

MPMS 3 Application Note 1505-213

MIUP/Resistance Option Overview

Abstract

The MPMS 3 resistance option provides customers the basic hardware necessary to install a sample in the system and connect it to a customer's measurement hardware for any measurement up to four individual wires. This note discusses the individual parts included and provides useful information to connect the user's hardware.

Parts

Sample holder:

The sample holder is a G10 fiberglass rod with 4 wires protruding from the connector and tied to the rod. It uses the same connector as an oven rod.

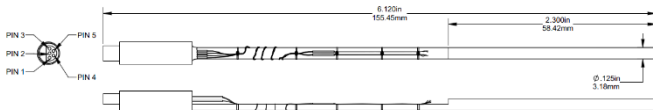


Figure 1: Sample holder with pin numbers and lengths.

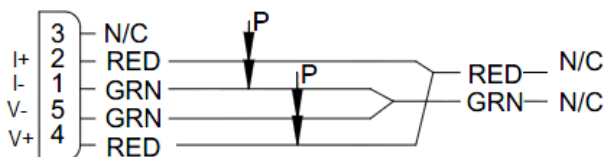


Figure 2: Sample holder wiring diagram.

Sample Rod:

There are two sample rods available. The standard rod has 40AWG (.0799mm) wire. It has a black cable strain relief on the top to indicate that it is a resistance rod.

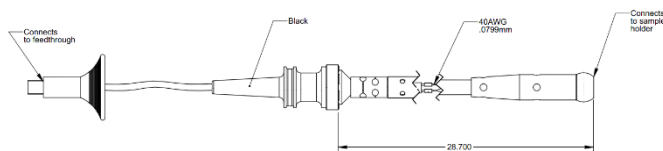


Figure 3: Standard resistance sample rod.

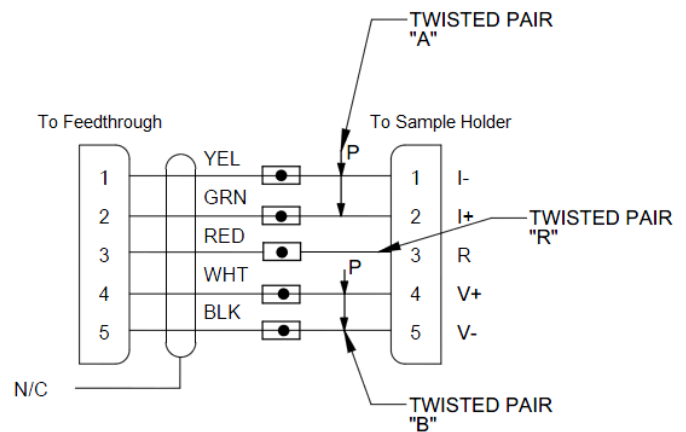


Figure 4: Sample holder wiring diagram.

For measurements that require higher current an Oven sample rod can be used. The Oven sample rod has 32AWG (.202mm) wires which conduct more heat into the sample chamber limiting the temperature range and stability. This rod is distinguishable by the white cable strain relief on top of the rod.

CAUTION!

Using this rod with the oven option can cause permanent damage.

Wired Access Port (WAP):

The wired access port connects to the top of the VSM motor and allows users to connect up to 3 different options using interchangeable feedthrough connectors.

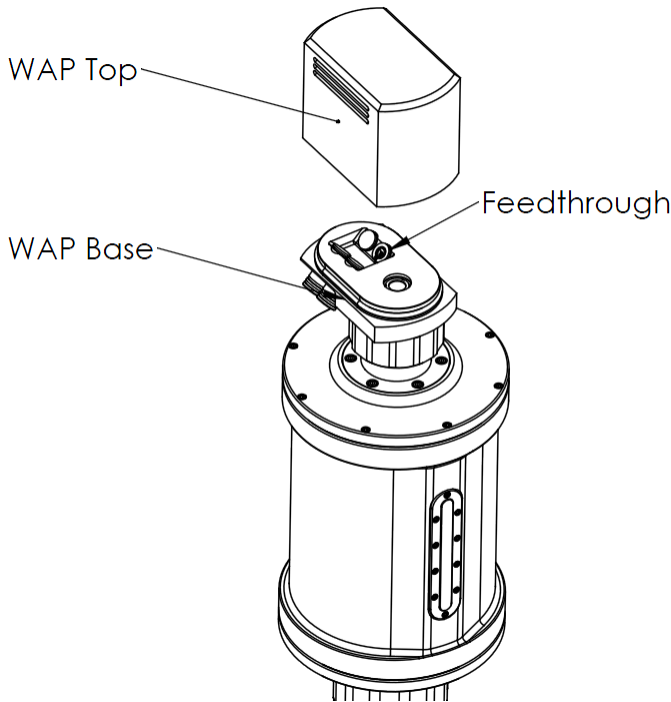


Figure 5: The Wired Access Port (WAP) attached to a VSM motor with the feedthrough installed.

