

surf

LTE Alarm System Communicators

Installation Guide

1.Overview

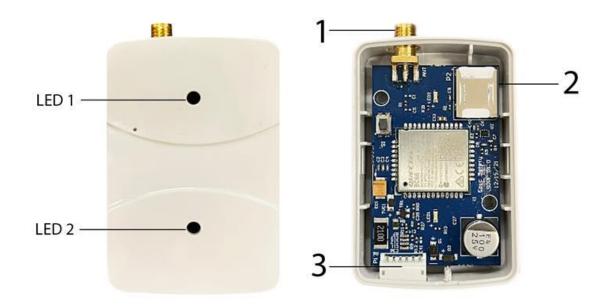
1.1. Description

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

1.2. In the box

- surf
- Quick installation guide
- Antenna (75cm)
- Connector Cable

1.3. Parts Identification



- 1) Antenna connector
- 2) 6-pin connector

2) SIM Card

2. Introduction

2.1. Features

- The use of LTE, NB-IoT by Surf makes it capable of covering a wide area using low power cellular technology.
- **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.
- Surf sends **full event reporting** when connected to Aryo cloud.
- Surf troubles such as power, network, and communication failures are monitored and reported.

2.2. Surf codes

Surf uses one master code (for the main user) and up to 40 user codes to arm and disarm the alarm panel when keyswitch arming is used. If the Surf master code is lost, it can be reprogrammed by the installer.

2.3. Monitoring options

2.3.1. Dial capture - Dial capture monitoring is available to connect the **TIP** and **RNG** terminals to any panel that can communicate in CID and SIA formats. The signals are captured and sent to Aryo cloud and the monitoring center.

3. Pre-Installation Recommendations

- Explore 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.
- 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.

3.1. Antenna

- Surf uses full-band LTE magnetic antenna. The antenna can be connected to Surf antenna connector as shown in section 1.3.
- Antenna should be placed high in an open area within the building and far from any interference, metals, pipes, and concrete.

• DO NOT install the antenna in a metal enclosure.

4. Performance Guide

4.1. 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 bar can be seen in the table below:

RSSI	Signal Level (dBm)	Service Level		
99	NA	No service		
0 - 2	-113 ~-109	No service		
3 - 9	-108 ~-95	Poor – Device will trigger signal strength		
3-9	-100 -93	trouble event.		
10 -14	-93 ~-85	Acceptable		
15 - 19	-83 ~-75	Good		
20 - 31	-73 ~-51	Excellent		

4.2. 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.

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

4.3. 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 - Surf will trigger low voltage trouble event.
10.1 – 13	Acceptable
13.1 – 14.5	Good
> 14.5	High voltage - Surf will trigger high voltage trouble event.

4.4. 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
<5 sec	Self-Test	To send device information such as signal level, voltage, and temperature to Aryo cloud.		Immediate	Blinks once
		To select the best location based on level of Surf.	_		
5 sec	Signal Level Mode	LED Indications LED 1 Blink LED 1 On LED 2 Blink LED 2 On LED 3 Blink LED 3 On LED 4 Blink LED 4 On	RSSI 0 ~ 9 10 ~ 12 13 ~ 16 17 ~ 19 20 ~ 22 23 ~ 25 26 ~ 28 29 ~ 31	30 sec	Slow blinking
10 sec	Reboot Device	If required.		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

4.5. LED indications

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

4.6. Connector Cable Color Code

A connector cable plugs into to 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

4.6.1. Connector Pins Description

Terminal Name	Connections
Tip	Connection to panel phone TIP terminal for detection and capture of CID and SIA events to be sent to Aryo cloud and the monitoring center
Ring	Connection to panel phone RING terminal for detection and capture of CID and SIA events to be sent to Aryo cloud and the monitoring center
PGM	To trigger the keyswitch zone of the panel for arming / disarming.
Zone (Dry Contact only)	To provide arm/disarm status of partition of the panel when connected to arm status PGM

Ground (GND)	Ground
Power (PWR)	12-14 VDC

Other Hardware:

• Antenna connector is for connecting our full frequency LTE antenna.

4.7. Connections description

4.7.1. Power

Surf could be powered by a host control panel auxiliary 12-14 VDC power. External auxiliary power source with back up battery can be used if they use common ground. These devices can still operate with power range of 5 to 20 VDC. Surf always monitors panel voltage and will generate power trouble when voltage drops below 9VDC.

4.7.2. Tip/Ring

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.

4.7.3. Zone

Surf provides 1 zone input used for arm status in keyswitch arming.

