RN MARK

TCP/IP Communications for RNJet Series

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TCP Communications over Ethernet

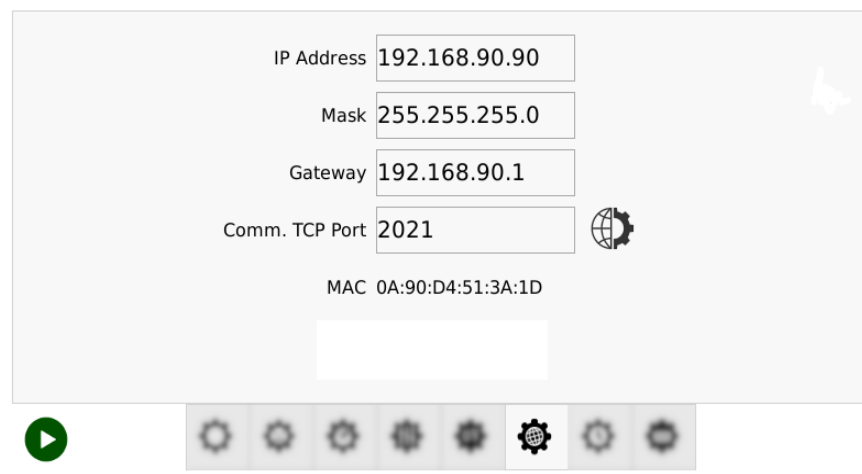The default values for network settings are:

    IP Address: 192.168.90.90

    Network Mask: 255.255.255.0

    Default Gateway: 192.168.90.1

    Default TCP-Port: 2021

To modify the network parameters, go to System Settings > Network Settings.

By default, RNJet printer is listening on tcp-port **2021** for user control commands. Only one tcp-socket connection is permitted at a time.

An application packet (will be referred to as packet in this document) is a unit of information containing command and parameters for one operation.

In this document, all binary values are presented as hexadecimal.
All integer values including commands and parameters are expected to be sent as **little endian**.

Set Print Settings, cmd = 0x6601

Send print setting to printer; This command packed is constructed from 16 bytes of data including cmd.

Packet structure

 Byte 0,1: cmd = 0x6601

 Byte 2: Reserved = 0

 Byte 3: Reserved = 0

 Byte 4: print-direction (head1): 0 = left to right (normal); 1 = right to left (reverse)

 Byte 5: print-direction (head2): 0 = left to right (normal); 1 = right to left (reverse)

 Byte 6: print-orientation (head1): 0 = normal; 1 = upside down

 Byte 7: print-orientation (head2): 0 = normal; 1 = upside down

 Byte 8-9: fire frequency (Hz); min=1, max=depends on printhead; uint16_t

 Byte 10-11: start-delay (px); uint16_t

 Byte 12-13: continuous count; uint16_t

 Byte 14-15: continuous pitch (px) uint16_t

Remarks

 Maximum fire frequency is 18000 for TIJ print-head (HP), and 7000 for Piezo print-head (XAAR/SEIKO)

 Continuous count: 1 is for single print, 0 is for infinite prints.

 All integer values (uint16_t) are little endian.

ACK/Response

 On a successful receive, printer will respond to this packet with an ACK feedback (two bytes) equal to the cmd value (response = **0x6601**)

Query printing settings, cmd = 0x6602

Request for print settings. This packet is two-byte long.

Packet structure

    Byte 0,1: cmd = 0x6602

Response structure

Printer will respond to this packet with a feedback packet (16 byte) as follow:

    Byte 0,1: ack code = 0x6602

    Byte 2: print status: 0 = print OFF, 1 = print ON

    Byte 3: Reserved = 0

    Byte 4: print-direction (head1): 0 = left to right (normal); 1 = right to left (reverse)

    Byte 5: print-direction (head2): 0 = left to right (normal); 1 = right to left (reverse)

    Byte 6: print-orientation (head1): 0 = normal; 1 = upside down

    Byte 7: print-orientation (head2): 0 = normal; 1 = upside down

    Byte 8-9: fire frequency (Hz)

    Byte 10-11: start-delay (px); uint16_t

    Byte 12-13: continuous count; uint16_t

    Byte 14-15: continuous pitch (px) uint16_t

Remarks

    Continuous count: 1 means single print, 0 means infinite prints.

