CATTRON™

Safe-D-Stop™

User Manual

9M02-9006-A001-EN

CONNECT. CONTROL. PROTECT.

Revision History

VERSION	DATE	NOTES
1.0	Aug 25th 2020	Initial Release per ECO-20-0193
2.0	2/20/21	Removed Cattronlink Section and added De-Linking ECO-20-0310

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Contents

1. Introduction

This manual includes general information concerning the operation of the Cattron Safe-D-Stop™ Operator Control Units (OCU).

For information pertaining to the matching Machine Control Unit (MCU), please refer to the separate MCU user manual.

1.1 Terminology

The following represents important acronyms and long form names used in this document:

- OCU – Operator Control Unit, historically referred to as a *transmitter*
- MCU – Machine Control Unit, historically referred to as a *receiver*

2. Warnings and Cautions

2.1 Warnings

WARNING statements have been strategically placed throughout all text prior to operating or maintenance procedures, practices, or conditions considered essential to the protection of personnel or equipment and property. A WARNING applies each time the related step is repeated. Before starting any task, the WARNINGS included in the text for the task should be reviewed and understood.

WARNINGS appearing in this manual follow the general format below.

	**WARNING**
	Description of warning Possible consequence of non-compliance

2.2 General Safety Information

- Persons under the influence of drugs, alcohol and/or other medicine that impairs reaction may not assemble, disassemble, install, put into operation, repair or operate the product.
- All conversions and modifications of an installation or system must conform to the relevant safety requirements.
- Only qualified, trained, authorized personnel may perform work on the equipment, in accordance with the relevant safety requirements.
- In the event of malfunction and/or visible defects or irregularities, the product must be stopped, switched off, and the relevant master switches also switched off.

	**WARNING** Observe the statutory regulations and directives applicable for the intended purpose, e.g.: • Accident prevention regulations • Safety rules and directives • Standards • Generally applicable statutory and other binding regulations for accident prevention and environmental protection, and general safety and health requirements.

- Ensure that users have access to the user manual.
- The personnel assigned to work on/with the product must have read and understood this operating manual and the safety instructions.
- The safety instructions must, if necessary, be supplemented by the user with instructions concerning the work organization, work sequences, qualified personnel, etc.
- All repairs made during the warranty period must be carried out by the manufacturer or appointed authorized service center; failure to comply will invalidate the warranty.
- All repairs made should be carried out in a suitably clean static-safe environment, free from contaminants such as metal filings, water, oil, etc.
- It is the user's responsibility to ensure that the product always operates in good condition and that all applicable safety requirements and regulations are observed.
- Product modifications may not be carried out without the consent of the manufacturer.
- Original spare parts from the manufacturer must be used.
- Carry out periodic inspections and/or maintenance either required by law or prescribed in the user manual within the required intervals.

2.3 Operation of OCUs and MCUs with Identical System Address

To ensure safe operation, OCUs and MCUs are paired by way of a system address.

This system address is unique and only assigned once by Cattron.

	**CAUTION** Conflict of Addresses: Addresses are never repeated and are System Unique. The user must ensure that the system address and addressing mode is used as designed. The system address is marked on the OCU and MCU and must match. In the event of a breach of this undertaking, the user is liable for any resulting damage/loss and shall indemnify the manufacturer against all third-party liability claims.

3. Benefits of Safe-D-Stop

A Safe-D-Stop system enables a user to have constant and immediate access to a Machine Stop switch regardless of their location relative to a machine, thereby making it possible to bring a machine to a stop almost instantly and without having to locate, move to and activate a hard wired stop switch. Safe-D-Stop also integrates two single-speed, reversing, PLd control functions.

4. Remote Control Safety

4.1 Radio Transmission and Security

The transmission between the OCU and MCU is performed by means of a secure RF telegram. Regarding the actual radio frequency that is used it typically depends on the national regulations and the choice of a licensed or license exempt frequency band.

