# Distinguished <br>  



Simplified setting - Set frequently used settings for streamline

## Easy status checking using 3-color switching

## Industry leading large display

Easier viewing display

## Industry Leading Large Display

## Multi-Functions, Simple to Operate

## Large LCD display

A specially treated large LCD display makes it easier to view even
in bright light and open-air.
PV display (ACD series): $24.0 \times 11.0 \mathrm{~mm}(\mathrm{H} \times \mathrm{W})$

${ }^{\text {Pv }} 258508$

Digital Indicating Controllers
ACD-13A, ACR-13A
ON/OFF SERVO Digital Indicating Controllers ACD-15A, ACR-15A

An easily viewable bar graph
22-segment bar graph allows simultaneous PV, SV, MV viewing.
Ease of viewing for manual output operation For the ACD-15A and ACR-15A, the motor valve opening can be checked with the bar graph (when feedback potentiometer "Yes" is set)

| MV indication | DV indication |
| :---: | :---: |
| Scale is -5 to $105 \%$, and bars light increasingly to the right in accordance with the MV | In the case of zero (0) deviation, central 2 bars light. <br> For positive deviation, bars light increasingly to the right. <br> For negative deviation, bars light <br> easingly to the left. |
| - (e.g.) MV 50\% <br> $-5 \% 11111110^{105 \%}$ <br>  | - (e.g.) Deviation 0 (zero) 매ำ |
| - (e.g.) MV 100\% -5\% 105\% \|||||||||||||||||||||||||| | (e.g.) Negative deviation <br>  |

## Enhanced visibility

PV display color selectable from red, green and orange. Colors can be set depending on the deviation between PV and SV, so status can be checked from a distance.

- PV color continuous change mode


PID zone function: PID resetting due to SV change Unnecessary
Up to 5 groups of PID parameters can be set.
When SV is changed, PID parameters are automatically changed for optimal control. (It is not necessary to reset PID after SV is changed.)

It is easier to see the SV, PV and setting characters, as an 11-segment LCD display is used.

are backlit


Actual size


## Simple operation in Simplified setting mode

Without setting engineering items, simplified setting mode can prevent operational mistakes, and simple operations run smoothly. Basic settings and key operations now are doable via 3-key usage.


Power unnecessary if USB comm. cable used
By connecting to a PC using the USB communication cable (CMB-001) (sold separately), initial settings can be made easily without complicated wiring [USB communication cable (sold separately) and dedicated software (free of charge) are required.]
OS: Windows $7 / 8 / 10$ (Japanese/English)
https: $/ / /$ shinko-Achnos.co.jple/ $\rightarrow$ Support \& Downloads $\rightarrow$ Downloads $\rightarrow$ Software $\rightarrow$ ACD, ACR-13A(15A) console software (SWS-AC001M)


PV display: Green, Red, Orange
Event output (any event from EVT1 to EVT5)
Alarm OFF: Green, Alarm ON: Red
Alarm OFF: Orange, Alarm ON: Red

- PV color changes continuously : Orange $\rightarrow$ Green $\rightarrow$ Red

PV color changes continuously + Event output (any event from EVT1 to EVT5) ON (Red)

Feedback potentiometer
"Yes/No" selectable

Selectable using the front keypad. If "Yes" is selected, feedback potentiomete position Fully Closed/Fully Open can be automatically adjusted. If "No" is

