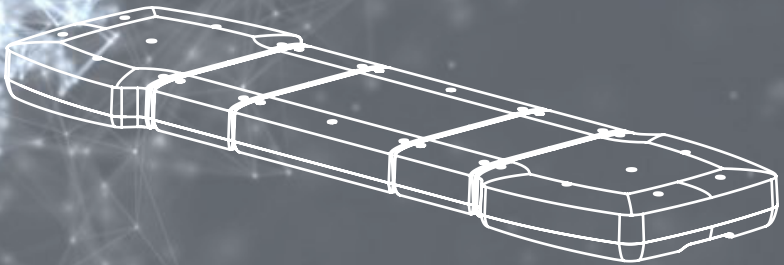


Installation manual 25 series™ lightbar



Warnings & Guidance

IMPORTANT! Read all instructions before installing and using. Installer: This manual must be delivered to the end user.



WARNING!

Failure to install or use this product according to manufacturers recommendations may result in property damage, serious injury, and/or death to those you are seeking to protect!



Do not install and/or operate this safety product unless you have read and understand the safety information contained in this manual.

1. Proper installation combined with operator training in the use, care, and maintenance of emergency warning devices are essential to ensure the safety of you and those you are seeking to protect.
2. Exercise caution when working with live electrical connections.
3. This product must be properly grounded. Inadequate grounding and/or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or severe vehicle damage, including fire.
4. Proper placement and installation are vital to the performance of this warning device. Install this product so that output performance of the system is maximised and the controls are placed within convenient reach of the operator so that they can operate the system without losing eye contact with the roadway.
5. Do not install this product or route any wires in the deployment area of an air bag. Equipment mounted or located in an air bag deployment area may reduce the effectiveness of the air bag or become a projectile that could cause serious personal injury or death. Refer to the vehicle owner's manual for the air bag deployment area. It is the responsibility of the user/operator to determine a suitable mounting location ensuring the safety of all passengers inside the vehicle particularly avoiding areas of potential head impact.
6. It is the responsibility of the vehicle operator to ensure during use that all features of this product work correctly. In use, the vehicle operator should ensure the projection of the warning signal is not blocked by vehicle components (i.e., open trunks or compartment doors), people, vehicles or other obstructions.
7. The use of this or any other warning device does not ensure all drivers can or will observe or react to a warning signal. Never take the right-of-way for granted. It is your responsibility to be sure you can proceed safely before entering an intersection, driving against traffic, responding at a high speed, or walking on or around traffic lanes.
8. This equipment is intended for use by authorised personnel only. The user is responsible for understanding and obeying all laws regarding warning signal devices. Therefore, the user should check all applicable city, state, and federal laws and regulations. The manufacturer assumes no liability for any loss resulting from the use of this warning device.

Important! This unit is a safety device and it must be connected to its own separate, fused power point to assure its continued operation should any other electrical accessory fail.

Product Overview



The 25 Series (Pursuit™) Lightbar is a versatile and powerful, high output warning device suitable for a range of vehicle types and duties. There are numerous options and lengths available. The lightbar can either be mounted permanently to the vehicle or mounted using the vehicle roof gutters. It also utilises a plug-in wiring harness and access hole to allow easy removal of the lightbar without uninstalling the wiring harness.

The unique shape of the 25 Series Lightbar ensures a sleek, low profile body hugging fit for many vehicle applications. In addition to the long, maintenance free service life and low current draw benefits of LED technology, the dual deck 25 Series also supports additional auxiliary lighting options. Featuring an aluminium base and clear, weatherproof, polycarbonate housing along with encapsulated electronic control modules, the lightbar is strong, durable and protected against the environment.

Specifications

Supply Voltage	V_S	10 – 30VDC
Standby Current	I_Q	14mA
Output Current	P_{AV}	Refer to lightbar drawing.
Operating Power	I_{SC}	Available on request
Operating Temperature	Top	-20C / +65C

Product Certifications

European EMC Regulation	ECE-R10
European EMC Regulation	CISPR-25
Australian Media and Communications Authority	RCM Approved
Ingress Protection	IP66
Light Output	SAE J845 Class 1, SAE J595 Class 1, SAE J2498 when configured.

Mounting

Before installation, examine the equipment for transit damage. Do not use damaged or broken parts.

