SOLAR CIRCUIT AND BOILER INTEGRATION KIT WITH MOTORIZED BALL VALVE
KSCM-S

de pala
Italian OEM Technology

OPERATING INSTRUCTIONS

☐ FUNCTIONING

It's a compact kit designed to manage the domestic hot water production from solar panels in the best way.
In case of low temperature of water from the solar panel, the deviating valve sends water to the boiler for temperature integration so that comfort is always guaranteed.

In case of temperature of water from solar panel too high or cold water missing from water network, the kit immediatly closes the hot water in order to prevent burns.
The water coming from the solar panel is deviated to the boiler or the user according to its temperature measured by a sensor and a control unit. The deviation set point is 60 °C and it is adjustable with the setting of the control unit (valve thermostat **A02**).

It's possible to set the DHW temperature t_2 rotating the yellow knob on the thermostatic valve. The numbers printed on the knob correspond to the following temperatures:

Knob position	1	2	3	4	5
Temperature t_2 (°C)	30	38	42	52	65

After the temperature is set, it's possible to lock the yellow knob to avoid accidental regulations, by screwing the grub screw on the knob.

THREE WAYS VALVE LATERAL DIVERTING
- Valve body: brass UNI EN 12165 CW617N nickel plated
- Rod: brass UNI EN 12164 CW614N with double EPDM O-RING and PTFE seal
- Ball: brass UNI EN 12165 CW617N nickel-chromium plated
- Seals: PTFE with EPDM O-RING
- Connections: 3/4" pipe unions
- Max. operating pressure: 10 bar
- Max. differential pressure: Δp = 4 bar
- Fluid temperature range: 0 ÷ 100 °C
- Kv: 10,3 m³/h (straight way) 3,5 m³/h (later way)

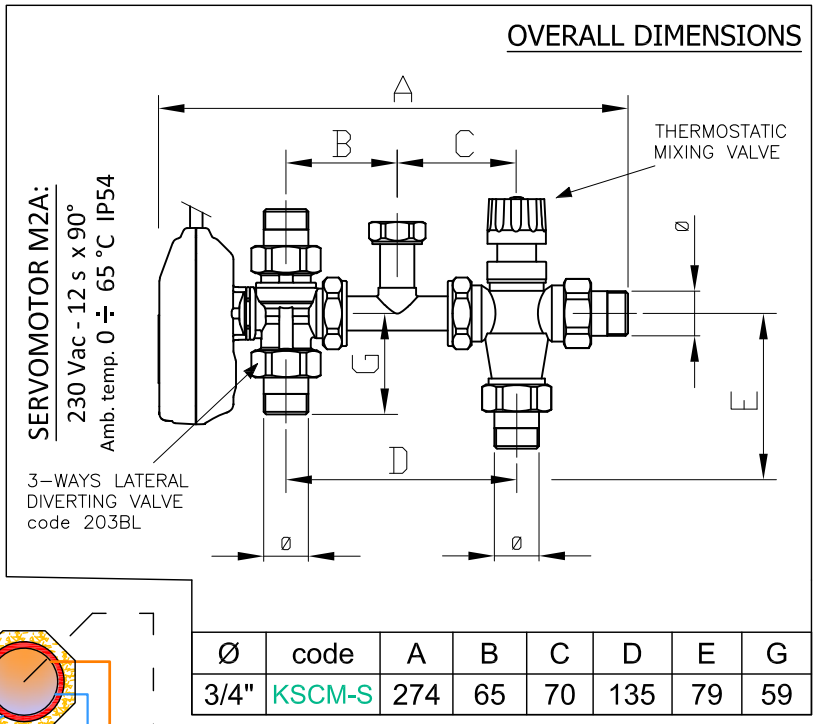
☐ CALIBRATION

If the water temperature to the user is different from the expected temperature according to the knob position it's possible to make the calibration:
- rotate the knob until the water temperature is exactly 42 °C;
- remove first the screw, then the knob;
- replace the knob with number 3 aligned to the mark on the body valve;
- tighten the know with the screw.

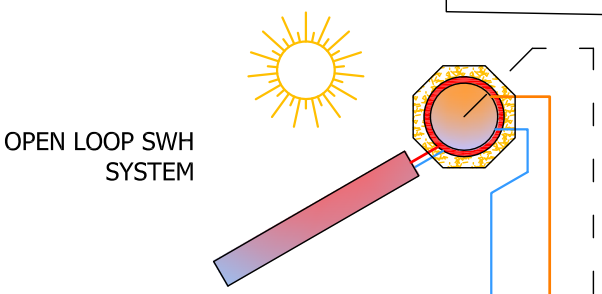
THERMOSTATIC VALVE

- Valve body: brass UNI EN 12165 CW617N nickel plated
- Shutter and inner parts: brass UNI EN 12164 CW614N
- O-RING: EPDM
- Temperature sensor: expansible wax
- Springs: stainless steel AISI 302
- Knob: nylon PA6
- Connections: 3/4" G pipe unions
- Max. operating pressure: 10 bar
- Reccomended pressure: 1 ÷ 5°bar
- Max. pressure difference between inlets: 0,5 bar (if more, install check valves at inlets)
- Max. inlet temperature: 100 °C
- Set point: 30÷65°C
- Kv: 3,2 m³/h

