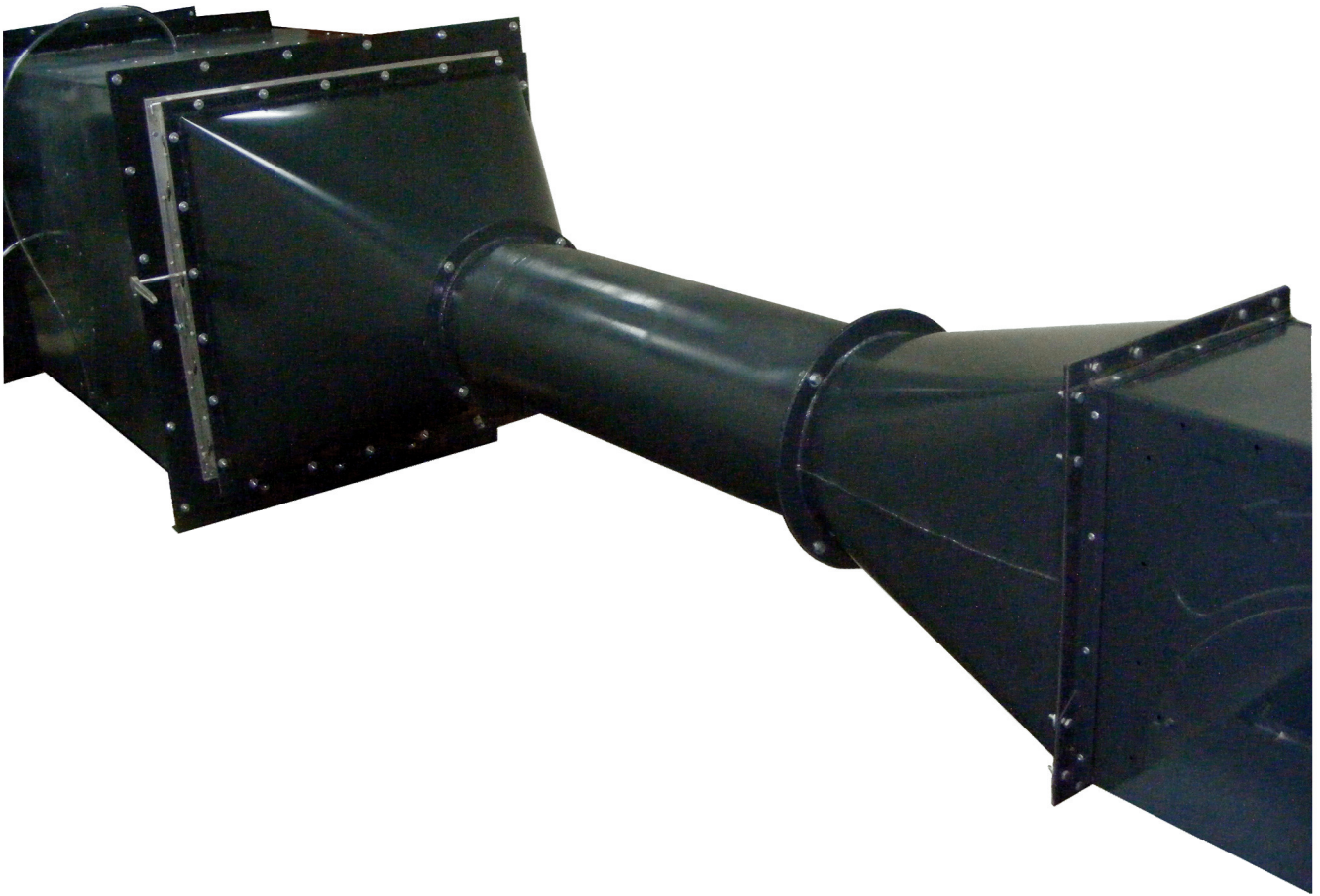


MEA Fan Testing Systems with Airways



**For Fans at Laboratory (R&D),
Production (EOL), and Quality
Assurance (QA)**



Application Testers

The MEA Fan Testing Unit with Airways, type MFAN-13F-3612, is capable of testing fans, according to IEEE Standard 112™ and according to BSi BS 848 Part 1, as classified according to the installation type or types for which they are intended. The four standard installation types are:

