



**surf**

*LTE Alarm System Communicator*

## **General Installation Guide**

V1.6

Firmware V1.0

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# 1. Overview

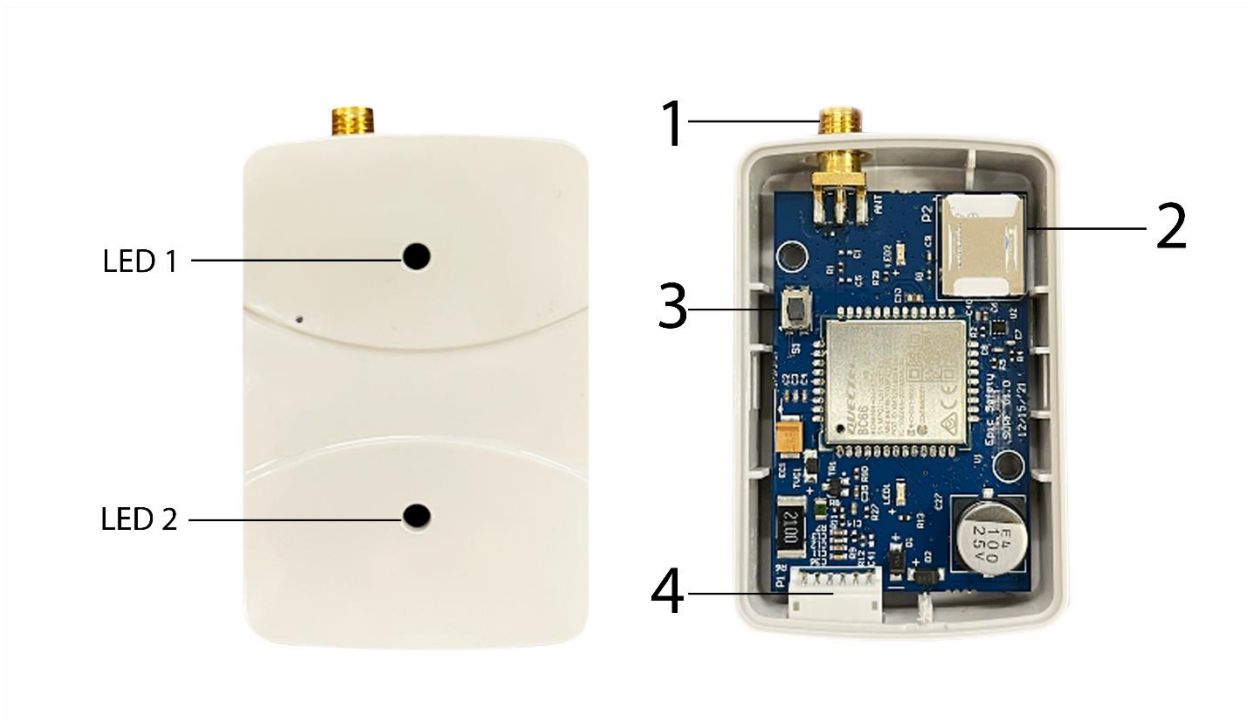
## a. Description

Surf is a primary alarm communicator that uses cellular (LTE) technology. It uses dial capture to monitor any alarm system that uses CID and SIA formats. Surf uses 1 zone and 1 PGM for keyswitch arming and disarming.

## b. In the Box

- surf
- Antenna (75 cm)
- Connector cable
- Quick Start Guide

## c. Parts Identification



1) Antenna connector

2) SIM card

3) Button

4) 6-pin connector

## 2. Introduction

### a. Device & Cloud Features

*Surf:*

- Covers a wide area using low-power cellular technology using **LTE, NB-IoT**.
- Takes over any alarm system whether locked or not.
- Connects to Aryo cloud for remote control and monitoring.
- Provides dial capture monitoring and keyswitch arming/disarming.
- Enables full event reporting to Aryo cloud and Central Monitoring Station (CMS).
- Sends panel and device troubles for remote diagnostics.
- Use one master code (for the main user) and up to 40 user codes to arm and disarm the alarm panel.

*Aryo cloud platform:*

- Provides comprehensive reports and analytics.
- Displays partitions, events, and status on up to 8 partitions or account numbers.
- Enables effortless cancellation of false alarms and dispatch of resources.
- Supports permission-based roles and functions for utmost security.
- Enables end-to-end device & user data encryption for enhanced protection.
- Sends Push, Email & SMS notifications.
- Allows for managing multiple alarm systems within the same app.

### b. Monitoring Options

- **Keyswitch** arming enables Surf to arm and disarm the system.
- **Dial capture** allows Surf to detect and capture **CID** and **SIA** events and monitor any alarm system that uses these two formats. Dial capture monitoring is available to connect the TIP and RING terminals to any panel that can communicate in CID and SIA formats. The signals are captured and sent to Aryo cloud and CMS.

