



## NFC Asset Tags: Overview and Guide

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# Introduction

Modern advances in PD surveying equipment have added data storage and reporting functions. These capabilities provide an immense advantage 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 difficult time consuming and this can lead to inefficiencies
- Technicians can become frustrated when they must stop and enter data, especially under adverse weather conditions
- Typing errors or abbreviations can lead to trouble interpreting data
- Misidentifying assets 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 4<sup>th</sup> generation UltraTEV Plus<sup>2</sup> 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 significantly reduced
- Technician efficiency increases with less data entry
- Reports are complete, accurate, and consistent
- Previous test data can be stored to an NFC Asset Tags to be retrieved for comparison with 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 (-40° C to +60° C). 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, read, and written to by specialized hardware in the UltraTEV Plus<sup>2</sup>. 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 Plus<sup>2</sup> (UTP<sup>2</sup>) is designed to work with tags that have 888 bytes of memory.

The NFC transmitter and receiver in the UTP<sup>2</sup> has its antenna on the back of the unit directly inside the NFC logo.

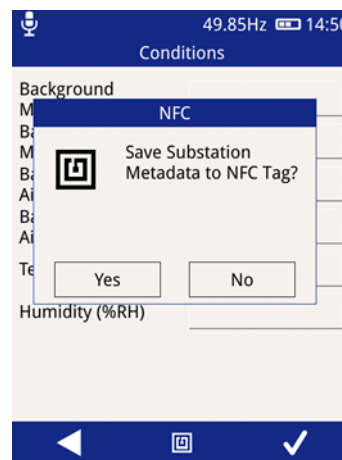


## What it does

NFC Asset Tags come from the factory blank and ready for data to be written to them. The first time in 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 performed, general information about the substation is entered into the UTP<sup>2</sup>. The user is then asked if they would like to write that to an NFC Tag. The unit is then held up to the “Substation” Tag for a second or two and the write will be 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 the future, any time a technician comes into the substation to start a survey, this NFC Asset Tag can be read with the UltraTEV Plus<sup>2</sup> 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, an 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.

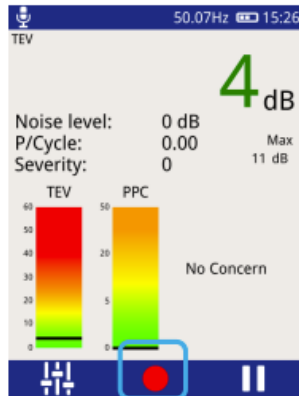
The next time this asset is surveyed, this information can be read from the Tag. This reduces typing and makes sure the asset identification is consistent from survey to survey.

# Storing Survey Results and Trending Data

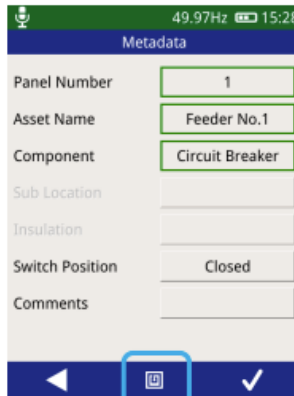
When tests are completed and saved as part of a survey, the user has the option of storing the data to an NFC Asset Tag. Not only is the panel number and panel name stored, but also the peak readings and date / time of the test.

The process of writing to an asset tag is as follows:

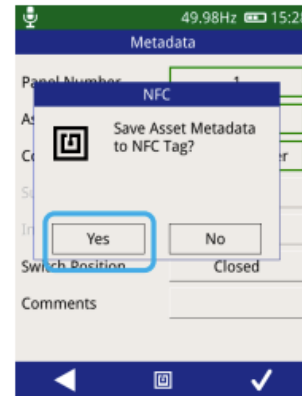
The recording data option is available in Survey, TEV and Ultrasonic mode.



