

Ultra-Stable

& High Precision

CURRENT

TRANSDUCERS

PRODUCTS SHORT-FORM CATALOG



- Fluxgate principle
- Excellent linearity: 1 to 3ppm
- Ultra-stability: offset vs. time <1ppm/year
- “ppm level” accuracy
- Current or voltage output types
- Very large and flat bandwidth
 - ▶ Recommended as current probes for power meters
 - ▶ Suitable for use in MRI, accelerators
- Extended operating temperature range from -40°C to +85°C
 - ▶ Recommended for current measurements in renewable energies or automotive



ACCURATELY MEASURE DC / AC CURRENTS BETWEEN mA AND FULL SCALE;

PRODUCTS LINEUP

		CURRENT OUTPUT MODELS										
		DC200IF (*)	DS50ID	DS200ID DQ200ID	DS300ID	DQ500ID	DS600ID DQ600ID	DQ640ID-B configurable (**)	DL2000ID	DR5000IM	DR10000IM	
Measuring range	I_{PM}	300A	150A	370A	600A	800A	1000A	640A	3000A	8000A	11000A	
Nominal AC current	$I_{PN,AC}$	200Arms	50Arms	200Arms	300Arms	500Arms	600Arms	28A to 452Arms (step 14Arms)	2000Arms	5000Arms	7000Arms	
Nominal DC current	$I_{PN,DC}$	300A	75A	300A	450A	750A	900A	40A to 640A (step 20A)	3000A	8000A	10000A	
Overload capacity (non measured, 100ms)	$I_{OU,1s}$	1500A	1500A	1500A	1500A	4500A	4500A	4500A	10000A	20000A	20000A	
Nominal DC secondary current	$I_{SN,DC}$	300mA	150mA	600mA	450mA	428.57mA	600mA	1000mA	2000mA	3200mA	4000mA	
Primary / secondary ratio	(n1:n2)	1:1000	1:500	1:500	1:1000	1:1750	1:1500	1:40 to 1:640 ステップ 20	1:1500	1:2500	1:2500	
Linearity error	ϵ_L	1.8µA 6ppm	1.2µA 8ppm	1.2µA 2ppm	0.675µA 1.5ppm	0.429µA 1ppm	0.6µA 1ppm	3µA 3ppm	2µA 1ppm	3.2µA 1ppm	4µA 1ppm	
Electric offset	I_{OE}	1.5µA 5ppm	12µA 80ppm	12µA 20ppm	6.3µA 14ppm	4.286µA 10ppm	5µA 8.33ppm	10µA 10ppm	12µA 6ppm	9.6µA 3ppm	26µA 5ppm	
DC to 10Hz Overall accuracy @23°C acc = $(\epsilon_L + I_{OE})$	acc ϵ	3.3µA 11ppm	13.2µA 88ppm	13.2µA 22ppm	6.975µA 15.5ppm	4.715µA 11ppm	5.6µA 9.33ppm	13µA 13ppm	14µA 7ppm	12.8µA 4ppm	24µA 6ppm	
