

# **AFA6**

## ***32-Way Pressure Display***

# ***User Guide***

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TecQuipment has taken care to make the contents of this manual accurate and up to date. However, if you find any errors, please let us know so we can rectify the problem.

TecQuipment supply a Packing Contents List (PCL) with the equipment. Carefully check the contents of the package(s) against the list. If any items are missing or damaged, contact TecQuipment or the local agent.

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# AFA6

## 32-Way Pressure Display

### User Guide

## Introduction



Figure 1 The AFA6 32-Way Pressure Display



***This Product is VDAS Compatible***

## The AFA6 32-Way Pressure Display

The AFA6 module is part of TecQuipment's Modular Wind Tunnel range. The module fits into the Control and Instrumentation Frame of the TecQuipment Wind Tunnels. It provides a means to measure and display 32 different pressures from models, Pitot static tubes and other devices fitted to the AF100 and AF200 series Wind Tunnels.

The module contains 32 calibrated pressure transducers rated at a maximum of  $\pm 7$  kPa. The module has an integral liquid crystal display with a scroll control that allows the user to read all 32 channels in groups of 4 at any time. All pressures are measured with respect to atmosphere.

The AFA6 can be interfaced to a PC by means of the optional TecQuipment VDAS (Versatile Data Acquisition System), that allows pressure measurements to be displayed, captured, conveniently tabulated, graphed, and exported to a spread sheet package for further processing.

When the AFA6 Module is used with TecQuipment's VDAS, it gives a great advantage over conventional instruments such as manometers. Many readings can be taken and the user may use a suitable spreadsheet software package to get a more accurate picture of pressure distributions. These results are usually unstable and difficult to obtain with "spot" readings.

## Optional Instrument Modules

- AFA2 - A Basic Balance with a single load cell (AF100 only).
- AFA3 - A Three Component Balance
- AFA4 - Angle Feedback Device for use with the AFA3
- AFA5 - Differential Pressure Transducer
- AFA7 - Pitot Traverse Unit (AF100 only)
- AFA8 - Pitot Traverse Unit (AF200 only)
- AFA9 - Traverse Frame (AF200 only)
- VDAS - A two part (hardware and software) versatile data acquisition system

Figure 2 shows a system diagram for the other ancillaries available for these wind tunnels and how they connect to the VDAS.