A specific RF frequency band and channel may have been selected prior to delivery of the system, depending on the frequency band, a specific number of RF channels will be available within that band. In all cases a clear unused (unless timesharing with another Cattron system) channel will be required for reliable operation.

The OCU and MCU must operate on the same RF channel in order to be able to communicate.

4.1.1 Continuous Transmission

Normally transmission is continuous and the MCU uses this as part of the information required to maintain the Main Contactor control relays in an active closed state. If the MCU does not receive a valid telegram in this mode for a defined period of time, it automatically turns off, i.e. main contactor control relays and command relays open and the machine will be brought to a halt.

4.1.2 Radio Interference

Signals from other RF-emitting sources might interfere with the radio communication between the OCU and MCU. If the radio link is affected by these sources, it may cause intermittent operation and a changing the RF channel might be necessary.

4.2 Telegram Security

The transmitted telegram contains several security features, as follows:

4.2.1 System Address

This system uses a 24-bit addressing scheme, normally comprising a 16 bit master-address and an 8 bit sub-address extension, where each OCU/MCU pair shares a common, unique overall address. This address is contained in every telegram sent by the OCU and is checked by the MCU every time an RF signal is received. The MCU processes a command only when the address in the telegram matches its own defined address. This is a safety measure to ensure that the MCU will act only upon its assigned OCU.

4.2.1.1 Addressing Modes

There are multiple addressing modes that may be implemented depending on the specific application needs, but in essence the units use a 16 bit Master Address (MA) and 8 bit Sub Address (SA), creating one single 24 bit address.
e.g. OCU address = 0000 0000 0000 0001 0000 0001
MCU address = 0000 0000 0000 0001 0000 0001 (MCU Online matching MA plus SA byte)
equivalent to a 24 bit address.

4.2.2 CRC

The telegram is checked for integrity using a 16-bit CRC, corrupted frames will be rejected because the recalculated CRC will not match the transmitted CRC.

4.2.3 Session and Frame Security

Each message is protected by an enhanced proprietary security protocol in such a way that every telegram sent is both encrypted and unique, thereby eliminating any possibility of a ‘hacking’ or ‘store and replay’ attack from ever being successful.

4.3 Firmware Features

Firmware enables the safe core functionality of the OCU and MCU, additionally it is the resident firmware ‘Apps’ within the firmware in conjunction with the related Configuration Parameters that enable the OCU and MCU to implement specific functionality. Firmware is upgradeable over the Bluetooth™ link, this is a closed box operation.

4.4 Configuration Parameters

The configuration parameters, including the System Address, Sub-Address, the selected RF channel(s), and those parameters needed to enable programmed functions to operate are programmed over the Bluetooth™ link, that is a closed box operation.

5. System Overview

Each system typically includes one, two or three OCUs and one MCU plus accessories.

An MCU can be considered as a specialized Safety PLC.

The Safe-D-Stop OCU requires the 10R-ASO MCU in order to meet the specified functional safety level.

The OCUs and MCU are linked by secure communication and a linking / delinking process, the MCU drives the machine interface (relays, etc.). Therefore, the machine is under the direct control of the OCU and hence operator.

These systems feature an ability to wirelessly connect to the OCU or MCU and upgrade firmware to take advantage of new features as they are released as well as the ability to wirelessly change configuration items such as frequency, address and function, or examine function totalizers, data and error logs etc.

6 OCU Overview

6.1 General

These OCUs are globally compliant when supplied with an appropriate radio module for the region being used, for non-standard applications additional regional or application specific certifications may be required. These units have been designed with the latest generation safety electronics and firmware and exceed the safety related systems requirements for ISO13849 Category 3 PLd for the stop and control functions.

OCUs are equipped with two internal antennae, one for 2.4GHz and the other for the sub-GHz link, the typical operating range while dependent on the local environment is well in excess of 300 ft, with an open site performance in excess of 750ft can be expected.

