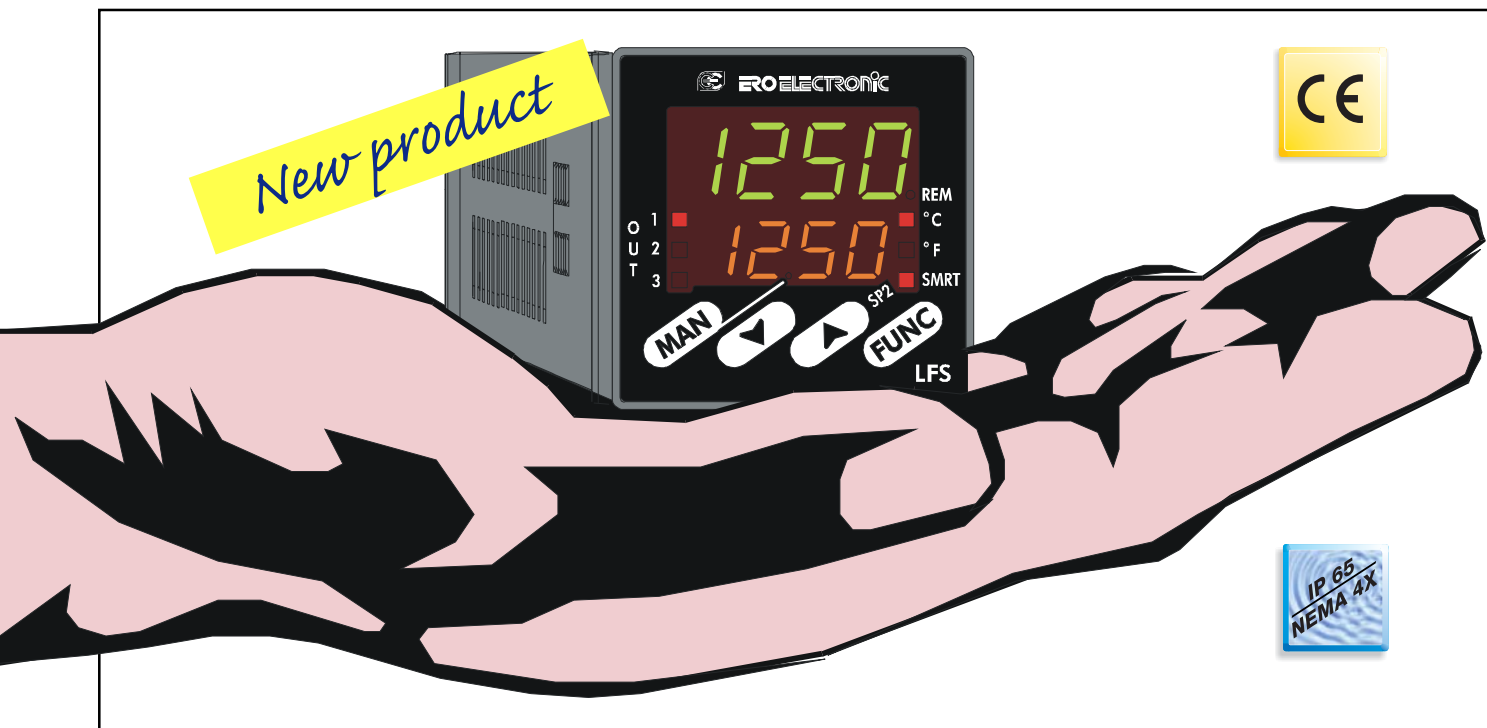




HOT-RUNNER CONTROLLERS 1/16 DIN

LFS-S03

- Master Set-point control of up to 255 slave controllers
- Low drift, Digital Set-point retransmission
- Soft Start feature extends heater life
- Isolated logic Set-point selection
- Thermocouple break protection
- Over temperature shut down function
- Compact dimensions for cost saving

PRELIMINARY

LFS-S03

Overview

LFS-S03 Hot runner controllers provide comprehensive control facilities for injection molding tool temperature control. Features such as master set-point control, soft start as well as protection from over temperature and thermocouple break conditions make this an ideal tool temperature control solution.

