



GK800-07
Dedicated User Manual
For CANOPEN Communication

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1. Function Description

GK800-07 mainly provides solution of Canopen protocol for communication bus. New H1 group parameters are added besides GK800 common platform. With this group of parameters, Canopen protocol in GK800 can be configured quickly. With this group of parameters, PDO configuration process can be completely omitted, making it much easier to use. (GK800 Canopen protocol complies with DS301V4.02 technical specifications).

This dedicated user manual shall be used together with GK800 Series High Performance AC Motor Drive User Manual.

2. Hardware Modification

Work with CANOPEN dedicated communication expansion board.

3. Dedicated Function Table

Parameter	Designation	Scope	Factory default	Attr.
H1-00	Canopen node address	1~127	1	×
H1-01	Canopen communication speed	0: 10 kbps 1: 20 kbps 2: 50 kbps 3: 125 kbps 4: 250 kbps 5: 500 kbps 6: 1000 kbps	5	×
H1-02	RPDO1 transport type	0~255	255	×
H1-03	TPDO1 transport type	0~255	255	×
H1-04	RPDO2 transport type	0~255	255	×
H1-05	TPDO2 transport type	0~255	255	×
H1-06	RPDO1 word mapping number	0~4	1	×
H1-07	TPDO1 word mapping number	0~4	1	×
H1-08	RPDO2 word mapping number	0~4	1	×
H1-09	TPDO2 word mapping number	0~4	1	×
H1-10	RPDO1 word 1 mapping object	0: No mapping 1: Control command word 2: Master frequency command setting 3: Auxiliary frequency command setting 4: Master frequency setting 5: Auxiliary frequency setting	1	△

Parameter	Designation	Scope	Factory default	Attr.
		6: Reserved 7: Reserved 8: PID digital setting percentage (0~100.0%) 9: PID feedback percentage (0~100.0%) 10: Electric driven torque limit (0~200.0%) 11: Brake torque limit (0~200.0%) 12: Torque setting during torque control (0~4000 corresponds -200.0%~200.0%) 13: Max. speed limit at forward torque control (0.00Hz~maximum frequency) 14: Max. speed limit at reverse torque control(0.00Hz~maximum frequency) 15: Analog A01 channel setting 16: Analog A02 channel setting 17: Digital DO output channel setting 18: Reserved 19: Virtual terminal communication setting 20: Accel time 1 21: Decel time 1 22: Carry bit quantity setting_low 16 bit 23: Carry bit quantity setting_high 16 bit 24: Orientation angle setting		
H1-11	RPDO1 word 2 mapping object	0~24	0	△
H1-12	RPDO1 word 3 mapping object	0~24	0	△
H1-13	RPDO1 word 4 mapping object	0~24	0	△
H1-14	TPDO1 word 1 mapping object	0: No mapping 1: Running status word 1 2: Current running frequency 3: output current 4: output voltage 5: output power 6: operating revolving speed 7: bus voltage	1	△

Parameter	Designation	Scope	Factory default	Attr.
		8: output torque 9: external counter 10: Actual length high word 11: Actual length low word 12: digital input terminal state 13: digital output terminal state 14: operation frequency setting 15: PID setting 16: PID feedback 17: setting length 18: setting Accel time 1 19: setting Decel time 1 20: AI1 (unit:V) 21: AI2 (unit:V) 22: AI3 (unit:V) 23: DI (unit:kHz) 24: first time running fault 25: second time running fault 26: third time (last time) running fault 27: running display parameter 28: stop display parameter 29: drive control mode setting 30: frequency setting mode 31: master frequency command source 32: digital setting of master frequency 33: auxiliary frequency command source 34: digital setting of auxiliary frequency 35: drive status word 2 36: drive current fault 37: Carry bit quantity feedback _low 16 bit 38: Carry bit quantity feedback _high 16 bit 39: Orient angle feedback		
H1-15	TPDO1 word 2 mapping object	0~39	0	△
H1-16	TPDO1 word 3 mapping object	0~39	0	△
H1-17	TPDO1 word 4 mapping object	0~39	0	△
H1-18	RPDO2 word 1	0~24	4	△