4.7.4. PGM

Surf has one PGM output for keyswitch arming.

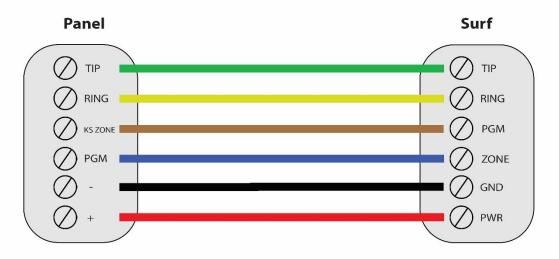
5. Installation & Programming

5.1. DSC Alarm Panels

5.1.1. Dial Capture (Tip/Ring) Monitoring and Keyswitch

For DSC panels that do not support keybus use Tip/Ring and keyswitch to monitor and control your system remotely.

5.1.1.1. Wiring Diagram



*Colours are for demonstration purposes only

5.1.1.2. Programming Instructions

To monitor DSC alarm panels with dial capture, program your system as described below. Instructions in *italics* are for optional remote arming with keyswitch. PGM on Surf can be connected to any zone programmed as keyswitch for remote arming functionality.

5.1.1.2.1. ALEXOR (PC9155)

Section	Description
[015]	Turn option 4 on, and options 7 and 8 off.
[301]	Enter any phone number.
[310]	Enter a system account number.
[350]	Enter 03 for CID reporting or 04 for SIA.
[351]	Turn option 1 on for alarm/restore reporting.
[367]	Turn option 1 on for open/close reporting.
[380]	Turn option 1 on to enable communicator for digital monitoring.
[381]	Options 3 and 7 must be off for automatic SIA and CID reporting.
[001]	Set a zone to 22 for keyswitch arm.
[009]	Set PGM1 to 05 for partition armed status monitoring.

[023]	Turn on option 8 for keyswitch to arm in Away mode.
[501]	Option 3 must be on.

5.1.1.2.2. IMPASSA (SCW9055/9057)

Section	Description
[015]	Turn option 4 on, and options 7 and 8 off.
[301]	Enter any phone number.
[310]	Enter a system account number.
[350]	Enter 03 for CID reporting or 04 for SIA.
[351]	Turn option 1 on for alarm/restore reporting.
[367]	Turn option 1 on for open/close reporting.
[380]	Turn option 1 on to enable communicator for digital monitoring.
[381]	Options 3 and 7 must be off for automatic SIA and CID reporting.
[001]	Set a zone to 22 for keyswitch arm.
[009]	Set PGM1 to 05 for partition armed status monitoring.
[023]	Turn on option 8 for keyswitch to arm in Away mode.
[501]	Option 3 must be on.

5.1.1.2.3. NEO (HS2016/2032/2064/2128)

Section	Description
[015]	Turn option 4 on, and options 7 and 8 off.
[301]	Enter any phone number.
[310]	Enter a system account number (first entry) and an account number for each active partition.
[311]-[318]	Turn on option 1 for each partition alarm/restore (first entry) and open/close (third entry) reporting.
[350]	Enter 03 for CID reporting or 04 for SIA.
[380]	Turn option 1 on to enable communicator for digital monitoring. Option 4 must be off.
[001]	Set a zone to 66 for keyswitch arm on partition 1 (set another for partition 2).
[009]	Set PGM1 to 115 for partition 1 armed status monitoring (set PGM2 for partition 2).

[010]	Option 1 must be on for both 001 (PGM1) and 002 (PGM2) subsections.
[022]	Turn on option 8 for keyswitch to arm in Away mode.

5.1.1.2.4. PC4020 MAXSYS

Section	Description
[0004000000]	Enter any phone number.
[0004000001]	Enter 04 for CID or 05 for SIA format.
[00040003]	Enter a system account number.
[01000100]- [01000800]	Enter an account number for each active partition.
[000401]	Enable "DTMF Dialing", "AutoReport SIA", and "Auto Contact ID" options, and disable "TLM Enabled" option.
[0004000002]	Enable alarm/restore and open/close reporting.
[000700]- [000701]	Set PGM1 to 06 for armed status and assign it to partition 1 (PGM2 for partition 2).
[0100010300]- [0100020300]	Set a zone to 26 for momentary keyswitch arm on partition 1 (set another for partition 2).

