KC868-A series board protocol – HTTP get command

Note: This protocol document use for KinCony smart controller:

KC868-A4 A6 A8 A8S A16 E16S A32 A64 A128

Different board will have different channel of digital output, digital input , ADC, DAC, so the protocol is same , just according to the hardware resource to set channel number.

HTTP command format:

http://ip/ctrl.cgi?secret=aaa&cmd=bbb&id=ccc&value=ddd

secret: set "secret code" in board setting webpage
cmd: set command type
id: set device input or output ID
value: set value of device

The complete command consists of these four parameters.

Fox example: KC868-A64 board ip=192.168.1.200   secret=abcd

Will have this command:

http://192.168.1.200/ctrl.cgi?secret=abcd&cmd=get_inputs&id=0&value=0

1. Read all digital input state

parameter	value
secret	abcd
cmd	get_inputs
id	0
value	0

send：
http://192.168.1.200/ctrl.cgi?secret=abcd&cmd=get_inputs&id=0&value=0

feedback：
{
    "inputs": [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
    "status": "success",
    "code": 0
}

Feedback JSON format data, "inputs" means: 1-64 channel digital input state: 1 is trigger , 0 is not trigger.

For example: if digital input-1 is trigger will feedback:

```
{
    "inputs": [1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
    "status": "success",
    "code":  0
}
```

2. Read all digital output state

parameter	value
secret	abcd
cmd	get_outputs
id	0
value	0

send：
http://192.168.1.200/ctrl.cgi?secret=abcd&cmd=get_outputs&id=0&value=0

feedback：

```
{
    "outputs":     [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
    "status": "success",
    "code":  0
}
```

Feedback JSON format data, "outputs" means: 1-64 channel digital output state: 1 is ON , 0 is OFF.

For example: if digital output-1 is ON will feedback:

```
{
    "outputs":     [1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
    "status": "success",
    "code":  0
}
```

3. Read all ADC (analog input) state

parameter	value
secret	abcd
cmd	get_adcs
id	0
value	0

send：

http://192.168.1.200/ctrl.cgi?secret=abcd&cmd=get_adcs&id=0&value=0

feedback：
```
{
    "adcs":   [31, 48, 50, 0],
    "status": "success",
    "code":   0
}
```
Feedback JSON format data，"adcs" means: 1-4 channel ADC original acquisition value. Range: 0-4095

4. Read all DAC (analog output) state

parameter	value
secret	abcd
cmd	get_dacs
id	0
value	0

send：
http://192.168.1.200/ctrl.cgi?secret=abcd&cmd=get_dacs&id=0&value=0

feedback：
```
{
    "dacs":   [31, 48],
    "status": "success",
    "code":   0
}
```
Feedback JSON format data，"dacs" means: 1-4 channel DAC value. Range: 0-255 for output DC 0-10v

5. Set ON/OFF one channel of digital output

parameter	value
secret	abcd
cmd	set_output
id	output channel number -- KC868-A64 is (1-64)
value	1: ON 0: OFF

send：
http://192.168.1.200/ctrl.cgi?secret=abcd&cmd=set_output&id=1&value=1
this means: turn ON output-1
feedback：
```
{
    "id": 1,
    "value":   1,
    "status": "success",
    "code":   0
}
```

Feedback JSON format data，"success" is control OK.

6. Set ON/OFF all channels of digital output

parameter	value
secret	abcd
cmd	set_outputs
id	0
value	HEX data for all output, KC868-A64 is (1000000000000000)

send：
http://192.168.1.200/ctrl.cgi?secret=abcd&cmd=set_outputs&id=0&value=0000000000000010

feedback：
{
    "outputs":   [0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
    "status": "success",
    "code":   0
}

The parameter value is a hexadecimal string, with a total of 8 bytes. The example is 0000000000000010. From left to right, it is D7, D6, D5, D4, D3, D2, D1, D0. D0 represents channels 1-8, and D1 represents Channels 9-16. D0, from low binary bit to high binary bit means: bit0: channel1, bit1:channel2⋯⋯bit7:channel8, so D0=0x10, converted into binary is 00010000, which means turn ON output-5, others 0 means all channels turn OFF.

Feedback JSON format data，"success" is control OK. Feedback all state after output updated.

For example value=8070605040302010

send：
http://192.168.1.200/ctrl.cgi?secret=abcd&cmd=set_outputs&id=0&value=8070605040302010

feedback：
{
    "outputs":   [0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0,
0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1],
    "status": "success",
    "code":   0
}
D7=0x80=(10000000)b   output (64-57)   output64:ON others: OFF
D6=0x70=(01110000)b   output (56-49)   output53,54,55:ON others: OFF
D5=0x60=(01100000)b   output (48-41)   output46,47:ON others: OFF
D4=0x50=(01010000)b   output (40-33)   output37,39:ON others: OFF
D3=0x40=(01000000)b   output (32-25)   output31:ON others: OFF
D2=0x30=(00110000)b   output (24-17)   output21,22:ON others: OFF
D1=0x20=(00100000)b   output (16-9)   output14:ON others: OFF
D0=0x10=(00010000)b   output (8-1)   output5:ON others: OFF

Output

ALL ON　　ALL OFF

OUT1	OUT2	OUT3	OUT4	OUT5	OUT6	OUT7	OUT8	OUT9	OUT10	OUT11	OUT12	OUT13	OUT14

OUT15	OUT16	OUT17	OUT18	OUT19	OUT20	OUT21	OUT22	OUT23	OUT24	OUT25	OUT26	OUT27	OUT28

OUT29	OUT30	OUT31	OUT32	OUT33	OUT34	OUT35	OUT36	OUT37	OUT38	OUT39	OUT40	OUT41	OUT42

OUT43	OUT44	OUT45	OUT46	OUT47	OUT48	OUT49	OUT50	OUT51	OUT52	OUT53	OUT54	OUT55	OUT56

OUT57	OUT58	OUT59	OUT60	OUT61	OUT62	OUT63	OUT64

7. Set DAC

parameter	value
secret	abcd
cmd	set_dac
id	1
value	0-255

send：
http://192.168.1.200/ctrl.cgi?secret=abcd&cmd=set_dac&id=1&value=248

feedback：
```
{
    "id": 1,
    "value":  248,
    "status": "success",
    "code":  0
}
```
Feedback JSON format data，"success" is control OK.

8. Read board all data

parameter	value
secret	abcd
cmd	get_all_datas
id	0
value	0

send：

http://192.168.1.200/ctrl.cgi?secret=abcd&cmd=get_all_datas&id=0&value=0

feedback:

```
{
    "inputs": [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
    "outputs":     [0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
    "adcs":    [68, 134, 75, 0],
    "dacs":    [61, 34],
    "status": "success",
    "code":   0
}
```

Feedback JSON format data, feedback all channels of digital input state, digital output state, ADC state and DAC state.