Master setpoint control

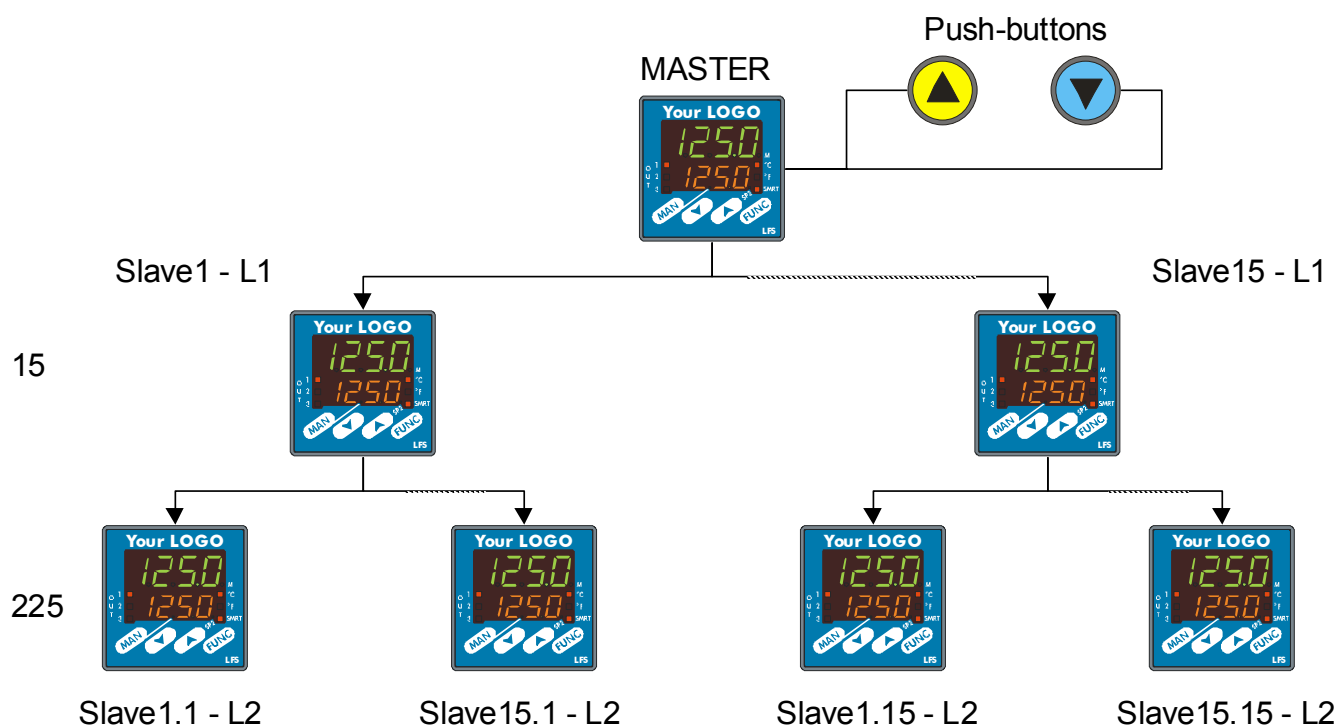
Provides quick and convenient set-point adjustment of a group of linked controllers. Set points are adjusted proportionally so if specific zones are set to different temperatures the delta values between controllers are maintained.

The use of a digital retransmission technique eliminates the need to trim and adjust master and slave set point inputs and outputs as is necessary with conventional analog methods. Drift is also eliminated, significantly reducing the need for routine maintenance.

Digital retransmission

Allows easy connection between a master and up to 255 controller slaves. All connected controller set-points follow the master controller set point

LFS-S03 controllers automatically recognize whether they are master or slave devices when powered up and auto-configure simplifying maintenance and reducing stock holding to a single instrument.



Soft Start

Limiting the heater power during startup reduces potential thermal stress on the heating elements and mould tool. The Soft-start feature of the LFS-S03 controller provides both time and temperature threshold based output power limit protection.

Over temperature protection

Hot runner system protection is provided by 2 user defined over temperature limit alarms. These alarms are used either to provide early operator warning or to shut down the main supply when dangerous temperatures are detected.



