Thermostat and Controller Glossary of Terms

ACCESS CODE – A 3-digit code that can be programmed into the thermostat or controller to limit access to the programming and scheduling functions.

ACCESS TO THE FAN MODE – A programming function giving the user access to the Fan Switch button on the face of the thermostat to set the *occupied fan mode*.

ACCESS TO THE SYSTEM MODE – A programming function giving the user access to the *System Switch* button on the front of the thermostat, with options of AUTO, HEAT, COOL of OFF.

ADJUSTMENT POTS: Small. Grey cube-shaped devices on the inside cover of the thermostat, *used to calibrate a sensor*.

ANALOG OUTPUT OFFSET VALUE: The number of degrees above or below the thermostat’s setpoint that a valve or damper will begin to modulate. Works similarly to a differential on a conventional thermostat.

AQUASTAT: Used in conjunction with Digital Input 2, Analog Output 1 will begin to modulate a valve. When DI-2 is open then AO-1 will operate in the cooling mode. When DI-2 closes, AO-1 will operate in the heating mode.

AUXILIARY HEATING: A secondary heating source used to supplement the heating provided by a heat pump, or also used as emergency heating.

AUXILIARY OUTPUT: A digital output signal wired to the other equipment. The digital output “opens” and “closes” based on the *occupied* and *unoccupied* times programmed into the thermostat.

AWG SHIELDED TWISTED: Wire that is twisted and covered by a shield which protects the wires from the radio frequency interference.

BAUD RATE: The per second signaling rate that the thermostat communicates on the *network*.

BUILT–IN DELAYS: Time delays and minimum run times which the fan, cooling and heating stages will run in order to protect equipment.

BUILT–IN SENSOR: The 100 ohm temperature sensor built in to each thermostat.
CALIBRATE A SENSOR: Use of the adjustment pots to insure that the sensor reading on the thermostat matches the actual temperature in the zone being measured.

COMMON RETURN PATHS: Denotes the A-to-A and B-to-B communication wiring that must be maintained throughout the network.

COMMON SIDE: Also referred to as ground.

COMPRESSOR: Equipment that provides mechanical cooling for a zone.
    Contact switch – a switch that sends a digital signal to the thermostat showing that a piece of equipment has been enabled.

CONTROL BASED ON DISCHARGE AIR: (SZ1017a & SZ1053 only) A method to control the temperature in the zone by maintaining a programmed temperature in the discharged air duct.

CONTROL MODE: Programming the thermostat to control the zone based on maintaining a temperature only, or adding a time factor.

CONTROLLER ADDRESS: The unique address programmed to each thermostat or controller on a network, from 000 to 255. 248 cannot be used.

COOL LOCKOUT W/ DI-2: A feature on DI-2, will insure that when an economizer is being used, only the first stage of cooling can be enabled.

COOLING DIFFERENTIAL: The number of degrees above the thermostat’s setpoint plus offset that will turn on a stage of cooling.

COOLING DIFFERENTIAL SETPOINT: The temperature of the zone arrived at by adding the thermostat’s setpoint plus offset to the cooling differential.

COOL LOCKOUT: The outdoor air temperature programmed into the thermostat that, below which, cooling stages will not be allowed to turn on.

COOL LOCKOUT TEMPURATURE: The outdoor air temperature programmed which will enable the cool lockout feature.

COOLING OFFSET: The number of degrees above the thermostat’s setpoint where a cooling stage will turn off.

COOLING SETPOINT: The temperature programmed to the thermostat or controller that will enable cooling when the zone goes above the temperature, based on the differentials established.
DAYLIGHT SAVINGS TIME: A feature on all 365-day thermostats which will automatically reset the clock twice per year on the dates when Daylight Savings Time occurs.

DEDICATED POWER: 24VAC power provided to a thermostat or controller using a dedicated transformer, NOT the unit transformer.

DELAY ON POWER UP: Number of seconds that the thermostat will delay providing a signal to HVAC equipment to turn on during a power-up, or upon going to an occupied schedule. Each thermostat should have a different number of seconds programmed so that power spikes can be avoided.

DI-1: A dry contact device providing a digital signal into the Digital Input 1 terminal block on the thermostat.

DI-2: A dry contact device providing a digital signal into the Digital Input 2 terminal block on the thermostat.

DI-3: A dry contact device providing a digital signal into the Digital Input 3 terminal block on the thermostat.

DIFFERENTIAL: The number of degrees above the cooling setpoint, or below the heating setpoint that cooling or heating will be enabled.

