040-0999-02

GENERAL PURPOSE INTERFACE BUS (OPTION 2)

For TEKTRONIX® 468 Oscilloscopes

Serial Numbers B010100 — Up

This modification kit provides parts and instructions to enable the 468 Digital Storage Oscilloscope to transmit a waveform message on a General Purpose Interface Bus (GPIB).

During transmission, the waveform displayed in SAVE Mode by the 468 will be sent to either a bus controller or a listener instrument. The waveform message format will conform to the Waveform Transmission Standard as specified in the Tektronix Standard, "General Purpose Interface Bus (GPIB), Codes and Formats (Rev. C.)."

Installation of this option does not affect the basic instrument operating specifications as listed in the 468 Instruction Manual.

6-9-82
Supersedes: 040-0999-01

PARTS INCLUDED IN MODIFICATION KIT:

Ckt. No.	Quantity	Part Number	Description
-----	2 ea	129-0236-00	Spacer Post, 0.188 hex x 0.375 long
-----	2 ea	129-0260-00	Spacer Post, hex, 0.210 hex x 0.210 long
DS11320	1 ea	150-1049-00	Diode, light emitting, red/green (includes mounting assembly)
-----	1 ea	175-3358-00	Cable assembly, 3-wire ribbon 5.0 inches long
-----	1 ea	198-4401-00	Wire set, 16-wire ribbon cable 3.5 inches long
-----	1 ea	200-2448-05	Cover, rear, 468 Option 02
-----	4 ea	211-0007-00	Screw, 4-40 x 0.188, pnh
-----	1 ea	211-0244-00	Screw, 4-40 x 0.312, pnh, with washer
A16S612	1 ea	260-1994-00	Switch, push DPDT (TRANSMIT)
-----	1 ea	337-2792-00	Shield, electrical, for GPIB circuit board
-----	2 ea	361-0383-00	Spacer, switch, 0.330 long
-----	1 ea	366-1559-00	Pushbutton cap, 0.180 square x 0.430 long
-----	1 ea	386-4308-00	Panel, side (self-adhesive film)
A17	1 ea	670-6378-01	Circuit board, GPIB
-----	1 ea	----- -----	Plate, identification (Option 02)

INSTRUCTIONS:

WARNING

Disconnect the instrument from the power source before proceeding.

A.   TO REMOVE THE CABINET:

( )   1.   Install the front panel cover, place the cabinet handle against the bottom of the cabinet, and set the instrument face down on a flat surface.

( )   2.   Remove the screw securing the power cord to the rear panel and unplug the power cord.

( )   3.   Completely loosen the six screws securing the rear cabinet frame and feet to remove the frame, feet, and screws from the instrument.

( )   4.   Slide the cabinet up until it is separated from the instrument.

B.   TO MODIFY THE STORAGE MODULE:

( )   1.   Peel the plastic-film side panel off the molded-plastic sub-panel located above the left edge of the Storage Display circuit board.

( )   2.   Install the new film side panel from the kit onto the same sub-panel.

( )   3.   Press the pushbutton cap from the kit onto the shaft of S612, the push-switch from the kit.

( )   4.   Trim the pins of S612 to 0.5 inch in length.

( )   5.   Slide the two T-shaped switch spacers from the kit onto the front and rear pins of S612, with the T-bar of each spacer toward the switch.

( )   6.   Install the switch on the Storage Display circuit board with the pushbutton extending through the side panel hole marked "TRANSMIT," and the switch base pins extending through the circuit board.

( )   7.   Solder the switch base pins to the circuit board.

( )   8.   Press mount the light emitting diode (LED) holder from the kit onto the "TIDS/SRQ" hole in the side panel. Install the holder so the shoulder is on the film side of the subpanel.

( )   9.   Press DS11320, the LED from the kit, into the holder from the inside of the subpanel; use the sleeve retainer from the kit to secure the LED in place.

( )   10.   Plug the 3-wire ribbon cable from the kit onto the leads of the LED. Position the connector so that the brown wire of the ribbon cable is connected to the "L"-shaped pin of the LED.

( )   11.   Connect the other end of the 3-wire ribbon cable to P318 on the Storage Display circuit board. Be sure the arrow on the connector is in line with the arrow on the circuit board.

C.   INSTALL THE GPIB CIRCUIT BOARD:

( )   1.   Mount the GPIB circuit board from the kit on the rear subpanel
            of the instrument as follows:

    ( )   a.   Install the 4-40 x 0.312 screw from the kit in the hole
                below the GPIB 24-contact connector.

