



Improved Efficiency and Accuracy of PD Testing with UltraTEV Plus2 and NFC Asset Tags

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Introduction

Modern advances in PD surveying equipment have added data storage and reporting functions. These capabilities provide a quantum leap over the paper and photo records of older test equipment. However, they have increased the need to enter accurate information into the hand-held equipment. This adds some challenges for the modern test technician

- Typing data into a small touchscreen can be time consuming and this can lead to inefficiencies
- Technicians can become frustrated when they have to stop and enter data, especially under adverse weather conditions
- Typing errors or abbreviations can lead to trouble interpreting data
- Mis-identifying assets can happen when different people use different names
- Locating the previous test results to look for trends can be difficult. Files can be deleted or misplaced.

EA Technology's 4th generation UltraTEV Plus2 includes data entry and recording but it also includes Near Field Communications (NFC) so that NFC Asset tags can be employed to solve these problems. NFC Asset Tags can be adhered to Assets allowing permanent asset identification and test data, as described below.

Having built in NFC and associated tags allows for the following.

- Substation information can be added to a report with a single click
- Identification of an asset just tested is entered with a single click
- Typing mistakes and lack of data are greatly reduced
- Technician efficiency goes up with less data entry
- Reports are complete, accurate, and repeatable
- Previous test data can be stored to an NFC Asset Tags to be retrieved for comparison to current test data.

How it works

NFC Asset Tags are small, inexpensive devices that contain an antenna, a radio transceiver, and a non-volatile memory device encapsulated into a sealed assembly. The Tag is zero maintenance, it has no power source or battery to manage. It is powered by the radio waves of the reader/writer. The tags can take the form of a flexible sticker with adhesive or a more rugged, molded unit intended for outdoor use (+60C to -40C). Below are examples of both types.

Flexible NFC Asset stickers



Rugged outdoor NFC Asset Tags



The NFC Asset Tags are designed to be waterproof and work at extreme temperatures (+60C to -40C). They can be mounted with pressure sensitive adhesive that is designed for extreme conditions. It is important to note that special tags are required for mounting on metallic surfaces like switchgear.

The NFC Tag is powered up, written to, and read by specialized hardware in the UltraTEV Plus2. It works at 13.56 MHz and has a range of a centimeter or less. It is intended to have the transceiver touch the tag when reading / writing. The UltraTev Plus2 (UTP2) is designed to work with tags that have 888 bytes of memory.

The NFC transmitter and receiver in the UTP2 has it's antenna on the back of the unit directly inside the NFC logo.

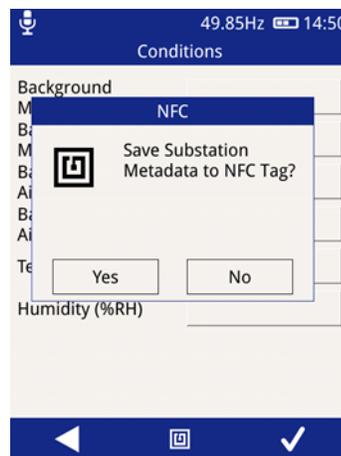


What it does

NFC Asset Tags come from the factory blank, ready for data to be written to them. The first time into a substation, one tag is designated the “substation general information tag” and additional tags are affixed to each asset to be tested.

When a survey is initiated, general information about the substation is entered into the UTP2. The user is then asked if they would like to write that to an NFC Asset Tag. The unit is then held up to the “Substation” Tag for a second or two and the write is performed. The following information is written to the Tag.

Substation Name
Substation Type
Switchgear Manufacturer Name
Switchgear Model
Installation Date
Rated Voltage
Operation Voltage
Busbar Insulation Type



In future, any time a technician comes into the substation to start a survey, this NFC Asset Tag can be read with the UltraTEV Plus2 and this information will be populated into the new survey instantly and accurately.

Blank NFC Asset Tag can be affixed to each asset to be surveyed. If the test results are to be stored on the Tags, a NFC Asset Tag for each compartment surveyed is required. Otherwise a single NFC Asset Tag per asset is all that is needed.