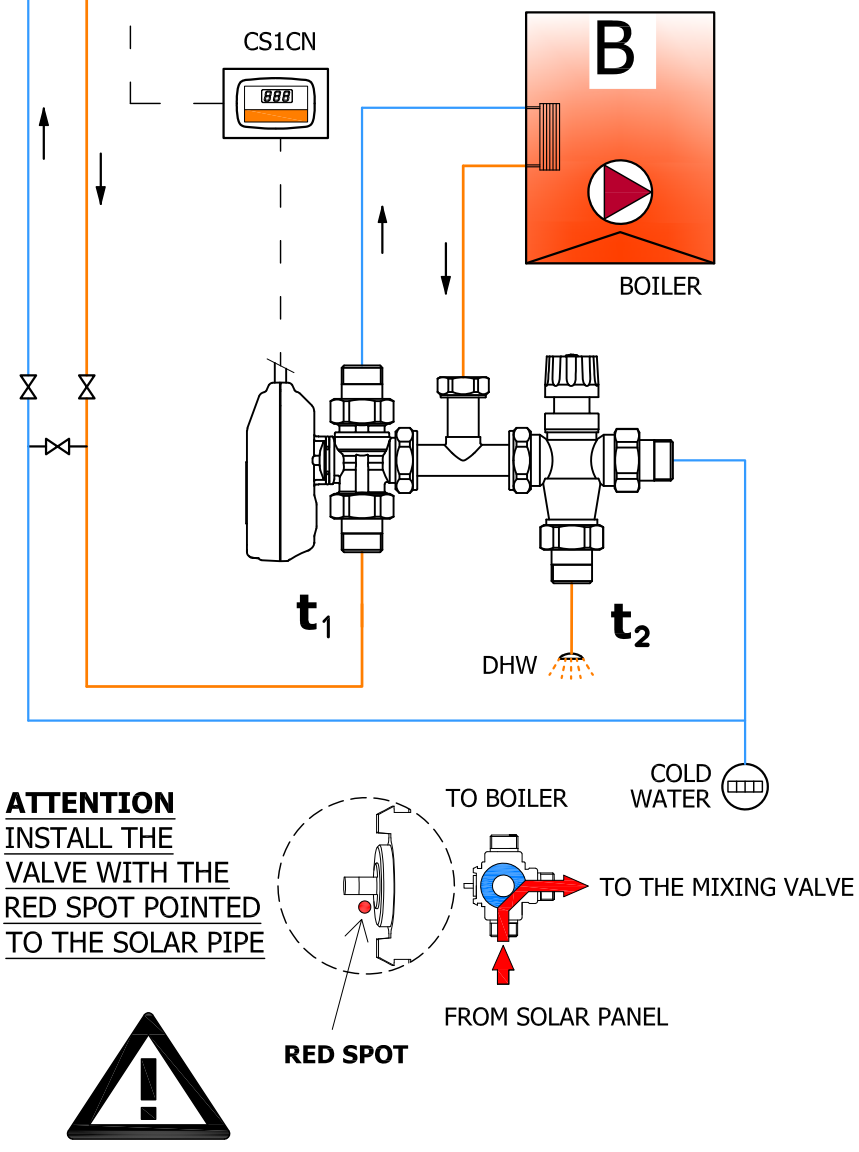
OVERALL DIMENSIONS



Ø	code	A	B	C	D	E	G
3/4"	KSCM-S	274	65	70	135	79	59



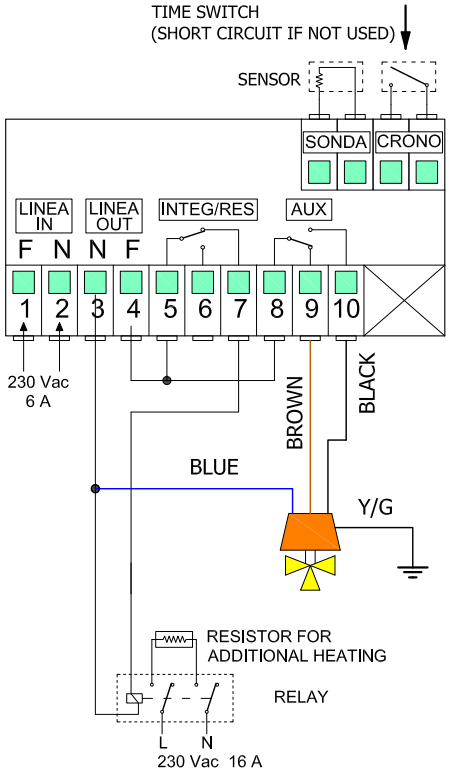
HYDRAULIC DIAGRAM



CONTROL UNIT CS1CN ELECTRIC DIAGRAM

WARNING

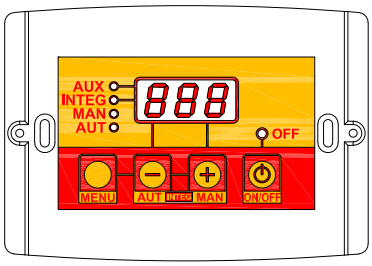
Do not install the cable of the sensor and of the power supply together.
Install an automatic circuit breaker according to the current regulations.
The installation and connection of the control unit must be executed by skilled personell and according to the current regulations.
Check properly that the power supply is switched off before making any electrical connections.



ATTENTION
INSTALL THE VALVE WITH THE RED SPOT POINTED TO THE SOLAR PIPE

ELECTRONIC CONTROL UNIT FOR OPEN LOOP SHW SYSTEMS

Mod. CS1CN inbox type



Functioning leds

AUX ● 3 ways deviating valve
INTEG ● Resistor or boiler for additional heating
MAN ● Manual mode
AUT ● Automatic mode

SUPPLY VOLTAGE: 230 Vac - 50 Hz
POWER CONSUMPTION: 2 W
DIMENSIONS: 120 x 80 x 50 (mm)

The display shows the temperature detected by the sensor and led lights show connected devices and signal failures.

INPUTS	SONDA	Temperature sensor	Working temperature 0 ÷ 100 °C	Type NTC 10 kΩ at 25 °C		
	CRONO	Terminals to turn on / turn off the control unit by a remote (time) switch				