## 3. Pre-Installation Recommendations

- Conduct a placement test to find a suitable location with the best LTE signal.
- Wiring can only be done when both Surf and the alarm panel are powered down.
- DO NOT route any wire over the alarm panel or Surf circuit boards.
- Install and program your alarm panel before connecting it to Surf.
- Use only one device per alarm panel.
- Install and operate Surf within its specified temperature ranges to prevent any possible

damage.

- DO NOT install the unit close to heating source, direct sunlight, or in a damp location.
- DO NOT connect Surf to a phone line. This will damage the device.
- Always connect Surf to an approved power source and battery backup.

#### **a. Antenna**

- Surf uses full-band LTE magnetic antenna. The antenna can be connected to Surf antenna connector as shown in **Section 1.c**.
- Antenna should be placed high in an open area within the building and far from any interference by heating ducts, metal pipes, or electrical wiring and concrete walls.
- DO NOT install the antenna in a metal enclosure.

## **4. Performance Guide**

### **a. Signal Level**

The signal level is reported using RSSI (Received Signal Strength Indicator) method which can be converted to dBm (decibel-milliwatts). The RSSI and corresponding signal strength can be seen in the table below:

<b>RSSI</b>	<b>Signal Level (dBm)</b>	<b>Service Level</b>
99	NA	No service
0 – 2	-113 ~-109	
3 – 13	-108 ~-87	Poor – Device will trigger signal strength trouble event.
14-20	-85 ~-73	Acceptable
21-24	-71 ~-65	Good
26 - 31	-61 ~-51	Excellent

This data is for reference only and may not be applicable for all situations.

### **b. Temperature**

For correct operation, the unit must be in the operating range for temperature level. The different temperature levels and their corresponding interpretations are listed below. The temperature for the unit can be viewed on the cloud.

<b>Surf Temp. (°C)</b>	<b>Interpretation</b>
< -5 °C	Low – Device will trigger low temperature trouble event.
-5 °C to 50 °C	Normal
> 51 °C	High – Device will trigger high temperature trouble event.

### c. Voltage

For proper operation, both alarm panel and Surf should be powered by approved power source within the recommended range. Different voltage levels and corresponding interpretations for the alarm panel are listed below.

Panel Voltage (VDC)	Interpretation
< 9	Low voltage - Device will trigger voltage trouble event.
10.1 – 13	Acceptable
13.1 – 14.5	Good
> 14.5	High voltage - Device will trigger voltage trouble event.

### d. Button Functions

Surf button is used for a few functions according to the table below:

Button Press Time (sec)	Function Name	Function Use	Duration time	LED Indicators
1 sec	Self-Test	To send device information such as signal level, voltage, and temperature to Aryo cloud.	Immediate	Blinks once
5 sec	Signal Level Mode	To select the best mounting location based on the signal level of Surf.  <b>LED Indications</b> <b>RSSI</b> LED 1 Blink                              0 ~ 9 LED 1 On                                    10 ~ 12 LED 2 Blink                                13 ~ 16 LED 2 On                                    >17	30 sec	Slow blinking
10 sec	Reboot Device	If required following the troubleshooting guide in <b>Section 5.b.</b>	Immediately	Fast blinking
15 sec	Reset SSL	When a device is reused for a new client or moved to a new location.	Immediately	Alter blinking

### e.LED Indications

Condition	Status	LED	Color	On	Off	Fast blink	1 blink	2 blinks	3 blinks	On-1 blink	On-2 blinks
Power	DC power on	1	Red	X							
	DC power off	1	Red		X						
	Device not registered	1	Red				X				
	Device troubles	1	Red			X					
	Firmware update in progress	1&2	Red/Green	Alternating. LED 1 is on/off while LED 2 is off/on.							
Cellular Network	Cannot find the cellular network	2	Green			X					
	Poor cellular signal	2	Green				X				
	Medium cellular signal	2	Green					X			
	Good cellular signal	2	Green						X		
Server Network	Connected to server & good signal	2	Green	X							
	Communicating with server	2	Green			X					
	Connected to network & poor cellular signal	2	Green							X	
	Connected to network & medium cellular signal	2	Green								X

### f. Connector Cable Color Code

A connector cable plugs into the 6-pin connector on Surf. The below table describes the color code in the cable.

