corrPRE
Special Anodes Manufacturing

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Technical Data Sheet

iGAL Galvanic CP
Remote Monitor C6350D

Web-based remote monitoring for galvanic anode installations



Typical features

- monitor up to four anode currents
- monitors up to four reference electrode voltages
- monitors up to four corrosion coupon currents
- easy to install with minimal wiring
- battery operation for up to 6 years

Description

The PowerView iGAL Galvanic CP remote monitor is designed to provide remote monitoring and testing of galvanic cathodic protection installations. This battery powered unit is supplied as a standalone unit or mounted in an optional weather-proof enclosure for easy installation close to the area of protection. (See ordering information).

Features of application

- monitor and test galvanic CP installations
- battery powered with up to 4 years life
- wirelessly connected to the web for remote operation
- SMS/Email/Notification alarms on exceptions
- monitor multiple units from a single private web login
- monitor references, anode current & corrosion coupons
- switch anode current to perform Instant Off testing etc

Monitoring your corrosion

Galvanic protection of concrete and steel structures provides a simple proven means of preventing corrosion by the installation of zinc based (or similar) anodes that are more electrochemically reactive than the steel in the structure. If the potential between the steel and the anodes is large enough, then the steel corrosion is halted.

Providing the ongoing assurance that the corrosion has been halted is a more complex process, often relying on the use of specialised measurements taken on site on a regular basis.

The iGAL is designed to reduce the number of site visits over the life of the asset, providing a significant cost saving and at the same time providing an improved level of assurance that the asset remains protected.

Web-based logging and monitoring

The iGAL is compatible with the Data2Desktop CP Monitoring Web portal. An integrated wireless data link installed in the iGAL sends readings every day to the Data2Desktop website where it is logged and available from any browser for display, trending or downloading for reporting purposes.

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Temporary or permanent installations

The iGAL can be used temporarily after the initial installation to monitor the corrosion rates for a period to ensure that the system is performing as intended, or can be installed permanently, allowing the ongoing monitoring and verification of the performance of the system over many years.

Anode current monitoring and switching

Up to four anode sets can be connected and monitored through the iGAL to the structure to allow the ongoing measurement of the current in the anodes. The anodes can be remotely disconnected from the structure to enable testing such as the measurement of instant off potentials of the steel and measurement of potentials over a longer depolarisation period.

In addition, further anodes (unmonitored) can be connected through the iGAL so that testing can be performed with all anodes disconnected from the structure.

Reference electrode

Reference electrode half cells are used to measure the electrical potential of the steel in the structure with respect to the surrounding environment – a key indicator of the effectiveness of the cathodic protection. The iGAL can monitor up to four reference electrodes using high impedance voltmeter technology.

Corrosion coupons

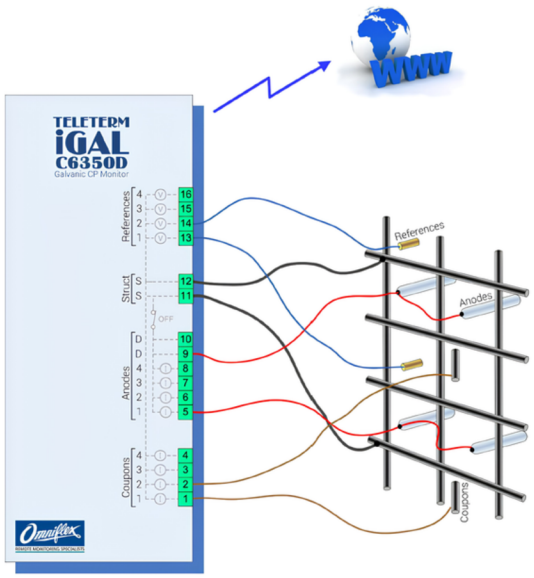
The iGAL also has four zero-resistance-ammeter inputs. These can be connected to corrosion coupons to directly measure the representative corrosion current in the structure. This can provide a more direct and alternative means of monitoring the rate of corrosion.

Email and SMS alarms

The iGAL also has four zero-resistance-ammeter inputs. These can be connected to corrosion coupons to directly measure the representative corrosion current in the structure. This can provide a more direct and alternative means of monitoring the rate of corrosion.

Temperature sensor

An internal temperature sensor on the iGAL allows the local equipment temperature to be monitored, which can be used to evaluate galvanic anode performance over varying temperatures.



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iGAL Connections

iGal cabinet recommendations and precautions

The PowerView iGAL is a battery powered device with sensitive measurement circuitry. It is important to take care when mounting outdoors that the iGAL is mounted in a protective enclosure to eliminate moisture and condensation over the expected temperature variations during the life of the product.

