

# azbil

## Single Loop Controller SDC35/36



*Functionality and Extreme Accuracy  
Packaged in One Advanced Process Controller.*



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**Azbil Corporation**  
Advanced Automation Company

*Yamatake Corporation changed its name to Azbil Corporation on April 1, 2012.*

1-12-2 Kawana, Fujisawa  
Kanagawa 251-8522 Japan

URL: <http://www.azbil.com>

1st Edition : Nov. 2003-PP  
7th Edition: Apr. 2017-AZ

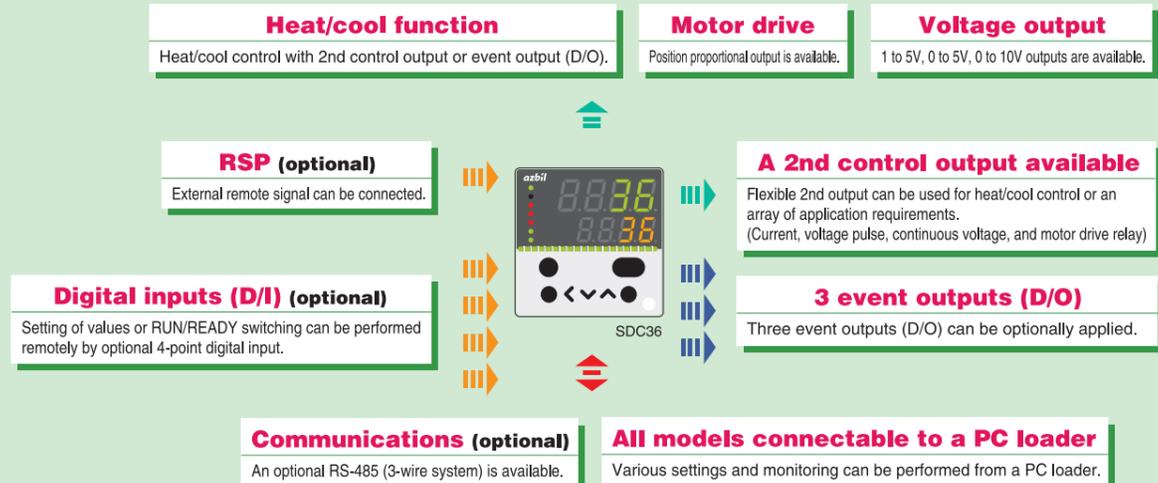
# Innovation Style

## An innovative next generation controller

Integration of a new algorithm, high accuracy ( $\pm 0.1\%FS$ ) and high speed sampling cycle 0.1 seconds.  
Advanced functions improve stability and disturbance response.



The wide variety of inputs and outputs of the SDC35/36 can be used to fulfill multiple application requirements.



## Hardware | User friendly design provides for easy installation.

### Simple design and compact

Simple design not available in conventional models.  
The shortest depth in the world - 65mm.  
Ultra thin bezel of 5mm  
fits in the tightest mounting areas.

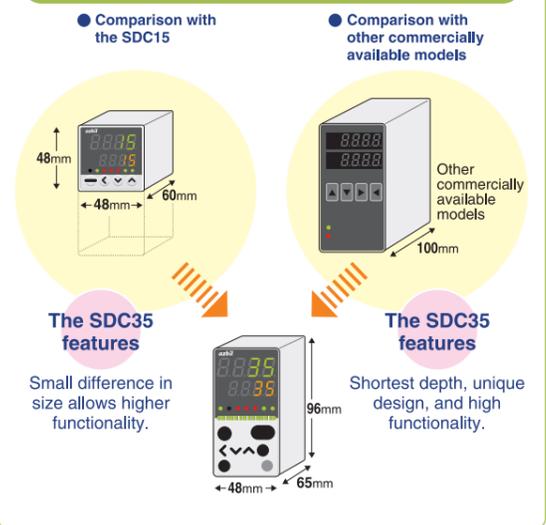


### Rubber key

Finger-friendly buttons and operational keys improve operability and adds a unique look and design.



### SDC35/36 vs SDC15 and other commercially available models



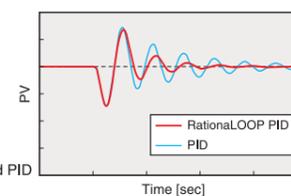
## Control | Optimum control with new algorithms and advanced Auto-Tune technology.

