

CATH-TECH

CORROSION CONTROL EQUIPMENT

Operation Manual for CIC-200

GPS Synchronized Current Interrupter Controller



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Limited Warranty

All Cathodic Technology Limited (Cath-Tech) instruments and equipment are warranted against defects in materials, design or workmanship for a period of two years from date of sale. This warranty excludes damage due to misuse, abuse, tampering or acts of God such as fires, floods, wind damage, lightning etc.

We will repair or replace at our option any defective component, after examination in our manufacturing facility, if the fault is due to defective materials or labour, within two years of the purchase date. For warranty repair, a Returned Goods Authorization (RGA) must be obtained from Cathodic Technology Ltd prior to shipping the defective unit pre-paid to our location.

Note: *There is no warranty expressed or implied on batteries.*

Cath-Tech Policy

- Cath-Tech extends a two-year in use warranty on all units, which have been designed and/or manufactured by Cath-Tech staff.
- Cath-Tech reserves the right to make any changes in design or specification which it deems an improvement, with no liability to make the same changes on existing equipment.
- This warranty is in lieu of all other warranties or guaranties, expressed or implied, which might otherwise exist. The purchaser is relying only upon this guarantee and not upon any representations not herein expressed.
- Any material or equipment being returned to the factory must first have a Returned Goods Authorization (RGA) from Cath-Tech.

Safety

Do not operate the CIC-200 GPS synchronized current interrupter during electrical storms. Damage to both the CIC-200 GPS synchronized current interrupter and the rectifier could occur.

The installation of the CIC-200 GPS synchronized current interrupter requires electrical connections in the rectifier. Only personnel who are trained in electrical safety should undertake this. The CIC-200 can interrupt either DC or AC current. Turn the AC supply to the rectifier OFF and verify with a volt meter before making any connections to the rectifier.

Welcome

Thank you for selecting the CIC-200 GPS synchronized current interrupter. Cath-Tech is the world leader in electronic equipment for corrosion control.

The CIC-200 GPS synchronized current interrupter is equipped with a GPS engine to ensure accurate synchronization with other interrupters no matter how far apart.

Your CIC-200 GPS synchronized current interrupter is a precision instrument. It is designed to interrupt the current flow from your cathodic protection rectifier or sacrificial anode system on a cyclic basis.

Open and inspect your CIC-200 GPS synchronized current interrupter on receipt. If any damage occurred during shipping, file a claim with the carrier immediately.

Rating Info

The CIC-200 is rated for a maximum of 200 Amps. As the voltage increases, the maximum amperage decreases as per the table below:

AC Voltage	Max Amps	DC Voltage	Max Amps
240 V AC	200 Amp	48 V DC	200 Amp
480 V AC	160 Amp	125 V DC	100 Amp
600 V AC	140 Amp	250 V DC	60 Amp