In normal operation the OCUs will Link to and delink from the MCU in a controlled manner that will prevent a machine stop being issued, if however a linked OCU loses RF communication with the MCU due to excessive range or RF interference, or if the E-Stop is pressed on a linked OCU, the MCU Main safety relays will be deactivated.

OCUs have been approved to comply with the RF standards applicable to the region or country of use, there are license exempt bands and license required bands.

In North America, the 915MHz band is license exempt (FCC Part 15 and Industry Canada RSS-210 standards).

In Europe and other regions, the typical license exempt band is 433-434 MHz, 869MHz; again, other licensed and unlicensed frequency bands are available.

Globally the 2.4GHz band is generally available as license exempt with some technical variations.

The use of licensed bands including 450-470MHz will require an operating license but provide additional reliability because they are protected from interference.

The OCUs are designed to be powered by two off the shelf AA Alkaline batteries for the quoted 95 hours of nominal operation and while the OCU would work with NiMH rechargeable batteries the battery life monitoring would not be accurate and may lead to unexpected shutdown.

Status and feedback are provided by 6 LEDs and a Haptic vibration motor, the 6 LEDs are Status, Stop, A, B, 1 and 2; Status is a Tri-color, Stop, A, B, 1 and 2 are Bi-color, there is an ambient light sensor to adjust the intensity based on background light levels.

The Stop LED shows the current availability of the Stop switch in line with the latest standards.

LEDs A, B, 1 and 2 located to the right and left of the ‘STATUS’ LED may be configured to indicate when an OCU function command, or to provide status indication of machine state, via Talkback.

6.2 OCU Overview

The Cattron Safe-D-Stop OCU is a lightweight, palm-sized, extremely rugged controller.

A label insert sheet is provided to identify button functionality to suit most applications, and while the front graphic is standard, it is possible to have both customized graphics and customized switch configurations.

Figure 1: Safe-D-Stop™, front view

The ‘STATUS’ LED (located center top) indicates the operational mode and any error messages.

The aperture directly under the ‘STATUS’ LED is an ambient light sensor that is used to adjust LED intensity and improve battery life.

The four remaining LEDs, A, B, to the left of the Status LED and 1 and 2 to the right of the Status LED, indicate either selection such as function select or optional Talkback information.

There is a Haptic (vibration) feedback motor within the case to provide alerting and confirmation to an operator focused on the task at hand.

Each high reliability rocker switch has two contacts in each direction to operate a single safe CAT3 PLd function, the on button is single step. The Stop switch is unique and features a Cat3 safety architecture and incorporates LED back lighting to provide information on the Stop switch availability as per latest standards.

Any function is normally active only if the respective pushbutton is pressed. When the pushbutton is released, the function automatically stops, however latched MCU functions may be defined for functions such as Lights that need to be maintained in the absence of an online OCU.

The On push button is for System Start / linking / delinking and possibly Reset/HORN depending on machine wiring.

At startup the pushbuttons are checked for the correct off state.

These OCUs are supplied with use off the shelf AA Lithium batteries that will typically provide more than 200 hours of continuous operation, Alkaline and rechargeable NiMH batteries can also be used but will provide different battery lives. The batteries are accessed via a sealed cover retained by two screws as shown below.

Figure 2 OCU, rear view

1. Sealed Battery Cover
2. Battery Access Screws
3. Loop for belt clip

6.3 RFID Reader

These OCUs have an additional feature option of a 125kHz RFID reader that can be used in two primary modes

1. User Authorization; where the user needs to hold the OCU to an ID badge at start up to be able to select an operational mode. This means that an OCU can associate an ID badge identity (person) to a specific machine and a specific set of available commands, or if no match is found not be able to start the OCU.

2. OCU Configuration to match a specific machine; where the user needs to hold the OCU to an ID TAG located on or near a machine at start up, to be able to select that specific machine. This means that an OCU can be owned by one user but used freely to control many different machines.

These two are similar and both required a database that cross references either Authorized User identities or Machine Identities to a specific System Address and set of configuration parameters. This database is then loaded into the OCU and used at startup.