	LINEA IN	Supply voltage 230 Vca - 50 Hz		1 (PHASE)	2 (NEUT.)	
OUTPUTS	LINEA OUT	With control unit ON, 230 Vca output protected by fuse (max 500 W)		3 (NEUT.)	4(PHASE)	
	INTEG / RES	Additional heating	Free potential terminals (max 5 at 250 Vac)	5 (COM)	6 (N.C.)	7 (N.O.)
	AUX	Auxiliary terminals	Free potential terminals (max 5 at 250 Vac)	8 (COM)	9 (N.C.)	10 (N.O.)

The electronic control unit is produced according to the standards EN 60730-1 50081-1 e EN 60730-1 A1 50081-2.

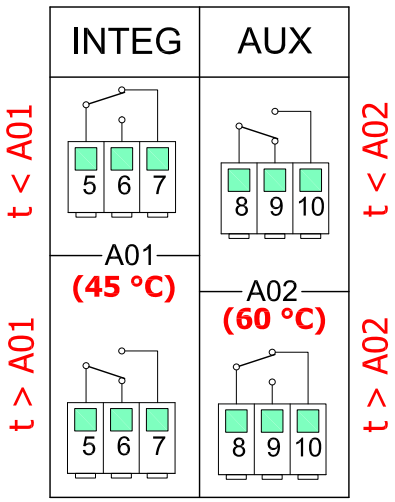
1. ON/OFF
Push for some seconds ⏻ button to switch ON / OFF the controller
- The state OFF is signaled with the lighting of led ● OFF

2. ALARM FUNCTION
If the temperature read by the sensor is over the value Alarm thermostat **A11 (90°C):**
- acoustic and visual signal are activated
- acoustic signal can be SUSPENDED for 5 minutes by pushing any button (**SILENCE** function)
- after 5 minutes, if the alarm condition is still ON, the acoustic signal starts again

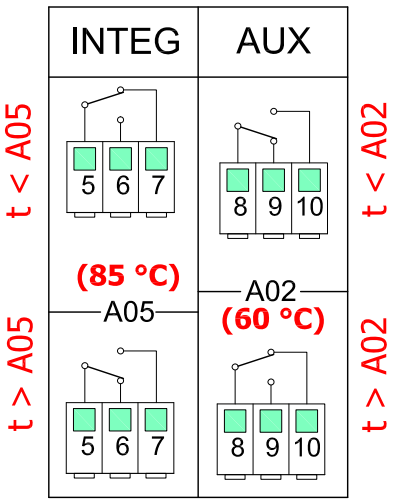
3. STANDBY FUNCTION
If the system is **OFF** in condition of **ALLARM** with t > **A11 (90°C):**
- the control unit turns **ON**, the acoustic and visual signal are activated and the valve deviates to DHW outlet.

