



SP2+B-LCD (SP1+B and SP2+B)

Quick Start Guide - 2023





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Introduction

The SP2+B-LCD combines the SP2+ software & features with the LCD display. These compact units include the hardware to support up to 4 sensor ports, dry contact, built in PoE and LCD display to show data from connected sensors. The SP2+ LCD Basic can be upgraded to the Pro version with a one time software license.

Basic vs Professional Versions

The below table shows the features included with the SP2+B-LCD Basic, and the benefits of upgrading to the Professional license. Please contact our sales team (sales@akcp.com) for the cost details.

	 SP2+B-LCD Basic	 Pro
5 dry contact	—	—
Virtual Sensors	—	5
Event Log	✓	✓
Notifications	✓	✓
MQTTS	✓	✓
Graphs	✓	✓
Maps	—	✓
3rd Party Modbus	—	✓
IPv6	—	✓
SNMPV3	—	✓
VPN	—	✓
Access Control User	—	✓
RADIUS	—	✓
Heartbeats	—	✓
Modbus	—	✓
Cloud	—	✓
Authentication	—	✓

Setup of the SP2+-B-LCD Base Unit & Notifications

Please refer to the SP2+ Introduction and Notifications manual on our website support portal for all of the details on the setup of the unit, connecting sensors and sending notifications.

Here are the direct links for these manuals;

<http://www.akcp.in.th/downloads/Manuals/SP2+/SP2+%20Introduction%20Manual.pdf>

<http://www.akcp.in.th/downloads/Manuals/SP2+/SP2+%20Notifications%20Manual.pdf>

<http://www.akcp.in.th/downloads/Manuals/SP2+/SP+%20Email%20Alerts%20Quick%20Start%20Guide.pdf>

Hardware Configuration Options

Connect up to 4 AKCP sensors, including combined cabinet thermal maps and contactless current meters, providing up to 9 sensors per port.

Optional Hardware & Configurations

4G Modem - External cellular data modem plugs into dedicated UART EXT modem port.

External PSU - Add a 5VDC external power supply for redundancy when combined with PoE

Modbus RS485 - Change the dry contact input to be Modbus RS485 (SP2+B-LCD-MOD)



Again, please refer to our specific product manuals for the USB external modem, the Modbus RS485 & the dry contact here below when setting these up on the SP2+B-LCD;

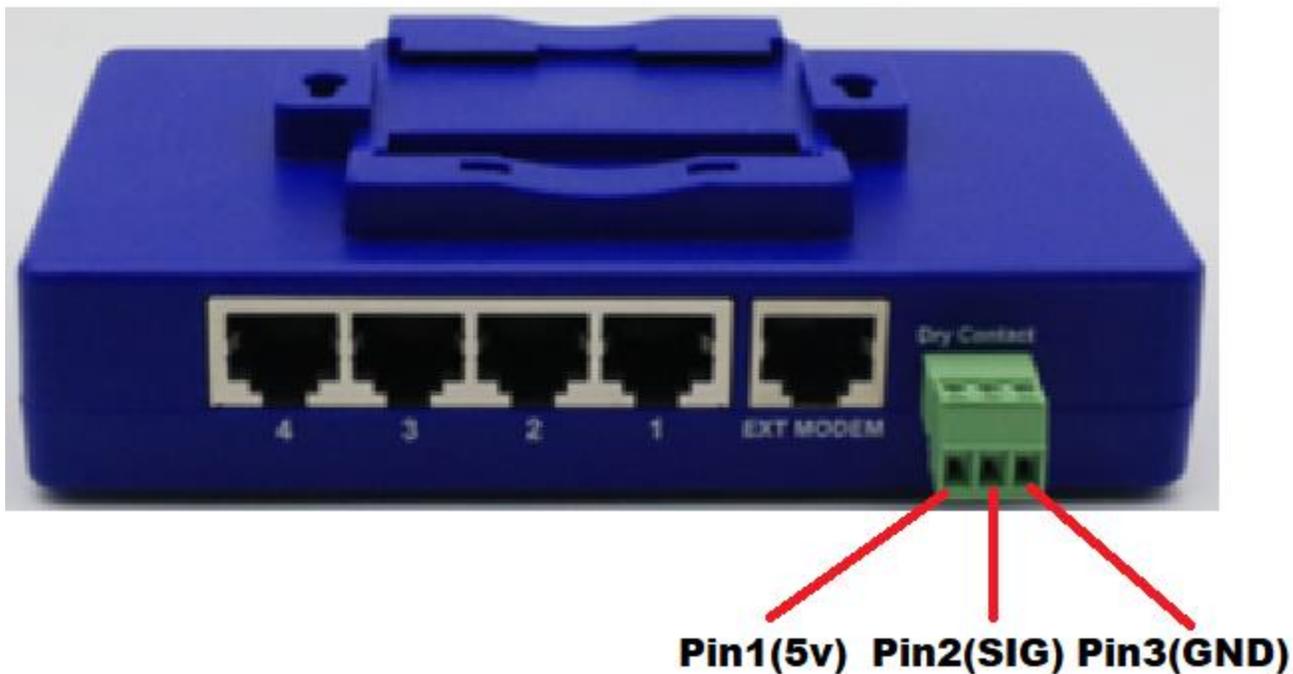
<http://www.akcp.in.th/downloads/Manuals/ExternalModem/SP+%20External%20Modem%20QuickStart%20Manual.pdf>

