TestExpress APP (MP2-TEX)

MPO-2000 Series

INSTRUCTION MANUAL

ISO-9001 CERTIFIED MANUFACTURER

GW INSTEK

The information in this manual was correct at the time of printing. However, Good Will continues to improve products and reserves the right to change specification, equipment, and maintenance procedures at any time without notice.

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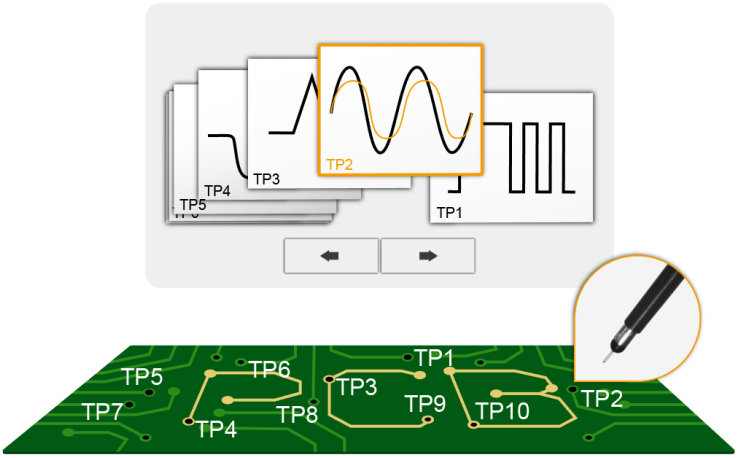
INTRODUCTION

"TestExpress" is a specialized APP designed for functional testing and repair of circuit boards, specifically compatible with the MPO-2000 series oscilloscopes. It is particularly useful for applications where manual operation of oscilloscopes is required to verify measurement values across numerous test points, or even for waveform comparison. By simplifying the operational steps, "TestExpress" helps improve the efficiency of operators or repair engineers, thereby reducing product testing costs. For example, during the rework and repair testing process of motherboards, oscilloscopes are commonly used and crucial testing equipment. They are primarily used for measuring various signals, such as verifying the frequency and amplitude of multiple clock signals on the motherboard. There are also multiple core voltages on the CPU and various ICs that need to be confirmed, as well as checking the proper functioning of SPI Flash's SDI, SDO, CLK signals, or the fan control signals. Before measuring the signals at each test point, it is necessary to correctly set the oscilloscope's horizontal scale, vertical scale, and trigger conditions to obtain accurate measurement data and waveforms. As circuit board functionalities become more complex and the number of test points increases, the demands on the memory skills of operators and work quality become more significant.

"TestExpress" assists operators by allowing them to set up the corresponding oscilloscope settings and reference waveforms with just one push button before each measurement. This enables quick verification of measurement values and waveforms, significantly reducing the steps required to adjust oscilloscope settings and simplifying the testing process. This enhancement leads to increased efficiency in manual testing.

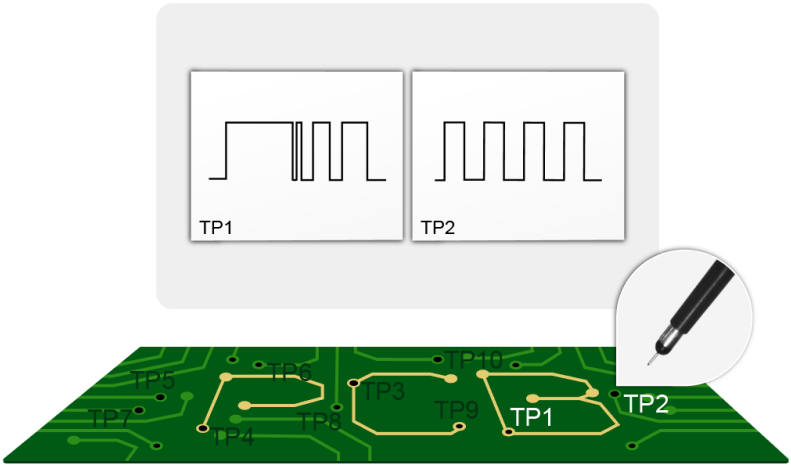


There are two different types of "TestExpress" APP: one for editing and one for execution:

- "TestExpressEditor" APP:
  Before using the "TestExpress" APP, users must save the oscilloscope settings (.SET files) and reference waveforms for each test item. We provide the "TestExpressEditor" APP to help users complete this preliminary work more efficiently. This application assists users in quickly creating test sequences.
- "TestExpress" APP:
  Quickly configure and change the oscilloscope settings according to the test sequences created by the user in the "TestExpressEditor" APP.

Example Usage to Illustrate the Entire Operation Process:

In this example, the user has a motherboard (test object model) labeled "MB_01" and needs to test the "TP1" and "TP2" test items under the "ERROR_01" test category.


TP1
TP2
TP5
TP6
TP10
TP3
TP7
TP8
TP9
TP1
TP2
TP4

OPERATION

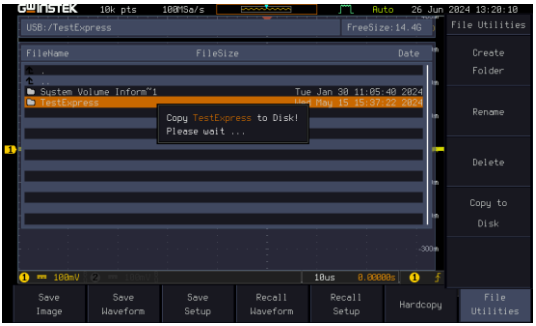
Create the "TestExpress" Directory

Procedure

1. First, user must create folders and subdirectories on the personal computer based on the test object name and test category, using English names for these folders. The root directory's name must be "TestExpress" (it cannot be changed).
2. Under the "TestExpress" directory, create the first-level "Test Object Model" subdirectory named "MB_01."
3. Under the "MB_01" subdirectory, create the second-level "Test Category" subdirectory named "ERROR_01."
4. In the "ERROR_01" subdirectory, create subdirectories for the corresponding "Test Items" named "TP1" and "TP2." These subdirectories will store the corresponding oscilloscope settings and reference waveforms.

   - Folder names can be modified later if necessary.
   - Please notice that the "TestExpress" directory structure is fixed at three levels, such as "X:\TestExpress\Test Object Model\Test Category\Test Items."
   - Each folder name can be up to 40 English characters long and can only use the characters 'A' ~ 'Z', 'a' ~ 'z', '0' ~ '9', '_', and '-'. The space key is not allowed.

5. Once completed, copy the entire "TestExpress" directory along with its subdirectories to a USB flash disk. Please notice that the "TestExpress" directory must be located in the root directory of the oscilloscope's internal disk.
6. Insert the USB flash disk into the oscilloscope's USB socket.
7. Press the "Save/Recall" button on the front panel, then press "File Utility."
8. Rotate the "VARIABLE" knob on the front panel to select the "TestExpress" directory on the USB flash disk.
9. Press the "Copy to Disk" button located at the bottom right of the screen to copy the entire "TestExpress" directory to the internal disk of the oscilloscope.



10. After completing the copy process, rotate the "VARIABLE" knob on the front panel and select the internal disk. Verify that the contents of the "TestExpress" directory have been successfully copied to the internal disk.

