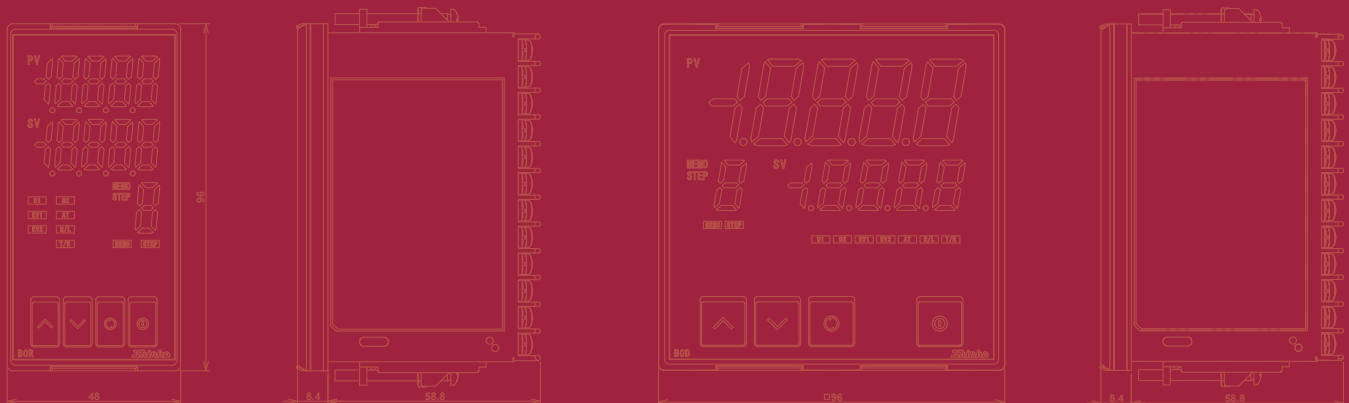


A New Standard



Contains frequently used setting items (in Initial setting mode)

Program control, converter function are standard features



5-digit displays suit many industries

Drip-proof / Dust-proof IP66 (front panel only)

5-digit PV, SV Displays



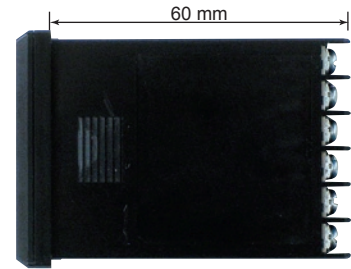
A wide range of information is displayed. (Model shown: BCD2)

Large Buttons



Easy to press
(Model shown: BCS2)

Control Panel Interior Depth 60 mm



Each unit needs just 60 mm of control panel space.
(Model shown: BCS2)

Quicker Setting Time – Frequently Used Items in One Mode

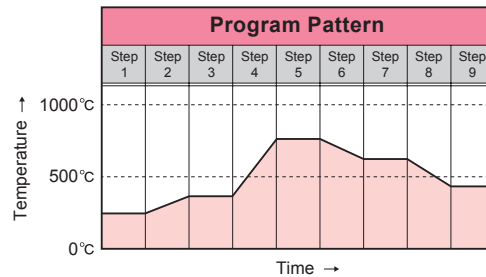
Contains frequently used setting items in Initial Setting mode.
Control can be started by setting those items in this mode.
Set other functions according to your requirements.



Simplified Program Control

9-step pattern (for SV and time) is a standard feature.

Number of patterns	1
Number of steps	9
Number of repetitions	0 to 10000 times
Program time range	00:00 to 99:59 (Hours:Minutes, Minutes:Seconds)



(e.g.) Temperature program control

Simplified Converter Function

Input signals can be converted to insulated 4 to 20 mA DC output (for direct current output type).

Simple Settings from a PC

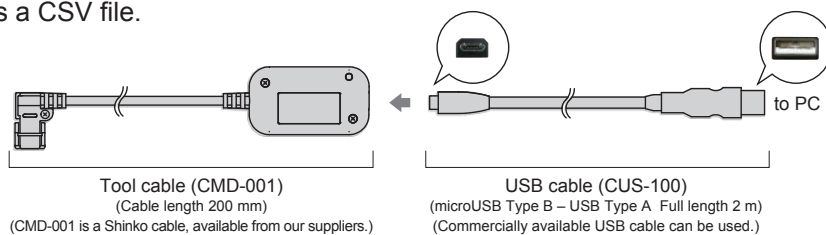
By connecting to a PC, various settings can be carried out.
[Tool cable (sold separately) and Software (charge-free) are required.]

