, etc. The main distinguished features of JKA Controller are:

- Power: 150~250V/AC, 50/60Hz, 4W;
- Chinese or English version alternatively selected, setting simplicity, No complicated programming languages ability needed to operator;
- Password Protection design prevents parameter setting from arbitrary and unexpected alteration;
- Flexible regeneration initiation modes ( Volume, Remote, Interval, Week timing ).The selection of regeneration modes depends on specific technical and systemic conditions.
- LCD display with backlight for over ten years use and state display function on panel;
- Regeneration and relevant outputs signals are all Relay Dry Contractor; AC 220/5A;
- Remote control signal is dry contact. Signal can be reserved at least 2 seconds;
- JKA Stager Controller contains four specified parameters:
  - a) Plan                      b) M program              c) S program              d) Commerce
- Peripheral logic interlock function can be implemented among multiple JKA Stager Controllers through using S1 or S3 program of one JKA Stager Controller as state feedback to adjacent one. Hereby, Regeneration initiation on two JKA Stager Controllers is thus avoided.
- JKA Stager Controller equips two logic level control units with Relay Dry Contractor output;
- Commercial lock. Please contact our technical personnel for detailed usage.

### 1.2 Key and Display

#### 1.2.1 Keys

The Six function keys, located directly beneath the display, control the majority of JKA

stager operation:

ESC : functional exit;

▲▼ : select /modify parameter;

▶◀ : move cursor;

ENTER: confirmation/input.

Note: keeping any key 5 seconds can get into setting state on main display.

The setting point is up by 1 when the upward key is pressed each time, and will be down by 1 when the downward key is pressed each time. The cursor on the screen will move right when the rightward arrowhead is pressed, and will move left when the leftward arrowhead is press.

### 1.2.2 Panel Display

Three light-groups locate on the right of panel.

#### Group one

Light A1 indicates high hydraulic level state of group one. Namely, lighting denotes “cut off” of high level contact point, and extinguishing denotes “connection” of high level contact point.

Light B1 indicates low hydraulic level state of group one . Namely, lighting denotes “cut off” of low level contact point, and extinguishing denotes “connection” of low level contact point.

Light C1 shows logic state output of hydraulic level of Group one . (Low level, C1 is connected, adversely high level, C1 is cut off)

#### Group two

Function and state of Group 2 is the same as that of Group 1.

#### Group three

Working light and Regeneration light separately indicates operational status. Frequent flashing denotes rotational frequency of flow sensor if flow sensor is implemented in system.

## 2. Parameters Setting

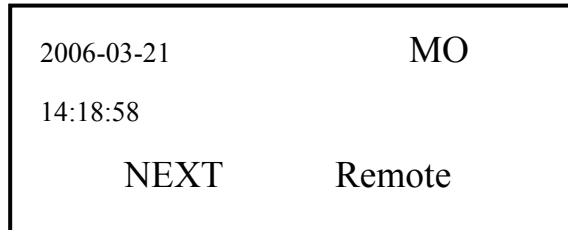
Parameter setting includes the following four steps: power supply connection; parameter

setting; input/output equipment connection, input/output equipment test

## 2.1 Power Supply Connection.

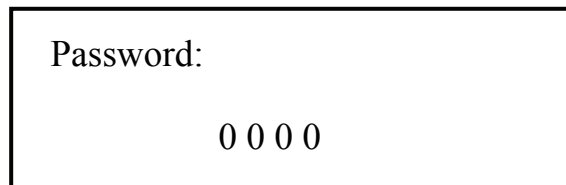
Properly link JKA Stager Controller to power supply before starting parameter setting.

The screen displays as below:



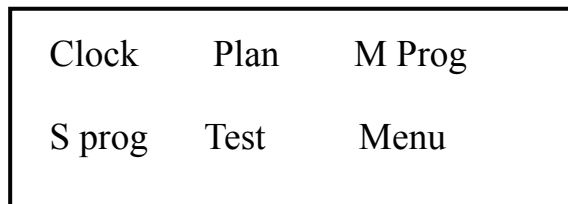
## 2.2 Setting procedure

2.2.1 Password input: constantly press any key on main display for 5 seconds, the screen will display as follow:



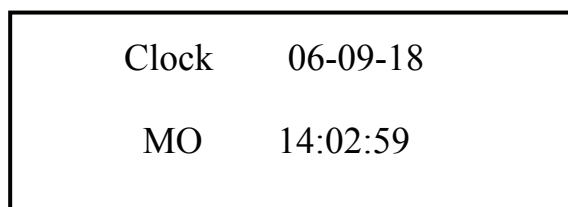
Use  $\blacktriangleleft$  $\blacktriangleright$  keys to move cursor, push  $\blacktriangle$  $\blacktriangledown$  key to modify value, transfer 0000 to 2008.