    All integer values (uint16_t) are little endian.

Printing On/OFF, cmd = 0x6603

Turn print status ON or OFF. This packet is four-byte long.

Packet structure

    Byte 0,1: cmd = 0x6603

    Byte 2: argument: 0 = set print OFF; 1 = set print ON

    Byte 3: Reserved = 0

Remarks

    Changing the print-power status takes up to 1 second to take effect. Consider implementing proper delay in command sequences.

ACK/Response

    On a successful receive, printer will respond to this packet with an ACK feedback (two bytes) equal to the cmd value (response = **0x6603**)

Load Print-Layout, cmd = 0x6604

Load an existing print-layout from printer's memory. This packet includes a 4-byte header plus layout filename.

Packet header structure

    Byte 0,1: cmd = 0x6604

    Byte 2: filename data length

    Byte 3: Reserved = 0

Packet payload structure

    Up to 255 bytes data stream of text data (utf8 encoded) for layout filename.

Remarks

    Filename data length is minimum 1, up to 255 bytes. Null termination is not required. Print status can be ON or OFF when this command is sent.

    Filename must be an existing file on printer's storage and compatible with the current printhead type on the controller.

ACK/NACK Response

    when received and executed, printer will respond to this packet with an ACK/NAK feedback (four bytes):

    Byte 0,1: ack code = 0x6604

    Byte 2: Reserved = 0

    Byte 3: error code: 0 = load successful (ACK)

                         1 = load failed; file not found (NAK)

                         2 = obsolete (ACK)

                         3 = load failed; layout does not match print-head (NAK)

                         4 = ignored; filename is the same as current loaded layout (ACK)

Query layout file list, cmd = 0x6605

Request for list of print layouts. This packet is two-byte long.

Packet structure

    Byte 0,1: cmd = 0x6605

Response

Printer will respond to this command with a feedback packet including 8 bytes header plus N bytes payload.

Response header:

    Byte 0,1: ack code = 0x6605

    Byte 2: Reserved = 0

    Byte 3: Reserved = 0

    Byte 4-7: payload size= N (uint32_t, little endian)

Response payload

    N bytes stream of text data with utf8 encoding; Layout filenames joined with Linefeed \n (ASCII value 10)

    payload size is the size of data stream (not the number of characters).

Send External Data to printer, cmd = 0x6610

Ext-Data is in plaint text format, with utf8 encoding.

Only printable characters are allowed. Any instance of linefeed, return, tab … (\n, \r, \t …) is ignored. Null-break is optional (not required)

Packet header structure

    Byte 0,1: cmd = 0x6610

    Byte 2,3: size of payload (unsigned short integer, little endian)

Packet payload structure

    n byte data stream of plain text encoded as utf8 as described above. Maximum: 65535 bytes

Remarks

    This command will over-write any previous Ext-data sent to printer. (won't be held in a queue)

    Before this command, a print-layout with dynamic Ext-Text object must be loaded on the printer. If current layout on the printer does not have at least one Dynamic Ext-Text object, this command has no effect! received data will be ignored but will respond with an ACK packet.

ACK/Response

    On a successful receive, printer will respond to this packet with an ACK feedback (two bytes) equal to the cmd value (response = **0x6610**)

Send DB data to printer, cmd = 0x6611

DB data is basically in CSV file format. A byte stream of plaint text format, with utf8 encoding. Linefeed (\n) is used as record separator. Records can be comma separated, or fixed size strings. This command packed includes an 8-byte header plus data-steam of DB data as explained above.

Packet header structure

    Byte 0,1: cmd = 0x6611

    Byte 2: argument1: 0 = replace; 1 = append

    Byte 3: argument2: 0 = no header; 1= first row is header (will ignore 1st row)

    Byte 4-7: size of payload = n

Packet payload structure

    n byte data stream of text data (CSV or fixed length records) using \n as record separator.