Caution: When drilling into any vehicle surface, make sure the area is free from any electrical wires, fuel lines, vehicle upholstery, etc. that could be damaged

Before proceeding with installation, plan all wiring and cable routing. Select the mounting location for the light bar on a flat, smooth surface and centre the unit across the width of the vehicle. The mounting location for the light bar should be chosen such that the light bar is level and visibility to approaching traffic is optimised. Mounting should be such that there is no less than 12mm ($\frac{1}{2}$ ") clearance between the roof and the lightbar at any point.

Different mounting solutions are available to suit a wide variety of installations - for fitment please see the instructions included with individual mounting kits.

Component Features

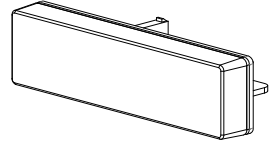
LED Modules

There are different types of mounting brackets to suit different locations in the lightbar.

LED modules are not user serviceable.

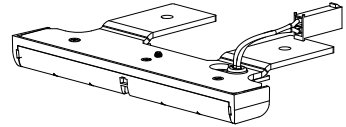
Upper Deck Modules

Designed for an uncompromised warning signal, the upper level LED modules combine maximum emitting surface area with a very high output LED optical system to produce an effective output at all angles around the vehicle. These multi-voltage units operate from 10V to 30V using 100% solid-state electronics and LEDs rated to 100,000 hours of operation.



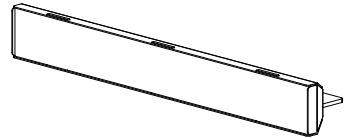
Lower Level LED Modules

Developed primarily to provide practical illumination over a broad area around the vehicle, the lower level cool-white LED modules pack high output into a very slimline optic. Options range from individual alley or takedown lights up to full 360° scene coverage, without impacting on upper level lightbar lens or LED colour requirements. They can also be configured to flash in conjunction with the upper level warning patterns. In amber version, the lower level can be configured as a traffic advisor.



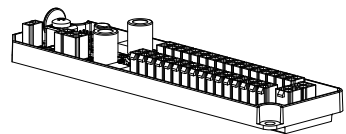
Sign Light Module

Mounted inside the lightbar and fully protected from weathering, the LED sign light is an enclosed module carefully specified to provide homogenous backlighting of the sign area while minimising stray light. The overlaid text is available in plain white text with black, blue or amber background, or coloured text with white background. Signs are also available in mirrored text.



Lightbar Controller

The Lightbar Controller can control up to 32 separate light heads, each of which can be configured to perform any supported lightbar function. Multiple controllers can work together in a lightbar to provide virtually unlimited lighting outputs. Operating on the C3 DNA Network, the Controller is also able to provide power and data to the M5 Message Display and other compatible devices while requiring only a compact 4-wire harness out of the lightbar, regardless of the number of functions. Lightbar chassis temperatures and ambient lighting levels are monitored by the Controller in order to maximise lighting output in a safe and controlled manner, over a wide range of environmental conditions throughout the life of the product.



WARNING – Lightbar Controller outputs are only compatible with Pursuit LED Modules. Warranty will be void if unsupported products are connected to the Controller.

Component Features

Solar Charger System

The solar charger helps keep the vehicle battery fully charged and ready for action. The system is extremely durable, with the PV cells completely integrated and sealed inside the lightbar. The charger module, which mounts near the vehicle battery, is designed for the harsh engine-bay environment. It is fully sealed in epoxy resin and enclosed in a robust aluminium case. The charger is fully protected from reverse polarity and ISO 7637-2 voltage transients. It supports from 5 to 20 watts of PV modules and protects against overcharging.

Note – the solar charger system is compatible with 12V vehicles only. Refer to Solar Charger installation manual for further details, including wiring.

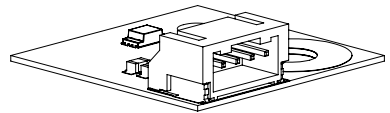
Temperature Foldback

The 25 Series lightbar is a high output, rugged lightbar suitable for many environments. However, in extreme temperatures the electronics can be adversely affected, reducing the life expectancy of the components. Each lightbar is fitted with temperature sensing to automatically reduce the current supplied to each module in the event of extreme heat. Once the modules have cooled to predetermined levels the lightbar returns to full duty.

Auto Dimming (where configured)

Due to the high level warning signal output of the 25 Series lightbar, the lightbar is capable of automatically dimming the warning functions. Onboard ambient light sensors detect the level of daylight present, and can dim the warning functions to a predetermined output. This reduces the chance of dazzling other road users, creating a safer working environment at night. If auto dimming has been configured for your lightbar from the manufacturer it will be noted on the light bar drawing supplied with your lightbar.

