Differential temperature controllers
iSolar
series 257

Function

The iSolar series solar thermal controllers are multi-functional temperature differential controllers that provide complete control of the solar thermal system for safe and long-lasting operation. The iSolar microprocessor controller monitors and controls thermal solar energy systems by means of a collector sensor and a storage tank sensor. The controllers also implements important system monitoring and safety functions. The system parameters and measured values can be viewed and altered by the large LCD display. The controller is equipped for up to four temperature sensor inputs and one or two outputs (some models) for activating the solar circuit pump and second output for activating a valve or second pump.

Tested and Approved by TÜV Rheinland as an approved U.S. Nationally Recognized Testing Laboratory (NRTL) Exceeds or is equivalent to:
UL 60730-1A
CAN/CSA E60730-1

Product range

Code 257210A	iSolar 1 with 1 pump control relay, includes 2 temperature sensors, data connection
Code 257220A	iSolar 2 with 1 pump speed control triac, includes 2 temperature sensors, data connection
Code 257230A	iSolar 3 with 2 control relays for solar pump and second pump or valve, includes 2 sensors, data connection
Code 257240A	iSolar 4 with 1 pump speed triac and 1 control relay for second pump or valve, includes 2 sensors, data connection
Code 257260A	iSolar Plus with 2 pump speed triacs, for second pump or valve, includes 4 sensors, data connection
Code 257260A PV1	iSolar Plus 12V with 2 pump control relay, for second pump or valve, includes 4 sensors, data connection
Code 257260A PV2	iSolar Plus 24V with 2 pump control relay, for second pump or valve, includes 4 sensors, data connection

Technical specifications

Housing plastic:	PC-ABS
Protection type:	Indoor only
Mounting:	wall or in 255 series pump station
Display:	LCD with symbols and text
Interface:	three soft push buttons
Inputs:	4 temperature sensors
Outputs:	1 or 2 triac or standard relays
Switching relay capacities:	1 (1) A 115VAC
Power supply:	115 VAC – 60 Hz 12V – 24V
Power consumption:	1W, 1.5VA
Data connection:	V-Bus

Performance

ΔT adjustment range:	2–40° ΔT (1–20°K)
Min. temperature differential:	2° ΔT (1°K)
Hysteresis:	2° ΔT, ± 1° ΔT (1°K, ± .5°K)
Max. tank temperature range:	35–205°F (2–95°C)
Max. collector temperature range:	210–375°F (100–190°C)
Emergency shut down of the collector:	230–395°F (110–200°C)
Min. collector temperature range:	50–195°F (10–90°C)
Antifreeze temperature option:	15–50°F (-10–10°C)
kWh (BTU) flow input:	0–5 gpm (0–20 lpm)
Agency approvals:	cTÜVus

Temperature sensors

Platinum RTD type:	1,000 ohm
Collector sensor working range:	-58–355°F (-50–180°C)
Tank sensor working range:	15–175°F (-10–80°C)
Length of collector black cable:	60 in. (1.5 m)
Length of tank sensor gray cable:	95 in. (2.5 m)

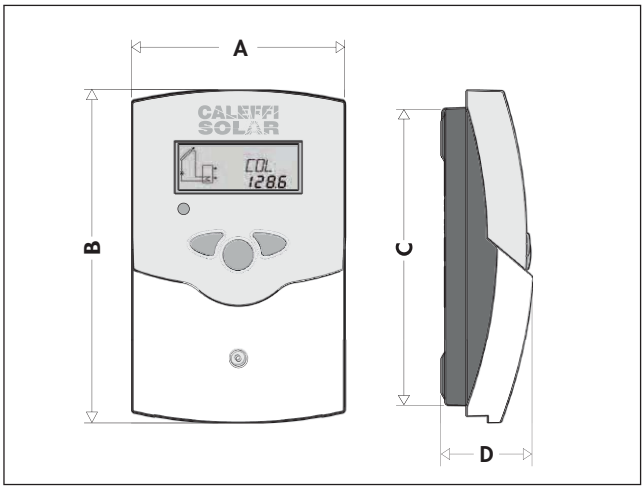
Resistance values for sensors subject to the temperature

