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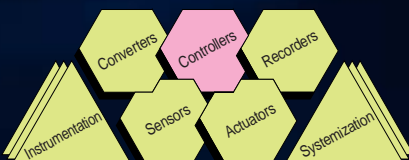
No.CP—PC—1462E

Super DigitroniK Line **SDC45/46**

Digital Indicating Controller

CE marking compliant (EN61010-1
EN61326)

*High-speed, high-accuracy and high-performance
next-generation controllers.*



EvolutionStyle

The capabilities you expect from a high-end model—these controllers offer highly advanced functionality.

High speed (25ms), high accuracy ($\pm 0.1\%$ rdg) and a new algorithm. Full multi-range input for 2 loops opens new vistas for control.



Models with all-orange LEDs are available. Orange LEDs have superior visibility in outdoor applications.

(Models in photo show all displayable digits, not an actual display.)

A generous variety of I/O, to satisfy high-level control demands.

• Suitable for multiple application requirements •

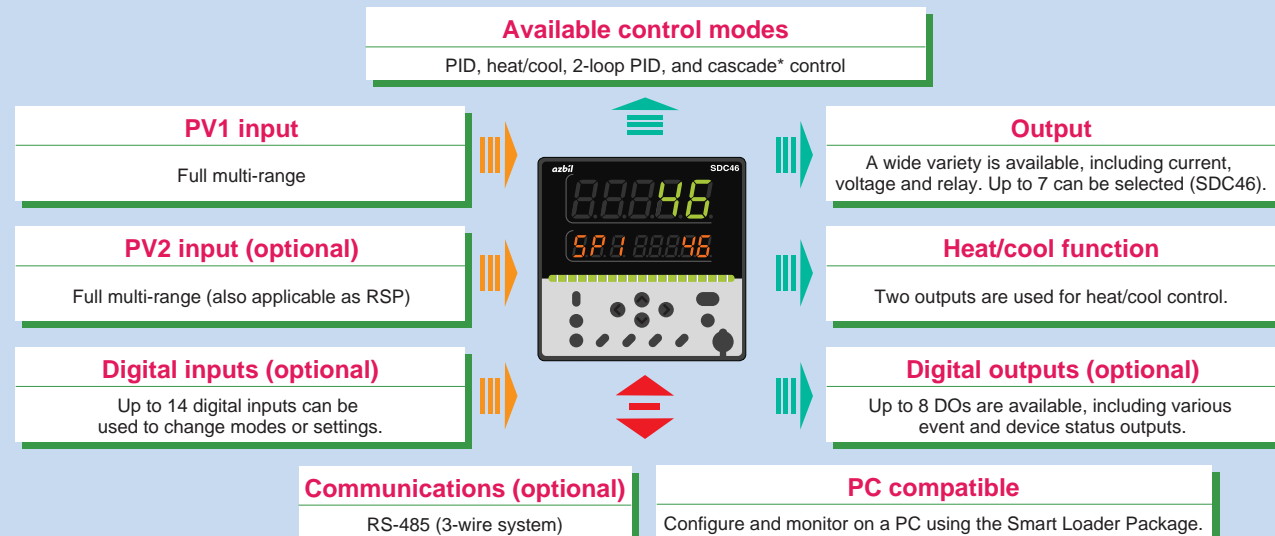
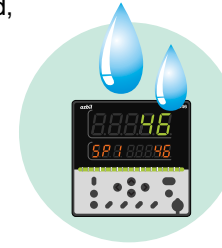


Illustration shows the SDC46.