Cable Color Code	Surf
Red	DC+
Black	DC -
Blue	Zone
Brown	PGM
Yellow	Ring
Green	Tip



**i. Connector Pins Description**

Surf Pin	Alarm Panel Terminal	Connection
Tip	TIP	Surf connects to Tip/Ring interface of any alarm panel that uses CID or SIA formats to capture all generated signals and send them to our Aryo cloud and then monitoring centers.
Ring	RING	
PGM	Keyswitch zone	Surf has 1 PGM to trigger the keyswitch zone of the alarm panel for remote arming / disarming.
Zone (Dry Contact only)	Available PGM <b>Always use a relay</b> when connecting panel PGM that supplies voltage/current to the Surf zone. Otherwise, it will damage the device.	Surf has 1 zone to provide arm/disarm status of alarm panel partition when connected to arm status PGM.
Ground (GND)	Ground	Surf could be powered by an alarm panel auxiliary 9-14 VDC. External auxiliary power source with backup battery can be used if they use a common ground. The device can still operate with a power range of 6 to 20 VDC. Surf monitors panel voltage and generates power trouble when voltage drops below 9 VDC.
Power (PWR)	9-14 VDC	

**ii. Other Hardware Connections**

Antenna connector is for connecting the full frequency LTE antenna.

**5. Trouble Conditions & Troubleshooting**

**a. Trouble Conditions**

**i. Primary Power Failure**

If alarm panel power rises above 14.5V or falls below 9V, Surf will send a trouble event to Aryo cloud server and CMS.

**ii. Network Signal**

If radio signal is poor, Surf will send a trouble event to Aryo cloud server and CMS.

### iii. No Cellular Service

If Surf cannot connect to the cellular tower (RSSI is 0 or 99), Surf will send a trouble event to Aryo cloud server and CMS.

### iv. SIM Card Error

If there is an issue with Sim card detection by Surf, it will send a trouble event to Aryo cloud server and CMS.

### vi. Aryo Communication Failure

If there is any error or failure in device communication with the cloud, Surf will send a trouble event to Aryo cloud server and CMS.

### vii. High/Low Temperature

If temperature goes above 50 degrees Celsius or falls below -5 degrees Celsius, Surf will trigger a trouble event on the host panel and sends the signal to Aryo cloud server and the CMS.

## CID codes for supervisory and troubles

Power	970
Network Signal	971
No Cellular Service	972
SIM Card Error	974
Aryo Communication Failure	976
High Temperature	977
Low Temperature	978

## b.Troubleshooting

Trouble Category	Trouble	Indication	Solution
Primary Power Failure	Panel Voltage below 9V or above 14.5V.	First LED blinks quickly.	Check the output voltage of DC/Auxiliary terminals of the alarm panel.
Network Signal	Poor signal.	1. First LED blinks quickly. 2. Second LED blinks slowly, one at a time.	1. Make sure the antenna is connected properly. 2. Move the antenna or Surf to a place where the LTE signal is well received.

Cellular Network	No connection to the cellular tower (RSSI 0 or 99).	<ol style="list-style-type: none"> <li>1. First LED blinks quickly.</li> <li>2. Second LED blinks quickly.</li> </ol>	<p>Check if the signal level is acceptable. If it is, check the followings:</p> <ol style="list-style-type: none"> <li>1. Check that the SIM card is properly installed in the device.</li> <li>2. Check that the device is properly registered with the cloud server.</li> </ol>
SIM Card Error	No Sim Card Detected.	<ol style="list-style-type: none"> <li>1. First LED blinks quickly.</li> <li>2. Second LED blinks quickly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check that the SIM card is properly installed in Surf.</li> <li>2. Check that the device is properly registered with the cloud server.</li> <li>3. Reboot the device.</li> </ol>
Aryo Communication Failure	No connection to Aryo cloud.	<ol style="list-style-type: none"> <li>1. First LED blinks quickly.</li> <li>2. Second LED blinks quickly.</li> </ol>	<p>If it does not operate normally even after waiting for a while, check the following.</p> <ol style="list-style-type: none"> <li>1. Check that the SIM card is properly installed.</li> <li>2. Check that the device is properly registered in the cloud server.</li> <li>3. Check if the antenna is properly connected.</li> </ol>
High/Low Temperature	Ambient temperature being out of the operating range of Surf.	<ol style="list-style-type: none"> <li>1. First LED blinks quickly.</li> </ol>	<p>Check the ambient temperature, identify the cause of the temperature abnormality, and eliminate the cause.</p>

## 6. Specifications

<b>HARDWARE</b>	<b>Surf</b>
<b>Dimensions</b>	57.5mm*37.5mm*14.75mm
<b>Weight</b>	19 g
<b>Operating temperature</b>	32°F to 120°F (0°C to 48.9°C)
<b>Humidity</b>	86%
<b>Input voltage</b>	9-14 VDC
<b>Operating voltage</b>	6-20 VDC
<b>Average current draw at 13.5V</b>	25 mA
<b>Max current draw at 13.5V</b>	60 mA
<b>Keybus</b>	N
<b>Tip/Ring</b>	Y
<b>Input Zones</b>	1
<b>PGMs</b>	1
<b>Status LEDs</b>	2
<b>Antenna Length</b>	75 cm
<b>Antenna frequency</b>	LTE Full band
<b>Communication</b>	LTE

