

STAR ECOTRONICS s.r.l.

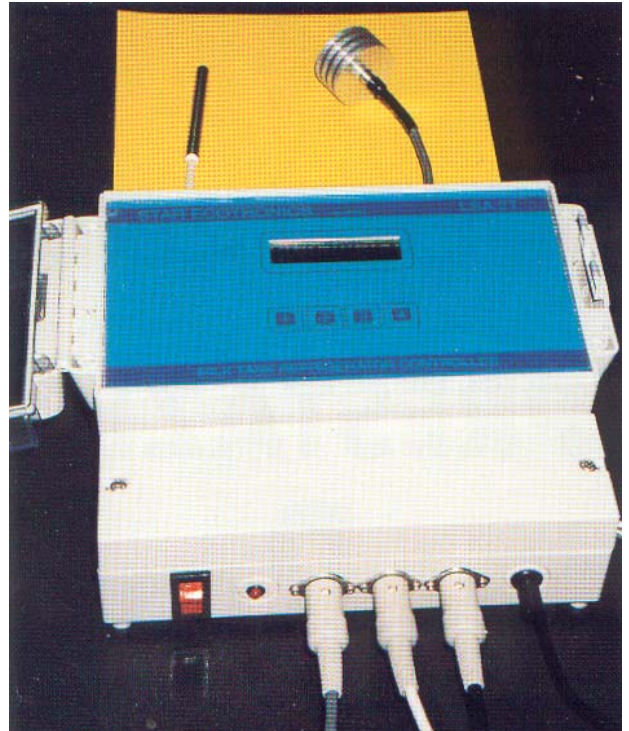
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MILK REFRIGERATED TANK CONTROLLER

The LSA-2T is a patented unique instrument able to calculate the rate of cooling of milk in the bulk tank and to display the cooling curve graphically on an LCD.

The LSA-2T incorporates the following components:

- An acquisition unit coupled to a data processor.
- A temperature sensitive probe incorporating a semiconductor sensor that is calibrated by the software. It is made of stainless steel with a plastic coating that makes it suitable for contact with food products.
- It is graduated to enable it to be correctly positioned in the centre of the bulk tank.
- A temperature sensitive probe made of aluminium for an optimum response time, which is positioned at the air intake of the refrigerator condenser unit to measure the ambient air temperature.
- An interface RS232 connection lead to download the data enabling the cooling time to be recorded and the cooling curve displayed (This uses the same software as the DAS-M).
- An LCD having 4 key pads used to enter the test parameters and capable of displaying 16 characters on two lines.



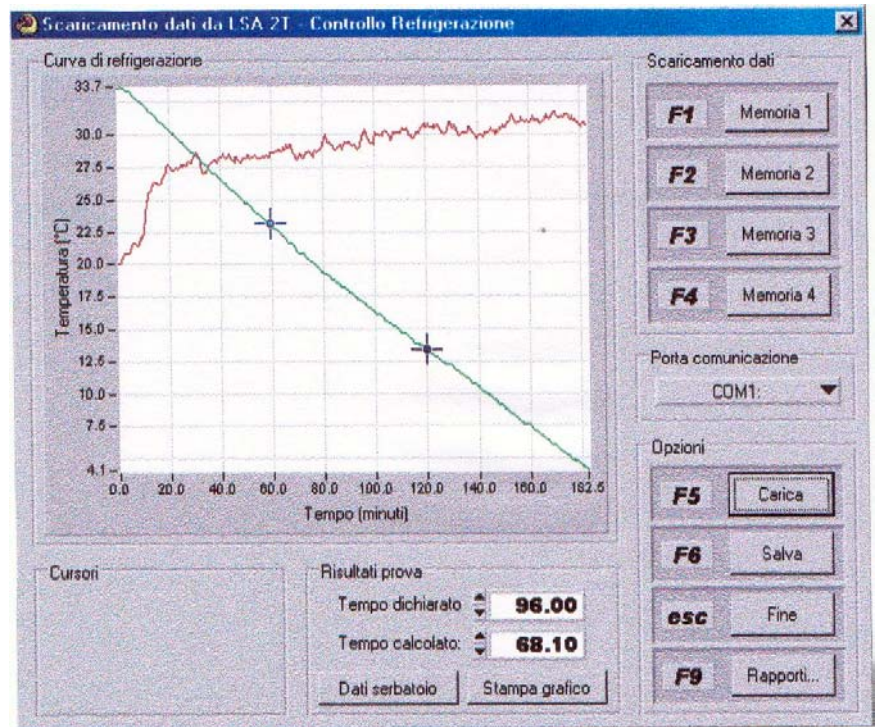
**When used with the DAS-M, the LSA-2T provides a complete report on the working of the milk-
ing plant.**

Using the key pad the instrument is easily operated by inputting the following information about the bulk tank.

1. The tank classification.
2. The power of the compressor or the cooling time in minutes to achieve the target temperature when the power of the compressor is not stated.
3. The age of the tank.

4. The number of collections (2 or 4 depending on 1 or 2 days' collections) stored in the tank.
5. The volume, expressed in litres, of milk in the tank at the end of the test.
6. The required range depending on whether data is required covering 35°C to 4°C or the simplified range from 24°C to 14°C.

Once the test has commenced the instrument shows the temperature curves for each of the 2 probes, and using a specific equation derived from the entered parameters, it calculates the time required to reduce the temperature from 35 to 4 °C (or 24 to 14 °C in the case of the simplified test). The time to reach the target temperature is simultaneously displayed on the LCD.



TECHNICAL SPECIFICATIONS

- **Memory:** 64 kB divided in 4 blocks of 16 kB
- **Temperature probes:** 2 digital probes of semiconductor material, accuracy of ± 0.5 °C and resolution of 0.1 °C.
- **Display:** LCD, 2x16 characters.
- **Interface:** serial RS232 - maximum speed 38.4 kB
- **Parameters:** Tank classification - volume of the milk – the age of the tank – target cooling time
- **Acquisition time:** The temperature is measured every second, then the average is calculated and recorded every 30 seconds.
- **Test data:** The instrument records the cooling curve over the ranges 35 to 4 °C or 24 to 14 °C.
- **Software:** Specifically designed to process data from the temperature probes in the milk and from the refrigerator condenser to produce a graphic presentation of the cooling curve.
- **Power :** 220V - 50Hz
- **Dimensions/weight:** Container IP56 240 x 190 x 110 mm - 1.150kg
- **Patent:** SS97000007