Appendix 9: Communicate protocol

1 Modbus communicate

KSR series soft starter provides communication interface. The Modbus communication protocol is adopted for master-slave communication. User can PC/PLC/touch screen as upper computer to realize centralized control to meet specific application requirement.

Communication protocol of KSR series soft starter is an asynchronous serial master-slave Modbus communication protocol. Only one device in the network can be host, which can establish a protocol. Other devices intelligently respond to the host to make corresponding action. Host refer to PC, Touch screen or PLC. Slave is soft starter or other communication equipment with communication protocol.

Communication data in RTU mode;

The coding system is 8-bit binary;

The data format is 1 start bit,8 data bit, 1 check bit, 1 stop bit, no parity

Slave address range :1-256

Baud rate: 28800(b/s),19200(b/s),14400(b/s),9600(b/s), 4800(b/s),2400(b/s).

2 communication data description

2.1 Read data from soft starter

Request format

Rest time	3.5 Characters
Slave address	Slave Number
Command code	03H
Start address HIGH	
Start address LOW	
Number of data HIGH	
Number of data LOW	
CRC LOW	
CRC HIGH	
Rest time	3.5 Characters

For example: 01 03 10 04 00 01 c1 0b read start mode

Respond format

Receive correct response format: (2 data and 4 bytes)

Rest time	3.5 Characters
Slave address	Slave Number
Command code	03H
Byte number	04H
The first data HIGH	
The first data LOW	
The second data HIGH	
The second data LOW	
CRC LOW	
CRC HIGH	
Rest time	3.5 Characters

For example: 01 03 02 00 01 79 84 start mode is 1.

2.2 Write data to soft starter

Request format

Rest time	3.5 Characters
Slave address	Slave Number
Command code	06H
Start address HIGH	
Start address LOW	
data HIGH	
data LOW	
CRC LOW	
CRC HIGH	
Rest time	3.5 Characters

For example: 01 06 10 02 00 02 4d 0a write start mode to 2

01 06 20 00 00 01 43 ca   start

01 06 20 00 00 02 03 cb   stop

Respond format

Receive correct response format

Rest time	3.5 Characters
Slave address	Slave Number
Command code	06H
Byte number	04H
Start address HIGH	
Start address LOW	
data HIGH	
data LOW	
CRC LOW	
CRC HIGH	
Rest time	3.5 Characters

For example: 01 03 02 00 01 79 84 start mode is 1.

3　Respond format

Definition of address corresponding to the parameter (see the specification for details and scope)

NO	Address	Parameter name	R/W
1	1000H	Rated current	R
2	1001H	Reserve	R
3	1002H	Working current	R
4	1003H	Fault(see manual)	R
5	1004H	Start mode (1.ramp 2.limit.3 jog 4.heavy load)	R/W
6	1005H	Initial voltage of ramp (5~75%)	R/W
7	1006H	Ramp time (1~120S)	R/W
8	1007H	Limit value of Start Current (20~400%)	R/W
9	1008H	Limit start time (1~120S)	R/W
10	1009H	Jog voltage (5~75%)	R/W
11	100AH	Control Mode 1.key 2.external 3.key+external 1.communicate 5.key+communicate 6.external+communicate 7.key+external+communicate	R/W
12	100BH	Start/stop over-current protect (400~600%)	R/W
13	100CH	Running over-current protect (20~400%)	R/W
14	100DH	3-phase Current unbalance factor (5~50%)	R/W
15	100EH	Stop mode select (1.free stop; 2.soft stop)	R/W
16	100FH	Soft stop time factor (1~10S)	R/W
17	1010H	SCR trigger select(1.close 2.not close)	R/W
18	1011H	Start overload level (1-8)	R/W
19	1015H	Running over-current protect ON/OFF(1.ON 2.OFF)	R/W
20	1016H	Current unbanlance protect ON/OFF(1.ON 2.OFF)	R/W
21	1017H	Programmable relay select(1.start 2.bypass 3.running 4.soft stop 5.fault)	R/W
22	1018H	Communicate address(1~256)	R/W
23	1019H	Baud rate (0:2400; 1:4800; 2:9600; 3:14400; 4:19200; 5:28800)	R/W
24	101EH	State(bit0 start bit1 bypass bit2 running bit3 soft stop Bit4 fault. All bit is zero.stop)	R
25	102BH	Phase A current	R
26	102CH	Phase B current	R
27	102D	Phase C current	R
28	1036	The second to last fault	R
29	1037	The third to last fault	R
30	2000	Start/stop control (=1,start =2 stop,reset)	W