6.4 Data Logging

These OCUs feature a fault and data logging capability that provides users with the ability to diagnose any intermittent operational issues and records the total switch activations for planned maintenance of the OCU.
The Associated MCUs feature enhanced logging capabilities with totalizers and run time per motion that enable planned maintenance and data-analytics.

The OCU logs specific data as shown in the table below, the MCU has extensive data logging that goes beyond this data set.
Data log events and switch totalizers can be downloaded over a Bluetooth link using the Configuration PC tool.
OCU Logs are shown in sequence, MCU logs are shown against a Real Time Clock

Table 1 OCU Log Event Detail

Log	Detail
Self test results	Event completed with no error or specific detail of fault shown
Power up	OCU power ON triggered
Power Down	OCU power OFF triggered
E-Stop pressed	E-Stop was pressed
Switch Totalizers for each switch	Current total activations for each switch
Battery Replaced	Batteries have been removed and replaced
Run time on batteries	Total run time since new bateries were fitted
Low Battery warning	Low Battery Warning has been triggered
RF received signal level below defined level	Received Signal Level is below -95dBm AND two of the last three messages were missed.
Configuration change and config ID	Configuration or Program has been updated
Datalog download	Datalog has been accessed
Datalog cleared	Datalog has been cleared
Cat 3 errors	Switch read Errors have been recorded

7 Operating Instructions

7.1 OCU First Use

Insert the set of AA size batteries supplied with your system.

7.2 OCU Battery – Removal and Replacement

Referring to the figure below, battery access is under the cover on the rear of the OCU.

- To gain access to the batteries, remove the two screws securing the cover, remove cover and old batteries.
- To replace the batteries, insert new batteries taking note of the correct polarity as shown on the graphic under the batteries, then replace the cover and gently tighten the screws to seal.

Figure 3 OCU, rear view

1. Sealed Battery Cover
2. Battery Access Screws
3. Loop for belt clip

Open Battery Cover showing batteries

Figure 4 Battery Pack Removal and Replacement

7.3 Activating the System

The following assumes that the MCU has been installed according to the associated user manual.

Ensure that the OCU being used is the correct one for the machine to be controlled, an OCU may operate equipment that is many hundreds of feet away. Each system is assigned a unique address, the OCU and MCU both use this address and it is not normally duplicated, the OCU should have a label on it identifying the machine to which it is assigned.

	**WARNING**
	More than one remote control system may be used at, around, or nearby your operating facility. Therefore, before selecting an address for a system or spare you must ensure that it is the correct address for the desired equipment to be operated. If the wrong address is programmed into an OCU or MCU, other remote-controlled equipment located at, around, or nearby your facility may unintentionally become operational. Failure to comply with the above warnings may result in serious injury or death to personnel and damage to equipment.

7.4 Operating the OCU

7.4.1 Comment on Momentary Transmission Mode systems

For systems configured in the Momentary Transmission (MT) mode, (this is non-standard) the OCU will transmit the STOP command from the OFF, Passive or Active States but will not transmit command functions until the Start sequence (STOP / START) has been completed. The OCU will continue to transmit for 5 seconds after any command button has been released or the stop switch has been pressed, then cease transmitting. The LED and Haptic indications for Stop being pressed in Sleep or Passive mode are no different to those shown in the following paragraphs. Note that MT mode cannot meet the requirements of ISO13849 PLd for the STOP function because there is no guarantee of communication between OCU and MCU.

	**WARNING**
	Momentary Transmission (MT) mode should not be used where it must be guaranteed that the OCU will be able stop the machine, for these applications a continuous mode of transmission must be used. Additionally, in MT Mode the MCU main contactor control safety relays can be configured to stay turned on for varying lengths of time including infinite, or until the OCU has commanded them to turn OFF. MT should only be used where a risk assessment has indicated that this mode of operation presents no additional risk. In MT mode there is no guarantee that when an OCU button is pressed it will manage to communicate with the MCU. Failure to comply with the above warnings may result in serious injury or death to personnel and damage to equipment.