<http://www.akcp.in.th/downloads/Manuals/Modbus%20on%20SP+/SP+%20Modbus%20Manual.pdf>

Dry Contact Input & Output

When connecting an external 3rd party dry contact to the internal dry contact input on the SP2+LCD, the connections are Pin 2(SIG) and Pin 3(GND) as shown in the diagram below. The initial status will be critical, and when shorted it becomes normal.

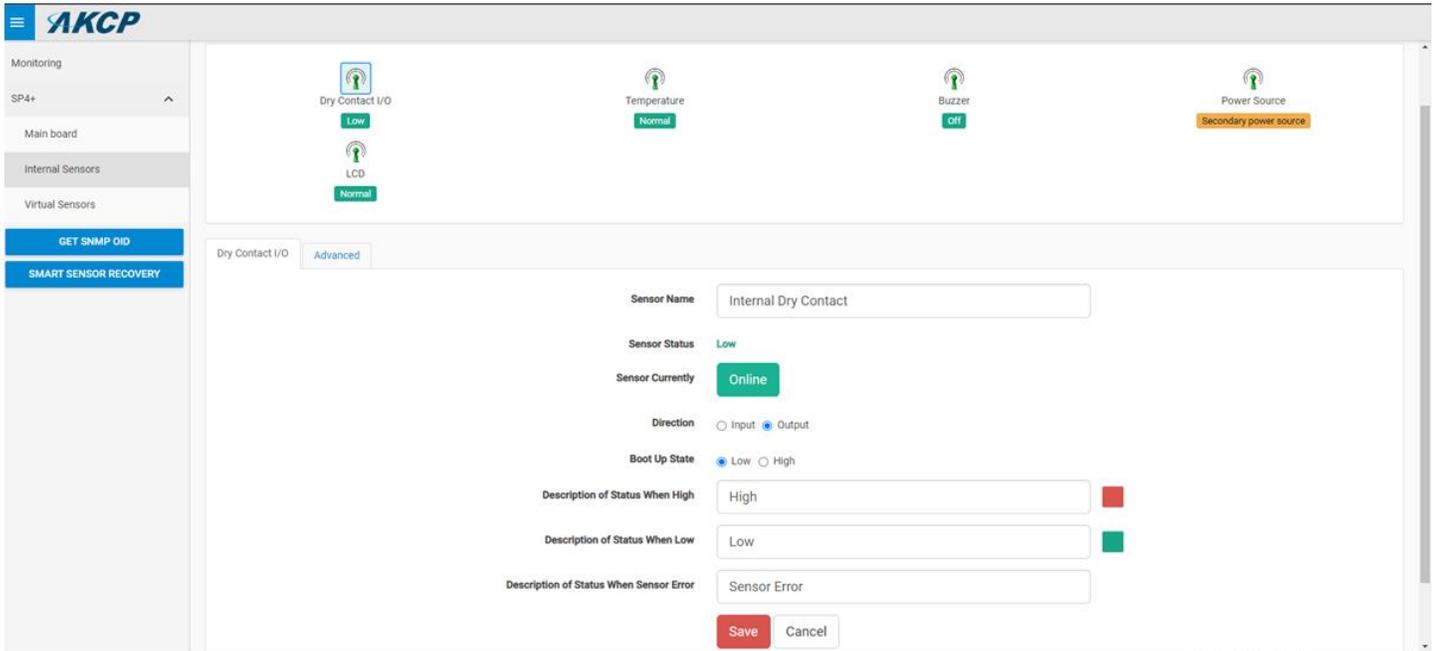
This is the same when configuring the dry contact as an output. The connections are Pin 2(SIG) and Pin 3(GND), When the status is set to low, Pin2 and Pin3 is 0VDC which you can check via a multimeter, then when the status is set to high the voltage is 5VDC.



