GTAKE
吉泰科

User Manual

GK600-48 Dedicated for Water Supply System

1. Instruction

GK600-48 dedicated drives are applied to constant pressure water supply system equipped a single water pump. This series have dedicated functions like pressure/frequency wakeup, timer sleep, timer sleep pressure wakeup, timer sleep pressure wakeup and sleep again, etc.

This additional manual should be used along with ***GK600 Series General Purpose AC Motor Drive User Manual***.

Group F4, constant pressure water supply parameters, are mainly added in this user manual. Impartantly PID process control should be digital setting, while feedback can be set on the basis of application.

2. Hardware Difference

No.

3. Dedicated Parameters

Param.	Designation	Range	Default	Attr.
F4-00	Constant pressure control	0: Disabled 1: Enabled	0	×
F4-01	Pressure range	0~100.00MPa	1.00	▵
F4-02	Constant pressure setting source	0: Digital setting 1 (F4-03) 1: Digital setting 2 (F4-04) 2: AI1 3: AI2	0	▵
F4-03	Constant pressure setting 1	0~100.00MPa	0.50	▵
F4-04	Constant pressure setting 2	0~100.00MPa	0.50	▵
F4-05	Sleep selection	0: No sleep 1: Pressure sleep 2: Frequency sleep	0	▵
F4-06	Pressure setting at pressure sleep	0~100.00MPa	0.80	▵
F4-07	Pressure sleep time delay	0.0~3600.0min	10.0	▵
F4-08	Frequency setting at frequency sleep	0.00~300.00Hz	20.00	▵
F4-09	Frequency sleep time delay	0.0~3600.0min	10.0	▵

Param.	Designation	Range	Default	Attr.
F4-10	Pressure wakeup in sleep	0: Set by F4-11 1: Set by F4-12	0	Δ
F4-11	Pressure wakeup setting 1	0~100.00MPa	0.30	Δ
F4-12	Pressure wakeup setting 2	0~100.00MPa	0.30	Δ
F4-13	Pressure wakeup activated time	0.0~3600.0min	10.0	Δ
F4-14	Timer sleep selection	Ones place: 0: Disabled 1: Enabled Tens place: 0: No wakeup in timer sleep 1: Wakeup allowed in timer sleep	00	×
F4-15	Timer sleep start time	0~2359	0	×
F4-16	Timer sleep end time	0~2359	0	×
F4-17	Wakeup pressure in timer sleep	0~100.00MPa	0.10	Δ
F4-18	Time delay of wakeup in timer sleep	0.0~3600.0min	10.0	Δ
F4-19	Sleep-again pressure after wakeup from timer sleep	0~100.00MPa	0.60	Δ
F4-20	Sleep-again time delay after wakeup from timer sleep	0.0~3600.0min	10.0	Δ
F4-21	Maximum stop pressure	0~100.00MPa	1.00	Δ
F4-22	Upper limit pressure protection setting	0: Disabled 1: Enabled	0	Δ
F4-23	Upper limit pressure protection value	0~100.00MPa	0.90	Δ
F4-24	System clock	0~2359	0	Δ
F4-25	Minimum stop pressure	0~100.00MPa	0.05	Δ

Param.	Designation	Range	Default	Attr.
F4-26	Time delay of minimum stop pressure	0.0~3600.0min	10.0	▵
F4-27	Sleep memory selection in stop	0: Sleep status memorized in stop 1: Sleep status cleared in stop	0	▵

4. Dedicated Parameters Specification

4.1 F4 Group

F4 -00	Constant pressure control	Range: 0~1	Default: 0

0: Disabled

1: Enabled

Parameters in Group F4 will take effect only when this parameter is set to 1.

F4 -01	Pressure range	Range: 0~100.00MPa	Default:1.00

Sets the pressure range upper limit.

F4-02	Constant pressure setting source	Range: 0~3	Default: 0

0: Set by F4-03

1: Set by F4-04

2: AI1

3: AI2

Pressure setting source needs to be selected by this parameter. For water supply system and when the Group F4 are activated, F0-00 must be set to 0. The pressure determined by F4-02 selected source will be converted to a percentage value, as the dynamical PID digital setting value at F0-01.