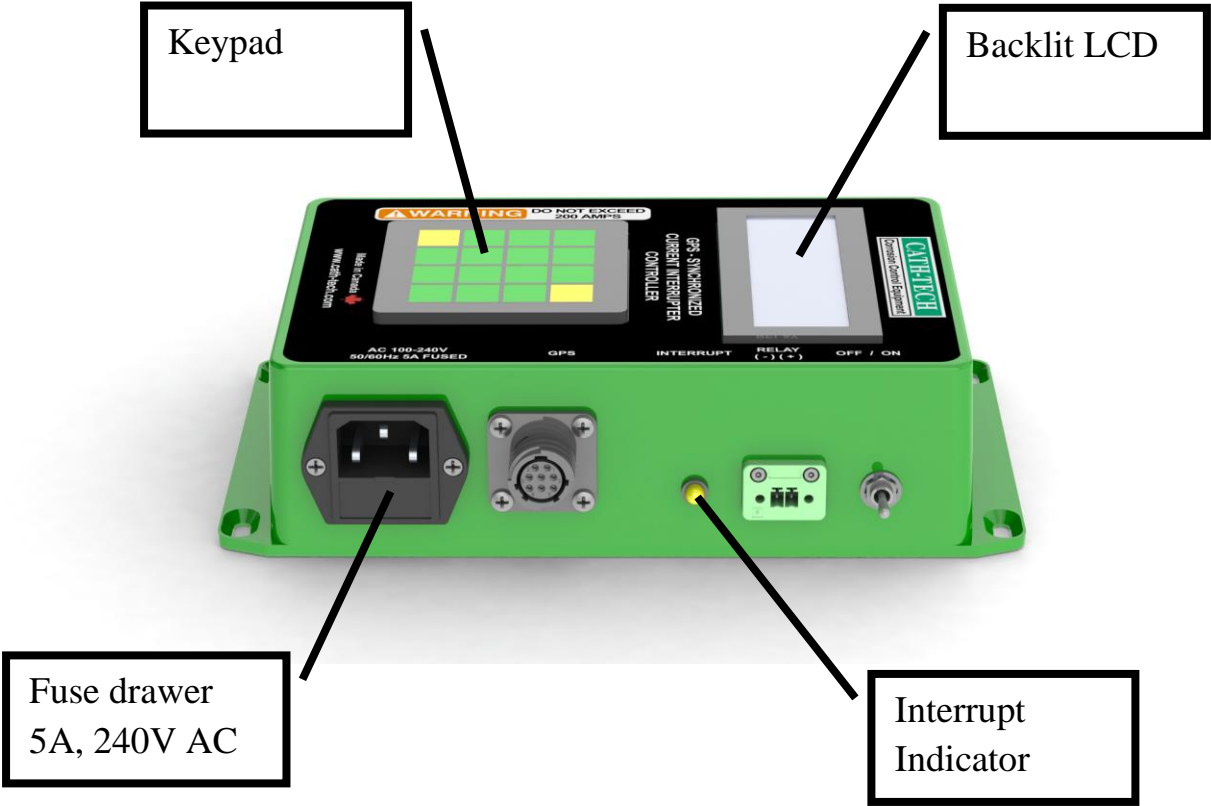
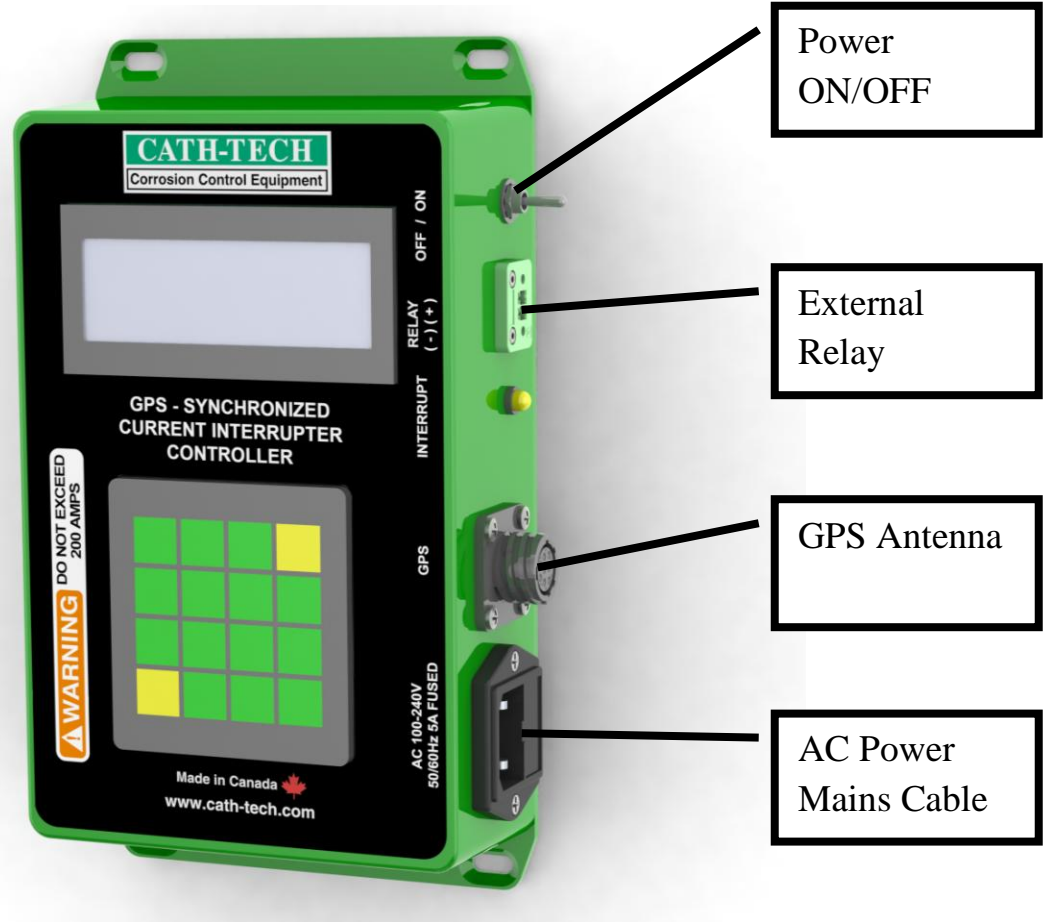


Do NOT exceed 200 Amps rectifier output.