Note: Auto dimming can not be used in conjunction with hard-wired input (Park light) dimming.



Wiring

The Pursuit lightbar may have been configured for basic operation with a junction box, or else configured as part of a more complex C3-DNA network. Before attempting to connect the lightbar wiring harness, please refer to the C3-DNA Toolbox software connection tables provided with the product in addition to the generic wiring diagram provided in this installation manual.

Notes:











1. Larger wires and tight connections will provide longer service life for components. For high current wires it is highly recommended that terminal blocks or soldered connections be used with shrink tubing to protect the connections. Do not use insulation displacement connectors (e.g., 3M Scotchlock type connectors).
2. Route wiring using grommets and sealant when passing through compartment walls. Minimise the number of splices to reduce voltage drop. High ambient temperature (e.g., under-bonnet) will significantly reduce the current carrying capacity of wires, fuses and circuit breakers. All wiring should conform to the minimum wire size and other recommendations of the wire manufacturer and be protected from moving parts and hot surfaces. Looms, grommets, cable ties, and similar installation hardware should be used to anchor and protect all wiring.
3. Fuses or circuit breakers should be located as close to the power takeoff points as possible and properly sized to protect the wiring and devices.
4. Particular attention should be paid to the location and method of making electrical connections and splices to protect these points from corrosion and loss of conductivity.
5. Ground termination should only be made to substantial chassis components, preferably directly to the vehicle battery.
6. Circuit breakers are very sensitive to high temperatures and may "false trip" when mounted in hot environments or operated close to their capacity.

Wiring Harness Removal

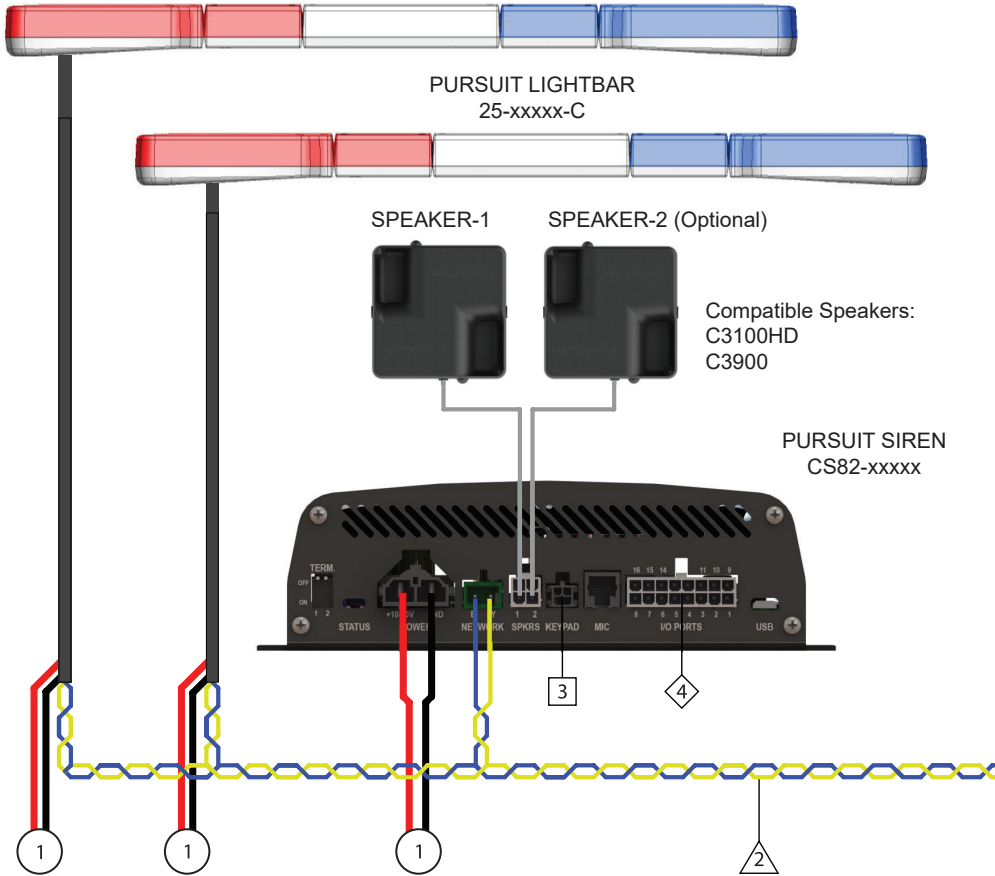
The 25 Series lightbar has been designed with a unique cable access hole enabling the lightbar to be removed without uninstalling the wiring harness.

