



### Heating, Ventilation and Air-conditioning SOLUTIONS

#### ▲ Sensors & Controls



Optimized indoor climate through carefully selected, installed and adjusted building controls equipment saves energy and cost while increasing living comfort at home and efficiency at work.

- High performance standalone controls with straightforward on-board parameter setting routine.
- Freely assigned inputs/outputs provides application flexibility.
- Temperature and humidity sensors and transmitters for room, duct, outdoor mount. Replaceable humidity elements with 2%, 3%, 5% accuracy.



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### Optimize Application Flexibility ...

#### ... For Controls



Proven PI algorithm with adjustable values, freely assigned inputs/outputs, alarms/feedback, select reaction on alarm, in a straightforward on-board parameter setting system.

**Typical parameters include:**

##### ▲ User Parameters

- Enable access to operation modes, set points, economy/comfort mode shift.
- Enable heat/cool changeover.
- Select contents of LCD display: set point, input/output values, clock.

##### ▲ Control Parameters

- Min. and max. set point for heating/cooling.
- Cascade control—set point Loop 2 provided by output of Loop 1.
- Adjust proportional band and integral in PI sequence. Vector Dynamic Integral speeds reaction away from set point, slows reaction approaching set point.
- Set the desired action for digital heat/cool stages (cumulative or sequential), switching hysteresis and delay, heat/cool changeover delay.

##### ▲ Input/output Configuration

- Assign inputs/outputs to a control loop.
- Set analog input signal range min. and max.
- Select unit and range of analog input: %, °F/°C, x10, x100.
- Configure output: heating only, cooling only, heating/cooling, manual override, action in case of alarms, analog output as feedback (set points, input values), min. and max. signal limitations.
- Create low/upper limit alarms, action on alarm.

#### ... For Sensors



##### ▲ Sensing Options

- Passive temperature sensors, temperature and humidity transmitters (analog signal out).
- Humidity transmitters with replaceable sensing element. Options for 2%, 3%, or 5% accuracy.
- Combination temperature/humidity sensors and transmitters.
- Wide range of NTC, NI, and PT sensing elements.

##### ▲ Signal Range Options

- 0-10vdc or 0-20mA output selectable by jumper.
- Customize output range with parameters (e.g. 0-5vdc, 2-20mA).
- Half wave/full wave power supply selectable by jumper for easy compatibility with multiple systems.

##### ▲ Mounting/display Options

- Wall, duct, and outdoor mounting.
- Remote and integrated display and parameter setting interface.
- Rigid housings or flying lead passive temperature sensors.

### TLR Series Fan Coil, Package Unit Controls

▲ **Performance, Value and Flexibility for Fan Coils, Package Units, Air-handlers**



TLR Series



AER... Base Unit



OPR-1

- Includes base plus terminal with sensor.
- Mount base with fan, terminal in room.
- One terminal operates up to 8 bases.
- Available infrared remote control.
- Economy/comfort modes, set point limitations.
- Economy/comfort modes, set point limitations.
- Demand-based fan switching.
- 1 internal and one external temperature input.
- Deluxe (-D) with Power Cap protected clock, time schedules, backlight.

Model #	Options	Features
TLR-D5-U-24(-D)	Standard (Deluxe)	<b>On/Off, Fan Coil</b> 3 DO Fan 2 DO H/C
TLR-D41-U-24(-D)		<b>PI Fan Coil Control</b> 3 DO Fan 1 DO 1 AO
TLR-D5P-U-24(-D)		<b>On/Off, Package Unit</b> 1 DO Fan 2 DO H 2 DO C
TLR-D5F-U-24(-D)		<b>PI Control</b> 3 DO (relays) for Fan 2 DO TRIAC for Floating Point
OPR-1		Remote control with LCD and clock (-D controllers).
AER...		Base unit for TLR Series

### TCY and TDC On/off Humidistats

**▲ Compact, Flexible Mounting, Replaceable Humidity Elements**




TCY-BH Wall Humidistat



TDC-BH Duct Humidistat

- Programmable user and expert parameters.
- Flush wall mounting (2"x4" single gang box).
- Duct mount with replaceable sensor element
- Humidify or dehumidify.
- Energy savings with standby functionality, set point limitations, external temperature reset.
- Optional fan support.
- Deluxe (-D) with Power Cap protected clock, time schedules, backlight.

