Communication Protocols

ASCII Series Version 8.0

For Firmware Version 8.03D(2013)

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STRUCTURE OF PROTOCOL

<IDxx><Pn>*...TEXT DATA/COMMANDS...*[EOT]

Where

<IDxx> Packet header also serves as destination Sign identifier

<, **>** are ASCII code 3C, 3D

ID are character "I" & "D" (must be in Upper case)

xx are the Hex numbers 00 to FF in ASCII format i.e.

- 00 = Global Call (to all Signs)
- 01 = display unit 1
- 0A = display unit 10
- 10 = display unit 16
- FF = display unit 255

Hexadecimal to Decimal table for ID conversion

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	XX	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63

<Pn> specifies which page the message will be delivered to:

There are 52 pages (A-Z, a-z) available in the TruColorXP Series. Each page can include text, graphics, and display functions such as scroll up, scroll down, show time, show date, etc.

<, **P**, **>** ASCII character "<" "P" & ">" respectively

n Page number in ASCII character, i.e.

- A = Page 1
- B = Page 2
- : :
- Z = Page 26
- a = Page 27
- b = Page 28
- : :
- z = Page 52

...TEXT DATA/COMMANDS...

Packet body consisting of Text Data and Commands.

*Refer to **Packet Body** section for details.

[EOT] End of Transmission

Option 1

[cr][lf]	Packet end with Character Return and Line Feed **[cr]** = ASCII code 0D **[lf]** = ASCII code 0A

*The remainder of this manual uses this terminating option.

Option 2

<E>	End of text Flag

SIGN RESPONSE FEATURE

If the display successfully accepts the data string, an automatic response will be initiated.

<IDxx><CheckCode>[cr][lf]

Where

<CheckCode>	S = Successful transmission E = Error F = Buffer Full

SAMPLE TRANSMISSION STRING

To Display

<ID01><PA>This is a test message[cr][lf]

OR

<ID01><PA>This is a test message<E>

SAMPLE RESPONSE STRING

From Display

<ID01><S>

DATA PACKET

Text Type

ASCII characters: Accepts free format text, i.e. any character and symbols (96 ASCII printable characters 20H - 7FH).

European characters: 64 European characters are provided for multi-nation language applications.

<E0>	=	Ã
:		**:**
<Ew>	=	Ω

*Refer to **APPENDIX A** for complete European character definition list.

Text Color

There are 26 selectable color combinations. To define a color to use for a message, a *color attribute* must be placed before the text information.

Rules: (1) If no *color attribute* is defined, the text color will default to rainbow, **<CP>**.
(2) Several *color attributes* can be used throughout the text information.

<CA>	Low Red
:	
<CZ>	Red on Green 3D

*Refer to **APPENDIX B** for the complete Color definitions list.

Text Font

There are 8 selectable character fonts. To define a font type to use for a message, a *font attribute* must be placed before the text information.

Rules: (1) If no *font attribute* is defined, the text font will default to normal size, **<SA>**.
(2) Several *font attributes* can be used throughout the text information.

<SA>	Normal size
:	**:**
<SH>	Flash Bold Italic

*Refer to **APPENDIX C** for the complete Font definitions list.

Text Size

There are 2 selectable character sizes. To define a character size to use for a message, a *character size attribute* must be placed before the text information.

Rules: (1) If no *character size attribute* is defined, the text size will default to 5x7, **<SI>**.
(2) Several *character size attributes* can be used throughout the text information.

<SI>	5X7 font size
<SJ>	4X7 font size

Functions
There are 26 built-in functions to control the text information being displayed on the screen.

Types of functions: (1) Leading commands - how the text information will appear on the display
(2) Tail commands - how the text information will disappear from the display
(3) Fixed commands – these functions have no effect on the text; examples are showing the time function and date function.

Rules: (1) If no *function attribute* is defined, the text will default to scrolling from right to left, **<FS>**.
(2) Several f*unction attributes* can be used throughout the text information.
(3) Using a single Leading command at the beginning of your text information will automatically be applied to the message as a whole.

<FA> Auto Function
:
<FY> Speed 2

*Refer to **APPENDIX D** for the complete Functions definition list.

Graphics
There are 26 preprogrammed graphics that can be inserted throughout the packet body.

<BA> Telephone Graphic
:
<BZ> Wine Glass Graphic

*Refer to **APPENDIX E** for complete Graphics definition list.

