

Technical Data LT1 in Wall Mounting Housing



Fig. 1 Lambda Transmitter LT1 in wall mounting housing

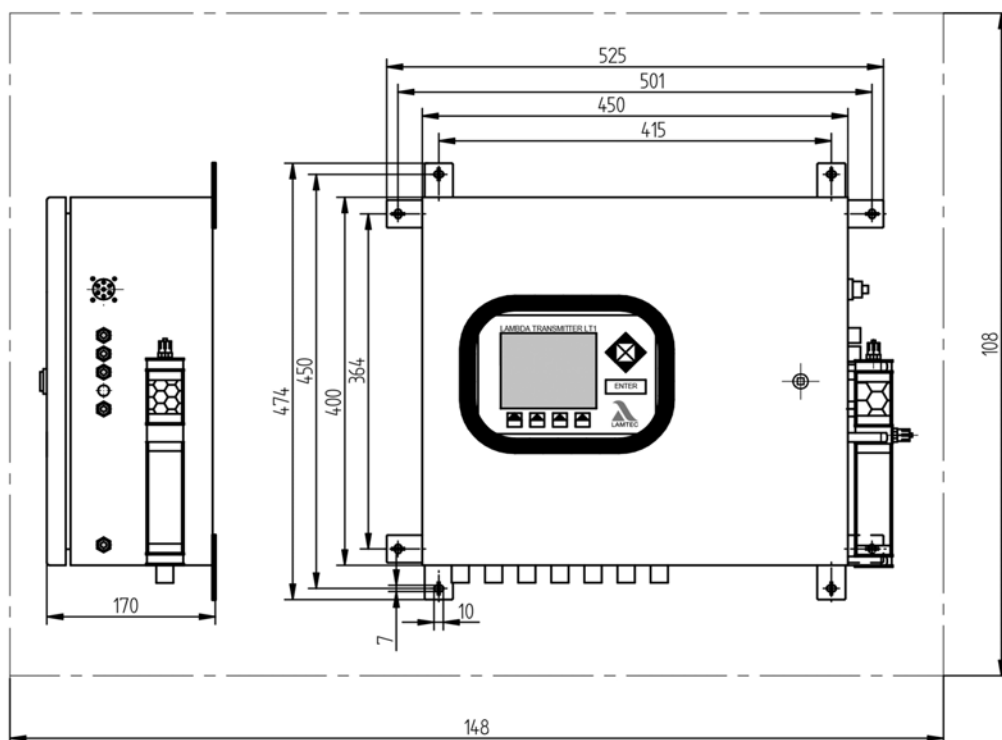


Fig. 2 Dimensional drawing LT1 type 657R002 wall mounting housing

LT1 in wall mounting housing

Housing	Housing in sheet steel, powder-coated alternative: housing in stainless steel 1.4301
Protection class to DIN 40050	IP54/IP65 (depending on variant selection)
Dimensions (HxWxD)	400x450x170 mm / 15.75"x17.72"x6.69" in
Colour (Housing in sheet steel)	RAL 7035 light grey
Weight	17.2 kg / 37.92 lb with display and operating unit +0.5 kg/1.1 lb
Control elements	Display and operating unit with LCD graphic display 100x80 mm / 3.94"x3.15" in (WxH) (option) LSB Remote Software (option)

