

# Autonics <sup>USA</sup> Newsletter

No. 1 Spring, 2012

- 02/03 **[New]** I/O terminal blocks **AFS/ACS/AFE/ABS Series**
- 04 **[Line-up]** Long distance sensing proximity sensors **PRD Series**
- 05 **[Upgrade]** Programmable counter/timers **CT Series**
- 06/07 **[Q & A]** Temperature Controllers

**Excellent durability and compatibility!**  
**Autonics I/O Terminal Block**  
**AFS, ACS, AFE, ABS Series**



## INPUT | OUTPUT TERMINAL

# Excellent durability and compatibility!

# We make AUTONICS I/O

## [I/O terminal block]

### AFS / ACS / AFE / ABS Series

Autonics newly introduces I/O terminal block - AFS, ACS, AFE, ABS Series, total 4 series 18 products, in order to provide more diverse & integrated IA solutions. Autonics terminal blocks are designed with excellent durability and high compatibility to realize superior networking reliability. In addition, Autonics will contribute to making better working



[Interface terminal block] AFS Series



[Common terminal block] ACS Series

#### Major features

- Compact interface terminal block - 7mm of terminal pitch
- Optimized for connector type PLC and dedicated controller I/O
- Space saving mounting with compact size
- Two ways of mounting(DIN Rail, bolt fix)
- Supports CJ Series(Connector transmission cable)

#### Ordering information

AF	S	-	H	20	
				Number of connectors	20 20pin 40 40pin
				Number of connectors	H Hirose connector
				Connector type	S Screw
				Terminal type	AF Interface terminal block

#### Major specifications

Model	AFS-H20	AFS-H40
Rated voltage	Max. 125VDC, 220VAC 50/60Hz	
Rated current	Max. 1A	
Number of connectors	20Pin	40Pin
Number of terminals	20pcs	40pcs
Terminal pitch	7.0mm	
Applicable wires	Min. 1.25mm <sup>2</sup>	
Tightening torque	0.4 ~ 0.6N·m	

#### Major features

- Compact interface terminal block - 7mm of terminal pitch
- No Jumper bars required due to built-in PCB Common
- Available for power supply expansion terminal block
- Space saving mounting with compact size
- Excellent environment resistance against dust and debris by hinged cover
- Two ways of mounting(DIN Rail, bolt fix)

#### Ordering information

AC	S	-	20	L	
				Common type	L Left-Right Common T Top-Bottom Common
				Number of terminals	20 20pcs 40 40pcs
				Terminal type	S Screw
				Item	AC Common terminal block

#### Major specifications

Model	ACS-20L	ACS-20T	ACS-40L	ACS-40T
Rated voltage	Max. 125VDC, 220VAC 50/60Hz			
Rated current	Max. 10A			
Common type	Left +COM Right -COM	Top +COM Bottom -COM	Left +COM Right -COM	Top +COM Bottom -COM
Number of terminals	20pcs		40pcs	
Terminal pitch	7.0mm			
Applicable wires	Min. 1.25mm <sup>2</sup>			
Tightening torque	0.4 ~ 0.6N·m			

#### CJ-HPFP Series



#### CJ-HPDP Series



#### CJ-HPHP Series



※ Others CJ-HPDS / CJ-HP / CJ-FP / CJ-DF / CJ-DS Series etc.(Total 8 Series)

## Wide range of 59 types

Connector transmission cable CJ series are applicable to various PLC and Controllers (LSIS, MITSUBISHI, AUTONICS etc) with supporting various types of cable. Its wide range of cable length depending on working environment also increases user's convenience.



# Long distance sensing up to 25mm and High reliability with dedicated IC

## [Long distance sensing proximity sensors] PRD Series

Long distance type proximity sensor - Autonics PRD30 series finally launched capable of sensing up to 25mm!  
 Long distance sensing proximity sensor PRD / PRDW / PRDCM Series guarantees 1.5~2 times longer sensing distance compared to existing models and realizes world-best class superior noise resistance characteristics with dedicated IC. Cable outgoing type PRD / cable outgoing

connector type PRDW which can prevent the disconnection of the cable connecting part by folding and banding with strengthening the sensor/cable connecting part, connector type PRDCM which makes easier maintenance and wiring works, and spatter-resistance type PRDAT/PRDAWT which prevent malfunction caused by spatter; these line-ups help users have a wide selection according to the work environment.