Offset temperature coefficient	TC I_{OE}	0.9µA/°C 3ppm/°C	0.06µA/°C 0.4ppm/°C	0.06µA/°C 0.1ppm/°C	0.045µA/°C 0.1ppm/°C	0.04µA/°C 0.1ppm/°C	0.06µA/°C 0.1ppm/°C	0.1µA/°C 0.1ppm/°C	0.2µA/°C 0.1ppm/°C	0.32µA/°C 0.1ppm/°C	0.4µA/°C 0.1ppm/°C	
Offset stability with time	$I_{OE}/time$	3µA/month 10ppm/month	0.12µA/month 0.8ppm/month	0.12µA/month 0.2ppm/month	0.09µA/month 0.2ppm/month	0.04µA/month 0.1ppm/month	0.06µA/month 0.1ppm/month	0.1µA/month 0.1ppm/month	0.2µA/month 0.1ppm/month	0.32µA/month 0.1ppm/month	0.4µA/month 0.1ppm/month	
Bandwidth (-3dB)	$f_{(-3dB)}$	>500kHz	>1MHz	>1MHz	>1MHz	>300kHz	>500kHz	>300kHz	>300kHz	>100kHz	>100kHz	
Amplitude error (small signal)	ϵ_G	10Hz - 10kHz 0.10% 10kHz - 100kHz 3.0% 100kHz - 300kHz 10.0%	10Hz - 5kHz 0.01% 5kHz - 100kHz 1.0% 100kHz - 1MHz 20.0%	10Hz - 5kHz 0.01% 5kHz - 100kHz 1.0% 100kHz - 1MHz 20.0%	10Hz - 2kHz 0.06% 2kHz - 10kHz 0.12% 10kHz - 100kHz 2.10%	10Hz - 2kHz 0.07% 2kHz - 10kHz 0.30% 10kHz - 100kHz 4.00%	10Hz - 2kHz 0.01% 2kHz - 10kHz 0.20% 10kHz - 100kHz 2.50%	10Hz - 2kHz 0.01% 2kHz - 10kHz 0.20% 10kHz - 100kHz 3.00%	10Hz - 1kHz 0.05% 1kHz - 5kHz 1.50% 5kHz - 30kHz 15.00%	10Hz - 1kHz 0.05% 1kHz - 5kHz 1.50% 5kHz - 30kHz 15.00%	10Hz - 1kHz 0.05% 1kHz - 5kHz 1.50% 5kHz - 30kHz 15.00%	
Phase shift (small signal)	θ	10Hz - 10kHz 0.09° 10kHz - 100kHz 0.4° 100kHz - 300kHz 2.0°	10Hz - 5kHz 0.1° 5kHz - 100kHz 0.5° 100kHz - 1MHz 5.0°	10Hz - 5kHz 0.1° 5kHz - 100kHz 0.5° 100kHz - 1MHz 5.0°	10Hz - 2kHz 0.02° 2kHz - 10kHz 0.03° 10kHz - 100kHz 1.40°	10Hz - 2kHz 0.03° 2kHz - 10kHz 0.04° 10kHz - 100kHz 3.00°	10Hz - 2kHz 0.03° 2kHz - 10kHz 0.04° 10kHz - 100kHz 1.00°	10Hz - 2kHz 0.03° 2kHz - 10kHz 0.04° 10kHz - 100kHz 3.00°	10Hz - 1kHz 0.05° 1kHz - 5kHz 0.50° 5kHz - 30kHz 3.00°	10Hz - 1kHz 0.05° 1kHz - 5kHz 0.50° 5kHz - 30kHz 3.00°	10Hz - 1kHz 0.05° 1kHz - 5kHz 0.50° 5kHz - 30kHz 3.00°	
