



 **Where Ideas Meet Industry**

# The Smart Current Interrupter for today's CP systems



## Smart Interrupter SI220

High performance, solid-state Current Interrupter  
for pipeline Cathodic Protection monitoring



**Radiodetection**  
AN SPX COMPANY

## High voltage and current capability

For today's Cathodic Protection (CP) systems – reliable surveying of older and longer pipes

## Patented GPS synchronizing

Evaluation of complex CP networks by allowing multiple units to be used at any one time

## Solid state switching

Reliable switching capability with no moving parts for improved reliability and durability

## Advanced safety features

Transient & overload protected – effective heat dissipation even at elevated temperatures

# SI220 Smart Interrupter: Advanced preventative maintenance tool for extending the life of buried metal pipes for the gas and oil industry

In the gas and oil industry infrastructure integrity is paramount in order to maintain vital supplies to industry. Unplanned downtime caused by corrosion is costly in terms of business impact and also carries potential risks to the environment. Knowing the status of the buried structures and their associated Cathodic Protection (CP) systems is therefore key in any pro-active maintenance regime.

By placing a characteristic signature on pipes, the SI220 enables the corrosion engineer to routinely determine the level of corrosion activity on the pipeline or metallic structure being surveyed. Through simple interruption of the flow of current and observation of the current and voltage readings at the CP station, the efficiency of the cathodic protection on the network can be quickly determined.

Building on the proven field success, reliability and ease of use of its SI100 sister range of products, the SI220 enables switching in a CP system of high levels of current at higher levels of voltage. This allows older, more problematic pipes and longer runs of infrastructure to be routinely inspected for integrity of the anti-corrosion coating. In addition the Radiodetection patented GPS synchronization system allows multiple units to be installed enabling more complex pipeline systems to be surveyed. For improved field durability and reliability over traditional relay style systems the SI220 incorporates solid state switching technology.

The SI220 can act as a stand-alone interrupter with third party data loggers to measure and record CP system voltage potentials. When used with other Radiodetection products such as the Stray Current Mapper (SCM) or Precision Pipeline Location (PPL) systems, advanced warning of potential corrosion problems can be identified early on providing support or even enabling preventative maintenance regimes on these valuable assets to be established.

With simple installation and setup at the CP station and housed in a field rugged casing the SI220 is the professional choice for oil and gas corrosion engineers.

## High voltage and current capability

- Higher voltage and current switching up to 220V rectified peak at 100A for surveying of older and more congested buried pipe networks.

## Patented GPS synchronizing

- Utilizes patented GPS synchronization for surveying of complex of networks using multiple SI220 units over extended periods. This enables the effects of more complex pipeline protection systems incorporating multiple CP systems to be evaluated.

## Solid state switching

- High power semiconductor devices provide a non-mechanical method for CP switching delivering improved reliability and durability.

## Advanced safety features

- Red LED on the booster pack to indicate reverse polarity connection.
- Integral protection against over-voltage and current surges caused by switching at the CP station.
- Efficient and effective heat dissipation even with high external ambient temperatures.



POWERFUL, EASY TO USE  
CONTROL FUNCTIONS



ROBUST CONNECTION TO GPS  
(CROCODILE CLIPS OPTIONS)



CARRY CASE INCLUDED



GPS TIME SYNCHRONIZATION  
OF MULTIPLE UNITS

SI220-0 BASE UNIT



SI220 BOOSTER

AUTO BACKLIT LED SCREEN

EASY TO USE KEYPAD

HIGH IMPACT PLASTIC  
Fire retardant

TECHNICAL SPECIFICATION	
SI220-0 (BASE UNIT)	SI BOOSTER UNIT
220V peak base unit (drives separate booster)	100A output switcher
10/SN2786-BP	10/SN2900

## Controller and Booster configuration

Covers range of switching loads

## High voltage and current capability

155Vrms / 220Vpk  
100A

## Base Unit

Simple user interface  
Menu selected  
switching patterns

## Booster Unit

100 Amp switching  
cool running

### ■ Switching capacity:

Max Switching Current = 100A.  
Max Switching Voltage = 220Vpeak / 155Vrms.

### ■ Supply:

Requires 2 x 1.5V Alkaline D Cells, Duracell LR20/D (or equivalent).

### ■ Battery Life:

300 hours @ 20 degrees C (Battery life can be extended, Auxiliary power from the CP system via 4mm shrouded sockets on the side of the base unit, if above 5Vrms open circuit).

### ■ Auxiliary (optional) Supply:

Min Aux Voltage = 5Vrms.  
Max Aux Voltage = 220Vpeak / 155Vrms.

### ■ Protection:

Class II double insulated. Thermal (software and hardware) and over voltage protection. Over current protection via thermal switches. Lightning related surge and spike.

### ■ Connection Outputs:

2 cables (CP Auxiliary power, CP switched) Customer lugs (Crocodile clips as option).

### ■ Switching Patterns:

On/Off Time 0-100s (0.1sec increments to 10secs)  
Unit saves history of last ten patterns. Last pattern used selected at power on. SCM and Precision Pipe Locator signals.

### ■ Synchronization:

Via GPS synchronization (as standard): +/- 4ms.

### ■ 24hr Timer:

Programmable On/Off timer repeats every 24hrs.

### ■ Microcontroller:

Controls keyboard inputs, LCD functions, non-volatile storage, USB I/O and FET switching.

### ■ User Interface:

2 line by 16 character LCD, alpha numeric and special character display. Automatic backlight.

### ■ Keypad:

User input via 9 key membrane keypad.

### ■ Software Upgrades:

Via USB interface.