Note: The dry contact connection pin assignments are shown in the above picture.

Dry Contact Web UI configuration

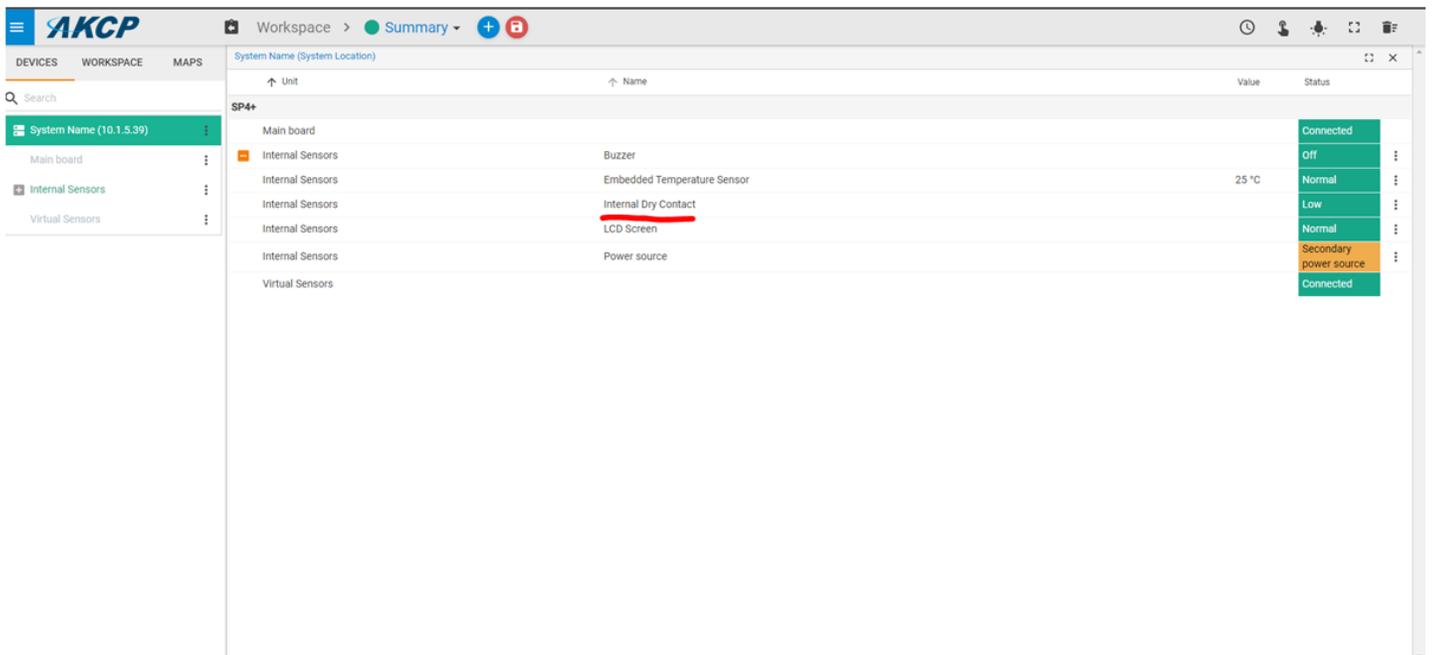
Please see the screen shots below on where in the SP2+LCD web UI the dry contact is configured.