DIFFERENTIAL PRESSURE SWITCH: A device that measures the pressure within an air duct and sends a signal to the thermostat or controller if that pressure drops below its programmed value.

DIPSWITCH: Manual switches within the thermostat or controller that enabled sensor inputs, or enable or disable functions to be accessed from the face on the thermostat or controller.

DIRECT ACTION: (SZ1017a/51/53 only) Places the valve or damper at its minimum position at 4mA (or 0mA) and its maximum position at 20mA.

DIRECT ACTION ECONOMIZER CONTROL: (SZ1041 & SZ1051 only) Places the damper on the economizer at its minimum position 4mA (or 0mA) and its maximum position at 20mA.

DISCHARGE AIR FUNCTION: A risk management function to turn off heating or cooling when the temperature in the discharge air duct goes above or below its programmed values.

DISCHARGE AIR PROPORTIONAL BAND: (SZ1041 & SZ1051 only) The number of degrees above the cooling setpoint that will modulate the economizer to its fully open position.
DISCHARGE AIR SENSOR: A platinum RTD sensor measuring the temperature in the discharge air duct.

DISCHARGE AIR SETPOINT: (SZ1017a & SZ1053 only) The temperature that the thermostat will maintain the discharge air temperature when control based on discharge air.

DISCHARGE AIR TEMPERATURE: The temperature within the discharge air duct

DISCHARGE HIGH LIMIT: The temperature that the heating will turn off, and not turn on again until the temperature in the discharge air duct raises 3°C below the high limit.

DISCHARGE LOW LIMIT: The temperature that the cooling will turn off, and not turn on again until the temperature in the discharge air duct raises 3°C below that low limit.

ECONOMIZER: Equipment used in conjunction with HVAC equipment that modulates a damper in order to utilize cooler outdoor air when the zone is calling for cooling.

ECONOMIZER CONTROL: (SZ1041 & SZ1051 only) An output from the thermostat that modulates the damper on an economizer when there is both a call for cooling, and the outdoor air temperature is sufficient to provide supplemental cooling.

ELECTRICAL NOISE: Interference that is created by a magnetic field such as a motor or florescent lighting.

EXTERNAL OVERRIDE FUNCTION: Allows the thermostat or controller to utilize it’s own internal schedule until such a time it receives a digital input signal which overrides the thermostat or controller into it’s occupied schedule.

EXTERNAL TIME CLOCK FUNCTION: Thermostat will go occupied or unoccupied based on a digital input, not on its internal schedule.

FAN MODE: The selections available to operate the fan during occupied or unoccupied periods

FAN PROVING: A risk management function to insure that the fan us running while heat or cooling is being called for by the thermostat. If the fan is not running when it should, the HVAC unit will be turned off and the SERVICE LED will go ON.

FAN SWITCH: A button on the front of the thermostat to change the fan status during occupied periods.
FILTER STATUS FUNCTION: Using a signal provided by a *differential pressure switch* mounted in the duct, the thermostat can monitor the air flow status of the filter and create a call for service if the air flow goes below the switch’s programmed limit.

HALF-WAVE RECTIFIED: When converting from AC power to DC, the negative voltages are eliminated.

HEAT LOW LIMIT: (SZ1017 & SZ1053 only) When using AO-1 to *control based on discharged air*, this function will maintain the heating *discharge air setpoint* until there is a call for cooling from the thermostat.

HEATING DIFFERENTIAL: The number of degrees below the heating *setpoint* that a heating stage will be enabled.

HEATING DIFFERENTIAL SETPOINT: The temperature that the stage of heating will turn on.

HEAT LOCKOUT: The outdoor air temperature programmed into the thermostat that, above which heating stages will not be allowed to turn on.

HEATING LOCKOUT TEMPERATURE: The outdoor air temperature programmed to enable the heat lockout feature.

HEATING OFFSET: The number of degrees below the heating setpoint that the heating stage will turn off.

HEATING SETPOINT: The temperature programmed to enable heating when the zone goes below that temperature, based on the differentials established.

HOLIDAY PERIOD: On a 365-day thermostat, the number of days that a *holiday schedule* will operate.

HOLIDAY SCHEDULES: On a 365-day thermostat or controller, a schedule separate from its normal 7 day schedule that can be programmed, and then set for a number of days or a “holiday period”

JUMPER: A wire or device connecting two different contact points. Keypad Access to programming, time clock, and scheduling functions from the keypad interface of the thermostat or controller.
LOCKOUT KEYPAD ACCESS: A programming or dipswitch feature that can lockout user access to the keypad interface of the thermostat or controller for programming and/or the time clock and scheduling.