- The setting contents of the 1st unit can be copied to other units with a single click (when using controllers with the same specifications).
- Logging and monitoring are possible!
Logging data can be saved as a CSV file.



Power to the BCx2 is supplied by PC via USB.

Communication Cables (Sold Separately)



Tool cable (CMD-001)
(Cable length 200 mm)
(CMD-001 is a Shinko cable, available from our suppliers.)

USB cable (CUS-100)
(microUSB Type B – USB Type A Full length 2 m)
(Commercially available USB cable can be used.)

Dedicated Software



OS: Windows 7/8/10 (Japanese/English)
<https://shinko-technos.co.jp/e/> → Support & Downloads → Downloads → Software → BCx2 series console software (SWC-BCx01M)

Model

Size	Control Output	Power Supply	Input (*1)	Option 1 (*2)	Option 2 (*2)	Specification
BCS2						48×48 mm (W×H) (Control panel interior depth 60 mm)
BCR2						48×96 mm (W×H) (Control panel interior depth 60 mm)
BCD2						96×96 mm (W×H) (Control panel interior depth 60 mm)
	R					Relay contact
	S					Non-contact voltage (for SSR drive)
	A					Direct current
		0				100 to 240 V AC
		1				24 V AC/DC
			0 –			Multi-range (*1)
				0		No option needed
				1		Event output EV2 (*3) EV2
				2		Heating/Cooling control output OUT2, Non-contact voltage DS
				3		Heating/Cooling control output OUT2, Direct current DA
				4		Insulated power output P24
				5		Event output EV2 + Heating/Cooling control output OUT2 Relay contact (*4) EV2+DR
				6		Event output EV2 + Heating/Cooling control output OUT2 Non-contact voltage (*4) EV2+DS
				7		Event output EV2 + Heating/Cooling control output OUT2 Direct current (*4) EV2+DA
				0		No option needed
				1		Event input (2 points) + Serial communication + Heater burnout alarm (20A) (*5)(*6) C5W (20A)
				2		Event input (2 points) + Serial communication + Heater burnout alarm (100A) (*5)(*6) C5W (100A)
				3		Event input (2 points) + Heater burnout alarm (20A) (*6) EIW (20A)
				4		Event input (2 points) + Heater burnout alarm (100A) (*6) EIW (100A)
				5		Event input (2 points) + External setting input+Transmission output (*7) EIT
				6		Serial communication C5
				7		Heater burnout alarm (20A) (*6) W (20A)
				8		Heater burnout alarm (100A) (*6) W (100A)
				9		Event input (2 points) EI

(e.g.)

BCS2 R 0 0- 13

- Size: 48 x 48 mm (W x H)
- Control output: Relay contact
- Power supply: 100 to 240 V AC
- Input: Multi-range
- Option 1: Event output EV2
- Option 2: Event input (2 points) + Heater burnout alarm (20A)

(*1) Thermocouple, RTD, Direct current and DC voltage can be selected by keypad.

(*2) Only one option can be selected from Option 1 and Option 2 respectively.

(*3) Event output EV1 is standard.

The following outputs can be selected in [Event output EV1/EV2 allocation] by keypad:

Alarm output (12 alarm types and No alarm action), Heater burnout alarm output, Loop break alarm output, Time signal output, Output during AT, Pattern end output, Output by communication command, Heating/Cooling control output OUT2 (for EV2 option only)

For Event output EV1/EV2, Heater burnout alarm output and Output by communication command are available when C5W, EIW, C5 or W option is ordered.

(*4) This option can be added to the BCR2, BCD2 only. If EV2+D□ and EIT options are ordered simultaneously, Transmission output is not available since EV2 output utilizes transmission output terminals.

(*5) For the BCS2, 2 points of Event input are not available.

(*6) For the direct current output type, C5W, EIW, W options cannot be ordered. The CT is sold separately.

(*7) For the BCS2, 1 point of Event input is available.