Model

(*1): Alarm types (12 types and No alarm action) and status Energized/De-energized can be set by front keypad.
${ }^{(* 2)}$ : Thermocouple, RTD, DC current or DC voltage is selectable by front keypad.
(*3): For the supply voltage, 100 to 240 V AC is standard.
When ordering 24V ACC/DC, enter "1" after the input code.
(*)): Applicable to the ACD-13A, ACR-13A.
(*5): If El and C/C5 options are added together, Event input EVI3 and EVI4 cannot be used.
(* $*$ ): $A 3, D \square$ and $P$ options cannot be added together.
(*): If D $\square$ and $P$ options are added, Event output EVT2 cannot be used.
(*8): The rated current ( $20 \mathrm{~A}, 100 \mathrm{~A}$ ) for single phase and 3 -phase is selectable by front keypad. The CT is sold separately. Not available for the DC current output type.
(*9): It can be changed to "0 to $20 \mathrm{~mA} \mathrm{DC"}$ ", " 0 to $5 \mathrm{~mA} \mathrm{DC"} \mathrm{or} \mathrm{"} 0$ to $12 \mathrm{mADC"}$. Please consult us.
(*10): It can be changed " 0 to 5 V DC", " 1 to 5 V DC" or " 0 to 10 V DC". Please consult us.

## Standard specifications

| Display | PV display $: 11$-segment LCD 5-digit, backlight Red/Green/Orange, Character size: ACD: $24.0 \times 11.0 \mathrm{~mm}(\mathrm{H} \times \mathrm{W})$, $\mathrm{ACR}: 14.0 \times 5.4 \mathrm{~mm}(\mathrm{HxW})$  <br> SV/MV/TIME display $: 11$-segment LCD 5 -digit, backlight Green, Character size: ACD: $14.0 \times 7.0 \mathrm{~mm}(\mathrm{HxW})$, ACR: $10.0 \times 4.6 \mathrm{~mm}(\mathrm{HxW})$ <br> MV/DV bar graph $: 22$-segment LCD bar graph, backlight Green  <br> MEMO/STEP display : 11 -segment LCD 2-digit, backlight Orange, Character size: ACD: $10.0 \times 5.0 \mathrm{~mm}(\mathrm{HxW})$, ACR: $10.0 \times 4.6 \mathrm{~mm}(\mathrm{HxW})$  |
| :---: | :---: |
| Rated input | Thermocouple : K, J, R, S, B, E, T, N, PL-II, C(W/Re5-26), External resistance, $100 \Omega$ or less <br> RTD (However, B input: External resistance, $40 \Omega$ or less) <br> DC current : Pt100, JPt100, 3-wire system Allowable input lead wire resistance: $10 \Omega$ or less per wire <br> DC voltage $\quad: 0-10 \mathrm{mV}$ DC, $-10-10 \mathrm{mV}$ DC, $0-50 \mathrm{mV}$ DC, $0-100 \mathrm{mV}$ DC, $0-1 \mathrm{~V}$ DC: <br> Input impedance: $1 \mathrm{M} \Omega$ or more <br> Allowable input voltage: 5V DC or less <br> Allowable signal source resistance: $0-10 \mathrm{mV}$ DC: $20 \Omega$ or less, $-10-10 \mathrm{mV}$ DC: $40 \Omega$ or less, $0-50 \mathrm{mV}$ DC: $200 \Omega$ or less, $0-100 \mathrm{mV}$ DC: $200 \Omega$ or less, $0-1 \mathrm{~V}$ DC: $2 \mathrm{k} \Omega$ or less <br> $0-5 \mathrm{~V} D C, 1-5 \mathrm{~V} D C, 0-10 \mathrm{~V} D \mathrm{C}$ : <br> Input impedance: $100 \mathrm{k} \Omega$ or more Allowable input voltage: 15 V DC or less Allowable signal source resistance: $100 \Omega$ or less |
