



# MMS1201 (AC-DC Difference) Expansion

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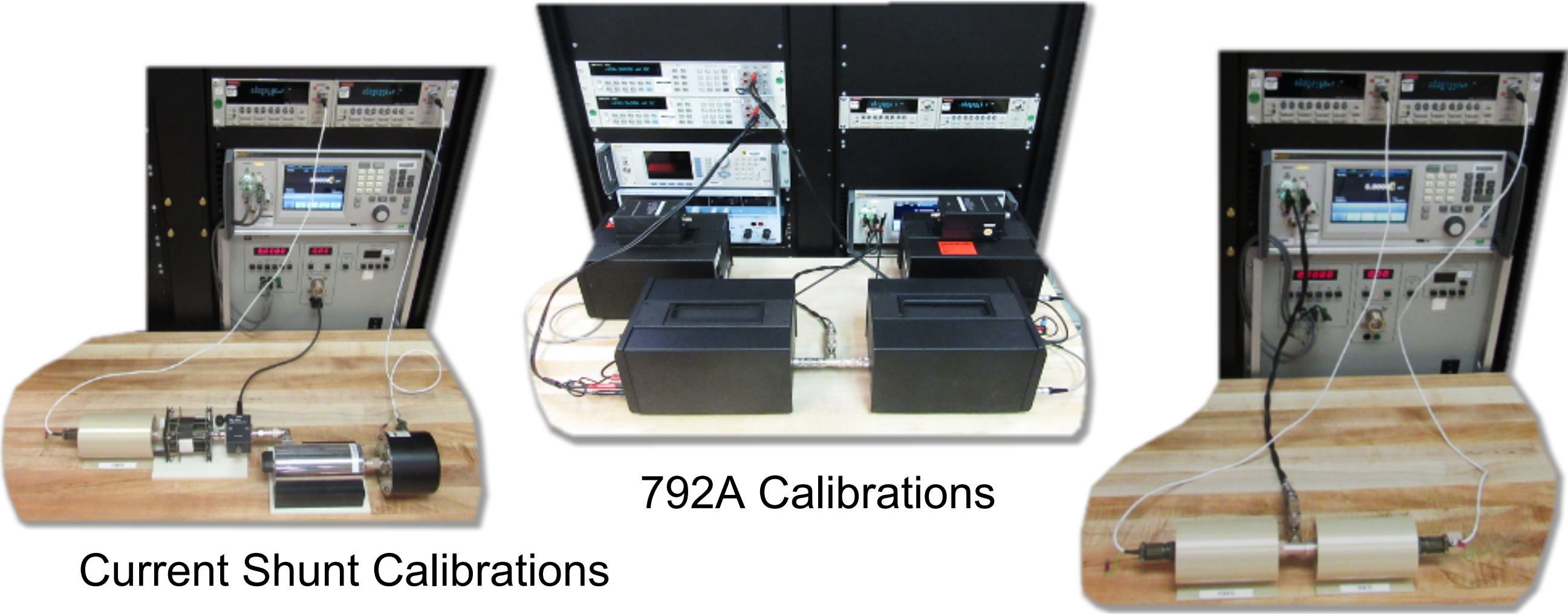
## Introduction/Motivation

**Problem:** The ac-dc difference station in the AC Lab requires more throughput to support customer needs while also needing to continue our R&D efforts on Multi-Junction Thermal Converter (MJTC) designs. However, limited space is available.