MIDPOINT: (SZ1017a/51/53 only) A selection in programming of the aquastat function so that both a heat and cool valve can be modulated from a single output.

MINIMUM DAMPER POSITIN: (SZ1041 & SZ1051 only) On an economizer, the minimum position that the damper must be open to allow a constant supply of fresh outdoor air.

MINIMUM OR MAXIMUM READING: A thermostat reading either 40° (minimum) or 90° (maximum), indicating the need to troubleshoot the device. See FAQ’s for troubleshooting.

MODEM: A device that allows the network to transmit data over a standard telephone line. It converts digital pulses to audio tones that an analog telephone line is set up to handle, and vice versa

MODULATING OUTPUT: (SZ1017a/41/51/53 only) An output that sends a 4-20mA (or optional 0-20mA) analog signal to another device or piece of equipment.

MODULATING OUTPUT PROPORTIONAL BAND: (SZ1017a/51/53 only) The number of degrees away from the setpoint that a valve or damper will operate from it’s minimum (or closed) position at setpoint, to fully open.

MODULATING OUTPUT RANGE: (SZ1017a/41/51/53 only) Either 4-20mA or 0-20mA.

MONITOR: A function in programming that will allow a digital input, such as temperature, to simply be monitored without initiating a response.

NETWORK: A series of thermostats or controller, linked together through communications wiring to a modem device or communications center such as the TCS QD2020 series.

NETWORK WIRING: The communications wiring that connects the thermostat and controllers to form a network.

OCCUPIED: The scheduled times when the building, space or zone will be operated based on the occupied setpoint.

OCCUPIED COOL DIFFERENTIAL SETPOINT: The temperature above the occupied cool setpoint plus offset that cooling will engage.
OCCUPIED COOL SETPOINT: The temperature that, if exceeded, the equipment will begin to cool that space in its occupied mode.

OCCUPIED HEAT DIFFERENTIALS SETPOINT: The temperature below the occupied heat setpoint minus offset that heating will engage.

OCCUPIED HEAT SETPOINT: The temperature that, if the zone goes below, the equipment will begin to heat the space in its occupied mode.

OCCUPIED SETPOINT: The two setpoints for heating and cooling that, if exceeded, will engage equipment to bring the zone back to the setpoint. Usually, this occupied range will be within a few degrees, such as 72° occupied cool setpoint and a 70° occupied heat setpoint to maintain comfort levels.

OCCUPIED TIMES: The times of day that the thermostat will operate equipment at the occupied setpoints.

OFFSET: The number of degrees above the cooling setpoint, or below the heating setpoint, that a stage will turn off.

OUTDOOR AIR ECONOMIZER SETPOINT: (SZ1041 & SZ1051 only) The minimum outdoor air temperature that would be required to enable the economizer.

OUTDOOR AIR FUNCTION: The function of the thermostat which reads the outdoor air temperature, then disables heating stages if the outdoor air reaches the heating lockout, or disables cooling stages if the outdoor air reaches the cooling lockout.

OUTDOOR AIR SENSOR: A platinum RTD temperature that reads the outdoor air temperature for monitoring, or to enable various functions.

OUTDOOR AIR TEMPERATURE: The reading provided by the Outdoor Air Sensor.

OUTDOOR COOLING LOCKOUT: As part of the Outdoor Air Function, the outdoor air temperature which, when reached, “locks out” stages of cooling to insure cooling stages are not running unnecessarily on cooler days.

OUTDOOR HEATING LOCKOUT: As part of the Outdoor Air Function, the outdoor air temperature which, when reached, “locks out” stages of heating to insure heating stages are not running unnecessarily on warmer days.

OVERRIDE: The function provided by the “Override button” on the front of the thermostat or controller which changes the setpoints from their unoccupied to occupied setpoints for a pre-programmed period of time.
OVERRIDE TIME: The pre-programmed number of minutes that the thermostat or controller will remain in the occupied mode when the “Override button” is pressed

P&I: A function which controls the zone based on both the setpoints and a time factor. If the zone remains above the cooling setpoint, but below the cooling differential thus not engaging any cooling of the zone, the differential and offsets will move 1° closer to the setpoint every five minutes until the cooling engages and the zone returns to it’s cooling setpoint. This is also the case for heating.

POLARITY: Maintaining +24V to +24V and -24V to -24V power connections and A to A and B to B communications wiring throughout a network.