Hardware

Thoughtful design responding to a variety of needs

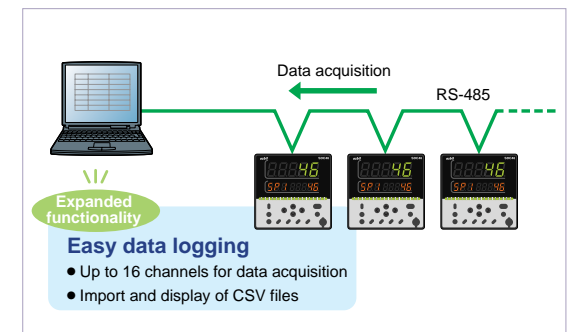
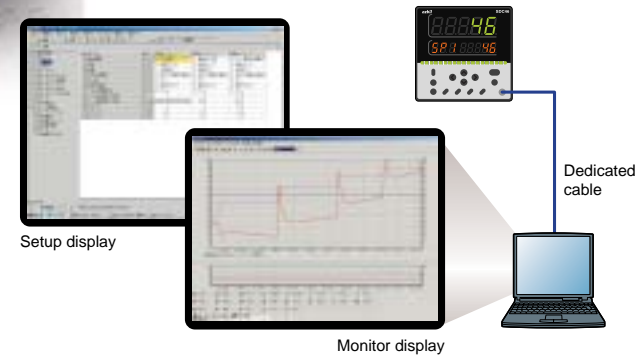
- ▶ **Full multi-range input**
Both inputs of the 2-input model are full multi-range. This versatile model is suitable for use with temperature sensors, signal transmitters, PH meters, and various linear signal applications. Customization is available on request, for applications such as signal for RS, 2-loop PID control, and cascade control.
- ▶ **Power supply can be installed for signal transmitter (optional).**
Up to two 24Vdc 30mA power supplies can be installed (one for the SDC45). An external power supply is not required, allowing simple wiring for use with signal transmitter, etc.
- ▶ **Easy-to-operate keys**
All necessary keys are arranged for easy setting and operation. Mechanical keys click when used, enhancing usability.
- ▶ **RoHS compliant**
This controller meets RoHS restrictions on 6 hazardous substances, making it suitable for export to Europe.
- ▶ **IP65 front panel protection**
If the included gasket is used, the front panel has IP65 splash-proof protection. This allows the controller to be used for food manufacturing processes, etc.



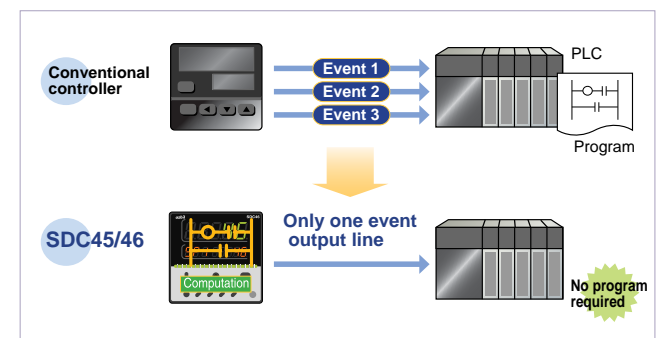
Software

Enhanced software for advanced hardware

- ▶ **Configure and monitor from a PC**
The SDC45/46 can connect to a PC via the Smart Loader Package (SLP), which includes a dedicated connector cable. The SLP software allows parameter setting, trend monitoring, and data output as CSV files.
- ▶ **Easy data logging function**
The communications function of the SDC45/46 allows data logging of multiple controllers using the Smart Loader Package. DI/DO status can be logged simultaneously.



- ▶ **Event configuration functionality means less wiring, reduced labor costs**
The SDC45/46 provides 16 internal event settings, which can be assigned to relay output or DO. A robust event output function reduces wiring and labor costs and increases flexibility when expanding instrumentation.

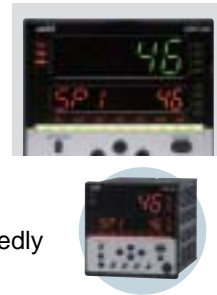


Monitoring & Operation

Easy to see, easy to operate

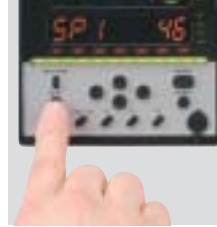
High-intensity LEDs for viewing ease

High-intensity LEDs are used for 7-segment dual displays and 11-segment auxiliary display, ensuring clear visibility. All-orange LED models are also available, offering markedly improved outdoor visibility.



Mode keys designed for usability

Mode keys are arranged for easy use. Keys (auto/manual, remote SP/local SP, AT start, etc.) can be changed with a single action. User-assignable function keys can be used for function changeover or recall of up to 8 parameters.