The screenshot shows the configuration page for a 'Dry Contact I/O' sensor. The left sidebar contains navigation options: Monitoring, SP4+, Main board, Internal Sensors, Virtual Sensors, GET SNMP OID, and SMART SENSOR RECOVERY. The main content area displays a dashboard with four sensor status cards: Dry Contact I/O (Low), Temperature (Normal), Buzzer (Off), and Power Source (Secondary power source). Below the dashboard, the 'Advanced' configuration for the 'Dry Contact I/O' sensor is shown. The configuration includes:

- Sensor Name:** Internal Dry Contact
- Sensor Status:** Low
- Sensor Currently:** Online
- Direction:** Input Output
- Boot Up State:** Low High
- Description of Status When High:** High
- Description of Status When Low:** Low
- Description of Status When Sensor Error:** Sensor Error

Buttons for 'Save' and 'Cancel' are located at the bottom of the configuration form.



The screenshot shows the 'Workspace' view in the AKCP web UI. The top navigation bar includes 'Workspace', 'Summary', and a search icon. The left sidebar shows a search bar and a list of devices: System Name (10.1.5.39), Main board, Internal Sensors, and Virtual Sensors. The main content area displays a table of sensors for the 'System Name (System Location)' device. The table has columns for Unit, Name, Value, and Status.

Unit	Name	Value	Status
Main board			Connected
Internal Sensors	Buzzer		Off
Internal Sensors	Embedded Temperature Sensor	25 °C	Normal
Internal Sensors	Internal Dry Contact		Low
Internal Sensors	LCD Screen		Normal
Internal Sensors	Power source		Secondary power source
Virtual Sensors			Connected

LDC display

The LCD display combined on the SP2+B-LCD base unit can be programmed to display the data from any AKCP sensor or virtual sensor.

You can mount the unit on the end of an aisle, on the door of every cabinet, or on the wall of a room. The LED indicators will alert if a sensor is in critical condition, as well as the on screen display of the critical or warning status.

LCD Overview



Features:

- Easy to read, high quality backlit LCD display
- Program to display specific sensors
- Keyhole mounting
- LED Status indicator for Critical and Warning sensor statuses
- Built-in temperature sensor (not available on the SP2+LCD)
- Displays the base unit's IP address (see below)

Please Note: The temperature reading in the top left corner of the unit will not show as the built-in temperature sensor is not available on the SP2+LCD.

Watch our Youtube video referring to the LCD sensor: <https://youtu.be/klieKQJ52-U>
Which will also apply to the LCD functions on the SP2+LCD.

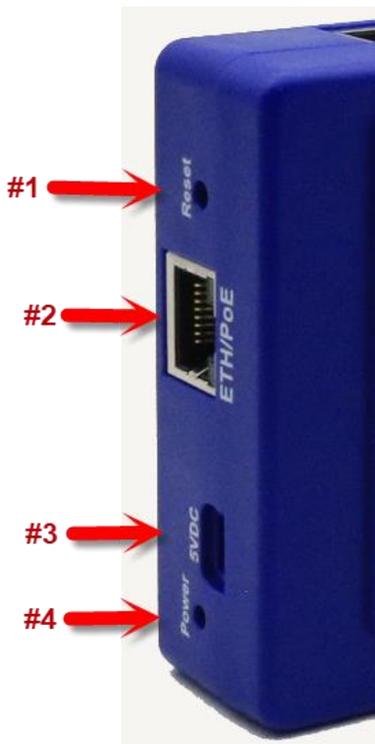
SP2+LCD Reset Button

The reset button on the SP2+LCD unit functions the same as the SP2+ unit.

The reset button performs the following on the SP2+LCD.

- A. IP address broadcasting (press for 0 - 3 seconds)
- B. Device reboot (press for 3 - 7 seconds)
- C. Web UI password reset (press for 7 - 12 seconds)
- D. Soft reset (press for 12 - 17 seconds)
- E. Hard reset (press for 17 - 22 seconds)
- F. Reset to default IP 192.168.0.100 (press for 22 - 25 seconds)
- G. No action (25 seconds)

SP2+LCD Power & Additional Connections



#1. Reset Button | The reset button as explained above.

#2. Ethernet Connection & PoE.

#3. Power Connections. The unit can be powered by both PoE and a micro USB 5VDC adapter simultaneously (micro USB cable included).

It can also be powered by our 5.5VDC 3A power adapter using this DC jack to micro USB adapter shown below. The 5.5VDC adapter or the adapter shown below are not included.

