

3023 & 3024 X-Y Recorders



3023 (Front-input model)
482 × 441 × 136 mm 18 kg
(19 × 17-3/8 × 5-3/8" 39.7 lbs)

3024 (Rear-input model)
482 × 399 × 136 mm 18 kg
(19 × 15-3/4 × 5-3/8" 39.7 lbs)

The 3023 and 3024 are top-level, high performance A3 X-Y recorders, available in front- or rear-input models, and one- or two-pen models. All models offer the fastest slewing speed and acceleration. The slewing speed and acceleration of the one-pen model in the Y axis is 2,200 mm/s 7.6 G, and 2,000 mm/s 5.1 G in the X axis.

FEATURES

- **The Highest Speed – Slewing Speed of 2,200 mm/s in the Y axis, 2,000 mm/s in the X axis**
The use of new, high-torque DC servomotors and pen mechanism results in the highest speed and excellent phase characteristics.
- **Acceleration in the Y axis of 7.6 G and 5.1 G in the X axis (One-Pen Model)**
Two-pen model is 7.0 G in the Y axis, and 4.5 G in the X axis. By combining high slewing speed and acceleration, the 3023 & 3024 can capture fast-changing signals.
- **High-Quality Traces by Using Disposable, Quick-Change Felt-Tip Pen Cartridges, and by a Light-Weight, Fast-Response Pen Mechanism**
- **Top-Level Accuracy of ±0.2%**
- **Quick, Convenient Operation**
Major design features include the addition of convenient servo ON/OFF and polarity reversal switches, and pre-amplifiers separated from the input terminals for safety input wiring.
- **Electrostatic Paper Holddown with Back-lighted Led for Accurate Paper Alignment**
- **A Choice of Front- or Rear-Input Model, and One- or Two-Pen Model**
- **10 Scales of Calibrated Offset and 16 Speeds of Time Base (Standard)**
- **Versatile Remote Controls**
- **Excellent Frequency Characteristics**

SPECIFICATIONS

- Drive System:** Automatic null-balancing DC servo mechanism
Writing Area (Effective Recording Span): X-axis 381 mm (15"), Y-axis 254 mm (10")
Number of Pens: 1 or 2
Writing System: Ink writing using disposable felt-tip pen cartridges
Ink Colors: Red for Y₁ 1st pen, green for Y₂ 2nd pen
Basic Accuracy: ±0.2% of effective recording span (including non-linearity and dead band) at 23 ±5°C on 25 mV/cm range
Error between Ranges: Less than ±0.1% of pen deflection
Deadband: Less than 0.1% of effective recording span
Slewing Speed (Nominal): X-axis 2,000 mm/s, Y-axis 2,200 mm/s
Acceleration (Nominal): One-pen model ... X-axis 5.1 G, Y-axis 7.6 G, two-pen model ... X-axis 4.5 G, Y-axis 7.0 G
Pen Lift: All pens simultaneously lifted or lowered by PEN UP/DOWN switch on the front panel, or by an external contract or TTL-level signal
Chart Paper: A3 size graph paper, or roll chart (optional chart drive unit required)
Paper Holddown: Electrostatic paper holddown with LED spot paper alignment
Type of Input: Front (3023) or rear (3024) input. Floating, guarded and shielded (polarity reversal switch on the front panel)
Input Ranges: 50 μV/cm, 0.1, 0.25, 0.5, 1, 2.5, 5, 10, 25, 50 mV/cm, 0.1, 0.25, 0.5, 1, 2.5, 5 V/cm (16 calibrated ranges plus continuous vernier between ranges)
Zero Set: Adjustable to any point on the writing area
Input Impedance: Approx. 1 MΩ constant on all input ranges
Maximum Source Resistance: 10 kΩ
Zero Stability (Nominal): ±(1.5 μV + 0.02% of effective recording span)/°C
Maximum Allowable Input Voltage (Continuous): 50 V DC on 50 μV/cm to 50 mV/cm ranges, 250 V DC on 0.1 V/cm to 5 V/cm ranges
Maximum Common Mode Voltage: 250 Vrms AC, or 350 V DC (3023), 130 Vrms AC, or 180 V DC (3024)
Common Mode Rejection: More than 140 dB at power line frequency or at DC
Normal Mode Rejection: More than 50 dB
Offset Input: Selectable to ±20, ±40, ±60, ±80, ±100 cm (10 ranges) or 0 (OFF) by front panel dial
Time Base (Standard): Sweep rates ... 0.25, 0.5, 1, 2.5, 5, 10, 25, 50 s/cm & min/cm (accuracy: ±0.5%), Pens automatically lifted after sweep or reset. Trial sweep available with pens lifted
Operating Position: Horizontal, vertical or inclined
Dielectric Strength: 1,500 V AC (3023), or 1,000 V AC (3024) for one minute between power line and case, and between input-guard terminals and case
Insulation Resistance: More than 100 MΩ at 500 V DC between power line and case, and between input-guard terminals and case
Power Requirements: 100, 115, 200 or 230 V AC (must be specified), for both 50 and 60 Hz
Weight: One-pen model ... approx. 17 kg (37.5 lbs), two-pen model ... approx. 18 kg (39.7 lbs)

- **Remote Controls by External Contact or TTL-Level Signals (Standard)**

Function	Description
Remote pen lift control	All pens are simultaneously lifted or lowered.
Remote time base control	Remote control of sweep start (SWEEP TRIAL or SWEEP RECORD) and reset (RESET).
Remote chart drive control	Remote control of chart drive START/STOP and chart speed (optional chart drive unit is required).