### [Long distance sensing proximity sensor] PRD Series

#### Major features

- Long sensing distance (1.5 to 2 times longer sensing distance guaranteed compared to existing models)
- Improved the noise resistance with dedicated IC
- Integrated surge protection, reverse polarity protection, overload & short protection circuit
- Long life cycle and high reliability
- Red LED status indication
- Protection structure IP67(IEC standard)
- Replaceable for micro switches and limit switches
- Improved cable strain relief : More reliable flexural strength of sensor/cable connecting part (PRD / PRDW Series)
- Easy maintenance guaranteed (PRDCM Series)
- Coated with teflon against thermal resistance (Prevention of malfunction due to spatter) (PRDAT/PRDAWT Series)

## Proximity Sensors

#### Major specifications

Type	DC2 wire(Standard, Connector, Cable outgoing connector type)					
	M12 Flush	M12 Non-flush	M18 Flush	M18 Non-flush	M30 Flush	M30 Non-flush
Sensing distance	4mm ±10%	8mm ±10%	7mm ±10%	14mm ±10%	15mm ±10%	25mm ±10%
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12x12x1mm(Iron)	25x25x1mm(Iron)	20x20x1mm(Iron)	40x40x1mm(Iron)	45x45x1mm(Iron)	75x75x1mm(Iron)
setting distance	0~2.8mm	0~5.6mm	0~4.9mm	0~9.8mm	0~10.5mm	0~17.5mm
Power supply (operating voltage)	12-24VDC (10-30VDC)					
Leakage current	Max. 0.6mA					
Response frequency	450Hz	400Hz	250Hz	200Hz	200Hz	100Hz
Residual voltage	Max. 3.5V					

Type	DC3 wire(Standard, Connector, Cable outgoing connector type)					
	M12 Flush	M12 Non-flush	M18 Flush	M18 Non-flush	M30 Flush	M30 Non-flush
Sensing distance	4mm ±10%	8mm ±10%	7mm ±10%	14mm ±10%	15mm ±10%	25mm ±10%
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12x12x1mm(Iron)	25x25x1mm(Iron)	20x20x1mm(Iron)	40x40x1mm(Iron)	45x45x1mm(Iron)	75x75x1mm(Iron)
setting distance	0~2.8mm	0~5.6mm	0~4.9mm	0~9.8mm	0~10.5mm	0~17.5mm
Power supply (operating voltage)	12-24VDC (10-30VDC)					
Leakage current	Max. 10mA					
Response frequency	500Hz	400Hz	300Hz	200Hz	200Hz	100Hz
Residual voltage	Max. 1.5V					

Type	DC2 wire(Spatter resistance type)	
	M18 Flush	M30 Flush
Sensing distance	7mm ±10%	15mm ±10%
Hysteresis	Max. 10% of sensing distance	
Standard sensing target	20x20x1mm(Iron)	45x45x1mm(Iron)
setting distance	0~4.9mm	0~10.5mm
Power supply (operating voltage)	12-24VDC (10-30VDC)	
Leakage current	Max. 0.6mA	
Response frequency	250Hz	100Hz
Residual voltage	Max. 3.5V	

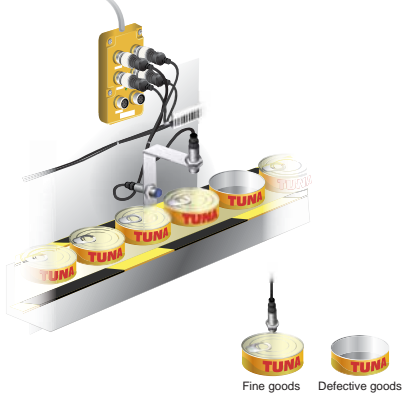
#### [ Adopting Cable Support ]



Strengthened sensor / cable connecting part will prevent any wire-break on code connecting part due to folding and bending. (9 times improved flexural strength, increased durability)

#### Application

- Defect inspection for canned goods conveyor



**The characteristic of spatter-resistance type**

The hot arc from arc welding machine is adhesive even with metals or plastics. Therefore, normal proximity sensor might have malfunction even though there are no sensing object if the arcs are put on the sensing surface. The arcs are not adhered on the sensing part of the spatter-resistance type proximity sensor as the part is coated with teflon against thermal resistance.