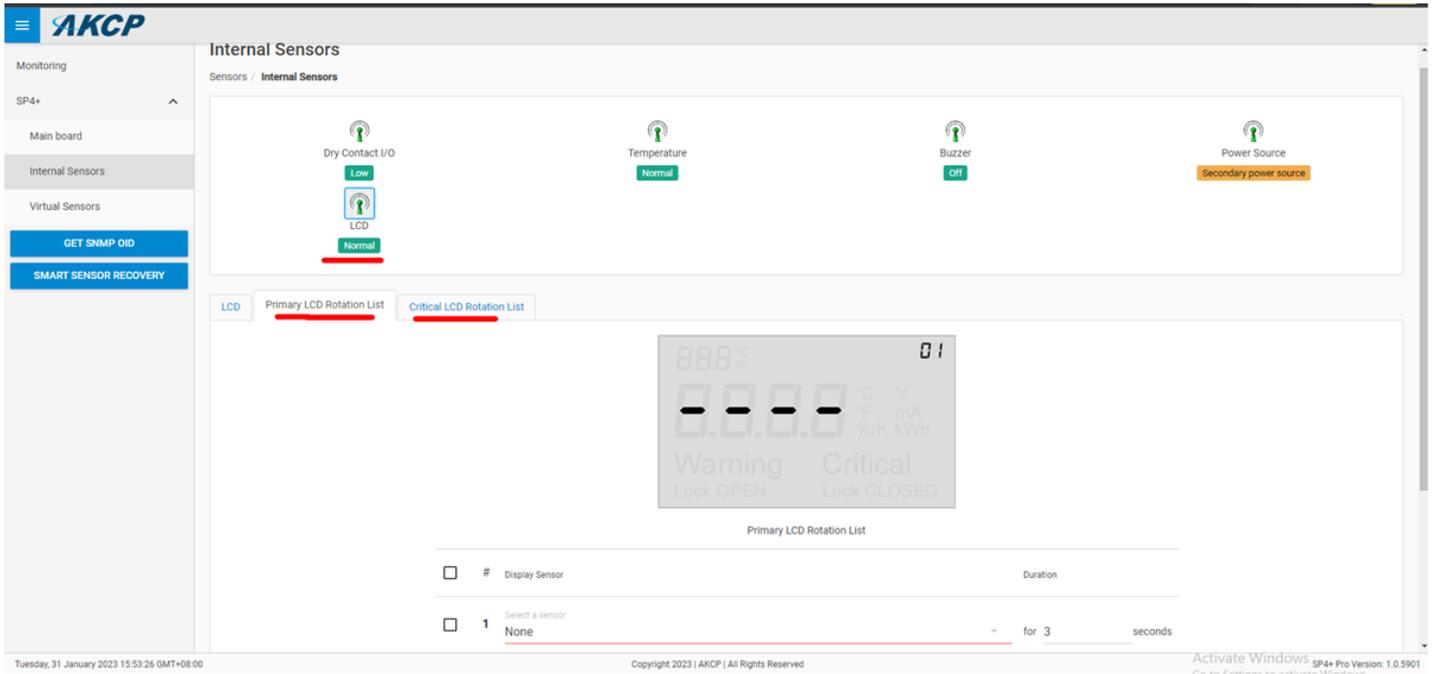


#4. Power LED.

Note: Please contact our sales team for more details on the options available when ordering the SP2+LCD units.

LCD Configuration

The SP2+-B-LCD configuration is shown below in the following screen shots.