5.1.1.2.5. SCW9045/9047

Section	Description
[015]	Turn options 4 on, and options 7 and 8 off.
[301]	Enter any phone number.
[310]	Enter system account number.
[350]	Enter 03 for CID or 04 for SIA.
[351]	Turn option 1 on for alarm/restore reporting.
[367]	Turn option 1 on for open/close reporting.
[380]	Turn option 1 on to enable communicator for digital monitoring.
[381]	Options 3 and 7 must be off for automatic SIA and CID reporting codes.
[001]	Set a zone to 22 for keyswitch arm.
[009]	Set PGM1 to 05 for partition armed status monitoring.
[501]	Option 3 must be on.

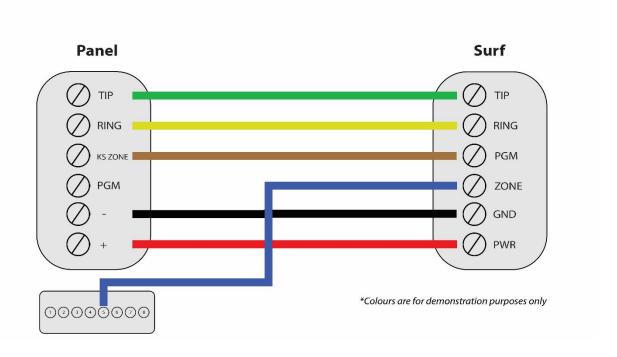
5.2. Honeywell Alarm Panels

5.2.1. Dial Capture (Tip/Ring) Monitoring and Keyswitch

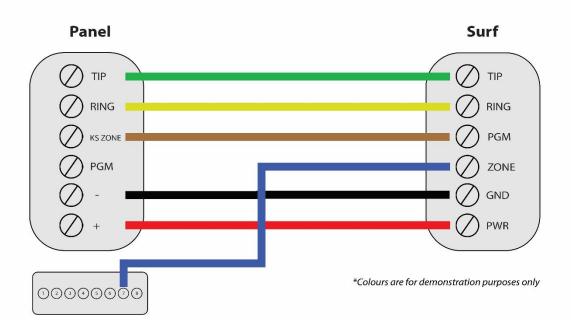
For Honeywell alarm panels that do not support keybus, use Tip/Ring and keyswitch to monitor and control your system remotely.

5.2.2. Wiring Diagram

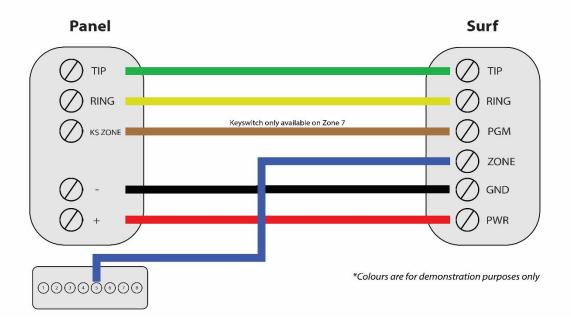
5.2.2.1.1. 10P(SIA)/15P(SIA)/20P(SIA)/21ip/48LA



5.2.2.1.2. Vista 32FB/128FBP



5.2.2.1.3. Vista 50P & 40



5.2.2.2. Programming Instructions

To monitor Honeywell alarm panels with dial capture, program your system as described below. Instructions in *italics* are for optional remote arming with keyswitch. PGM on Surf can be connected to any zone programmed as keyswitch for remote arming functionality.

5.2.2.2.1. Vista 10P(SIA)/15P(SIA)/20P(SIA)/21ip/48LA

Section	Description
*41	Enter any phone number.
*43	Enter an account number for partition 1.
*45	Enter an account number for partition 2 (Vista 20P/21iP/48LA).
*48	Set the report format to 7 for CID.
*65-*66	Enter 1 in each entry to enable open/close report codes for partitions being used.
*70	Enter 1 to enable alarm restore report codes.
*56	Set a zone to 77 for keyswitch arm on partition 1 (set another for partition 2 if available)
*79	Set to 1 (normally low) for OUTPUT 17 & 18 (if required).
*80	Follow the below table for PGM outputs programming.