Noises 0 - 100Hz 0 - 1kHz 0 - 10kHz 0 - 100kHz	Noises (rms)	0.10ppm 0.20ppm 3.00ppm 8.00ppm	0.08ppm 0.16ppm 1.60ppm 6.00ppm	0.02ppm 0.04ppm 0.40ppm 1.50ppm	0.02ppm 0.04ppm 0.60ppm 2.50ppm	0.02ppm 0.05ppm 0.60ppm 2.50ppm	0.01ppm 0.02ppm 0.20ppm 0.70ppm	0.01ppm 0.02ppm 0.20ppm 0.70ppm	0.02ppm 0.10ppm 0.80ppm 3.50ppm	0.10ppm 0.70ppm 5.00ppm 7.00ppm	0.05ppm 0.40ppm 3.00ppm 4.00ppm	
Induced rms voltage on primary conductor		5µVrms	5µVrms	5µVrms	5µVrms	5µVrms	5µVrms	5µVrms	5µVrms	10µVrms	10µVrms	
Rated rms insulation voltage (***)	U_b	300V 600V	300V 600V	300V 600V	300V 600V	300V 600V	300V 600V	300V 600V	1500V 1500V	3000V 3000V	3000V 3000V	
rms insulation test voltage (Pri.-Sec.) ACS0-60Hz, 1min	$U_{d,P-S}$	5.7kV	5.7kV	5.7kV	5.7kV	5.7kV	5.7kV	5.7kV	14.4kV	23.7kV	23.7kV	
rms insulation test voltage (Sec.-Shield) ACS0-60Hz, 1min	$U_{d,S-S}$	0.2kV	0.2kV	0.2kV	0.2kV	0.2kV	0.2kV	0.2kV	0.2kV	0.2kV	0.2kV	
Impulse withstand voltage (1.2/50µs)	\dot{U}_W	10.4kV	10.4kV	10.4kV	10.4kV	10.4kV	10.4kV	10.4kV	26.3kV	43.5kV	43.5kV	
Operating temp. range	T_a	-40°C to +70°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	0°C to +55°C	-40°C to +65°C	head : 0 to +70°C controller : 0 to +45°C		
Power supplies	U_c	±15V±5%	±15V±5%	±15V±5%	±15V±5%	±15V±5%	±15V±5%	±15V±5%	±15V±5%	AC 90 ~ 295V - 50/60Hz or DC 127V ~ 417V		
Diameter of aperture	ϕ	20.0mm	27.6mm	27.6mm	27.6mm	27.6mm	27.6mm	28.1mm	68.0mm	150.0mm	140.0mm	
External dimensions	WxHxD	apprx. 92.4 x 61.5 x 40mm						DS (apprx. 122 x 108 x 45mm) / DQ (apprx. 104 x 106 x 47mm)		apprx. 104 x 106 x 47mm	apprx. 240 x 230 x 82mm	head apprx. 420 x 325 x 122mm controller apprx. 483 x 241mm
Weight	M	approximate 0.2kg						approximate 0.6kg		apprx. 6.5kg	head : 17kg controller : 6kg	
Observations :												
(*) DC200IF is a low-cost industrial grade model												
(**) DQ640ID-B parameters are shown at 1:640 configuration												
(***) Insulation voltage: Reinforced insulation, Over Voltage category III, Pollution degree 2												
Calibration (Test) winding		No	Optional	Optional	Optional	Optional	Optional	Optional	100 turns	Optional	Optional	