After each measurement is taken, the panel number, asset name, and survey results are written to each NFC Asset Tag.

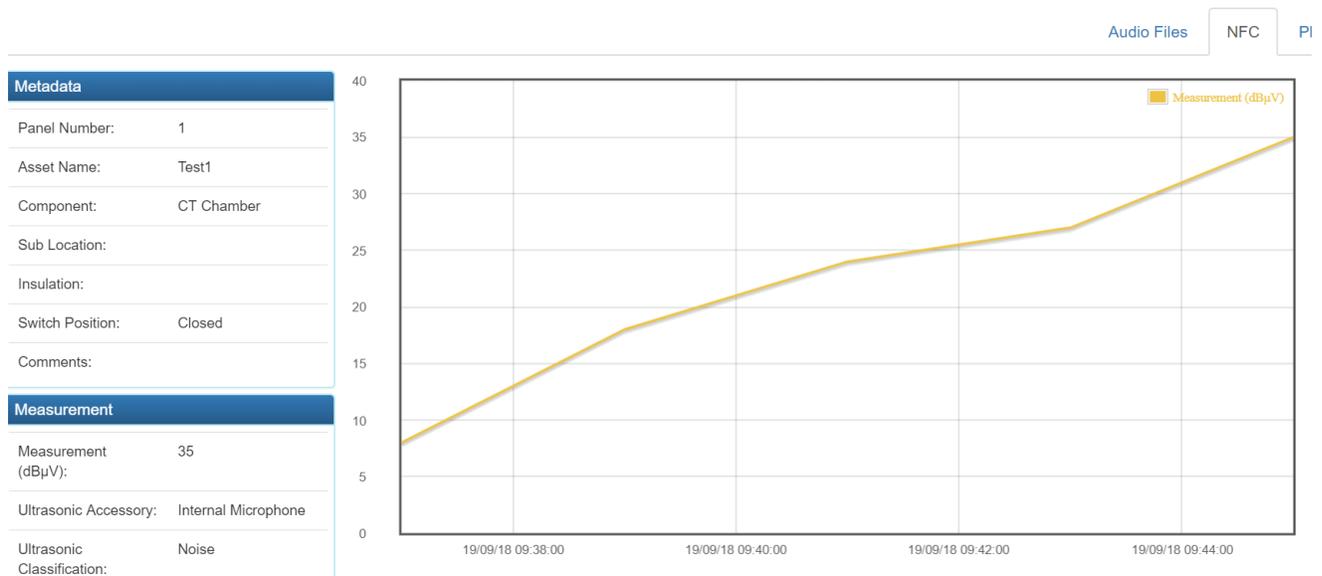
The next time this asset is surveyed, this information can be read from the Tag. This reduces typing and makes sure the asset identification is consistent from survey to survey.

Storing Survey Results and Trending Data

When tests are completed and saved as part of a survey, the user has the option of storing the data to an NFC Asset tag. Not only is the panel number and panel name stored, but also the peak readings and date / time of the test.

When a second survey is performed, and the NFC Asset tag is written, the data is read and stored in the unit with other survey information. When the survey is displayed on a computer, the trend is available via a tap for each reading taken.

An example of an ultrasonic trend with 4 results is shown below.



Summary

When equipment technology advances it inevitably brings along increased data handling requirements. With thousands of assets, dozens of test sets, and hundreds of people, data management becomes more difficult.

The UltraTEV Plus2 with NFC Asset Tag technology can help with test data management in a way never available previously.

- Reduced testing errors.
 - o Ensure accurate data is recorded for relevant equipment. Stored asset information and test results on the NFC Chip AND the UltraTEV Plus2.
- Increased efficiency of testing personnel.

- o Testing is often done by different people over time. With this unique Asset information and test data storage, technicians can quickly perform accurate PD tests soon equipment.
- Better visibility of equipment health status.
 - o By facilitating more frequent or targeted testing routines based on thorough knowledge, keep a better handle on asset health
- More valuable data trending.
 - o Easily see trends from ongoing test results over time.

Learn More

To learn more on how the UltraTEV Plus2 and NFC chips can be used in your facilities please visit or contact:

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