Parameter	Designation	Scope	Factory default	Attr.
	mapping object			
H1-19	RPDO2 word 2 mapping object	0~24	0	Δ
H1-20	RPDO2 word 3 mapping object	0~24	0	Δ
H1-21	RPDO2 word 4 mapping object	0~24	0	Δ
H1-22	TPDO2 word 1 mapping object	0~39	2	Δ
H1-23	TPDO2 word 2 mapping object	0~39	0	Δ
H1-24	TPDO2 word 3 mapping object	0~39	0	Δ
H1-25	TPDO2 word 4 mapping object	0~39	0	Δ
H1-26	Protocol special treatment	0~21	0	Δ

4. Function details

H1-00	Canopen address	Scope: 1~127	Factory default: 1
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Canopen address *
1~127: Local node-ID

H1-01	Canopen communication speed	Scope: 0~6	Factory default: 5
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Canopen communication speed *
0: 10 kbps
1: 20 kbps
2: 50 kbps
3: 125 kbps
4: 250 kbps
5: 500 kbps
6: 1000 kbps

H1-02	RPDO1 transport type	Scope: 0~255	Factory default: 255
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RPDO1 transport type selection*
0: synch, non cyclical
1~240: synch, cyclical

241~251: Reserved
 252: synch, after RTR
 253: asynch, after RTR
 254~255: asynch, data change time

H1-03	TPDO1 transport type	Scope: 0~255	Factory default: 255
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TPDO1 transport type selection*
 0: synch, non cyclical
 1~240: synch, cyclical
 241~251: Reserved
 252: synch, after RTR
 253: asynch, after RTR
 254~255: asynch, data change time

H1-04	RPDO2 transport type	Scope: 0~255	Factory default: 255
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RPDO2 transport type selection*
 0: synch, non cyclical
 1~240: synch, cyclical
 241~251: Reserved
 252: synch, after RTR
 253: asynch, after RTR
 254~255: asynch, data change time

H1-05	TPDO2 transport type	Scope: 0~255	Factory default: 255
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TPDO2 transport type selection*
 0: synch, non cyclical
 1~240: synch, cyclical
 241~251: Reserved
 252: synch, after RTR
 253: asynch, after RTR
 254~255: asynch, data change time

H1-06	RPDO1 word mapping number	Scope: 0~4	Factory default: 1
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RPDO1 word mapping number*
 0: RPDO1 no mapping data, namely RPDO1 stops using
 1: RPDO1 mapping object is 1 word
 2: RPDO1 mapping object is 2 word

3: RPDO1 mapping object is 3 word

4: RPDO1 mapping object is 4 word

H1-07	TPDO1 word mapping number	Scope: 0~4	Factory default: 1
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TPDO1 word mapping number*

0: TPDO1 no mapping data, namely TPDO1 stop using

1: TPDO1 mapping object is 1 word

2: TPDO1 mapping object is 2 word

3: TPDO1 mapping object is 3 word

4: TPDO1 mapping object is 4 word

H1-08	RPDO2 word mapping number	Scope: 0~4	Factory default: 1
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RPDO2 word mapping number*

0: RPDO2 no mapping data, namely RPDO2 stop using

1: RPDO2 mapping object is 1 word

2: RPDO2 mapping object is 2 word

3: RPDO2 mapping object is 3 word

4: RPDO2 mapping object is 4 word

H1-09	TPDO2 word mapping number	Scope: 0~4	Factory default: 1
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TPDO2 word mapping number*

0: TPDO2 no mapping data, namely TPDO2 stop using

1: TPDO2 mapping object is 1 word

2: TPDO2 mapping object is 2 word

3: TPDO2 mapping object is 3 word

4: TPDO2 mapping object is 4 word

H1-10	RPDO1 word 1 mapping object	Scope: 0~24	Factory default: 1
H1-11	RPDO1 word 2 mapping object	Scope: 0~24	Factory default: 0
H1-12	RPDO1 word 3 mapping object	Scope: 0~24	Factory default: 0
H1-13	RPDO1 word 4 mapping object	Scope: 0~24	Factory default: 0

H1-06 sets word length of RPDO1, H1-10~H1-13 sets detailed object which each word maps.