4 (6)-CHANNEL POWER SUPPLIES UNIT, ACCESSORIES

Power up to 4 (or 6) transducers from 50 to 2000 models



DSUB2/5/10 (m) Cable





DSSIU-4-1U (4-channel)

DSSIU-6-1U (6-channel, I outputs, calibration coils access)

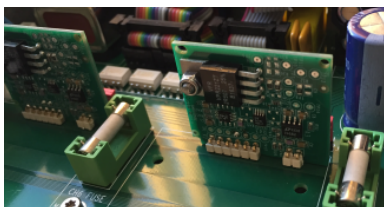
DSSIU-6-1U (6-channel, V outputs or mixed V and I outputs, calibration coils access)

- Output voltage: ± 15V (per channel)
- Input voltage: AC 100V to 240V, 47Hz to 63Hz
- Dimensions: 19" rack, 1U in height
- Features DSSIU-4, DSSIU-6
 - D-SUB 9 pins for transducer connection
 - 2 x 4mm-banana jacks for current outputs
- Features DSSIU-6
 - 2 x 4mm-banana jacks for test coil (cal. current)
 - Option: 1V or 10V voltage output modules VOM
 - Mini Amphenol XLR connector for voltage outputs

DESIGNED FOR MAGNET POWER SUPPLIES, ELECTRIC / HYBRID CAR, R&D LABS.