## 7. Warranty

### a. Product Warranty

Subject to the limitations set forth herein and in Epic's warranty policy document, Epic warrants that the products sold by it to its authorized Dealers shall be free, under normal use and service, from defects in material and workmanship for a period of twelve (12) months from the date of purchase. Epic does not warrant products that do not have a serial number. This warranty shall also be void if there is a failure to maintain the products and the systems in which they operate in proper working conditions. During the warranty period, Epic shall, at its option, repair or replace any defective product upon return of the product, by the Dealer, to Epic, at no charge for labor and materials. This warranty is for the authorized Dealer who originally purchased the product and is not transferrable, not assignable to any party.

Further details are available in Epic's warranty policy document.

## **b. Warranty Disclaimer**

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## **c. Limitations of Liability**

Epic shall not be held liable for indirect, incidental, special, exemplary, punitive, or consequential damages of any kind, including but not limited to loss of profits, data, revenue, production, or use, business interruption, cost of substitute, or replacement equipment, facilities or services, downtime, the claims of third parties (including Users), property damage, or the procurement of substitute goods or services. This applies to any damages arising out of or related to the use of Epic's services, the use or performance of any product, whether based on contracts, tort (including negligence), or any other legal theory, even if Epic has been advised of the possibility of such damages.

Epic shall not be liable for any loss and/or damage to the user's premises and the contents thereof, any injury or death to any person, any failure of the system to function, any error in performance, any inaccuracies or issues in transmission, reception, or handling by the recipient of any alarm signal to react properly, for any reason whatsoever, and such circumstances shall not create any liability for Epic, whether in breach of contract, tort, or otherwise.

Epic's usage of services is not intended to establish obligations under the Health Insurance Portability and Accountability Act of 1996 (HIPAA), and no assurances are provided that the services fulfill HIPAA requirements. If the end User is (or becomes) a Covered Entity or Business Associate under HIPAA, Epic's services cannot be employed for any involvement with Protected Health Information (as defined by HIPAA) without obtaining prior written consent from Epic.

Epic is not an insurer and assumes no responsibility for any damage, loss, or injury resulting from alarm system failures or signal monitoring, and the user must obtain their required insurance coverage. System failures may occur beyond Epic's control, and responses from authorities can be slow or ineffective. The system serves as a deterrent, not a comprehensive protection or substitute for insurance. Payment to Epic covers subscription services, not insurance. Epic's charges are unrelated to User's premises value. In case of loss, the User's reimbursement sources are their resources or insurers.

The total aggregate liability of Epic, its affiliates, and their respective officers, directors, employees, and agents, for damages of any nature, regardless of the form of action, shall not exceed the total amount paid by the authorized parties to Epic in the twelve (12) months preceding the event giving rise to the claim.

#### **d.Repair Under Warranty**

All the warranty claims must be accompanied by a Return Merchandise Authorization (RMA) number which must be obtained before merchandise can be returned for any warranty replacement or repair. To request an RMA number, the customer can contact Epic's Technical Support Center via telephone. The Technical Support Center will provide troubleshooting assistance and if they find the product to be defective, will issue an RMA number. The RMA number must be displayed on the outside packaging of the returned item. Transportation charge, if any, incurred in connection with the return of a defective item to Epic shall be borne by the customer. Any collect shipments returned to Epic will be refused. Epic shall fix the goods without extra costs under the warranty period.

Epic shall pay any transportation charge incurred with the redelivery of a repaired or replacement item or ship the warranty item with customer's next order. If, however, Epic reasonably determines that the item can function, the customer shall pay all the transportation charges. If Epic determines, at its sole discretion, that the allegedly defective item is not covered by the terms of the warranty provided hereunder or that a warranty claim is made after the warranty period, the cost of repair by Epic, including all shipping fees, shall be paid by the customer.

Claim for damaged products or shortages when shipment arrived must be made by the customer immediately. If any goods are damaged on shipment arrival, it must be noted on the

carrier's waybill prior to signing. Failure to note the shortages or damages on the carrier's waybill will result in the claim being denied. Epic will provide free replacement or credit note for the damaged products or product shortage claims.

THE FOREGOING IS CUSTOMER'S AND DISTRIBUTOR'S SOLE AND EXCLUSIVE REMEDY IN THE EVENT OF A WARRANTY CLAIM.