Thermocouple break protection

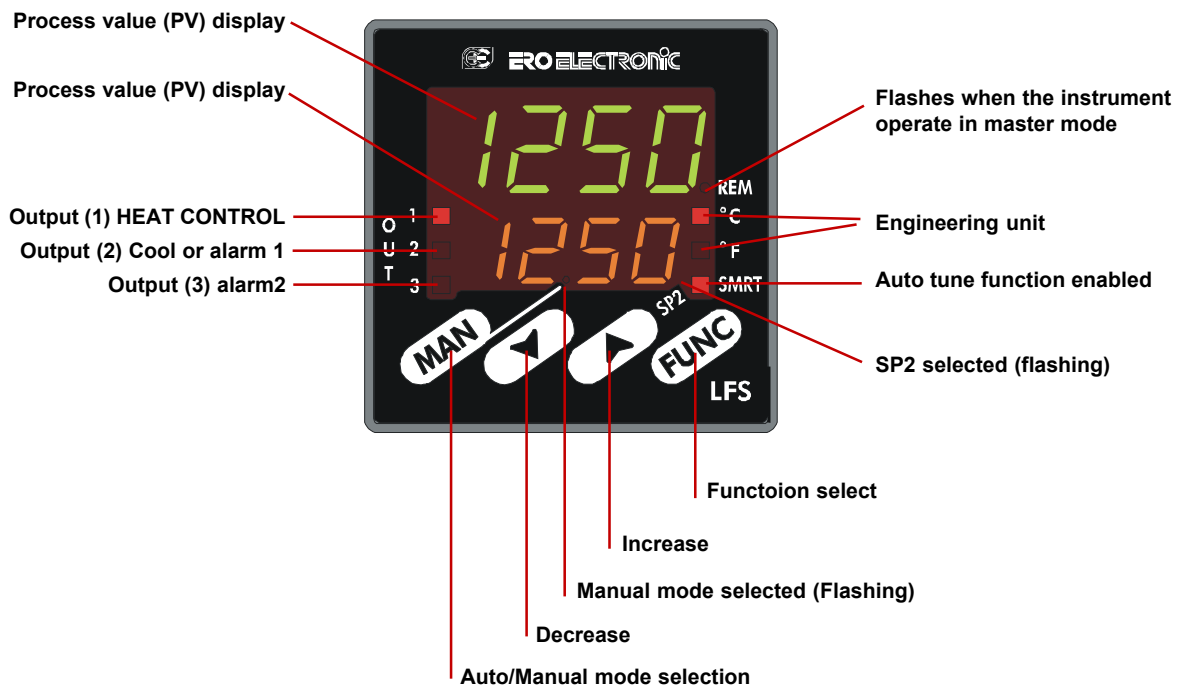
Open circuit thermocouples connections are a common fault found on Hot Runner systems. The LFS-S03 is able to detect poor thermocouple connections and breaks.

When an open TC is detected, the LFS-S03 automatically sets the power output to a safe user preset value, allowing production to continue until maintenance is possible.

Isolated Logic input for Set-point selection (Stand By function)

Up to 2 user defined set-points may be selected using the LFS-S03 controllers isolated logic input. The isolated input provides the additional benefit of allowing un-isolated (grounded) thermocouples to be used, reducing total system cost and improving control performance.

Front panel description



LFS-S03

GENERAL SPECIFICATION

Case:	ABS grey color (RAL 7043); self-extinguishing degree: V-0 according to UL 94.
Front protection:	designed and tested for IP 65 (*) and NEMA 4X (*) for indoor locations (when panel gasket is installed). (*) Test were performed in accordance with CEI 70-1 and NEMA 250-1991 STD.
Rear terminal block:	15 screw terminals (screw M3, for cables from f 0.25 to f 2.5 mm2 or from AWG 22 to AWG 14) with connection diagrams and safety rear cover.
Dimensions:	48 x 48 mm, depth 122 mm (DIN 43700).
Weight :	250 g max.
Power supply:	- 100V to 240V AC 50/60Hz (-15% to + 10% of the nominal value). - 24 V AC/DC (+10 % of the nominal value).
Power consumption:	10 VA max.
Display updating time:	500 ms.
Sampling time:	250 ms for linear inputs 500 ms for TC and RTD input.
Accuracy:	+ 0,2% f.s.v. + 1 digit @ 25 °C ambient.
Common mode rejection ratio:	120 dB at 50/60 Hz.
Normal mode rejection ratio:	60 dB at 50/60 Hz.
Electromagnetic compatibility and safety requirements:	this instrument is marked CE and therefore, it is conforming to council directives 89/336/EEC (reference harmonized standard EN-50081-2 and EN-50082-2) and to council directives 73/23/EEC and 93/68/EEC (reference harmon. standard EN61010-1).
Installation category:	II
Operative temperature:	from 0 to 50 °C.
Storage temperature:	from -20 to +85 °C
Humidity:	from 20 % to 85% RH, non condensing.