### Greatly improved controllability ensured with a brand new algorithm

Stable control that is unaffected by disturbance has been realized by including the highly accurate "RationalLOOP PID" control logic and the "Just-FITTER" algorithm (effective in suppressing overshoot).

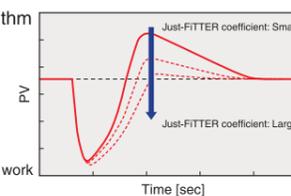
#### RationalLOOP PID

Hunting is suppressed almost immediately with the addition of RationalLOOP PID to the conventional PID.



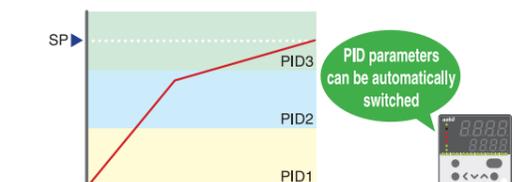
#### Just-FITTER

Just-FITTER is an algorithm that restricts overshoot within the disturbance response and step response functions.



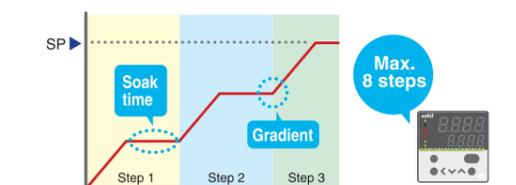
### Zone PID control

The SDC35/36 has the ability to switch PID parameters depending on the process input value or the set-point value utilizing "zoned" temperature ranges. Both the process value and the set-point can be used to initiate change of the PID parameters to provide more detailed and optimum control of the application.



### Programmable recipe control

Maximum of 8 set points (SP) can be set in the SDC35/36. Each SP has soak time and gradient settings, enabling a maximum of 8 steps (16 segments) of programmable recipe control.



### Three separate Auto-Tuning features

The SDC35/36 includes the following three types of Auto-Tuning as standard functions:

- Normal AT (Auto Tuning)
  - Immediate response type Auto-Tune is suitable for heated systems with fast responding heater designs.
  - Stable type Auto-Tuning which is suitable for systems involving a slow response heater design.
- Better control characteristics can be obtained depending on the variables of the application.

# Operation & Monitoring

Easy-to-see display and operability assured simultaneously.

## Large and easy-to-use dual seven-segment displays

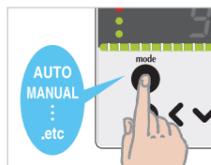
Reliable visibility assured even from a distance. Process value (PV), set-point (SP) or other values are clearly indicated on two displays.



## Mode key for easy change of operation modes

The following operation modes can easily be switched by pressing the mode key:

- AUTO/MANUAL, RUN/READY, remote SP/local SP, contact latch cancellation, etc.



## Customizable parameter key

The SDC35/36 offers user customization of the "para" key. A maximum of 8 parameters can be assigned. This key is used to access and monitor frequently used parameters without navigating the menus.



# Software

Creating new methods of installation and operation utilizing a wide variety of software functions.

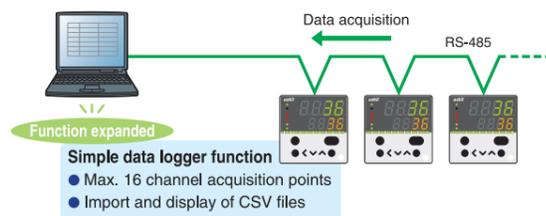
## PC loader (connection to PC via dedicated cable) used to set parameters and monitor values

The SDC35/36 can be conveniently connected to a PC via our loader software. Easy connection is provided via a dedicated connector cable. The software contains various functions such as parameter settings, trend monitoring and CSV output of acquisition data.



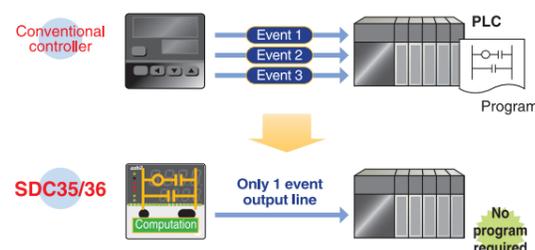
## Simple to use data logging function

Data logging with the PC loader from one or several SDC35/36 can be accomplished via communications. DI/DO status can be logged simultaneously.



