Omniace RA1000/RA2000 and DL2800
Input Unit Specifications

2-CH High Resolution Amp (AP11-101)	
Input	2 channels/unit, isolated unbalanced input, isolated BNC connector
Input coupling	AC and DC coupling
Input impedance	1 MΩ or higher
Measurement range	±0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100, 200, and 500 V
Range accuracy	Within ±0.3% FS (Within 0.8% FS at ±500 V)
Offset accuracy	Within ±0.3% FS (at 25℃)
Linearity	Within ±0.1% FS
Allowable input voltage	Range of ±10 V to 500 V: ±500 V max. (DC or AC peak values)
	Range of ±0.1 V to 5 V: ±100 V max. (DC or AC peak values)
CMV	Unit only: 42 V (DC or AC peak values)
	When using isolated BNC cable (optional): 300 VAC
Frequency response	At DC coupling: DC to 50 kHz (+0.5, -3 dB)
	At AC coupling: 0.3 to 50 kHz (+0.5, -3 dB)
Low-pass filter	Bessel type (attenuation factor: -12 dB/OCT)
	30, 300, 3 kHz, and OFF (+0.5, -3 dB)
	A/D converter 16 bits, 100 kHz max. (two channels simultaneous sampling)
Temperature stability	Zero point: Within ±0.02% FS/℃
	Gain (range): Within ±0.01% FS/℃
Weight Approx.	230 g

2-CH High Speed Amp (AP11-103)	
Input	2 channels/unit, isolated unbalanced input, isolated BNC connector
Input coupling	AC and DC coupling
Input impedance	1 MΩ or higher
Measurement range	±0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100, 200, and 500 V
Range accuracy	Within ±0.5% FS (Within 0.8% FS at 500 V)
Offset accuracy	Within ±0.5% FS (at 25℃)
Linearity	Within ±0.2% FS
Allowable input voltage	Range of ±10 V to 500 V: ±500 V max. (DC or AC peak values)
	Range of ±0.1 V to 5 V: ±100 V max. (DC or AC peak values)
CMV	Unit only: 42 V (DC or AC peak values)
	When using isolated BNC cable (optional): 300 VAC
Frequency response	At DC coupling: DC to 400 kHz (+0.5, -3 dB)
	At AC coupling: 0.3 to 400 kHz (+0.5, -3 dB)
Low-pass filter	Bessel type (attenuation factor: -12 dB/OCT)
	5, 50, 500, 5 k, 50 kHz, and OFF (+0.5, -3 dB)
A/D converter	12 bits, 1 MHz max. (two channels simultaneous sampling)
Temperature stability	Zero point: Within ±0.03% FS/℃
	Gain (range): Within ±0.01% FS/℃
Weight Approx.	240 g

2-CH Zero Suppression Amp (AP11-111)	
Input	2 channels/unit, isolated unbalanced input, isolated BNC connector
Input coupling	AC and DC coupling (Maximum allowable input ±30V at AC coupling for
	measurement range ±0.1V to 2V)
Input impedance	1 MΩ or higher
Measurement range	±0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100, 200, 500 V
Range accuracy	Within ±0.5% FS (within ±1% at ±500 V)
Offset accuracy	Within ±0.5% FS (at suppression voltage off)
Linearity	Within ±0.2% FS
Allowable input voltage	Range of ±5 V to ±500 V: ±500 V max. (DC or AC peak value)
	Range of ±0.1 V to ±2 V: ±100 V max. (DC or AC peak value)
CMV	±42 V (DC or AC peak value)
	When using isolated BNC cable (option): 300 VAC
Frequency response	At DC coupling: DC to 5 kHz (+0.5, -3 dB)
	At AC coupling: 0.3 Hz to 5 kHz (+0.5, -3 dB)
Low-pass filter	Bessel type (attenuation -12 dB/OCT)
	30, 300, 3 kHz and OFF (+0.5, -3 dB)
Suppression voltage	±13 V at ±0.1, 0.2, 0.5, 1 and 2 V range
	±110 V at ±5, 10, 20, 50, 100, 200, 500 V range
	Resolution:
	500 µV or less at ±0.1, 0.2, 0.5, 1 and 2V range
	5 mV or less at ±5, 10, 20, 50, 100, 200 and 500 V range
	Accuracy: within ±0.5% (at suppression voltage +13 V max.)
	Temperature stability: ±0.005%/℃ (at suppression v oltage +13 V max.)
Auto zero suppression	Recognizing current input voltage and suppress the voltage automatically.
	Time: within 1 sec.
	Remain voltage: within ±(resolution of suppression voltage x 10) V
A/D converter	16 bits, 100kHz max. (two channels simultaneous sampling)
Temperature stability	Zero point: within ±0.03% FS/℃
	Gain (range): within ±0.01% FS/℃
Weight Approx.	260g