MEASURING INPUT

RTD	Measure current: 135 mA
	RTD type: Pt 100 3 wire connection.
	Calibration: according to DIN 43760
	Line resistance: Max 20 Ω/wire with no measurable error.
	Engineering unit: °C and °F keyboard programmable.
	Burn out: Detection of the sensor open circuit and of one or more wires open circuit. Detection of the sensor short circuit .

STANDARD RANGES TABLE

RTD Type	°C	°F
PT 100 3-wire	-199.9/ 400,0°C	-199.9/ 400,0°F
	-200 / 800 °C	-330 / 1470 °F

Thermocouples

Burn out:	open input circuit detection (wires or sensor) via overrange or underrange indication.
Cold junction:	automatic compensation from 0 and 50 °C ambient.
Cold junction compensation error:	0.1 °C/°C.
Calibration:	according to IEC 584-1 and DIN 43710 - 1977 (TC L).

STANDARD RANGES TABLE

TC Type	°C	Ranges	°F
L	-100 / 900		-150 / 1650
L	-100.0 / 900.0		
J	-100 / 1000		-150 / 1830
J	-100.0 / 999.9		
K	-100 / 1370		-150 / 2500
K	-100.0 / 999.9		
N	-100 / 1400		-150 / 2550
R	-50 / 1760		
S	-50 / 1760		-60 / 3200
T	-200 / 400		
T	-199.9 / 400.0		-330 / 750



Linear input (mA and V)

Read-out: keyboard programmable from -1999 to 4000.
Decimal point: programmable in any position.

Input	Impedance
0 - 20 mA	< 3 Ω
4 - 20 mA	< 3 Ω
0 - 60 mV	> 1 M Ω
12 - 60 mV	> 1 M Ω
0 - 5 V	> 90 k Ω
1 - 5 V	> 90 k Ω
0 - 10 V	> 180 k Ω
2 - 10 V	> 180 k Ω

Logic input

Function: Set point selection (SP/SP2)
Type: Contact free of voltage
Isolation: Galvanically isolated from the other inputs and outputs

CONTROL ACTION

Algorithm: PID + SMART.
Types: - one control output (heating)
 - two control outputs (heating and cooling)
Output types: relay or SSR.
Output action: time proportional.
Proportional band: from 1.0 % (heating) or 1.5 % (heating and cooling) to 100 % of the input span.
 If Pb = 0 the control algorithm becomes ON/OFF.
Hysteresis: (in ON/OFF control): from 0.1 % to 10.0 % of the input span.
Integral time: from 1 second to 20 minutes or excluded;
Derivative time: from 0 to 10 minutes or excluded.
Integral preload: - for one control output, from 0 to 100% of the output range
 - for two control outputs, from -100% to 100% of the output range
Out 1 cycle time: from 1 to 200 s.
Out 2 cycle time: from 1 to 200 s.
Relative cooling gain: from 0.20 to 1.00 referred to the proportional band.
Overlap/dead band: from - 20 % to 50 % of the proportional band.

