

## DESCRIPTION

The 91A24 Data Acquisition Module is a plug-in circuit board assembly that is compatible with any DAS 9100 Series mainframe. It features comprehensive clocking, triggering, and storage qualification abilities. Acquisition rates of up to 10 MHz are possible, using either internal or external clocking control. The 91A24 acquires 24 data channels, using three data acquisition probes. Up to three 91AE24 expander modules may be added to increase channel width. Each 91AE24 adds 24 channels.

A special feature is provided in the DAS for using the 91A24 with high-speed acquisition modules in 91A24 ARMS modes.

- Refer to the *DAS 9100 Series Operator's Manual* for complete operating instructions, specifications, and operator checkout procedures for all DAS instrument modules, options, and probes. If your manual does not contain 91A24 information, refer to the *91A24, 91AE24, and P6460 Operator's Manual Addendum*.

## MODULE INSTALLATION

Do not install or remove a 91A24 module until you have read the following warnings, cautions, and configuration requirements.

### WARNING

*When installing or removing instrument modules, the operator may gain access to the mainframe's module compartment only. Unless you are a qualified service technician, do not open any other compartments within the mainframe because they contain hazardous voltages.*

### CAUTION

*When modules are being installed, the mainframe should be turned off and unplugged from its power source. Damage to the module's circuitry may occur if the module is installed while the mainframe is receiving power.*

## CONFIGURATION AND UPDATE REQUIREMENTS

### Configuration Requirements

The power and configuration requirements for 91A24 and 91AE24 modules are as follows:

1. To operate 91AE24 modules, a 91A24 module must be installed in the mainframe.
2. The 91A24 module can only share a +5 V power supply with a 91AE24, 91A08, or 91P32 module.

### CAUTION

*If the 91A24 is installed in a bus slot sharing a power supply with any type of module other than a 91AE24, 91A08, or 91P32, the power supply may not function correctly due to current overload.*

When positioning modules around the 91A24, be sure to allow for the power supply restriction. Table 1 shows bus-slot positions recommended for 91A24 and 91AE24 modules.

You can see which power supplies are present in the mainframe by checking the chrome pins visible through the power supply area cover. DO NOT remove the power supply area cover.

3. Without violating the power supply requirement, the 91A24 and 91AE24 must be positioned in adjacent bus slots. All 91AE24 modules must be positioned to the same side (either all to the right or all to the left) of the 91A24 module. Table 1 shows bus-slot positions recommended for 91A24 and 91AE24 modules.

**Table 1  
RECOMMENDED BUS SLOT PLACEMENT**

Bus Slot	Module
0	Controller
1	91A24 Data Acquisition Module
2	91AE24 Data Acquisition Module
3	91AE24 Data Acquisition Module
4	91AE24 Data Acquisition Module
5	Any module other than a 91A24 or 91AE24
6	Any module other than a 91A24 or 91AE24
7	Trigger/Timebase

Positioning modules as recommended ensures that Tektronix mnemonics tape files will restore. Also, if you use more than one DAS, consistent positioning of modules ensures that your setup files are transferable.

**Firmware Update Requirements**

To operate with 91A24/91AE24 modules, your DAS must be equipped with firmware version 1.11 or higher. If your DAS has a lower firmware version, it will display the error message NEEDS FIRMWARE VERSION > = 1.11 at powerup. You can determine your mainframe's firmware version by looking in the upper right corner of the power-up display.

Firmware version 1.11 requires that 91A04 modules be equipped with version 2 (or higher) firmware. You can determine if your 91A04 has the correct firmware by checking the 91A04 listing on the DAS powerup display: V2 (or higher) should appear at the right of this line.

To obtain Version 1.11 update kits for your mainframe and/or 91A04, contact your Tektronix representative.

**Hardware Update Requirements**

For use with 91A24/91AE24 modules, certain hardware updates may be required. These updates can be performed by your Tektronix Service Center, or you can order the appropriate DAS hardware update kit. The following updates are necessary:

- DAS mainframes with serial numbers lower than B030100 require a controller board modification.
- 91A08 modules with serial numbers lower than B020100 require modification to operate in 91A24 ARMS 91A08 mode.
- PMA 100 Personality Module Adapters with serial numbers lower than B020100 require a new backpanel label.

Should any of your equipment require an update, contact your Tektronix representative.

**INSTALLATION**

Figure 1 illustrates the steps for installing a module in the mainframe. Refer to this figure while reading the following instructions.

