WMRNET CONMAND Details

Application notes for metering modules V2.0

The concentrator module (APC910M) communicates with the host (or server) in ASCII codes. Lower or upper cases don't make any influence on commands. The ID of each node module is the same with the meter in which it is utilized. Usually the ID of node module (APC230N) consists 6 bytes in HEX format and its address ranges from 0X00000000000 to 0XFFFFFFFFFFFF, among which 0X000000000000 is the address of concentrator and 0XFFFFFFFFFFFF is reserved by system.

BASIC COMMAND FORMAT

Command_Para1_Para2..... ↙

E.g. CMD_Node ID_ Number of response bytes _Data area

- CMD: the command below is for the host communicating with network nodes.
- "_" represents blank character (0X20) and "↙" for return character (0X0D,0X0A)
- Node ID is the ID of network node in HEX format, which is not case sensitive.
- Number of response bytes refers to the Maximum bytes which the node responds. It can be 1~3 byte long in ASCII format from 0 to 180. E.g. "10" means the length of responded bytes not exceeding 10 bytes and "180" for not exceeding 180 bytes. 0 means unexpected length of bytes. This parameter is used for calculating network delay.
- Data area contains the commands sent to node modules by the host (or server) through the concentrator. Please note the commands must be ASCII format. E.g. if the command in HEX format is (0X68 0X01 0X23 0X45 0X67 0X89 0XAB 0XCD 0X68 0X02 0X02), it will look like (68_01_23_45_67_89_AB_CD_68_02_02↙) after being transformed to ASCII format and characters are separated by blank character.
- The response data from the node modules must also be output in ASCII format. E.g. the response data in HEX format is (0X68 0X01 0X23 0X45 0X67 0X89 0XAB 0XCD 0X68 0X02 0X02), the corresponding ASCII data will be (ANS-_68_01_23_45_67_89_AB_CD_68_02_02↙) and characters are separated by blank character.

COMMAND

1. DELNET

Format: DELNET↙

Concentrator response: a).OK↙
b).ERR *↙

Notes: 1).The command will delete the ID of all existing nodes and network data.
2).After deleting the network, the system enters into maintenance status automatically and will reconstruct the network soon.
3). * means the error type
- 1→ unknown command or wrong input
- 2→network busy

2. CMD

Format: CMD_Node ID_ Number of responded bytes _Data area↙

Concentrator response: a).OK 2 bytes delay↙
In 1~20 seconds, the concentrator again will respond: ANS_response data or respond: NO ANS↙ if no data is received in a certain period
b).ERR *↙

Notes: 1).2 bytes delay (Max. delay for response)
2). * means the error type
- 1→ unknown command or wrong input
- 2→network busy
- 3→ the ID of node module doesn't exist

3). The length of data area should not exceed 180 bytes. The nodes communicate with the concentrator in HEX format. The concentrator must respond and at least send the first byte in the period (T). The time gap between two bytes mustn't exceed 20ms and the total response bytes can't exceed 180 bytes. As to the setting of T, please check command for more details.

3. TST

Format: TST_Node ID_ Number of responded bytes↙

Concentrator response: a).OK_2 bytes delay↙
In 1~20 seconds, the concentrator again will respond: ANS_responded data or respond: NO ANS↙ if no data is received in a certain period

b).ERR *↙

Notes: 1).2 bytes delay (Max. delay for response)

2). * means the error type

- 1→ unknown command or wrong input
- 2→network busy
- 3→ the ID of node module doesn't exist

3). The command is used to test the status of network

E.g. TST_1234567890AB_100↙

The node ID is 1234567890AB and the node module will respond to the concentrator with 100 bytes. After receiving, the concentrator then outputs:

ANS_00_01_02_03_04_05_06_07_08_09_0A_0B_0C_0D_0E_0F_10_11_12_13_14_15_16_17_18_19_1A_1B_1C_1D_1E_1F_20_21_22_23_24_25_26_27_28_29_2A_2B_2C_2D_2E_2F_30_31_32_33_34_35_36_37_38_39_3A_3B_3C_3D_3E_3F_40_41_42_43_44_45_46_47_48_49_4A_4B_4C_4D_4E_4F_50_51_52_53_54_55_56_57_58_59_5A_5B_5C_5D_5E_5F_60_61_62_63↙

4. BCTIME

Format: BCTIME_Year(2 bytes)_ Month(2 bytes)_Day(2 bytes)_Hour(2 bytes)_Minute(2 bytes)_Second(2 bytes)↙

Concentrator response: a).OK 2 bytes delay↙

After 10~15 seconds' delay, the concentrator again will respond with BCTIME_END↙

b).ERR *↙

Notes: 1).the execution time of this command is about 10~15 seconds

2). * means the error type

- 1→ unknown command or wrong input
- 2→network busy

3).After receiving BCTIME command, the node module will output time with format A

Format A obeys the DLT645-1997 Communication Rules for multi-functional electric meters. Below are the details of Format

Function: enforce slave stations synchronous with master
Control Code: C=08H
Data length: L=06H
Data area: Yy Mm Dd hh mm ss (compact BCD code)

Frame format: 68H 99H … 99H 68H 08H 06H ss mm hh DD MM YY CS 16H

Among which ss, mm, hh, DD, MM, YY mean second, minute, day, month, year correspondingly.

According to Rule 5.3.1 of DLT645-1997, 4 bytes of preamble (0XFE) should be sent first before sending frame information in order to wake up the receiving side. The Rule 5.2.5 also stipulates that each byte of data area should be added with 0X33.