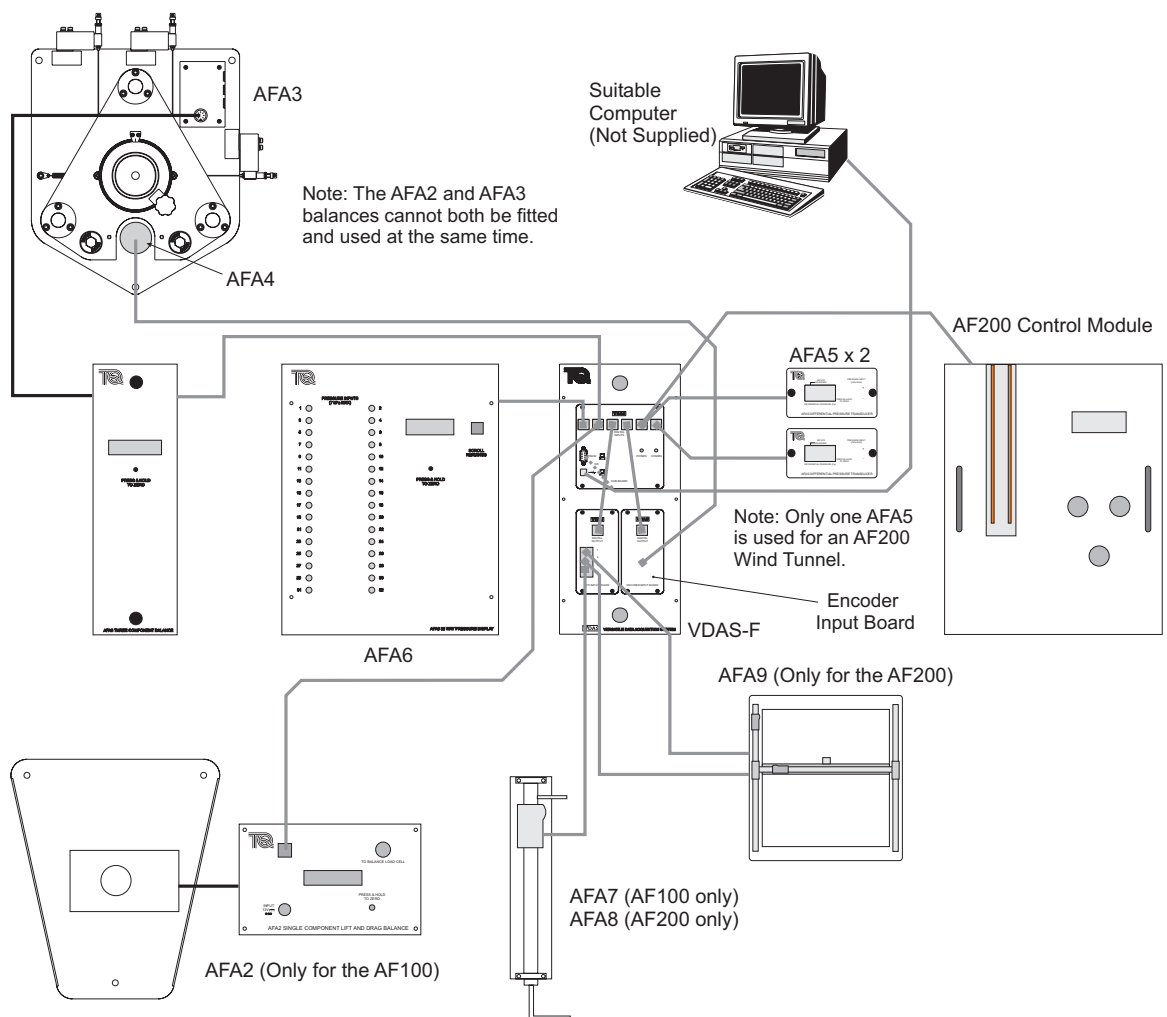


Figure 2 System Diagram





# Technical Details

Item	Details
Height	450 mm
Width	350 mm
Depth	220 mm (add 100 mm for cables)
Weight	10 kg
Inputs	32 pressure sockets
Outputs	1 Digital with RJ45 connectors
Electrical Supply	85 VAC to 264 VAC 50 Hz to 60 Hz
Fuse	20 mm F6.3 A
Nominal Power Consumption	45 W

*Table 1 Technical Specifications*



# Installation

The terms **left**, **right**, **front** and **rear** of the apparatus refer to the operators' position, facing the unit.

## Assembly

The AFA6 module locates in the AF100 or AF200 Control and Instrumentation Frame. The main section of the frame (main drive unit in the AF200) includes the power supply connection for the AFA6 module.

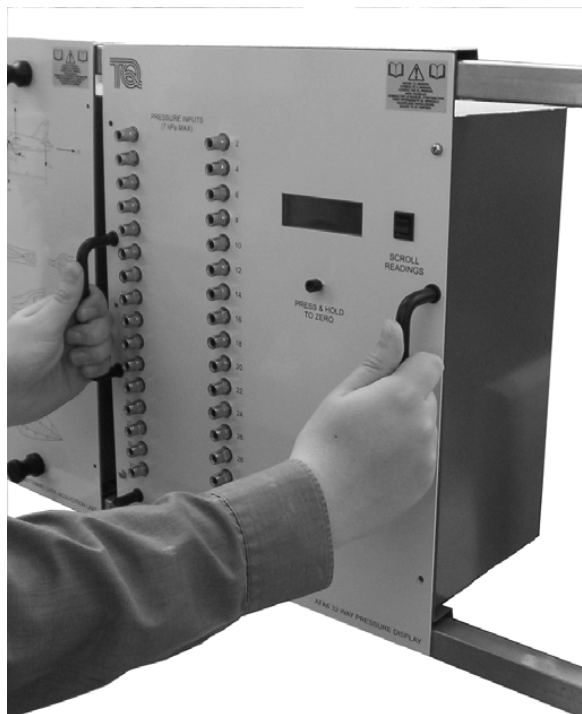
## Procedure



### WARNING

*Disconnect the electrical supply to the wind tunnel before you install the AFA6.*

1. Lift the module up and onto the top and bottom bars of the Control and Instrumentation Frame as shown in Figure 3.



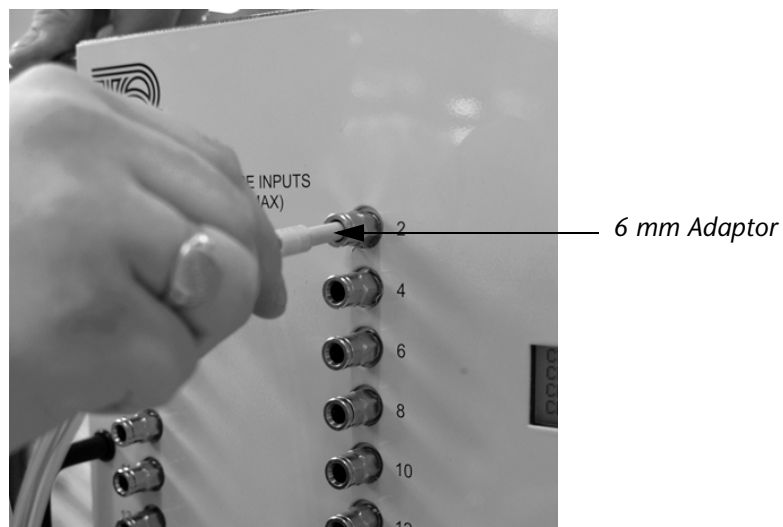
*Figure 3 Lift the Module Up and Onto the Frame*