Accessories Sold Separately

Model		
Terminal cover	CT for 20A (CTL-6-S-H) (*)	CT for 100A (CTL-12-S36-10L1U) (*)
Tool cable (CMD-001)	USB cable (CUS-100)	

(*) Used for Heater burnout alarm (C5W, EIW, W options)

Specifications

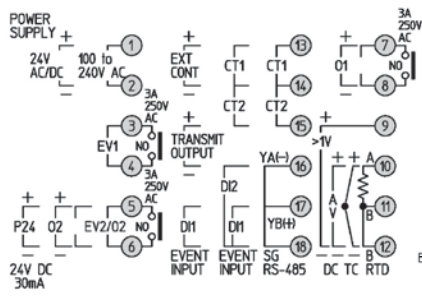
Input	Thermocouple: K, J, R, S, B, E, T, N, PL-II, C (W/Re5-26), External resistance: 100 Ω max. (However, B: 40 Ω max.) RTD: Pt100, JPt100, 3-wire type, Allowable input lead wire resistance: 10 Ω max. per wire Direct current: 0 to 20 mA, 4 to 20 mA DC: Input impedance: 50 Ω, Allowable input current: 50 mA max. DC voltage: 0 to 1 V DC: Input impedance: 1 MΩ min. Allowable input voltage: 5 V DC max. Allowable signal source resistance: 2 kΩ max. 0 to 5 V, 1 to 5 V, 0 to 10 V DC: Input impedance: 100 kΩ min. Allowable input voltage: 15 V DC max. Allowable signal source resistance: 100 Ω max.
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Base accuracy [At ambient temperature 23°C (for a single unit mounting)]	<p>Thermocouple: Within $\pm 0.2\%$ of each input span ± 1 digit However, R, S inputs, 0 to 200°C (32 to 392°F): Within $\pm 6^\circ\text{C}$ (12°F) B input, 0 to 300°C (0 to 572°F): Accuracy is not guaranteed. K, J, E, T, N inputs, Less than 0°C (32°F): Within $\pm 0.4\%$ of input span ± 1 digit</p> <p>RTD: Within $\pm 0.1\%$ of each input span ± 1 digit</p> <p>Direct current: Within $\pm 0.2\%$ of each input span ± 1 digit</p> <p>DC voltage: Within $\pm 0.2\%$ of each input span ± 1 digit</p>
Input sampling period	125 ms
Control output	<p>Relay contact 1a: Control capacity: 3 A 250 V AC (resistive load), 1 A 250 V AC (inductive load $\cos\phi=0.4$) Electrical life: 100,000 cycles Minimum applicable load: 10 mA 5 V DC</p> <p>Non-contact voltage (for SSR drive): 12 V DC $\pm 15\%$, Max 40 mA (short circuit protected)</p> <p>Direct current: 4 to 20 mA DC (Resolution: 12000), Load resistance: Max 550 Ω</p>
Event output EV1	<p>Relay contact 1a: Control capacity: 3 A 250 V AC (resistive load), 1 A 250 V AC (inductive load $\cos\phi=0.4$) Electrical life: 100,000 cycles Minimum applicable load: 10 mA 5 V DC</p>
Program control	<p>Number of patterns: 1 Number of steps: 9 Number of repetitions: 0 to 10000 Program time range: 00:00 to 99:59 (Hours:Minutes or Minutes:Seconds) Setting range: Scaling low limit value to Scaling high limit value (Factory default: 0°C) Time setting accuracy: Within $\pm 1.0\%$ of setting time Wait value : 0 to Converted value of 20% of input span (Direct current, voltage inputs: 0 to Converted value of 20% of scaling span)</p>
Event input (Optional)	<p>If 'Set value memory' is selected in [Event input DI1/DI2 allocation], SV1 to SV4 are available. Circuit current when Closed: Approx. 16 mA</p>
Heater burnout alarm (Optional)	<p>Monitors heater current with CT (current transformer), and detects burnout. EV1/EV2 output, for which Heater burnout alarm is selected in [Event output EV1/EV2 allocation], will be turned ON or OFF. This alarm is also activated when the input is burnt out. Rated current: 20 A, 100 A (Must be specified when ordering.) Single-phase: Detects burnout with CT1 input. 3-phase: Detects burnout with CT1 and CT2 inputs. Setting accuracy: Within $\pm 5\%$ of the rated value</p>
Event output (Optional)	<p>Output will be turned ON or OFF depending on the Event conditions selected in [Event output EV2 allocation]. Relay contact, 1a Control capacity: 3 A 250 V AC (resistive load) 1A 250 V AC (inductive load, $\cos\phi=0.4$) Electrical life: 100,000 cycles Minimum applicable load: 10 mA 5 V DC</p>
Heating/Cooling control (Optional)	<p>Performs Heating/Cooling control. (Heating side specifications are the same as those of OUT1.) OUT2 proportional band: Thermocouple, RTD inputs without decimal point: 0 to Input span Thermocouple, RTD inputs with decimal point: 0.0 to Input span DC voltage, current inputs: 0.0 to 1000.0% OUT2 integral time: Same as OUT1 integral time OUT2 derivative time: Same as OUT1 derivative time OUT2 proportional cycle: 0.5, or 1 or 120 seconds Overlap/Dead band setting range: Thermocouple, RTD inputs: -200.0 to 200.0°C(°F) DC voltage, current inputs: -2000 to 2000 (The placement of the decimal point follows the selection.) OUT2 ON/OFF hysteresis: Thermocouple, RTD inputs: 0.1 to 1000.0°C(°F) DC voltage, current inputs: 1 to 10000 (The placement of the decimal point follows the selection.) OUT2 high limit: 0 to 100% (Direct current output: -5 to 105%) OUT2 low limit: 0 to 100% (Direct current output: -5 to 105%) OUT2 cooling method: One cooling method can be selected from Air cooling (linear characteristics), Oil cooling (1.5th power of the linear characteristics) and Water cooling (2nd power of the linear characteristics) by keypad operation. Cooling output (OUT2): Relay contact 1a (EV2, EV2+DR) Control capacity: 3 A 250 V AC (resistive load) 1 A 250 V AC (inductive load, $\cos\phi=0.4$) Electrical life: 100,000 cycles Non-contact voltage (for SSR drive) (DS, EV2+DS): 12 V DC$\pm 15\%$, Max. 40 mA (short circuit protected) Direct current (DA, EV2+DA): 4 to 20 mA DC Resolution: 12000 Load resistance: Max. 550 Ω</p>