Model #	Options	Features
TDC-BH-U(-D)	Standard(Deluxe) Humidify/Dehumidify	<b>Duct Mount On/Off Humidistat</b> 1 external temperature input 2 DO relays
TCY-BH-U(-D)	Standard(Deluxe) Humidify/Dehumidify	<b>Flush Wall Mount On/Off Humidistat</b> 1 external temperature input 2 DO relays
AES-HT-A5		Replacement humidity element TDC/TCY-BH. 5% accuracy.

### TCY3 Dual Loop PI Temperature and Humidity Controls

**▲ Compact, Easy-to-use, Proven PI Control Algorithm, Flexible Applications, Clean Look. For VAV, Temperature and Humidity Control**



TCY3 Series



OPR-1

- Large LCD display.
- Programmable user and expert parameters.
- Flush wall mounting (.6 inch off wall).
- Infrared remote control with OPR-1.
- Remote control functions on external input.
- Economy/comfort mode, summer/winter compensation, set point limitations, alarms, feedback on analog output.
- 0-10VDC /0-20mA output selectable with jumpers, custom ranges with parameters (e.g. 0-5VDC, 4-20mA).
- Cascading control loops (e.g. temperature/pressure in VAV).
- Deluxe (-D) with Power Cap protected clock, schedules, backlight.

Model #	Options	Features
TCY3-T0121R-U(-D)	Standard(Deluxe)	1 internal and 1 external temperature input 1 AI 2 DO relays 1 AO
TCY3-T0121R-H-U(-D)	Standard(Deluxe) Humidify/Dehumidify	1 internal and 1 external temperature input 1 internal humidity sensor/input 1 AI 2 DO relays 1 AO
TCY3-T0121T-U(-D)	Standard(Deluxe)	1 internal and 1 external temperature input 1 AI 2 DO TRIAC 1 AO
TCY3-T1102-U(-D)	Standard(Deluxe)	1 internal and 1 external temperature input 1 DI 1 AI 2 AO
TCY3- T1102-H-U(-D)	Standard(Deluxe) Humidify/Dehumidify	1 internal and 1 external temperature input 1 internal humidity sensor/input 1 DI 1 AI 2 AO
OPR-1		Remote control with LCD and clock (for -D controllers).

### TCI Single and Dual PI Loop Universal Controls



TCI-W...  
Wall Mount



TCI-C...  
DIN Rail Mount

▲ **Wall Mounting With Internal Sensors or DIN Rail Mount With Remote Sensors, Special Enable/disable Functions**

- Universal inputs: analog, binary, temp. sensor.
- Freely assign inputs and outputs.
- Remote control, enable/disable functions.
- Heat/cool changeover, set point compensation.
- PWM control.
- Programmable low high limit alarms, reaction with alarm.
- 0-10VDC /0-20mA output selectable with jumpers, custom ranges with parameters (e.g. 0-5VDC, 4-20mA).
- Cascading control loops (e.g. temperature/pressure in VAV).
- Deluxe (-D) with Power Cap protected clock, schedules, backlight.

Model #	Options	Features
<b>PI controller, flush wall mounted</b>		
TCI-W11-U	Standard 1 loop	1 internal temperature input 1 UI 2 DO relays 1 AO
TCI-W22-U	Deluxe 2 loops	1 internal temperature input 2 UI 2 DO relays 1 AO
TCI-W22-H-U	Deluxe 2 loops	1 internal temperature, 1 internal humidity input 2 UI 2 DO relays 1 AO
<b>PI controller, cabinet mounted, DIN rail mount</b>		
TCI-C11-0	Standard 1 loop	2 UI 2 DO relays 1 AO
TCI-C13-0	Standard 1 loop	2 UI 2 DO TRIAC 1 AO
TCI-C22-0	Deluxe 2 loops	4 UI 2 DO relays 2 AO

