

# Controller LC200

Valve's controller LC200 is intended for control high speed micro-dispensing valves and nozzle heater.

There are two operation modes: master and slave. In master mode, all the necessary settings apply from the user menu of the LC200-Remote software. In slave mode, it works from external trigger signals.

## Valves control system

- Number of valve channels: 1
- Internal (master mode) and external (slave mode) valve's modes of control
- Manual switch between modes by menu

## User Interface

- User-friendly interface LC200-Remote software
- Time to ready after power on is 20 second

## Electrical characteristics

- Operating voltage: +24V  $\pm$ 5%
- Current consumption (heater off, valve in standby mode): 400 mA
- Current consumption (heater on, valve 1kHz/100us/300us): 6000 mA

## Internal master mode

- Setting following parameters for first valve
  - Units of frequency: Hz
  - Units of durations: us
- Long term accuracy of pulse's frequency: 50 ppm

- Step of period of the pulses: 250 nS – 1 uS
- Long term accuracy of pulse's duration: 50 ppm
- Step of duration of the pulses: 250 nS – 1 uS

### External slave mode

- Type of input: LED of the photo coupler
- Actuation delay (delay between changing the input signal and actuation the output: 2...4 uS
- Operation voltage of logical '1': 5...24V
- Operation voltage of logical '0': 0...2V
- Isolation voltage: 2.5 kV
- Protection from short pulses
- Resettable fuse for overvoltage and reverse voltage protection +60V -30V cycles 100 min.

### Output specification

- Output type: Class-D amplifier 200 kHz PWM
- Valve operating voltage: -20V...+110V ( ± 5%)
- Valve operating max current : up to 15A (100 us pulse)
- Valve max pulse front: 100 us (100 V amplitude)

### Thermal control heating system

There are single input and output in the thermal control heating system.

The input provides connection of Pt100 type thermo sensor and output is intended for plugging the heater.

- Type of thermo sensor: Pt100 nominal resistance 100 Ohm at 25 °C
- Temperature measurement ranges: 0...90 °C
- Connection type: 2-wire
- Sensor power current: 1 mA
- Sampling rate : 15 sample/s
- Channel bandwidth: 6 Hz
- Temperature measurement accuracy: ±0.05 °C
- Protection against short pulses and power interference (50 or 60 Hz)
- Heater's operating voltage: 24V ± 5%
- Operating current of control switch: up to 4A
- Switch on resistance: 3 mOhm
- Protection circuit current threshold: 4 A
- Protection circuit time threshold: 50 us
- Regulator type: PID with automatic tuning coefficients.
- Temperature hold accuracy: ±0.1 °C (max)

## **External interfaces**

- External control interfaces
  - Isolated RS-485: LC200-Remote software, RTU MODBUS, 115200 baud
  - Ethernet 10/100 Mb: RealVNC software
- External trigger signals