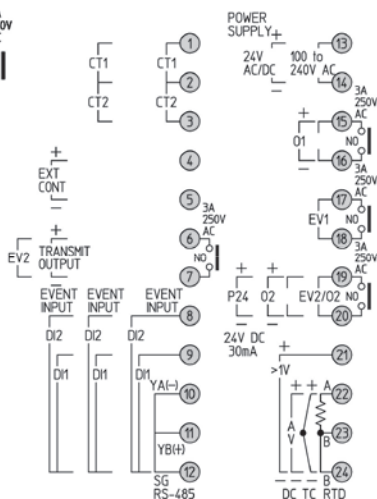
Transmission output (Optional)	Resolution: 12000 Output: 4 to 20 mA DC (Load resistance: Max 550 Ω) Output accuracy: Within ± 0.3% of Transmission output span																				
Serial communication (Optional)	Communication line: EIA RS-485 Communication method: Half-duplex communication Synchronization method: Start-stop synchronization Communication speed: 9600, 19200, 38400 bps (Selectable by keypad) (Factory default: 9600 bps) Data bit: 7 or 8 (Factory default: 7 bits) Parity: Even, Odd, No parity (Selectable by keypad) (Factory default: Even) Stop bit: 1 or 2 (Selectable by keypad) (Factory default: 1) Data format: <table border="1"> <tr> <th>Communication Protocol</th> <th>Shinko Protocol</th> <th>MODBUS ASCII</th> <th>MODBUS RTU</th> </tr> <tr> <td>Start bit</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>Data bit</td> <td>7</td> <td>7 (8) Selectable</td> <td>8</td> </tr> <tr> <td>Parity</td> <td>Even</td> <td>Even (No parity, Odd) Selectable</td> <td>No parity (Even, Odd) Selectable</td> </tr> <tr> <td>Stop bit</td> <td>1</td> <td>1 (2) Selectable</td> <td>1 (2) Selectable</td> </tr> </table> <p>Response delay time: 0 to 1000 ms (Factory default: 10 ms) Response from the controller can be delayed after receiving command from the host computer.</p>	Communication Protocol	Shinko Protocol	MODBUS ASCII	MODBUS RTU	Start bit	1	1	1	Data bit	7	7 (8) Selectable	8	Parity	Even	Even (No parity, Odd) Selectable	No parity (Even, Odd) Selectable	Stop bit	1	1 (2) Selectable	1 (2) Selectable
Communication Protocol	Shinko Protocol	MODBUS ASCII	MODBUS RTU																		
Start bit	1	1	1																		
Data bit	7	7 (8) Selectable	8																		
Parity	Even	Even (No parity, Odd) Selectable	No parity (Even, Odd) Selectable																		
Stop bit	1	1 (2) Selectable	1 (2) Selectable																		
External setting input (Optional)	SV adds external analog signal to remote bias value. Not available for Program control. Setting signal: 4 to 20 mA DC Allowable input: 50 mA DC max. Input impedance: 50 Ω max. Input sampling period: 125 ms																				
Insulated power output (Optional)	Output voltage: 24 ± 3 V DC (when load current is 30 mA DC) Ripple voltage: Within 200 mV DC (when load current is 30 mA DC) Max. load current: 30 mA DC																				
Environmental specification	RoHS directive compliant																				