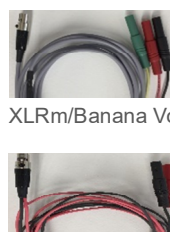
		VOLTAGE OUTPUT MODELS								
		DS200UB-1V	DS200UB-10V	DS600UB-1V	DS600UB-10V	DS1000UB-10V	DL2000UB-1V	DL2000UB-10V	DR5000UX-10V/7500A	DR10000UX-10V
Measuring range	I_{PM}	330A	220A	950A	660A	1100A	3000A	2200A	8000A	11000A
Nominal AC current	I_{PN_AC}	200Arms	140Arms	600Arms	424Arms	700Arms	2000Arms	1414Arms	5000Arms	7000Arms
Nominal DC current	I_{PN_DC}	300A	200A	900A	600A	1000A	3000A	2000A	7500A	10000A
Overload capacity (non measured, 100ms)	$I_{OVL0.1s}$	1500A	1500A	4500A	4500A	4500A	10000A	10000A	10000A	35000A
Nominal DC secondary output voltage	V_{SN_DC}	1.5V	10V	1.5V	10V	10V	1V	10V	10V	10V
Primary / secondary conversion ratio	Conv.Ratio	5mV/A	50mV/A	1.67mV/A	16.67mV/A	10mV/A	0.5mV/A	5mV/A	1.333mV/A	1mV/A
DC to 10Hz Overall accuracy of I_{PN_DC} @23°C $acc\epsilon = (\epsilon_L + V_{OE} + \epsilon_C)$	acc ϵ	73.5 μ V 49ppm	540 μ V 54ppm	63 μ V 42ppm	430 μ V 43ppm	540 μ V 54ppm	75 μ V 50ppm	500 μ V 50ppm	200 μ V 20ppm	200 μ V 20ppm
Bandwidth (-3dB)	$f_{(-3dB)}$	>500kHz	>500kHz	>300kHz	>300kHz	>300kHz	>300kHz	>300kHz	>100kHz	>100kHz
Amplitude error (small signal)	ϵ_g	10Hz - 5kHz 0.01% 5kHz - 10kHz 1.00% 10kHz - 100kHz 20.00%	10Hz - 3kHz 0.01% 3kHz - 10kHz 0.20% 10kHz - 100kHz 3.00%	10Hz - 2kHz 0.01% 2kHz - 10kHz 0.20% 10kHz - 100kHz 2.50%	10Hz - 3kHz 0.01% 3kHz - 10kHz 0.20% 10kHz - 100kHz 4.00%	10Hz - 3kHz 0.01% 3kHz - 10kHz 0.20% 10kHz - 100kHz 4.00%	10Hz - 2kHz 0.01% 2kHz - 10kHz 0.40% 10kHz - 100kHz 2.50%	10Hz - 1kHz 0.20% 1kHz - 10kHz 1.50% 10kHz - 100kHz 6.00%	10Hz - 1kHz 0.05% 1kHz - 5kHz 1.50% 5kHz - 30kHz 15.00%	10Hz - 1kHz 0.05% 1kHz - 5kHz 1.50% 5kHz - 30kHz 15.00%
Phase shift (small signal)	θ	10Hz - 5kHz 0.2° 5kHz - 10kHz 0.5° 10kHz - 100kHz 5.0°	10Hz - 3kHz 0.3° 3kHz - 10kHz 1.0° 10kHz - 100kHz 9.0°	10Hz - 2kHz 0.03° 2kHz - 10kHz 0.04° 10kHz - 100kHz 1.0°	10Hz - 3kHz 0.4° 3kHz - 10kHz 1.0° 10kHz - 100kHz 9.0°	10Hz - 3kHz 0.4° 3kHz - 10kHz 1.0° 10kHz - 100kHz 9.0°	10Hz - 2kHz 0.05° 2kHz - 10kHz 0.10° 10kHz - 100kHz 2.50°	10Hz - 1kHz 0.3° 1kHz - 10kHz 1.5° 10kHz - 100kHz 15.0°	10Hz - 1kHz 0.05° 1kHz - 5kHz 0.50° 5kHz - 30kHz 3.00°	10Hz - 1kHz 0.05° 1kHz - 5kHz 0.50° 5kHz - 30kHz 3.00°
Noises 0 - 100Hz 0 - 1kHz 0 - 10kHz 0 - 100kHz	Noises (rms)	0.02ppm 0.04ppm 0.40ppm 1.50ppm	0.02ppm 0.04ppm 0.40ppm 1.50ppm	0.01ppm 0.02ppm 0.20ppm 0.70ppm	0.02ppm 0.04ppm 0.40ppm 1.50ppm	0.02ppm 0.04ppm 0.40ppm 1.50ppm	0.04ppm 0.10ppm 0.60ppm 1.50ppm	0.02ppm 0.06ppm 0.60ppm 1.20ppm	0.1ppm 0.7ppm 5.0ppm 7.0ppm	0.1ppm 0.7ppm 5.0ppm 7.0ppm
Induced rms voltage on primary conductor		5 μ Vrms	5 μ Vrms	5 μ Vrms	5 μ Vrms	5 μ Vrms	5 μ Vrms	5 μ Vrms	10 μ Vrms	10 μ Vrms