°F	14	23	32	41	50	59	68	77	86
Ω	961	980	1000	1019	1039	1058	1078	1097	1117

°F	95	104	113	122	131	140	149	158	167
Ω	1136	1155	1175	1194	1213	1232	1252	1271	1290

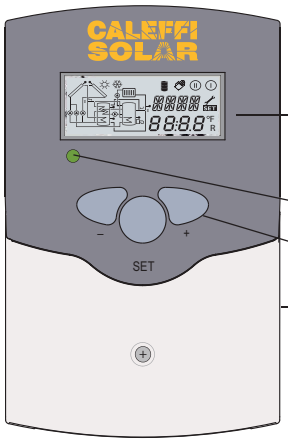
°F	176	185	194	203	212	221	230	239	248
Ω	1309	1328	1347	1366	1385	1404	1423	1442	1461

Dimensions



Code	A	B	C	D	Weight (lb)
257series	4 3/8"	6 3/4"	6"	2"	0.9

Characteristics



User-friendly operation

System screen LCD display with 16-segment display and 8 symbols for system status

Operating LED control lamp

3 push-button controls

Attractive design and compact dimensions

Easy to install

Pump speed control functions (iSolar 2, 4 & Plus)

Pump speed control can improve system efficiency by reducing the flow to the collectors on cloudy days to improve solar thermal transfer and reduce electrical consumption. This is achieved by the differential temperature value between the collectors and storage tank.

If the value for the ΔT switch-on is reached (e.g. ΔT on = 9°), the pump will start with 100% pump speed for 10 seconds, then reduce the speed to the adjusted minimum pump speed (min. pump speed = 30 %, adjustable). If the temp-erature difference reaches the set value (e.g. ΔT Set = 18°), pump speed will increase by 10 %. At any further rise of 3° ΔT the pump speed will increase by 10% until the maximum of 100% is reached.

Standard operation functions

	iSolar 1 120V	*iSolar 2 120V*	*iSolar 3 120V*	*iSolar 4 120V*	*iSolar Plus 120V*	*iSolar Plus PV 12 or 24V*
Selectable programs	1	1	3	3	10	10
Standard relay output	1	0	2	1	0	2
Speed control triac output (30 to 100%)	0	1	0	1	2	0
Sensor inputs (temperature)	4	4	4	4	4	4
Max. solar collector arrays	1	1	1	1	2	2
Max. solar storage tanks	1	1	1	1	2	2
Two tank priority logic	no	no	no	no	yes	yes
Second deltaT-function	no	no	no	no	yes	yes
Drainback pump speed control	no	yes	no	yes	yes	no
Drainback booster pump (second relay)	no	no	yes	yes	yes	yes
Thermostat function (second relay)	no	no	yes	yes	yes	yes
Backup heat function (second relay)	no	no	yes	yes	yes	yes
Heat dump function (second relay)	no	no	yes	yes	yes	yes
Real time clock (timer function)	no	no	yes	yes	yes	yes
Collector freeze protection	yes	yes	yes	yes	yes	yes
Evacuated tube collector function	yes	yes	yes	yes	yes	yes
Min. collector temperature	yes	yes	yes	yes	yes	yes
Collector cooling functions	yes	yes	yes	yes	yes	yes
Tank (night time) cooling	yes	yes	yes	yes	yes	yes
Emergency shutdown functions	yes	yes	yes	yes	yes	yes
Operating hours counter	yes	yes	yes	yes	yes	yes
Energy metering measurement	yes	yes	yes	yes	yes	yes
Vbus data commincation	yes	yes	yes	yes	yes	yes
Code	257210A	257220A	257230A	257240A	257260A	257260A PV1 or PV2