2-CH TC/DC Amp (AP11-106)	
Input	2 channels/unit, isolated unbalanced input, terminal block ø4
Input coupling	DC coupling
Input impedance	10 MΩ or higher (approx. 1 MΩ at 5, 10, 20, 50 VFS in DC range)
Thermocouple	R, T, J, K, and W
Measurement range	R: 0 to 1600℃
	T: -200 to 400℃
	J: -200 to 1000℃
	K: -200 to 1350℃
	W: 0 to 2300℃
Voltage measurement range	100, 200, 500 mV, 1, 2, 5, 10, 20 and 50 V FS
Range accuracy	Temperature: Within ±0.5% FS (Within ±1% FS at 0℃ or lower)
	Voltage: Within 0.5% FS
Cold junction compensation	Internal/external switchable
	Accuracy: Within ±2℃ (Within 1℃ at stable tempera ture of 20℃ at
	input terminal)
Linearity	Within ±0.1% FS

2-CH TC/DC Amp (AP11-106) Continued	
Allowable input voltage	50 V (DC or AC peak values)
CMV	42 V (DC or AC peak values)
Frequency response	DC to 40 kHz (+0.5, -3 dB)
Low-pass filter	Bessel type (attenuation factor: -18 dB/OCT)
	1, 30, 500, 5 kHz, and OFF (+0.5, -3 dB)
A/D converter	15 bits, 100 kHz max. (two channels simultaneous sampling)
Temperature stability	Accuracy: ±0.04% FS/℃ (When used as temperature am p)
	Zero point: Within ±0.03% FS/℃ (When used as DC am p)
	Gain (range): Within ±0.01% FS/℃
Weight Approx.	240 g

TC/DC Amp (AP11-107)	
Input	1 channel/unit, isolated unbalanced input, 2 binding posts
Input coupling	DC coupling
Input impedance	10 MΩ or higher (1 MΩ at 5, 10, 20, 50 V FS in DC amp)
Thermocouple	R, T, J, K
Measurement range	R: 0 to 800℃ at 800℃ FS and 0 to 1600℃ at 1600℃ FS
	T: -200 to 200℃ at 200℃ FS and -200 to 400℃ at 4 00C°FS
	J: -200 to 200℃ at 200℃ FS and -200 to 1000℃ at 1000℃
	K: -200 to 200℃ at 200℃ FS and -200 to 1200℃ at 1200℃
	Voltage measurement range 10, 20, 50, 100, 200, 500 mV, 1, 2, 5, 10, 20, and 50 V FS
Range accuracy	Temperature: Within ±0.5% FS (Within 1% FS at 0℃ or lower)
Voltage:	Within ±0.5% FS
Linearity	Within 0.1% FS
Allowable input voltage	50 V (DC or AC peak values)
CMV	300 V (DC or AC peak values)
Frequency response	DC to 40 kHz (+0.5, -3 dB)
Low-pass filter	Bessel type (attenuation factor: -18 dB/OCT)
	1, 30, 500, 5 kHz, and OFF (+0.5, -3 dB)
Reference junction compensation	Internal/external switchable
A/D converter	14 bits, 100 kHz max.
Weight Approx.	200 g