Remarks

    Payload size is uint32_t (little endian) up to 16MB. Maximum number of records is 65535.

    DB Data will be uploaded to the printer's RAM (not permanent storage) and will be accessible until a new layout is loaded, or DB data is cleared or over-written by user.

    This command with argument=0 (replace) and payload size=0, will clear the Database content.

    Before this command, a print-layout with dynamic DB-Text object must be loaded on the printer. If current layout on the printer does not have at least one Dynamic DB-Text object, this command has no effect! DB data will be ignored but will respond with an ACK packet.

ACK/Response

    On a successful receive, printer will respond to this packet with ACK feedback (two bytes) equal to the cmd value (response = **0x6611**)

Query printing statistics, cmd = 0x6612

Request for print counters and database record index. This packet is two-byte long.

Packet structure
>Byte 0,1: cmd = 0x6612

Response structure

Printer will respond to this packet with a feedback packet (20 byte) as follow:
>Byte 0,1: ack code = 0x6612
>Byte 2: Reserved = 0
>Byte 3: Reserved = 0
>Byte 4-7: total prints since load layout (uint32_t)
>Byte 8-11: total prints since print on (uint32_t)
>Byte 12-15: DB record count (uint32_t)
>Byte 16-19: current DB record index (int32_t)

Remarks
>All integer values (int32_t/uint32_t) are little endian.
>When DB record count = 0, current record index is -1.

Set/change database index, cmd = 0x6613

Request for change current record index on DB Data. This packet is eight-byte long.

Packet structure
>Byte 0,1: cmd = 0x6613
>Byte 2: Reserved = 0
>Byte 3: Reserved = 0
>Byte 4-7: set new DB record index (int32_t)

Remarks
>New record index (int32_t) is signed integer/little endian. 0 <= index <= record-count

Response structure

Printer will respond to this packet with a feedback packet (4 bytes) as follow:
>Byte 0,1: ack code = 0x6613
>Byte 2: Reserved = 0
>Byte 3: error code: 0x00 = success; no error
>>>>0x01 = failed; invalid index (NAK)

TCP Comm. Simulator

cmd = 0x6601

cmd = 0x6602

cmd = 0x6603

cmd = 0x6611

cmd = 0x6612

cmd = 0x6605

cmd = 0x6604

cmd = 0x6613

RNSoft TCP Comm. simulator version 1.00

Controller Address 192.168.90.90   Disconnect

Clear Log

Printer Parameters
get parameters   set parameters   ○ Print ON   ◉ Print OFF

☐ Reverse Direction   Speed (Hz) 1354   Delay (px) 4
191 mm/s @180dpi   1 mm @180dpi
☐ Reverse Orientarion 115 mm/s @300dpi   0 mm @300dpi

Print Count 1   Pitch (px) 0

☐ Append to DB >>   upload CSV   DB index 0

get counters

get layout list   load layout >>

default-layout
layout01
layout02
layout03
layout04

printer connected
data-sent: 02 66
data-sent: 12 66
data-sent: 05 66
data-recv: 02 66 00 00 00 00 00 00 4a 05 04 00 01 00 00 00 12 66 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 ff ff ff ff 05 66 00 00 7a 00 00 00 64 65 66 61
75 6c 74 2d 6c 61 79 6f 75 74 0a 6c 61 79 6f 75 74 30 31 0a 6c 61 79 6f 75 74
30 32 0a 6c 61 79 6f 75 74 30 33 0a 6c 61 79 6f 75 74 30 34 0a 6c 61 79 6f 75
74 30 35 0a 6c 61 79 6f 75 74 30 36 0a 6c 61 79 6f 75 74 30 37 0a 6c 61 79 6f 75
74 30 38 0a 6c 61 79 6f 75 74 30 39 0a 6c 61 79 6f 75 74 31 30 0a 6c 61 79 6f 75
74 31 31 0a 6c 61 79 6f 75 74 31 32

print-counter #1: 0
print-counter #2: 0
DB records: 0