# Multi-functions and RS485 communication supported, more increased user convenience

## [Programmable Counter/Timer] CT Series

The multi-function(829,728 kinds) counter/timer, CT Series is dramatically upgraded. New CT Series adopts RS485 communication function so that each parameter setting and monitoring can be available from PC. In addition, it allows up to 6 digits pre-scale setting possible to provide user convenience. Moreover, it uses not only new name plate also added various I/O operation modes and the contact capacity of load

increased to 5A so that the new CT can be applied various machines. -New CT Series with upgrade performance and design at once are now available.

### [Programmable counter/timers] CT Series

#### The upgrade information

##### [Common Features]

- Supports RS485 communication (Modbus RTU) function  
: Parameter setting and monitoring via PC  
: PC loader program 'DAQMaster' provided free of charge
- Increased contact capacity of load to 5A(Previous model: 3A) (CTS, CTM)
- Sets one-shot output time from 0.01 to 99.99 sec. per 10ms
- Increased visibility by using high-luminance LED.

##### [Counter function]

- Available to set 6 digits pre-scale value (0.00001~999999), (4 digits: 0.001~9999)
- Added BATCH counter indication mode for CT6M-1P and CT6M-2P
- Available to set Count Start Point (Initial value)
- Added input operation mode, UP-1/UP-2/Down-1/Down-2
- Added TOTAL/HOLD operation mode(only for indicator model).

##### [Timer function]

- Memory backup function (For indicator)
- More diverse time range  
(6 Digits : 999.99s / 9999m59 / 99999.9h, 4 Digits : 9.999s)
- Available to set "0"
- Added output operations mode, INT2/NFD/NFD.1/INTG
- Added TOTAL/HOLD/On Time Display operation mode (only for indicator model)



Communication Converter SCM-US481



## Counter/Timers

#### Major specifications

Series		CTS		CTY		CTM	
Digit		4	6	6	6	6	6
Model	Dual Preset	CT4S-2P	CT6S-2P	CT6Y-2P		CT6M-2P	
	Single Preset	CT4S-1P	CT6S-1P	CT6Y-1P		CT6M-1P	
Indicator			CT6S-I	CT6Y-I		CT6M-I	
	Count value	11mm	10mm	10mm		13mm	
Digit Size	Preset value	8mm	7mm	7mm		9mm	
	AC Power	100-240VAC 50/60Hz					
Power Supply	AC/DC Power	24VAC 50/60Hz / 24-48VDC					
	Allowable voltage range	90~110% of rated voltage(AC Power type)					
Power consumption	AC Power	Max. 12VA					
	AC/DC Power	AC: Max. 10VA/ DC: Max. 8W					
CPS of INA, INB		Selectable 1cps, 30cps, 1kcps, 5kcps, 10kcps					
Min. input signal width	Counter	Reset input: Selectable 1ms or 20ms					
	Timer	INA, INB, RESET : Selectable 1ms or 20ms				INA, INB, RESET, INHIBIT, BATCH RESET : Selectable 1ms or 20ms	
Input		Selectable voltage input or No-voltage input -Voltage input: input impedance is 5.4kΩ, 'H' level: 5-30VDC, 'L' level: 0-2VDC -No-voltage input: short-circuit impedance: Max. 1kΩ, Residual voltage: Max. 2VDC					
One-shot output		Selectable 0.01s to 99.99s					
Control output	Without com.	Contact output	Dual preset: SPST(1a) 2EA Single preset: SPDT(1c) 1EA		Dual preset: SPST(1a) 1EA, SPDT(1c) 1EA Single preset: SPDT(1c) 1EA		
		Solid state output	Dual preset: 1NPN open collector Single preset: 1NPN open collector		Dual preset: 3NPN open collector Single preset: 2NPN open collector		
	Com.	Contact output	Dual preset: SPST(1a) 2EA Single preset: SPDT(1c) 1EA		Dual preset: SPST(1a), SPDT(1c) Single preset: SPDT(1c)		
		Solid state output	-		Dual preset: 2NPN open collector Single preset: 2NPN open collector		
Capacity	Contact output	250VAC 5A resistive load		250VAC 3A resistive load		250VAC 5A resistive load	
	Solid state output	30VDC Max. 100mA Max.					
External sensor power		12VDC ±10%, 100mA Max.					
Memory retention		10years (When using non-volatile semiconductor memory type)					
Timer		Repeat error, Set error, voltage error, Temperature error -Power ON Start: Max. ±0.01% ±0.05sec -Signal Start: Max. ±0.01% ±0.03 sec					