The following precautions are recommended to ensure a long life in an outdoor environment:

1. Use an IP66 minimum rated enclosure fitted with pressure equalisation to ensure that water cannot be sucked into the enclosure caused by expansion and contraction in varying temperature conditions.

2. Ensure that all incoming cable glands are properly sealed to prevent the ingress of moisture.

3. Ensure that lid seals are kept in good condition, and free of dust and debris.

Omniflex recommends the use of one of the following enclosures for the iGAL. These enclosures have been carefully selected to be both rugged to withstand harsh outdoor environments for many years and to be waterproof to IP66.

These enclosures are fitted with pressure equalising valves containing a breathable watertight PES membrane to ensure that negative pressure within the enclosure is eliminated over extreme temperature variations, keeping moisture out of the enclosure.

The enclosures are manufactured from GRP material selected for its strength and high withstand of extremes of temperature and high UV exposure over extended periods (25 years typical life expectancy).

SPECIFICATIONS

MATERIAL	GLASS FIBRE-REINFORCED POLYESTER
COLOUR	RAL7000 LIGHT GREY
COVER SCREWS	CAPTIVE STAINLESS STEEL
TEMPERATURE WITHSTAND	-60ºC TO +100ºC (ENCLOSURE AND PUR SEAL ONLY)
PROTECTION CLASS	IP66, IP67



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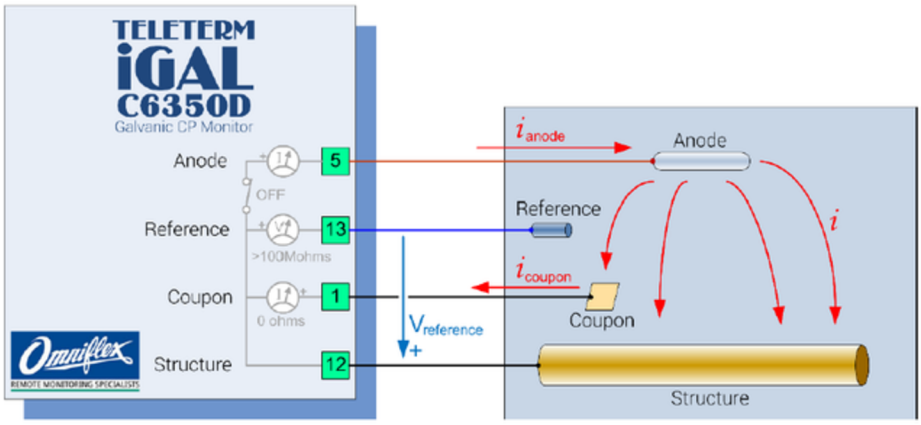
CORRPRE'S CABINET INFORMATION

BRAND	SCHNEIDER ELECTRICS
SERIE	NSYTBS24190H
WIDTH	194 MM
HEIGHT	241 MM
DEPTH	107 MM
IP	IP66
MATERIAL TYPE	ABS



iGAL Theory of Operation



This diagram shows the flow of currents and presence of voltages when the iGAL is installed in a galvanic CP system. (Note the direction of flow of current out of the anode and into the coupon)

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iGAL Data2Desktop Monitoring Web Portal

Overview | Charts | **History** | Test and Control | Ioff Results | Diagnostics | Diagnostic Charts

From Date: Blank for 15 days of data | From Time: Blank for 00:00 | To Date: Blank for lates

History

Update Time	Anode	Ref 1	Ref 2	Ref 3	Ref 4
2019-10-23 00:02:05	213	-0.7036	-0.7893	-0.756	-0.8677
2019-10-23 00:00:05	213.3	-0.7036	-0.7893	-0.756	-0.8676

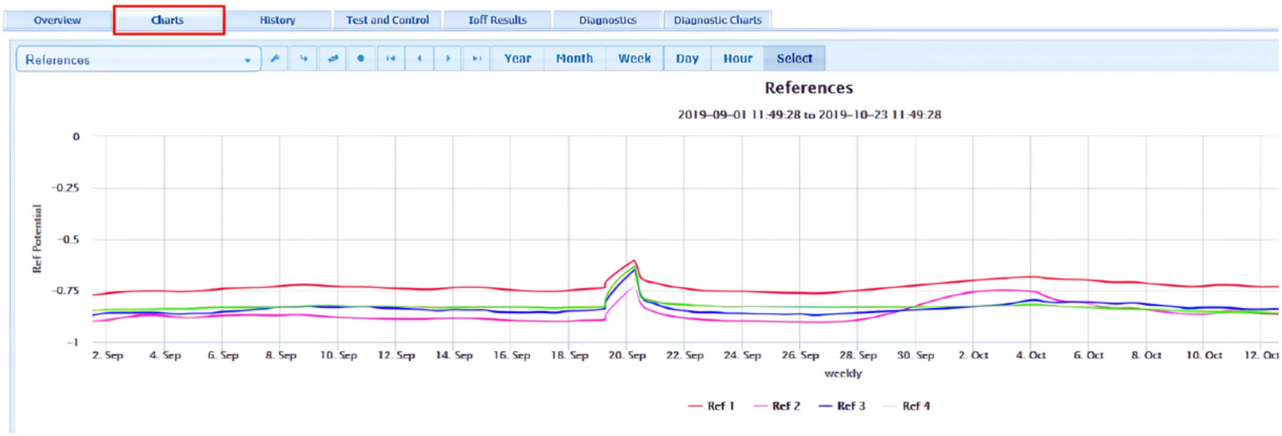
Overview | Charts | History | Test and Control | **Ioff Results** | Diagnostics | Diagnostic Charts