Then press ENTER to get into main menu, screen displays as below



### 2.2.2 Time calibration

Access to time calibration setting by pushing Clock and ENTER. Screen displays as below:



If the time is not consistent with current time, push  $\blacktriangleleft$  $\blacktriangleright$  and  $\blacktriangle$  $\blacktriangledown$  keys to adjust.

Then press ESC to return to main menu.

2.2.3. Plan setting: Move the cursor to Plan and press ENTER to access plan setting

program, display as follows:

Mode	Business
------	----------

- Mode setting: move the cursor to Mode and press ENTER to access to Modes choice, display as below

Mode: Volume Remote Interval Week Timing
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Note: Which regeneration mode is identified in the light of actual technique. Volume mode selection requires flow sensor matched that can generates rectangular pulse. (We recommend JM-TT flow sensor to match JMA Stager Controller usage)

If Volume mode is selected as regeneration initiation mode, then move cursor to Volume and press ENTER to get into Volume mode setting, display as below

K: 000.000	$\Sigma$
P: 00000.0	t

Note: K value is pipe coefficient. P is Total volume.

Press  $\blacktriangleright\blacktriangleleft$  and  $\blacktriangle\blacktriangledown$  keys to input K value and P value, and then press ENTER to confirm. Accumulative volume value checked by moving cursor on “ $\Sigma$ ” and press ENTER, then display as below

$\Sigma$ : (CLR 0000)
0000000.0 t

To remove accumulative volume value, press ENTER on the above display and type password “4321”. Then press ENTER to confirm this performance. When setting week

timing as system regeneration mode, moving cursor on Week timing and press ENTER to access, display as below

Week Plan						
SU	MO	TU	WE	TH	FR	SA

Pushing ►◄ and ▲▼ keys sets date and time requested to regenerate, then press ENTER to get into, display as below

Week Timing	SU
01:00:00	

Note: Interval mode setting. Move cursor on Interval and press ENTER to get into, display as below

Interval time
0000 min

Set interval time from 1 to 9999 seconds, and then press ENTER .

Note: among four regeneration modes, remote mode is highest priority, namely no matter Week timing or Interval mode, as long as Stager controller receives remote signal, it will initiate regeneration program.;

- Business Lock: if its function is needed please contact to us.

2.4. M program: Move cursor on M Prog and press ENTER to get into M program setting, display as below

Program
Stages: 3

Change number of push ►◄ key to change number of stages (1-16 total) and press

ENTER (3 stager as example), display as below

Program: 1/3 stages

Time: 0000 seconds

Push **▶◀** and press ENTER to access step width setting of first stage. Adjust this step width based on systematic requirement (from 1 second to 9999seconds). Up completion, press ENTER to confirm this setting. And then go to second stage setting by pressing **▶◀**.

Note: How many total stages needed should be identified by technique of water treatment. For example, normally, Media Filter needs two stages, fast rinse and back wash. Softening system needs three stages, back wash, brine, slow rinse and fast rinse.

2.5 S program setting: move cursor to S Prog and press ENTER to access S program setting, screen displays as below.

S Prog: 1 N= /3 T=

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Sprogram includes 3 sub-program can be set:

- S1, S3 program setting: select S1 or S2 program, and then press **▶◀** to go into setting display. Move cursor to certain “-” which stage needs assistant signal output. And then transfer “-” to “\*” to activate. S1 and S3 programs are restricted by M program on the number of stages and the step width of each stage.
- S2 program setting: after setting S1 and S2, press ENTER to go into setting display.