    ( )   b.   Install the two short spacer posts in the holes on each side
                of the 24-contact connector.

    ( )   c.   Install the two long spacer posts in the holes located near
                the lower corners of the GPIB circuit board.

( )   2.   Separate the rear chassis assembly from the main chassis by
            removing four flat-head screws located near the top rear corners
            of the rear chassis assembly and two pan-head screws located in
            the rear subpanel.

( )   3.   Move the rear chassis assembly to the rear until it is clear of
            the main chassis; then lift and rotate it 180° to rest on top of
            the main chassis.

( )   4.   Plug the 16-wire ribbon cable from the kit between P410 on the
            Time Base Power Supply circuit board and P265 on the GPIB
            circuit board. Be sure the arrows (pin 1) on the connectors are
            in alignment with the arrows printed on the circuit boards.

( )   5.   Install the GPIB shield included in the kit, using the four 4-40
            x 0.188 screws (also included in the kit).

D.   TO CHECK OPERATION:

( )   1.   If the Service Accessory Package, pn 067-0947-00, is available,
            verify the operation of the modified instrument as directed in
            the "Service Tests" portion of the Maintenance Section of the
            468 Service Manual, Volume I.

            Upon completion of the Service Test, return U565 to its socket,
            remove the service jumpers, and reinstall the rear chassis
            assembly onto the main chassis.

( )   2.   If the Service Accessory Package is not available, verify the
            installation of the GPIB interface as follows:

    ( )   a.   Reinstall the rear chassis assembly on the main chassis.
                Check that the three connectors on the 50-conductor ribbon
                cable are plugged in.

( ) b. Set Sections 7 (RAM Verification) and 8 (Option Present) of S707 to the closed (On) position. S707 is located near the left rear corner of the Storage Display circuit board.

( ) c. Press the front panel NORM STORAGE MODE push switch to the "in" (Storage) position.

( ) d. Set the rear-panel TALK ONLY switch to ON.

( ) e. Connect the instrument to the power source and press the POWER push switch to the ON position.

( ) f. Check that the four-digit, seven-segment LED indicators on the Storage module front-panel cycle through the Power-On Self-Test from "8.8.8.8." to "0000."

NOTE

The Power-On Self-Test is described under "Troubleshooting/Power-On Self-Test" in the Maintenance Section of the Service Manual.

( ) g. Check that the $\overline{\text{TIDS}}$/SRQ LED on the Storage Module side panel glows red.

( ) h. Press the TRANSMIT push switch and check that the $\overline{\text{TIDS}}$/SRQ LED changes to green and red.

NOTE

When Section 8 of S707 is in the Closed (On) position, pressing the TRANSMIT button with no controller or listener on the bus will put the 468 into SAVE Mode and will not return to normal operation. The only way to exit this condition is by cycling the POWER switch off, then on again, as follows:

( ) i. Press and release the POWER push switch to turn the instrument off; then press again to turn the instrument back on. If GPIB is operation-active (Section 8 of S707 in the Closed (On) position), and no GPIB controller services the 468 Service Request (SRQ), the $\overline{\text{TIDS}}$/SRQ LED should be red.

( ) j. Press the POWER push switch to the OFF position.

( ) 3. For information on setting up the 468 GPIB System, refer to "Option 02, Specific Operating Information" in the 468 Manual.

( ) 4. If the 468 is to be used as a conventional oscilloscope without using the GPIB until some time in the future, switch Section 8 of S707 to the OPEN (off) position. This will prevent an accidental closing of the TRANSMIT push switch from disabling the oscilloscope (see NOTE at the end of Step D-2h).

E. TO REINSTALL THE CABINET:

( ) 1. Install the front cover on the front panel and set the instrument face down on a flat surface.

( ) 2. Swing the cabinet handle back against the bottom of the cabinet.

( ) 3. Carefully slide the cabinet over the instrument. Avoid pinching cables or damaging components that extend above the circuit boards.

( ) 4. Using both hands, press lightly on the top, bottom, and sides of the cabinet until the front edge of the cabinet is seated in the groove around the front cabinet frame.

( ) 5. Install the new rear cover from the kit. Check that the cabinet edge is seated in the gasket groove of both the front and rear panels, and tighten the six screws of the rear cover to a snug fit. Do not over-tighten these screws.

( ) 6. Install the Option 02 identification plate (included in the kit) in one of the mod slots provided on the rear panel.

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