#### Communication specification

Protocol	Modbus RTU(16bit CRC)
Connection method	RS485
Application standard	Compliance with EIA RS485
Number of connections	31, it is available to set address 1~127
Communication method	Half Duplex
Synchronous method	Asynchronous
Communication distance	Within max. 800meter
Communication speed	2,400 / 4,800 / 9,600 / 19,200 / 38,400bps(Factory default: 9,600bps)
Response waiting time	5~99ms(Factory default: 20ms)
Start bit	1bit(Fixed)
Data bit	8bit(Fixed)
Parity bit	None, Even, Odd(Factory default: None)
Stop bit	1, 2bit(Factory default: 2bit)

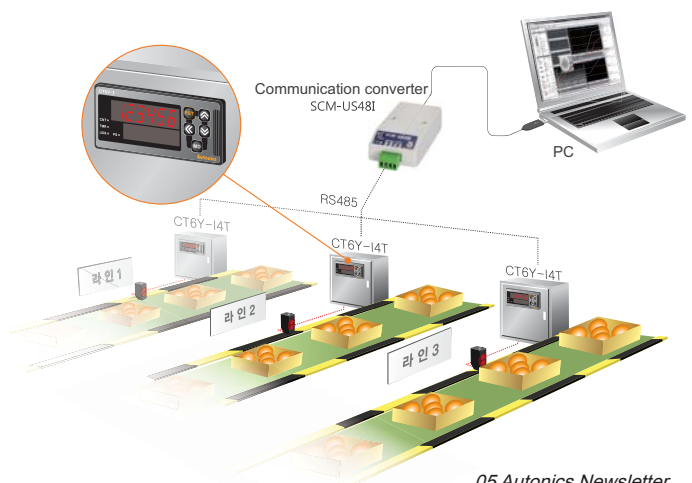
#### Ordering information

Item	CT	6	M	-	2P	4	T	
Communication								Blank T RS485
Power supply								4 100-240VAC 50/60Hz 2 24VAC 50/60Hz / 24-48VDC
Output								2P Dual preset 1P Single preset I Indicator
Size								S DIN W48×H48mm Y DIN W72×H36mm M DIN W72×H72mm
Digit type								4 9999(4 Digit) 6 99999(6 Digit)
								CT Counter/Timer

\* 4Digits does not exist in the indicator type.

#### Application

- To manage the numerical production data by using communication function.

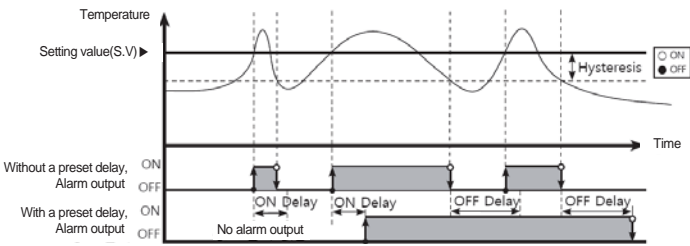


# Q&A Temperature

We would like to introduce the most frequently asked questions about **Autonics temperature controllers**.

**Q1** I designed my system using controller's alarm output (high limit alarm), that is, power supply of temperature controller would be cut off when alarm output occurs. From time to time, however, PV has soared due to noise inflow incurred by certain factors and it causes alarm output occurs consequently. Is there any possible way not to have noise influence on alarm output while using Autonics TK Series?

**A** Autonics TK Series has alarm output ON/OFF delay function that prevent false alarm output from occurring caused by erroneous input signals resulting from disturbances or noise. (Alarm output ON/OFF delay time can be set in parameter group 4.)



