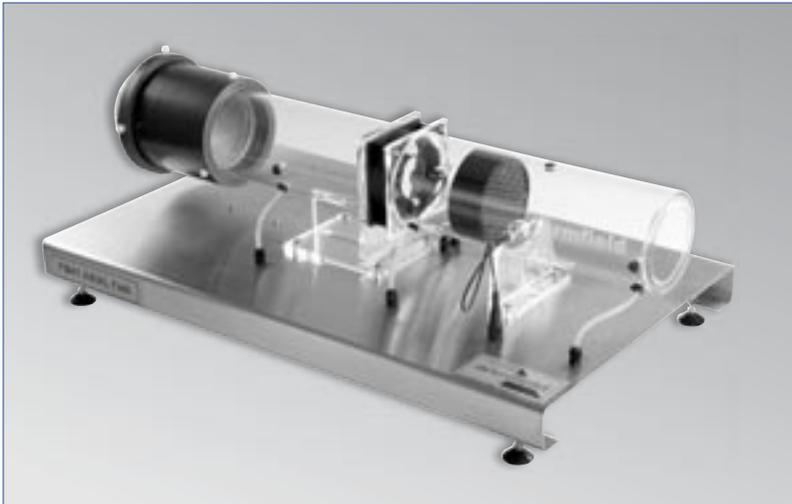




AXIAL FAN DEMONSTRATION UNIT

FM41
issue 2



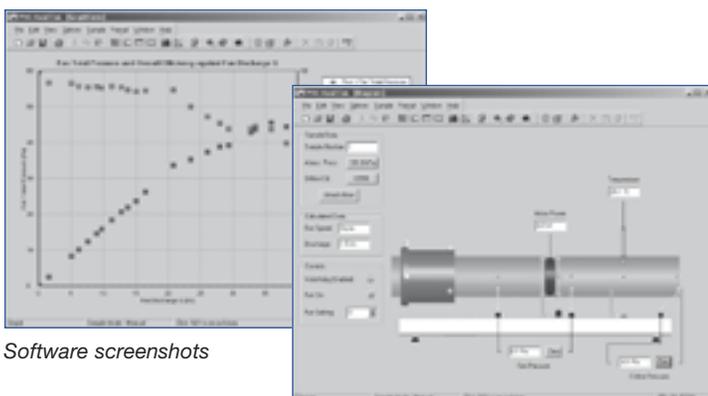
FM41 Axial Fan Demonstration Unit

The axial fan produces gas flow by virtue of the momentum changes imparted across the rotary blades, parallel to the axis of rotation. Such fans are more suitable for higher flows at lower delivery pressures than their centrifugal counterparts.

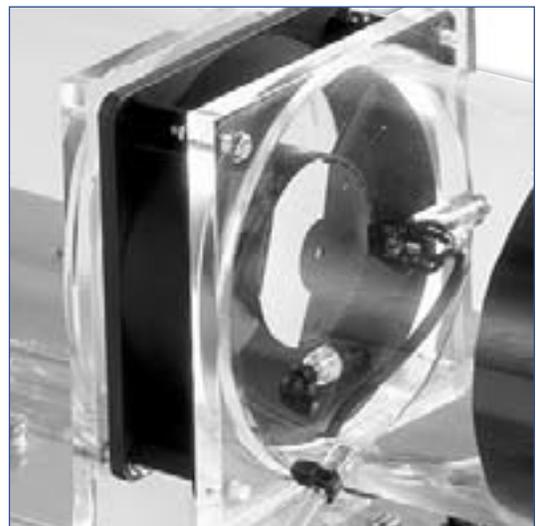
Comparison of the performance characteristics of the FM41 Axial Fan with those of the FM40 Centrifugal Fan thus provides an instructional exercise of valuable practical application.

INSTRUCTIONAL CAPABILITIES

- *Measurement of inherent-speed machine performance in terms of static and total pressures, rotor speed and motor input power, as a function of inlet flow*
- *Measurement of overall efficiency and estimation of impeller power efficiency*
- *Measurement of performance at constant speeds*
- *Introduction to similarity laws for scale-up*
- *Comparison of student calculations with computer results*



Software screenshots



Detail of the Axial Fan

DESCRIPTION

An axial fan, mounted on a stainless steel plinth. Transparent air inlet and air outlet ducts allow the fan construction to be clearly observed.