Water supply PID system setting is specified below:

1) F0-00=0 (must be)

If F4-02=0, F0-01 will be F4-03 x100.0/F4-01

If F4-02=1, F0-01 will be F4-04x100.0/F4-01

When F4-02 is set to 2 or 3, AI1 or AI2 curve will be determined by water supply pressure feedback source, and F0-01 will be a percentage value which equals to AI percentage value.

2) Set PID feedbck source by F0-02.

3) Adjust PID parameters on the basis of the system's status.

F4-03 and F4-04 could be selected via the digital input terminal "constant pressure switch".

F4-03	Constant pressure setting 1	Range: 0~100.00MPa	Default: 0.50
F4-04	Constant pressure setting 2	Range: 0~100.00MPa	Default: 0.50

Constant pressure setting 1 or 2 could be switched by “constant pressure switch” terminal and F4-02 parameter value.

F4-02 value	“constant pressure switch” terminal	constant pressure setting
0	0	Digital setting 1 (F4-03)
0	1	Digital setting 2 (F4-04)
1	0	Digital setting 2 (F4-04)
1	1	Digital setting 1 (F4-03)

F4-05	Sleep selection	Range: 0~2	Default: 0

0: No sleep
1: Pressure sleep
2: Frequency sleep

F4-06	Pressure setting at pressure sleep	Range: 0~100.00MPa	Default: 0.80
F4-07	Pressure sleep time delay	Range: 0.0~3600.0min	Default: 10.0

If the pressure is detected higher than F4-06 value, with time delay set by F4-07, the system immediately goes to pressure sleep mode. F4-06 and F4-07 are activated only if F4-05 is set to 1 (pressure sleep).

F4-08	Frequency setting at frequency sleep	Range: 0.00~300.00Hz	Default: 20.00
F4-09	Frequency sleep time delay	Range: 0.0~3600.0min	Default: 10.0

If run frequency is lower than F4-08 set value, with time delay set by F4-09, the system immediately goes to frequency sleep mode. F4-08 and F4-09 are activated only if F4-05 is set to 2 (frequency sleep).

F4-10	Pressure wakeup in sleep	Range: 0~1	Default: 0

0: set by F4-11
1: set by F4-12

F4-11	Pressure wakeup 1	Range: 0~100.00MPa	Default: 0.30
F4-12	Pressure wakeup 2	Range: 0~100.00MPa	Default: 0.30
F4-13	Pressure wakeup activated time	Range: 0.0~3600.0min	Default: 10.0

Pressure wakeup 1 or 2 activated can also be determined by F4-10 and “pressure wakeup switch” terminal as below:

F4-10 value	“pressure wakeup switch” terminal	Pressure wakeup
0	0	Pressure wakeup 1
0	1	Pressure wakeup 2
1	0	Pressure wakeup 2
1	1	Pressure wakeup 1

In sleep mode, if the feedback pressure is less than pressure wakeup setting, and maintain the time set by F4-13, the drive will immediately exit sleep mode.

F4-14	Timer sleep selection	Range: 00~11	Factory default: 0

Ones place:
0: Disabled
1: Enabled
Tens place:
0: No wakeup in timer sleep
1: Wakeup allowed in timer sleep
As long as timer sleep is enabled, pressure/frequency sleep is disabled.

F4-15	Timer sleep start time	Range: 0~2359	Default: 0
F4-16	Timer sleep end time	Range: 0~2359	Default: 0

When the time now is timer sleep start time set by F4-15, and feedback pressure is bigger than the value of F4-17, drive enters timer sleep mode immediately.
When the time now is timer sleep end time, timer sleep mode is finished.
At F4-15 and F4-16, 2359 represents time 23:59, while 1130 means 11:30.

F4-17	Timer sleep wakeup pressure	Range: 0~100.00MPa	Default: 0.10

F4-18	Timer sleep wakeup activated time	Range: 0.0~3600.0min	Default: 10.0

If feedback pressure is lower than the value set by F4-17, and it retains the same as long as the time set by F4-18, the drive wakes up from timer sleep mode immediately.

F4-19	Sleep-again pressure after wakeup from timer sleep	Range: 0~100.00MPa	Default: 0.60
F4-20	Sleep-again time delay after wakeup from timer sleep	Range: 0.0~3600.0min	Default: 10.0

If feedback pressure is higher than F4-19, and lasts the time set by F4-20, on the condition that the drive has already been woken up from timer sleep mode, the drive will get into sleep mode again.