1. Remove power to the lightbar/junction box.
2. Remove upper lens set as described in "Lens removal and Installation" – in the Options and maintenance section of this manual.
3. Undo the cable gland from the plastic housing.
4. Unplug the CAN data connector from the LED controller.
5. Using a No.2 point Phillips screwdriver, remove the screw grounding the external harness to the chassis, and the positive feed to the LED controller.
6. Unplug and remove harness.
7. When reconnecting the lightbar, connect the wiring harnesses and cable gland as originally installed.

Key to Wire reference

Function	Colour	Description
Power		Refer to wiring instructions
Ground		Refer to wiring instructions
CAN-H		Refer to wiring instructions
CAN-L		Refer to wiring instructions
N/C		No function - do not connect. Reserved for alternative functions.
±Input		Configurable input that can detect either connection to GND or connection to +ve voltage range 10-30V
+Input		Input that can only detect connection to +ve voltage range 10-30V.
±In/Out		Multi-function pin: Configurable input that can detect either connection to GND or connection to +ve voltage range 10-30V. Configurable positive switched output - refer to wiring section for hardware limitations.
+In/Out		Multi-function pin: Configurable input that can detect either connection to +ve voltage range 10-30V. Configurable positive switched output - refer to wiring section for hardware limitations.
Output		Positive switched output - refer to wiring section for hardware limitations.

GENERIC WIRING DIAGRAM



NOTES



① Each product must be wired and appropriately fused as close to the battery terminal or power distribution point as possible.



② Network Data Cable Requirements:
Twisted Pair, 30mm Pitch (see C3-DNA wiring section).



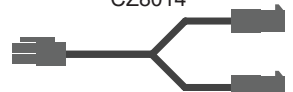
③ Controller Port: Provides regulated power and data for C3-DNA controllers. Up to 3 controllers can be driven from each port. For use with controllers, Y-adaptors and extension cables.



④ I/O Connections:
Refer to C3-DNA Toolbox connection table for more detail.

ACCESSORIES

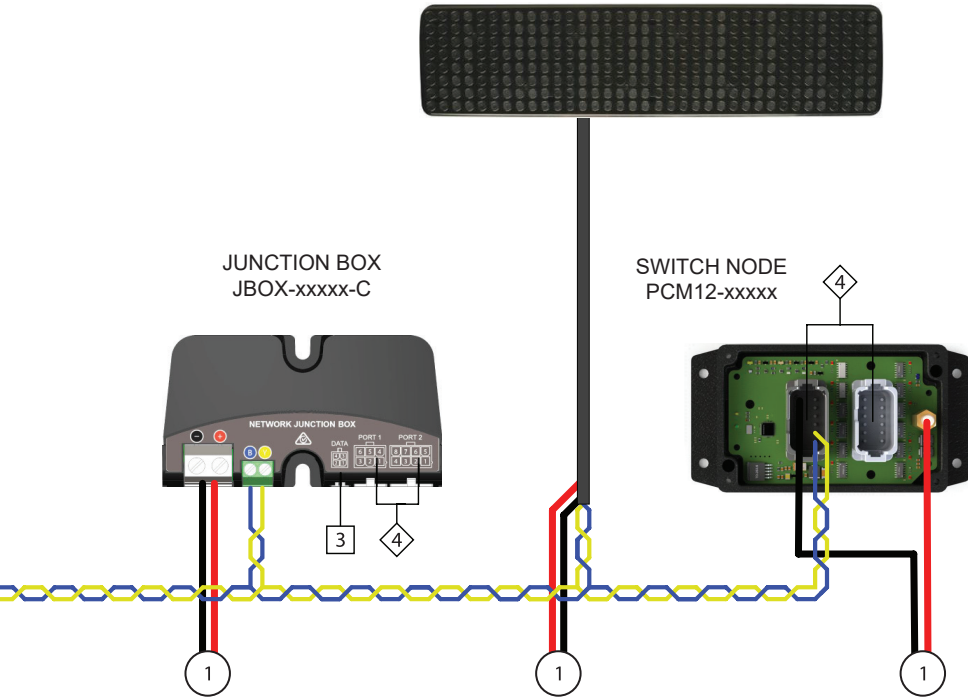
Y-SPLITTER
CZ8014



EXTENSION CABLES
CR8007 - 2.5m
CR8021 - 6.0m



MESSAGE DISPLAY
CD0012x (INCLUDES MESSAGE CONTROLLER)



CONTROLLER EXAMPLES



SLIC
STANDARD
CONTROLLER



MTC
MESSAGE DISPLAY
TOUCHSCREEN



CR9B
ROTARY KNOB
CONTROLLER



CM9B
INTEGRATED
MICROPHONE

Other controllers may be available - refer to the website for more details.