7.4.2 Transition to Passive Mode

From an OFF state the OCU can be powered on by pressing the ON button, this will wake the OCU from a deep sleep state to a fully tested PASSIVE mode where it is waiting for user input to move into another operational mode.

The LEDs and Haptic will be tested at this point so you will see all LEDs flash briefly and the Haptic buzz to confirm they are all working.

The center Status and Right-hand LEDs 1 & 2 will then illuminate, the battery status will be shown on LEDs 1 & 2, after a few seconds LED1 & 2 will turn back OFF.

Table 2 Switch ON LED Sequence

Sequence	LEDs							Function
	E-Stop	A	B	STATUS	1	2	HAPTIC	
Entering Passive State				GREEN				
At switch on after self test	RED	RED	RED	RED	RED	RED		quick verify of LEDs & haptic
		GREEN	GREEN	GREEN	GREEN	GREEN		
				BLUE			1 BUZZ	
INTERNAL Error				RED			3 BUZZ	
CAT 2 Error				N/A				
SWITCH Error				ALT. RED/GRN			3 BUZZ	Alternating Red/Green with Battery state masked
Pause								
Passive State	OFF			GREEN	GREEN	GREEN		Battery more than 80%
	OFF			GREEN	GREEN	AMBER		Battery 60-80%
	OFF			GREEN	AMBER	AMBER		Battery 40-60%
	OFF			GREEN	AMBER	RED		Battery 20-40%
	OFF			GREEN	RED	RED		Battery less than 20%

7.4.3 Linking to the MCU

From Passive Mode the OCU can be moved into Active (Transmitting) mode and linked to an MCU, this stage involves some critical Safety tests and a positive transition into active machine controlling mode.
The STOP switch is tested every time the OCU is moved into an Active mode, additionally all switch elements are tested at this phase to ensure that none of them are activated, the start sequence from Passive Mode is;
Press the Stop switch and then press the Start switch within 3 seconds.

Table 3 Active Mode LED Sequence

Sequence	LEDs							Function
	E-Stop	A	B	STATUS	1	2	HAPTIC	
Active State Transmission Battery >40%	RED F			OFF				Active and E-Stop available
Active State Transmission Battery 20-40%	RED F			AMBER F				Active and E-Stop available
Active State Transmission Battery <20%	RED F			RED F			3 BUZZ	Active and E-Stop available

At this point the OCU is linked to the MCU and operative, the target machine will be under direct control, verify the connection by activating a non-motion function such as the Horn button.
Test all functions briefly at the start of the work session.

	**WARNING**
	Before attempting to use the system, verify the target crane or machine you wish to operate is under the direct command of your OCU. This is accomplished by operating a non-motion OCU function such as the horn and observing that the horn sounds on the targeted crane or machine. Failure to implement the above may result in serious injury or death to personnel and damage to equipment.

7.4.4 Disconnecting from the MCU by De-Linking

The OCU may be disconnected from the MCU without causing an E-Stop by pressing and holding the ON button, then pressing and releasing the STOP button, then releasing the ON button, all within 5 seconds, the OCU will then be in Passive Mode.

7.4.5 Transition to Passive Mode by pressing STOP

The machine may be brought to a halt at any time by simply releasing the motion control button that will deactivate the motion control, or in an emergency pressing the STOP button to deactivate the machines main contactor.
When the STOP button is pressed the OCU sets the STATUS LED Red and the ESTOP LED Green and sends a positive stop command to the MCU and then terminates transmission.

7.4.6 Transition to OFF Mode

From Passive mode the OCU can either be left until it powers down automatically, or manually put to sleep by pressing and holding the STOP button for 3 seconds.

7.5 Control Functions

The system may have been configured in in different ways, there will be a configuration sheet that identifies all the functions in detail; some of the specific functions are mentioned below.

