Dealer Support Documentation

XCell Device

The goal of this document is to provide additional guidelines to Giatec's dealers to impower them to act as the first layer of support in a situation where customers are facing some issues with the XCell device. In this case, the dealer can refer to this document for FAQ's and follow some troubleshooting steps that will either resolve the issue or will provide necessary information for the Giatec Support Team to help solve the issue more efficiently. The dealers are involved in Tier 1 support, the Giatec Support Team will handle cases that escalate to Tier 2 or 3.

Important Note

If required, each client is responsible for getting a copy of the ASTM C876 standard to fully understand how the surface of the concrete must be prepared and how to interpret the results. It is the responsibility of the end user to purchase a copy of the standard, because copyright prevents Giatec from sharing the ASTM C876 document outside the organization. The user manual doesn't cover all the information in the standard, but simply explains how the specific device works.

Tiers Description:

TIER 1 (Dealer): Tier 1 support is the first level of support that can be provided by dealers, resellers, SmartRock Plus partners, sales team, and technical support. It provides simple troubleshooting suggestions that the user can do or try to fix the issue. It also acts as a checklist for information required when the case is escalated to Tier 2.

TIER 2 (Giatec Support): Tier 2 support is provided by technical support at Giatec's main office. It involves accessing some of the user or project information through the backend of Giatec 360 or the support applications. It also requires testing and recreation of more complicated issues.

TIER 3 (Giatec Support): If the root cause of the issue and possible solutions cannot be achieved in Tier 2, the case is escalated to Tier 3 for the product development team to take over. This might involve releasing a patch on the application or a modification on the products' hardware or software.

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Summary

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1. FAQ's

1.1 Can I install the XCell application on another Android tablet device?

Yes. However, the user requires a product key to activate the Android application. The product key is a unique number that is provided with the XCell sensor for the enhanced and comprehensive packages and can only be installed on one device. The activation key is located in the first page of the user manual. If you want to use a different Android tablet than the one provided by Giatec, the device should have wireless 4.0 BLE connectivity capability.

1.2 Does XCell require a connection to the reinforcement during the test?

Yes. The XCell device follows the ASTM C876 standard, in which a hard-wire connection to the steel rebar is required.

1.3 What is the required maintenance?

Usual precautions are necessary for the XCell device, such as cleaning after use and preserving the unit's integrity throughout the tests. Moreover, it is fundamental to always store the unit with the sponges saturated with storage solution provided within the XCell package. By keeping both sponges saturated within the XCell and verification probe, the user ensures that the electrode does not dry out. The XCell is a battery-operated device, it must be fully charged every 6 months if not used on a regular basis.

1.4 Does the device need to be calibrated?

A verification kit is available to purchase and automatically comes with the XCell Comprehensive and Enhanced packages. It is recommended to verify the device using this reference electrode before conducting a corrosion mapping project. If the unit doesn't pass verification, contact the technical support team at Giatec.

1.5 Can XCell develop corrosion mapping for non-flat surfaces?

Yes, corrosion maps can be developed for a non-flat surface, the tablet application creates a grid which represents plan surface. In the case of non-flat testing surfaces, for example a column, the measurements taken on the circumference are represented as a surface. The user creates a grid with desired dimensions,spacing and measurements can be taken at any location within that grid.

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1.6 What type of electrode is used in the XCell probe?

The XCell device utilizes an Ag/AgCl instead of a more common Cu/CuSO4 electrode. However, the XCell data recording app accounts for this difference and presents the results in mV/CSE as per ASTM C876. By using an Ag/AgCl electrode, the XCell can provide more stable results in chloride contaminated environments.

1.7 How to wet the surface?

The best condition is saturated surface dry (SSD). This condition can be achieved by wetting the surface with a water spray water hose, sprinkler, pounding the surface, etc., foras long as possible. Wet the surface as much as possible and let it dry for 15-20 minutes before taking a measurement, making sure there is no running water on the surface of the concrete.

1.8 Measuring half-cell potential in cold weather

When performing measurements in cold weather, the results willshow much lower corrosion potential than expected. This is because, in low temperatures, the corrosion process is greatly reduced, and the conductivity of the concrete is very low. In this scenario, it is best to perform the readings when the temperatures are back to above freezing temperatures.

