

MANUEL D'UTILISATION DE L'ENREGISTREUR TABLE TRAÇANTE X-Y HEWLETT-PACKARD HP 7035B

FICHE N° 3907

PRÉSERVER
SAUVEGARDER
VALORISER

Période de fabrication : 1950-1974
Fabricant : Hewlett-Packard Company
Domaines : Physique
Sous-domaines : Electronique
Organisme : Université de Rennes
Ville : Rennes
Modèle : HP 7035B
Matériaux : Papier

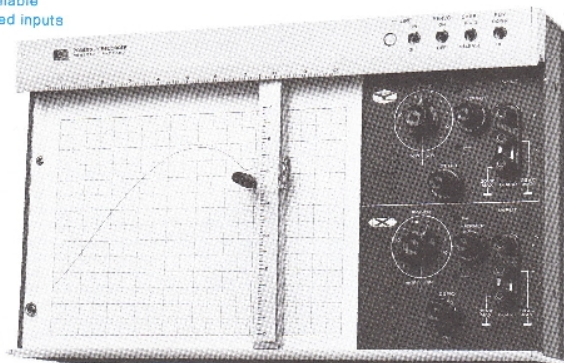
Description

Ce manuel d'utilisation de l'appareil de l'enregistreur XY HP 7035B a été édité par Hewlett-Packard en 1969. Ce manuel de 167 pages décrit dans le détail le fonctionnement de l'appareil, ses propriétés, les circuits électroniques et les tests de mesures possibles. Cet appareil est aussi présenté dans le catalogue général Hewlett-Packard de 1969 (page 139) mais aussi de 1982 (page 285).

Utilisation

Cet enregistreur était très souvent utilisé dans les laboratoires de physique ou en travaux pratiques dans les années 1970-1980. Celui-ci faisait partie d'une manipulation de travaux pratiques de Physique de la faculté des sciences de Rennes.

- Precision recording
- Time base available
- Floating guarded inputs



7035B

Model 7035B X-Y Recorder

The 7035B combines precision with low cost and general-use design to provide users with one X-Y recorder that serves most recording needs where high dynamic performance is not a requirement. Compact in design, the 7035B is well adapted to rack mounting with the addition of only two optional wing brackets. Other features are silent, trouble-free electrostatic paper hold down for paper sizes up to 216 x 280 mm (8½ x 11 in.); floating guarded inputs to help eliminate the common mode voltage effects that are troublesome when recording from low level sources; and disposable pens with self-contained ink supply to allow simple, one-step replacement of ink, tip, and color.

Input connectors on the 7035B accept both open wire and plug-type connectors. In addition, the recorder provides five calibrated ranges (0.4 mV/cm to 4 V/cm) for each axis; signal scaling for full-scale deflection, and high input impedance (1 megohm, except the first two ranges).

Model 17108A Time Base

The 17108A is a self-contained external time base that operates on either axis of the 7035B. By simply plugging in the 17108A, the 7035B is provided with five sweep speeds from 0.2 to 20 s/cm (0.5 to 50 s/in.). This module, powered by a single self-contained battery, is controlled by its own six-position range switch and three-position mode switch.



17108A Option 001 mounted on recorder

17108A Specifications

Sweep speeds: 0.2, 0.4, 2, 4, 20 s/cm (0.5, 1, 5, 10, 50 s/in.)
Accuracy: 5% of recorder full scale
Linearity: 0.5% of full scale (20°C to 30°C)
Output voltage: 0 to 1.5 V
Power: Replaceable mercury battery (100 hr)

7035B Performance Specifications

Input ranges: 0.4, 4, 40, 400 mV/cm and 4 V/cm (1, 10, 100 mV/in.; 1 and 10 V/in.). Continuous vernier between ranges

Input types: Floating guarded signal pair; rear connector

Input resistance:

Range	Input resistance
0.4 mV/cm Variable	Potentiometric (essentially infinite at null)
4 mV/cm Variable	11 kΩ
40 mV/cm & above	100 kΩ
	1 MΩ

Normal mode rejection: >30 dB at 60 Hz; then 18 dB/octave
Maximum allowable source impedance: No restrictions except on fixed 0.4 mV/cm (1 mV/in.) range. Up to 20 kΩ source impedance will not alter recorder's performance.

Accuracy: ±0.2% of full scale

Linearity: ±0.1% of full scale

Resetability: ±0.1% of full scale

Zero set: Zero may be set up to one full scale in any direction from zero index. Lockable zero controls.