### TCX2 Cabinet Mount PI Universal Controls

**▲ Up to 8 Inputs, 9 Outputs, Energy Saving Features Including Economizer Control – Great for Air Handlers**



TCX2 Series



OPU-X2 Display Terminal/Sensor

- -OP version with integrated LCD display, backlight.
- Standard version for use with display terminal and parameter setting interface (OPU-X2)
- Communication with Vector Controls protocol.
- PC set-up tool for upload and copying of parameters.
- Programmable user and expert parameters.
- 8 Universal Inputs: analog, on/off, or NTC passive temperature sensor input.
- 0-10VDC /0-20mA output selectable with jumpers, custom ranges with parameters (e.g. 0-5VDC, 4-20mA).
- Cascading control loops, economizer control, summer/winter compensation, auto change-over and more energy saving features

Model #	Options	Inputs/Outputs
<b>4 control loops</b>		
TCX2-40863(-OP)	Standard (-OP with integrated display)	8 UI 4 DO Relays 2 DO TRIAC 3AO
<b>2 control loops</b>		
TCX2-20362-FC	Use with OPU-X2	3 UI 6 DO Relays 2AO 1 fan module
TCX2-20350-FC		3 UI 5 DO Relays 1 fan module
TCX2-20332-FC		3 UI 3 Relays 2 AO 1 fan module
OPU-X2		Remote display terminal, parameter interface

### S and SD Flying Lead Temperature Sensors



S Series



SD Series Duct Mount

- Passive temperature sensors
- Stainless Steel
- NTC, PT and NI elements
- Wide selection range
- NEMA 4
- Ask for other elements if required

Model #	Options	Features	Cable/Probe Length	
S-Tn3-2	NTC 3k $\Omega$	B35/50: 3935	2m(6.5ft) cable	
S-Tn10-2	NTC 10k $\Omega$ Type II	B35/50: 3935		
S-Tn11-2	NTC 10k $\Omega$	B35/50: 3630		
S-Tn20-2	NTC 20k $\Omega$	B35/50: 4200		
S-Tn100-2	NTC 100k $\Omega$	B35/50: 4200		
S-Tp1-2	PT100	EN60751		
S-Tp2-2	PT1000	EN60751		
S-Tk5-2	NI1000	5000 ppm/K		
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SD-Tn3-12-2	NTC 3k $\Omega$	B35/50: 3935		2m(6.5ft) cable 12cm(4.7in) probe
SD-Tn10-12-2	NTC 10k $\Omega$ Type II	B35/50: 3935		
SD-Tn11-12-2	NTC 10k $\Omega$	B35/50: 3630		
SD-Tn20-12-2	NTC 20k $\Omega$	B35/50: 4200		
SD-Tn100-12-2	NTC 100k $\Omega$	B35/50: 4200		
SD-Tp1-12-2	PT100	EN60751		
SD-Tp2-12-2	PT1000	EN60751		
SD-Tk5-12-2	NI1000	5000 ppm/K		
<hr/>				
SD-Tn3-20-2	NTC 3k $\Omega$	B35/50: 3935	2m(6.5ft) cable 20cm(7.8in) probe	
SD-Tn10-20-2	NTC 10k $\Omega$ Type II	B35/50: 3935		
SD-Tn11-20-2	NTC 10k $\Omega$	B35/50: 3630		
SD-Tn20-20-2	NTC 20k $\Omega$	B35/50: 4200		
SD-Tn100-20-2	NTC 100k $\Omega$	B35/50: 4200		
SD-Tp1-20-2	PT100	EN60751		
SD-Tp2-20-2	PT1000	EN60751		
SD-Tk5-20-2	NI1000	5000 ppm/K		

NTC at 25°C (77°F)

### SRA, SDB and SOB Passive Temperature Sensors



SRA... Wall Mount



SDB... Duct Mount



SOB... Outdoor

▲ **Full Range of NPT, PT, NI Elements, Mounting Options**



AMC-1 Cable Gland



AMC-2 Conduit Fitting

- Passive temperature sensors.
- Rigid housing.
- NTC, PT and NI elements.
- Large range selection.
- Order cable gland or conduit connector as required.
- NTC at 25°C (77°F)