F4-21	Maximum stop pressure	Range: 0~100.00MPa	Default: 1.00

If feedback pressure is higher than the maximum stop pressure set by F4-12, the drive will stop running immediately.

F4-22	Upper limit pressure protection setting	Range: 0~1	Default: 0

0: Disabled
1: Enabled

F4-23	Upper limit pressure protection value	Range: 0~100.00MPa	Default: 0.90

If upper limit pressure protection F4-22 is set to1, and while feedback pressure is higher than F4-23 set value, drive will run with lower limit frequency.

F4-24	System clock	Range: 0~2359	Default: 0

For example, 2359 means time 23:59, while 1130 means 11:30.
This parameter indicates system current time, which should be set once again every other power-up.

F4-25	Minimum stop pressure	Range: 0~100.00MPa	Default: 0.05
F4-26	Minimum stop pressure activated time	Range: 0.0~3600.0min	Default: 10.0

When the pressure is lower than minimum stop pressure and lasts the time set by F4-26, drive stops running. F4-25 and F4-26 are usually used for protection on the system in case of no

water in the pipe network.

F4 -27	Exit sleep mode when stop	Range: 0~1	Default: 0

0: Disabled

1: Enabled

When F4-27 is set to 1, if the drive is stopped at sleep mode, the drive will exit its sleep mode. When F4-27 keeps its default setting F4-27=0, if the drive is stopped at sleep mode, the drive will maintain its sleep mode unless the pressure or frequency meets the conditions to exit sleep mode.

4.2 Input terminal added parameters

C0-01	Function of terminal X1	71: contant pressure switch 72: pressure wakeup switch	Default: 0
C0-02	Function of terminal X2		Default: 0
C0-03	Function of terminal X3		Default: 0
C0-04	Function of terminal X4		Default: 0
C0-05	Function of terminal X5		Default: 0
C0-06	Function of terminal X6		Default: 0
C0-07	Function of terminal X7/DI		Default: 0
C0-08	Function of terminal AI1 (Digital enabled)		Default: 0
C0-09	Function of terminal AI2 (Digital enabled)		Default: 0
C0-10	Function of terminal AI3 (Digital enabled)		Default: 0

4.3 Output terminal added parameters

C1-00	Function of terminal X7/DI	34: Sleeping 35: Timer sleeping 36: Pressure-out-of-limit STOP	Default: 0
C1-01	Function of terminal AI1 (Digital enabled)		Default: 0
C1-02	Function of terminal AI2 (Digital enabled)		Default: 0
C1-03	Function of terminal AI3 (Digital enabled)		Default: 0

4.4 RUN and STOP added parameters

L1-00	LED display 1 in RUN	Range: 0000~37FF	Default: 000F

0: No Display; 1: Displayed
Ones place:
BIT0:Running frequency (Hz)
BIT1: Set frequency (Hz)
BIT2: Bus voltage (V)
BIT3: Output current (A)
Tens place:
BIT0: Output torque (%)
BIT1: Output power (KW)
BIT2: Output voltage (V)
BIT3: Motor speed (RPM)
Hundreds place:
BIT0: AI1 (V)
BIT1: AI2 (V)
BIT2: AI3 (V)
BIT3: Run frequency 2
Thousands place:
BIT0: DI
BIT1: External count value
BIT2: System pressure
BIT3: System time

L1-02	LED display in STOP	Range: 0000~FF7F	Default: 000F

Sets HMI displayed parameters in stop status. When a number of parameters are selected to be displayed, skim-through could be performed via key >> on keypad.
0: No display；
1: Displayed
Ones place:
BIT0: Frequency setting (Hz)
BIT1: Bus voltage (V)
BIT2: Input terminal status
BIT3: Output terminal status
Tens place:
BIT0:AI1 (V)
BIT1:AI2 (V)
BIT2:AI3 (V)
BIT3: System time

Hundreds place:
BIT0: PID setting (%)
BIT1: PID feedback (%)
BIT2: Set length (m)
BIT3: Actual length (m)
Thousands place:
BIT0: Run linear speed (m/s)
BIT1: Set linear speed (m/s)
BIT2: External count value
BIT3: DI

Other parameters and functionalities are the same with ***GK600 Series General Purpose AC Motor Drives.***

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