Slewing speed: 50 cm/s (20 in./s) nominal at 115 V.

Common mode rejection: 130 dB at DC & 100 dB at line frequency with up to 1 kΩ between the positive input and guard connection point and attenuator on most sensitive range. CMR decreased 20 dB per decade step in attenuation.

7035B General Specifications

Electrostatic paper hold down: Grips 216 x 280 mm (8½ x 11 in.) charts or smaller. Special paper not required.

Pen lift: Electric pen lift capable of being remotely controlled.

Size: 265 H x 445 W x 121 mm D (10-7/16 x 17½ x 4¾ in.)

Weight: Net, 8 kg (18 lb). Shipping, 10.9 kg (24 lb).

Power: 115 or 230 V ±10%, 50 to 60 Hz, approximately 45 VA

7035B Options

001 Metric calibration

003 Retracting potentiometer on X-axis 5kΩ ±3%

17108A Options

002 17108A Metric calibration

Ordering Information

7035B General purpose X-Y recorder

17108A Time base plug-in

TABLE OF CONTENTS (CONTINUED)

Section	Page	Section	Page
5-68 Y Gear Train Backlash Adjustment	5-10	6-4 Alphanumerical Table	6-1
5-70 Y-Axis Pen Carriage Adjustment	5-10	6-6 Miscellaneous Parts	6-1
5-72 Y-Axis Alignment	5-11	6-8 Recommended Spares	6-1
5-74 X-Axis Cable Tension Check/ Adjustment	5-11	6-10 Code List of Manufacturers	6-1
5-77 X-Axis Drive Belt Tension Check/Adjustment	5-11	6-12 Illustrated Parts Breakdown.....	6-1
5-80 X-Axis Drive Belt Replacement.....	5-11		
5-82 X Gear Train Backlash Adjustment	5-13	VII TROUBLESHOOTING	
5-84 X-Axis Track Bearing Adjustment	5-13	7-1 Introduction	7-1
5-86 X-Axis Drive Train Bearing Replacement	5-13	7-2 Content	7-1
5-91 Electrical Adjustments.....	5-14	7-4 Troubleshooting	7-1
5-92 Gain Adjustment	5-14	7-5 Requirements	7-1
5-94 Calibration Adjustment.....	5-14	7-7 Troubleshooting Index.....	7-1
5-96 Phase Shift Adjustment	5-15		
		VIII BACKDATING	
VI PARTS LIST		8-1 Requirements	8-1
6-1 Introduction	6-1	8-2 Definitions	8-1
6-3 Parts List.....	6-1	8-4 Change I	8-1
		8-6 Change II	8-3
		8-8 Change III	8-3
		8-10 Change IV	8-4
		8-12 Change V	8-4
		8-14 Change VI	8-7
		8-16 Change VII	8-7
		APPENDIX A REFERENCES	A-1
		B MAINTENANCE ALLOCATION	B-1

