# General Specifications

**Model CCH7**
**Isolator**
**(Programmable Isolator)**

**SMPSC**

## ◆General

The plug-in type isolator converts DC current or DC voltage signal into isolated DC current or DC voltage signal.

- DC voltage signal, communication output (RS485), or alarm output (2 relay contacts) is selectable as output-2
- Incorporation of microcomputer allows the change of input ranges and I/O monitoring etc. through Setup Utility.

## ◆Model and Suffix Codes

CCH7-0□□-□□□0/□

Model

Output
1: 1 output
2: 2 outputs

Power supply
6: 100-240 V AC/DC (Operating range: 85-264 V)
7: 15-30 V DC (Operating range: 12-36 V)

Input signal
A: 0 to 50 mA DC, span is 5 mA or more
1: -10 to +10 V DC, span is 0.1V or more

Output-1 signal

| | |
|---|---|
| A: 4 to 20 mA DC | 1: 0 to 10 mV DC |
| B: 2 to 10 mA DC | 2: 0 to 100 mV DC |
| C: 1 to 5 mA DC | 3: 0 to 1 V DC |
| D: 0 to 20 mA DC | 4: 0 to 10 V DC |
| E: 0 to 16 mA DC | 5: 0 to 5 V DC |
| F: 0 to 10 mA DC | 6: 1 to 5 V DC |
| G: 0 to 1 mA DC | 7: -10 to +10 V DC |

Output-2 signal
A: 4 to 20 mA DC
6: 1 to 5 V DC
P: Communication function (RS485)
T: High limit / low limit alarm output (2 relay contacts)
N: No output-2

Options
/SN : Without socket
Blank : With socket

## ◆Input/Output Specifications

### ■ Input

Input Range:
Code A: 0 to +50 mA DC, span is 5 mA or more
Code 1: -10 to +10 V DC, span is 0.1 V or more

Input Resistance:
DC current signal : 100 Ω (Shunt resistor)
DC voltage signal: 1 MΩ (100 kΩ when power off)

### ■ Output-1

| Output-1 Range | Allowable Load Resistance | Output-1 Range | Allowable Load Resistance |
|---|---|---|---|
| 4 to 20 mA DC | 750Ω max. | 0 to 10 mV DC | 250KΩ min. |
| 2 to 10 mA DC | 1500Ω max. | 0 to 100 mVDC | 250KΩ min. |
| 1 to 5 mA DC | 3000Ω max. | 0 to 1 V DC | 2KΩ min. |
| 0 to 20 mA DC | 750Ω max. | 0 to 10 V DC | 10KΩ min. |
| 0 to 16 mA DC | 900Ω max. | 0 to 5 V DC | 2KΩ min. |
| 0 to 10 mA DC | 1500Ω max. | 1 to 5 V DC | 2KΩ min. |
| 0 to 1 mA DC | 15KΩ max. | -10 to +10V DC | 10KΩ min. |

### ■ Output-2

- **Analog Output**

| Output Signal | Output Resistance | Permissible Load Resistance |
|---|---|---|
| 1 to 5 V DC | 1 Ω or less | 2 kΩ or more |
| 4 to 20 mA DC | 500 kΩ or more | 350Ω or less |

- **Communication Function**

This isolator can be connected to a personal computer, or programmable controllers.

Standards: EIA RS485
Maximum number of connectable controllers: 31 controllers
Maximum communication distance: 1200 m
Communication method: 2-wire half duplex, start-stop synchronization, non-procedural
Communication rate: 1200, 2400, 4800, 9600, 19200 bps
Data length: 8 bit
Stop bit: 1, 2 bit
Parity: Even parity, odd parity, or none
Communication protocol: MODBUS RTU

- **Alarm Output**

Signal type: Relay contact
Output signal: N.O. contact output (contact ON at excitation) 2 points, COM common
Contact capacity: 30 V DC, 1 A
Alarm operating direction: High limit alarm or low limit alarm
Relay operating direction setting: Excitation or non-excitation at normal status
Alarm setting range: 0 to 100 % of input range
Setting resolution: 0.1 %, 4 significant digits

Hysteresis setting range: Set the value added to alarm setting point at alarm release, 0 to 100 % of input range
Setting resolution: 0.1 %, 4 significant digits
Alarm on-delay setting: Delay time from alarm condition completion to output
(Ex. Outputted when alarm status continues for 1 second or more after input value is over alarm point in case of set value "1 second.")
Setting range: 0 to 999 seconds
Setting resolution: 1 second (however, add about 0.2 seconds to setting time to prevent wrong operation)
Alarm off-delay setting: Delay time from alarm normal condition completion to output
(Ex. Released when normal status continues for 2 seconds or more after input value becomes normal status from alarm status in case of set value "2 seconds.")
Setting range: 0 to 999 seconds
Setting resolution: 1 second (however, add about 0.2 seconds to setting time to prevent wrong operation)
Alarm operation display: Front LED lights at excitation, 2 LEDs