Environmental Protection

Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority or retailer for recycling advice.

Features



Installation

The CIC-200 is designed to mount on the inside of a rectifier cabinet as a permanent installation. Failure to mount the unit properly may result in damage to the unit.

This module has an external mechanical relay for interrupting the current. This requires installation directly to the output of the rectifier

There are three different connections that need to be made:

AC Power

A single phase AC power input is required to provide power to the CIM-50S. A range of 100V to 240V at either 50 or 60 Hz is acceptable. A cable with a

Rectifier

Always turn the rectifier OFF and check with a meter before performing any work inside the rectifier case. This should only be done by trained personnel following the company's safety policies. Follow the company procedures for rectifier access.

The relay is installed in series with the rectifier output to the anode bed or to the structure. The CIC-200 has 2 relays that are to be wired in parallel to share the load at high amperage.

GPS (Global Positioning System)

The GPS antenna is external to the CIC-200 box. The antenna should be mounted so that it has an unobstructed view of the sky. When the GPS engine has acquired the minimum number of satellites and calculated its position, the UTC time and location will be shown on the screen.

Physical Orientation

The CIC-200 controller may be installed anywhere convenient. The case is dust resistant, but not weather proof and requires installation within a cabinet or indoors.

There are two relays provide on a mounting plate. The relays must be installed oriented vertically to function. There is an arrow on each relay to indicate which end must face up.



Setup

Prior to turning on the unit, it is best to attach the GPS antenna if you will be using GPS synchronization. To turn the unit on move the power toggle to the ON position then press the * key on the keypad. As the unit activates, the following message will appear on the screen:

```
CATHODIC TECHNOLOGY
2 VIII 2006 V127mH
```

The second line indicates the version of firmware currently installed. After a short delay, the main menu will be displayed.

Main Menu

The main menu allows the user to program the unit to operate. If there is no user input after 20 seconds, the unit will go into operation and run whatever programs it currently has stored. The options on the main menu are as follows;

```
CATHODIC TECHNOLOGY
E-program I-off
0-RS232
C-GPS-power  GPS ON
```

- | | |
|-------------|--|
| E-program | This allows the user to see and change the programs currently in the current interrupter’s memory. |
| C-GPS-power | This option turns the GPS power on and off. For GPS synchronized surveys, GPS power must be on. |
| 0-RS232 | Do not use. |
| I-off | Do not use. |

At any time the user may return to the main menu by toggling the power switch or press both yellow keys simultaneously.

E-program

Prior to using your current interrupter, the unit must be programmed with your desired current interruption cycle. From the main menu screen, press E to access the programming mode.

OFF Time

The first input will be the length of time OFF.

```
0200 ms off
C-change N-ok
```

To change this value press C and enter a 4 digit off time in ms. 1 second = 1000 ms.

If you only enter 3 digits, the program interprets that as having an extra 0 on the end. For example, entering the number 200, the program will make your off time 2000 ms. Instead, type in 0200.

After you are satisfied with the off time, press N to move on.

Cycle Time

The next screen asks for the cycle time to be set. The cycle time is the total time of the interruption cycle including the OFF and ON time. Some standard cycles are:

Off Time	Cycle Time	
200 ms	1 sec	This results in 800 ms on
400 ms	2 sec	This results in 1.6 seconds on
1 sec	4 sec	This results in 3 seconds on

The current interrupter has pre programmed cycles ranging from ¼ second to 6 minutes. Press C to cycle through the options. The available cycles are:

¼, ½, 1, 2, 3, 4, 5, 6, 10, 12, 15, 20 and 30 seconds, 1, 2, 3, 4, 5 and 6 minutes

The cycle time should always be greater than the OFF time. When the correct cycle time is displayed, press N to accept and move on.

