



ORDELA MODEL 4050X X-RAY BEAM MONITOR

DESCRIPTION

The ORDELA Model 4050X is an X-Ray Beam Monitor designed and manufactured by ORDELA, Inc. This instrument consists of an ionization chamber and electrometer amplifier to measure the ionization current produced by a narrow x-ray beam of the following characteristics: beam area 0.2 to 1 cm diameter, x-ray energy 8 to 17.5 keV, and beam intensity 10^6 to 10^7 x-rays per second. The detection efficiency is greater than 80% for the entire energy range.

The ionization chamber is contained in an aluminum box 12 cm long, 5 cm high, and 4 cm wide. This box may be mounted inside a vacuum flight path enclosure. Two coaxial cables, HV and SIGNAL interconnect the ionization chamber and the electrometer amplifier. This amplifier is to be mounted outside the flight path enclosure. A nuclear BIN/power supply and a negative 100-V bias supply are required for operation of the Model 4050X. A low impedance output provides interfacing capability to compute total flux and dose information.

Analog and digital data processing instrumentation for beam analysis is available from ORDELA, Inc. upon request.

SPECIFICATIONS

IONIZATION CHAMBER

ACTIVE VOLUME:	1 cm diameter, 3.5 cm deep
COUNTING GAS:	Xe-CO ₂ at 1500 torr pressure
WINDOW:	500- μ m-thick beryllium
DIMENSIONS:	5 cm high, 4 cm wide, 12 cm long

ELECTROMETER

INPUT SIGNAL:	Ionization current, 0 to 1.999 nA
RESPONSE TIME:	1 s to reach 99% of final value
DARK CURRENT:	10 pA
POWER INPUTS:	± 24 V at 100 mA, -100 V at 0.1 mA
CONTROLS:	ZERO and SCALE adjustments
DISPLAY:	Digital readout, in nA
OUTPUT:	100 Ω impedance, 10 V/nA
DIMENSIONS:	8 cm high, 11 cm wide, 15 cm long

ACCESSORIES

Standard accessories, delivered with the Model 4050X at no extra cost are: (1) Power and signal output cable, 5 m long for interconnection between the electrometer and the BIN/power supply and signal processing circuits. This cable is terminated at both ends with 9-pin Sub-D Connectors. The signal output cable is not terminated. (2) Two BNC-connector-terminated, coaxial cables (60 cm long) for interconnection between the ionization chamber and the electrometer.

Optional accessories are: (1) A complete package of signal analysis electronics, manufactured to customer specifications. (2) Customer specified interconnection cables.

INSTALLATION

The ionization chamber has four studs, 4-40 UNC thread, equally spaced on a 3/4" (1.9 cm) diameter bolt circle for mounting it to the positioning holder. The electrometer is housed in a HAMMOND Model 1414SCC Electric Box Enclosure. Eight mounting holes are provided for attaching this box to the flight path enclosure as close as possible to the ionization chamber.

A nuclear BIN/power supply and a negative 100 V bias supply are the only accessories required for initial operation of the Model 4050X x-ray monitor.

WARRANTY

ORDELA, Inc. warrants its products to be free from defects in materials and workmanship for 12 months after shipment. No other warranty is included. Specifically, no warranty of merchantability or fitness for a particular purpose is implied. ORDELA's liability under this warranty is limited to repairing or replacing the product at ORDELA's option. This warranty is void if the product is operated improperly, disassembled, or modified other than in the ORDELA laboratory.