### ■ Dimensions & weight (base unit):

Size 12" (300mm) x 6" (150mm) x 3" (80mm),  
Weight 2.5kg (5.5lb).

### ■ Dimensions & weight (booster unit):

10" (255mm) x 10" (255mm) x 9.6" (216mm),  
Weight 13.3kg (29lb).

### ■ Environmental Protection:

IP65 rain and dust resistant. Note that if the unit is to be used in heavy storm conditions then it should be suitably covered.

### ■ Ambient Operating Temperature:

-14°F (-20°C) to 140°F (60°C).

### ■ Reverse Polarity:

Indication of reverse polarity via a red LED on Booster pack.

### ■ Construction:

Housing high impact plastic. Fire retardant.

### ■ Compliance:

EC Directive 2004/108/EC, 73/23/EEC  
FCC Part CFR Part 15  
EN61010-1: 2001  
UL61010-1: 2004.

### ■ Lead sets:

Switching leads. Copper tube lugs. Crocodile clips as optional accessory.

### ■ Advanced features:

The Smart Interrupter provides switching patterns compatible with Radiodetection's Stray Current Mapper (SCM) and Precision Pipe Locator (PPL) products and PCM/A-Frame for ACVG surveys.



# Corrosion

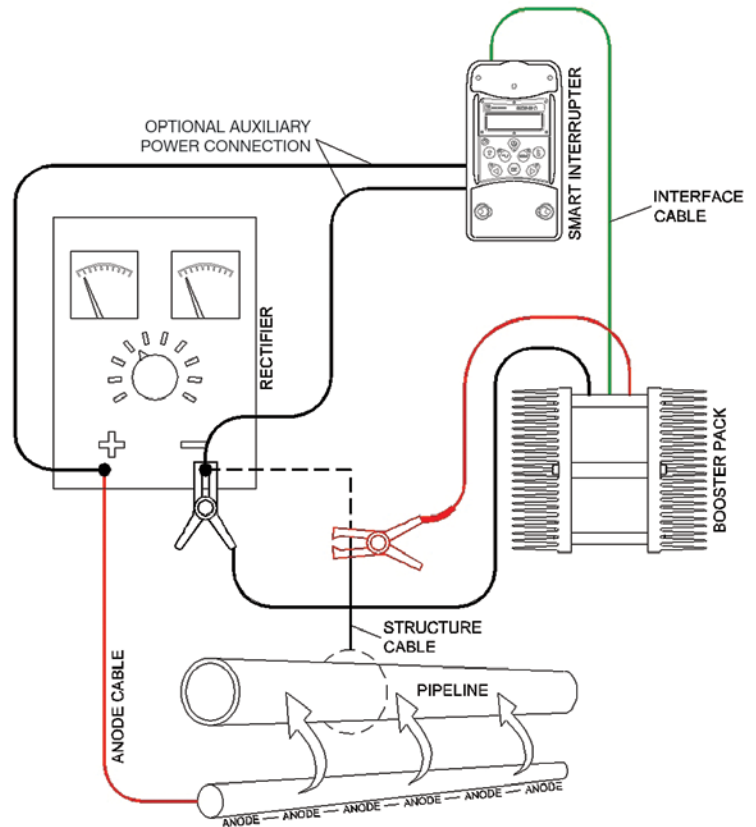
Corrosion is an electrochemical reaction and all metallic structures will corrode, it is just a question of how quickly. Metals, when immersed in an electrolyte, such as soil, water, or concrete, produce a current and it is the rate of flow of this current that determines the life of the metal structure.

The job of the corrosion engineer is to slow down this process. Cathodic protection is one of the techniques available. On a buried pipeline, a current will flow from the anode (positive) to the cathode (negative) creating anodic corrosion. By making the pipeline negative with respect to the surrounding earth we apply Cathodic Protection holding back corrosion on the target structure. This is achieved by an external power supply (usually rectified mains) applying a current onto the pipeline.

Cathodic Protection Systems are most effective with proper monitoring and this becomes all the more important when considering the age of buried services and the environmental and safety threat from a damaged pipe. Regular surveys, which may include close interval surveys (CIS) need to be made to determine the effectiveness of the protection. With the amount of pipeline in the ground, it is important that such surveys are able to be carried out quickly, consistently and effectively.

The Smart Interrupter has been designed to meet these needs, addressing the range of old and new services across different soil types. It is a robust and easy to use tool enabling the corrosion technician to effectively monitor the effectiveness of the CPS system without having to connect to the pipeline or dig down to the pipeline.

The new Radiodetection Smart Interrupter delivers higher voltage interrupt at high currents with improved over-voltage protection. Multiple units can be synchronized via GPS (RD patented). Radiodetection has paid particular attention to the safe running temperature of the SI220 and the Booster.



## World leaders



Radiodetection is a proud member of the SPX group of companies, which provide technical products and service solutions worldwide.

Radiodetection and its associated companies specialize in the design and manufacture of products for the location and maintenance of underground pipes and cables. Our aim is to be viewed as the supplier of choice of 'high performance' quality equipment using advanced product technologies. We are also committed to both design innovation and customer support.

## Technical support



Radiodetection equipment users have easy access to technical support. A call to your regional representative, or the Radiodetection head office, will put you in contact with our team of field-experienced technical experts.

## Servicing and repair



Radiodetection has a team of factory-trained service technicians and dedicated service facilities. Turnaround is fast, and costs are very competitive.

## Training



Product training for your operators and training personnel is available on your site, or at Radiodetection's headquarters. Training is with qualified instructors and each trainee receives a certificate to confirm they have received the training.

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