7.5.1 Lights

Lights or latched function selection is an MCU based variation where the relay being Latched toggles between the OFF and ON state and it is not affected by the state of the MCU Mainline Contactor relay outputs, i.e. when the MLC relays turn off, this assigned relay will stay in whatever state it was, OFF>OFF or ON>ON. The state can only be changed by turning the OCU back on and changing the state or resetting the MCUs power.

7.6 RFID Option

These OCUs have an additional feature option of a 125kHz RFID reader that can be used in two primary modes

1. User Authorization; where the user needs to hold the OCU to an ID badge at start up to be able to select an operational mode. This means that an OCU can associate an ID badge identity (person) to a specific machine and a specific set of available commands, or if no match is found not be able to start the OCU.
   This mode has an associated database of users that have specific rights, the OCU will either allow or deny a user to transition the OCU into Active Mode, additionally a user may call up a specific pre-programmed configuration, so for instance a maintenance supervisor will be given additional control functionality not available to the normal user.
   After a successful RFID Badge read if the OCU is powered OFF, the process will need to be repeated the next time it is powered ON.

2. OCU Configuration to match a specific machine; where the user needs to hold the OCU to an RFID TAG located on or near a machine at start up to be able to select that specific machines MCU. This means that an OCU can be owned by one user but used freely to control many different machines. This mode also has an associated database of machines MCU and associated characteristics, the OCU will call up a specific pre-programmed configuration such as frequency, address, button functionality and any additional required functions.

7.6.1 Transition to RFID Read Mode

From Passive mode the OCU can be transitioned to RFID read mode by pressing and holding the ON/ALM button for 5 seconds. If the OCU is held to a pre-assigned Personnel ID card or Machine Tag, the OCU will attempt to read the RFID device and set the appropriate parameters. After a successful read the OCU will revert to Passive Mode.

Table 4 RFID Read Mode LED Sequence

Sequence	LEDs						
	E-Stop	A	B	STATUS	1	2	HAPTIC
RFID READ Stage 1 PASSIVE	OFF			GREEN	DEFAULT	DEFAULT	
After pressing ON/ALM for 5 Seconds	OFF	RED F		AMBER	OFF	OFF	
RFID READ Successfully	OFF	AMBER F		AMBER	OFF	OFF	
Configuration Updated	OFF	GREEN		GREEN	OFF	OFF	
Config Complete, back to Passive Mode	OFF	OFF		GREEN	DEFAULT	DEFAULT	1 BUZZ
RFID READ FAILED	OFF	RED		AMBER	OFF	OFF	3 BUZZ

8 OCU Maintenance

8.1 Built in Reliability

The Safe-D-Stop and associated MCU has been designed to be highly reliable by incorporating many features such as RF antenna diversity, high performance radios, built in fault tolerance that will safely isolate any faults if possible and self-clearing in the event of a transient fault, (these will still be logged) so users can expect superior reliability.

8.2 Maintenance Personnel

Unless customer technicians have received formal maintenance training from Cattron, the safe and approved maintenance philosophy is that faulty OCUs or MCUs should be returned to an authorized facility for repair. This ensures that safety and reliability are maintained at the required level.

Note: When returning an OCU for repair, make a note of the serial number so that the OCU configuration may be retrieved for any spare OCUs that need to be programmed.

8.3 Preventative Maintenance

Preventive on-site maintenance is extremely important to ensure system safety and longevity, the following items are recommended:

Daily Visual Inspection:

- Before use, visually inspect the OCU for cleanliness, physical damage and security of external parts (screws, battery cover, switches, etc.).
- Regular visual inspections not only mean quickly locating a source of potential problems, but also may prevent serious problems from developing later.

Cleaning the OCU:

- If necessary, the OCU should be cleaned with a moist cloth and a mild soap solution and then wiped dry with a clean paper towel. Do not immerse the OCU in water and do not use any alcohol-based or oil-based solvent cleaners—these could damage the housing.

Functional Check:

- After maintenance or repair, carry out a functional check to ensure the correct machine is under control and that all functions are working correctly.