| Accuracy (Setting, Indication) | Thermocouple : Within $\pm 0.2 \%$ of each input span $\pm 1$ digit,  <br>  However $\mathrm{R}, \mathrm{S}$ input, 0 to $200^{\circ} \mathrm{C}\left(32\right.$ to $\left.392^{\circ} \mathrm{F}\right)$ : Within $\pm 0^{\circ} \mathrm{C}\left(12^{\circ} \mathrm{F}\right)$ <br>  B input, 0 t $300^{\circ} \mathrm{C}\left(0\right.$ to $\left.572^{\circ} \mathrm{F}\right)$ : Accuracy is not guaranteed. <br>  $\mathrm{K}, \mathrm{J}, \mathrm{E}, \mathrm{T}, \mathrm{N}$ input, less than $0^{\circ} \mathrm{C}\left(32^{\circ} \mathrm{F}\right)$ : Within $\pm 0.4 \%$ of input span $\pm$ digit <br> RTD Within $\pm 0.1 \%$ of each input span $\pm 1$ digit <br> DC current : Within $\pm 0.2 \%$ of each input span $\pm 1$ digigit <br> DC voltage $\quad$ Within $\pm 0.2 \%$ of each input span $\pm 1$ digit  <br> Cold junction temperature compensation accuracy: Within $\pm 1^{\circ} \mathrm{C}$ at 0 to $50^{\circ} \mathrm{C}$  |
| Input sampling period | 125ms (250ms when EA1/EA2 or EV1/EV2 option is added) |
| Control output | ACD-13A, ACR-13A <br> Relay contact: 1a 1b, Control capacity; 3A 250V AC (resistive load), 1A 250V AC (inductive load $\cos \phi=0.4$ ), Electrical life, 100,000 cycles Non-contact voltage (for SSR drive): 12 V DC $\pm 15 \%$ Max. 40 mA (short circuit protected) <br> DC current $: 4$ to 20mA DC (Resolution 1/12000) Load resistance, Maximum $600 \Omega$ <br> ACD-15A, ACR-15A <br> Relay contact: 1ax2, Control capacity; 3A 250V AC (resistive load), 1A 250 V AC (inductive load $\cos \phi=0.4$ ), Electrical life, 100,000 cycles |
| FBP resolution | 1/1000 (corresponds to fully open and fully closed by FBP adjustment) (ACD-15A, ACR-15A) |
| Feedback resistance | $100 \Omega$ to 10k $\Omega$ |
| Control action | PID action (with auto-tuning function), PI, PD action (with Auto/Manual reset function), P action (with Auto/Manual reset function), ON/OFF action <br> OUT1 proportional band ( P ) <br> OUT1 Integral time (I) <br> OUT1 Derivative time (D) <br> OUT1 proportional cycle (*1) <br> ARW <br> OUT1 ON/OFF action hysteresis <br> OUT1 high limit, low limit <br> MV high limit, low limit (*2) <br> Open output time (*2) <br> Closed output time (*2) <br> Open/Closed output dead band (*2): 0 to $100 \%$ of the proportional band (Default: 10\%) <br> Open/Closed output hysteresis (*2):0 to 100\% of the proportional band (Default: 1\%) <br> (*1): ACD-13A, ACR-13A, (*2): ACD-15A, ACR-15A |
| EVT output | EVT1 output <br> Output: Relay contact 1a, Control capacity: 3A 250V AC (resistive load), 1A 250 V AC (inductive load $\cos \phi=0.4$ ), Electrical life: 100,000 cycles EVT2 output (ACD-13A, ACR-13A) <br> Output: The same as EVT1 If DR/DS/DA or P option is added, EVT2 output is disabled. |


