ELETTRONICA

DATASHEET

LAPM EGSE

DUAL LAPM CONTROL SYSTEM

LTG ELETTRONICA
ROME - ITALY

Dual LAPM Control System

The LAPM_EGSE is a complete test equipment for position and thermal control of two LAPM (Linear Actuator Pointing Mechanism), each one equipped with two Linear Actuators (LA).

Moreover the thermal control of four additional channels on both nominal and redundant devices is provided too.

Each LA is equipped with:

- Nominal and redundant stator windings
- One LVDT (Linear Voltage Differential Transformer) as position sensor
- Nominal and redundant and thermistors
- Nominal and redundant heaters

The LAPM_EGSE features are listed here after:

LA's position monitoring

- Monitoring Enable/Disable of each LA
- Full stroke, step by step characterization and 5th order polynomial regression coefficients computation for each LA
- Simultaneous monitoring of the enabled LA's:
  - LVDT raw value (16 bit resolution i.e. 0÷65535)
  - Step counter value
  - Step by step Absolute Position, computed by LVDT raw value polynomial coefficients
  - Present Magnetic State
  - CW and CCW programmable Electrical End Limits
  - Alarm for Electrical End Limits overriding

Motor Driving

- Bi-phase and three-phase motor type, Unipolar/bi-polar or custom windings excitation table selectable for each motor.
- One at the time among four motors, on Nominal or redundant windings
- Three types of displacement, "relative", "absolute", and "go to center"
- CW/CCW direction for "relative" displacement only
- Stepping rate selection among fourteen values from 1 to 150 sps
- LVDT reading disable to increase stepping rate up to 280 sps
- Enable/Disable of Electrical End Limits overriding
- Thermistors selection (Nominal/Redundant/Both/None) to enable/disable the temperature range (–20÷+70°C) security
- Holding/Detent mode selection i.e. winding maintained or not energized at the end of movement for measurement purposes.

- Number of step to be done in "relative" displacement or position to be reached in "absolute"
- Step counter reset or preset
- Staring Magnetic State forcing capability
- Driving Start/Pause/Stop pushbuttons

Thermal control

- Monitoring Enable/Disable of each channel
- Four actuators plus four additional auxiliary channels on nominal and redundant devices (heaters and thermistors)
- Thermistor type selection for each channel among Betatherm 10K, Rosemount 118MF or custom type (defined on "Characterization panel)
- Lower temperature limit for each channel
- Positive temperature excursion from lower temperature limit
- Nominal and redundant Heaters setting: ON/OFF/Auto
- Simultaneous monitoring of the enabled channels:
    - Nominal and redundant measured thermistor temperature
    - Alarm for nominal or redundant thermistor temperature overriding
    - Nominal and redundant Heaters ON/OFF status

Data Logging

- Data logging file in .CSV format, easy to import in every spreadsheet
- Monitoring Mode, Data Logging
    - Programmable time period of data logging
    - Simultaneous Data Logging of the enabled nominal and redundant devices including:
        - Logging time
        - Device identifier
        - Step counter
        - Absolute Position
        - LVDT raw value
        - Heater status
        - Measured temperature

- Driving Mode, "Every Step" Data Logging
    - Simultaneous data log of the driven actuator including:
        - Starting time
        - Driven Motor and Stator
        - Starting Temperature
        - Starting Absolute Position
        - Step counter
        - Step by step LVDT raw value
        - Stopping time
        - Driven Motor and Stator
        - Stopping Temperature
        - Absolute position

  - Fifth order Polynomial coefficients computation Characterization function is selected