Section		Page	Section		Page
I	INTRODUCTION	1-1	3-32	Install Paper	3-4
	Description	1-1	3-34	Install Pen	3-4
1-2	Basic Frame	1-1	3-36	Zero Set	3-4
1-4	Model-Manual Information.....	1-1	3-38	Lower Pen	3-4
1-8	Specifications	1-1			
1-8	Options	1-1	IV	THEORY OF OPERATION	
1-9	Metric Calibration (Option 001)	1-1	4-1	General Operation	4-1
1-11	X-Axis Retransmitting Potentiometer (Option 003)	1-1	4-7	Circuit Description	4-1
1-13	Accessories	1-1	V	MAINTENANCE, PERFORMANCE, CHECKS AND ADJUSTMENTS	
1-15	Model 7562A Logarithmic Converter	1-1	5-1	Introduction	5-1
1-17	Model 7563A Log Voltmeter/Amplifier	1-4	5-3	Preventive Maintenance	5-1
1-19	Model 17108A Time Base	1-4	5-4	General	5-1
1-21	Model 10025A Straight-through Voltage Probe	1-4	5-6	Environmental Operation.....	5-1
1-23	Model 10111A Adapter	1-4	5-8	Cleaning	5-1
1-25	Model 10002A/B/C/D Voltage Divider Probe	1-4	5-10	Potentiometer Cleaning	5-2
1-27	Model 11000A Cable Assembly	1-4	5-12	Lubrication	5-2
1-29	Typical Performance	1-4	5-14	Visual Lubrication	5-2
1-30	Input Resistance vs Off Balance Characteristics	1-4	5-16	Mechanical Maintenance.....	5-2
1-32	Normal Mode Noise	1-4	5-17	Disassembly/Assembly	5-2
1-34	Dynamic Response	1-5	5-19	Carriage Arm Removal	5-3
			5-21	Pen Carriage Removal	5-3
II	INSPECTION AND INSTALLATION		5-23	Potentiometer Replacement - X-Axis	5-4
2-1	Introduction	2-1	5-25	Wiper Replacement - X-Axis	5-4
2-3	Incoming Inspection	2-1	5-27	Potentiometer Replacement - Y-Axis	5-5
2-4	Mechanical Checks	2-1	5-29	Wiper Replacement - Y-Axis	5-6
2-6	Electrical Checks	2-1	5-31	Servo Motor Maintenance	5-5
2-8	Damage Claims	2-1	5-33	X-Axis Servo Motor Replacement	5-5
2-10	Storage	2-1	5-35	Y-Axis Servo Motor Replacement	5-6
2-12	Shipping	2-1	5-37	Brush Replacement	5-6
2-14	Recorder Installation	2-1	5-39	Correction of Sticking Motor Brushes	5-6
2-16	Cooling	2-1	5-41	Y-Axis Restringing	5-6
2-18	Stacking H-P Instruments	2-1	5-43	X-Axis Restringing	5-6
III	OPERATING INSTRUCTIONS		5-45	Electrical Maintenance	5-7
3-1	Operating Requirements	3-1	5-46	Requirements	5-7
3-2	General	3-1	5-48	Performance Tests	5-7
3-4	Controls, Connectors, and Indicators	3-1	5-49	Criteria	5-7
3-6	Electrical Requirements	3-1	5-51	Test Equipment	5-7
3-7	Operating Power	3-1	5-53	Initial Checks	5-8
3-9	Input Signals	3-1	5-55	Y-Axis Accuracy and Linearity	5-8
3-11	Grounding	3-1	5-56	X-Axis Accuracy and Linearity	5-8
3-13	Recording Input Connections	3-1	5-57	Y-Axis Slewing Speed	5-8
3-15	Connection Techniques for the Guard Shield	3-1	5-58	X-Axis Slewing Speed	5-8
3-17	Maximum Allowable Source Impedance	3-1	5-59	Common Mode Rejection	5-9
3-19	Operating Precautions	3-3	5-60	DC Rejection	5-9
3-23	Operating Instructions	3-3	5-61	AC Rejection	5-9
3-24	Operational Conditions	3-3	5-62	Mechanical Adjustments	5-9
3-26	Connect Power	3-3	5-63	Procedure	5-9
3-28	Connect Inputs	3-3	5-65	Y-Axis Drive String Tension Check/Adjustment	5-9
3-30	Energize Recorder	3-3			