Start Time

The next screen asks for the starting time of the cycle. The value is entered in a 24 hour clock format. i.e. 2pm = 1400 hours.

1030 from
hhmm
C-change N-ok
program 1

All times in the current interrupter are in Coordinated Universal Time (UTC). You must calculate your start and stop times by adding or subtracting your local time as appropriate.

Press C to change the starting time and enter your new time in hours and minutes. Press N once you are satisfied to move on.

Stop Time

The next screen asks for the ending time of the cycle. The value is entered in a 24 hour clock format. i.e. 2pm = 1400 hours.

1950 to
hhmm
C-change N-ok
program 1

All times in the current interrupter are in Coordinated Universal Time (UTC). You must calculate your start and stop times by adding or subtracting your local time as appropriate.

Press C to change the starting time and enter your new time in hours and minutes.
Press N once you are satisfied to move on.

Start Date

The next screen asks for the starting date of the cycle. The value is entered in 4 digits representing the month and day.

0101 from
mmdd
C-change N-ok
program 1

Press C to change the starting time and enter your new date in month and day.
Press N once you are satisfied to move on.

End Date

The next screen asks for the ending date of the cycle. The value is entered in 4 digits representing the month and day.

1231 to
mmdd
C-change N-ok
program 1

Press C to change the starting time and enter your new date in month and day.
Press N once you are satisfied to move on.

Additional Programs

Once the first program is complete, the unit asks if there are any additional programs to be entered.

more programs? N F-Y

For example, you can program the unit to work Monday to Friday, 7am to 7pm. Then program 2 will have the unit work Monday to Friday the following week.

Press F to enter another program or press N to exit the programming mode and return to the main menu.

C-GPS-power

On the main menu the GPS function can be turned on or off by pressing C. GPS must be on to be synchronized with other interrupters and survey equipment.

When the GPS is turned off, a slightly different main menu is shown.

CATHODIC TECHNOLOGY
E-program I-off
0-RS232 N-time
C-GPS-power GPS OFF

The extra option is to set the date and time on the unit so it can go through the programs. This is only in GPS off mode.

yymmddhhmmss

The date and time is entered as one long numerical string with two digits for the year, month, day, hour, minute and second. Once programmed, the internal clock will keep track. After the date and time have been successfully programmed, it will be shown on the main menu.

13:07:52 25/12/10
E-program I-off
0-RS232 N-time
C-GPS-power GPS OFF

0-RS232

This option is no longer used.

Operation

After turning the unit on, the main menu is displayed. If there is no user input then the unit will switch to run mode after 20 seconds. The menu is obscured briefly by a series of boxes as the unit switches to run mode.

██████████C TECHNOLOGY
E-program I-off
0-RS232
C-GPS-power GPS ON

Once in run mode, the unit looks for the GPS lock. At first the screen will look like below:

00:00:00UTC 00/00/00
GPS NOT LOCKED

program 1

After the unit receives the GPS lock, it will display the GPS information.

20:11:06UTC 17/12/10
GPS LOCKED
4351.642N 07942.900W
program 1 █████

The unit must have a GPS lock for the program to run and the unit to interrupt. A minimum of 4 satellites are required for the lock. Beside the program number that is currently running there will be two boxes; the first indicates that the program is activated and the second flashes with the interruption cycle.

If only one block appears, check the programming, your interruption cycle time may not be active at the moment. If the blocks do not appear (or the program number keeps changing) then a valid program hasn't been entered. See the Programming section and enter a valid program.

When the program is not interrupting the rectifier, the output is held ON to minimize depolarization of the cathodic protection levels.

When the GPS is turned off, the operations screen is slightly different.



If the time and date show all zero's and don't change, then return to the main menu and re-enter the date and time.

An amber LED on the outside of the box above the power input will flash in time with the interruption cycle.