## Event configuration functionality enables wiring reduction yielding labor cost savings

In the SDC35/36, a maximum of 8 internal event points are provided. These internal events can be assigned to 3 event outputs using logic operations. The event output reduction in wiring yields labor cost savings and flexibility when expanding instrumentation.



## Specifications

PV input	Type	Thermocouple, RTD, DC voltage, DC current.											
	Range	Refer to the input type and range table											
	Sampling cycle	0.1 seconds											
Indication	Method	Digital 4-digit, 7-segment											
	Accuracy	±0.1%FS±1 digit											
	Control output	Model No.	R0	V0	C0	VC	VV	CC	VD	R1	CD	D0	DD
Control output	Control mode	ON/OFF control, time proportional PID, current proportional PID											
	1st control output	Relay	Voltage pulse	Current	Voltage pulse	Voltage pulse	Current	Voltage pulse	Motor drive	Current	Continuous voltage	Continuous voltage	
	2nd control output	-	-	-	Current	Voltage pulse	Current	Continuous voltage	-	Continuous voltage	-	Continuous voltage	
	No. of PID groups	8 max.											
External switch input	PID auto-tuning	Automatic setting of PID values by limit cycle method (selectable from normal type, quick response type or stability tape)											
	No. of inputs	4 max.											
Event	Function	LSP No., PID group No., READY/RUN changeover, timer start/stop, etc.											
	No. of outputs	3 max. (internal 8)											
Heater line break alarm	Function	Selectable from PV, SP, deviation value, absolute value, alarm, timer output, heater line break alarm, etc.											
	No. of inputs	2 (optional)											
Analog output	No. of outputs	3 max.											
	Type	Selectable from PV, SP or MV											
Communication	Communication system	RS-485											
	No. of connectable units	31 units max.											
	Communication speed	38400bps max.											
Additional processing	Inspection certificate and traceability certification supported												
General	Rated power supply	AC power supply model : 100 to 240Vac 50/60Hz DC power supply model : 24Vac 50/60Hz , 24Vdc											
	Power consumption	SDC35 AC power supply model : 12VA max. SDC36 AC power supply model : 12VA max.						DC power supply model : 12VA max. (24Vdc) , 8W max. (24Vdc)					
	Standards compliance	CE marking (EN61010-1, EN61326) cUL (UL61010-1)*											
	Weight (mass)	SDC35: 250g, SDC36: 300g											

\*. Varies depending on the model.

## Input Type and Range

Sensor	Sensor type	Range (°C)
Thermocouple	K	-200 to +1200
		0 to 1200
		0 to 800
		0.0 to 600.0
		0.0 to 400.0
		-200.0 to +400.0
		-200.0 to +200.0
		0 to 1200
		0.0 to 800.0
		0.0 to 600.0
	J	0.0 to 400.0
		-200.0 to +400.0
		0 to 1200
		0.0 to 800.0
		0.0 to 600.0
		-200.0 to +400.0
		0.0 to 800.0
		0.0 to 600.0
		-200.0 to +400.0
		0 to 1200
E	0.0 to 800.0	
	0.0 to 600.0	
	-200.0 to +400.0	
	0 to 1200	
	0.0 to 800.0	
	0.0 to 600.0	
	-200.0 to +400.0	
	0 to 1200	
	0.0 to 800.0	
	0.0 to 600.0	
T	0 to 1600	
	0 to 1800	
	0 to 1300	
	0 to 1300	
	0 to 1400	
	0 to 2300	
	0 to 1300	
	0 to 1900	
	-200.0 to +400.0	
	-100.0 to +800.0	
Golden iron chromel	0.0K to 360.0°K	