PROGRAMMING CODE: The three digit code that, if required, needs to be entered for programming and/or scheduling.

REMOTE SENSORS: Any sensors that are NOT built-in to a thermostat or controller and wired to one of the appropriate inputs.

RESET RADIO FACTOR: (SZ1017a & SZ1053 only) When control based on discharge air, the number of degrees the discharge air is raised or lowered when the temperature in the zone changes 1° from setpoint.

REVELATION PROFESSIONAL: A TCS/Basys Controls PC based network interface for programming, scheduling and monitoring. Can be used on a direct connection to a PC on site, or on a dial-in network over a standard phone line.

REVERSE ACTION: Places the valve or damper at it’s minimum position at 20 mA, and it’s maximum position at 4 mA (or 0mA).

REVERSE ACTION ECONOMIZER CONTROL: (SZ1041 & SZ 1051 only) Places the damper on the economizer at it’s minimum position at 20 mA and it’s maximum position at 4 mA (or 0mA).

SCHEDULING: The function of establishing occupied and unoccupied times for each day of the week.

SERVICE: An LED light that indicates a need for service based on discharge air limit, fan failure, filter status, or when other input on DI-2 which programmed for service becomes closed.
SETPOINT: The temperatures established to maintain a zone, and if exceeded will engage cooling or heating functions.

SETPOINT ADJUST: If enabled, will allow the user a programmed number of degrees to adjust the zone temperature by pressing the “Warmer” and “Cooler” buttons on the face of the thermostat or controller.

SETPOINT SHIFT: If enabled, the number of degrees the cooling setpoint will raise and heating setpoint will lower when an input on DI-2 closes.

SHARE A REMOTE OUTDOOR AIR SENSOR: The ability of a network to share the reading from the outdoor air sensor input from one thermostat or controller to any other thermostat or controller throughout a network as long as the thermostat or controller has the outdoor air function.

SMART RECOVERY: The function of the thermostat to gradually “ramp” the zone to it’s setpoint. Prior to it’s occupied time, the thermostat will insure that the zone is 1° closer to setpoint every 15 minutes. This will have the zone to its setpoint temperature at the beginning of its occupied time without the need to run HVAC equipment excessively in order to do so.

SYSTEM MODE: The five selections that the thermostat will base operation of the HVAC equipment. See FAQ for further information.

SYSTEM SWITCH: If enabled, the user will be able to change the system mode from the face of the thermostat.

TERMINAL BLOCKS: The terminals where wires are attached to the thermostat or controller. Each terminal block can be detached from the posts for easier installation of wiring.

THROTTLING RANGE: (SZ1041 & SZ1051 only) Same as discharge air proportional band. The number of degrees above the cooling setpoint that will modulate the economizer damper to it’s fully open position.

TIME CLOCK: The time of day (and date on 365-day models) that the thermostat or controller can be programmed to maintain occupied and unoccupied schedules.

TIME CLOCK and SCHEDULING CODES: If required, a 3-digit code that would be required to access time clock and scheduling functions from the face of the thermostat or controller.
UBIQUITY: The TCS internet ASP application for interfacing with TCS control networks.

UNIT TRANSFORMER: The 24V transformer on the HVAC equipment that may be used to provide power for thermostats or controllers if used as stand-alone ONLY.

UNOCCUPIED: The schedule times when the building, space or zone will be operated based on the unoccupied setpoints.

UNOCCUPIED ACTION: (SZ1017a/51/53 only) Choosing to maintain an analog output as modulating, fully open or fully closed while unoccupied.

UNOCCUPIED COOL DIFFERENTIAL SETPOINT: The temperature above the unoccupied cool setpoint plus offset that cooling will engage.

UNOCCUPIED COOL SETPOINT: The temperature that, if exceeded, the equipment will begin to cool the space in its unoccupied mode.

UNOCCUPIED HEAT DIFFERENTIAL SETPOINT: The temperature below the unoccupied heat setpoint plus offset that heating will engage.

UNOCCUPIED HEAT SETPOINT: The temperature that, if the zone goes below, the equipment will begin to heat the space in its unoccupied mode.

UNOCCUPIED SETPOINTS: The two setpoint for heating and cooling that, if exceeded, will engage equipment to bring the space back to the setpoint. Usually, these unoccupied settings will be a broad range of degrees, such as a 80° unoccupied cool setpoint and a 60° unoccupied heat setpoint. In this way energy is not wasted while the zone is unoccupied, but equipment or contents within the zone are protected.