4. Functioning of additional heating 'INTEG/RES'
This output is reserved to control an additional heating device, i.e. a resistor, an electric water heater or others.
By pushing **MAN** button (**manual mode**) with led **MAN** on, the additional heating device is on and it will turn off once temperature overcomes **A05 (85 °C).**
By pushing **AUT** button (**automatic mode**) with led **AUT** on, the additional heating device is on and it will turn off once temperature overcomes **A01 (45 °C).**

AUTOMATIC MODE



MANUAL MODE

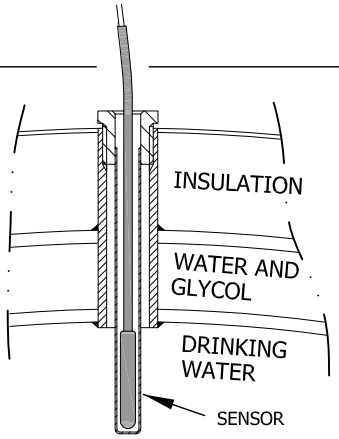


5. Functioning of 'AUX' output
This output is reserved to control a 3 ways motorised deviating valve.
Until the sensor measures a temperature lower than **A02 (60 °C)** the valve is deviated toward the boiler.
With temperatures higher than **A02** the valve deviates towards the DHW outlet: this is valid on both manual and automatic mode.

TEMPERATURE SENSOR (cod. SBF10N)

It measures and checks the temperature of the water inside the solar panel. It is made of a thermoplastic capsule Ø 6 x 30 mm and of a cable Ø 3.2 mm diameter, lenght 2 m, bipolar (2 x 0.30 mm²). Inside the capsule there is a thermoresistive sensor type **NTC 10 kΩ ± 1% a 25 °C.** The temperature sensor works in the range of temperature 0÷100 °C, it has a time of response of about 6 sec, it is electrically insulated >20 MΩ at 500 Vac and IP68 protected.

It must be installed inside an inspection pit Ø1/2" that is merged into the tank of solar panel. In case of necessity the con- nection can be extended up to **15 m**, by using a bipolar cable (2x0.50 mm²).



6. MAIN MENU

Enter MENU through the click of the (MENU) **(MENU)** button. Value of the first thermostat is shown while the related led blinks. Scroll the thermostat through the (MENU) **(MENU)** button.

To modify: choose the thermostat, modify the value through the ⊖ (decrease) / ⊕ (increase) buttons. Memorise the value through the (MENU) **(MENU)** button.

To exit: from MENU wait about 5 seconds or push (MENU) **(MENU)** button.

MAIN MENU PARAMETERS		LED	TERMINALS	MIN	DEFAULT	MAX	TIPICAL VALUES
Additional heating thermostat 'RES'	A01	INTEG	5, 6, 7	20	45	85	45
Auxiliary (valve) thermostat 'AUX'	A02	AUX	8, 9, 10	20	60	85	60

7. Output management 'LINEA OUT'

The 230 Vac output is activated when the control unit is ON and it can be used to supply load within the capacity of the FUSE (max 500 W).

8. Input 'CRONO'

It is possible to connect a daily or weekly time switch that at the first ON/OFF cycle synchronizes its function with the control unit; so the control unit will be turn on or turn of by the time switch. The manual operation has priority over the time switch. **If the time switch is not used, please short-circuit the terminals CRONO.**

9. INSTALLER MENU (the admission to this menu is only for INSTALLERS or EXPERT PERSONNEL, because modified parameters could damage the product or could make the product not fit for the applications)

To enter the MENU push together buttons (MENU) **(MENU)** and ⏻ for about 5 seconds

To visualize the parameters use buttons ⊕ and ⊖

To visualize the parameter value push button (MENU) **(MENU)**

To modify the value push buttons ⊕ or ⊖ together with button (MENU) **(MENU)**

To see the list of the parameters and memorize push button (MENU) **(MENU)**

To exit and memorize wait about 10 seconds

INSTALLER MENU PARAMETERS		SYMBOL	MIN	DEFAULT	MAX	TIPICAL VALUES
SECURITY Thermostat	(°C)	A 05	20	85	99	85
Hysteresis of INTEG/RES Thermostat **A01**	(°C)	A 06	1	2	10	2
Hysteresis of AUX Thermostat **A02**	(°C)	A 07	1	2	10	2
Hysteresis of SECURITY Thermostat **A05**	(°C)	A 10	1	2	10	2
ALARM Thermostat	(°C)	A 11	20	90	99	90

10. SIGNAL FAILURE OR ALARMS

Blinking message **LO** (out of range to the low temperature - under 0°C) = **SENSOR BROKEN**

Blinking message **HI** (out of range to the high temperature - over 100°C) = **SENSOR IN SHORT CIRCUIT**

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