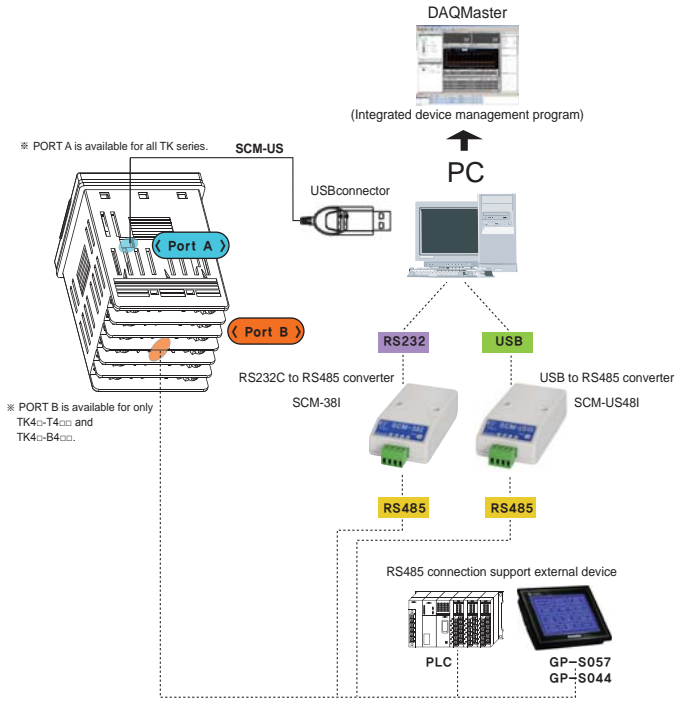
■ Alarm output ON delay (R I . O N)

Stands by for the preset duration upon an alarm event, checks the alarm trigger conditions, and turns on the alarm output if the conditions are still present.

■ Alarm output OFF delay (R I . O F)

Stands by for the preset duration upon the time when alarm output is off, checks the alarm trigger conditions, and turns off the alarm output if the deactivation conditions are still present.

- ※ The number of alarm output contact can be different depending on each model (1 alarm output or 2 alarm output contacts) (Setting range: 0-3,600 sec)
- ※ NOTE: Alarm output ON/OFF delay function is allowed for high user level only. Make sure to set user level parameter to "Hi L H" in parameter group 5 before operating this function.



※ NOTE: In case users operate dedicated serial communication using SCM-US through PORT A, RS485 communication through PORT B is automatically blocked.

• Once you set up communication function as described above, users can carry out parameter setting and monitoring with DAQMaster, Autonics integrated device management program

• Autonics TK Series adopts Modbus RTU communication protocol so that users can operate communication function with external devices (PLC or touch panels) which support the same protocol.  
 [ ※ Refer to TK Series user manual and TK Series communication manual available at [www.autonics.com](http://www.autonics.com) ]

**Q2** I'd like to know about TK Series, in particular, parameter setting and communication with DAQ master, Autonics integrated device management program.

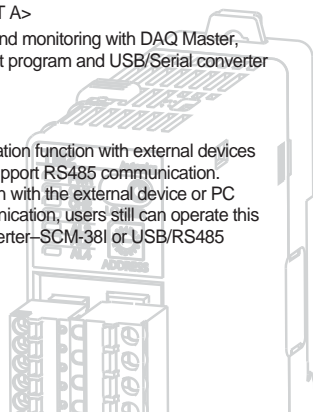
**A** Autonics TK Series is a communication support model of which parameter setting and monitoring can be available thru communication. Please refer to the directions below how to use its dedicated serial communication power (PORT A) and RS485 communication port (PORT B).

1) Dedicated serial communication <PORT A>

- Users can carry out parameter setting and monitoring with DAQ Master, Autonics integrated device management program and USB/Serial converter - SCM-US (sold separately).