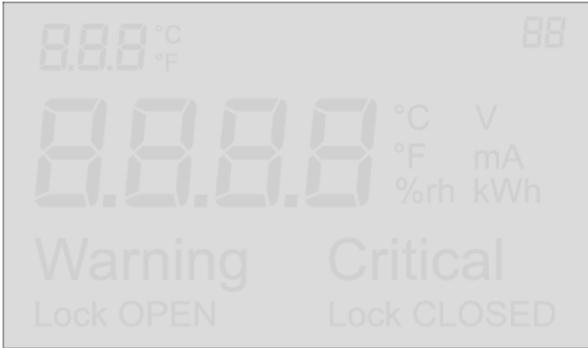


The screenshot displays the AKCP monitoring interface. On the left is a navigation menu with options: Monitoring, SP4+, Main board, Internal Sensors (selected), and Virtual Sensors. Below the menu are buttons for 'GET SNMP OID' and 'SMART SENSOR RECOVERY'. The main content area is titled 'Internal Sensors' and shows a grid of sensor status cards: Dry Contact I/O (Low), Temperature (Normal), Buzzer (Off), and Power Source (Secondary power source). Below this is the 'LCD' configuration section, which includes tabs for 'Primary LCD Rotation List' and 'Critical LCD Rotation List'. A central LCD display preview shows '8.8.8' and '01' with various unit indicators. Below the preview is a table for the rotation list:

#	Display Sensor	Duration
1	Select a sensor None	for 3 seconds

At the bottom of the interface, there is a timestamp 'Tuesday, 31 January 2023 15:53:26 GMT+08:00', a copyright notice 'Copyright 2023 | AKCP | All Rights Reserved', and an 'Activate Windows' watermark.

LCD Primary LCD Rotation List Critical LCD Rotation List



88.8 °C 88
88.8 °F
8.8.8.8 °C V
8.8.8.8 °F mA
8.8.8.8 %rh kWh
Warning Critical
Lock OPEN Lock CLOSED

Primary LCD Rotation List

No Rotation List

UP DOWN DELETE ADD

Save Cancel

Now you can define the display rotation list that will be displayed on the LCD. The Primary Rotation List is what will be normally displayed on the screen.

LCD Primary LCD

None

Gateway

Module 0 - 4x Sensor Ports

Digital Voltmeter Port 2

HL Rack PID1

Liquid Rope Detector Port 1

SHL Reader 4

Temperature Port 3

Module 1 - 4x Sensor Ports

Buzzer

Humidity Port 3

LCD Screen

Temperature Port 2

Temperature Port 3

Temperature Port 3.1

Temperature Port 3.2

Duration

for 5 seconds

UP DOWN DELETE ADD

*Invalid Rotation List

Save Cancel

Click on the Add button, and one by one add the sensors that you'd like to have their statuses displayed on the LCD.

Note: You can only select the sensors which are already connected to the unit.

LCD
Primary LCD Rotation List
Critical LCD Rotation List



Primary LCD Rotation List

<input type="checkbox"/>	#	Display Sensor	Duration
<input type="checkbox"/>	1	Module 1 - 4x Sensor Ports Temperature Port 2	for 5 seconds

UP
DOWN

DELETE
ADD

Save
Cancel

For each sensor, you can define the duration of the display, before it will switch to the next sensor status display.

LCD
Primary LCD Rotation List
Critical LCD Rotation List



Primary LCD Rotation List

<input type="checkbox"/>	#	Display Sensor	Duration
<input type="checkbox"/>	1	Module 1 - 4x Sensor Ports Temperature Port 2	for 5 seconds
<input type="checkbox"/>	2	Module 0 - 4x Sensor Ports Digital Voltmeter Port 2	for 5 seconds

UP
DOWN

DELETE
ADD

Save
Cancel

The preview screen will show you how the configured display will look like, with the actual sensor reading and status value.

The small index counter on the top right corner of the LCD screen shows the sensor's order number in the list. You can reorder the sensors by selecting them and clicking on the Up/Down buttons accordingly.

Save your configuration, then it will be uploaded to the sensor (this takes a few seconds).

The screenshot shows the 'Critical LCD Rotation List' configuration page. At the top, there are three tabs: 'LCD', 'Primary LCD Rotation List', and 'Critical LCD Rotation List'. The 'Critical LCD Rotation List' tab is active. Below the tabs is a preview of the LCD display showing a temperature of 25.5°C, a 'Warning' status, and various sensor units (°C, °F, V, mA, %rh, kWh). Below the preview is a table with the following columns: '#', 'Display Sensor', 'Duration', and 'Blinking'. The table contains one entry: '# 1', 'Module 1 - 4x Sensor Ports Temperature Port 2', 'for 5 seconds', and a dropdown menu for 'Blinking'. The dropdown menu is open, showing three options: 'None', 'Blink Slow', and 'Blink Fast'. Below the table are 'UP' and 'DOWN' buttons, and at the bottom are 'Save' and 'Cancel' buttons.