0: No mapping object

1: Control command word

- 2: Master frequency command setting
 3: Auxiliary frequency command setting
 4: Master frequency setting
 5: Auxiliary frequency setting
 6: Reserved
 7: Reserved
 8: PID digital setting percentage (0~100.0%)
 9: PID feedback percentage (0~100.0%)
 10: Electric driven torque limit (0~200.0%)
 11: Brake torque limit (0~200.0%)
 12: Torque setting during torque control (0~4000 corresponds -200.0%~200.0%)
- 13: Max. speed limit at forward torque control (0.00Hz~maximum frequency)
 14: Max. speed limit at reverse torque control(0.00Hz~maximum frequency)
 15: Analog A01 channel setting
 16: Analog A02 channel setting
 17: Digital DO output channel setting
 18: Reserved
 19: Virtual terminal communication setting
 20: Accel time 1
 21: Decel time 1
 22: Carry bit quantity setting_low 16 bit
 23: Carry bit quantity setting_high 16 bit
 24: Orientation angle setting

Control command word bit table

Control word (bit)	Value	Meaning	Function description
BIT0	0	stop	Start and stop command
	1	run	
BIT1	0	FWD	Running direction
	1	REV	
BIT2	0	Jog invalid	Jog command
	1	Jog	
BIT3	0	Reset command invalid	Reset command
	1	Reset command valid	
BIT4	0	Coast to stop invalid	Coast to stop mode
	1	Coast to stop valid	
BIT15~BIT5	000000000000B	Reserved	

H1-14	TPDO1 word 1 mapping object	Scope: 0~39	Factory default: 1
H1-15	TPDO1 word 2 mapping object	Scope: 0~39	Factory default: 0
H1-16	TPDO1 word 3 mapping object	Scope: 0~39	Factory default: 0

H1-17	TPDO1 word 4 mapping object	Scope: 0~39	Factory default: 0
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H1-07 sets word length of TPDO1, H1-14~H1-17 sets detailed object which each word maps.

- 0: No mapping
- 1: Running status word 1
- 2: Current running frequency
- 3: output current
- 4: output voltage
- 5: output power
- 6: operating revolving speed
- 7: bus voltage
- 8: output torque
- 9: external counter
- 10: Actual length high word
- 11: Actual length low word
- 12: digital input terminal state
- 13: digital output terminal state
- 14: operation frequency setting
- 15: PID setting
- 16: PID feedback
- 17: Setting length
- 18: setting Accel time 1
- 19: setting Decel time 1
- 20: AI1 (unit:V)
- 21: AI2 (unit:V)
- 22: AI3 (unit:V)
- 23: DI (unit:kHz)
- 24: first time running fault
- 25: second time running fault
- 26: third time (last time) running fault
- 27: running display parameter
- 28: stop display parameter
- 29: drive control mode setting
- 30: frequency setting mode
- 31: master frequency command source
- 32: digital setting of master frequency
- 33: auxiliary frequency command source
- 34: digital setting of auxiliary frequency
- 35: drive status word 2
- 36: drive current fault
- 37: Carry bit quantity feedback _low 16 bit
- 38: Carry bit quantity feedback _high 16 bit
- 39: Orient angle feedback

Status word 1 bit Table

Status word 1 (bit)	Value	Meaning
BIT0	1	Drive run

	0	drive stops
BIT1	1	Drive REV
	0	Drive FWD
BIT3~BIT2	00B	Constant speed
	01B	Accel
	10B	Decel
BIT4	0B	Reserved
BIT7~BIT5	Reserved	
BIT15~BIT8	00~0xFF	Drive fault code 0: No fault None zero: fault occurs, for details, please refer to the user manual.

Status word 2 bit table

Status word 2 (bit)	Value	Meaning
BIT0	1	Jog run
	0	Non jog run
BIT1	1	PID running
	0	Non PID running
BIT15~BIT2	000000000000000B	Reserved

H1-18	RPDO2 word 1 mapping object	Scope: 0~24	Factory default: 4
H1-19	RPDO2 word 2 mapping object	Scope: 0~24	Factory default: 0
H1-20	RPDO2 word 3 mapping object	Scope: 0~24	Factory default: 0
H1-21	RPDO2 word 4 mapping object	Scope: 0~24	Factory default: 0
H1-22	TPDO2 word 1 mapping object	Scope: 0~39	Factory default: 2
H1-23	TPDO2 word 2 mapping object	Scope: 0~39	Factory default: 0
H1-24	TPDO2 word 3 mapping object	Scope: 0~39	Factory default: 0
H1-25	TPDO2 word 4 mapping object	Scope: 0~39	Factory default: 0

PDO2 mapping object and PDO1 share the same setting methods.