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Characteristics	
Power supply	230 VAC and 115 VAC +10 % / -15 %, 48 Hz ... 62 Hz Use only in earthed networks!
Power consumption	max. 150 VA short-term 310 VA
Resolution	0.01 vol. % O ₂ across the entire range
Measurement accuracy	0.05 % of the measured value, no more precise than 0.1 vol. % O ₂
Time for operational readiness	1 ... 2 hours after MAINS ON
Cold start delay	automatically cold start delay, 5-120 min
Analogue outputs	
Monitor output	0 ... 2.55 VDC, load >10 k Ω , \leq 100 nF 2 % of the measured value, no more precise than 0.2 vol. % O ₂
1 ... 4 current/voltage outputs	1 standard – 2 ... 4 option Direct current 0/4 ... 20 mA load 0 ... 600 Ω non floating (potential isolation optional) Direct voltage 0 ... 10 V load \geq 10 k Ω non floating (potential isolation optional)
Analogue inputs	
Analogue inputs: 1 ... 4	via plug-in card on LT1 power pack electronic <ul style="list-style-type: none"> – Analogue input module potentiometer 1 ... 5 kΩ type 657P6000 – Analogue input module 0/4 ... 20 mA type 663P6001 – Analogue input module 0/4 ... 20 mA with supply 24 VDC for transducer type 663P6002 – Temperature input for Pt100 sensor type 657R0890 temperature range 0 ... 320 °C/32 °F ... 608 °F 0 ... 850 °C/32 °F ... 1562 °F resolution 1 °C/33.8 °F
Digital outputs	
Digital outputs	1 standard + 6 optional <ul style="list-style-type: none"> – 1 relay output 0 ... 230 VAC, 2 A – 0 ... 42 VDC, 3 A collective fault indicator – relay card with 6 relays (1 changeover switch) 0 ... 230 VAC, 2 A – 0 ... 42 VDC, 3 A
Digital inputs	
Digital inputs	8 inputs - configurable (any) Factory settings: 24 VDC referenced to instrument potential, can be switched via jumper to floating, for external voltage source.
Interface	
Interface	LAMTEC SYSTEM BUS, alternative RS 422 floating, RS 232 only in combination with LSB Remote Software
BUS connection	PROFIBUS DP Modbus RTU

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Operating condition	
Ambient temperature	Operation: 0 ... +60 °C /32 ... 140 °F
	Transport and storage: -40 ... +85 °C/-40 ... 185 °F
CE Declaration of Conformity	2014/30/EU – EMC Directive 2014/35/EU – Low Voltage Directive

Order Information

Order Information

O₂-Measuring System Lambda Transmitter LT1

LT1 in Wall Mounting Housing / on Mounting Plate – Configuration

657R002 -	A 03 TYPE	A 09 DISPLAY	A 12 CALIBRATION	A 15 HOUSING HEATING	A 18 PRESSURE SENSOR	A 21 FLUE GAS PUMP	A 24 ANALOGUE OUTPUT 1
A 27 ANALOGUE OUTPUT 2	A 30 ANALOGUE OUTPUT 3	A 33 ANALOGUE OUTPUT 4	A 36 ANALOGUE INPUT 1	A 39 ANALOGUE INPUT 2	A 42 ANALOGUE INPUT 3	A 45 ANALOGUE INPUT 4	A 48 RELAY MODULE, LIMIT VALUES, O ₂ CONTROL- LER, FIRING-RATE
A 51 EFFICIENCY CALCULATION	A 54 POWER SUPPLY VOLTAGE	A 57 LANGUAGE	A 60 CO/O ₂ CONTROL	A 63 CALCULATIONS	A 66 OPTIONS	A 69 SPECIAL CONFIGURATION	

A 03 – TYPE WALL MOUNTING HOUSING / MOUNTING PLATE

Selection

IN WALL MOUNTING HOUSING, WITH INTERNAL FLUE GAS PUMP, Probe connection via circular plug IP54 Additional required: Extension for probe connecting cable, shielded Order no. 655R0010/R0011/R0012, length 2 m/5 m/10 m / 6.6 ft/16.4 ft/32.8 ft	5
IN WALL MOUNTING HOUSING IP65, WITH INTERNAL FLUE GAS PUMP, Probe connection via terminals Additional required: Extension for probe connecting cable with one-sided ferrules, shielded Order no. 655R0043/R0044/R0045, length 2 m/5 m/10 m/ 6.6 ft/16.4 ft/32.8 ft	5-IP65
IN WALL MOUNTING HOUSING IP65, FOR EXTERNAL FLUE GAS PUMP Additional required: Probe Connection Box (PCB), see attribute A21	6
ON MOUNTING PLATE FOR CABINET INSTALLATION, FOR EXTERNAL FLUE GAS PUMP Additional required: Probe Connection Box (PCB), see attribute A21	8
ON MOUNTING PLATE FOR CABINET INSTALLATION, WITH INTERNAL FLUE GAS PUMP, Probe connection via terminals Additional required: Extension for probe connecting cable with one-sided ferrules, shielded Order no. 655R0043/R0044/R0045, length 2 m/5 m/10 m/ 6.6 ft/16.4 ft/32.8 ft	9