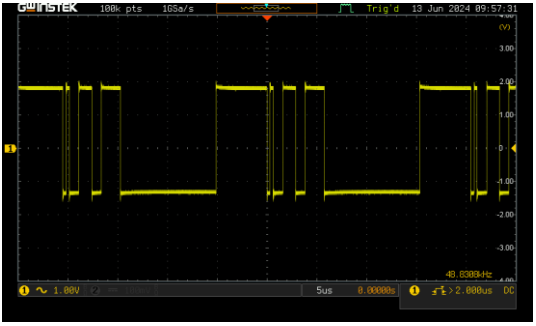

100k pts
1GSa/s
Auto
13 Jun 2024 09:50:27
disk:/TestExpress/MB_01/ERROR_01/TP1
FreeSize:100M
File Utilities
FileName
FileSize
Date
TP1
Thu Jun 13 09:49:45 2024
TP2
Thu Jun 13 09:49:45 2024
Create Folder
Rename
Delete
Copy to USB
1.00V
5us
0.00000s
Save Image
Save Waveform
Save Setup
Recall Waveform
Recall Setup
Hardcopy
File Utilities

Creating Standard Waveforms (TestExpressEditor APP)

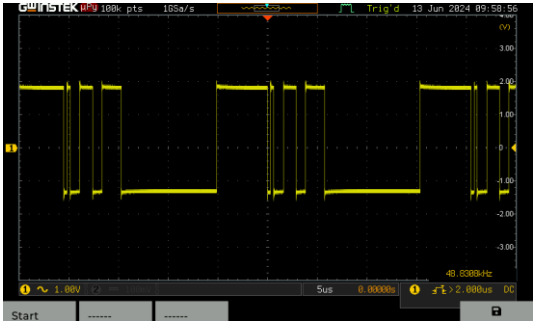
Procedure

1. Adjust the oscilloscope settings and display the correct "TP1" waveform on the LCD screen. Then, press the "µPy/Exit" button on the front panel. Rotate the "VARIABLE" knob to select "TestExpressEditor" APP and press the "Select" button on the front panel to run the APP.

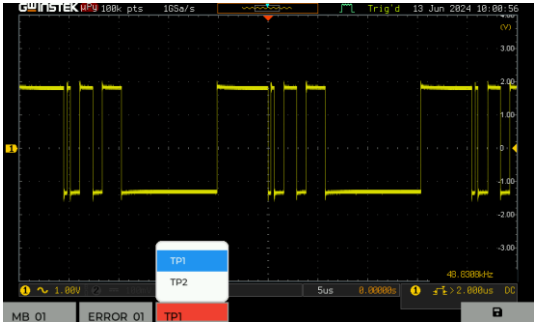
   - If the shortcut key is already set to "TestExpressEditor" APP, press the "µPy/Exit" button will directly enter the "TestExpressEditor" APP, saving operational time.



2. Enter the "TestExpressEditor" APP and press the "Start" button at the bottom left of the screen.



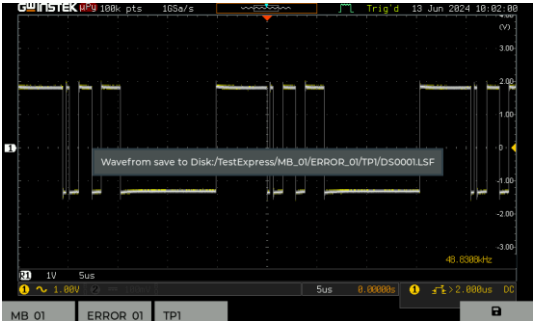
3. Select “MB_01”, “ERROR_01”, and “TP1” options in sequence and press the save button at the bottom right of the screen. ( ).



- In the “TestExpressEditor” and “TestExpress” APPs, the names of items in the ‘Test Object Model’, ‘Test Category’, and ‘Test Items’ folders are sorted in alphabetical order.

- It is recommended to set the memory length to 1k or 10k points to store more test items and also speed up the read process.

4. Once the message in the center of the screen disappears, it indicates that the current settings and waveform have been successfully saved.



5. After completion, press the "µPy/Exit" button to exit the APP, and follow steps 1 to 4 which mentioned above to save the settings and waveform for the next test item (TP2).

