ASCII Protocol Board LAN / Serial

Low Cost & Industrial Grade Cabinets

Kamal & Co

**42, Mambalam High Road,
T Nagar, Chennai,600017**
sales@factorydisplay.com

Description

The LED ASCII protocol board serves as a versatile interface, enabling communication between PCs, PLCs, or other automation devices and the LED display. This communication occurs through LAN, WIFI, or Serial (RS232/RS485) connections. The ASCII protocol employed is straightforward, allowing users to transmit ASCII data for controlling various display aspects such as text, font, effects, and speed. The unit's parameters are user-programmable, offering flexibility in setting transmission parameters, including device ID, effect type, speed, stay time, data format, and display parameters like alignment, font selection, brightness, and more. Notably, the programmed parameter set is securely stored in non-volatile memory, safeguarding against data loss, and is hardware-protected for reliability and consistency in display configurations.

Product Features

- **Communication protocol:** Utilizes a simple ASCII format with start and end characters, coupled with CRC for error detection.

- **Data Transmission:** Supports LAN via TCP/IP, as well as RS-232 and RS-485 for versatile connectivity.

- **Typography:** Offers four built-in fonts, providing flexibility in text presentation.

- **Visual Effects:** Encompasses over ten dynamic effects to enhance the visual appeal of displayed messages.

- **Dynamic Settings:** Allows users to define speed, stay time, and IDLE time for tailored message display.

- **Default Message:** Features an IDLE time function, activating a default message after a specified period of inactivity.

- **Text Positioning:** Enables precise alignment within fixed messages for a customized

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display layout.

- **Brightness Control**: Includes a brightness control feature, allowing adjustment based on environmental conditions or preferences.
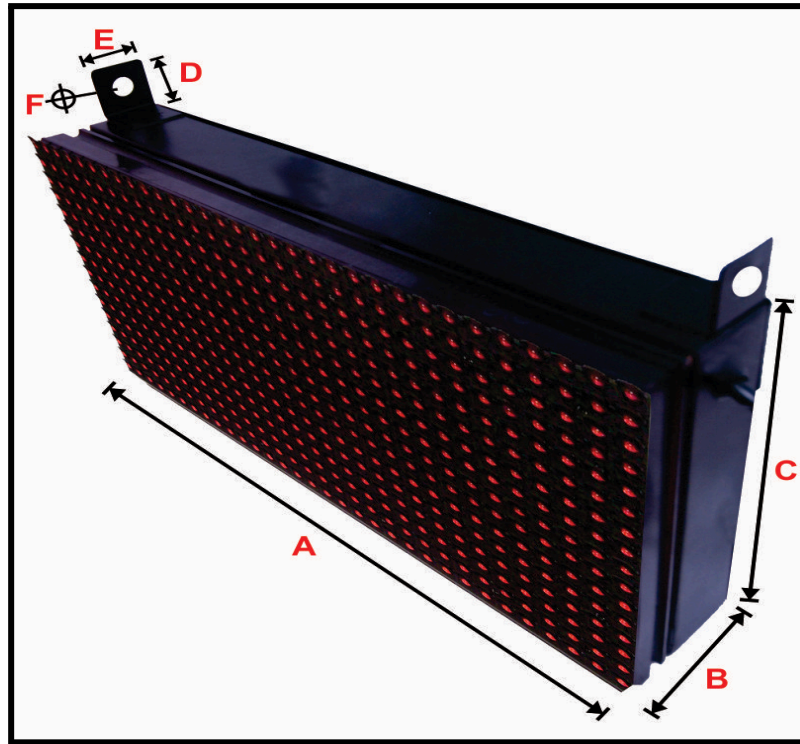
Notes and Options.

- Display Characteristics: All units feature a single-colour display with the default supply in vibrant RED, offering excellent brightness suitable for both indoor and outdoor viewing.
- Colour Customization: Alternative colours are available upon request, incurring an extra cost.
- Outdoor Units: For outdoor applications, the cost increases by 18% over the base price to account for additional specifications.
- Customization Options: Titles and fixed designs can be added to meet specific requirements.
- Power Supply: All units operate on a standard 230V AC mains power source, with the option for 110V available upon separate quotation.
- Mounting Flexibility: Two mounting options are provided - top eye bolts for ceiling suspension and side clamps for secure bolting to supports.