Feedthrough:

The feedthrough is a hermetically sealed connector from the sample rod inside the vacuum space to a cable outside the vacuum space. The same feedthrough is used for the Oven option and the resistance option.

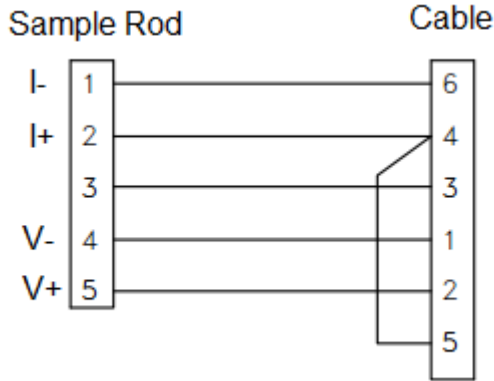


Figure 6: Feedthrough wiring diagram.

Cable:

The cable is a 6 wire, twisted pair, and shielded. It has a Fischer push-pull connector on one end which mates to the feedthrough. The other end is terminated with a DB-15 connector. The shell and pins can be removed and connected to the user's hardware.

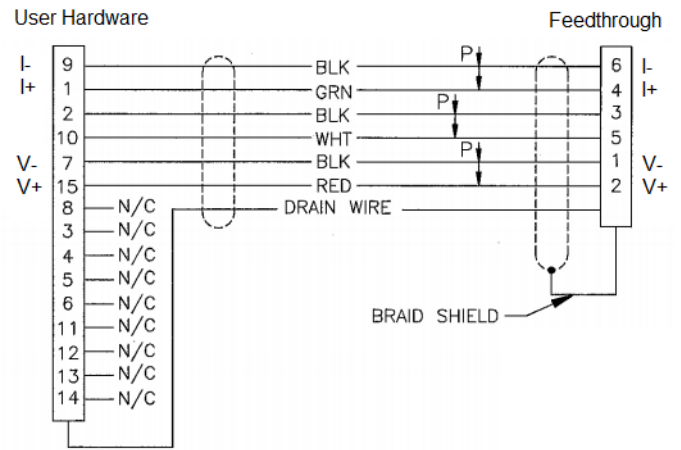


Figure 7: Cable wiring diagram.

Connections Summary

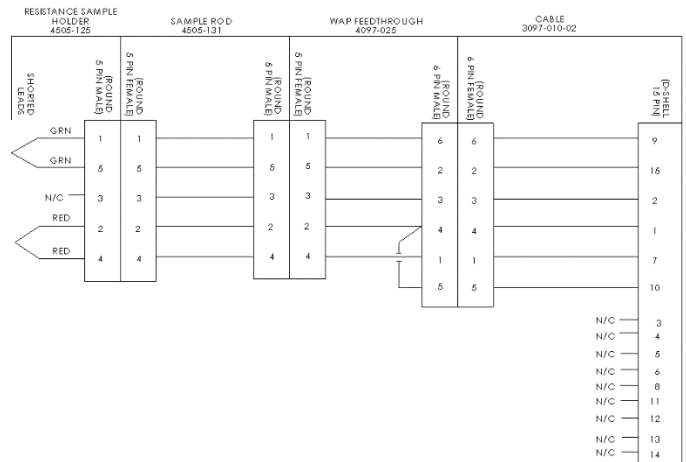


Figure 8: Connection diagram for all parts.

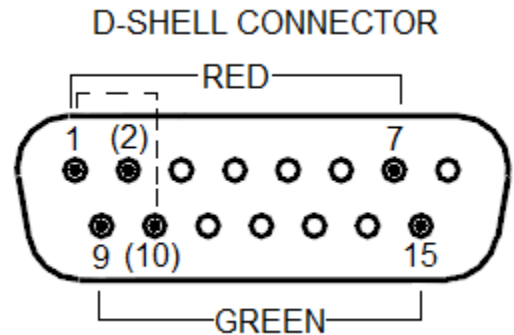


Figure 9: D-Shell connector pin-out with green wires shorted, and red wires shorted.

Summary

The resistance option is not fully integrated into the MPMS 3 system. It is important customers familiarize themselves with the hardware to determine what else they need to perform the measurements successfully.