

NHV- Display Controller Protocol description

V 0.0

Test mode:

Power up with key 0 or 4 or 8 or 12 starts display testmode.

Power up with key 1 or 5 or 9 or 13 display SW version

EXIT Test mode and RESET:

Key 0 and 3 simultaneously enters RESET.

Example: Push key0 and key3 until RESET appears on the display.
Release key3 while still pushing key0 -> Enter Test mode.

Serial Protocol:

Serial Command Table from Host:

###X p0(px0) p1 p2 p3 p4 p5 p6 p7 p8 p9 p39 CR LF

= Start character (4 times to recognize start of message)
X = command
p0..p39 = parameter /ASCII character
px0 HEX value
CR LF End delimiter

Command A: Alive test

###A CR LF : Request RDY

Answer by Display : X CR LF

Command B: Display ON/OFF

###B px0 CR LF : Display OFF/ON

px0: 0x00 off
0x01 on

Answer by Display : no answer

Command C: Color setup

###C px0 CR LF : Color setup

px0: 0x00 no color
0x01 red
0x02 green
0x03 blue
0x04
0x05
0x06
0x07

Answer by Display : no answer

Special: If back light is permanently on, color will change immediately,
otherwise change for next use.

Command D: Set single character at current position

D px0 CR LF : Set single char at current position

px0: any ASCII char (including CGRAM char)

Answer by Display : no answer

Special: User must take care about border after location 20!

Command E: Display line 1 and line 2

E p0 ... p39 CR LF : Display line 1 and line 2

p0 ... p39 : 40 char , 20 in line 1 and 20 in line2

Answer by Display : no answer

Command H: Char size

H px0 CR LF : Character size

px0: 0x00 small
0x01 large

Answer by Display : no answer

Command K: Clear LCD Line/s

K px0 CR LF : Clear LCD display Line(s)

px0: 0x01 clear upper line
0x02 clear lower line
0x03 clear both lines

Answer by Display : no answer

Special: Start is first position in clear line. In case of both, start is in upper line.

Command L: Back light LED on/off control (not color)

L px0 CR LF : LED AUTO OFF

px0: 0x00 back light always off
0xFF back light always on
0x01 .. 0xFE auto off after px0 seconds

Answer by Display : no answer

Special: If back light is on and command is OFF, back light turns off
If back light is off and command is ON, back light turns on
No change if just seconds setup. New value used after next key stroke.

Command P: Start position of next character

P px0 CR LF : Start Position

px0: 0x01 ... 40

Answer by Display : no answer

Command R: return home

R CR LF : Return Home to location 1 (first char upper line)

Answer by Display : no answer

Command V: Request voltage value

V CR LF : Request Voltage

Answer by Display : # px0 px1 px2 CR LF

px0	: value Volt (one's)
px1	: value Volt 1/10
px2	: value Volt 1/100

Example : # 323 -> 3.24 V

Command W: Set user char in CGRAM

W px0 px1.. px8 CR LF : Setup Char in CGRAM

px0	: 0x00 .. 0x08	Start address in CGRAM
px1	: 0x00 .. 0x1F	5 char bits char line 1
px2	: 0x00 .. 0x1F	5 char bits char line 2
px3	: 0x00 .. 0x1F	5 char bits char line 3
px4	: 0x00 .. 0x1F	5 char bits char line 4
px5	: 0x00 .. 0x1F	5 char bits char line 5
px6	: 0x00 .. 0x1F	5 char bits char line 6
px7	: 0x00 .. 0x1F	5 char bits char line 7
px8	: 0x00 .. 0x1F	5 char bits char line 8

Answer by Display : no answer

Special: Next write position at 0.

Default setting is bar graph horizontal 5 vertical pixel column

Command X: Reset LCD controller

X CR LF : Controller board reset

Answer by Display : no answer

Command Z: Display and send SW version

Z CR LF : Display and end SW Version

Answer by Display : # 001 -> V 1.00