TECHNICAL MANUAL

HEWLETT-PACKARD MODEL HP-7035B

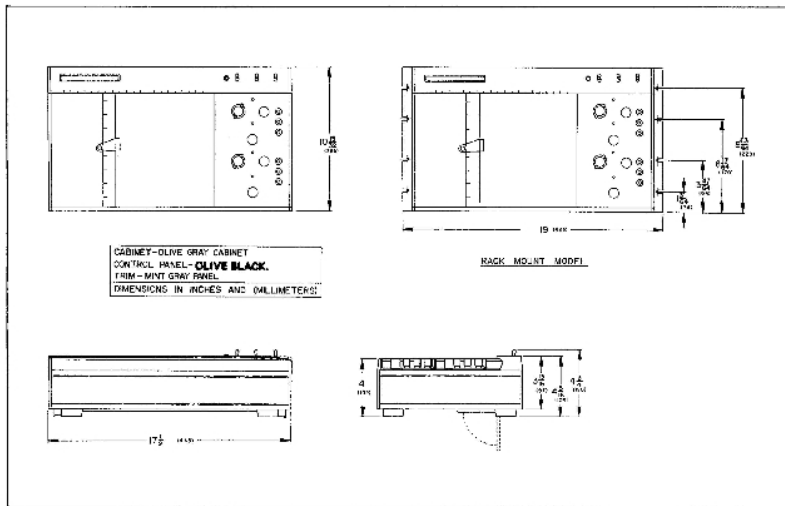


FIGURE 1-4. DIMENSION DRAWING

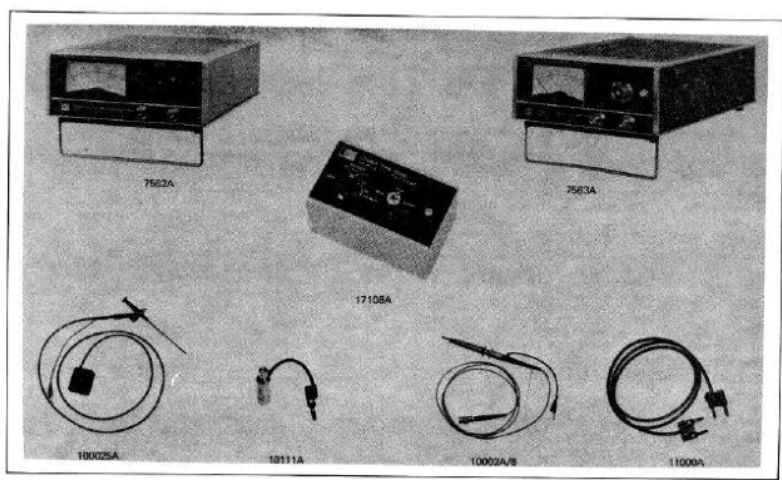


FIGURE 1-5. ACCESSORIES

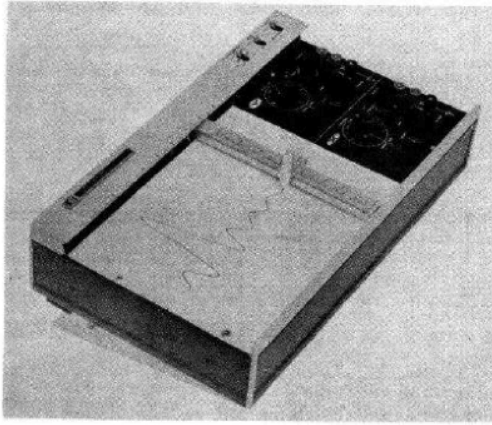


FIGURE 1-1. MODEL 7035B X-Y RECORDER

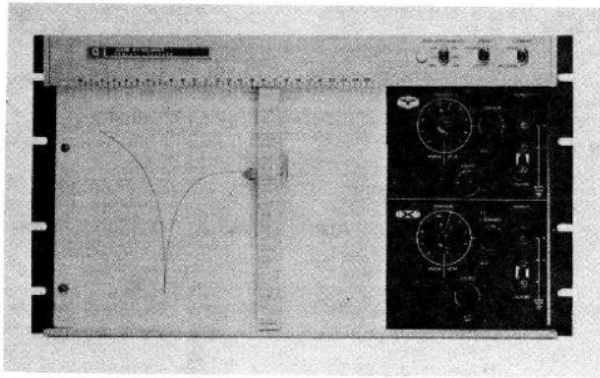
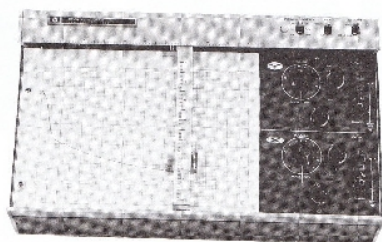


FIGURE 1-2. MODEL 7035B X-Y RECORDER - OPTION 001 (WITH WING BRACKETS)

RECORDERS & PRINTERS

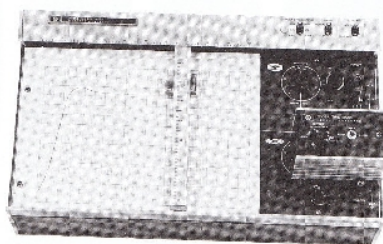
General performance X-Y recorder, time base
Models 7035B & 17108A

- Floating Guarded inputs



7035B

- Disposable pens



7035B with 17108A

The 7035B is a high-quality, low cost instrument designed for use in general purpose applications. Each axis has an independent servo system with no interaction between channels. The 7035B plots two graphs from two dc signals representing the function being measured.