## ◆Items Available to Be Set

The following items can be set through Setup Utility:
Input range, address number, communication rate, parity, data length, stop bit, alarm operating direction, relay operating direction, alarm setting, hysteresis, alarm on-delay, alarm off-delay

## ◆Standard Performance

Accuracy rating: ±0.1 % of span
However accuracy is limited in the following case according to the input ranges:
Input range is -10 to +10 V (H range), span is under 5 V; accuracy (%) = ±0.1%×5 V / input span [V]
Input range is -5 to +5 V (M range), span is under 2.5 V; accuracy (%) = ±0.1%×2.5 V / input span [V]
Input range is -1 to +1 V (L range), span is under 0.5 V; accuracy (%) = ±0.1%×0.5 V / input span [V]
When current input, apply [input range×input resistance] to the above, and add 0.1 % of resistance error.
Response speed: 200 ms, 63 % response (10 to 90 %)
Alarm output: 350 ms (input change 10 to 90 %, alarm setting point 50 %, time till alarm output, when alarm delay setting and hysteresis are min.)
Effect of power supply voltage fluctuation: ±0.1 % or less of span for power supply voltage fluctuation of 15 to 30 V DC (±20 %), 100 to 240 V AC/DC
Effect of ambient temperature change: ±0.2 % or less of span for change of 10℃

## ◆Safety and EMC Standards

The followings will be acquired.

Safety:
Conforms to IEC1010-1: 1990 and EN61010-11: 1993.
Certified for CSA1010
CSA1010 category: CAT II (IEC1010-1)
Certified for UL508
Non-Incendive Explosion-Proof:
CSA C22.2 No. 213 Class I, Division 2, Groups A, B, C & D
FM No. 3611 Class I, Division 2, Groups A, B, C & D
The above certified/approved instrument is only for voltage of 15 to 30 V DC.
EMC Standards:
Conforms to the following EMC standards.
EN55011: 1991 Class A Group1 for EMI (emissions)
EN50082-2: 1995 for EMS (immunity)
The above conformed instrument is only for voltage of 15 to 30 V DC.

## ◆Power Supply and Isolation

Supply rated voltage range: 100-240 V AC/DC 50/60Hz or 15-30 V DC
Supply input voltage range: 100-240 V AC/DC (-15, +10%) 50/60Hz or 15-30 V DC (±20%)
Power consumption: 2.2W at 24V DC; 2.1W at 110 V DC; 4.2 VA at 100V AC; 6.1VA at 200 V AC
Insulation resistance: 100 MΩ minimum at 500V DC between input, output-1,output-2,power supply and grounding terminals mutually
Withstanding voltage: 2000 V AC for one minute between input, (output-1 and output-2), power supply and grounding terminals mutually; 1000 V AC for one minute between output-1 and output-2 terminals

## ◆Environmental Conditions

Operating temperature range: 0 to 50℃
Operating humidity range: 5 to 90% RH (no condensation)
Operating conditions: Avoid installation in such environments as corrosive gas like sulfide hydrogen, dust, sea breeze and direct sunlight.
Installation altitude: 2000 m or less above sea level.

## ◆Mounting and Appearance

Construction: Compact plug-in type
Material: Modified polyphenylene oxide (case body)
Mounting method: Wall or DIN rail mounting
Connection method: M3 screw terminal
External dimension: 29.5×76×124.5mm (W×H×D)
Weight: Approx. 170 g

## ◆Instruction Required When Ordering

• Model and suffix code
Shipped after setting the input ranges as specified.

## ◆ Factory Setting

Factory settings are as follows:

• Input range: 0 to 10 V DC

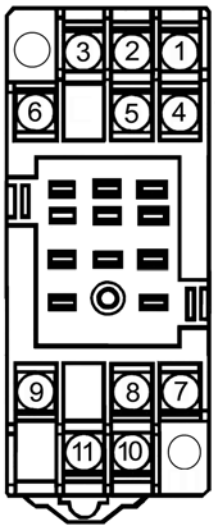
■ **When output-2 is specified as communication output**

• Address No.: 01
• Communication rate: 9600 bps
• Parity: None
• Data length: 8 bit
• Stop bit: 1 bit