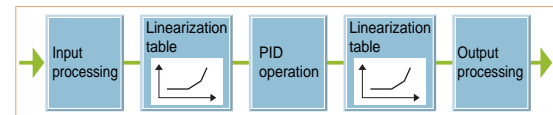


Control

Broad application support includes nonlinear processes

I/O linearization table is a standard feature

Features a 20-point linearization table for use just after input processing and just before control output processing.

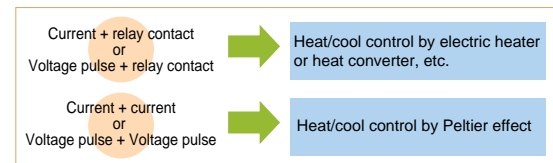


Fixed output level function

For equipment startup or in the initial processing stage, constant control output on a temporary basis is available for purposes of equipment protection or control stabilization. Up to 8 set points can be set, allowing flexibility for a variety of application needs.

Heat/cool control

Up to 7 outputs are available to handle a wide variety of heat/cool control requirements.



New algorithms for enhanced control

Stable control that is unaffected by disturbances is accomplished using highly accurate Ra-PID (RationalLoop PID) control logic and the Just-FITTER algorithm for overshoot suppression.

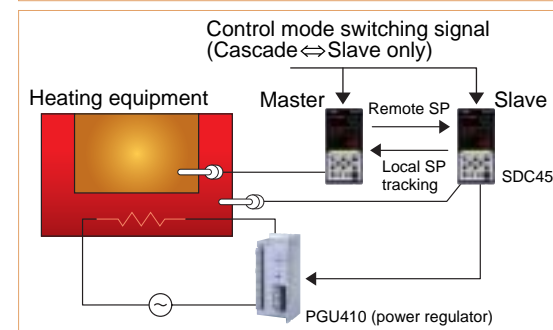
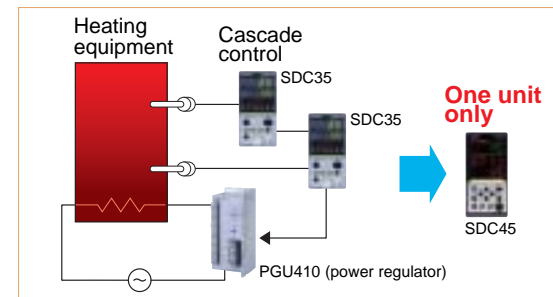
3 types of auto-tuning (AT) are standard features

The SDC45/46 is equipped with:

- Regular AT
- Quick-response AT, optimal for systems that heat up easily
- Stable operation AT, optimal for systems that heat up and cool down easily

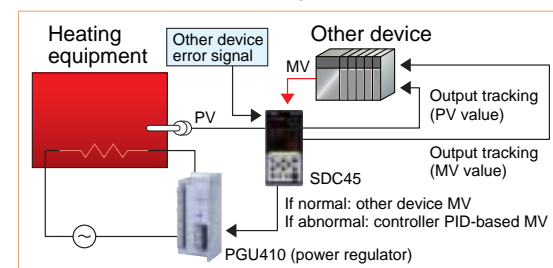
Cascade control (2-input model)

PID cascade control can be done using only one controller acting as both master and slave. This is very effective for a process with a large dead time. When using 2 units for cascade control, the control mode can be easily switched (cascade control ↔ slave control only).



Backup controller (2-input model)

When control is handled by another device such as DCS, and is interrupted due to power failure or malfunction, bumpless transfer to a controller can be initiated by a preset value or tracking of the other device's output.