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Low Cost Cabinet Sizes and Models								
Model	Digit Height (mm)	**No. Of Characters/ Digits per screen**		Height (mm)	Width (mm)	Depth (mm)	Max Power (W)	
		140mm high	**70mm high**	C	A	B		
ECON-ASCII-11	**One line of 140mm OR Two lines of 70mm**	4	10	160	320	50	35	
ECON-ASCII-12		8	20	160	640	50	65	
ECON-ASCII-13		12	30	160	960	50	95	

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Technical Specifications

VOLTAGE	230 VAC 1 PHASE MAIN POWER
OPERATING TEMP	5 TO 55'C
STORAGE TEMP	0 TO 65'C
RELATIVE HUMIDITY	UP TO 95% RH NON CONDENSING
DISPLAY	FULL MATRIX
LED COLOUR	RED
CHARACTERS TABLE	ASCII CHAR. (CODE 30H TO 5 FH)
PROTOCOL	ASCII PROTOCOL
INTERFACE BY	RS232/RS485/LAN/WiFi COMMUNICATION
DATA TRANSFER RATE	9600 BAUD (8,n,1)
DATA TYPE	CHARACTER,INTEGER AND FLOAT
ACCESSORIES	POWER CABLE 1 METER

Electrical Connections.

1) RS232 Communication:

- Ensure all modules have built-in communication ports.
- Connect the unit to a PC/PLC or any other automation device using an RS232 cable.
- Alternatively, connect the unit through a USB to serial adapter, such as a USB to RS232 adapter.

2) RS485 Communication:

- For RS485 communication, use an appropriate RS232 to RS485 or USB to RS485 adapter on the PC side.
- In PLC or other devices with RS485 terminals, connect the module directly to those RS485 terminals.
- Utilize a 2-core twisted pair cable with a shield for optimal performance. You may also use a Communication Cable CAT5 or CAT6 with a shield.
- Ground one end of the shield for proper grounding.

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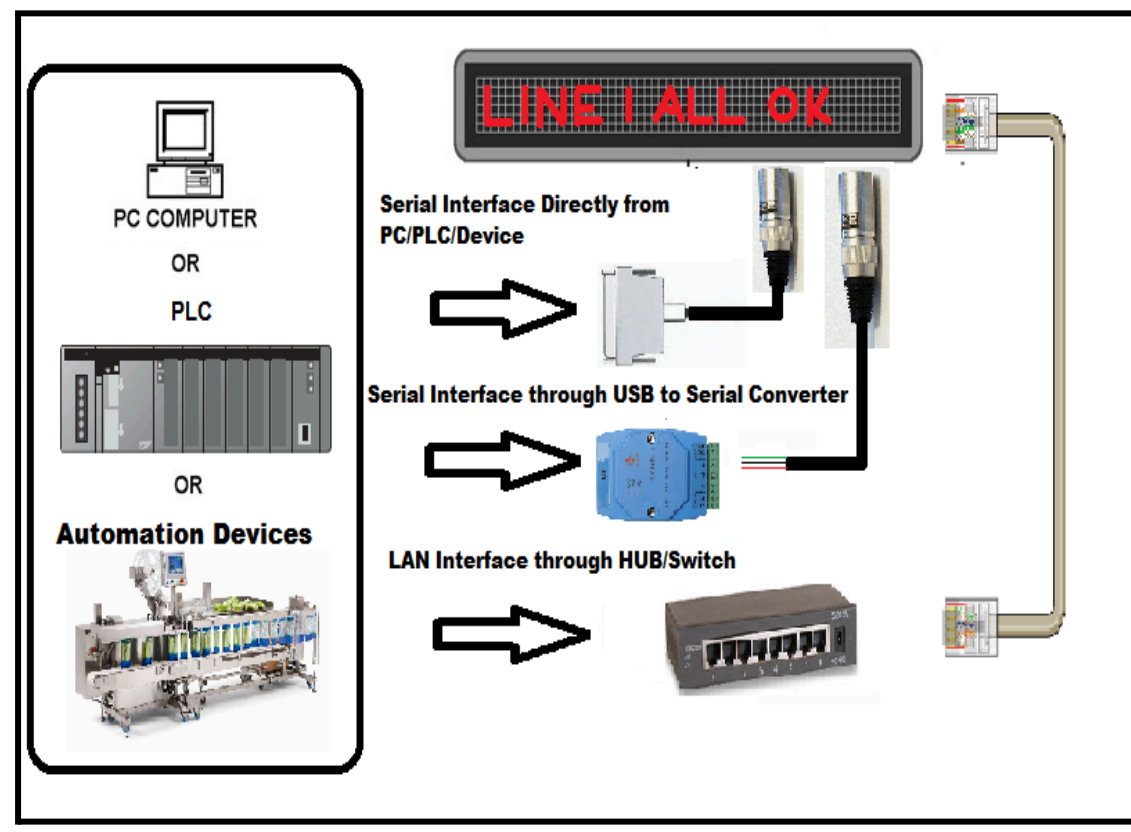sales@factorydisplay.com

3) LAN Communication:

- To connect the module to a PC/PLC or any other automation device through LAN, use an RJ45 connector.
- Connect the RJ45 connector through a HUB for network connectivity.
- Ensure proper cable management and routing for organized connections.

