# KC868-A series board protocol – String 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.

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String format command can use for “TCP Server/TCP Client/RS232/UCP Server/UDP Client” work mode.

1. Read all digital output state

Send: RELAY-STATE-255
Feedback: RELAY-STATE-255, D7,D6,D5,D4,D3,D2,D1,D0,OK

D7,D6,D5,D4,D3,D2,D1,D0 are “decimal” number, every data convert to binary, bit ”1” is ON, bit “0” is OFF.

if use KC868-A64 , it have 64 digital output, every byte have 8 bit, every bit mean every digital output state, so KC868-A64 have 8 bytes. Feedback format is RELAY-STATE-255,D7,D6,D5,D4,D3,D2,D1,D0

For example: feedback is RELAY-STATE-255,0,0,0,0,0,0,5,128,OK

| | | |
|---|---|---|
| D7=(0)dec=(00000000)b | output (64-57) | means:output57—64: OFF |
| D6=(0)dec=(00000000)b | output (56-49) | means:output49—56: OFF |
| D5=(0)dec=(00000000)b | output (48-41) | means:output41—48: OFF |
| D4=(0)dec=(00000000)b | output (40-33) | means:output33—40: OFF |
| D3=(0)dec=(00000000)b | output (32-25) | means:output25—32: OFF |
| D2=(0)dec=(00000000)b | output (24-17) | means:output17—24: OFF |
| D1=(0)dec=(00000101)b | output (16-9) | means: output9,11: ON others: OFF |
| D0=(128)dec=(10000000)b | output (8-1) | means: output8: ON others: OFF |

2. Read all digital input state
send：RELAY-GET_INPUT-255
feedback：RELAY-GET_INPUT-255, D7,D6,D5,D4,D3,D2,D1,D0,OK

D7,D6,D5,D4,D3,D2,D1,D0 are “decimal” number, every data convert to binary, bit ”0” is trigger, bit “1” is not trigger.

if use KC868-A64 , it have 64 digital input, every byte have 8 bit, every bit mean every digital input state, so KC868-A64 have 8 bytes. Feedback format is RELAY-STATE-255,D7,D6,D5,D4,D3,D2,D1,D0

For example: feedback is RELAY-STATE-255,255,255,255,255,255,255,255,127,OK

D7=(255)dec=(11111111)b output (64-57) means:input57—64: not trigger
D6=(255)dec=(11111111)b output (56-49) means:input49—56: not trigger
D5=(255)dec=(11111111)b output (48-41) means:input41—48: not trigger
D4=(255)dec=(11111111)b output (40-33) means:input33—40: not trigger
D3=(255)dec=(11111111)b output (32-25) means:input25—32: not trigger
D2=(255)dec=(11111111)b output (24-17) means:input17—24: not trigger
D1=(255)dec=(11111111)b output (16-9) means: input9,11: trigger others: not trigger
D0=(127)dec=(01111111)b output (8-1) means: input8: trigger others: not trigger

3. Read one channel of ADC (analog input) state
   RELAY-GET_ADC-255,id

   send：RELAY-GET_ADC-255,1
   feedback：RELAY-GET_ADC-255,1,100,OK means: channel-1 ADC value=100

   "id" means: 1-MAX channel number.
   “100” is ADC original acquisition value. Range: 0-4095 -> dc 0-5v input

4. Read one channel of DAC (analog output) state
   RELAY-GET_DAC-255,id

   send：RELAY-GET_DAC-255,1
   feedback：RELAY-GET_DAC-255,1,100,OK means: channel-1 DAC value=100

   "id" means: 1-MAX channel number.
   “100” is DAC output value. Range: 0-255 -> dc 0-10v output

5. Read one channel of digital output state
   RELAY-READ-255,id

   send：RELAY-READ-255,2 means: turn digital output-2 OFF
   feedback：RELAY-READ-255,2,0,OK

   "id" means: 1-MAX channel number.
   “0” is OFF, “1” is ON.

6. Set ON/OFF one channel of digital output
   RELAY-SET-255,id,state

   send：RELAY-SET-255,1,0 measn: turn OFF digital output-1
   feedback：RELAY-SET-255,1,0,OK

   "id" means: 1-MAX channel number.
   “state” means: “0” is OFF, “1” is ON.