Specifications

PV input	Type	Thermocouple, RTD, DC current, DC voltage
	Range	(Refer to Input Type and Range table)
	Sampling cycle	25ms, 50ms, 100ms, 300ms (depending on setup)
Indication	Method	Digital 5-digit, 7-segment and 3-digit, 11-segment
	Accuracy	±0.1% rdg ±1 digit (depending on range)
Output	No. of outputs	SDC45A: 5 max., SDC46A: 7 max.
	Type	Relay, voltage pulse, DC current and voltage, triac (for position proportional output, on sale soon), power supply for signal transmitter (24Vdc)
	Control mode	PID
	No. of PID groups	16
	Auto-tuning	Automatic PID settings by limit cycle method
DI	No. of inputs	SDC45A: 10 max., SDC46A: 14 max.
	Function	LSP No., READY/RUN changeover, etc.
DO (transistor)	No. of outputs	8 max.
	Function	PV, SP, deviation value, device alarm, etc.
Communications	Type	RS-485
	No. of connected units	31 max.
	Speed	38400bps max.
General	Power	100 to 240Vac 50/60Hz
	Power consumption	SDC45A: 30VA max., SDC46A: 40VA max.
	Certification	CE marked
	Front panel protection	IP65
	Mass	SDC45A: 400g max. SDC46A: 700g max. (including dedicated mounting parts)

Input Type and Range

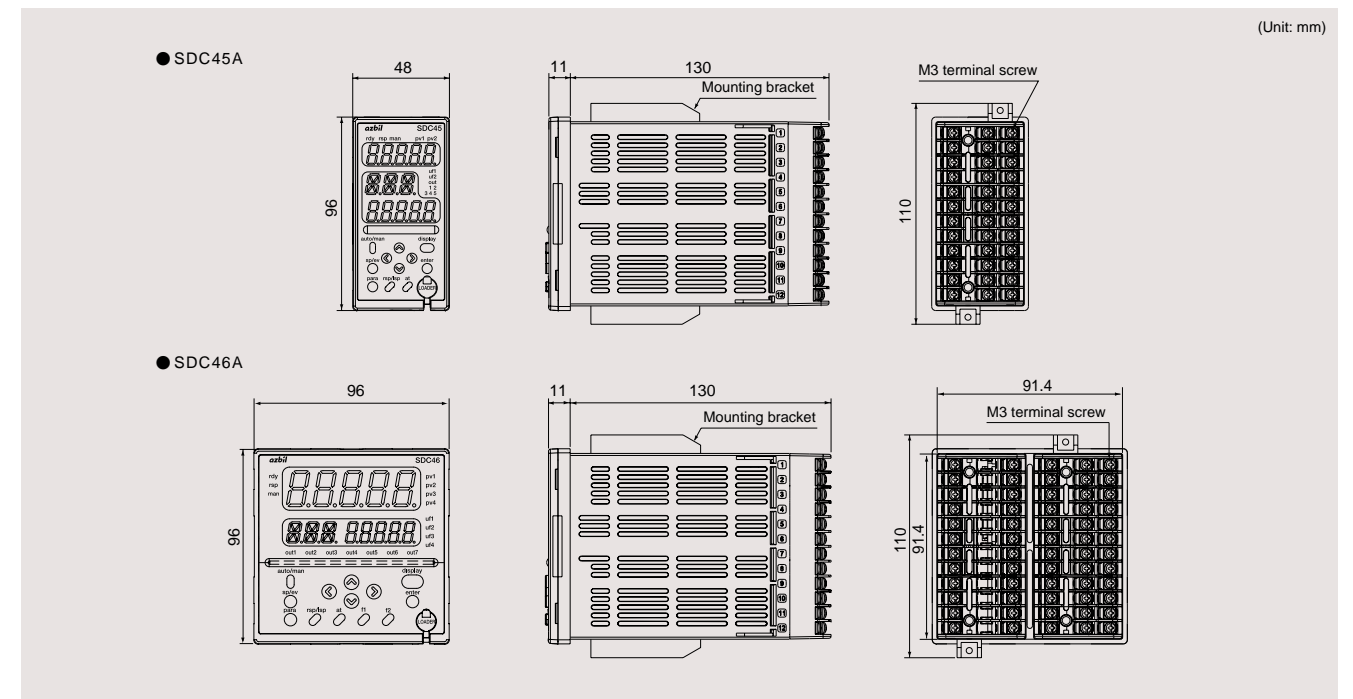
Sensor	Sensor type	Range (°C)
Thermocouple	K	-270.0 to +1372.0
	E	-270.0 to +1000.0
	J	-200.0 to +1200.0
	T	-270.0 to +400.0
	B	0.0 to 1800.0
	R	-50.0 to +1768.0
	S	-50.0 to +1768.0
	WRe5-26	0.0 to 2300.0
	PR40-20	0.0 to 1900.0
	Ni-Ni MO	0.0 to 1300.0
	N	-200.0 to +1300.0
	PL II	0.0 to 1390.0
DIN U	-200.0 to +600.0	
DIN L	-200.0 to +900.0	
Golden iron chromel	-273.0 to +27.0	