- **Refer to the *DAS 9100 Series Operator's Manual* for instructions on removing the mainframe top panel and module compartment cover.**
1. Remove the mainframe top panel and module compartment cover. DO NOT remove the power supply area cover.
  2. Position the module over the selected bus slot, with the ejector tab toward the front of the mainframe. Make sure this tab is parallel to the module.
  3. Insert the module between the guide slots at the top of the mainframe. This procedure is easiest if you align the module with the rear guide first.
  4. Slide the module down through the slots until its connectors rest on the top of the bus slot connectors on the interconnect board.
  5. Push the module down into the bus slot connectors. Press firmly on the board but do not press on the components.

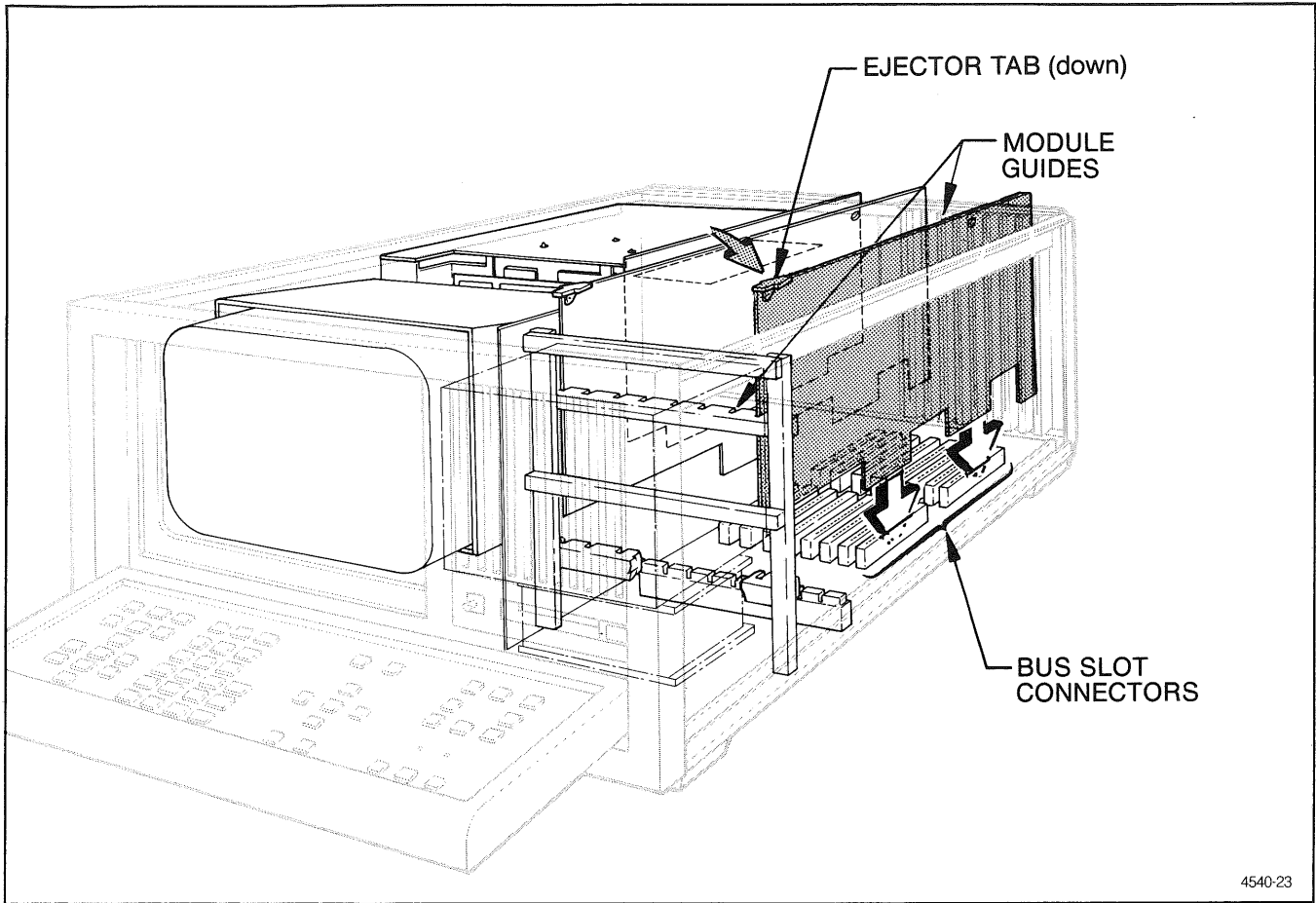


Figure 1. Installing an instrument module in the mainframe.