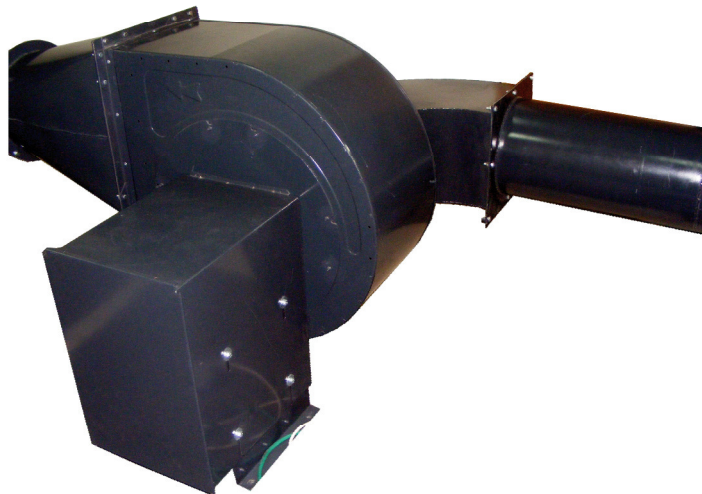
- Type A: free inlet, free outlet;
- Type B: free inlet, ducted outlet;
- Type C: ducted inlet, free outlet; and
- Type D: ducted inlet, ducted outlet.

The systems can test axial fans, centrifugal fans and blowers from all types and sizes, including heavy-duty fans.

Scope

The scope of the MFAN unit is to measure the fan:

- Airflow Rate vs. Static Pressure.
- Airflow Rate vs. Dynamic Pressure.
- Efficiency (Air Power vs. Shaft Power):
$$\text{FAN Air Dynamic Efficiency} = \frac{\text{Air Output Power}}{\text{Mechanical Input Power}}$$
$$= \frac{\text{Airflow Volume} * \text{Dynamic Pressure}}{\text{Mechanical Input Power}}$$
- Heating and cooling capacity in kilocalories, kilowatts, or BTU.
- Heating/cooling capacity vs. Airflow Rate.



Auxiliary fan and rectangular elbow

Configuration

The MEA Fan Test Unit with Airways System is a state-of-the-art, computerized testing system for fans. The system enables you to comprehensively test fans with an airway.

Main Features

- The System automatically stores the test results into the system's database. The results can be retrieved and viewed at any time. With the data stored in the database, you can easily produce statistical reports on batches of tested fans.
- Allows testing the fan, measuring, and providing the following data:
 - Pressure reading inside of the airway testing chamber.
 - Pressure reading at the airway inlet orifice.
 - Temperature reading inside the airway testing chamber, near the fan under test.
 - Temperature reading outside the airway.



Inlet test duct

Typical Components

- Airway tunnel
- Rings for inlet orifice
- Pressure sensors
- Temperature sensors
- KEB F5 Inverter
- Optional AC- and/or DC-motor power supply
- Control unit with 19" rack
- Power analyzer(s)
- IPC with printer and network interface
- Power Unit with common DC Bus to support multi-drive configuration
- Optional power supply for motors under test

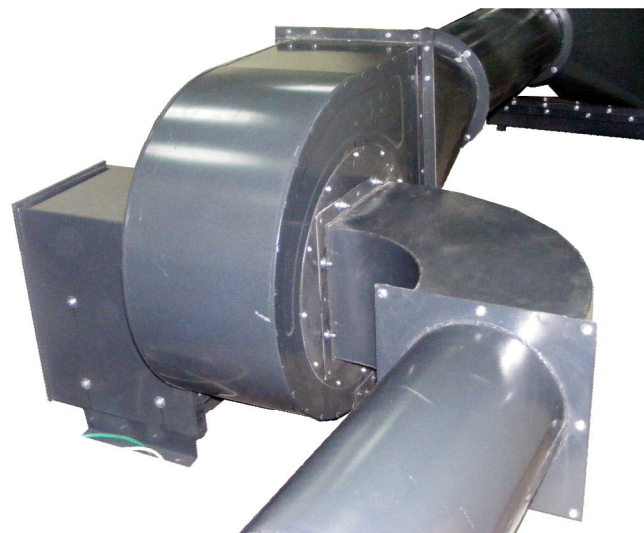


Airway inlet orifice

Software

The Fan Testing Unit software allows the user to accurately measure the pressure and temperature of the fan at air inlet conditions. The system includes powerful, flexible, user-defined testing parameters, which gives the user the capability to testing different characteristics of the fan. The set of tests and their parameters include, among others:

- Current
- Voltage
- Motor Power Input
- Fan Power In
- Fan Power Out
- Fan Efficiency
- Air Heating Capacity



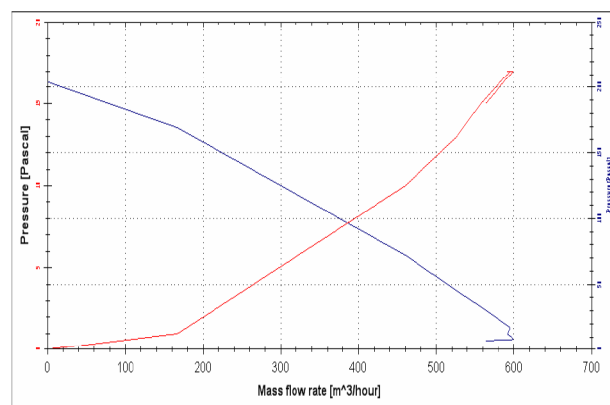
Auxiliary fan, rectangular elbow, and round transition section

The software includes an advanced interface, allowing the user to perform all the tests needed, to save the results to the system's database, and to produce different types of test reports in MS Excel and PDF format.

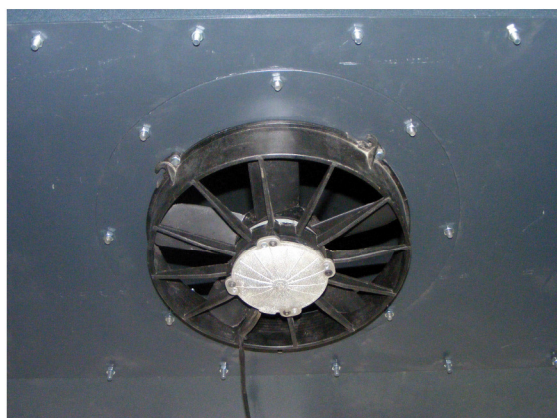
Sample	Mass flow rate (m³/hour)	Current (A)	Voltage (V)	Power (W)	Static Press. (Pascal)	Total Press. (Pascal)	Test Gas (kg)	Fan P1 (W)	Fan P2 (W)	Fan Eff. (%)
347	563.5839978	7.334729351	11.69003134	85.72047113	15	7	48.9996403	29.20337636	0.72420547	2.479920604
320	599.0289305	7.405601781	11.69663169	86.60654671	17	8	66.72643114	29.40480005	1.200725007	4.08343114
300	596.7269537	7.434595959	11.68979836	86.89033941	17	10	51.94089312	26.98409463	1.534241918	5.695726867
275	591.7051294	7.401363462	11.69252004	86.53626555	17	12	28.31987806	27.49315794	2.115277361	7.693931947
250	595.2764245	7.368567391	11.69508899	86.15796136	17	17	21.44221916	26.03366242	3.148257115	12.09348881
200	557.4621537	7.150114532	11.70448753	83.66745174	15	33	16.0742412	28.0982757	6.285120836	22.36835065
180	526.4770708	6.978392639	11.70897589	81.68868715	13	45	16.17688692	28.09051377	8.050526765	28.65923646
150	460.266913	6.604355156	11.72307634	77.40507479	10	72	17.57132868	29.77613896	11.11688103	37.33486467
75	167.2708863	4.835226751	11.7204489	56.88963378	1	189	10.30369728	11.47498354	8.537525096	14.40197485
0	0	3.767365313	11.80240425	44.43815568	0	204	0	31.70260743	0	0

Generated by Fan Test Unit, MEA Testing Systems Ltd. <http://www.meatesting.com>

► ► ► Fan Results / Motor Test Graph / Pressure Test Graph / Capacity Test Graph / Fan Test Graph ◀ ◀ ◀



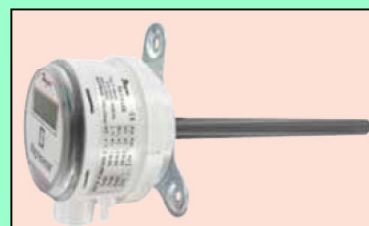
Examples of test results in tabulated and graphic format



Fan under test

Pressure Measurement

MEA Fan Testing with Airway supports the precise measurement of pressure with differential pressure transmitters.