C3-DNA General Wiring Information

The Code 3 Distributed Network Architecture uses a proprietary communication protocol operating over the highly reliable and industry standard CAN bus physical layer.

For correct and reliable operation, “twisted-pair” data wires must be used to connect between each of the C3-DNA devices on a vehicle. C3-DNA uses a yellow wire for CAN-H and a blue wire for CAN-L. These wires are typically 0.25mm² with a nominal 30mm twist-pitch.

Often the data wires are integrated into product power cables. This is the case for all C3-DNA compatible Lightbars, Message-Displays and Keypads. For long data-only runs without power (the length of a firetruck for example) it is often convenient to use the yellow and blue twisted-pair in the standard keypad extension cables, leaving the red and black power wires unconnected.

CAN bus wiring is ideally a linear “bus” or “back-bone” arrangement, with devices on short “stubs” along the length and with termination at each end. However, due to the nature of Emergency Vehicles and the location of warning devices, this ideal topology is often hard to achieve in practice. Because of this, C3-DNA has been designed to allow for somewhat more flexible wiring and termination arrangements. When installing a C3-DNA system, there is generally no need to be concerned about termination and bus-topology, so long as there are at least one or two devices that include termination components, and twisted-pair data wires are used.

CAN termination and biasing is provided by the JBox and the Siren. A C3-DNA system must contain at least one of these devices, unless the system consists of a single device only (e.g. a Switch Node performing stand-alone battery management functions), or unless discrete termination resistors are added to the system. Contact the factory for more information about these special cases.

C3-DNA Configuration Software


C3-DNA devices and systems can be configured using the code 3 DNA System Configuration Toolbox software. For more information, including download links, please scan the QR code for access:



Glossary of Terms

Name	Description
Level-#	System warning level. 1 = lowest level.
ALERT	Legacy term. Activates Lights and Sirens
PRI	Legacy term. Primary warning level - highest level of warning light function.
SEC	Legacy term. Secondary warning level - for lower level of warning lights.
White Flash	Activates white flash steady output. Normally deactivated at night.
White Cut	Masks white flashing warning modules. Normally enabled at night.
Alley Left	Steady white light illumination - LHS of vehicle.
Alley Right	Steady white light illumination - RHS of vehicle.
Takedown	Steady white light illumination - FRONT of vehicle.
Worklight	Steady white light illumination - REAR of vehicle.
Sign Light	Illuminated sign light option on lightbars.
LF-Enable	Enables the operation of siren low-frequency tones, where configured. Low frequency tones are normally only activated for a timed burst of 8 seconds for enhanced an intersection warning signal.
Test Volume	Once enabled, reduces the siren volume by 45dB for safe workshop operation and testing.
Parklight	Vehicle parklight circuit. Dims the lightbar output at night.
Ignition (IGN)	Vehicle ignition circuit.
Accessories	Vehicle accessory circuit.
MDT	Required for Mobile Data Terminal. Output/s active when lights, siren or both are active (as configured).
EM BLUE	Emergency warning lights - blue. Normally connected to discrete directional modules.
EM RED	Emergency warning lights - red. Normally connected to discrete directional modules.
DNC	Do Not Connect
Reserved	Do Not Connect
C3DNA-	C3-DNA CAN port, low.
C3DNA+	C3-DNA CAN port, high.
C2L	Auxiliary CAN port, low. Do not connect to C3DNA+ or C3DNA-.
C2H	Auxiliary CAN port, high. Do not connect to C3DNA+ or C3DNA-.
Input L	Input pin - active low (GND).
Input H	Input pin - active high (12V / 24V).
Output H	Output pin - high.
Radio In	For the radio rebroadcast function
Horn: 1T	Single Tap.
Horn: 2T	Double Tap.
Horn: H	Hold.
Momentary switch	Operates only while pressed.
Latching switch	Switched on by the user, remains on until switched off again
Momentary input	Triggers function only while input is active.
Latching input	Triggers function with either the rising edge or falling edge of an input.