A 09 – DISPLAY

Selection

WITHOUT DISPLAY AND OPERATING UNIT or EXTERNAL	a0*
WITH DISPLAY AND OPERATING UNIT	a1

* (Default Settings)

A 12 – CALIBRATION

Selection

WITHOUT CALIBRATION UNIT	b00*
INTEGRATED CALIBRATION UNIT "PUMP"	b1
INTEGRATED CALIBRATION UNIT "PUMP" WITH OPTION "CONNECTING 1 TEST GAS"	b11
INTEGRATED CALIBRATION UNIT "PUMP" WITH OPTION "CONNECTING 2 TEST GASES"	b12
INTEGRATED CALIBRATION UNIT "PUMP" and PRESSURE RELEASE Necessary when ceramic-GED	b1A
INTEGRATED CALIBRATION UNIT "COMPRESSED AIR" Required pre pressure compressed air 0 ... 1 bar, adjustable on site	b2
INTEGRATED CALIBRATION UNIT "COMPRESSED AIR" and PRESSURE RELEASE Necessary when ceramic-GED required pre pressure compressed air 0 ... 1 bar, adjustable on site	b2A
EXTERNAL CALIBRATION UNIT "PUMP" Additional required: probe connection box (PCB), order no. 657R0013	b4

Order Information

A 12 – CALIBRATION	Selection
EXTERNAL CALIBRATION UNIT "PUMP" and PRESSURE RELEASE Necessary when ceramic-GED Additional required: probe connection box (PCB), order no. 657R0015	b4A
EXTERNAL CALIBRATION UNIT "COMPRESSED AIR" Additional required: probe connection box (PCB), order no. 657R0010, 657R0016, 657R0031	b5
EXTERNAL CALIBRATION UNIT "COMPRESSED AIR" and PRESSURE RELEASE Necessary when ceramic-GED Additional required: probe connection box (PCB), order no. 657R0011	b5A

* (Default Settings)

A 15 – HOUSING HEATING	Selection
WITHOUT HOUSING HEATING	d0*
WITH HOUSING HEATING 230 VAC/320 W (-25 °C/-13 °F), only for LT1 without integrated display	d1
WITH HOUSING HEATING 230 VAC/500 W (-40 °C/-40 °F), only for LT1 without integrated display	d2
WITH HOUSING HEATING 230 VAC/180 W, only for LT1 with integrated display	d3

* (Default Settings)

A 12 – DRUCKSENSOR – Selection not necessary, will be setted automatically by the system

A 21 - FLUE GAS PUMP	Selection
EXTERNAL FLUE GAS PUMP Additional required: Probe Connection Box (PCB), order no. 657R0013/14/15/16/31/31-4	f0
INTEGRATED FLUE GAS PUMP STANDARD	f1*
INTEGRATED FLUE GAS PUMP FOR AGGRESSIVE GASES	f2
INTEGRATED EJECTOR FLUE GAS PUMP	f3
INTEGRATED EJECTOR FLUE GAS PUMP FOR AGGRESSIVE GASES	f4
EXTERNAL EJECTOR FLUE GAS PUMP Additional required: probe connection box (PCB), order no. 657R0010/11/12/17/31-1/31-2/31-3/31-5	f5

* (Default Settings)