H1-26	Protocol special treatment	Scope: 0~21	Factory default: 0
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Protocol special treatment*

Bit 0:

0: Standard

1: Node automatically enters operation state

Bit 1~2:

0: Neglects node protection, no alarm and fault

1: Give an alarm after node protected, drive continues running

2: Fault after node protected, drive stops

*Notes:

1. After changing H1-00~H1-09 Parameter, the drive need to be re-power on to make parameters valid.
2. GK800 PDO adopts the following default COB-ID

RPDO1	0x200+NodeID	RPDO2	0x300+NodeID
TPDO1	0x180+NodeID	TPDO2	0x280+NodeID

3. Users can further set object dictionary by SDO, such as setting life protection, heartbeat message and such.

Appendix: Object dictionary (Factory default setting)

Index	Sub-index	Access right	Type	Default	Explanation
0x1000	0x00	RO	UINT32	0x00010192	Equipment type
0x1001	0x00	RO	UINT8	0x00	Wrong register
0x1002	0x00	RO	UINT32	0x00000000	Manufacturer state register
0x1005	0x00	RW	UINT32	0x00000080	Sync message COBID
0x1008	0x00	RO	UINT32	0x4b415447	Equipment name (GTAK)
0x1009	0x00	RO	UINT32	0x30304230	Hardware version (B00)
0x100A	0x00	RO	UINT32	0x36303038	Software version (8007)
0x100C	0x00	RW	UINT16	0x0000	Node protect (ms)
0x100D	0x00	RW	UINT8	0x00	Life protect
0x1014	0x00	RW	UINT32	0x00000081	Urgent message COBID

0x1015	0x00	RW	UINT16	0x0000	Forbidden time
0x1017	0x00	RW	UINT16	0x0000	Heartbeat message produce cycle (ms)
0x1029	0x00	RO	UINT8	0x02	Mis-action
	0x01	RW	UINT8	0x00	Status of node enters when communication fault 0: Pre-operation status 1: Inaction 2: Stop status
	0x02	RW	UINT8	0x00	Status of node enters when communication fault 0: Pre-operation status 1: Inaction 2: Stop status
0x1400	0x00	RO	UINT8	0x02	Number of sub-index
	0x01	RW	UINT32	0x00000201	COBID
	0x02	RW	UINT8	0xff	transport type
0x1401	0x00	RO	UINT8	0x02	Number of sub-index
	0x01	RW	UINT32	0x00000301	COBID
	0x02	RW	UINT8	0x01	transport type
0x1600	0x00	RW	UINT8	0x01	Mapping object number
	0x01	RW	UINT32	0x21000110	First mapping object
	0x02	RW	UINT32	0x00000000	Second mapping object
	0x03	RW	UINT32	0x00000000	Third mapping object
	0x04	RW	UINT32	0x00000000	Fourth mapping object
0x1601	0x00	RW	UINT8	0x01	Mapping object number
	0x01	RW	UINT32	0x21010110	First mapping object
	0x02	RW	UINT32	0x00000000	Second mapping object
	0x03	RW	UINT32	0x00000000	Third mapping object
	0x04	RW	UINT32	0x00000000	Fourth mapping object
0x1800	0x00	RO	UINT8	0x05	Number of sub-index
	0x01	RW	UINT32	0x00000181	COBID
	0x02	RW	UINT8	0xff	transport type
	0x03	RW	UINT16	0x0000	Forbidden time
	0x04	RW	UINT8	0x00	Reserved
	0x05	RW	UINT16	0x0000	Timing time
0x1801	0x00	RO	UINT8	0x05	Number of sub-index
	0x01	RW	UINT32	0x00000281	COBID
	0x02	RW	UINT8	0x01	transport type

	0x03	RW	UINT16	0x0000	Forbidden time
	0x04	RW	UINT8	0x00	Reserved
	0x05	RW	UINT16	0x0000	Timing time
0x1A00	0x00	RW	UINT8	0x01	Mapping object number
	0x01	RW	UINT32	0x20000110	First mapping object
	0x02	RW	UINT32	0x00000000	Second mapping object
	0x03	RW	UINT32	0x00000000	Third mapping object
	0x04	RW	UINT32	0x00000000	Fourth mapping object
0x1A01	0x00	RW	UINT8	0x01	Mapping object number
	0x01	RW	UINT32	0x20010110	First mapping object
	0x02	RW	UINT32	0x00000000	Second mapping object
	0x03	RW	UINT32	0x00000000	Third mapping object
	0x04	RW	UINT32	0x00000000	Fourth mapping object

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