A manually operated adjustable aperture allows the air flow rate to be varied.

A calibrated orifice plate is used on the discharge to measure the air flow rate.

Electronic sensors measure the pressure head developed across the fan, the pressure across the orifice plate (and hence the flow rate), the rotational speed of the fan and the air temperature.

The fan speed is controlled by modulated dc supply, complete with current sensing to allow the power drawn by the fan to be measured.

An IFD7 is required to provide the conditioning electronics for the sensors and to allow their readings to be displayed on the computer software. Connections to the IFD7 are a single multi-way connector for the sensors and a power connector for the fan drive.

The equipment is provided with advanced education and data logging software. See the software section of this datasheet for further details.

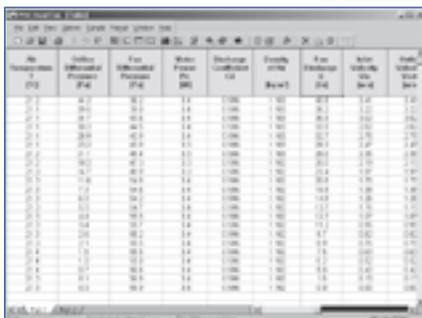
PERFORMANCE SPECIFICATION

Max Flow Rate: 38 l/s typical

Max Head: 0.06 KPa

Max fan speed 2700rpm

Motor Power rating 5W



Time	Fan Speed (rpm)	Fan Pressure (Pa)	Orifice Pressure (Pa)	Fan Power (W)	Air Temp (°C)
0.0	0	0.00	0.00	0.00	20.0
0.1	100	0.01	0.01	0.01	20.0
0.2	200	0.02	0.02	0.02	20.0
0.3	300	0.03	0.03	0.03	20.0
0.4	400	0.04	0.04	0.04	20.0
0.5	500	0.05	0.05	0.05	20.0
0.6	600	0.06	0.06	0.06	20.0
0.7	700	0.07	0.07	0.07	20.0
0.8	800	0.08	0.08	0.08	20.0
0.9	900	0.09	0.09	0.09	20.0
1.0	1000	0.10	0.10	0.10	20.0
1.1	1100	0.11	0.11	0.11	20.0
1.2	1200	0.12	0.12	0.12	20.0
1.3	1300	0.13	0.13	0.13	20.0
1.4	1400	0.14	0.14	0.14	20.0
1.5	1500	0.15	0.15	0.15	20.0
1.6	1600	0.16	0.16	0.16	20.0
1.7	1700	0.17	0.17	0.17	20.0
1.8	1800	0.18	0.18	0.18	20.0
1.9	1900	0.19	0.19	0.19	20.0
2.0	2000	0.20	0.20	0.20	20.0
2.1	2100	0.21	0.21	0.21	20.0
2.2	2200	0.22	0.22	0.22	20.0
2.3	2300	0.23	0.23	0.23	20.0
2.4	2400	0.24	0.24	0.24	20.0
2.5	2500	0.25	0.25	0.25	20.0
2.6	2600	0.26	0.26	0.26	20.0
2.7	2700	0.27	0.27	0.27	20.0
2.8	2800	0.28	0.28	0.28	20.0
2.9	2900	0.29	0.29	0.29	20.0
3.0	3000	0.30	0.30	0.30	20.0

Software screenshot

ORDERING SPECIFICATION

- **A small-scale axial fan demonstration unit, comprising of an inlet duct, the fan, an outlet duct and an adjustable aperture, all mounted on a stainless steel base.**
- **Equipped with electronic measurement sensors for fan head pressure, flow-rate (via orifice plate), fan speed and air temperature.**
- **Transparent ducts give visibility of the fan in operation.**
- **Capable of being linked to a PC (not supplied) via a USB interface console (an essential accessory), which does not require internal access to the computer. Also allows interfacing to other software packages.**
- **Supplied with software providing full instructions for setting up, operating, calibrating and performing the teaching exercises. Facilities for logging, processing and displaying data graphically.**
- **Offers a complete teaching package of coursework and laboratory investigation, complete with a student questions and answers session.**

ESSENTIAL EQUIPMENT

Armfield IFD7 Interface Unit
PC with spare USB port

OVERALL DIMENSIONS

Height: 0.945m

Length: 0.85m

Width: 0.45m

SHIPPING SPECIFICATION

Gross Weight: 90Kg

Volume: 0.75m³