#	Display Sensor	Duration	Blinking
1	Module 1 - 4x Sensor Ports Temperature Port 2	for 5 seconds	Blink Slow

There's also a Critical Rotation List configuration, which will be used when one of the monitored sensor's status is in a warning or critical state.

Important: The Critical Rotation List will override the Primary Rotation List if a sensor's status is warning or critical and will only display those sensor statuses.

The display configuration is the same as for the Primary Rotation List, but you can also define a blinking rate value (slow or fast) to emphasize the value reading that is being displayed.



LCD Display Sensor Types

Switch type sensors that have no unit values are displayed as a sensor-type. The following list provides a definition of the sensor mapped to a specific sensor type. Examples can be seen on the following page.

- ST-01 - Airflow
- ST-02 - Dry Contact I/O
- ST-03 - Dry Contact Input
- ST-04 - Motion Detection
- ST-05 - Water Sensor
- ST-06 - Security Sensor
- ST-07 - Siren and Strobe
- ST-08 - Sensor Controlled Relay
- ST-09 - AC Voltage Sensor
- ST-10 - 8x Sensor Controlled Relay
- ST-11 - Smoke Detector
- ST-12 - 8 Dry Contact I/O
- ST-13 - Rope Water Sensor
- ST-14 - 5 Input Dry Contact
- ST-15 - Handle Lock Status
- ST-16 - Handle Lock Reader Status
- ST-17 - Virtual Sensor (Switch Type)
- ST-18 - LCD sensor status

Examples of LCD Display program



Sensor 1 - Temperature (°C)



Sensor 2 - Power (Amps)



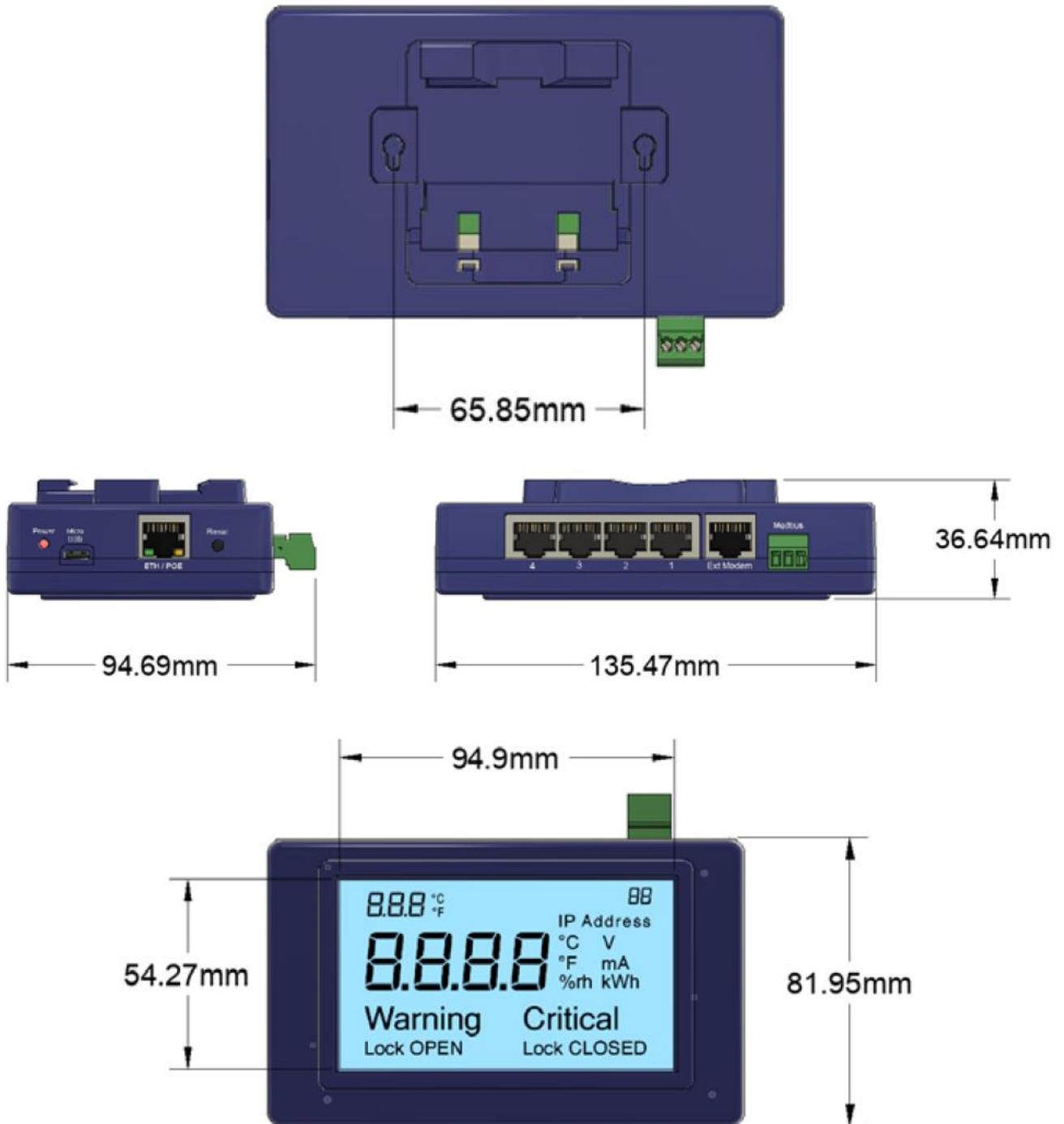
Sensor 3 - Cabinet door lock (sensor type 16)