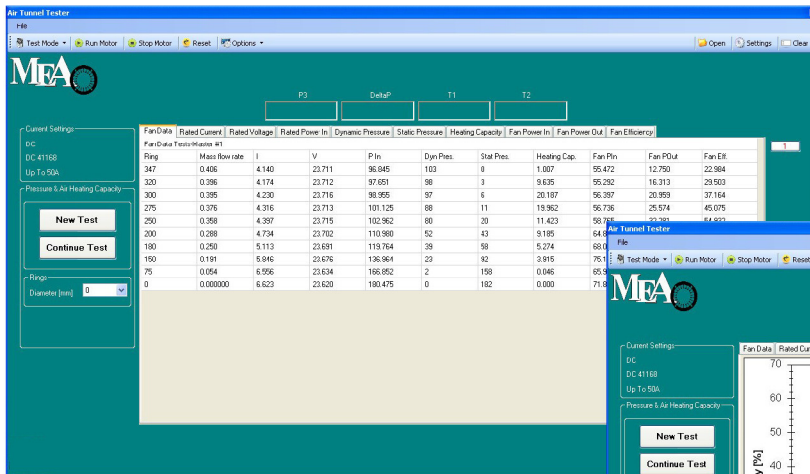
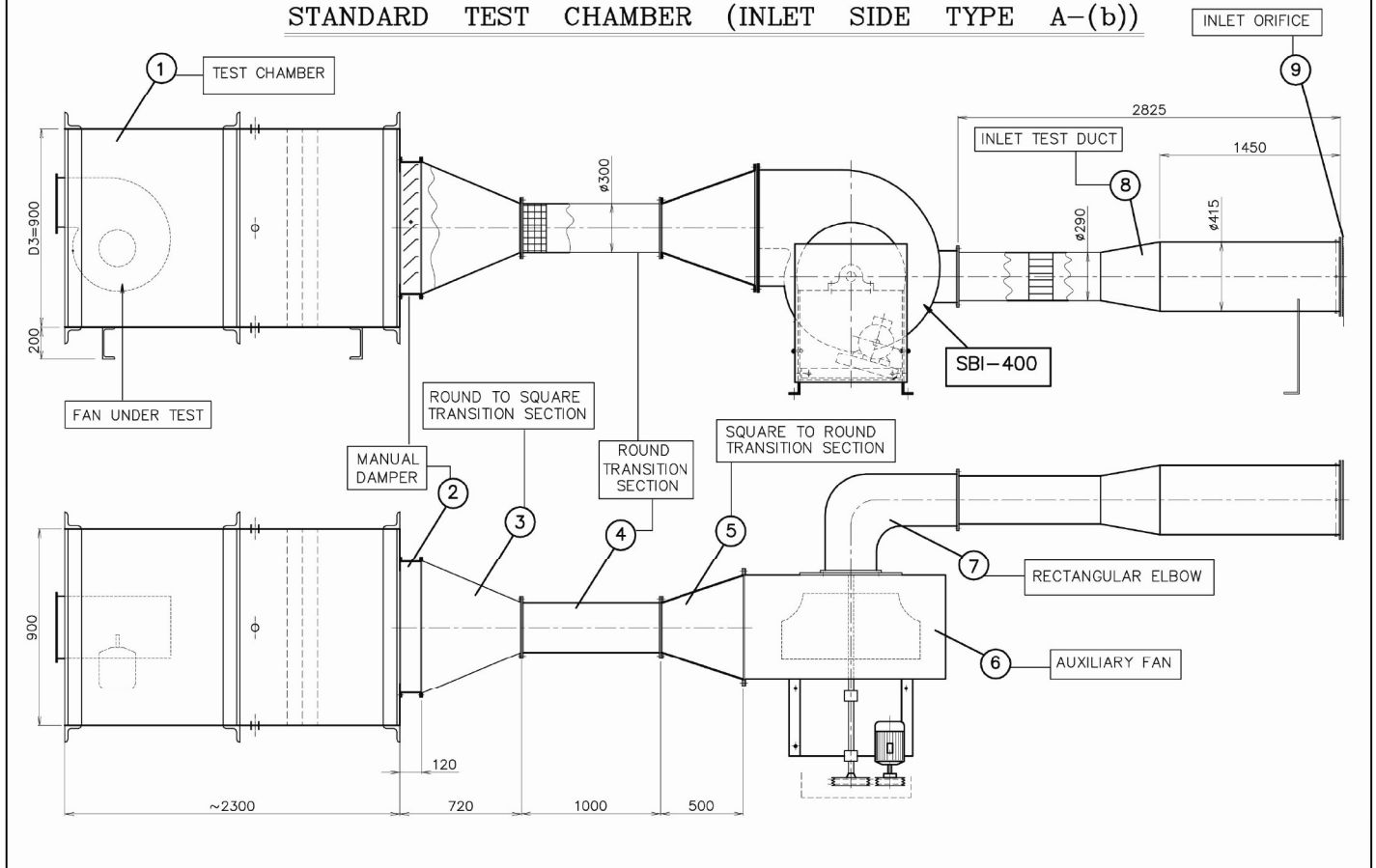