Additional Notes:

- Always check the compatibility of adapters and connectors with the specific modules and devices you are using.
- When using shielded cables, grounding is essential for noise reduction and stable communication.
- Follow manufacturer guidelines for cable types, pin configurations, and communication settings.
- Keep cables neatly organized and avoid tight bends or stress points to prevent damage.
- Test the communication setup after connecting to ensure proper functionality.

Connection Details

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For RS232/RS485 Communication:

Open a terminal program such as Hyperterminal, TeraTerm, Putty, or RealTerm.
Set the following communication parameters:
- Baud Rate: 9600 Baud
- Data Bits: 8 Bit
- Parity: None
- Stop Bits: 1 Bit

Choose the appropriate communication port in the terminal program.
Connect the RS232 or RS485 cable to the board.

For LAN/WiFi Communication:

Open a terminal program like Hyperterminal, TeraTerm, Putty, or RealTerm.
Set the following network communication parameters:

- Host IP Address: [Your IP Address]
- TCP Port: 8080
- Service: Telnet
- Protocol: UNSPEC

Connect the LAN or WiFi module to the board.
Ensure the board is configured with the following settings:
- IP Address, TCP Port, Service, and Protocol matching the terminal program settings.
- Board operating in 9600 8,n,1 setting.

Technical Notes:

- Verify the correct physical connection between the communication port (RS232/RS485/LAN/WiFi) and the board.
- Ensure that the terminal program settings match the board's communication parameters (9600 8,n,1 for RS232/RS485).
- For LAN/WiFi, coordinate the IP address, TCP port, service, and protocol between the terminal program and the board.
- Double-check cabling integrity and make sure there are no loose connections.
- Confirm that the chosen terminal program supports the selected communication method.

Following these steps will establish a proper communication link between the terminal program and the board through RS232/RS485/LAN/WiFi connections, allowing for the transmission of ASCII protocol settings.
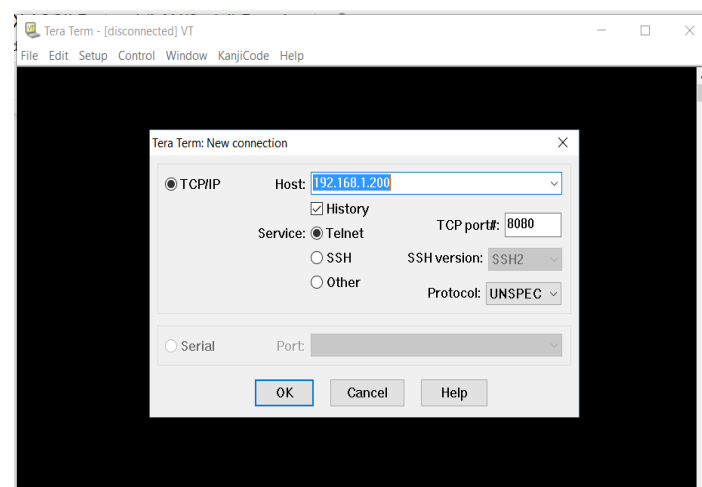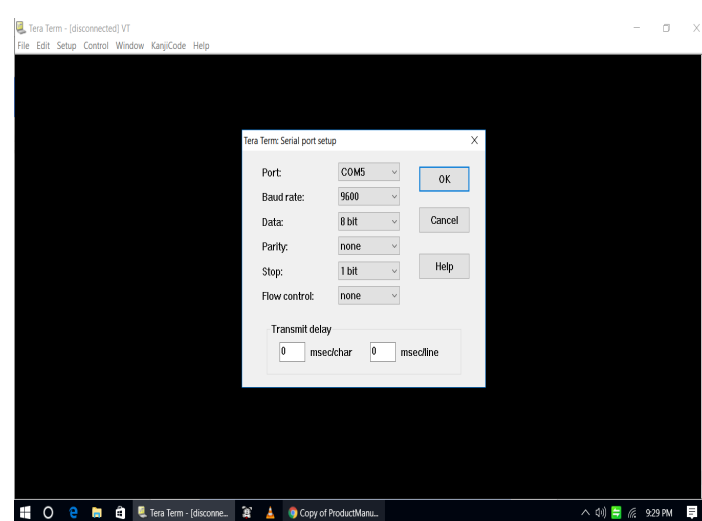
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ASCII Configuration Protocol.