2. Slide the unit along the frame so that it is at the nearest end to the wind tunnel. This gives the nearest and most convenient arrangement for the connections and cables.
3. If you need to connect to the optional VDAS, use the cable supplied with the VDAS and connect it to the socket marked 'Digital Output' on the AFA6 (see Figure 4). Refer to the VDAS manual for more details.



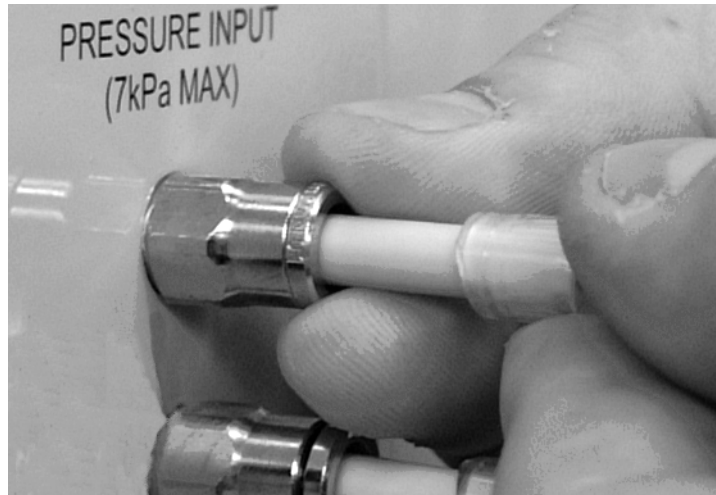
*Figure 4 Use the Cable Supplied with the VDAS for Data Connection*

4. A set of 6 mm adaptors are supplied with the AFA6 module. Fit these adaptors to the ends of your pipework, then insert the adaptors into the pressure sockets of the AFA6 module (see Figure 5).



*Figure 5 Fit the 6 mm Adaptors to your Pipework, then Insert the Adaptors into the Sockets*

5. To remove the pipe connection, push and hold the collar on the pressure socket, pull the pipe and adaptor from the socket (see Figure 6).



*Figure 6 Push and Hold the Pressure Socket to Remove the Pipe Connection*

6. Connect the mains electrical IEC type cable to the AFA6 from one of the mains electrical supply sockets on the rear of the main section of the Control and Instrumentation Frame (or the main drive box on the AF200 wind tunnel).



# To Use the AFA6 Module

## Switch on

1. Make sure that there is no pressure applied to the pressure sockets.
2. Switch on the power to the Control and Instrumentation Unit of your wind tunnel.



*Do not press the 'zero' button on the AFA6 module when the power is first applied.*

3. The AFA6 display will show 'TecQuipment', then 'Digital Pressure System'. It will then automatically zero its readings (10 second delay).
4. Leave the module to stabilize for 10 to 15 minutes.
5. Press and hold the zero button for at least four seconds to re-zero the readings.
6. Start your experiment.



*Do not apply pressure greater than 7 kPa to any of the pressure sockets.*

*Never blow into the pipework connected to the pressure sockets, human saliva can cause the instrument to give false readings.*

7. Use the 'Scroll Readings' button to scroll up and down through the readings (four at a time).

## Calibration

The AFA5 unit is calibrated at the factory and should not need re-calibrating. If you suspect that the calibration has been accidentally upset or is wrong for any reason, you may recalibrate it. You will need:

- A common 'pressure chest' with 33 tappings
- A variable pressure source 0 to 7 kPa
- A precision manometer or calibrated pressure meter with a 7 kPa range

## Procedure

1. Connect the AFA6 to the pressure chest and manometer as shown in Figure 7. Do not apply any pressure yet.
2. Press and hold the zero button on the AFA6 module, at the same time, switch on the electrical supply.
3. The AFA6 display will show 'TecQuipment'. Then it will show 'Digital Pressure System'.

4. The display will then automatically zero its readings (10 second delay) and show 'Auto-span to follow'. Note: If you disconnect the power at this point, the settings will remain unchanged.
5. Use your variable pressure source to apply exactly 6895 Pa (1 PSI or 703 mm H<sub>2</sub>O).
6. Press the scroll button up or down. The display will show 6895 Pa. Note that the final digit may fluctuate if your pressure source is not perfectly constant. The AFA6 module is now calibrated.
7. You may reduce the pressure source and check that the AFA6 display shows the same reading as the manometer, for a number of different pressures.

