GPS SYNCHRONIZED CURRENT INTERRUPTER

OPERATING MANUAL

Model EPT/ CI-100

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Welcome:

Thank you for selecting GPS Synchronized Current Interrupter

This equipment is a precise instrument and it is designed to interrupt the current flow from your cathodic protection Rectifier on a cyclic Basis.

The Current Interrupter should not be opened. There is no consumer serviceable part inside. Breaking the seal invalidates the limited on year warranty.

The Installation of the GPS Synchronized Current Interrupter requites Electrical connections in the Rectifier.

Personnel who are trained in electrical safety should undertake this job.

This unit can interrupt the DC output current supply to the Rectifier. Please use special Cable for and observe the following safety precautions when installing the interrupter

Turn the AC supply to the Rectifier OFF

The “**EPT/ CI-100**” should now be connected as a series switch in the DC supply to the Rectifier.

Before connecting the “EPT/CI-100” to the Rectifier, charge the Battery overnight with the supplied Battery charger.

Technical spec:

- 12 satellites visible and it works in all parts of the world
- Magnet mounts GPS Antenna
- GPS lock indicator
- RS 232 port to connect to PC for UTC time, date, and coordinates
- Programmable or Selectable Interruption program models
- Manual and GPS synchronized mode,
- Compatible with NACE standard Logic
- Rechargeable long life battery
- Resynchronized every 1-minute and remains synchronized
- Waterproof and heavy-duty box
- 5 program capability
- Programmable start and stop time
- Programmable start and stop date
- Hold rectifier power ON when not interrupting
- 1 year Warranty from the date of purchase against defective component and faulty workmanship

Accessories:

GPS Synchronized Current Interrupter Model "**EPT/ CI-100**" has these accessories:

1- One pair Interruption DC Cable for 100 AMP with Alligator and Supper con Connector
2- AC Interruption Cable with Amp Connector
3- Universal Switching Charger
4- GPS Magnet mount Antenna
5- Manual
6- RS- 232 Null Modem Cable

THEORY OF OPERATION:

Current Interrupters need to turn ON and OFF the Rectifiers for cathodic protection sources. Measurement of ON and OFF potential, shows a good explanation of the level of the protection of the Pipelines.

We have a number of Rectifiers for the Pipelines that supply current for cathodic protection process. Therefore for interruption of the power, we need several current Interrupters that turn OFF and ON all Rectifiers in exactly the same time.

To synchronize the Interrupters, we use GPS Engine technology that controls and communicates with 12 GPS satellites in all the word.

Our experience in the field for more than twenty years and our understanding that we are in the field and not in the lab, has allowed us to manufacture equipment simply but accurately. This equipment is equipped with a switch that you can easily change from GPS mode to non GPS mode.

In GPS Mode, the GPS Engine works as a pulse generator and provides a synchronized pulse from the satellites. When the GPS is locked, the white led on the top of the GPS switch will start flashing. The Interrupter will be synchronized in the 00 second of every minute and will turn OFF the Rectifier in 00 second and continue to be OFF up to the end of the OFF time. Therefore when the GPS is locked, we have to wait at least one minute to become synchronized with satellites

Notice: In GPS Mode the Rectifier will not start interruption unless the GPS Engine is locked.

In non GPS Mode, use a crystal controlled oscillator as a time base control, and this will provide a very accurate pulse for the Interruption program.

Description of GPS Current Interrupter Model "EPT/ CI- 100"

I- Seconds Cycle: is the sum of OFF and ON time for interruption. In GPS Synchronized equipment must be resynchronize every minute, therefore the Cycle can be only 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60 seconds. The green LED on the top of the cycle rotary switch is ON only when Rectifier is ON

Important: most operators think this selector is ON time, but it is not. It is the sum of OFF time and ON time.