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2. Tier Support

2.1 Cannot connect to the probe

Description:
Cannot make the connection between the tablet and the XCell probe.

Possible causes:

- *Bluetooth is not on*
- *The cable is not connected to the probe*
- *The battery is not charged*
- *The connection cable is damaged*
- *The battery is dead*

Additional comments:

Troubleshooting		
#	**Questions/ Steps**	**Comments**
1	User should be using latest version of the tablet application.	Some functionalities of the device are only accessible using the latest version. Ask the client to check Google Play store/ App store to download the latest available update. For customers using the phone application, the phone setting must be change to English as the primary language.
2	Make sure Bluetooth is activated on the tablet.	The tablet and the probe communicate via Bluetooth.
3	Is the probe connected to the test cable?	The probe does not have an on/off button. The device is only turned on when connected to the cable.
4	Is the battery fully charged?	Ask the client to charge the probe for an entire night.
5	If the user cannot connect using the test cable, ask the client to try to connect using the charging cable (the one with the USB).	If the issue is with the test cable, the probe would turn on with the charging cable. If this is the case a new cable is needed.
6	Does the device turn on if the charging cable is connected to an energy source?	If the device turns on, it means that the issue is not with the charging cable, go to the step below.
7	When was the last time the device was used?	This will help troubleshoot and Tier 2.
If none of the above steps worked, please proceed below to escalate the issue to Tier 2 (Giatec Support Team)		
8	What is the device's Serial Number?	Provide serial number to Giatec Support Team.
9	Contact: support@giatec.ca.	Make sure to include all the information given by the client in the previous steps.

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2.2 Device does not pass verification

Description:
The unit does not pass verification on Half-Cell mode.

Possible causes:

- *Half-cell electrode is dry*
- *Half-cell verification probe is problematic/dry*
- *Half-cell cable is broken*

Additional comments:
This issue is likely related to a dried out electrode. If the device is stored for a long period without wetting the sponges on the verification probe and inner electrode, the electrodes could dry.

Troubleshooting		
#	**Questions/ Steps**	**Comments**
1	User should be using latest version of the tablet application.	Some functionalities of the device are only accessible using the latest version. Ask the client to check Google Play store/ App store to download the latest available update.
2	Setup for the verification according to the user manual?	If not properly conducted, the device could fail verification.
3	Verification with both sponges wet.	Sponges from the inner electrode and verification probe should be wet and connected during the verification test.
4	Ask to perform real measurements using the verification set up and send the screenshots of the results.	More info in Appendix A1. If the result is “Out of Range” proceed to Step 6. If the unit displays some values, proceed to step 5.
5	Ask to wet the sponges of the verification probe and XCell electrode using the storage solution, close the tap and leave them for 2-3 days	If the issue is a dried electrode, performing this procedure should to revive the electrode. Repeat verification, and Step 4. If the unit still doesn’t pass verification proceed to Step 6.
If none of the above steps worked, please proceed below to escalate the issue to Tier 2 (Giatec Support Team)		
6	What is the device’s Serial Number?	Provide serial number to Giatec SupportTeam.
7	Contact: support@giatec.ca	Make sure to include all the information and screenshots given by the client in the previous steps.

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2.3 App shows error – Storage Permission

Description:
Cannot connect to the app / App shows error that the user needs storage permission

Possible causes:

- *Tablet settings*
- *Tablet settings were changed*

Additional comments:
All tablets should be sent with the appropriate settings for connecting with the XCell probe. When the unit leaves the Giatec office all the right settings are put in place.

Troubleshooting		
#	**Questions/ Steps**	**Comments**
1	User should be using latest version of the tablet application.	Some functionalities of the device are only accessible using the latest version. Ask the client to check Google Play store/ App store to download the latest available update.
2	Ensure that the settings are right: App settings-> select Connections (wi-fi, data usage, flight mode) ->Select location method > Set to 'high accuracy'	
3	Delete and reinstall the app	Only perform this step if the user did not previously create projects, otherwise, those projects will be deleted.
4	What is the device's Serial Number?	This will help us find the unit history.
If none of the above steps worked, please proceed below to escalate the issue to Tier 2 (Giatec Support Team)		
	What is the device's Serial Number?	Provide serial number to Giatec Support Team.
5	Contact: support@giatec.ca.	Make sure to include all the information given by the client in the previous steps.