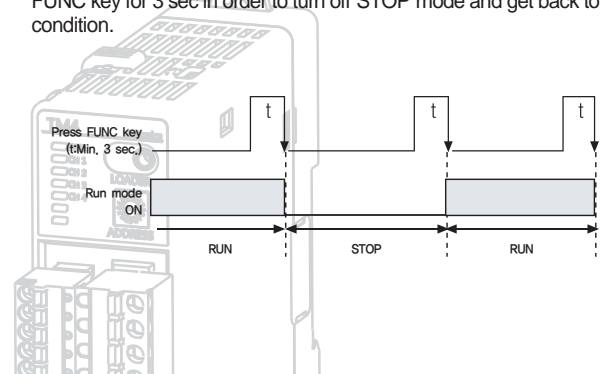
2) RS485 communication <PORT B>

- Autonics TK Series support communication function with external devices including PLC or touch panels which support RS485 communication. In case of using communication function with the external device or PC which does not support RS485 communication, users still can operate this function by using RS232 / RS485 converter-SCM-381 or USB/RS485 converter-SCM-US481.



**Q3** What is 'RUN/STOP' function in TC/TD Series and to which applications this function can be implemented?

**A** RUN/STOP function is to allow users to select the status of control output RUN/STOP. When it is required to stop control output temporarily e.g., during maintenance work, use "STOP" command to stop control output. (☑, ☑ Alarm output is normally provided as setting values.) When controller 's power is off during "STOP" mode, "STOP" mode will be kept after power is supplied again. Therefore, it is required to press FUNC key for 3 sec in order to turn off "STOP" mode and get back to normal condition.



# Controllers



**Q4** What is Input digital filter function in TC/TD Series and how can I make use of it?

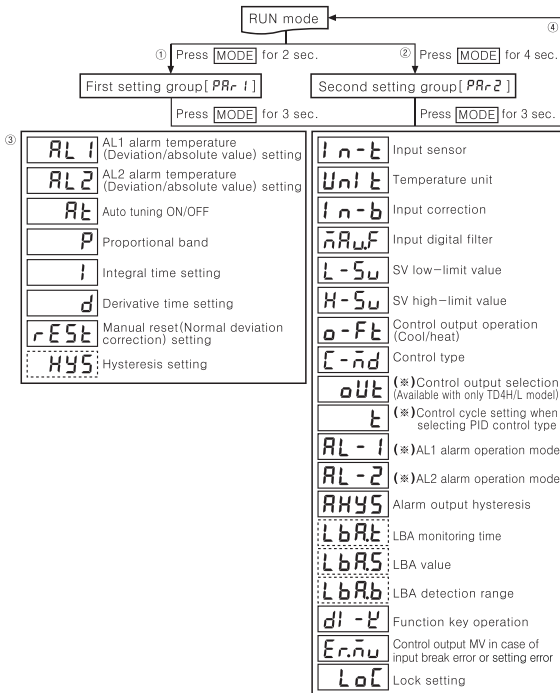
**A** Input digital filter setting up  

 setting range : 0.1 ~ 120.0 sec

If noise occurs on input signals or PV value keeps changing, it gets difficult to perform high accuracy control since PV has a direct effect on output level. Input digital filter function is to filter input signals for more stable PV display in order to provide stable control output, consequently.

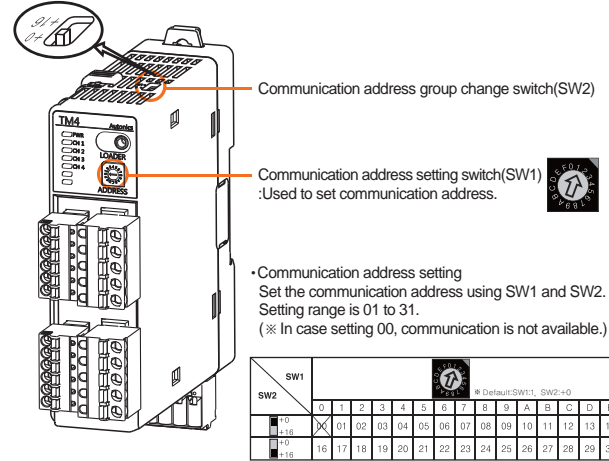
How to set up input digital filter function?

Press MODE key for 4 seconds in order to enter into parameter group 2. Then, press MODE key to implement input digital filter function. Setting range is 0.1~120.0 sec. Keep pressing MODE key more than 3 seconds to return to RUN mode. Please make sure that display accuracy can be increased while control characteristic could decline somewhat.