Terminal Arrangement

BCS2



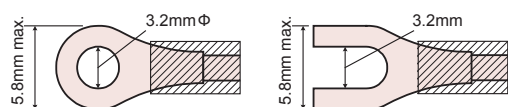
BCR2 BCD2



POWER SUPPLY	100 to 240 V AC or 24 V AC/DC [For a 24 V AC/DC power source, do not confuse polarity when using direct current (DC)]
EV1	Event output 1
EV2	Event output 2 (EV2, EV2+D□ options)
O2	Control output OUT2 (EV2, DS, DA, EV2+D□ options)
P24	24 V DC insulated power output (P24 option)
O1	Control output OUT1
TC	Thermocouple input
RTD	RTD input
DC	DC voltage, Direct current inputs
CT1	CT input 1 (C5W, EIW, W options)
CT2	CT input 2 (C5W, EIW, W options)
RS-485	Serial communication RS-485 (C5W, C5 option)
EVENT INPUT	Event input DI1 (BCS2: EIW, EIT, EI options, BCR2/BCD2: C5W, EIW, EIT, EI options) Event input DI2 (BCS2: EIW, EI options, BCR2/BCD2: C5W, EIW, EIT, EI options)
EXT CONT	External setting input (EIT option)
TRANSMIT OUTPUT	Transmission output (EIT option)

Lead Wire Solderless Terminal

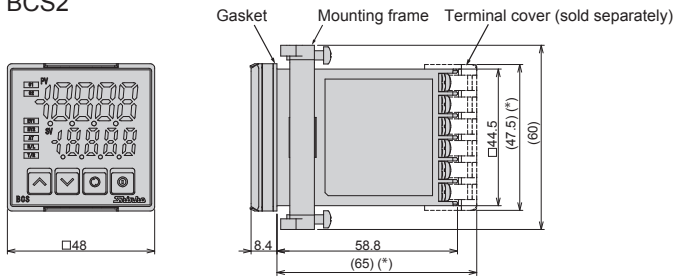
Use a solderless terminal with an insulation sleeve in which an M3 screw fits as shown below.
The torque should be 0.63 N•m.



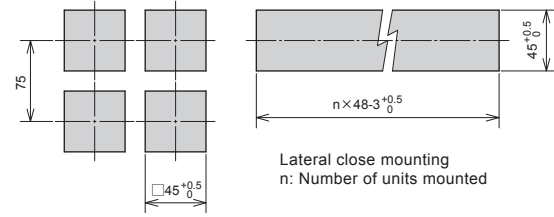
Solderless Terminal	Manufacturer	Model	Tightening Torque
Y-type	Nichifu Terminal Industries Co., Ltd.	TMEV1.25Y-3	0.63 N•m
	Japan Solderless Terminal MFG Co., Ltd.	VD1.25-B3A	
Ring-type	Nichifu Terminal Industries Co., Ltd.	TMEV1.25-3	
	Japan Solderless Terminal MFG Co., Ltd.	V1.25-3	