Linearity error	ϵ_L	9 μ V 6ppm	40 μ V 4ppm	7.5 μ V 5ppm	30 μ V 3ppm	40 μ V 4ppm	19.5 μ V 13ppm	70 μ V 7ppm	50 μ V 5ppm	50 μ V 5ppm
Offset error										
Initial	V_{OE}	27 μ V 18ppm	250 μ V 25ppm	18 μ V 12ppm	150 μ V 15ppm	150 μ V 15ppm	10.5 μ V 7ppm	130 μ V 13ppm	50 μ V 5ppm	50 μ V 5ppm
Versus temperature	TCV_{OE}	1.5 μ V/°C 1ppm/°C	10 μ V/°C 1ppm/°C	1.5 μ V/°C 1ppm/°C	10 μ V/°C 1ppm/°C	10 μ V/°C 1ppm/°C	1.5 μ V/°C 1ppm/°C	10 μ V/°C 1ppm/°C	10 μ V/°C 1ppm/°C	10 μ V/°C 1ppm/°C
Versus time	I_{Oetime}	1.5 μ V/°C 1ppm/°C	10 μ V/month 1ppm/month	1.5 μ V/°C 1ppm/°C	10 μ V/month 1ppm/month	10 μ V/month 1ppm/month	1.5 μ V/°C 1ppm/°C	10 μ V/month 1ppm/month	10 μ V/month 1ppm/month	10 μ V/month 1ppm/month
Conversion ratio error										
Initial	ϵ_C	37.5 μ V 25ppm	250 μ V 25ppm	37.5 μ V 25ppm	250 μ V 25ppm	350 μ V 35ppm	45 μ V 30ppm	300 μ V 30ppm	100 μ V 10ppm	100 μ V 10ppm
Versus temperature	$TC\epsilon_C$	4.5 μ V/°C 3ppm/°C	30 μ V/°C 3ppm/°C	4.5 μ V/°C 3ppm/°C	30 μ V/°C 3ppm/°C	30 μ V/°C 3ppm/°C	2 μ V/°C 3ppm/°C	20 μ V/°C 2ppm/°C	20 μ V/°C 2ppm/°C	20 μ V/°C 2ppm/°C
Versus time	ϵ_{Ctime}	0.45 μ V/month 0.3ppm/month	3 μ V/month 0.3ppm/month	0.45 μ V/month 0.3ppm/month	3 μ V/month 0.3ppm/month	3 μ V/month 0.3ppm/month	0.45 μ V/month 0.3ppm/month	3 μ V/month 0.3ppm/month	3 μ V/month 0.3ppm/month	3 μ V/month 0.3ppm/month
Rated rms insulation voltage (**) IEC61010-1 EN50178	U_b U_{bS}	300V 600V	300V 600V	300V 600V	300V 600V	300V 600V	1500V 1500V	1500V 1500V	3000V 3000V	3000V 3000V
rms insulation test voltage (Pri.-Sec.) AC50-60Hz, 1min	U_{dP-S}	5.7kV	5.7kV	5.7kV	5.7kV	5.7kV	5.7kV	14.4kV	23.7kV	23.7kV
rms insulation test voltage (Sec.-Shield) AC50-60Hz, 1min	U_{dS-S}	0.2kV	0.2kV	0.2kV	0.2kV	0.2kV	0.2kV	0.2kV	0.2kV	0.2kV
Impulse withstand voltage (1.2/50 μ s)	\hat{U}_W	10.4kV	10.4kV	10.4kV	10.4kV	10.4kV	10.4kV	26.3kV	43.5kV	43.5kV
Operating temp. range	T_a	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +65°C		head : 0 to +70°C controller : 0 to +45°C	
Power supplies	U_c	$\pm 15V \pm 5\%$	$\pm 15V \pm 5\%$	$\pm 15V \pm 5\%$	$\pm 15V \pm 5\%$	$\pm 15V \pm 5\%$	$\pm 15V \pm 5\%$		AC 90 ~ 295V - 50/60Hz or DC 127V ~ 417V	
Diameter of aperture	ϕ	27.6mm	27.6mm	27.6mm	27.6mm	27.6mm	68.0mm		150.0mm	140.0mm
External dimensions	WxHxD	apprx. 122 x 108 x 45mm					apprx. 240 x 230 x 82mm		head appr. 420 x 325 x 122mm controller appr. 483 x 88 x 241mm	
Weight	M	approximate 0.6kg					apprx. 6.5kg		head : 17kg head : 19kg controller : 6kg	
Output connector		BNC 							mini XLR 	
Calibration (Test) winding		Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional

Factory mounted voltage output modules (VOM) 1V and 10V, for use with DSSIU-6-1U model



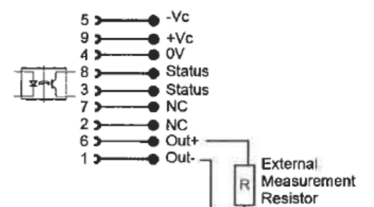
- VOM 400mA/1V
- VOM 400mA/10V
- VOM 1.333A/1V
- VOM 1.333A/10V

DSSIU-6 back panel

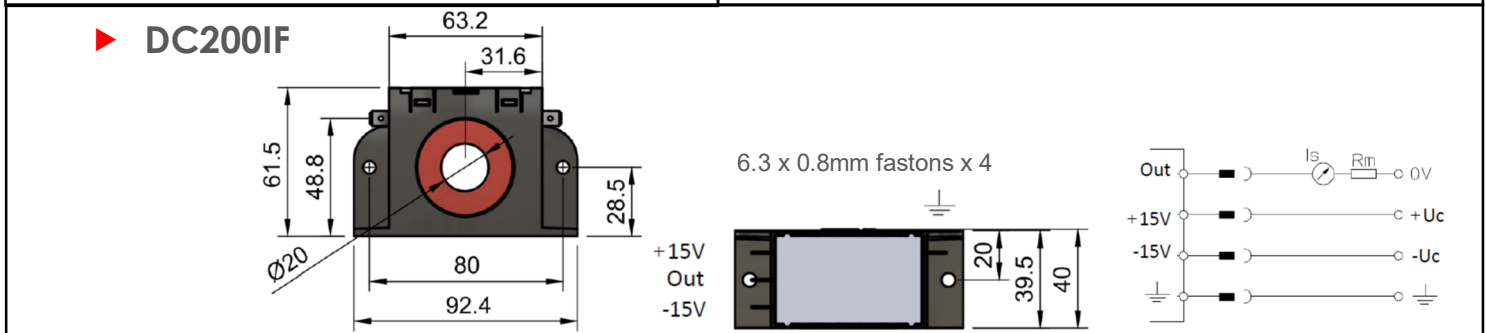
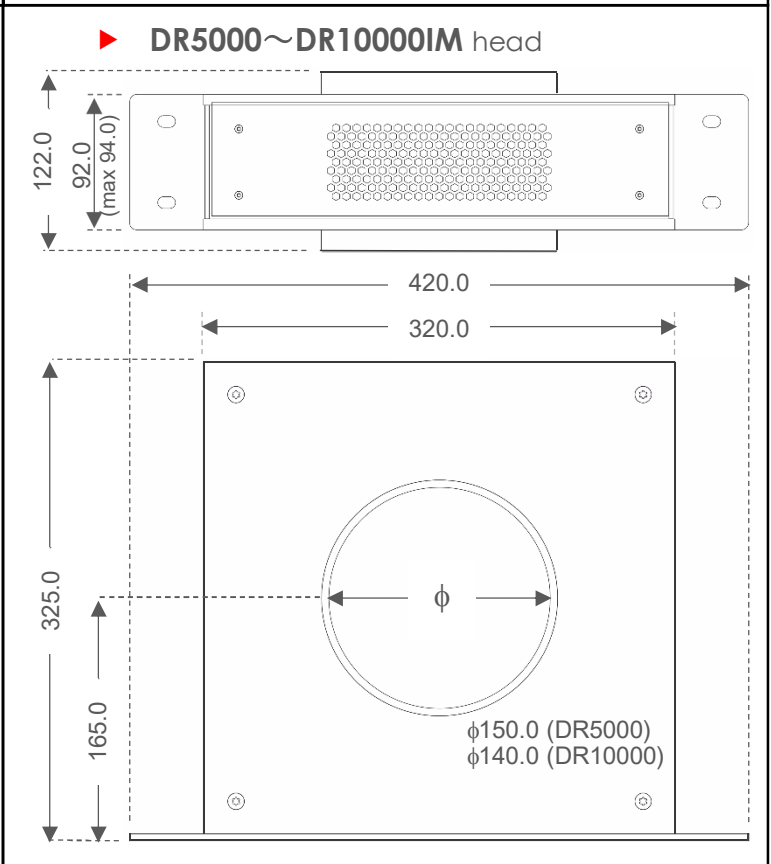
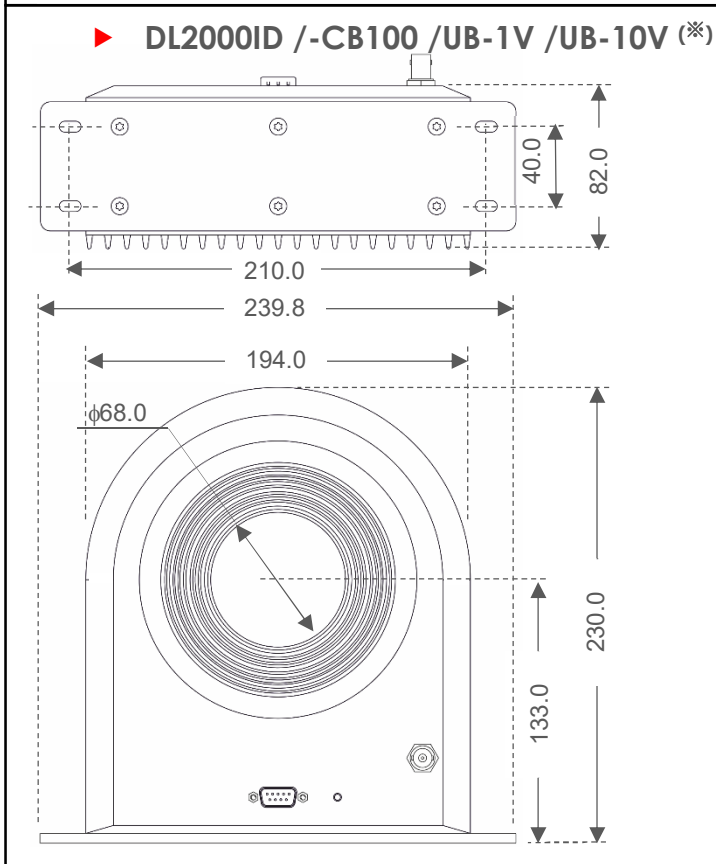
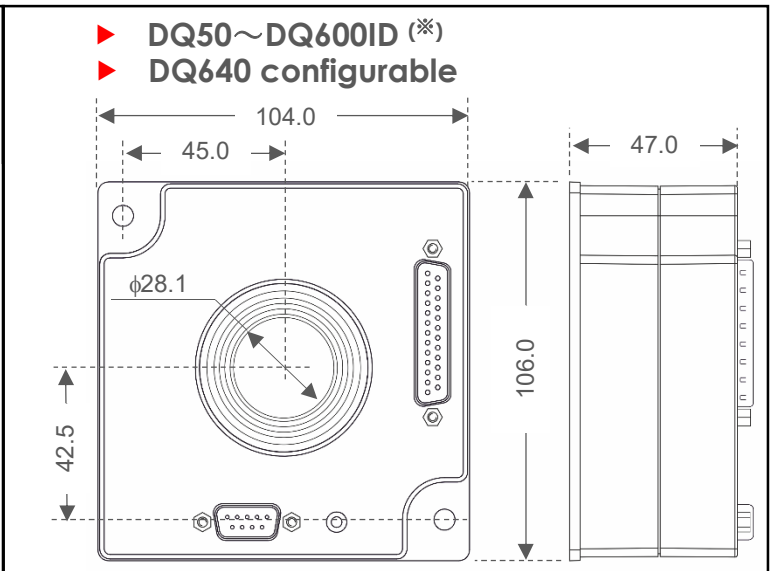