2- Seconds OFF: is the time the Rectifier is OFF and the red LED on the top of this rotary switches is ON, when the rectifier is OFF. The selectable OFF time are 0.2, 0.3, 0.5, 0.7, 1, 2, 3, 4, 5, 6, 8, 10 seconds

3- Battery check: when the voltage of the Battery is 12 volt the Green LED is ON. When Battery becomes exhausted the Red LED will turn ON. This is a warning message to charge the Battery. Please recharge the Battery before it completely becomes exhausted otherwise may causes damage to the Battery.

When you connect the charger to the unit the Yellow LED in the top of the charger Jack must be turned ON. The charger is a universal switching power supply with a constant control current. The current charge for this Battery is 0.5 Amp. It takes 10 hours to completely charge the Battery. Before operation, the Battery must be completely charged.

4- GPS Antenna: the Magnet mount Antenna with BNC connector must connect to unit to enables it to communicate with satellites.

5- RS- 232 Port: to Communicate this unite with PC must use a Hyper Terminal Communication Program that normally exists in all computers with Windows operation system. This program is in program, accessories, and communication. First you have to connect your PC to this unit with a Null Modem Cable, then you must select a name for your communication (for example "GPS"). Use a direct port 1 for this connection.

The Port setting must be in the below form:

1- Bite per second 4800
2- Data bits 8
3- Parity none
4- Stop bits 1
5- Flow Control : Hardware

When you select this setting the Interrupter will send information to your PC every minute. You must wait for one minute for the first information. The information will be in this format.

$GPRMC,023523,V,4353.6221,N,07926.9788,W,000.0,000.0,250106,010.8,W*6F

1- $GPRMC is a special message from satellite for coordinate, date and UTC time
2- 02 35 23 is the UTC time 02: 35: 23

3- V means that the GPS is still not locked. When GPS locked, the V will change to “A” means that GPS is locked.
4- 4353.6221, N, 07926, 9788, W is Geographical local coordinates.

5- 2 5 01 0 6 is the date “25 January 06”

How to Start Operation

A) Selectable Interruption program model:

1- Turn your Rectifier OFF and, disconnect one pole of power and connect to the Interrupter with one cable. Please be careful about the polarity for DC interruption. In the DC if you connect to the reverse it will not interrupt.

2- Connect the other interruption cable to the Interrupter and the power pole that you have already disconnected. In this way you put your interrupter series with power. According NACE standard, it is better to connect to the negative pole of Rectifier.

3- Select your Interruption Program. Your cycle is the sum of ON+ OFF time, therefore; always OFF Seconds must be less than Cycle seconds. Normally operation OFF time is one third Second Cycle. For example if you want the Interrupt program 0.3 second OFF and 0.7 second ON, you must to select the Second cycle for 1 second and OFF time 0.3 second.

4- Select your GPS mode.

5- Connect your Magnet mount Antenna cable to the unit and attached the antenna to a metal surface in an open area to lock the GPS Engine. When GPS is locked, the white LED will start flashing and in this position has to wait for one minute to synchronize with the Satellites.
6- Put all Interrupters program completely similar Cycle and OFF time.
7- Turn your Rectifier ON
8- Turn your interrupter ON.
9- In GPS mode, wait for the GPS to lock and then start interruption. After 1 minute, it will be synchronized with satellites.

Latch Night Programmer:

You can program it to start and stop automatically .You have many options with up to 40 Timer settings:

- Set to a specific ON/OFF time
- Set to a DAWN and DUSK, which automatically adjust as the season change. This is the ASTRONOMIC feature.
- Set to active ALL days, M-F Weekend, or Individual days.

Please be aware that when the light inside the programmer is white is connected and when the programmer is OFF light is black.

In manual mode you have to put on white slight situation.

B) Programmable models:

This model is sophisticated electronic equipment with capability to program with 5 different interruption programs.

The only difference with selectable model is the programming procedure.

1- First set up date and time.
2- Program the interrupter by entering Cycle and OFF time.
3- Enter your start stop time and date


GPS SYNCHRONIZED CURRENT INTERRUPTER
Model: EPT/CI-100
Electronic
Pipeline
Technology
A 1 2 3
B 4 5 6
C 7 8 9
D STOP 0 START
Made in Canada
Power
ON
OFF
Charger