Monitors Pressure and Air Velocity

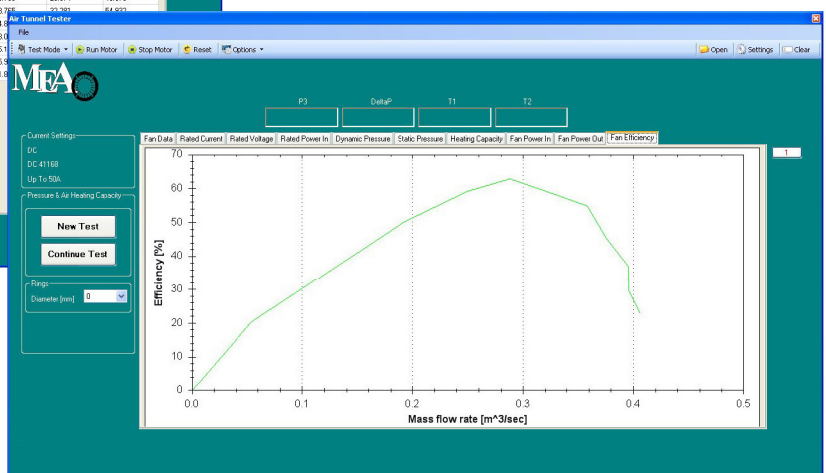


MEA AIR TUNNELS

STANDARD TEST CHAMBER (INLET SIDE TYPE A-(b))

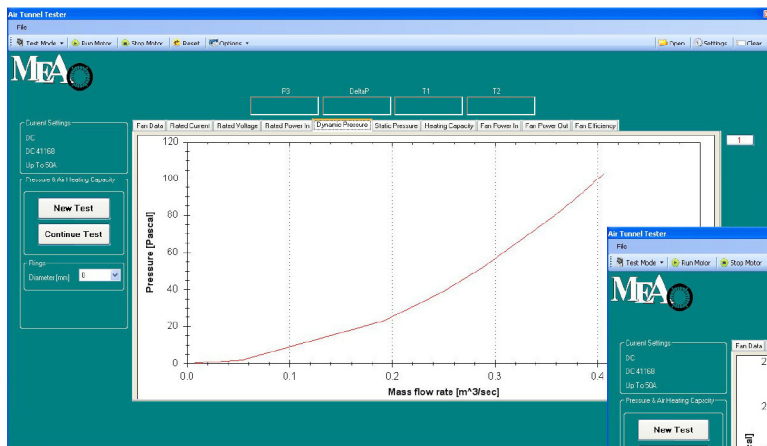


Automatically reveals the fan efficiency, by mass flow rate.