|  | Alarm action <br> Alarm types: High limit alarm, Low limit alarm, High/Low limits alarm, High/Low limits independent, High/Low limit range, <br> High/Low limit range independent, Process high alarm, Process low alarm, High limit alarm with stand <br> Low limit alarm with standby, High/Low limits with standby, High/Low limits with standby independent |
| :--- | :--- |
| One type can be selected from 24 types (with status Energized/De-energized) and No event. (Default value: No event) |  |

Optional specifications

| EVT input [El] | An Event input comprises events from EVI1 to EVI4. Events selected from Event input allocation will be performed depending on the Input ON (Closed) or OFF (Open) status. <br> If Set value memory function is selected: $2^{0}, 2^{1}, 2^{2}$ and $2^{3}$ will be allocated to Event input EVI1 to EVI4 respectively, and SV1 to SV15 will be determined by each value of EVI1 to EVI4. The selected memory number is indicated on the MEMO/STEP display. <br> Circuit current when Closed: Approx. 16 mA <br> If this option and Serial communication (C, C5 option) are added together, Event input EVI3 and EVI4 cannot be used. |
| :---: | :---: |
| Event output [A3] (*), <br> Event output [A5] | A3: EVT1 to EVT3 will be added using a common terminal. Output will be turned ON or OFF depending on the conditions selected from Event output allocation. <br> If EVT3 (A3 option) is added, Heating/Cooling control (DR/DS/DA option) or Insulated power output (P option) cannot be added together. A5: EVT4 and EVT5 can be added. Output will be turned ON or OFF depending on the conditions selected from Event output allocation. Output: Relay contact 1a, Control capacity: 3A 250V AC(resistive load), 1A 250V AC (inductive load cos $\phi=0.4$ ), Electrical life: 100,000 cycles |
| Heater burnout alarm [W, W3] (*) | Rating : Single-phase 20A, 3-phase 20A, Single-phase 100A, 3-phase100A (Selectable by keypad) <br>  Single-phase: Detects burnout with CT1 input 3-phase: Detects burnout with CT1 and CT2 input <br> Setting range $: 0.0$ to 20.0A for Heater rated current 20A [W(20A) W3(20A)] (Off when set to 0.0) <br>  0.0 to 100.0A for Heater rated current 100A [W(100A) W3(100A)] (Off when set to 0.0) <br> Setting accuracy: $: \pm 5 \%$ of the rated current  <br> Action point : Set value <br> Action ON/OFF action <br> Output : Relay contact 1a, Control capacity: 3A $250 \mathrm{~V} \mathrm{AC} \mathrm{(resistive} \mathrm{load)}, \mathrm{1A} \mathrm{250V} \mathrm{AC} \mathrm{(inductive} \mathrm{load} \cos \phi=0.4$ ), Electrical life: 100,000 cycles |
| Heating/Cooling control Output [DR, DS, DA] (*) | Heating control action: The same as Control output (OUT1) <br> Cooling control action: <br> OUT2 proportional band $\quad: 0.0$ to 10.0 times OUT1 proportional band (ON/OFF action when set to 0.0 ) <br> OUT2 integral time, OUT2 derivative time: The same as those of OUT1 <br> OUT2 proportional cycle : 1 to 120 sec [Default: DR; 30sec, DS; 3sec, DC current (DA); Not available] <br> Overlap/Dead band setting range : TC, RTD input: -200.0 to $200.0^{\circ} \mathrm{C}\left({ }^{\circ} \mathrm{F}\right)$, <br> DC input: -2000 to 2000 (The placement of the decimal point follows the selection) <br> OUT2 ON/OFF action hysteresis : TC, RTD input: 0.1 to $1000.0^{\circ} \mathrm{C}\left({ }^{\circ} \mathrm{F}\right)$ (Default: $1.0^{\circ} \mathrm{C}$ ), <br> DC input: 1 to 10000 (The placement of the decimal point follows the selection) <br> OUT2 high limit, OUT2 low limit : <br> : 0 to 100\% (DC current output: -5 to 105\%) (Not available for ON/OFF action) <br> (Default: OUT2 low limit; 0\%, OUT2 high limit; 100\%) <br> OUT2 action mode <br> : (1) Air cooling (linear characteristic) (2) Oil cooling (1.5th power of the linear characteristic) <br> (3) Water cooling (2nd power of the linear characteristic) (Default: Air cooling) <br> Output DR: Relay contact, 1a, Control capacity: 3A 250V AC (resistive load), 1A 250V AC (inductive load cos $\phi=0.4$ ), Electrical life: 100,000 cycles <br> DS: Non-contact voltage (for SSR drive) 12 V DC $\pm 15 \%$, Max. $40 \mathrm{~mA} \mathrm{DC} \mathrm{(short} \mathrm{circuit} \mathrm{protected)}$ <br> DA: DC current 4 to 20 mA DC, Resolution (1/12000), Load resistance: Max. $600 \Omega$ <br> If this option is added: Event output (A3 option) or Insulated power output (P option) cannot be added together, and Event output EVT2 cannot be used. |