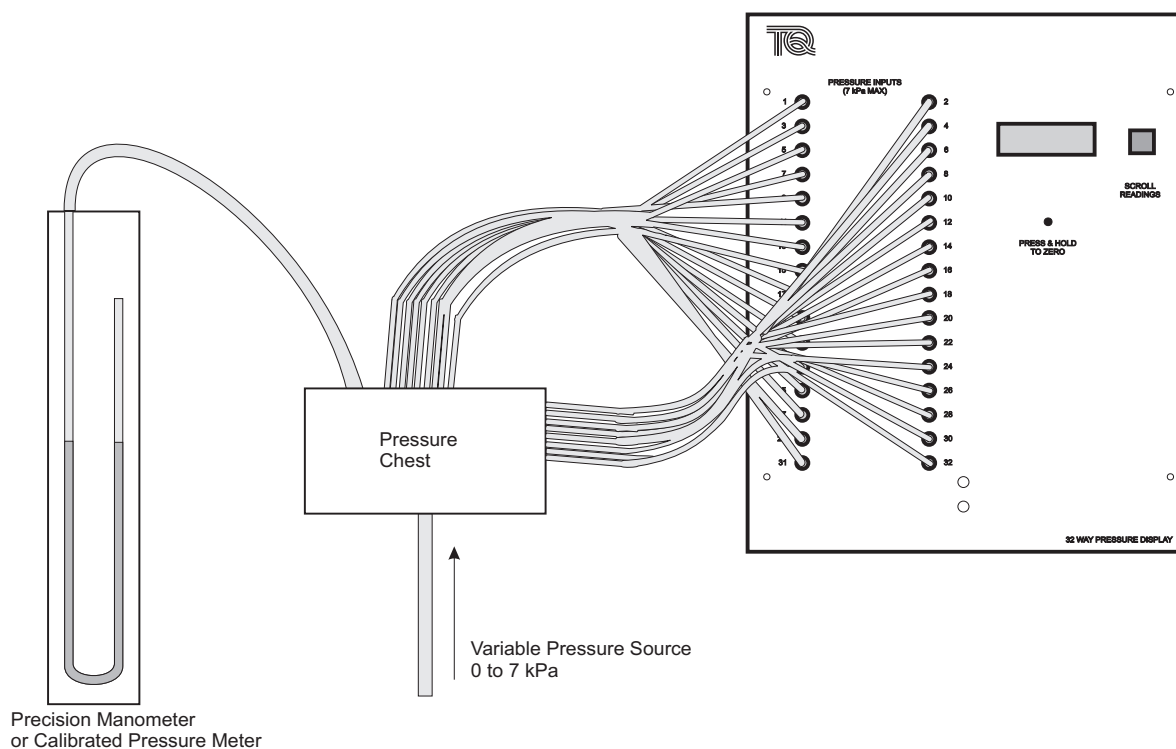


Figure 7 Connections for Calibration



# Maintenance

## General

To clean the AFA6 module, wipe clean with a damp cloth - do not use abrasive cleaners.

Store in a dry and dust free area suitably covered.

## Electrical

### WARNING



***Only a qualified person may carry out electrical maintenance.***

***Ensure the following procedures are followed.***

- Assume the apparatus is energised until it is known to be isolated from the electrical supply.
- Use insulated tools where there are possible electrical hazards.
- Confirm that the apparatus earth circuit is complete.
- Identify the cause of a blown fuse or tripped circuit breaker before renewing or resetting.

### ***To renew a blown fuse***

- Isolate the apparatus from the electrical supply.
- Renew the fuse.
- Reconnect the apparatus to the electrical supply and switch on.
- If the apparatus fails again, contact TecQuipment Ltd or your agent for advice.

### NOTE



*Renew faulty or damaged parts with an equivalent item of the same type or rating.*

### ***Circuit Protection***

There is one replaceable fuse located in a fuse holder at the IEC socket on the back of the AFA6 module. Use a small flat-bladed screwdriver to open the fuse holder.

## Spare Parts

Check the Packing Contents List to see what spare parts we send with the apparatus.

If you need technical help or spares, please contact your local TecQuipment Agent, or contact TecQuipment direct.

When you ask for spares, please tell us:

- Your Name
- The full name and address of your college, company or institution
- Your email address
- The TecQuipment product name and product reference
- The TecQuipment part number (if you know it)
- The serial number
- The year it was bought (if you know it)

Please give us as much detail as possible about the parts you need and check the details carefully before you contact us.

If the product is out of warranty, TecQuipment will let you know the price of the spare parts.

## Customer Care

We hope you like our products and manuals. If you have any questions, please contact our Customer Care department:

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For information about all TecQuipment Products and Services, visit:

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