Mission Time

- The OCU mission time (between major service or replacement) is expected in a normal heavy industrial environment to be about 5 years. Examination of the Totalizer logs should be made at least annually, if the number of switch activations has exceeded 1 Million operations, we recommend that the unit be returned for a switch assembly replacement before the projected switch life of 2 million operations is reached.

9 CattronLink™

	**WARNING**
	More than one remote control system may be used at, around, or nearby your operating facility. Therefore, before selecting an address for a system or spare you must ensure that it is the correct address for the desired equipment to be operated. If the wrong address is programmed into an OCU or MCU, other remote-controlled equipment located at, around, or nearby your facility may unintentionally become operational. Failure to comply with the above warnings may result in serious injury or death to personnel and damage to equipment.

These controllers feature the latest innovations in Safety, Programming and Configuration that enable continuous performance and feature upgrades to be a simple process.

There are two parts to this;

1. The Firmware that includes the core safety functions and the Features (or Apps) that have been integrated that give the OCU its operational capabilities such as RFID User Authorization or Tandem Crane control
2. The Configuration Parameters that define the enabled state of any features, the required configuration parameters such as Operating Frequencies, Address, Addressing Mode, Time-share Algorithms, Switches allowed to be ON at startup, RFID use, Switch Mapping and much more.

The Firmware may contain features that are not configured or used, however if a feature is wanted, its App must be in the firmware.
Configuration parameters that are not available in the firmware will not be implemented even if loaded in the Configuration file.

Therefore, as features are release the firmware needs to be upgraded in order to benefit from them (if wanted).

Be aware that there may be compatibility issues that may prevent a system from operating if for e.g. using newer firmware in an OCU and older firmware in an MCU; to ensure compatibility upgrade the firmware in all system components.

Due to this flexible and easily upgradeable configuration concept, it is not uncommon for one OCU to be kept as a spare for multiple machines.

All OCU and MCU access is carried out wirelessly over a Bluetooth link from a laptop or PC running the Cattron software utility called CattronLink™.

9.1 What is CattronLink™ Software.

CatttonLink™ software is a suite of Apps that enable the latest generation of Cattron remote control products to be accessed over a Bluetooth® link for the purposes of;

- Firmware Upgrades
- Loading or changing of configuration parameters such as Frequency, Address, OCU Timeout, button / switch / relay allocation, etc.
- Examining device status including switch and relay totalizers
- Examining the datalogging stores.

CattronLink may be operated locally or remotely with the assistance of a member of the Cattron support team.

10Technical Specifications

Refer to Resources tab on the Cattron Website

https://www.cattron.com/products/safety-system-solutions/safe-d-stop/

11 Configuration Sheets

Refer to the resource tab for Safe-D-Stop™ at the following web address.
www.cattron.com/index.php/Safe-D-Stop

12 CE Declaration of Conformity

Hereby Cattron declares that the radio equipment is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.cattron.com

13 RF Compliance

Information to the User regarding FCC Compliance:

- Changes or modifications not expressly approved by the manufacturer shall void the user's authority to operate the equipment.
- This Class A digital apparatus complies with Industry-Canada ICES-003 standards.
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
  (1) This device may not cause harmful interference
  (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

OCUs have been approved to comply with both FCC Part 15 and Industry Canada RSS-210 applications standards.

No United States of America FCC or Industry Canada license is required for operation of FCC Part 15 or RSS-210 MKU OCUs.

13.1 Unlicensed Bands

Unlicensed bands include the following:

- 902-928 MHz in the U.S.A. and Canada
- 433-434 MHz in the EU, Brazil, China and others
- 868 MHz in the EU
- Other regions may differ based on National and regional rules.

13.2 Licensed Bands

Licensed bands include the following:

- 450-470 MHz in the U.S.A. and Canada
- Other regions may differ based on National and regional rules.

Due to continuous product improvement, the information provided in this document is subject to change without notice.

Cattron Support
For remote and communication control systems support, parts and repair, or technical support, visit us online at:
www.cattron.com/contact

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