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2.4 Activation Key

Description:
Activation key is not working and cannot get into the application, or the client lost their activation key.

Possible causes:

- *No internet connection*
- *Attempt to use activation key on multiple devices*
- *Lost the activation key*

Additional comments:
The Activation Key can only be used on one tablet. Activation keys are provided only with enhanced and comprehensive packages.

Troubleshooting		
#	**Questions/ Steps**	**Comments**
1	Make sure you are connected to the Internet.	The application checks with our server if the activation key and the serial number are right. You won't need access to the Internet to use the device unless you would like to share reports via email.
2	The activation doesn't work.	Go to step 4.
3	The Activation key is located in the first page of the user manual.	Follow next steps if user lost the user manual.
If none of the above steps worked, please proceed below to escalate the issue to Tier 2 (Giatec Support Team)		
4	What is the device's Serial Number?	We will be able to provide the activation key and know if it was used on previous devices.
5	Contact: support@giatec.ca.	Make sure to include all the information given by the client in the previous steps.

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2.5 Unstable readings

Description:
Cannot save the data points because the data keeps fluctuating.

Possible causes:

- *Too far from the connection point*
- *No continuity between the rebar from the measurement point to the connection point*
- *Concrete extremely dry and larger thickness (no signal from the bar)*
- *Measurement performed in the air (no hard contact with concrete surface)*

Troubleshooting		
#	**Questions/ Steps**	**Comments**
1	Is the device passing verification?	Always make sure to perform a verification before you start using the device. If the device doesn't pass verification refer to Section 2.2. of this document.
2	Make sure the concrete was properly wetted before the test.	Refer to FAQ section.
3	Make sure there is a proper connection between the rebar and the cable, and the cable with the unit.	If an extension reel is used, try performing a measurement with and without the reel.
4	Perform a measurement closer to the connection point with the reinforcement. If the values are stable this means the measurements were performed too far away from the connection point or there is a break in the steel continuity. Select a new connection point.	Depending on the type and the age of the structure, multiple connection points might be required.
If none of the above steps worked, please proceed below to escalate the issue to Tier 2 (Giatec Support Team)		
5	What is the device's Serial Number?	We will be able to provide the activation key and know if it was used on previous devices.
6	Contact: support@giatec.ca.	Make sure to include all the information given by the client in the previous steps.

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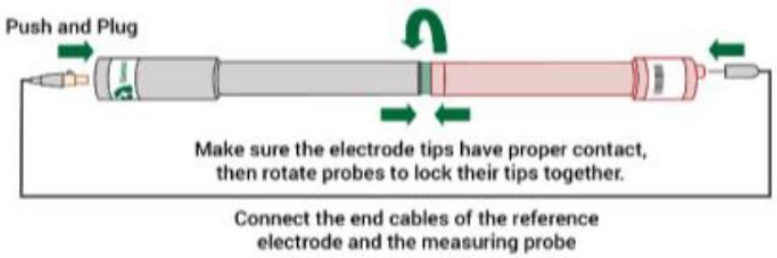
Appendix

A.1 Electrode not passing verification

If the XCell probe is not passing verification, there is a way to check the electrode's condition:

- Create a verification project with small gri.
- Perform a real measurement in the project using the setup below:



XCell Verification Setup

If the measurements are stable: take a screenshot

If the measurements are unstable take a short video.

What we are trying to find is the condition of the electrodes, whether it is dry or not (in rare occasions it can be too wet). We diagnose that by comparing the reading between electrodes (electrode in the XCell and the one in the red probe). If the result obtained with the verification setup is close to -110mV, the electrodes should be in good shape and the device should be passing verification. Results more positive than -110mV indicate that there is a dried-out electrode, which is the cause of the verification failure.

A.2 Device Storage – Increasing the electrode's life

The sponge on the tip of the probe should be completely wetted with the storage solution and the probe cap should be placed and tightened on the probe head before storing the unit. This practice will significantly increase the lifetime of the electrode. Also, the same practie should be applied to the verification probe (red probe).

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