5. RDNODE

Format: RDNODE_Node ID**A**_ **N** (number of read modules)↙

Concentrator response: a).OK ↙

Node ID1 routing level (1 Byte)_Node ID1(12 Bytes)

Node ID2 routing level (1 Byte)_Node ID2 (12 Bytes)

… … …

Node IDN routing level (1 Byte)_Node IDN (12 Bytes)

F_ FFFFFFFFFFFF↙

b).ERR *↙

Notes: 1).the concentrator will output data from node IDA (2, 3, 4 … N) which node IDA is allowed to be a blank node to the host (or server)

2).If the number of node ID is inefficient or the output is finished, F _ FFFFFFFFFFFF↙ will be filled or attached at the end

3). * means the error type

- 1→ unknown command or wrong input
- 2→network busy
- 3→ the ID of node module doesn't exist

4).If the command is input as RDNODE↙ (no parameters), the concentrator will respond: TOTAL_XXXX↙ which XXXX represents all of the node IDs.

5).If the command is input as RDNODE _ IDA↙ (no N parameter), the concentrator will respond: OK_Node ID A routing level (1 Byte) ↙ or else respond: ERR 3↙

6).Because MNET is a dynamic network, it can find new node or remove any node which doesn't exist in present network timely so the node number, node ID and node ID routing level will be affected by the dynamic change of network.

6. RDFREQ

Format: RDFREQ↙

Concentrator response: a).OK_XXXXXX ↙
b).ERR *↙

Notes: 1). XXXXXX is the frequency used by present network. The unit is KHz. E.g. for 434.000MHz, the concentrator will respond: OK_4340000↙
2). * means the error type
- 1→ unknown command or wrong input
- 2→network busy

7. WRFREQ

Format: WRFREQ_XXXXXX↙

Concentrator response: a).OK ↙
b).ERR *↙

Notes: 1).The writing command is only available for concentrator and will not affect the parameters of node modules. After the command is confirmed, users should execute DELNET command and reconstruct the network.
2). XXXXXX is the frequency set for present network. The unit is KHz. E.g. for 434.000MHz, the writing command will be: WRFREQ_4340000↙
3). * means the error type
- 1→ unknown command or wrong input
- 2→network busy

8. RDNETID

Format: RDNETID↙

Concentrator response: a).OK_XXXXX ↙
b).ERR *↙

Notes: 1). XXXXX is the net ID which ranges from 0 to 65535.
2). * means the error type
- 1→ unknown command or wrong input
- 2→network busy

9. WRNETID

Format: WRNETID_XXXXX↙

Concentrator response: a).OK ↙
b).ERR *↙

Notes: 1).The writing ID command is only available for concentrator and will not affect the parameters of node modules. After the command is confirmed, users should execute DELNET command and reconstruct the network.
2). XXXXX is the net ID which ranges from 0 to 65535.
3). * means the error type
- 1→ unknown command or wrong input
- 2→network busy

10. MTNET

Format: MTNET↙

Concentrator response: a).OK ↙
b).ERR *↙

Notes: 1).After executing the command, the network will be in active status. The concentrator and node modules might transmit or receive data voluntarily.
2). When DELNET command is executed, the network will enter into maintenance status automatically.
3). * means the error type
- 1→ unknown command or wrong input
- 2→network busy

11. STOPMT

Format: STOPMT↙

Concentrator response: a).OK ↙
b).ERR *↙

Notes: 1).The network will be in SILENT status after executing the command for 30 seconds or less. The concentrator and node modules will not transmit data voluntarily.
2). * means the error type
- 1→ unknown command or wrong input
- 2→network busy

12. STATUS

Format: STATUS↙

Concentrator response: a).NOMIC ↙
b).STOP↙
c).ERR *↙

Notes: 1).If the network is in maintenance status. The concentrator will respond NOMIC ↙ or else respond STOP↙
2). * means the error type
- 1→ unknown command or wrong input
- 2→network busy

13. RATE

Format: RATE_XXXX↙

Concentrator response: a).OK ↙
b).ERR *↙

Notes: 1).XXXX is the serial data rate which can be one of them below:
9600bps, 19200bps, 38400bps, 57600bps, 115200bps.
E.g. to change the data rate to 115200bps, the command can be: RATE_115200↙. It comes into effect after the concentrator respond: OK↙
2). * means the error type
- 1→ unknown command or wrong input
- 2→network busy

14. IODELAY

Format: IODELAY_XX↙

Concentrator response: a).OK ↙
b).ERR *↙

Notes: 1).XX can be one of the values showed as below:
05,10,15,20,25,30,35,40 which are corresponding to 0.5s, 1s, 1.5s, 2s, 2.5s, 3s, 3.5s, 4 seconds.
It comes into effect after the concentrator respond: OK↙. If no parameter is attached to the command: IODELAY↙, The concentrator will use default setting (05).
2). * means the error type
- 1→ unknown command or wrong input
- 2→network busy

15. MRATE

Format: MRATE_XXXX↙

Concentrator response: a).OK ↙
b).ERR *↙

Notes: 1).The purpose of this command is for calculating network delay and can't change the actual FSK data rate of node modules with which the concentrator's FSK data rate must be kept the same. The FSK data rate of node module can be revised through RF TOOL.

2). XXXX can be one of the data rates below:
1200bps, 2400bps, 4800bps, 9600bps, 19200bps, 38400bps, 57600bps
If no parameter is attached to the command: MRATE↙, The concentrator will use default setting (19200).

3). * means the error type
- 1→ unknown command or wrong input
- 2→network busy