Incoming Message Notifier
There are 4 built-in message notification functions that will simultaneously initiate a beeping sound with lighting from the end caps of the sign. The beeping and lighting will initiate only at the commencement of the text information. Thereafter only the text information will show continuously.

<MA> = Normal speed
10 Beeps
No flashes from the end cap lighting

<MB> = Normal speed
10 Beeps
10 flashes from the end cap lighting

<MC> = Fast speed
10 Beeps
10 flashes from the end cap lighting

<MD> = Superfast speed
10 Beeps
10 flashes from the end cap lighting

MESSAGE COMMANDS

Delete Page(s)

<IDxx><DPn>[cr][lf]

<, D, P, >	ASCII characters "<","D","P" & ">"
n	Page number in ASCII character (A – Z, *)

<DP*> = Delete All pages
<DPA>= Delete page A
:
<DPZ>= Delete page Z
<DPa> = Delete page a
:
<DPz> = Delete page z

Run Page Now

<IDxx><RPn>[cr][lf]

<, R, P, >	ASCII characters "<","R","P" & ">"
n	Page number in ASCII character (A – Z, *)

<RP*> = Restart current page
<RPA>= Run page A
:
<RPZ>= Run page Z
<RPa> = Run page a
:
<RPz> = Run page z

Page Run Time

Run designated Page for number of times and default to another Page. Assigned pages must be preprogrammed prior to sending this command.

<IDxx><RPx><nn><RPy>[cr][lf]

<, R, P, >	ASCII characters "<","R","P" & ">"
x, y	Page number in ASCII character (A - Z)
<nn>	Where nn represents number of times (01-99)

***x** is the page letter that will run for **<nn>** times.
****y** is the page letter that will run after **x** has met **<nn>**

Show Sign Information
Model, Firmware Version, Memory, ID, COM Status, Baud Rate, and Trivia Status

<IDxx><?>[cr][lf]

Sign Reset
Reset the sign to factory default settings.

<IDxx><RST>[cr][lf]

Set sign SHIFT SPEED

<IDxx><SPDy>[cr][lf]

<, S, P, D, >	ASCII characters "<","I","D" & ">"
y	Letter in ASCII character (A - Z) A = fastest; Z = slowest

Trivia
The following commands used in succession permanently removes the stored Questions and Answers that run between the text information.

<ID00><Q+>[cr][lf]
<ID00><Q->[cr][lf]

To create and store your own Questions and Answers into the sign, simply Insert them between the opening and closing Trivia commands. For example:

<ID00><Q+>[cr][lf]
<ID00>...question... [cr][lf]
<ID00>...answer... [cr][lf]
<ID00>...question... [cr][lf]
<ID00>...answer... [cr][lf]
<ID00>...question... [cr][lf]
<ID00>...answer... [cr][lf]
<ID00><Q-> [cr][lf]

Rules: (1) The ID must be “00”
(2) The maximum number of lines between the opening and closing Trivia commands are limited to 90.
(3) Only Text Type information is allowed between the opening and closing Trivia commands.
(4) Use of commands such as color control, font control or other functions will initiate errors and the sign will not accept the data.
(5) Question and answer colors are fixed and not user alterable. Questions are in red color and answers are in green color.

SET INTERNAL CLOCK

Special command to sync or set the relative/real time clock of the display unit(s). This is the only command that does not require the **<IDxx>** header.

<TCCYYMMDDWhhmmssH>[cr][lf]

<, T, >	ASCII "<", "T" & ">"
CC	Century (19 = 19TH Century; 20 = 20TH Century)
YY	Year (00 - 99)
MM	Month (01 - 12)
DD	Day (01 - 31)
W	Day of week (0 - 6)
hh	Hour (in 24 hour format, 00 - 23)
mm	Minute (00 - 59)
ss	Second (00 - 59)
H	“0” = 12 hr display mode; “1” = 24 hr display mode

APPENDIX A – EUROPEAN TABLE

ASCII	Character
0	Ã
1	Â
2	Á
3	À
4	Ä
5	Å
6	Æ
7	ã
8	â
9	á
:	à
;	ä
<	å
=	æ
>	ß
?	Ç
@	ç
A	Đ
B	É
C	Ê
D	È
E	Ë
F	é
G	ê
H	è
I	ë
J	Í
K	Ì