Sensor	Sensor type	Range
RTD	Pt100	-200.0 to +850.0 °C
	JPt100	-200.00 to +300.00 °C
DC current / voltage	Current	-200.00 to +640.00 °C
		-200.00 to +300.00 °C
	Voltage	4 to 20mA
		0 to 20mA
		0 to 10mV
		-10 to +10mV
		0 to 100mV
		-100 to +100mV
0 to 1V		
-1 to +1V		
1 to 5V		
0 to 5V		
0 to 10V		

Input sensor standards

- Thermocouple K, J, E, T, R, S, B, N: JIS C 1602-1995
- PL II: ASTM E1751-00
- WRe5-26: ASTM E988-96 (reapproved 2002)
- Ni-NiMo: ASTM E1751-00
- PR40-20: ASTM E1751-00
- DIN U, DIN L: DIN 43710-1985
- Golden iron chromel: ASTM E1751-00
- RTD Pt100: JIS C 1604-1997
- JPt100: JIS C 1604-1989

Dimensions



Selection Guide

Model No. selection methods

- **Detailed model No. /** Specifications required for a particular application can be selected in detail, allowing purchase of the optimal device (especially useful for equipment manufacturers).
- **Combined function model No. /** Easy selection from pre-made combinations of required functions. Selections feature multiple I/Os, so these devices can be used flexibly for a variety of application requirements (especially useful for engineering manufacturers and factory maintenance staff).

Detailed model No.

●SDC45 I II III IV V VI VII VIII IX X Example: C45A1A1C000000

Segment	Model No. selection	Description	Remarks
I	Basic No. C45A	Standard model	
II	Input	1	1-input model (full multi: 1)
		2	2-input model (full multi: 2)
III	Power A	AC power	
IV	Output 1, 2	1	1c relay
		2	1a relay + 1a relay
V	Output 3, 4	C0	Current With 2 DIs
		D0	Continuous voltage With 2 DIs
		V0	Voltage pulse With 2 DIs
		V1	Voltage pulse (available soon) 2 CT inputs
		RR	1a relay + relay 1a With 2 DIs
		CC	Current + current With 2 DIs
		VV	Voltage pulse + voltage pulse With 2 DIs
		CV	Current + voltage pulse With 2 DIs
		SS	1a triac + 1a triac (available soon) 1 MFB input
VI	Output 5	0	None
		R	1a relay
		C	Current
		D	Continuous voltage
VII	Output 6, 7	0	None
		1	8 digital inputs
		2	8 digital outputs
		3	8 digital outputs + RS-485
VIII	Option	0	None
		T	Tropicalization
		K	Antisulfidization
		D	With test data
		B	Tropicalization + test data
IX	Additional processing 1	L	Antisulfidization + test data
		0	None
		1	Orange color for all LEDs
X	Additional processing 2	0	None
		1	Orange color for all LEDs

- Outputs 1–2: mainly used as event output (alarms).
- Outputs 3–4: mainly used as control output.
- Output 5–7: mainly used for selecting auxiliary output or power supply of signal transmitter.