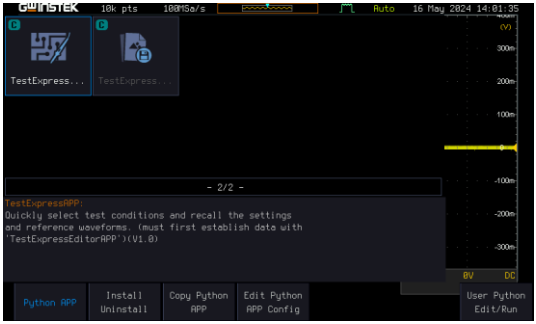
   - The "TestExpress" folder and entire files can be copied to another oscilloscope for use or backed up on a personal computer.

   - If you need to delete an unnecessary "Test Object Model", just press the "Save/Recall" button on the front panel and use the "File Utility" function to remove the "Test Object Model" folder directly from the oscilloscope.

Comparing Standard Waveforms (TestExpress APP)

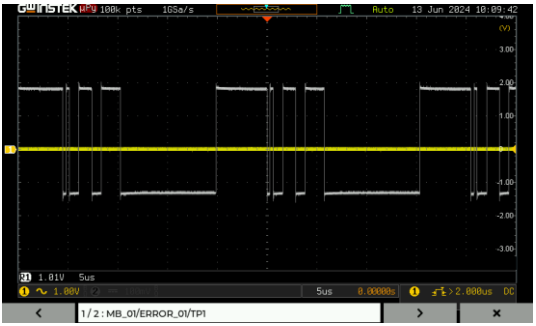
Procedure

1. Once all test items have been saved, users can begin testing the signals at each test point on the motherboard to see if they match the preset waveforms (please notice that this APP does not have the capability for automatic interpretation of measurement results).
2. Press the "µPy/Exit" button to launch the "TestExpress" APP.

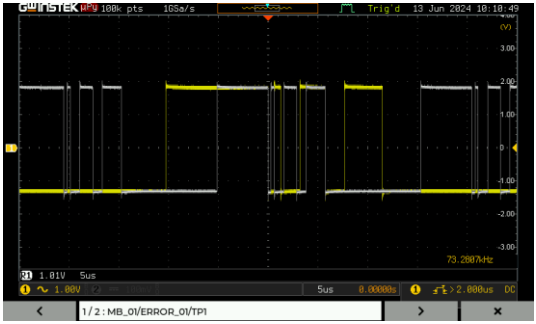


3. After launching the APP, users will enter the first-level menu. Press the "Start" button at the bottom left of the screen, and a list of "Test Object Models" will appear. In this example, sequentially select "MB_01", "ERROR_01", and "TP1". Press the "↵" button at the bottom right finally to start the process and recall the settings and waveform stored in TP1.

4. The current test item number and name will be displayed at the bottom of the screen. The gray waveform represents the stored reference test waveform.



5. At this point, after the oscilloscope's Channel 1 probe contacts the test point, user will observe the waveform. If the yellow waveform does not match the reference waveform, it may indicate a potential issue or abnormality in the circuit.



6. Press the “>” button to move to the next test item. If the test waveform matches the reference waveform, the user can proceed to the next test item.

Shortcut Keys

To reduce the number of steps during testing and editing, users can set up a shortcut in the "µPy User Define" settings to automatically launch either the "TestExpressAPP" or the "TestExpressEditorAPP" when the "µPy/Exit" button is pressed.

Procedure

1. Press the "Utility" button on the front panel, then select the "µPy User Define" button.

2. Press the corresponding "OFF" button on the right side of the screen to open the menu and select either "TestExpressAPP" or "TestExpressEditorAPP." After making the selection, press the "Select" button on the front panel to confirm the selection.

After the setting is completed, users can run the selected APP directly by pressing the "µPy/Exit" button on the panel.

"TestExpress" APP utilizes pre-configured settings and saved data to reduce the repetitive task of constantly setting up the oscilloscope in scenarios involving the manual testing of a large number of motherboards. This allows personnel who are not familiar with oscilloscope operations to get started quickly. The complex oscilloscope setup is simplified into a few simple button operations, reducing the time required for personnel training, improving the efficiency of manual testing, reducing the testing time and costs.