Input terminals accept either open wires or plug-type connectors. Five calibrated ranges from 0.4 mV/cm (1 mV/in.) to 4 V/cm (10 V/in.) are provided in each axis. A variable range control permits scaling of signal for full scale deflection. High input impedance (1 megohm on all but the first two ranges), floated and guarded input, and 0.2% accuracy is provided.

Each closed-loop servo system uses a high-gain, solid-state servo amplifier, servo motor, long-life balance potentiometers, photo-chopper, low pass filter, guarded inputs, and attenuator and balance circuit.

A plug-in time base, Model 17108A, operates on either axis to provide five sweep speeds from 0.2 to 20 s/cm. The unit is self-contained, external, and designed to directly plug into the 7035B input terminals. Any number of recorders may be driven simultaneously, provided the combined parallel input resistance is 20 kΩ or more.

7035B Specifications

Performance specifications

Input ranges

Metric: 0.4, 4, 40, 400 mV/cm and 4 V/cm.

English: 1, 10, 100 mV/in.; 1 and 10 V/in. Continuous vernier between ranges.

Types of inputs: floated and guarded signal pair; rear input connector.

Input resistance

Range	Input resistance
0.4 mV/cm (1 mV/in.)	Potentiometric (essentially infinite at null)
Variable	1 kΩ
4 mV/cm (10 mV/in.)	200 kΩ
Variable	100 kΩ
40 mV/cm (100 mV/in.)	1 MΩ
Variable	1 MΩ
400 mV/cm (1 V/in.)	1 MΩ
Variable	1 MΩ
4 V/cm (10 V/in.)	1 MΩ
Variable	1 MΩ

Normal mode rejection: >30 dB at 60 Hz; 18 dB octave above 60 Hz.

Maximum allowable source impedance: no restrictions except on fixed 0.4 mV/cm (1 mV/in.) range. Up to 20 kΩ source impedance will not alter recorder's performance.

Accuracy: ±0.2% of full scale.

Linearity: ±0.1% of full scale.

Resetability: ±0.1% of full scale.

Zero set: zero may be set up to one full scale in any direction from zero index. Lockable zero controls.

Sweeping speed: 50 cm/s, (20 in./s) nominal at 115 V.

Common mode rejection: conditions for the following data are line frequency with up to 1 kΩ between the positive input and guard connection point. Max. dc common mode voltage is 500 V.

Range	DC (CMR)	AC (CMR)
Metric		
0.4 mV/cm	130 dB	100 dB
4 mV/cm	110 dB	80 dB
40 mV/cm	90 dB	50 dB
400 mV/cm	70 dB	40 dB
4 V/cm	50 dB	20 dB
English		
1 mV/in.	130 dB	100 dB
10 mV/in.	110 dB	80 dB
1 V/in.	90 dB	50 dB
10 V/in.	70 dB	40 dB

General specifications

Paper holddown: autogrip electric paper holddown grips 216 mm × 279 mm (8½ in. × 11 in.) charts or smaller. Special paper not required.

Pen lift: electric pen lift capable of being remotely controlled.

Dimensions: 265 mm H × 445 mm W × 121 mm D (10½" × 17½" × 4¾").

Weight: net, 8 kg (18 lb). Shipping, 10.9 kg (24 lb).

Power: 115 or 230 V ±10%, 50 to 60 Hz, approximately 45 VA.

17108A Specifications

Sweep speeds: 0.2, 0.4, 2, 4, 20 s/cm (0.5, 1, 5, 10, 50 s/in.).

Accuracy: 5% of recorder full scale.

Linearity: 0.5% of full scale (20°C to 30°C).

Output voltage: 0 to 1.5 V.

Power: replaceable mercury battery (100 hr).

7035B Options and accessories

Opt 001: metric calibration

Opt 003: retransmitting potentiometer on X-axis 5 kΩ ±3%

Opt 020: modification for use with models 3580A and 3581A/C

Opt 008: rack mount kit

17108A: extra manual

17108AM: Time Base Plug-In

17024A: Recorder Supplies Starter Kit—English

17025A: Recorder Supplies Starter Kit—Metric

7035B General Purpose X-Y recorder



Pour nous citer :

Base de la Mission nationale de sauvegarde et de valorisation du patrimoine scientifique et technique contemporain, PATSTEC, Manuel d'utilisation de l'enregistreur table traçante X-Y Hewlett-Packard HP 7035B (Hewlett-Packard Company),
<https://www.patstec.fr/ressources/objets/detail?id=15925>, consulté le 2026-07-28