Event Amp (AP11-105)	
Number of channels	8 channels/unit
Input type	Logic input isolated between each channel and chassis,
	Common ground in unit, case free
Input signal	Sets voltage or contact for each channel
	Voltage input: Input voltage range 0 to +24 V
	Detection level:
	H level...2.5 V or higher
	L level...0.5 V or lower
	Contact input:
	Close...250 or lower
	Open...2 kΩ or higher
Response time	1μs or faster (Input level should be +5 V or higher.)
Input connector	Round DIN connector 8P...2 pcs.
	Event amp side: XT2B-0800 (Conforms to DIN45326)
Weight Approx.	100 g

2-CH AC Strain Amp (AP11-104)	
Number of channels	2 channels/unit, isolated balanced input, NDIS connector
Applicable gauge resistance	120Ω to 1 kΩ
Bridge power supply	Sine wave 2 Vrms, 5 kHz (Bridge power supply must be supplied separately.)
Gauge factor	1.9 to 2.2
Range of balance	Resistance: 2% (10000 με) or lower Capacitance: 2000 pF or lower
Balance method	Resistance: Auto-balance
	Capacitance: Auto-balance (500 pF or lower, eliminating constantly)
	Balance time: Within 1s at 1 ch Remained voltage accuracy: Within 0.5%Fs
Maximum sensitivity	Over full-scale at ±500 με (at bridge voltage 2 V or higher)
Measurement range	1, 2, 5, 10, 20 kμε FS
Internal calibrator & accuracy	±0.5 k, 1 k, 2 k, 3 k, 5 kμε Accuracy: Within ±0.5% FS
Linearity Within	±0.2% FS
CMV	300 VAC
Frequency response	DC to 2 kHz (+1, -3dB)
Low-pass filter	Butterworth type (attenuation factor: -12 dB/OCT)
	10, 30, 100, 300 Hz, and OFF (+0.5, -3 dB)
A/D converter	16 bits, 100 kHz max.
Temperature stability	Zero point: Within 0.05% FS/℃
	Gain (range): Within 0.05% FS/℃
Weight Approx.	285 g

2-CH DC Strain Amp (AP11-110)	
Number of channels	2 channels/unit, isolated balanced input, NDIS connector
Input coupling	DC
Input impedance	10 MΩ + 10 MΩ or higher
Bridge power supply	2 V and 5 V
Applicable gauge resistance	120 to 2 kΩ (at BV = 2 V), 350 to 2 kΩ (at BV = 5 V)
Gauge factor	2
Range of balance	3% (15000 με) or lower
Balance method	Resistance: Auto-balance
	Balance time: 0.5 sec max. at 1ch
	Remained voltage accuracy: Within ±0.3% FS
Measurement range	2, 5, 10, 20, 50 kμε FS (at BV = 2 V)
	0.8, 2, 4, 8, 20 kμε FS (BV = 5 V)
	Voltage measurement range 2, 5, 10, 20, 50 mV FS
Range accuracy	Within 0.3% FS
Linearity	0.1% FS
Allowable input voltage	8 V (DC or AC peak values)
Frequency response	DC to 50 kHz (+0.5, -3dB)
Low-pass filter	Bessel type (attenuation factor: -12 dB/OCT)
	10, 30, 300 Hz, 1 kHz, and OFF (+0.5, -3 dB)
Temperature stability	Zero point: Within ±0.1% FS/℃
	Gain (range): Within ±0.01% FS/℃
CMV	300 VAC
A/D converter	16 bits, 100 kHz max
Weight Approx.	240 g

2-CH Vibration/RMS Amp (AP11-109)	
Input	2 channels/unit, isolated unbalanced input, isolated BNC connector
Input coupling	AC and DC
Input impedance	10 MΩ or higher
Power supply for sensor	2 mA, 18 V or higher
Measurement range	±0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100, 200, 500 V
Range accuracy	DC amp range: Within ±0.3% FS (Within 0.8% FS at ±500 V)
	RMS amp range: Within ±2% FS (at DC and 40 Hz to 20 kHz)
Linearity	Within ±0.1% FS
Crest factor	2.8 max. (When used as RMS amp)
CMV	Unit only: 42 V (DC or AC peak values)
	When isolated BNC cable (optional) is used: 300 V AC
Frequency response	DC coupling: DC to 50 kHz (+1, -3 dB)
	AC coupling: 1 to 50 kHz (+1, -3 dB)
Low-pass filter	Butterworth type (attenuation factor: -24 dB/OCT)
	30, 100, 300 Hz, 1 kHz, and OFF
High-pass filter	Butterworth type (attenuation factor: -24 dB/OCT)
	10, 30, 100 Hz, and OFF
A/D converter	16 bits, 100 kHz max.
Temperature stability	Zero point: Within ±0.02% FS/℃
	Gain (range): Within ±0.01% FS/℃
Weight Approx.	270 g