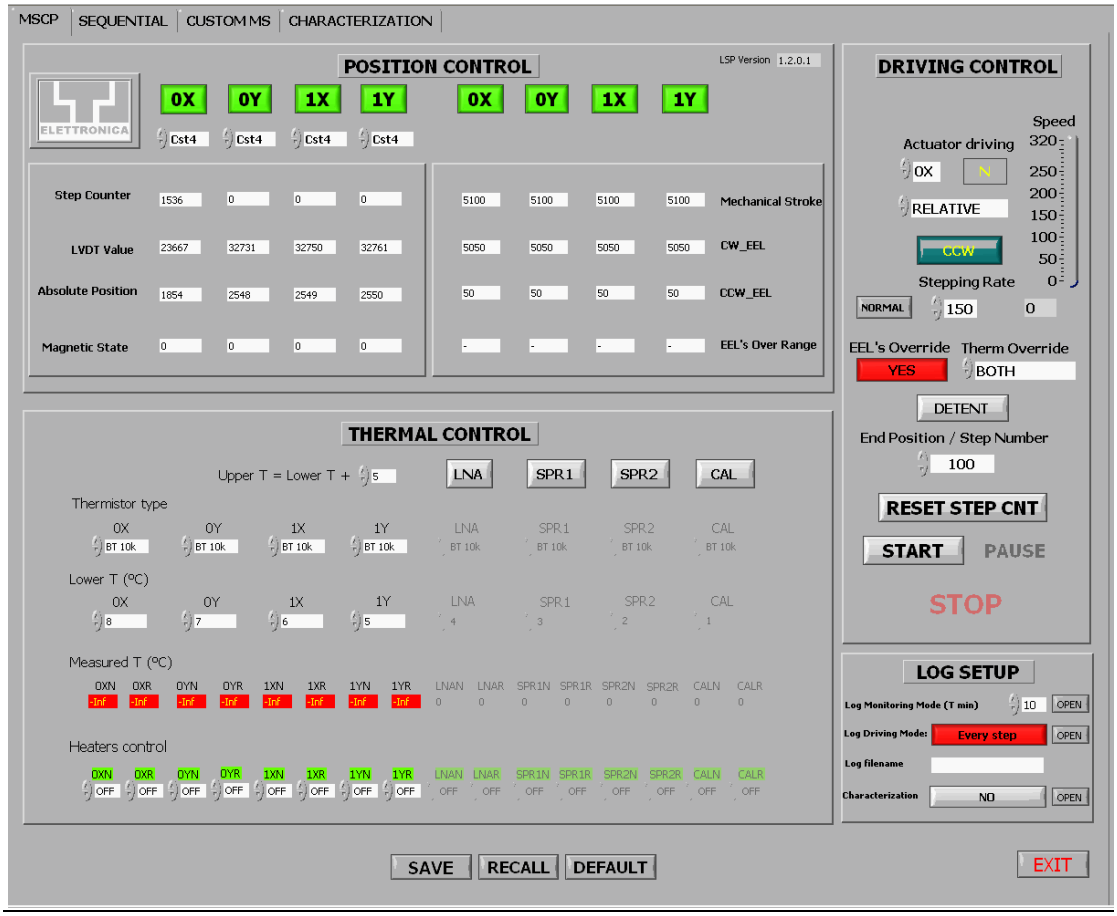
- Driving Mode, "Begin/End" Data Logging
  - Simultaneous data log of the driven actuator including:
    - Starting time
    - Stopping time
    - Driven Motor and Stator
    - Starting Temperature
    - Stopping Temperature
    - Starting Step counter
    - Stopping Step counter
    - Starting Absolute Position
    - Stopping Absolute Position

Sequential Driving

- Batch programming up to 16 different sequential movements fully selectable in terms of:
  - Actuator an stator
  - Displacement type, "relative", "absolute", and "go to center"
  - Direction CW/CCW for relative displacement only
  - Stepping rate
  - Step to be done or position to be reached
  - Stating trigger:
    - time
    - time delay from Stopping of previous one
    - one of four external trigger inputs
- Programmable number of sequence to be repeated for stressing cycles
- Running cycle displaying
- Driving Start/Pause/Stop pushbuttons
- Data Logging as per Driving Mode
- Clear of the programmed sequence
- Store/Recall the programmed sequences

Manual controls

- Motor internal/external supply voltage selection
- Motor external supply voltage input
- Motor supply current measurement jump
- Motor Phases voltage measurement tips
- Heaters internal/external supply voltage selection
- Heaters external supply voltage input
- Heaters nominal or redundant switching ON in case of automatic control failure



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Electrical and mechanical interface

• Power supply	220VAC
• Max power consumption	200W
• Dimension L/H/D	19”/3U/600mm
• Weight	41Kg
• Motors internal supply voltage	24÷26V
• Motors external supply voltage	7÷50V
• Motors output max current	1A
• LVDT excitation Voltage	4.9÷5.1 Vrms
• LVDT excitation Frequency	4.8÷5.2 KHz
• Heaters internal supply voltage	48V
• Heaters internal supply global current	3A
• Heaters external supply voltage	2÷60V
• Heater max output current	1.2A
• Thermistor excitation current	100µA
• Thermistor max output voltage	15V

System

- SAVE, RECALL and DEFAULT commands to save and recall the complete control panels setting up or recall the Default one