OUTPUTS

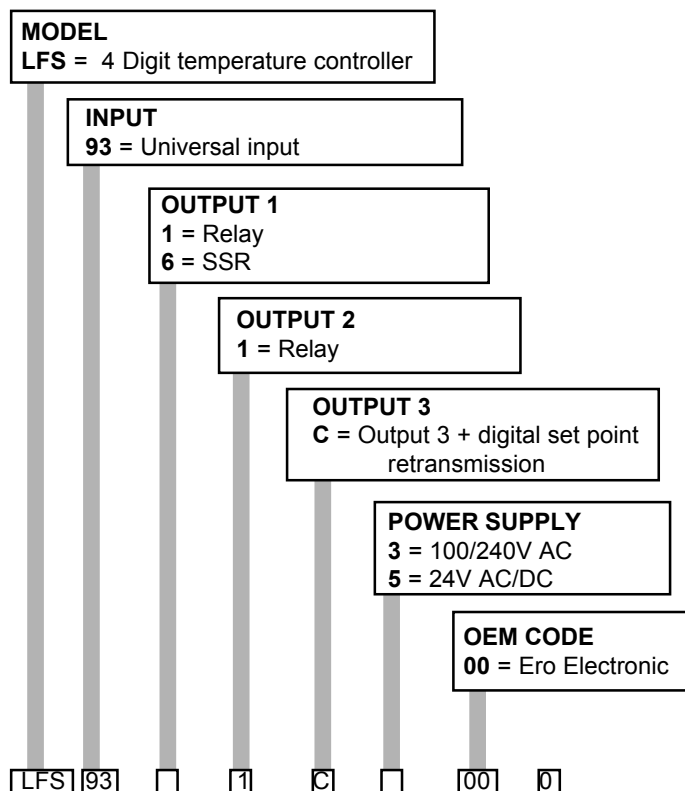
	Updating time: 250 ms
	Type: time proportioning
Output 1 - Relay	Relay type: SPDT.
	Contact rating: 4 A @ 250 V AC on resistive load.
Output 1 - SSR	Type: non isolated. - Logic level 1: 14 V DC @ 20 mA max. 24 V DC @ 1 mA. - Logic level 0: < 0.5 V DC
Output 2 and 3 - Relay	Relay type: SPST.
	Contact rating: 2 A @ 250 V AC on resistive load.

ALARM

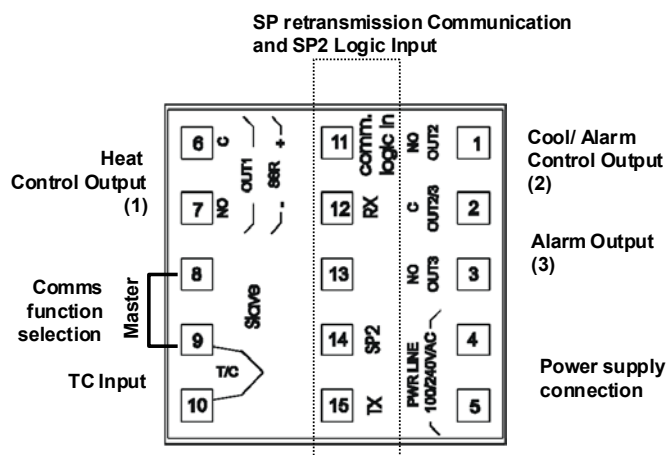
	Action: direct or reverse.
	Function: programmable as process, band or deviation alarm.
	Reset : programmable as automatic or manual reset.
	Masking: programmable as masked or standard alarm .
	Hysteresis: from 0.1% to 10.0% of the input span.
Process alarm	Operative mode: "high" or "low".
	Threshold: in engineering unit within the input range.
Band alarm	Operative mode: inside or outside band.
	Threshold: from 0 to 500 units.
Deviation alarm	Operative mode: "high" or "low".
	Threshold: from -199 to +500 units.

LFS-S03

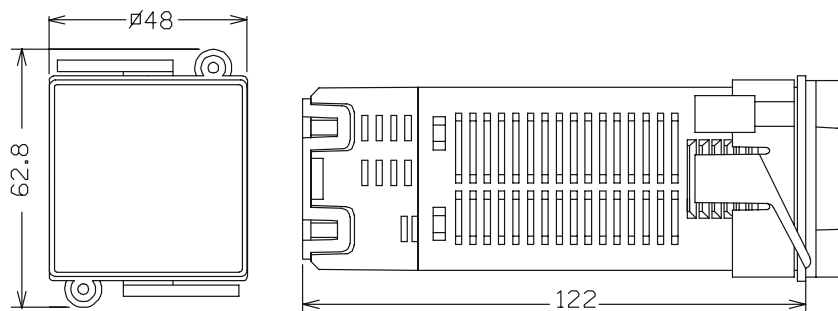
HOW TO ORDER



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