S prog: 2 N=2/3

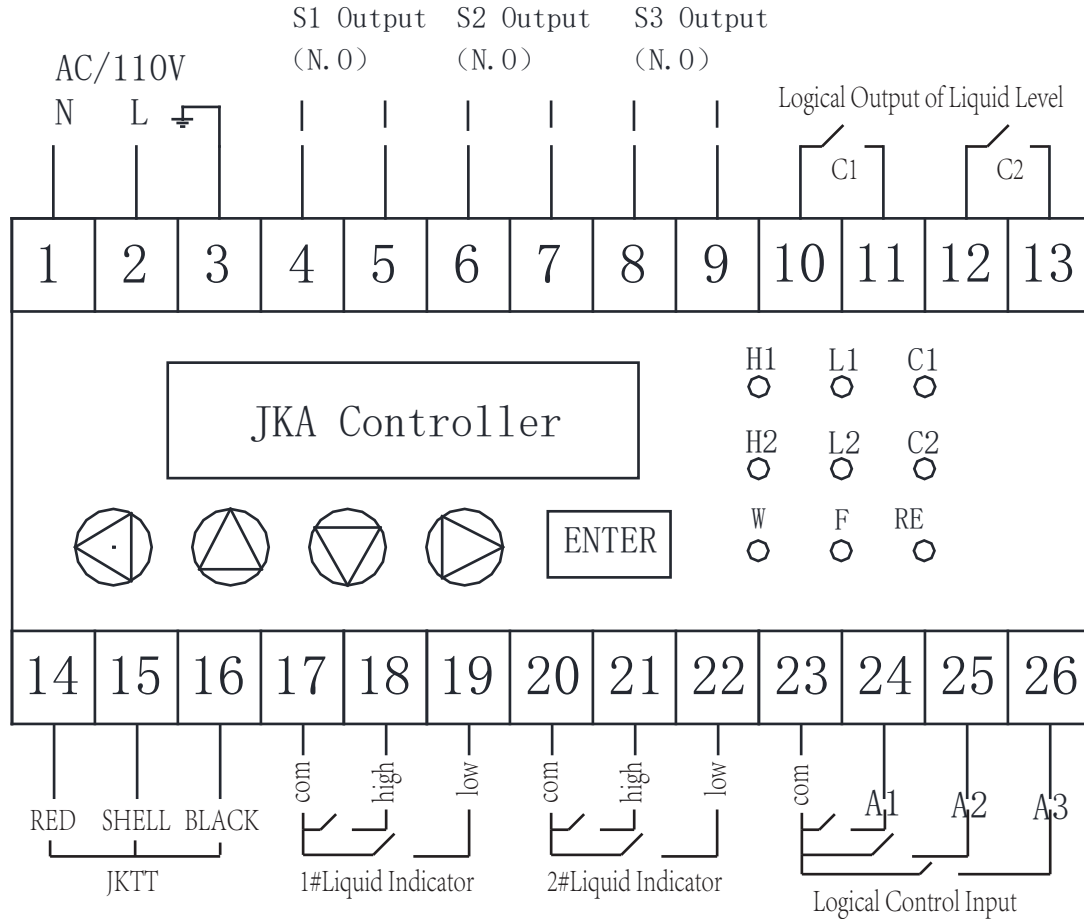
T=3600

Step 03 delay2700

Select Step 00 and press ENTER . Push **▶◀** and **▲▼** keys to set the number of output stages (This number is limited by the number of main program stages). And then

confirm by pressing ENTER . Select delay0000 and press ENTER to set the step width of delay that can not exceed the length of relevant stage in main program. S2 output can only be implemented in one step during regeneration process.

### 3. input/output equipment



Terminal# -- connection

1#---B	220V	4# 5#	S1 output	10# 11#-c1	Level control	Remote control input
2#---L	Power	6# 7#	S2 output	12# 13#-c2	output	
3#---G	supply	8# 9#	S2 output			
14#-red	Sensor	17# com	1# Level	20# com	2# Level	25# Interlock input
15#-shell	signal	18# hi	switch	21# hi	switch	26# Interlock input
16#-black	input	19# low	input	22# low	input	

Note: If SIGNET flow sensor is chosen, linking red line of flow sensor to 16 terminal CPIN. And black line and shield line both link to 15 terminal COM. 14 terminal is no connection.

Instruction: terminal 25 and 26 are two input points of external feedback signal.

Regeneration of JKA Stager Controller is restrained immediately when any of both forms short circuit with COM linking. As far as releasing external feedback signal, regeneration can be available. This function are normally used to avoid coinstantaneous regeneration



state of two equipments.

4. Test setting: on the main menu display, operate ►◀ button to select Test and press ENTER to get into setting state. Display as below.

09:34:21	step 0
Enter	ESC

Press ENTER to go into the first step of program.

09:34:21	step 1
118/121	
ENTER	ESC

Inspect validities of equipment and valve's connection before press ENTER to go into the second stage of program.