Replacement Parts

 **CAUTION!** Always use approved Pursuit replacement modules and hardware.

Description	Part No.
Lenses	
Upper End Lens	CR2501x
Upper Mid Short Lens	CR2502x
Upper Mid Long Lens	CR2503x
Lower End Lens (clear only)	CR2504C
Lower Mid Short Lens (clear only)	CR2505C
Lower Mid Long Lens (clear only)	CR2506C
<i>x: A-Amber, C-Clear, B-Blue, R-Red</i>	
Inner Panels	
End Inner Panel	CR2518
Short Inner Panel	CR2519
Long Inner Panel	CR2520
LED modules	
Upper LED module - SAE dispersion (<i>x: A-Amber, B-Blue, R-Red, G-Green & W-White + Dual Colour RB-Red/Blue, RA-Red/Amber & BA-Blue/Amber</i>)	CR2507X
Lower Mid LED module - Single Channel (<i>x: A-Amber</i>)	CR2508X
End Module Assemblies - <i>please contact the manufacturer for part numbers</i>	
Control Boards	
M5-LED32 controller	CR2512
Solar Panels	
Solar Panel - individual	CR2515
Solar Distribution board	CR2516
Solar Charger	CR2517
Screws	
Lens screw (M5 x 30mm socket cap)	CR2513
Internal screw (M5 x 10mm Phillips head)	CR2514
Harnesses	
4-Core External Harness	CR2510
6-Core External Harness - Solar Compatible	CR2511

Maintenance

Occasional cleaning of the lenses will ensure optimum light output. Take care when cleaning lenses – although tough, polycarbonate scratches easily. Clean the lens and base with soap and water or a lens polish using a soft cloth. Do not use solvents as they may damage the polycarbonate. Do not subject the light bar to high pressure washers or automatic car washers.

Lens Removal and Installation

1. Identify the lens(es) to be removed - not all lenses need to be removed to access the internal components.
2. Undo the retaining screws from the lens(es) of the lightbar - the screws can be left captive in the lens.
3. Carefully lift the lens off the seal – choose a suitable location to temporarily store the lens so as to not scratch the surface.
4. When reinstalling, gently apply pressure around the upper lens taking care not to damage the seal around the lower lens set. Retorque the retaining screws to 2.0 N-M (18 IN-LB).

Care must be taken when reinstalling the upper lens to ensure that it has seated correctly into the channel in the lower lens. A continuous dark line should be visible at the join areas once installed.

TROUBLESHOOTING

All products are thoroughly tested prior to shipment. However, should you encounter a problem during installation or during the life of the product, follow the guide below for troubleshooting and repair information. If the problem cannot be rectified using the solutions given below, additional information may be obtained from the manufacturer – contact details are at the end of this document.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Does not function	Poor power or ground connection	Check power and ground connections.
	Blown fuse	Check wiring, replace fuse
One LED head does not flash, but corresponding indicator LED on control module does flash.	Open circuit wiring from control module to LED head	Connect a known-good LED head to the problem output to ensure the control module is working correctly. Repair or replace
	Poor ground connection at LED head	Tighten or replace mounting screw.
	Failed LED head	Replace LED head
One LED head does not flash, and corresponding indicator LED on control module does not flash when appropriate pattern selected.	C3-DNA configuration issue	Contact customer service
	Failed control module	Replace control module
Incorrect flash patterns	C3-DNA configuration issue	Contact customer service

Warranty

Manufacturer Limited Warranty and Limitation of Liability:

Manufacturer warrants that on the date of purchase, this product will conform to Manufacturer's specifications for this product (which are available from the Manufacturer upon request). This Limited Warranty extends for sixty (60) months from the date of purchase.

DAMAGE TO PARTS OR PRODUCTS RESULTING FROM TAMPERING, ACCIDENT, ABUSE, MISUSE, NEGLIGENCE, UNAPPROVED MODIFICATIONS, FIRE OR OTHER HAZARD; IMPROPER INSTALLATION OR OPERATION; OR NOT BEING MAINTAINED IN ACCORDANCE WITH THE MAINTENANCE PROCEDURES SET FORTH IN MANUFACTURER'S INSTALLATION AND OPERATING INSTRUCTIONS VOIDS THIS LIMITED WARRANTY.

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This Limited Warranty defines specific legal rights. You may have other legal rights which vary from jurisdiction to jurisdiction. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages.

Notes

Notes

Notes



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DISTRIBUTED NETWORK ARCHITECTURE

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