Packet Format

Start of Packet SOP => [
End Of Packet EOP =>]

[ID Command Data CRC]

ID (2 chars) is the ID of the board default is 01
Command (1 char) is the command character which defines the function.
Data (n chars) is the data associated with the command.

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CRC (2 chars) is the CRC for the data packet. To ignore CRC provide XX.

Command	Description	Example
Set Device ID	This command sets the device ID when multiple devices are connected. Default device will be 01.	[ID ZD DD CRC] DD-01234567890123456789 Ex: [01ZD02XX] [01ZD10XX]
Set Brightness	This command is used to set the brightness of the led display.Where Brightness can be from 0-9.	[ID ZH N CRC] Ex: To set minimum brightness [01ZH1XX]
Set TEXT	This command send text to led display with all parameters Font, Effect,Speed, Stay time, Alignment etc..	[ID T Font(1-9) Effect(A-Z) Speed(00-FF) Stay(00-FF) Align(0-F) tttttttttttt CRC] Ex: [01T1A0F1F8Welcome To G-BoxXX]
Set TEXT and save.	This command send text to led display and it will be saved with all parameters Font, Effect,Speed, Stay time, Alignment etc	[ID U Font(1-9) Effect(A-Z) Speed(00-FF) Stay(00-FF) Align(0-F) tttttttttttt CRC] Ex: [01U1A0F1F8Welcome To G-BoxXX]

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Font	ASCII Value	Example Command
FONT_GBOX_5X7 (included)	**1**	[01T1A0F1F8Welcome To G-BoxXX]
FONT_GBOX_8	**2**	[01T2A0F1F8Welcome To G-BoxXX]
FONT_GBOX_16(included)	**3**	[01T3A0F1F8Welcome To G-BoxXX]
FONT_GBOX_16_WIDE	**4**	[01T4A0F1F8Welcome To G-BoxXX]
FONT_GBOX_24	**5**	[01T5A0F1F8Welcome To G-BoxXX]
FONT_GBOX_16_LARGE_NUM	**6**	[01T6A0F1F8Welcome To G-BoxXX]
FONT_GBOX_28	**7**	[01T7A0F1F8Welcome To G-BoxXX]
FONT_GBOX_32	**8**	[01T8A0F1F8Welcome To G-BoxXX]
FONT_GBOX_32N	**9**	[01T9A0F1F8Welcome To G-BoxXX]

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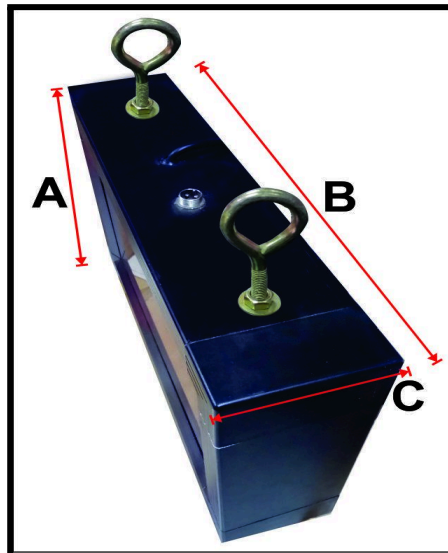| Effect	ASCII Value	Example Command
SCROLL_ANIM_STAY	A	[01T3A0F1F8WelcomeXX]
SCROLL_ANIM_SCROLL_LEFT	B	[01T3B0F1F8WelcomeXX]
SCROLL_ANIM_SCROLL_CONT_LEFT	C	[01T3C0F1F8WelcomeXX]
SCROLL_ANIM_SCROLL_BLINK_LEFT	D	[01T3D0F1F8WelcomeXX]
SCROLL_ANIM_BLINK	E	[01T3E0F1F8WelcomeXX]
SCROLL_ANIM_BOT2TOP	F	[01T3F0F1F8WelcomeXX]
SCROLL_ANIM_CONT_BOT2TOP	G	[01T3G0F1F8WelcomeXX]
SCROLL_ANIM_BLINK_BOT2TOP	H	[01T3H0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_TOP2BOT	I	[01T3I0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_BLINK_TOP2BOT	J	[01T3J0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_BOT2TOP	K	[01T3K0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_BLINK_BOT2TOP	L	[01T3L0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_L2R	M	[01T3M0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_BLINK_L2R	N	[01T3N0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_R2L	O	[01T3O0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_BLINK_R2L	P	[01T3P0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_TOP2BOT_ FULL	Q	[01T3Q0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_BLINK_TOP2BOT_FULL	R	[01T3R0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_BOT2TOP_FULL	S	[01T3S0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_BLINK_BOT2TOP_FULL	T	[01T3T0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_L2R_FULL	U	[01T3U0F1F8WelcomeXX]