Dimensions (Scale: mm)

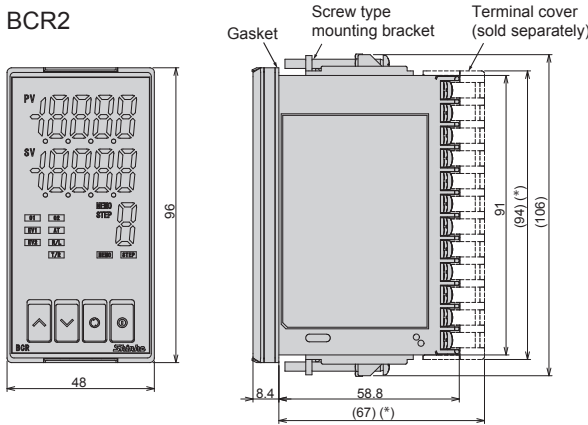
BCS2



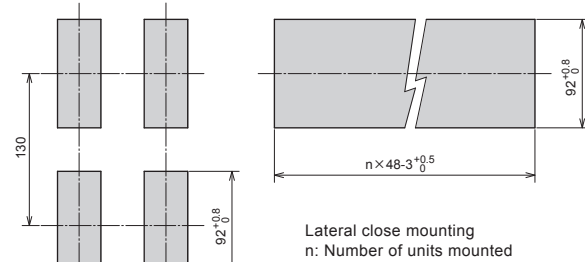
BCS2



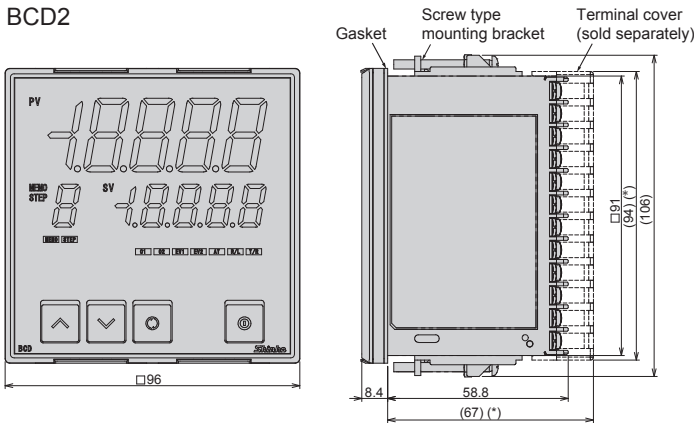
BCR2



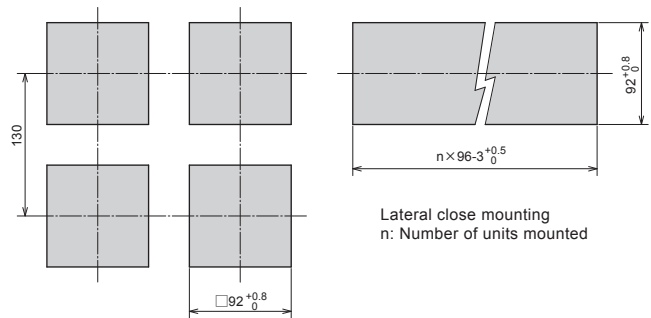
BCR2



BCD2



BCD2



Caution

If lateral close mounting is used for the controller, Drip-proof/Dust-proof IP66 may be compromised, and all warranties will be invalidated.

(*) : When terminal cover is used



SAFETY PRECAUTIONS

- To ensure safe and correct use, thoroughly read and understand the manual before using this instrument.
- This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after purpose-of-use consultation with our agency or main office. (Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices such as protection equipment against excessive temperature rise, etc. must be installed, as malfunction of this product could result in serious damage to the system or injury to personnel. Also proper periodic maintenance is required.
- This instrument must be used under the conditions and environment described in the manual. Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in this manual.

Caution with respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument. In the case of resale, ensure that this instrument is not illegally exported.

- This catalog is as of May 2021 and its contents are subject to change without notice.
- The photos in this catalog do not show actual usage.
- If you have any inquiries, please consult us or our agency.