Sensor 4 - Voltage Sensor (V)

Through the SP2+LCD web interface the LCD display is programmed to display the sensors you wish to view and the sequence in which they are displayed. The above example shows a series of 4 sensors status being displayed.

Technical Drawing (also refer to the SP2+LCD datasheet)





Technical Specifications (also refer to the SP2+LCD datasheet)

Dimension	Size 135 x 81 x 36 mm Weight 0.4 Kg
Network Interface	Standard 10/100 Mbps Full Duplex Ethernet RJ-45 Port
Mounting	0U rack-mountable Built in DIN rail mounting clip Screw hole mounting
Power Requirements	PoE IEEE 802.3af support External 5.5V 3A Power Adapter Input Voltage and Current ratings : 100V~240V - 0.22A
Status Indication	LCD display for sensor values, status and IP address LED indication for Power LED for network connectivity LED for sensor online and threshold status
RJ-45	4 RJ-45 Sensor Ports for connecting AKCP Autosense Sensors Up to 20 Dry Contact Input and Output (0VDC/5VDC)
Components	Manufactured using highly integrated, low power surface mount technology to ensure long term reliability.
Operating Environment	Temperature : Min. -35° C – Max.80° C Humidity: Min. 20% – Max. 80% (Non-Condensing)
MTBF	1,400,000 Hours based on field experience with sensorProbe units.
Inputs	4x RJ-45 Sensor Ports (SP2+) 1x 10/100 Ethernet Port 1x UART external modem port
Outputs	Configurable output signals (0VDC/5VDC) on any of the 4 RJ-45 sensor ports
Max Sensors	Maximum of 400 onlined sensors, including virtual sensors.
Maximum Number of Access Control Users	500 Users 100 Users default
Supported Protocols Requires Pro License	Rsyslog MQTT / MQTTS SNMP V1/2 IPV6 RADIUS TACACS HTTPS Encrypted E-mail
Pro License Features	
5 Dry Contact	5 dry contact input sensor (per port) 1 License equals 1 RJ45 port unlocked
Virtual Private Network (VPN)	VPN - Connect to AKCPPro Server from your base unit through VPN over Ethernet or cellular network.
Virtual Sensor pack	Virtual sensor (pack of 5 sensors). Maximum of 80 virtual sensors. * **
3rd Party PMS & Modbus	3rd Party Modbus / PMS device. Up to 4 modbus devices with 15 sensors.* **
500 Access Control user database : UA	500 users for access control (SP+ series has 100 users as standard)
IPV6	Support for IPV6 network addresses
Radius	Radius user authentication server connection. TACACS authentication to Radius.
Important Notes	* the sensorProbe+ units can only have 60 Modbus RS485 sensors (virtual sensor + modbus devices) ** the sensorProbe+ units can only have 60 Modbus TCP/IP sensors (virtual sensor + modbus devices)



Please contact support@akcp.com if you have any further technical questions or problems.

Thanks for Choosing AKCP!