

# AT

## Optical antivibration tables



Fig. 1. Photos of two AT optical tables: a) AT1228, b) AT720

### BASIC INFORMATION:

The primary goal of a well designed optical table is to eliminate relative motion between components of test system located on the surface of the optical table because such motion can generate measurement errors.

AT is a series of stationary optical tables manufactured by Inframet and optimized for use with Inframet test systems. The tables are built from two main blocks: 1) a support frame, 2) table plate. The support frame is made as a steel frame combined with rubber isolation absorbers. The table plate is made as thick multi-layer slab composed by combining main layer of vertically bonded cores with top layer from artificial granite and with bottom cardboard layer. The table plate is characterized by excellent thermal stability and vibration damping properties combined with moderate weight. Typical sizes of AT tables are up to 200 cm times 600 cm. Bigger sizes are optionally possible.

The tests have shown that even in heavy industry buildings AT tables reduce vibrations to level not noticeable by even vibration sensitive test systems (like ORI test stations for testing optical objectives) and make measurement results not sensitive to acoustic vibrations in air, vibrations generated by moving mechanical parts in test system (like MRW 8 rotary wheel) or to vibrations transmitted from the building to the optical table through the table support.

### TABLE CONCEPT:

Inframet specialty are not optical tables but test equipment to be located on the tables. Our experience has shown that the tables in many labs are not optimal for testing EO systems typically used for surveillance applications.

Two extreme situations are often met. First case, test equipment and tested imagers are located on big and extremely heavy antivibration optical tables built using a thick ultraflat steel plate and a honeycomb core. There is an array of hole for screws on the top plate. Second case, test equipment and tested imagers are located on cheap unstable tables suitable for office but not for a professional laboratory.

The steel tables in the first group offer perfect stability for test equipment. However, typical large optical table tables are expensive, extremely difficult for transport because of very high weight, and quite often dimensions of the optical tables do not fit well to dimensions of the test systems. Further on, only a small fraction of screw holes are ever use. These disadvantages are particularly clear in case of tables needed for large test system.

The tables from the second group are extremely cheap. However antivibration properties are poor. Table vibrations can influence quality of image projected by the test system and distort measurement results.

AT tables manufactured by Inframet are based on the concept to create a new class of optical tables made using artificial granite that could be optimal for tables that are as platforms for equipment for testing EO system:

1. Moderate weight to enable relatively easy short distance transport
2. Abilities to manufacture ultra large table of sizes up to 200 cm times 600 cm.
3. Moderate cost comparing to typical large optical tables,
4. Small array of hole located at plates where such holes are truly needed,
5. Very good antivibration properties comparable to typical steel optical tables.

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### CODING:

A code that consists of a number and a letter is used to describe properties of AT tables. The number gives information about size of table in tens of centimeters: AT612 means table of size 60x120cm.

### SPECIFICATIONS

Dimensions	vary from 0.5x0.5m to over 2x6m
Blocks	1) support frame, 2) table plate
Support frame design	steel frame combined with rubber isolation absorbers
Table plate design	Multi-layer artificial granite/fibreboard slab
Flatness	not more than 0.3mm at 1 m length
Vertical transmissibility at 10Hz	average: 27dB (30db at L version)
Horizontal transmissibility at 10Hz	average: 29dB (32db at L version)
Athermalized design	Yes
Working temperature range	optimal: 5°C ÷ +35°C maximal : -5°C ÷ +45°C
Working humidity range	up to 90% (non-condensing)
Optimal load	< 220 kg for table on four leg frame < 330 kg for table on six leg frame
Approximate mass	AT612 – 84kg; AT1212 – 132kg; AT1018 – 179kg; AT622- 170kg; AT1027- 285kg;

Version: 3.1

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