Keypad Display	Partition 1	Partition 2 (if required)	
Define the first function for each output			
Output funct#*	01	11	
Activated by	2	2	
Zn Type	20 (stay arm)	20 (stay arm)	
Partition	1	2	
Output action	0 (off)	0 (off)	
Output No.	17	18	
Dej	Define the second function for each output		
Output funct#	02	12	
Activated by	2	2	
Zn Type	21 (away arm)	21 (away arm)	
Partition	1	2	
Output action	0 (off)	0 (off)	
Output No.	17	18	
De	fine the third Function for each out	tput	
Output funct#	03	13	
Activated by	2	2	
Zn Type	22 (disarm)	22 (disarm)	
Partition	1	2	
Output action	2 (stay closed)	2 (stay closed)	
Output No.	17	18	

5.2.2.2. Vista 128BP/128SIA

Section	Description
*32	Enter a system account number.
*33	Enter any phone number.
*45	Set the report format to 1 for CID.
#93-REPORT CODE PROG.	Enter to "SYSTEM GROUP 1" menu and set 01 for both open and close reports.
#93-REPORT CODE PROG.	Enter to "SYSTEM GROUP 2" menu and set 01 to enable stay reporting.
*15	Enter 1 to enable keyswitch for partition 1.
*40	Enter 1 to enable open/close reporting for keyswitch.
2*20	Enter 1 to enable J7 triggers for partition 1.
#93-OUTPUT PGM	Define output functions.

5.2.2.3. Vista 32FB/128FBP

Section	Description
*32	Enter a system account number.
*33	Enter any phone number.
*45	Set the report format to 1 for CID.
*79-*80	Enter 1 to enable alarm restore reporting for all zone types.
*85	Enable all panic/duress reporting.
#93	Disable zone 974 in zone programming to disable TLM (Telephone Line Monitoring).
*15	Enter 1 to enable keyswitch for partition 1.
*40	Enter 1 to enable open/close reporting for keyswitch.
2*20	Enter 1 to enable J2 triggers for partition 1.
3*19	Set to 0.
3*20	Set to 0 for keyswitch armed status monitoring through Out 1 (pin 7).

5.2.2.2.4. Vista 50P & 40

Section	Description
*32	Enter a system account number.
*33	Enter any phone number.
*45	Set the report format to 1 for CID.
*79-*80	Enter 1 to enable alarm restore reporting for all zone types.
*81	Enter 1 to for both open and close reports
*15	Enter 1 to enable keyswitch for partition 1.
*40	Enter 1 to enable open/close reporting for keyswitch.
1*46	Set Out 1 function to 1 for keyswitch armed status monitoring.
2*20	Enter 1 to enable J7 triggers.

5.2.3. Dial Capture (Tip/Ring) Monitoring

For Honeywell alarm panels that do not support keyswitch, use Tip/Ring to monitor your system remotely.

5.2.3.1. Wiring Diagram



*Colours are for demonstration purposes only

5.2.3.2. Programming Instructions

To monitor Honeywell alarm panels with dial capture, program your system as described below.

5.2.3.2.1. FA162C

Section	Description
*41	Enter any phone number.
*43	Enter an account number for the panel.
*48	Set the report format to 7 for CID reporting.
*65-66	Enter 1 in each entry to enable open/close reporting.
*70	Enter 1 to enable alarm restore reporting.

5.2.3.2.2. Vista 10/10SE/VIA30 & FA147C/148C

Section	Description
*41	Enter any phone number.
*43	Enter an account number for the panel.
*46	Set the report format to 07 for CID reporting.
*65-66	Enter 1 in each entry to enable open/close reporting.

*70 Enter 1 to enable alarm restore reporting.	*70	Enter 1 to enable alarm restore reporting.
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5.2.3.2.3. Vista 15/15SE

Section	Description
*41	Enter any phone number.
*43	Enter an account number for the panel.
*46	Set the report format to 07 for CID reporting.
*65-66	Enter 1 in each entry to enable open/close reporting.
*70	Enter 1 to enable alarm restore reporting.
*92	Set to 0 to disable TLM.

5.2.3.2.4. LYNX 5100/5210

Section	Description			
Reporter –				
Primary CS	Sat to CID 4 digit or CIA			
Info – Phone	Set to CID 4 digit or SIA.			
type				
Reporter –				
Primary CS	Enter any phone number.			
Info – Phone				
Number				
Reporter –				
Primary CS				
Info –	Enter an account number for the panel.			
Account				
Number				
Reporter –				
Primary CS	Enable alarm reporting.			
Info – Report				
Alarms				
Reporter –				
Primary CS	Enable open/clase reporting			
Info – Report	Enable open/close reporting.			
Open/Close				
Reporter –				
Report	Enable open/close and alarm/restore reporting.			
Selection				

6. Trouble Conditions

6.1 Primary Power Failure

If panel power fails below 9V, SURF will trigger a trouble event on the host panel and sends the signal to our cloud server and CMS.

6.2 Network Signal

If radio signal falls below 9, Surf will trigger a trouble event on the host panel and sends the signal to our cloud server and CMS.