A 24/27/30/33 – ANALOGUE OUTPUTS 1/2/3/4	Selection Output 1	Selection Output 2	Selection Output 3	Selection Output 4
WITHOUT ANALOGUE OUTPUT	not possible	h20*	h30*	h40*
ANALOGUE OUTPUT CURRENT 4 ... 20 mA	h11*	h21	h31	h41
ANALOGUE OUTPUT CURRENT 0 ... 20 mA	h12	h22	h32	h42
ANALOGUE OUTPUT VOLTAGE 0 ... 10 VDC	h13	h23	h33	h43
ANALOGUE OUTPUT CURRENT 4 ... 20 mA FLOATING	h14	h24	h34	h44
ANALOGUE OUTPUT CURRENT 4 ... 20 mA FLOATING REG Necessary in conjunction with O ₂ control via analogue input at FMS/VMS (0 ... 25 Vol. % O ₂ → 4 ... 20 mA)	h15	h25	h35	h45
ANALOGUE OUTPUT CURRENT 0 ... 20 mA FLOATING	h16	h26	h36	h46
ANALOGUE OUTPUT VOLTAGE 0 ... 10 VDC FLOATING	h17	h27	h37	h47
ANALOGUE OUTPUT CURRENT 4 ... 20 mA ELECTRICALLY ISOLATED	h19	h29	h39	h49

* (Default Settings)

A 36/39/42/45 – ANALOGUE INPUT 1/2/3/4 – Selection not necessary, will be setted automatically by the system

A 48 – DIGITAL OUTPUTS, LIMIT VALUES, O₂ CONTROLLER, FIRING-RATE OUTPUT	Selection
WITHOUT DIGITAL OUTPUTS	j00*
RELAY MODULE WITH 6 DIGITAL OUTPUTS (EACH WITH ONE CHANGE-OVER CONTACT)	j30
FIRING-RATE DEPENDING LIMIT VALUES, FIRING-RATE INPUT VIA LSB, INCL. RELAY MODULE	j31
FIRING-RATE DEPENDING LIMIT VALUES, FIRING-RATE INPUT VIA POTENTIOMETER, INCL. RELAY MODULE	j32
FIRING-RATE DEPENDING LIMIT VALUES, FIRING-RATE INPUT VIA CURRENT, INCL. RELAY MODULE	j33
O ₂ CONTROLLER (PID), FIRING-RATE INPUT VIA LSB, INCL. RELAY MODULE *	j34
O ₂ CONTROLLER (PID), FIRING-RATE INPUT VIA POTENTIOMETER, INCL. RELAY MODULE *	j35

Order Information

A 48 – DIGITAL OUTPUTS, LIMIT VALUES, O₂ CONTROLLER, FIRING-RATE OUTPUT

Selection

O₂ CONTROLLER (PID), FIRING-RATE INPUT VIA CURRENT, INCL. RELAY MODULE *

j36

OUTPUT of "INTERNAL FIRING-RATE" AT ANALOGUE OUTPUT

j40

Only possible via LSB connection in combination with FMS/VMS/ETAMATIC

* Additional required: Analogue output current 4 ... 20 mA, floating, for output of the O₂ controller value

A 51 – EFFICIENCY CALCULATION

Selection

Analogue outputs for the flue gas temperature and / or the efficiency must be ordered separately (attribute A27 / A30)

Additional required:

Temperature sensor PT100, length 150 mm/5.9" in, order no. 657R0897 and/or

Temperature sensor PT100, length 250 mm/9.8" in, order no. 657R0891

WITHOUT EFFICIENCY CALCULATION

k0*

EFFICIENCY CALCULATION WITH FIXED ENVIRONMENT TEMPERATURE
FLUE GAS TEMPERATURE RANGE 0 ... 320 °C/32 ... 608° F, WITHOUT ANALOGUE OUTPUT

k1

EFFICIENCY CALCULATION WITH FIXED ENVIRONMENT TEMPERATURE
FLUE GAS TEMPERATURE RANGE 0 ... 850 °C/32 ... 1562 °F, WITHOUT ANALOGUE OUTPUT