Sensor	Sensor type	Range (°C)
RTD	Pt100	-200.0 to +500.0
		-200.0 to +500.0
		-200.0 to +200.0
		-200.0 to +200.0
		-100.0 to +300.0
		-100.0 to +300.0
		-100.0 to +200.0
		-100.0 to +200.0
		-100.0 to +150.0
		-100.0 to +150.0
	JPt100	-50.0 to +200.0
		-50.0 to +200.0
		-50.0 to +100.0
		-50.0 to +100.0
		-60.0 to +40.00
		-60.0 to +40.00
		-40.0 to +60.0
		-40.0 to +60.0
		-10.00 to +60.00
		-10.00 to +60.00
Linear	0 to 10mV	Scaling in the range of -1999 to +9999 Decimal point position changeable
	-10 to +10mV	
	0 to 100mV	
	0 to 1V	
	1 to 5V	
	0 to 5V	
	0 to 10V	
	0 to 20mA	
	4 to 20mA	



innovation Style

## Selection Guide

I II III IV V VI VII Example: C35TR0UA1000

Table	Selection	Description				
I	Basic model No.	<b>C35T</b> Single Loop Controller (48x96mm size)				
		<b>C36T</b> Single Loop Controller (96x96mm size)				
II	Control output	<b>Output 1</b>	<b>Output 2</b>	<b>Reference</b>		
		<b>R0</b>	Relay	-	-	
		<b>V0</b>	Voltage pulse	-	-	
		<b>C0</b>	Current	-	-	
		<b>D0</b>	Continuous voltage <sup>*3</sup>	-	-	
		<b>R1<sup>*1</sup></b>	Motor drive relay	-	With MFB (motor feedback)	
		<b>VC</b>	Voltage pulse	Current	-	
		<b>VV</b>	Voltage pulse	Voltage pulse	-	
		<b>CC</b>	Current	Current	-	
		<b>VD</b>	Voltage pulse	Continuous voltage <sup>*3</sup>	-	
		<b>CD</b>	Current	Continuous voltage <sup>*3</sup>	-	
		<b>DD</b>	Continuous voltage <sup>*3</sup>	Continuous voltage <sup>*3</sup>	-	
III	Input type	<b>U</b> Universal (full multi) input				
IV	Power supply	<b>A</b> 100 to 240Vac				
		<b>D</b> 24Vac/24Vdc				
V	Option (1)	<b>EV (DO)</b>	<b>Auxiliary output</b>			
		<b>1</b>	3 points	-		
		<b>2</b>	3 points	Current		
		<b>3</b>	3 points	Voltage		
		<b>4<sup>*1</sup></b>	Independent 2 points	-		
		<b>5<sup>*1</sup></b>	Independent 2 points	Current		
		<b>6<sup>*1</sup></b>	Independent 2 points	Voltage		
VI	Option (2)	<b>CT<sup>*2</sup></b>	<b>DI</b>	<b>RSP</b>	<b>Communication</b>	
		<b>0</b>	-	-	-	
		<b>1</b>	2 points	4 points	-	-
		<b>2</b>	2 points	4 points	-	RS-485
		<b>3</b>	2 points	2 points	Available	-
<b>4</b>	2 points	2 points	Available	RS-485		
VII	Additional processing	<b>0<sup>*4</sup></b>	None			
		<b>D<sup>*4</sup></b>	With test data			
		<b>Y<sup>*4</sup></b>	With traceability certification			

- \*1. Not selectable with the DC power supply model.  
 \*2. CT is not applicable when R1 control output is selected.  
 \*3. Selectable from 1 to 5V, 0 to 5V, or 0 to 10V.  
 \*4. Standards compliance  
=0: CE marking  
=A: CE marking, cUL



Memo

## Software (sold separately)

Model No.	Name and specifications
<b>SLP-C35J50</b>	SLP-C35 standard loader for the SDC35/36 with loader cable
<b>SLP-C35J51</b>	SLP-C35 standard loader for the SDC35/36 without loader cable

## Optional Devices (sold separately)

Model No.	Name and specifications
<b>QN206A</b>	Current transformer (5.8mm dia.)
<b>QN212A</b>	Current transformer (12mm dia.)
<b>81446915-001</b>	Hard cover for the SDC35
<b>81446916-001</b>	Hard cover for the SDC36
<b>81441121-001</b>	Soft cover for the SDC35
<b>81441122-001</b>	Soft cover for the SDC36
<b>81446912-001</b>	Terminal cover for the SDC35
<b>81446913-001</b>	Terminal cover for the SDC36
<b>81409654-001</b>	Mounting bracket (included with the controller)

## Dimensions