## SYNC-OUTPUT CABLE CONNECTION

The 91A24 module comes equipped with a 2-meter coaxial cable. This cable terminates with a BNC connector at one end and a male phone plug at the other, and is used to carry a TTL sync-output signal. The signal is synchronized with the recognition of events defined in the Trigger Specification sub-menu's sequential word recognizer.

The sync-output cable is connected to the 91A24 through back-panel openings on the mainframe. The female plug-in jack for the cable is located on the back edge of the 91A24 module, immediately below the pod C connector. Connection of the sync-output cable is shown in Figure 2.

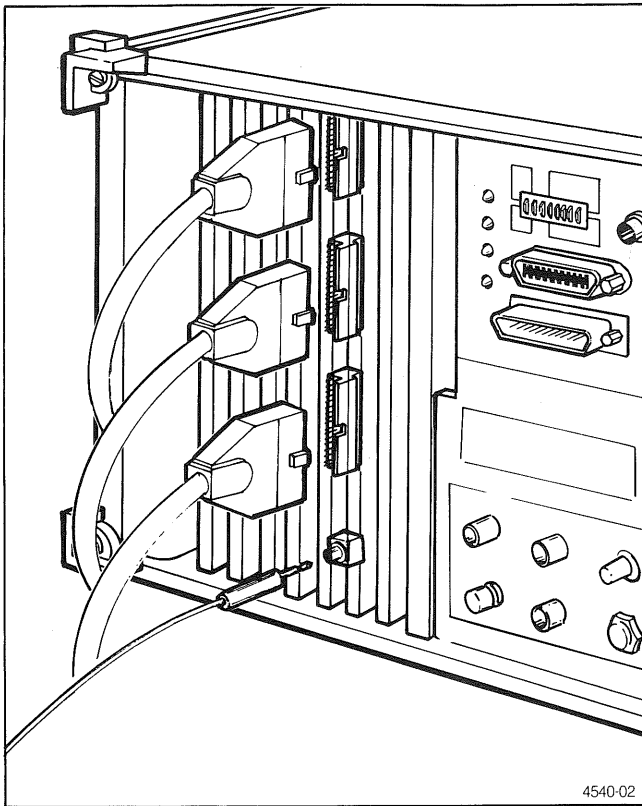


Figure 2. Connecting the sync-output cable and P6460 probes.

## PROBE CONNECTIONS

Data acquisition probes are connected to the 91A24 module through back-panel openings on the mainframe. The probes attach to the module's pod A, pod B, and pod C connectors.

### To connect probes to modules (see Figure 2):

1. Grasp the probe by its cable holder.
2. Align the cable holder with the module's pod connector. Be sure the raised tab on the cable holder is facing towards bus slot 0 and is aligned with the opening on the module's pod connector.

3. Gently push the cable holder onto the connector. Do not force the connection.

To disconnect the probe, grasp the cable holder and pull gently.

### CAUTION

*Damage may occur to the probe cable if you disconnect the probe by pulling on the cable rather than the cable holder.*

## ACCESSORIES

### Standard Accessories

- 1 175-8165-00 External Sync-Output Cable, 2 m (76 in.)
- 1 070-4672-00 *91A24 Instructions*
- 1 070-4540-00 *91A24, 91AE24, and P6460 Operator's Manual Addendum (to the DAS 9100 Series Operator's Manual)*

### Optional Accessories

- UPIK40 40-pin Universal Probe Interface Kit
- 070-4541-00 *91A24 and 91AE24 Service Manual Addendum (to the DAS 9100 Series Service Manual)*
- 175-8166-00 Interconnect Cable Assembly, 28 cm (11 in.), for service procedures; 7 required
- DAS 9100 Series Mnemonics Tapes; see your Tektronix Sales Engineer for ordering information

### Recommended Accessories

- 062-5847-04 *DAS 9100 Series Operator's Manual (includes 91A24, 91AE24, and P6460 Operator's Manual Addendum)*
- 062-5848-02 *DAS 9100 Series Service Manual*

## SERVICE

**WARNING**

*The 91A24 module should be serviced only by qualified personnel in accordance with procedures outlined in the DAS 9100 Series Service Manual.*

Refer to the *DAS 9100 Series Service Manual* for 91A24 service information including verification/adjustment procedures, circuit descriptions, troubleshooting methods, schematics, and replaceable parts lists.

If your *DAS 9100 Series Service Manual* does not include 91A24 information, refer to the *91A24 and 91AE24 Service Manual Addendum*.

Tektronix provides complete instrument service at local Field Service Centers and at the Factory Service Center in Beaverton, Oregon. Contact your local Tektronix representative for additional information.