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SCROLL_ANIM_WIPE_BLINK_L2R_FULL	V	[01T3V0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_R2L_FULL	W	[01T3W0F1F8WelcomeXX]
SCROLL_ANIM_WIPE_BLINK_R2L_FULL	X	[01T3X0F1F8WelcomeXX]
SCROLL_FIXED_MESSAGE	Y	[01T3Y0F1F8WelcomeXX]
SCROLL_FIXED_BLINK	Z	[01T3Z0F1F8WelcomeXX]

SCROLL_FIXED_MESSAGE and SCROLL_FIXED_BLINK are special since they display text messages directly without textwrapping etc. Special Characters in the string can be used to position text.

Char = 0x0A   => Will move the text cursor to the next line   ex "Line1""\x0A""Line2"
Char = 0x0D   => Will move the text cursor to the X start.(Will make X=0).
Char = 0x0E   => Will move the text cursor to the Y start.(Will make Y=0).

Char = 0x0C   => Will Switch the font between 16 and 5x7

Char = 0x0B   => Will move the text cursor to the starting of the current module.

Char = 0x01 - 0x07   => Will move the text cursor by 1 - 7 pixels So if you want two pixel gap
                            between Two words then you can specify "Test1""0x02""Text2".

Char = 0x08 '\t'   => Will move the text cursor to the starting of the next module.

Speed	00-FF	**Ex:For Min speed** [01T1A001F8Welcome To G-BoxXX] **Ex:For Max speed** [01T1AFF1F8Welcome To G-BoxXX
Stay Time	00-FF	**Ex:For Min stay time** [01T1A00008Welcome To G-BoxXX] **Ex:For Max stay time** [01T1AFFFF8Welcome To G-BoxXX

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Alignment	ASCII Value	Example Command
No Alignment (Default)	0	[01T1A0F0F0Welcome To G-BoxXX
Top Left	1	[01T1A0F0F1Welcome To G-BoxXX
Center Left	2	[01T1A0F0F2Welcome To G-BoxXX
Bottom Left	3	[01T1A0F0F3Welcome To G-BoxXX
Top Center	8	[01T1A0F0F8Welcome To G-BoxXX
Center Center	A	[01T1A0F0FAWelcome To G-BoxXX
Bottom Center	B	[01T1A0F0FBWelcome To G-BoxXX
Top Right	C	[01T1A0F0FCWelcome To G-BoxXX
Center Right	E	[01T1A0F0FEWelcome To G-BoxXX
Bottom Right	F	[01T1A0F0FFWelcome To G-BoxXX

CRC Calculation

The CRC is the ASCII Encoded HEX

Ex:

CRC is calculated by XORing all the characters from ID to end of data. STX character [is not included in the CRC.

[01E2000.0169]

```
byte i, CalcCRC=0;
for(i=1;i<PacketLen-2;i++)
{
CalcCRC = CalcCRC ^ InputText[i];
}
```

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Industrial Grade Cabinet Models and Dimensions

All Units in mm

Model No	A Height (mm)	B Width (mm)	C Depth (mm)	Max Power (W)
IC-ASCII-11	250	410	93	35
IC-ASCII-12	250	730	93	65
IC-ASCII-13	250	1050	93	95
IC-ASCII-14	250	1370	93	125
IC-ASCII-22	410	730	93	125
IC-ASCII-23	410	1050	93	185
IC-ASCII-24	410	1370	93	245

Heavy Duty Cabinet

❏ The Heavy Duty Cabinets make the LED board more durable and robust.

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- ❏ The cabinets are made from extruded aluminium profiles and moulded corners for better appearance.
- ❏ The front filter used is Perspex / LEXAN ® sheets for UV and robust.
- ❏ The hanging hooks are also heavy and suited for mounting from your support structure.

Contact Information

No. 42, Mambalam High Road,
T. Nagar, Chennai - 600017,
Tamil Nadu, India

Phone : 91-44-28140111/222/333/444/555

Fax : 91-44-28140814

Email: sriram@factorydisplay.com, kamalco@gmail.com

Important Notice