| Serial communication [C, C5] | This option and Console communication cannot be used together. The following operations can be carried out from the external computer. <br> (1) Reading and setting of the SV (desired value), PID values and various set values <br> (2) Reading of the PV (process variable) and action status (3) Function change <br> Communication line <br> : EIA RS-485 (C5 option), EIA RS-232C (C option) <br> Communication method <br> Synchronization method <br> Communication speed <br> Data bit/Parity <br> Stop bit <br> Communication protocol <br> Number of connectable units : 1 unit to 1 host computer (C), Maximum 31 units to 1 host computer (C5) <br> Communication error detection: Parity, checksum (Shinko protocol), LRC (MODBUS ASCII), CRC-16 (MODBUS RTU) <br> Digital external setting : Receives digital set values from Shinko programmable controllers (PC-900, PCD-33A with SVTC option). <br> If this option and Event input (EI option) are added together, Event input EVI3 and EVI4 cannot be used. |
| External setting input [EA1, EA2, EV1, EV2] | SV adds external analog signal to remote bias value. <br> Setting signal : DC current: 4 to 20 mA (EA1 option), 0 to 20 mA (EA2 option) <br>  DC voltage: 0 to 1 V (EV1 option), 1 to 5 V (EV2 option) <br> Allowable input : EA1, EA2: 50 mA DC or less, EV1: 5 V DC or less, EV2: 10 V DC or less <br> Input impedance : EA1, EA2: $50 \Omega, \mathrm{EV} 1, \mathrm{EV} 2: 100 \mathrm{k} \Omega$ <br> Input sampling period |
| Transmission output [TA1, TV1] | Converting the value (PV, SV, MV or DV) to analog signal every 125 ms , outputs the value in current or voltage. (Default: PV transmission) Outputs Transmission output low limit value ( 4 mA DC or OV DC) if Transmission output high limit and low limit value are the same. $\begin{array}{ll} \text { Resolution } & : 1 / 12000 \\ \text { Output } & : \text { TA1:4 to } 20 \mathrm{~mA} \text { DC (load resistance, Max. } 500 \Omega \text { ), TV1: } 0 \text { to } 1 \mathrm{~V} \text { DC (load resistance, Min. } 100 \mathrm{k} \Omega \text { ) } \\ \text { Output accuracy }: \text { Within } \pm 0.3 \% \text { of Transmission output span } \end{array}$ |
| Insulated power output [P] (*) | Output voltage $: 24 \pm 3 \mathrm{~V}$ DC (when load current is 30 mA DC ) <br> Ripple voltage : Within 200 mV DC (when load current is 30 mA DC ) <br> Max. Ioad current: 30mA DC <br> If this option is added: Event output (A3 option) or Heating /Cooling control (DR/DS/DA option) cannot be added together, and Event output EVT2 cannot be used. |

External dimensions (Scale:mm)


Terminal cover (sold separately)

## $\square$ Terminal arrangement

## - ACD-13A

- ACD-15A


- ACR-13A

- ACR-15A




## $\square$ Solderless terminal

Panel cutout (Scale:mm)

- ACD

- ACR


Lateral close mounting
n : Number of units mounted

## 1 . Caution

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

Use a solderless terminal with an insulation sleeve in which the M3 screw fits. The torque should be $0.63 \mathrm{~N} \cdot \mathrm{~m}$.


## 1. Caution

- This controller does not have a built-in power switch, circuit breaker or fuse It is necessary to install them near the controller.
- For a 24 V AC/DC power source, do not confuse polarity when using direct current (DC).


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## SHINKO TECHNOS CO., LTD. OVERSEAS DIVISION



> 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. militiary 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.


[^0]:    This catalog is as of September 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.