### 3. Process test and manpower control

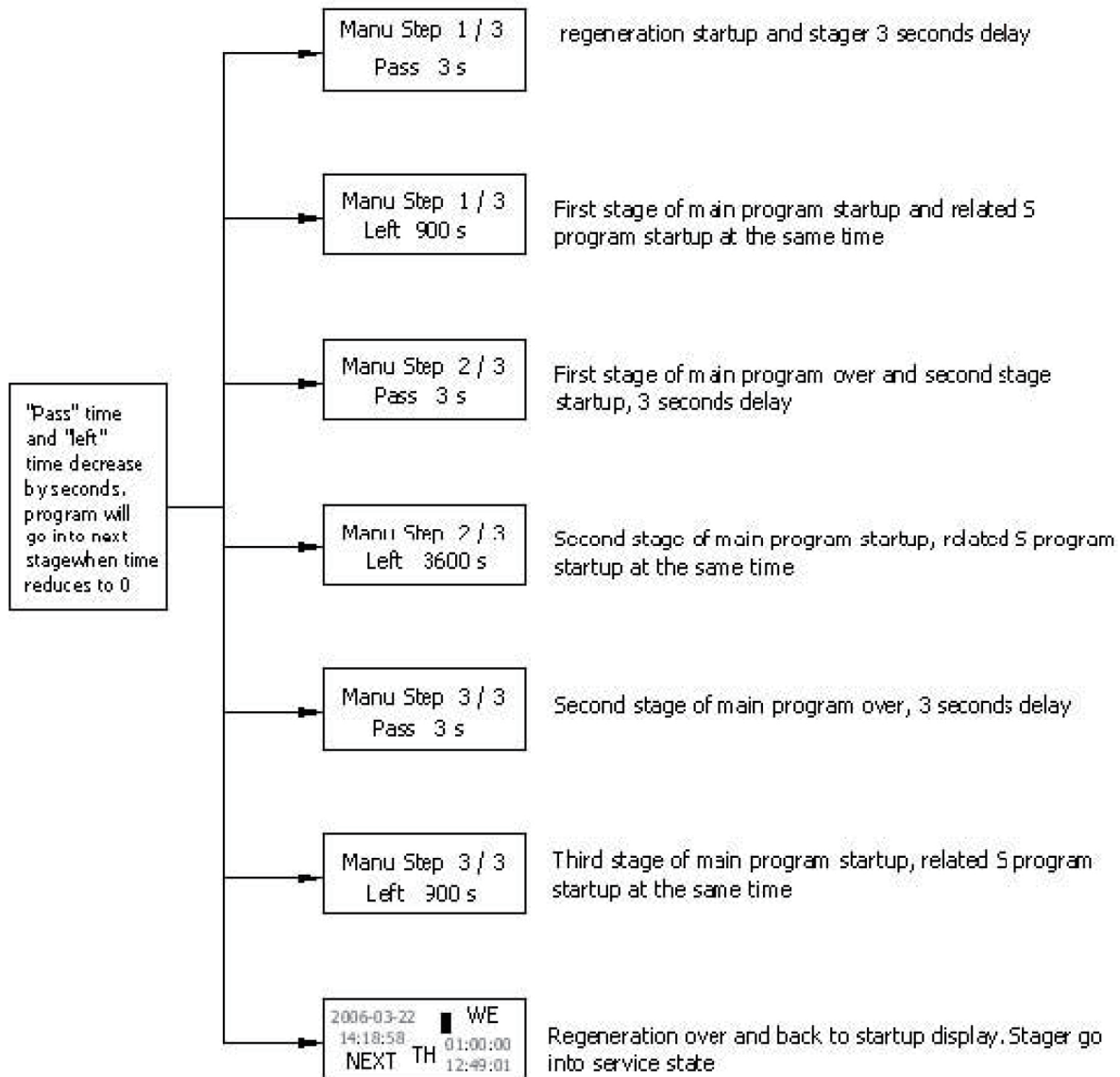
#### 3.1. Main screen

According to various systematic operational states, Screen may display current systematic state information. Under the working status, display as below:

2006-03-21	TU
14:18:58	
Next	Remote

- Acquire present date, time, and next regeneration time from main screen, when Week timing mode is adopted;
- Easily obtain volume, flow rate on main screen, when Volume mode is adopted;
- Know present date, time, week and remote control mode when Remote mode is selected.

JKA stager controller activates regeneration when residual flow rate/time value reaches setting or is received remote signal. Under the regeneration states, screen displays various stages' information accorded with below



### 3.2. Manpower initiation or stop

- Move cursor by pressing ►◀ to Manu , and then push 强制 to initiate regeneration. Display as below

2006-03-21	TU
14:18:58	
Next	Remote

When regeneration program initiated, residual time of first stage decreases by 1. Till zero, program goes into second stage.

- Press ESC constant for 5 seconds to stop regeneration, display as below.

ManuStep STEP 1/3
Left 600

Press ENTER to skip one stage.

Above description is general instruction of JKA stager controller, if any question in your use please contact to us with any hesitate.

## Appendix

K value reference (national PN10 and metric PVC pipe standard)

Metric PVC Pipe	DN 40	DN 50	DN 65	DN 80	DN 100
recommendatory K value	6.8~10.0	3.6~4.2	2.8~3.3	1.8~2.2	0.8~1.2
installation pattern	Support Base Union Connection	Support Base Union Connection	Support Base Union Connection	Support Base Flange Connection	Support Base Union Connection

### Control Principle Drawing