●SDC46 I II III IV V VI VII VIII IX X Example: C46A1A1C000000

Segment	Model No. selection	Description	Remarks
I	Basic No. C46A	Standard model	
II	Input	1	1-input model (full-multi: 1)
		2	2-input model (full-multi: 2)
III	Power A	AC power	
IV	Output 1, 2	1	Relay 1c
		2	Relay 1a + relay 1a
V	Output 3, 4	C0	Current With 2 DIs
		D0	Continuous voltage With 2 DIs
		V0	Voltage pulse With 2 DIs
		V1	Voltage pulse (available soon) 2 CT inputs
		RR	1a relay + relay 1a With 2 DIs
		CC	Current + current With 2 DIs
		VV	Voltage pulse + voltage pulse With 2 DIs
		CV	Current + voltage pulse With 2 DIs
		SS	1a triac + 1a triac (available soon) 1 MFB input
VI	Output 5	0	None
		R	Relay 1a
		C	Current
		D	Continuous voltage
VII	Output 6, 7	0	None
		1	Current
		2	Signal transmitter
		3	Current + current
VIII	Option	4	Current + signal transmitter
		0	None
		1	DI: 12 inputs
		2	DI: 12 inputs + DO: 8 outputs
IX	Additional processing 1	3	DI: 12 inputs + DO: 8 outputs + RS-485
		0	None
		T	Tropicalization
		K	Antisulfidization
X	Additional processing 2	D	With test data
		B	Tropicalization + test data
		L	Antisulfidization + test data
		0	None
		1	Orange color for all LEDs

- Outputs 1–2: mainly used as event output (alarm).
- Outputs 3–4: mainly used as control output.
- Output 5–7: mainly used for selecting auxiliary output or power supply of signal transmitter.

Combined function model Nos. (LEDs: all orange)

●SDC45 I II III IV Example: C45A000

Segment	Model No. selection	Description	
I	Basic No. C45A	Common feature: 2 alarm outputs	
II	Function 0	None	
III	Option 1	0	Regular type 1: Plus 1 current and 2 relay outputs, and 2 DIs
		1	Regular type 2: Plus 1 current and 1 voltage pulse and 1 relay output, and 2 DIs
		2	Position proportional type: Plus 1 relay output (available soon)
		3	Regular type 3: Plus 2 current outputs, power supply for signal transmitter (24Vdc), and 2 DIs
IV	Option 2	4	Position proportional type: Plus power supply for signal transmitter (24Vdc) (available soon)
		0	None
		1	Plus RS-485 communications, 2 PV inputs, and 8 DOs
		2	Plus 2 PV inputs and 8 DOs
		3	Plus 8 DOs
		4	Plus 2 PV inputs

●SDC46 I II III IV Example: C46A000

Segment	Model No. selection	Description	
I	Basic No. C46A	Common features: 1 current and 2 alarm outputs	
II	Function 0	None	
III	Option 1	0	Regular type 1: Plus 1 current and 2 relay outputs, and 2 DIs
		1	Regular type 2: Plus 1 current, 1 voltage pulse, and 1 relay output, and 2 DIs
		2	Position proportional type: Plus 1 relay output (available soon)
		3	Regular type 1 + 24Vdc power supply for signal transmitter
IV	Option 2	4	Position proportional type + 24Vdc power supply for signal transmitter (available soon)
		0	None
		1	Plus RS-485 communications, 2 PV inputs, 12 DIs, and 8 DOs
		2	Plus 2 PV inputs, 12 DIs, and 8 DOs
		3	Plus 12 DIs and 8 DOs
		4	Plus 2 PV inputs

Accessories (sold separately)

Model No.	Description
SLP-C45J60	Smart Loader Package
81441420-001	Terminal cover set*
81441421-001	Hard cover set (for SDC45) (available soon)
81441422-001	Hard cover set (for SDC46) (available soon)

*:2 sets are needed for the SDC46.

Information about Standards

EMC Directive:	Requires that the electromagnetism generated by the device does not interfere with the operation of communications equipment, and that the device have a certain level of resistance to electromagnetic interference. EN 61326 applies EMC requirements to electric devices for measurement, control and testing.
Low-Voltage Directive:	Requires that devices are safe, that high-level engineering has been applied to ensure safety, and that the design has been made in accordance with the general rules recognized by EU member countries. EN61010-1 defines the safety requirements for electric equipment of measurement, control and test equipment (Part 1: general information).

Specifications are subject to change without notice.

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⚠️ RESTRICTIONS ON USE

This product has been designed, developed and manufactured for general-purpose application in machinery and equipment. Accordingly, when used in applications outlined below, special care should be taken to implement a fail-safe and/or redundant design concept as well as a periodic maintenance program.

- Safety devices for plant worker protection
- Start/stop control devices for transportation and material handling machines
- Aeronautical/aerospace machines
- Control devices for nuclear reactors

Never use this product in applications where human safety may be put at risk.

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