7. Set one channel of DAC output
RELAY-SET_DAC-255,id,state

send：RELAY-SET_DAC-255,1,200
feedback：RELAY-SET_DAC-255,1,200,OK

"id" means: 1-MAX channel number.
“state” range: 0-255 -> dc 0-10v output

8. Set ON/OFF/TOGGLE for any multi channel of digital output
RELAY-SET_MULTI-255,
D23,D22,D21,D20,D19,D18,D17,D16,D15,D14,D13,D12,D11,D10,D9,D8,D7,D6,D5,D4,D3,D2,D1,D0

if use KC868-A64 , it have 64 digital output, every byte have 8 bit, every bit mean every digital output state, so KC868-A64 have 8 bytes. We will use ON/OFF/TOGGLE for these, so total need 8*3=24 bytes.

(D23,D22,D21,D20,D19,D18,D17,D16) use for ON command
(D15,D14,D13,D12,D11,D10,D9,D8) use for OFF command
(D7,D6,D5,D4,D3,D2,D1,D0) use for TOGGLE command
D23,D22,D21,D20,D19,D18,D17,D16,D15,D14,D13,D12,D11,D10,D9,D8,D7,D6,D5,D4,D3,D2,D1,D0
are “decimal” number, every data convert to binary, bit ”1” is effective , bit “0” is ineffective.

For example:
send：RELAY-SET_MULTI-255,0,0,0,0,0,0,0,128,0,0,0,0,0,0,0,64,0,0,0,0,0,0,0,32
feedback：RELAY-SET_MULTI-255,OK

D16=(128)dec=(10000000)b means: turn ON output-8
D8=(64)dec=(01000000)b means: turn OFF output-7
D0=(32)dec=(00100000)b means: TOGGLE output-6

So send this command, will turn ON output-8,turn OFF output-7, TOGGLE output-6 simultaneously.

9. Set ON/OFF multi channel of digital output
RELAY-SET_ALL-255,D7,D6,D5,D4,D3,D2,D1,D0

send：RELAY-SET_ALL-255,0,0,0,0,0,0,5,128
feedback：RELAY-SET_ALL-255,0,0,0,0,0,0,5,128,OK

if use KC868-A64 , it have 64 digital output, every byte have 8 bit, every bit mean every digital output state, so KC868-A64 have 8 bytes. Feedback format is RELAY-SET_ALL-255,D7,D6,D5,D4,D3,D2,D1,D0,OK

For example: send command is RELAY-SET_ALL-255,0,0,0,0,0,0,5,128

D7=(0)dec=(00000000)b output (64-57) means:output57—64: OFF

D6=(0)dec=(00000000)b output (56-49) means:output49—56: OFF
D5=(0)dec=(00000000)b output (48-41) means:output41—48: OFF
D4=(0)dec=(00000000)b output (40-33) means:output33—40: OFF
D3=(0)dec=(00000000)b output (32-25) means:output25—32: OFF
D2=(0)dec=(00000000)b output (24-17) means:output17—24: OFF
D1=(0)dec=(00000101)b output (16-9) means: output9,11: ON others: OFF
D0=(128)dec=(10000000)b output (8-1) means: output8: ON others: OFF

So use this command will turn ON output8,9,11 turn OFF others simultaneously.

10. Set all channels of digital output ON
    send：RELAY-AON-255
    feedback：RELAY-AON-255,OK

11. Set all channels of digital output OFF
    send：RELAY-AOF-255
    feedback：RELAY-AOF-255,OK

12. Actively report information
    feedback：RELAY-NOTIFY-255,id,state

    "id" means: 1-MAX channel number.
    “state” means: “0” is OFF, “1” is ON.
    Any digital output changed STATE by any way , it will actively report message.

13. Toggle state of digital output
    Send:RELAY-KEY-255,id,1
    Feedback:RELAY-KEY-255,id,1,OK

    "id" means: 1-MAX channel number.

    change the status of one digital output, such as your output is ON, when send this command , it will be OFF. if your output is OFF, when send this command , it will be ON.