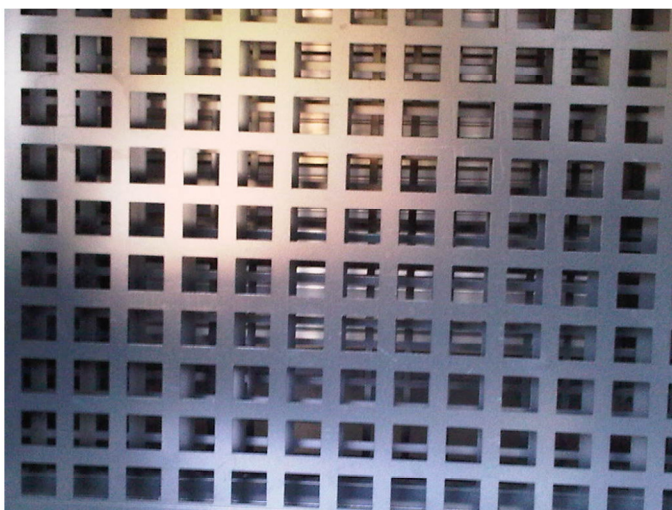
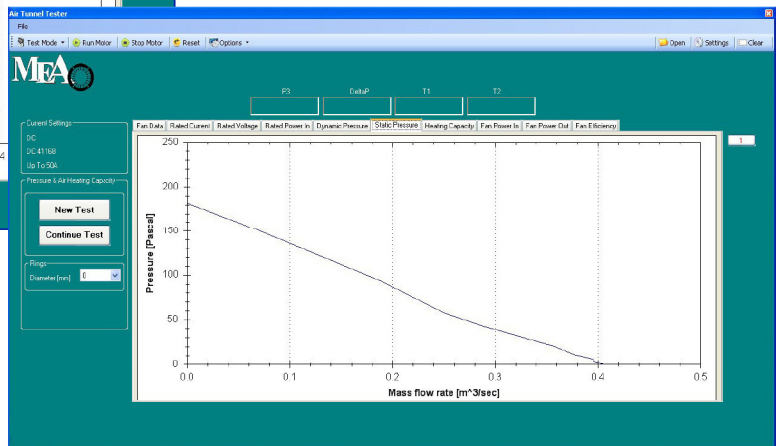


Measures the temperature in the airway test chamber.

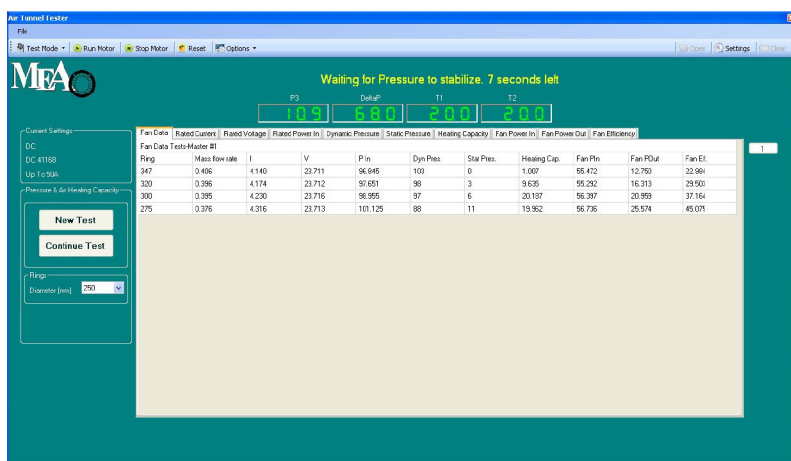
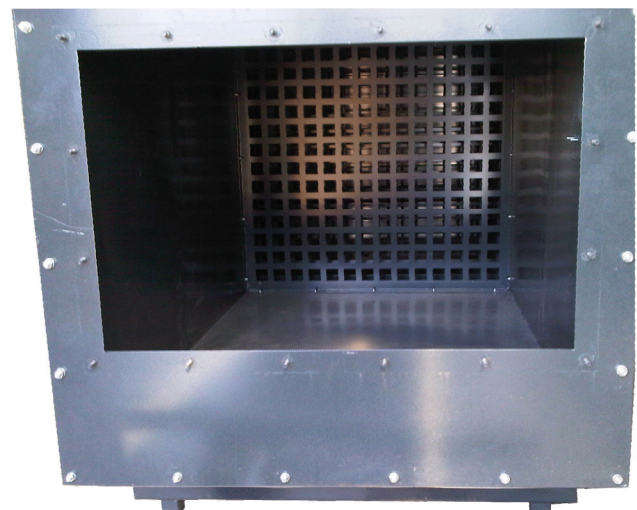




Automatically reveals the dynamic and static pressure, by mass flow rate



Airway test chamber



Pressure testing supports the use of an array of rings at the airway inlet orifice, designed to simulate fans different operating conditions.