6.3 No Cellular Service

If Surf cannot connect to the cellular tower (RSSI is 0 or 99), Surf will trigger a trouble event on the host panel and sends the signal to our cloud server and CMS.

6.4 Tip & Ring Communication Status

During normal operation, if Tip & Ring signal is not detected, Surf will trigger a trouble event on the host panel and sends the signal to our cloud server and CMS.

6.5 SIM Card Error

If there is a SIM Card Error, Surf will trigger a trouble event on the host panel and sends the signal to our cloud server and CMS.

6.6 Aryo Communication Failure

If there is any error or failure in our communication with our cloud, Surf will trigger a trouble event on the host panel and sends the signal to our cloud server and CMS.

6.7 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 our cloud server and CMS.

CID codes for supervisory and troubles

Power	970
Network Signal	971
No Cellular Service	972
DTMF communication error	973
SIM Card Error	974
Aryo Communication Failure	976
High Temperature	977
Low Temperature	978

7. Specifications

HARDWARE	Surf			
Dimensions	57.5mm*37.5mm*14.75mm			
Weight	19			
Operating temperature	32°F to 120°F (0°C to 48.9°C)			
Humidity	86%			
Input voltage	9-14 VDC			
Operating voltage	5-20 VDC			
Average current draw at	25 mA			
13.5V				
Max current draw at 13.5V	60 mA			
Operating Power	5-20 VDC			
Keybus	N			
Tip/Ring	Υ			
Input Zones	1			
PGMs	1			
Status LEDs	2			
Antenna Length	75 cm			
Antenna frequency	LTE Full band			
Communication	LTE			
Certification	PTCRB, FCC, IC			

8. 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 packing 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 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.

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10. Product Warranty

Subject to the limitations set forth herein, Epic Safety Inc. (Epic) warrants that the Products sold by it to its authorized Distributors shall be free, under normal use and service, from defects in material and workmanship for a period of twelve months (12) months from the date of purchase. The Products manufactured and sold by Epic are date stamped at the time of production. Epic does not warrant Products that do not have a serial number and a manufacturing date. This warranty shall be void if a Product is altered, serviced or repaired by anyone other than Epic or its authorized Distributors. 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 periods, Epic shall, at its option, repair or replace any defective product upon return of the product to its factory, at no charge for labor and materials. Any replacement and/or repaired parts are warranted for the remainder of the original warranty

or ninety (90) days, whichever is longer. The original purchaser must promptly notify Epic that there is a defect, in material or workmanship, such written notice to be received in all events prior to expiration of the warranty period. The Customer assumes all responsibility for the proper selection, installation, operation and maintenance of any products purchased from Epic. Custom products are only warranted to the extent that they do not function upon delivery. In such cases, Epic can repair, replace or credit as its option.

This warranty is for the original owner only and is therefore non-transferable, non-assignable and is voided when the Warranted Product is transferred to another party.

This warranty gives you specific legal rights and is only valid in the United States and Canada. You may also have other rights which vary from state to state or province to province. EPIC MAKES NO FURTHER WARRANTIES, AND DISCLAIMS ANY AND ALL OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THE PRODUCTS, TRADEMARKS, PROGRAMS AND SERVICES RENDERED BY EPIC INCLUDING WITHOUT LIMITATION, INFRINGEMENT, TITLE, MERCHANTABILITY, OR FITNESS FOR ANY PARTICULAR PURPOSE. EPIC SHALL NOT BE LIABLE FOR ANY PERSONAL INJURY OR DEATH WHICH MAY ARISE IN THE COURSE OF, OR AS A RESULT OF, PERSONAL, COMMERCIAL OR INDUSTRIAL USES OF ITS PRODUCTS.

No increase or alteration, written or verbal, of the obligation of this warranty is authorized. Epic does not represent that its products will prevent any loss by fire or otherwise.

11. Limitation of Warranty

This limited warranty applies only to the original purchases of the Warranted Products from a Distributor or a Reseller; this warranty will not extend to any person that acquires a Warranted Product on a used basis. Epic shall replace or repair, at its sole discretion, each product returned by its authorized Distributor and acknowledged by Epic to be defective, provided that such product shall have been returned to Epic with all charges prepaid and the authorized Distributor has followed Epic's Return Policy. The replacement product shall come from Epic's stock and may be new or refurbished.

This limited warranty does not cover any defects, damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use, tampering or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, use not in accordance with the Warranted Product documentation, fire, improper packing, shipping and handling, (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product.

Without limiting any other exclusion herein, Epic does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.