2-CH FFT Amp (AP11-102)	
Input	2 channels/unit, isolated unbalanced input, isolated BNC connector
Input coupling	AC and DC (only AC coupling when amp-embedded piezo-electric
	accelerometer is connected)
Input impedance	1 MΩ or higher
Power supply for sensor	2 mA, 18 V or higher
Measurement range	0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100, 200, 500 V
Range accuracy	Within ±0.3% FS (Within ±0.8% FS at ±500 V)
Linearity	Within ±0.1% FS
Maximum input voltage	±500 V (DC or AC peak values) (±30 V at AC coupling in ±0.1 to 5 V range)
CMV	Unit only: 42 V (DC or AC peak values)
	When isolated BNC cable (optional) is used: 300 V AC
Frequency response	DC coupling: DC to 50 kHz (+0.5, -3 dB)
	AC coupling: 0.3 to 50 kHz (+0.5, -3 dB)
Low-pass filter	Bessel type (attenuation factor: -12 dB/OCT)
	30, 300 Hz, 3 kHz, and OFF (+0.5, -3 dB)
Anti-aliasing filter	20, 40, 80, 200, 400, 800 Hz, 2, 4, 8, 20, and 40 kHz
	Drop characteristic: -72 dB (typ.) at 1.5 x fc
Offset accuracy	Within ±0.3% FS (at 25 ℃)
A/D converter	16 bits, 100 kHz max.
Temperature stability	Zero point: Within ±0.02% FS/℃
	Gain (range): Within ±0.01% FS/℃
Weight Approx.	240 g

F/V Converter (AP11-108)	
Input	1 channel/unit, isolated unbalanced input, isolated BNC connector
Input coupling	AC and DC
Input impedance	100 kΩ or higher
Input frequency range	1 Hz to 10 kHz (Pulse width: 20 μs or longer)
Measurement range	0.1, 0.2, 0.5, 1, 2, 5, 10 kHz FS
Range accuracy	Within ±0.5% FS
Linearity	Within ±0.3% FS
Trigger level	Selectable from 0 V and 2.5 V
Allowable input voltage	±100 V (DC or AC peak values)
CMV	Unit only: 42 V (DC or AC peak values)
	Between isolated BNC and safety terminal (optional): 300 VAC
Response time	Approx. 20 ms (at the range of 10 kHz)
A/D converter	16 bits, 100 kHz max.
Temperature stability	Zero point: Within ±0.03% FS/℃
	Gain (range): Within ±0.02% FS/℃
Weight Approx.	125 g

Charge Converter (AP11-901, AP11-902, AP11-903)	
Gain	1.0 mV/pC ±5% (AP11-901), 1.0 mV/pC ±5% (AP11-902), 0.1 mV/pC ±5%
	(AP11-903)
Max. input charge	5000 pC (AP11-901), 5000 pC (AP11-902), 50000 pC (AP11-903)
Frequency range	Approx. 1.6 Hz to 50 kHz
Max. output voltage	5 V p-p or lower
Drive voltage	12 to 25 VDC
Drive current	0.5 to 5.0 mA
Rated noise	20 μVrms or lower
Phase	180°(Inverted input is output.)
Operating temperature	-20 to 80℃ (AP11-901), -20 to 110℃ (AP11-902), -20 TO 110℃ (AP11-903)
Connector	Input: Miniature connector (10-32UNF)
	Output: Male BNC terminal (AP11-901)
	Female BNC connector (AP11-902)
	Female BNC connector (AP11-903)
Weight Approx.	20 g