

Instrument Security Procedures

Model: Fluke 5730A

Product Name: Multi-Function Calibrator

Instrument Description: High Performance Multi-Function Calibrator

Memory Description: The Fluke 5730A Multi-Product Calibrator contains three types of storage media. Two are flash-based storage media and the third is random access memory (RAM).

Flash Memory

The first flash memory used in the 5730A is associated with the main microprocessor. It is a physically block structured device that is logically partitioned into 5 separate blocks. The first block holds a composite image.

This image contains a small boot loader, a small, self-contained 'C' program and a compressed kernel image. This composite image is maintained by the Fluke Corporation and is preprogrammed into the flash device for us by the vendor.

This image cannot be easily changed or reconfigured without special programming equipment. This block is considered by Fluke to be permanent. If it were tampered with, or otherwise changed, by anyone other than a qualified software engineer equipped with supporting documentation from Fluke and external programming hardware, the calibrator would cease to function.

The second block contains the FPGA configuration image. This block is programmed by the vendor and is subject to the same stringent restrictions as the first block.

The third block is imaged as a JFFS2 files system. It contains the calibrator main application code, calibration constants for the instrument, and all nonvolatile configuration data for the instrument.

Calibration Constants

Calibration constants are double precision floating-point numbers. The instrument uses these numbers during normal operations to achieve its rated output accuracy. Each calibration constant (CCO) has a default value and a limit. Most limits are within a few percent of the default value.

It's impossible to set a calibration constant to a number outside of its limit. Calibration constants cannot be accessed directly by a user. They can be changed during a calibration process. But the values are derived using external standards and internal algorithms. The user has no direct control over the values stored in the constants.

Non-Volatile Configuration Data

Non-Volatile configuration data contains user settings like IEEE address, serial port configuration, calibration dates, etc. It also contains a string of a maximum of 64 characters. The string is an IEEE 488.2 standard and is set using the <*PUD> command. It's queried using the <*PUD?> Command or from the front panel (Refer to the Operator Manual for a complete explanation of these. commands).

Random Access Memory (RAM)

RAM is not directly accessible by the user and its contents are lost when the power is removed (volatile). RAM is not a likely security risk.

Memory Cleaning Instructions:

The PUD string can be cleared using the <*PUD> command in conjunction with an empty string. Then queried to insure it contained the empty string. This would not address any of the other nonvolatile constants but would remove the most likely threat.

All Configuration Data, including the User Report String, can be set to their default state using the <FORMAT> command and argument <SETUP> (eg FORMAT SETUP).

Any configuration data that has been modified by the customer would need to be restored, including the system clock time/date format. This command also clears the PUD string. This would eliminate any risk of tampering with the Configuration Data Constants. Configuration Data and the Calibration constants, can be reset to their default state by using the <FORMAT> command and argument <ALL> (eg FORMAT ALL). <FORMAT> <CAL> (eg FORMAT CAL) and <ALL> (FORMAT ALL) require the calibration password to enable the feature.

You must calibrate the instrument after this operation and any modified configuration data would need to be restored, including the system clock format. This is the safest method, but is highly destructive in that it requires a total recalibration of the instrument.