From Date: Blank for 15 days of data | From Time: Blank for 00:00 | To Date: Blank for lat

History

Update Time	Ref 1	Ref 2	Ref 3	Ref 4
2019-10-23 00:00:24	-0.6907	-0.7736	-0.741	-0.8477
2019-10-22 12:00:14	-0.6926	-0.7586	-0.7408	-0.8477





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Specifications

Network Communication Specifications

Model C6350D-141 LTE Version (Europe, Middle East, Africa)	
Bands	LTE FDD: B1/B3/B5/B7/B8/B20 WDCMA: B1/B5/B8 GSM: B3/B8
Approvals	Various Carrier Approvals
Model C6350D-142 LTE Version (Australia, New Zealand)	
Bands	LTE FDD: B1/B3/B5/B7/B28 WDCMA: B1/B5
Approvals	Telstra
Antenna	
Antenna	External Antenna (0dB antenna supplied)
Antenna Connection	SMA Female Jack on iGAL

Reference Half-Cell Voltage Measurement Inputs

Quantity	4
Input voltage range	0 to ±3 V
Input Impedance	>100 MΩ (Megaohms)
Resolution	1 mV
Accuracy	<10 mV

Anode Current Measurement Inputs

Quantity	4
Range	0-1 A
Resolution	54 µA
Accuracy	<1 mA
Input Impedance	40 mΩ (milliohms)
Anode Potential	1.5V max. (measured in instant-OFF)

Corrosion Coupon Measurement Inputs

Quantity	4
Range	0-1 mA
Resolution	10 nA
Accuracy	100 nA
Input Impedance	0 Ω (Zero Resistance Ammeter)

LED Indicators

OK LED (Green)	On in running mode Off when Power is off or in standby
Battery OK (Top) LED (Green) (one per battery)	Flashes when Battery is OK
Battery Flat (Bottom) LED (Red) (one per battery)	Flashes when Battery is Flat

Temperature Sensor

Quantity	1 (internal)
Temperature Range	-20 to 55 °C
Accuracy	± 2 °C

Anode Switching

Maximum Current	2A

Batteries

Quantity	2
Type	3.6V Primary Li-$SOCl_2$ (non-rechargeable)
Size	'D' Cell
Battery Life	3 – 6 years typical with once per day updates

CP Testing / Verification Functionality

Functions Available	Instant Off Test Depolarisation Test

Environment

Operating Temperature	-10 to +50°C (+14°F – 122°F)
Storage Temperature	-10°C – 70 °C (+14°F – 158°F)
Degree of Protection in Weatherproof Housing	IP67 / NEMA 4S

Compliance to Standards

Safety	IEC60950-1; EN60950-1
Emissions	EN 55011 Group I, Class A
Immunity	EN55011; EN55032:2015

iGAL Mechanical

Width	227mm (10.7")
Height	87mm (6.7")
Depth	54mm (3.6")
Weight	430g (15.1oz) approx.
Protection Rating	IP66, IP67

Enclosures Mechanical

Enclosure Model	C1401A	C1402A
Spare DIN rail width	None	220mm
Width	260mm (10.7")	250mm (10.3")
Height	160mm (6.7")	400mm (15.8")
Depth	90mm (3.6")	121mm (4.8")
Empty Weight	1.7 kg (3.8 lb)	3.7kg (8.2 lb)

Ordering Information

ORDER CODE	DESCRIPTION
C6350D-141	PowerView iGAL (EU, South Africa, others)
C6350D-142	PowerView iGAL (Telstra – Australia/New Zealand)
Accessories	
C4101A	PowerView Compact Weatherproof Enclosure
C4102A	PowerView Marshalling Weatherproof Enclosure
C1120A	Replacement LSH20 3.6V Lithium Battery (two required per iGAL)

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