Maintenance

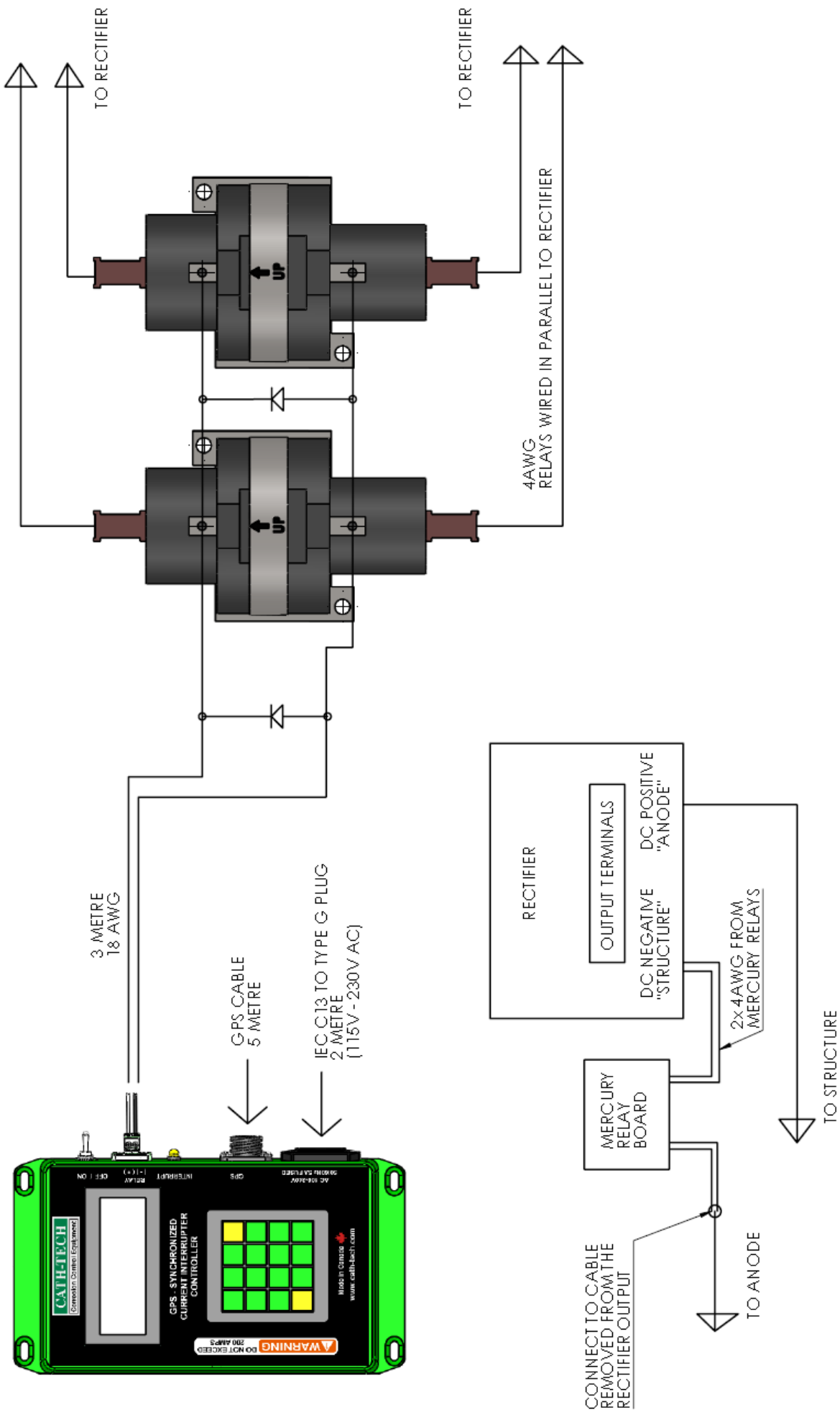
There are very few user serviceable parts on the CIC-200.

If the unit does not interrupt;

- Ensure that AC power is provided to the unit. The screen should light up and show the Main Menu when the power switch is ON.
- Check the program, it may not be programmed to interrupt that day.
- Observe the amber 'Interrupt' LED on the side, if it is not blinking, check the program. If it is blinking, confirm that all connections to the relays are correct.

For other problems, please contact Cathodic Technology at ++1-905-857-1050 or ctl@cath-tech.com.

Wiring Diagram



Spare Parts

Below is a list of spare or replacement parts available for the CIC-200 from Cathodic Technology. Most parts are in stock and can ship in 2 business days.

CTL-230

Power
cable CI-
100 200



CTL-542

LCD
display for
CI



CTL-311

GPS 18X,
long lead



CTL-553

Mechanical
relay for
CI-100 &
200



CTL-541

Keypad for
CI



CTL-609

Main
Control
Card



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