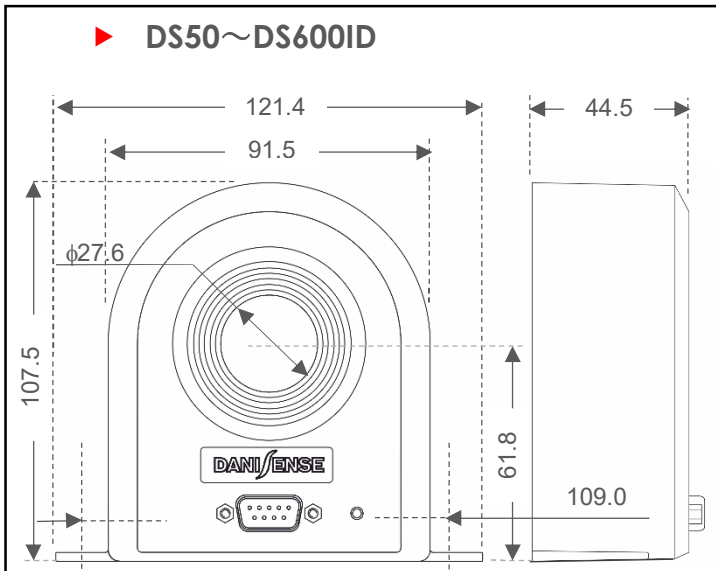


XLRm/Banana Current Cable (2m)

DSUB connector pin assignment



3) Please contact us for OEM or any specific requirements



(※): 21-pin DSUB programming connector is for DQ640 programmable model / BNC connector is for voltage output model
unit: mm – general tolerance: ±0.3mm unless otherwise stated

DANISENSE

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