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Hyper Unicorder  
Pen recorder unit  
MI-1650

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Specifications

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Specifications are subject to change without notice.

PANTOS CO. , LTD	Drawing number	Amendment
	MI1650-00-0001	

## 1 . OUTLINE

The unit is configured with the integrated functions of an M-1650 pen-recorder unit and of an IFA-1650 interface unit. By combining with a P-1650 notebook-sized personal computer with application software, these functions become the same as a combination of the HU-1650 and the M-1650.

## 2 . SPECIFICATIONS

### 2 . 1 Main body specifications

Name	:	Pen recorder (Option)
Model	:	MI-1650
Channels	:	4, 8, 12, 16
Recording method	:	Automatic balancing recording system (digital servo system)
Recording pens	:	A felt-tip pen with life of approx.5km
Effective recording width	:	250mm
Pen interval	:	4mm
Pen name	:	NDL-**
Accuracy	:	$\pm 0.1$ % of (measurement accuracy + effective recording width) (including linearity and dead band) (Measuring accuracy : Refer to the specification of analog input unit.)
Pen speed	:	Max Approx.1200mm / sec
Synchronizer	:	ON, OFF 20date / 1mm
Measurement ON / OFF	:	Each channel individually.
Chart paper	:	Roll paper [ No.25020P50 (50m)、 No.2501P50 (20m) ]
Chart speed	:	40, 20, 10, 5, 2, 1 mm / sec / min, / h
Resolution of time axis	:	0.05mm
Sampling speed	:	Max 10ms
Rapid chart drive	:	2400mm / min (Reverse rotation not allowed)
Accuracy for chart drive	:	$\pm 0.1$ % (at a recording length over 1m)
Chart end detection	:	Provided (Pen up, CHART EMPTY is displayed.)
Swing-out protection	:	Signal Limiter
Superimposed marker	:	Operate by operation switch It is operated by external remote. Link with ON / OFF of synchronizer Amplitude : Approx.10mm ON time : Approx.50ms
Auto pen cap	:	Pen is automatically stored at the specified position on power OFF and measurement OFF.
Scaling	:	Range:-10000 to +10000 (Decimal point, Arbitrary setup, Arbitrary unit)
Pen lift	:	When a power supply is OFF, all pens are moved to pen rest. Total pen simultaneous specification • Measurement ON / OFF switch Measurement OFF → Pen up → Pen rest (Meanwhile, pens other than Measurement OFF rest.) Measurement ON → Pen up → It moves to the record position. → Pen down (Meanwhile, pens other than Measurement ON rest.)

## 2 . 2 General specifications

Withstanding voltage	:	AC1500V between Power supply and chassis ( GND) ( for 1min.)
Insulation resistance	:	More than 100MΩ between Power supply and Chassis ( GND) ( 500VDC megger) More than 20MΩ between Control input / output and Chassis ( GND) ( 250VDC megger)
Environment	:	Temperature 5 to 45 °C Humidity 35 to 80 % RH
Preservation environment	:	Temperature -5 to 50 °C Humidity 35 to 80 % RH
Vibration	:	5 to 50 Hz Less than 0.1G
Shock	:	Not approve
Power supply	:	AC90 to 265V 47 to 440Hz
Power consumption	:	Maximum 4pens, 90W typ. 8pens, 90W typ. 12pens, 90W typ. 16pens, 90W typ. At balanced 4pens, 40W typ. 8pens, 40W typ. 12pens, 40W typ. 16pens, 40W typ.
External dimensions	:	Approx. 438 ( W ) × 252 ( H ) × 420 ( D ) mm
Weight	:	4ch 13kg 8ch 13kg 12ch 13kg 16ch 13kg
Accessory	:	Power cord 1 Chart paper ( 20m ) No.2501P50 1 Pen ( Each color ) NDL-** each 1 Fuse 250V 5A Time lag type 2 Supoido 1 USB cable (1m) 1 Earth adaptor 1 Manual 1

### 2 . 3 Input I/F unit

Name	:	Direct current voltage unit
Channel	:	1 to 16ch
Input method	:	Non-balancing, Floating
Input resistance	:	1M $\Omega$
Signal source resistance	:	Less than 1k $\Omega$
Input kind	:	Voltage
Measuring range	:	$\pm 1V$ , $\pm 2V$ , $\pm 5V$ , $\pm 10V$
Zero point movement range	:	$\pm 100$ %
Measuring accuracy	:	$\pm 0.1$ % / FS
Temp.-characteristics	:	Zero $\pm (0.01$ % (range) ) / FS / $^{\circ}C$ Full scale $\pm (0.01$ % (range) ) / FS / $^{\circ}C$
Noise-proof characteristics	:	CMRR Morr than $-150dB$ NMRR Morr than $-50dB$
Resolution	:	14bit
Sampling time	:	10ms
Withstanding voltage	:	AC500V between Analog input and Chassis ( GND ) .(for 1 min.) Analog input [ I ] 1ch- 4ch between non-isolated Analog input [ II ] 5ch- 8ch between non-isolated Analog input [ III ] 9ch-12ch between non-isolated Analog input [ IV ] 13ch-16ch between non-isolated Analog input block [ I ] , [ II ] , [ III ] , [ IV ] between AC500V Between analog each input ( for 1min.)
Insulation resistance	:	More than 100M $\Omega$ between Analog input and Chassis ( GND ) . ( 500V DC megger)
Frequency characteristic	:	10Hz-3dB

EXTERNAL VIEW