Ordering Key

Fan Testing Unit

Fan Testing Type

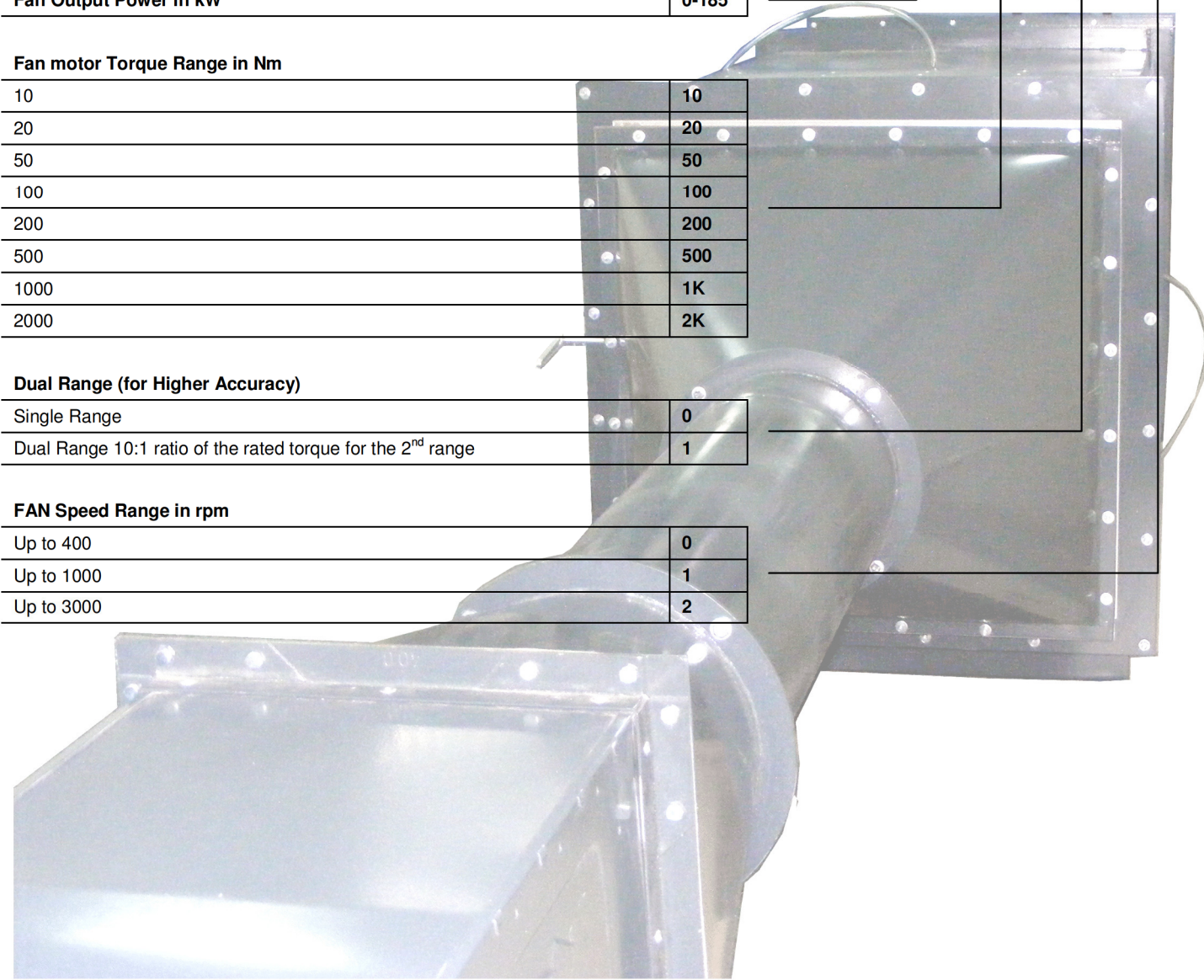
Fan Output Power in kW	0-185
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Fan motor Torque Range in Nm	
10	10
20	20
50	50
100	100
200	200
500	500
1000	1K
2000	2K

Dual Range (for Higher Accuracy)	
Single Range	0
Dual Range 10:1 ratio of the rated torque for the 2 nd range	1

FAN Speed Range in rpm	
Up to 400	0
Up to 1000	1
Up to 3000	2

FAX/FCEN	30	200	1	1
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Ordering Key