Model #	Options	Probe Length	Features
<b>Wall Mount</b>			
SRA-Tn3	NTC 3kΩ		B35/50: 3935
SRA-Tn10	NTC 10kΩ Type II		B35/50: 3935
SRA-Tn11	NTC 10kΩ		B35/50: 3630
SRA-Tn20	NTC 20kΩ		B35/50: 4200
SRA-Tn100	NTC 100kΩ		B35/50: 4200
SRA-Tp1	PT100		EN60751
SRA-Tp2	PT1000		EN60751
SRA-Tk5	NI1000		5000 ppm/K
<b>Duct Mount</b>			
SDB-Tn3-12	NTC 3kΩ	12cm(4.7in) probe	B35/50: 3935
SDB -Tn10-12	NTC 10kΩ Type II		B35/50: 3935
SDB -Tn11-12	NTC 10kΩ		B35/50: 3630
SDB -Tn20-12	NTC 20kΩ		B35/50: 4200
SDB -Tn100-12	NTC 100kΩ		B35/50: 4200
SDB-Tp1-12	PT100		EN60751
SDB-Tp2-12	PT1000		EN60751
SDB-Tk5-12	NI1000		5000 ppm/K
SDB-Tn3-20	NTC 3kΩ	20cm(7.8in) probe	B35/50: 3935
SDB -Tn10-20	NTC 10kΩ Type II		B35/50: 3935
SDB -Tn11-20	NTC 10kΩ		B35/50: 3630
SDB -Tn20-20	NTC 20kΩ		B35/50: 4200
SDB -Tn100-20	NTC 100kΩ		B35/50: 4200
SDB-Tp1-20	PT100		EN60751
SDB-Tp2-20	PT1000		EN60751
SDB-Tk5-20	NI1000		5000 ppm/K
<b>Outdoor (NEMA 4)</b>			
SOB-Tn3	NTC 3kΩ		B35/50: 3935
SOB-Tn10	NTC 10kΩ Type II		B35/50: 3935
SOB-Tn11	NTC 10kΩ		B35/50: 3630
SOB-Tn20	NTC 20kΩ		B35/50: 4200
SOB-Tn100	NTC 100kΩ		B35/50: 4200
SOB-Tp1	PT100		EN60751
SOB-Tp2	PT1000		EN60751
SOB-Tk5	NI1000		5000 ppm/K
AMC-1			Cable gland
AMC-2			Conduit connector: 1/2" NPT

### SRC, SDC, and SOC Temperature and Humidity Transmitters

▲ **Full Range of Housings, Humidity Elements, Output Ranges, Display Options, Electrical Connections**



SRC Room Mount



SOC Outdoor Mount



SDC Duct Mount



OPC-S Integrated Display



OPA-S Remote Display



AMC-1 Cable Gland



AMC-2 Conduit Fitting



AES Replaceable Element

- Programmable measuring and output range.
- Order specific transmitter, element, and connector for best fit!
- Selectable half- or full-wave power supply option.
- Remote display, min/max records with OPA-S.
- Choose desired humidity accuracy: 2, 3 or 5%.
- SDC and SOC with integrated display option.