ASCII	Character
L	Î
M	Ï
N	í
O	ì
P	î
Q	ï
R	Ñ
S	ñ
T	Ó
U	Ô
V	Ò
W	Ö
X	Õ
Y	ø
Z	ó
[	ô
\	ò
]	ö
^	õ
_	ø
`	Þ
a	þ
b	Ú
c	Ù
d	Û
e	Ü
f	ú
g	ù

ASCII	Character
h	û
i	ü
j	Ÿ
k	Ý
l	ÿ
m	ý
n	ó
o	Í
p	£
q	¥
r	α
s	β
t	π
u	Φ
v	Σ
w	Ω

APPENDIX B – COLOR TABLE

ASCII	Color
CA	Dim RED
CB	RED
CC	Bright RED
CD	ORANGE
CE	Bright ORANGE
CF	Light YELLOW
CG	YELLOW
CH	Bright YELLOW
CI	LIME

ASCII	Color
CJ	Dim LIME
CK	Bright LIME
CL	Bright GREEN
CM	GREEN
CN	Dim GREEN
CO	YEL/GRN/RED
CP	RAINBOW
CQ	RED/GRN 3D
CR	RED/YEL 3D

ASCII	Color
CS	GRN/RED 3D
CT	GRN/YEL 3D
CU	GRN on RED
CV	RED on GRN
CW	ORG on GRN 3D
CX	LIME on RED 3D
CY	GRN on RED 3D
CZ	RED on GRN 3D

APPENDIX C – FONT TABLE

ASCII	Description
SA	Normal
SB	Bold
SC	Italic

ASCII	Description
SD	Bold Italic
SE	Flash Normal
SF	Flash Bold

ASCII	Description
SG	Flash Italic
SH	Flash Bold Italic

APPENDIX D – FUNCTIONS TABLE

ASCII	Description
FA	AUTO
FB	OPEN <---->
FC	COVER <---->
FD	DATE
FE	CYCLING
FF	CLOSE -->
FG	CLOSE <--
FH	CLOSE --><--
FI	SCROLL UP
FJ	SCROLL DOWN
FK	OVERLAP
FL	STACKING
FM	COMIC 1
FN	COMIC 2
FO	BEEP
FP	PAUSE

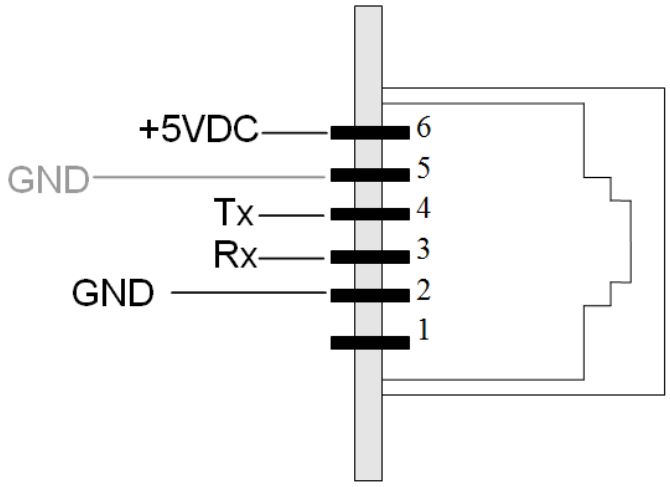
ASCII	Description
FQ	APPEAR
FR	RANDOM
FS	SHIFT <--
FT	TIME
FU	MAGIC
FV	THANK YOU
FW	WELCOME
FX	SPEED1
FY	SPEED2

APPENDIX E – GRAPHICS TABLE

ASCII	Description
BA	Telephone
BB	Glasses
BC	Faucet
BD	Rocket
BE	Space Monster
BF	Key
BG	Shirt
BH	Helicopter
BI	Car
BJ	Tank
BK	House
BL	Tea pot
BM	Knife & Fork

ASCII	Description
BN	Duck
BO	Motorcycle
BP	Bicycle
BQ	Crown
BR	Twin Hearts
BS	Arrow →
BT	Arrow ←
BU	Arrow ↙
BV	Arrow ↖
BW	Glass of beer
BX	Chair
BY	High-heel shoe
BZ	Wine glass

RJ11 PORT ASSIGNMENTS FOR XP SERIES



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