Power Analyzer

Power Analyzer Type

Motor Type

AC Single-Phase	1PH
AC Three-Phase	3PH
DC	DC

Current Range in A

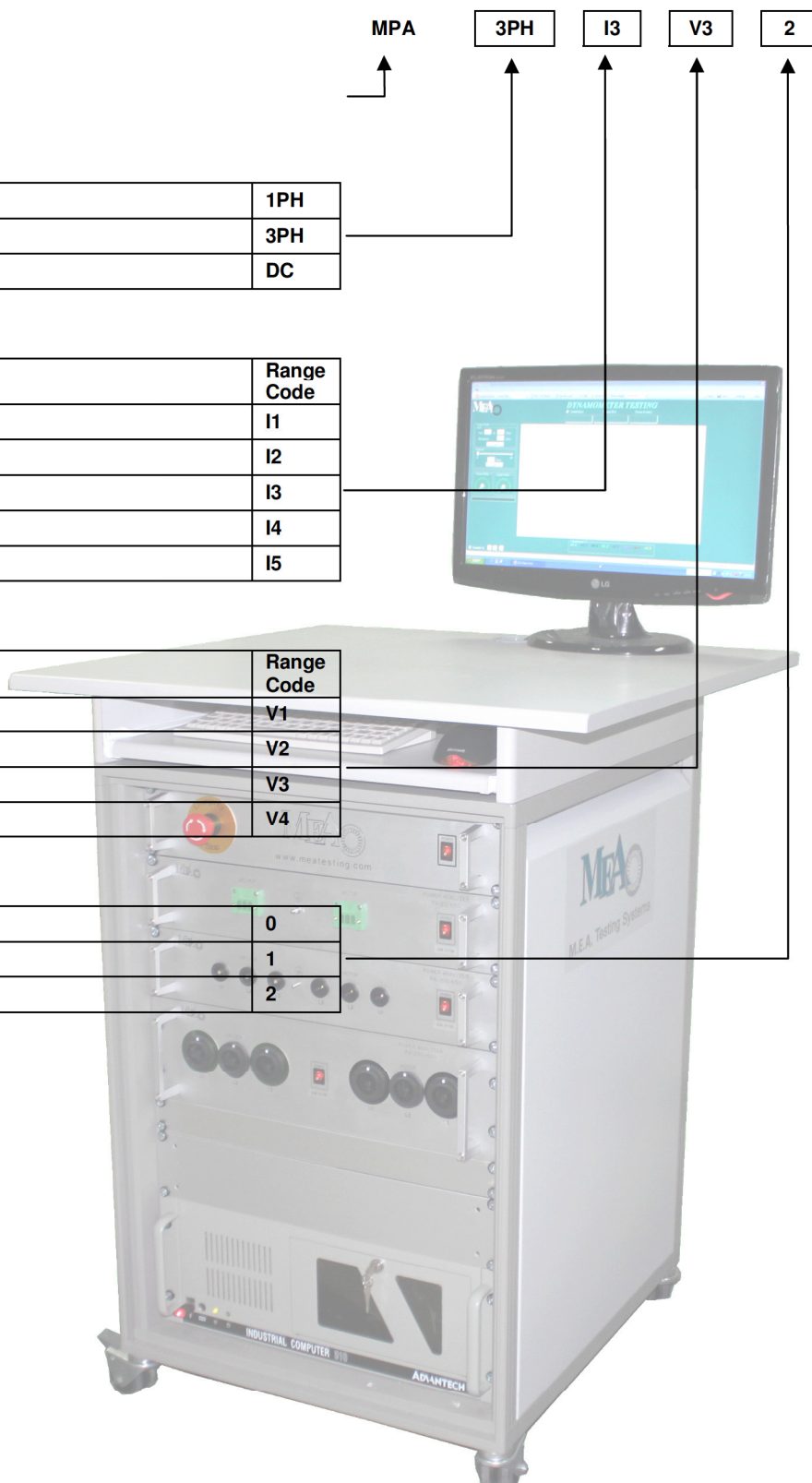
Min	Max	Range Code
0.1	20	I1
0.5	50	I2
5	100	I3
10	200	I4
20	400	I5

Voltage Range in V

Min	Max	Range Code
6	36	V1
12	100	V2
90	440	V3
90	600	V4

Frequency Range

DC	0
AC 50/60 Hz	1
PWM	2



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