k11

EFFICIENCY CALCULATION
FLUE GAS AND ENVIRONMENT TEMPERATURE 0 ... 320 °C/32 ... 608° F, WITHOUT ANALOGUE OUTPUT

k2

EFFICIENCY CALCULATION
FLUE GAS AND ENVIRONMENT TEMPERATURE 0 ... 850 °C/32 ... 1562 °F, WITHOUT ANALOGUE OUTPUT

k22

FLUE GAS TEMPERATURE MEASUREMENT 0 ... 850 °C/32 ... 1562 °F, WITHOUT ANALOGUE OUTPUT

k3

FLUE GAS TEMPERATURE MEASUREMENT 0 ... 320 °C/32 ... 608° F, WITHOUT ANALOGUE OUTPUT

k33

* (Default Settings)

A 54 – POWER SUPPLY VOLTAGE

Selection

POWER SUPPLY VOLTAGE 230 VAC

I1*

POWER SUPPLY VOLTAGE 115 VAC

I2

* (Default Settings)

A 57 – LANGUAGE SETTING

Selection

GERMAN

nD*

ENGLISH

nE

FRENCH

nF

* (Default Settings)

A 60 – CO/O₂ MONITORING/ -CONTROL

Selection

WITHOUT CO/O₂ MONITORING/ -CONTROL

o0*

CO/O₂ MONITORING PREPARED as MASTER-LT
Additional required: LT2/KS1 prepared as SLAVE-LT

o1

CO/O₂ CONTROL PREPARED as MASTER-LT
Additional required:
LT2/KS1 prepared as SLAVE-LT and FMS / VMS or ETAMATIC with activated CO control

o2

* (Default Settings)

A 63 – CALCULATIONS

Selection

WITHOUT CALCULATIONS

p0*

CO₂ CALCULATION
Analogue output for the CO₂ value must be ordered separately (attribute A27/A30/A33)

p1

O₂ WET/DRY – CONVERSION

p2

* (Default Settings)

Order Information

A 66 – OTHER OPTIONS	Selection
WITHOUT OTHER OPTIONS	q0*
PRESSURE COMPENSATION MEASURED VALUE Necessary when pressure change >10 at the measuring point (fault influences approx. 1.3 % from the measured value)	q1
TEMPERATURE COMPENSATION MEASURED VALUE Necessary when temperature change >10 K at the probe housing (fault influences approx. 1 % from the measured value) in measuring range from 10 ... 21 Vol. % O ₂ Only in conjunction with Lambda Probe LS1 with integrated temperature sensor Pt100	q2
FORCED VENTILATION	q5
PURGING SINTERED METAL FILTER Necessary if increased dust levels at the measuring point	q6
EXTERNAL CONTROL "BLOW OUT HIGH DUST PROTECTION TUBE"	q7
CYCLIC CONTROL "BLOW OUT HIGH DUST PROTECTION TUBE"	q71
CYCLIC CONTROL "BLOW OUT SINTERED METAL FILTER AND HIGH DUST PROTECTION TUBE"	q8

* (Default Settings)

A 69 – SPECIAL CONFIGURATION	Selection
WITHOUT SPECIAL CONFIGURATION	z0*
BUILT-IN in STAINLESS STEEL HOUSING, MATERIAL: V2A	z1
PARAMETER SETTING GED- AND FILTER HEATING SYSTEM	z2
PARAMETER SETTING FOR PROFIBUS-CONNECTION Additional required: Field bus module, order no. 663R040 – 1PB / LT PROFIBUS DP, CONNECTING at LT	z4
PARAMETER SETTING FOR MODBUS-CONNECTION Additional required: Field bus module, order no. 663R040 – 3MBK / LT MODBUS on terminals (RTU), CONNECTING at LT	z41

* (Default Settings)

The information in this publication is subject to technical changes.



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