Model #	Options	Features
<b>Wall Mount</b>		
SRC-T1	with element	Indoor temperature transmitter
SRC-H1	add AES-HT	Indoor humidity transmitter
SRC-H1T	add AES-HTx	Indoor humidity transmitter & temp. sensor
SRC- H1T1	add AES-HT	Indoor humidity & temperature transmitter
<b>Duct Mount</b>		
SDC-T1-08 SDC-T1-16 SDC-T1-24	with element add AMC	Duct temperature transmitter, 80mm(3.2in) probe 160mm(6.2in) probe 240mm(9.5in) probe
SDC-H1-08 SDC-H1-16	add AES-HT, AMC	Duct humidity transmitter, 80mm probe 160mm probe
SDC-H1T-08 SDC-H1T-16	add AES-HTx, AMC	Duct humidity transmitter & passive temp., 80mm probe 160mm probe
SDC-H1T1-08 SDC-H1T1-20	add AES-HT, AMC	Duct humidity & temperature transmitter, 80mm 160mm
<b>Outdoor (NEMA 4)</b>		
SOC-T1	with element	Outdoor temperature transmitter
SOC-H1	add AES-HT, AMC	Outdoor humidity transmitter
SOC-H1T	add AES-HTx, AMC	Outdoor humidity transmitter and temp. sensor
SOC- H1T1	add AES-HT, AMC	Outdoor humidity & temperature transmitter
<b>Electrical Connections</b>		
AMC-1		Cable gland
AMC-2		Conduit connector: NPT thread
<b>Display Options</b>		
OPC-S		Integrated display option for SDC, SOC transmitters
OPA-S		Remote display option for transmitters
<b>Humidity Elements (Accuracy: A5 - 5%, A3 - 3%, A2 - 2%)</b>		
AES-HTn3-(A5,A3,A2)		For SxC-H1T, NTC 3kΩ, B35/50: 3935
AES-HTn10-(A5,A3,A2)		For SxC-H1T, NTC 10kΩ Type II, B35/50: 3935
AES-HTn11-(A5,A3,A2)		For SxC-H1T, NTC 10kΩ, B35/50: 3630
AES-HTn20-(A5,A3,A2)		For SxC-H1T, NTC 20kΩ at 25°C, B35/50: 4200
AES-HTn100-(A5,A3,A2)		For SxC-H1T, NTC 100kΩ at 25°C, B35/50: 4200
AES-HTp1-(A5,A3,A2)		For SxC-H1T, PT100, EN60751
AES-HTp2-(A5,A3,A2)		For SxC-H1T, PT1000, EN60751
AES-HTk5-(A5,A3,A2)		For SxC-H1T, NI1000, 5000 ppm/K

### SDA-P Differential Pressure Sensor, SCC PT1000 Temperature Sensor

#### ▲ Differential Pressure Transmitter, PT1000 Temperature Sensor for Wide Range and Precise Measurement



SCC



SDA-P



OPC-S Integrated Display



OPA-S Remote Display



AMC-1  
Cable Gland










AMC-2  
Conduit Fitting

- SDA-P differential pressure transmitter.
- Integrated or remote display option (SCC)
- Programmable measuring and output range.
- SCC for large temperature range and exact measurement.
- Remote display, min/max records with OPA-S.
- 0-10VDC, 4-20mA selectable outputs.

Model #	Options	Features
SCC-T1-Tp2	-40-60°C (-40-140°F) -40-200°C (-40-392°F) 0-500°C (32-932°F)	PT1000 temperature transmitter Add 2 each AMC-1 or AMC-2
SDA-P1	0-300Pa (1.2in WC)	Differential pressure transmitter
SDA-P2	0-500Pa (2in WC)	
SDA-P3	0-1kPa (4in WC)	
SDA-P4	0-3kPa (12in WC)	
SDA-P5	0-5kPa (20in WC)	
OPC-S		Integrated display option for SCC transmitters
OPA-S		Display and programming interface for transmitters
AMC-1		Cable gland for SCC
AMC-2		Conduit connector: 1/2" NPT for SCC

### Accessories for Sensors and Controls

Housing	Model #	Options	Features
	AMI-S5	5 cm	Stainless steel pocket For SDB and SD type sensors Use up to 150°C (302°F)
	AMI-S7	7.5 cm	
	AMI-S10	10 cm	
	AMI-S15	15 cm	
	AMC-1		Cable gland
	AMC-2		Conduit connector: 1/2" NPT thread
	AER-C13		AO-DO Converter Converts 1 AO to 3 DO Adjustable switching points
	OPC-S		Integrated display option for SDC, SCC and SOC transmitters
	OPA-S		Display and programming interface for transmitters
	OPR-1		Remote Control device with LCD clock. For Deluxe controllers with clock/time schedules