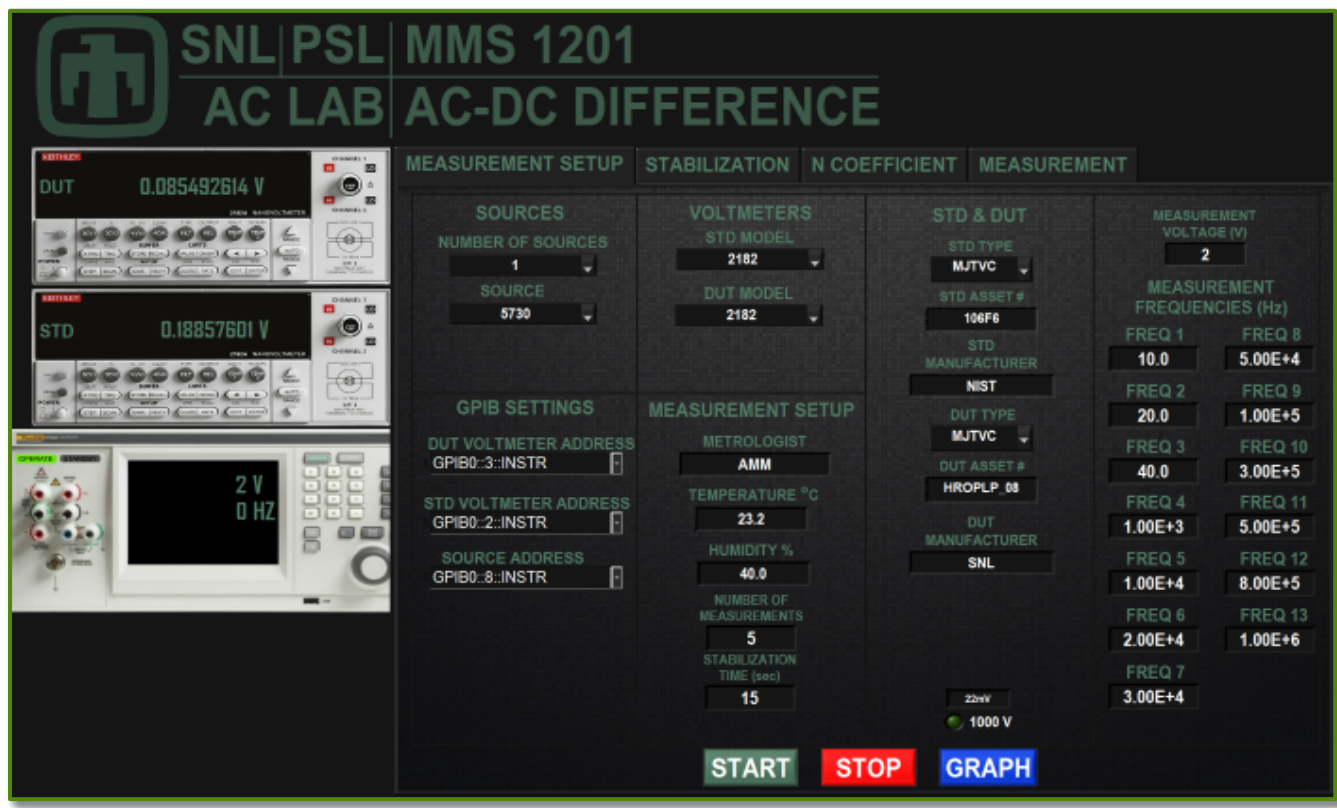
**Goal:** Minimize the test station footprint and increase capacity

## Procedure/Execution

- Existing MMS had very little space available
- Used a secure Keyboard, Video, Mouse (KVM) switch that allows us to have **one** “workstation” for **three** calibration stations



- New state-of-the-art calibration software:
  - Graphical User Interface (Joshua Stanford)
  - Stores results in HTML format
  - Sends data to shared network drive for easy access
  - Data can be easily pasted into Excel or Word for evaluation
  - Very little hands on time required for calibration and/or data analysis



## Future Work

We will consider using the KVM/Multi-station approach on any stations that need an increased throughput and a small footprint. The new software package will be used on all future automated stations in the AC Lab.

## Background

- The ac-dc difference station in the AC Lab is used to calibrate ~100 items or sets a year
- Calibrations include: Fluke 792A, thermal voltage converters (TVC) and current shunts
- Simply building copies of the existing MMS would multiply the space requirements, but this space wasn't available

## Customer Need

**Impact:** Our customers are primarily the Contractor Standards Labs in the NSE and we are collaborating with NIST to develop new Multi-Junction Thermal Converter (MJTC) designs.

## Results

- More than doubled our throughput on AC-DC difference calibrations (shunts and thermal voltage converters)
- Reduced the space needed by at least 128 square feet.
- Maintained a median turn around time of less than 10 days.
- Continue our R&D efforts on MJTCs.

## Conclusions

The project is approximately 80% complete. We are still clearing out storage cabinets and drawers so the stations can be placed in their final locations. We also added indicator lights to show station status from across the lab. The software is 100% complete and working great!

We had one major problem when we discovered that the graphics cards were not compatible with the KVM. This required some adjusting and is working properly now.

The KVM was useful in helping to reduce the footprint of calibration stations and our software (which runs the procedures and drives the indicator lights) helped with productivity and analysis.

## Acknowledgements

We would like to thank Mark Aucker for helping us select a secure KVM switch.