■ **When output-2 is specified as alarm output**

• Alarm operating direction: High limit alarm (alarm-1),
High limit alarm (alarm-2)
• Relay operating direction: De-energized at alarm (alarm-1 / 2)
• Alarm setting: 100 % (alarm-1), 100 % (alarm-2)
• Hysteresis: 3 % (alarm-1 / 2)
• Alarm on-delay: 0 second (alarm-1 / 2)
• Alarm off- delay: 0 second (alarm-1 / 2)

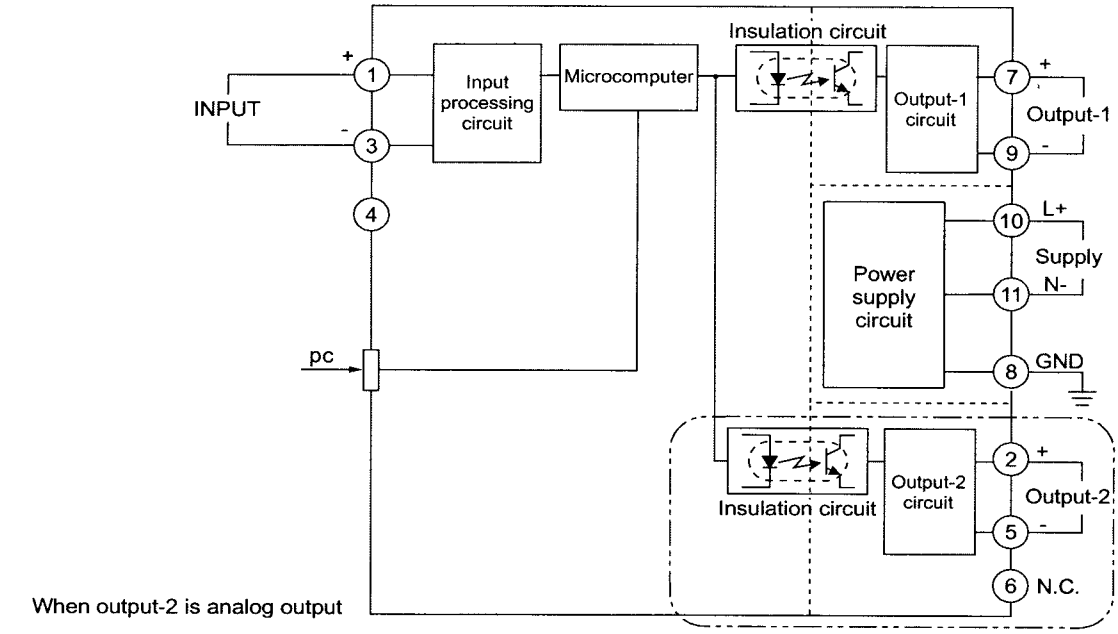
## ◆ Terminal Arrangement & Terminal Connection

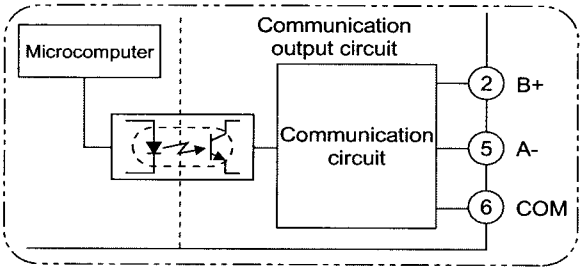



| Terminal No. | Signal | Output-2 Analog output | Output-2 Communication output | Output-2 Alarm output |
|---|---|---|---|---|
| 1 | Input | (+) | | |
| 2 | Output-2 | (+) | B (+) | ALM1 |
| 3 | Input | (-) | | |
| 4 | Input | N.C. | | |
| 5 | Output-2 | (-) | A (-) | COM |
| 6 | Output-2 | N.C. | COM | ALM2 |
| 7 | Output-1 | (+) | | |
| 8 | GND | GND | | |
| 9 | Output-1 | (-) | | |
| 10 | Supply | (L+) | | |
| 11 | Supply | (N-) | | |

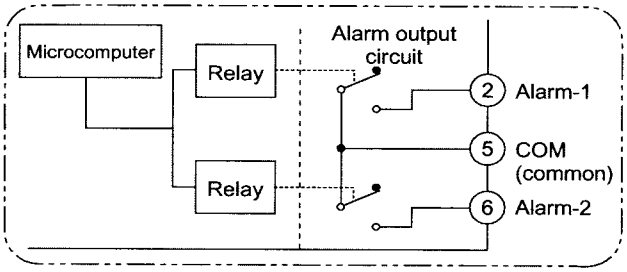
Note: In case of one output type, output-2 is N.C.

## ◆Block Diagram




When output-2 is communication output




When output-2 is alarm output

## ◆External Dimension