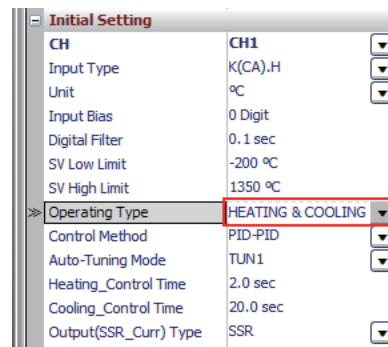
**Q6** I'd like to set up communication address with Autonics TM Series – multi channel modular type temperature controllers.

**A** As you can refer to the figure below, there are two switches on TM unit, one is SW1 having 0~F and the other is SW2 having +0~+16. In case you wish to set up communication address #7, set SW1 to 7 and set SW2 to +0.



**Q7** Is it possible to operate heating & cooling control with Autonics TM Series?

**A** Note that both Autonics TM2 and TM4 Series support heating & cooling control with single unit. Users can set up heating & cooling control thru DAQMaster as shown below. When initial setting screen appears, click operating type and select HEATING & COOLING for CH1.



Each output for heating and cooling is automatically allocated as described in the following table

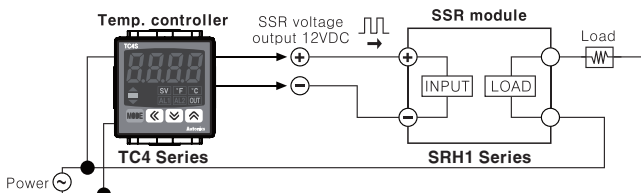
Series	heating control	cooling control	note
TM2	CH1 OUT	AL1 OUT	heating output : Control output selectable depending on each model
	CH2 OUT	AL2 OUT	cooling output : Relay output only
TM4	CH1 OUT	CH2 OUT	heating output : Control output selectable depending on each model
	CH3 OUT	CH4 OUT	cooling output : Control output selectable depending on each model

\* For TM2 Series, heating output can be selected by models from relay output, SSR output and current output. Cooling output is fixed to relay output.

\* Users still implement ideal controlling with heating & controlling mode when it is difficult to control subject temperature with only heating or cooling.

**Q5** What is SSRP output in TC Series?

**A** SSRP is a user selectable output type which phase control and cycle control are added to standard SSR drive output so that it makes possible to realize high accuracy and const effective temperature control with both current output (4-20mA) and linear output. Make sure that power supply for load and temperature controller should be the same when selecting SSRP output.



# More precise & reliable encoders?

## Rotary encoders E Series



### Reliable encoding technology

### Autonics Rotary encoders



*Established in 1977, Autonics is a leading company of Sensors & Controllers in Korea and its products are marketed in more than 100 countries worldwide.*

Autonics rotary encoders with various sizes and types (incremental/absolute) of precise and stable encoding technology provide more reliable performance for various IA fields including elevators, industrial robots, packaging machines, conveyors and NC machines up to 10,000 pulse available.

#### E Series Major features

- Small moment of inertia
- Suitable for measuring angle, position, revolution, speed, acceleration and sensing distance
- Power supply : 5VDC, 12-24VDC  $\pm 5\%$  (E20 Series : 5VDC, 12VDC  $\pm 5\%$ )
- Output types : Totem pole / NPN open collector / Voltage / Line driver
- 1 to 8,000 PPR (10,000PPR for E100H Series)
- Protection structure IP50 (IEC standard)

**Autonics** [www.autoniconline.com](http://www.autoniconline.com) [www.autonics.com](http://www.autonics.com)

UL US ISO-9001 CE G ROHS

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#### Major products

• Photoelectric sensors • Fiber optic sensors • Door/Door side sensors • Area sensors • Proximity sensors • Pressure sensors • Rotary encoders • Temperature controllers • Temperature/Humidity transducers  
• SSR/Power controllers • Counters • Timers • Panel meters • Tachometer/Pulse(Rate) meters • Display units • Sensor controllers • Switching power supplies • 2/5-phase stepping motors/drivers • Motion controllers  
• Graphic/Logic panels • Field network devices • Control switches/Lamps/Buzzers/Sockets • Laser marking systems(Fiber, CO<sub>2</sub>, Nd:YAG) • Laser welding/soldering systems