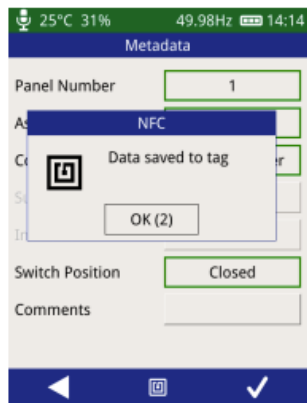
On any screen press record



Input asset information



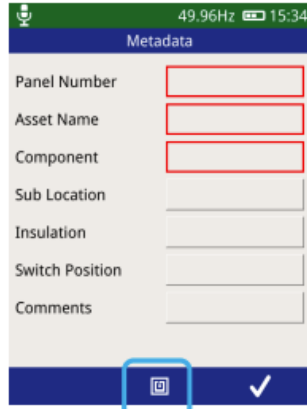
Select 'yes' and align the UTP2 centre button with the NFC tag



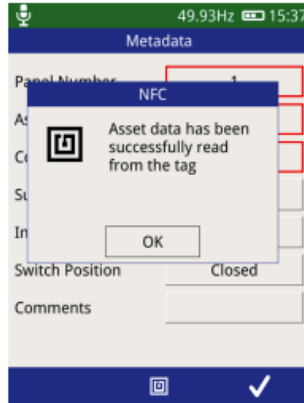
The UTP2 will beep once to indicate a tag has been detected, followed by two beeps to indicate a successful tag write

In subsequent surveys the NFC Asset Tag can be read to obtain the asset metadata:

Whenever the record option is used in Survey mode and the measurement 'Metadata' screen is displayed, a tag read is possible.



Press the centre button or NFC icon to trigger a scan



The UTP2 will beep once to indicate a tag has been detected, followed by another beep to indicate a successful tag read

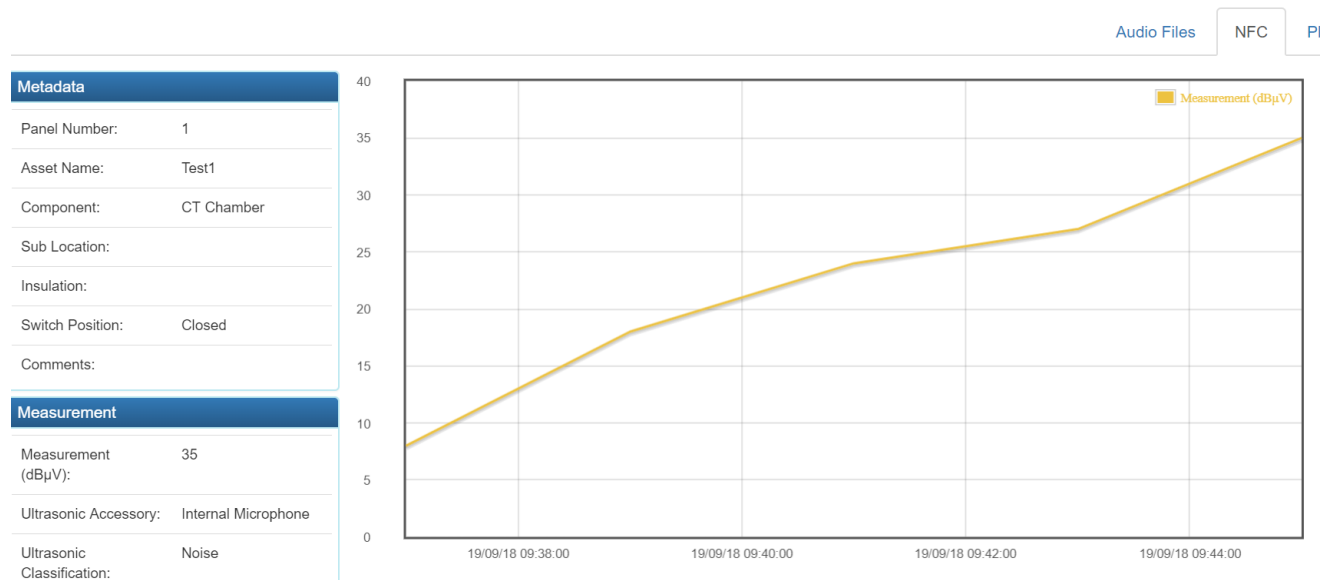


Data will populate asset information

Measured values are stored on the tag. Past results can now be viewed in the html file on the UTP2 SD Card, for trending purposes, as long as the reading was taken in the same location.

When a tag with previous measurement results is read during a survey the past measurement data will also be read and can be viewed as a trend in the survey file.

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 Plus<sup>2</sup> 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 Plus<sup>2</sup> and NFC Tags can be used in your facilities please contact us at:

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