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防爆合格证

证 号: GYJ22.1809X

制 造 商 **Temposonics LLC**

(地址: 3001 Sheldon Drive, Cary, NC 27513, USA)

产 品 名 称 **磁致伸缩液位变送器**

型 号 规 格 **LP 系列**

防 爆 标 志 **Ex ia II C T4 Ga**

产 品 标 准 **/**

图 样 编 号 **651543-3 Rev.J, 651544-3 Rev.J, 651594-3 Rev.B,
651596-3 Rev.B**

经图样及技术文件的审查和样品检验, 确认上述产品符合下列标准:
GB/T 3836.1-2021, GB/T 3836.4-2021

特颁发此证。

本证书有效期: **2022 年 05 月 11 日 至 2027 年 05 月 10 日**

- 备 注
1. 安全使用注意事项见本证书附件。
 2. 证书编号后缀“X”表明产品具有安全使用特殊条件, 内容见本证书附件。
 3. 型号规格说明见本证书附件。
 4. 本安电气参数见本证书附件。



上海仪器仪表自控系统检验测试所有限公司
国家级仪器仪表防爆安全监督检验站
颁发日期 **二〇二二年五月十一日**

本证书仅对与认可文件和样品一致的产品有效。

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EXPLOSION PROTECTION

CERTIFICATE OF CONFORMITY

Cert No. GYJ22.1809X

Manufacturer	Temposonics LLC (Address: 3001 Sheldon Drive, Cary, NC 27513, USA)
Product	Level Plus Digital Level Transmitters Level Plus Analog Level Transmitters
Model	LP series
Ex marking	Ex ia IIC T4 Ga
Product standard	/
Drawing number	651543-3 Rev.J, 651544-3 Rev.J, 651594-3 Rev.B, 651596-3 Rev.B

The product was found to comply with the following standard(s):

GB/T 3836.1-2021, GB/T 3836.4-2021

Valid until: 2027.05.10

Remarks

1. Conditions for safe use are specified in the attachment to this certificate.
2. Symbol "X" placed after the certification number denotes specific conditions of use, which are specified in the attachment to this certificate.
3. Model designation is specified in the attachment to this certificate.
4. Intrinsic safety parameters specified in the attachment to this certificate.



Approval

Shanghai Inspection and Testing Institute of
Instruments and Automation Systems Co., Ltd.

National Supervision and Inspection Center for
Explosion Protection and Safety of Instrumentation

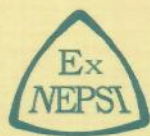
Date of issue 2022.05.11

This Certificate is valid for products compatible with the documents and samples approved by NEPSI.

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(GYJ22.1809X)

(Attachment I)

GYJ22.1809X防爆合格证附件 I

由Temposonics LLC生产的LP系列磁致伸缩液位变送器（以下简称变送器），经检验符合下列标准：

GB/T 3836.1-2021 爆炸性环境 第1部分：设备 通用要求

GB/T 3836.4-2021 爆炸性环境 第4部分：由本质安全型“i”保护的设备

产品防爆标志为Ex ia II C T4 Ga，防爆合格证号为GYJ22.1809X。

本次认可的产品分为数字式变送器及模拟式变送器，具体如下：

● 数字式变送器LP **a b c d e f g h i j k l m n o p**，（Tank Slayer，RefineME，Chambered或SoClean）

a代表变送器类型，可为T（Tank Slayer），R（RefineME），C（Chambered）或S（SoClean）；

b代表输出信号，可为M、D或U；

c代表外壳类型，可为A、B、C、D、E、L或Y；

d代表电气安装方式，可为1、2、3、4、5、6、7或8；

e代表测量管，可为B、C、D、E、F、M、N、P、S、R、Y或X；

f代表接液部件材质，可为1、2、3、A或9；

g代表过程连接类型，可为1、2、4、5、6、7、8、A、B、C、D或X；

h代表过程连接口径，可为A、B、C、D、E、F、G、H、J或X；

i代表数字式温度计数量，可为0、1、5、K、M、P或X；

j代表数字式温度计布置，可为F、C、B、E、K或X；

k代表认证机构，为N；

l代表保护类型，为I；

m代表适用气体组别，可为3；

n代表测量单位，可为F、M或U；

o代表测量管长度，可为XXX.XXin、XXX.XXft或XX.XXXmm（实际表示时不含小数点）；

p代表特殊选项，可为S、E、R或F。

● 模拟式变送器LP **a b c d e f g h i j k l m n o p**, (Tank Slayer, RefineME, Chambered或SoClean)

a代表变送器类型, 可为T (Tank Slayer), R (RefineME), C (Chambered) 或S (SoClean);

b代表输出信号, 可为1~7任意数字;

c代表外壳类型, 可为A、B、C、D、E、L或Y;

d代表电气安装方式, 可为1、2、3、4、5、6、7或8;

e代表测量管, 可为B、C、D、E、F、M、N、P、S、R、Y或X;

f代表接液部件材质, 可为1、2、3、A或9;

g代表过程连接类型, 可为1、2、4、5、6、7、8、A、B、C、D或X;

h代表过程连接口径, 可为A、B、C、D、E、F、G、H、J或X;

i代表数字式温度计数量, 可为0、1、5、K、M、P或X;

j代表数字式温度计布置, 可为F、C、B、E、K或X;

k代表认证机构, 为N;

l代表保护类型, 为I;

m代表适用气体组别, 可为3;

n代表测量单位, 可为F、M或U;

o代表测量管长度, 可为XXX.XXin、XXX.XXft或XX.XXXmm (实际表示时不含小数点);

p代表特殊选项, 可为S、E、R或F。

● 数字式变送器LPL **b c d e f g h i j k l m n**, (LevelLimit)

b代表输出信号, 可为M;

c代表测量管, 可为B、M、N、P或S;

d代表过程连接类型, 可为1、6、7、8、A、B、C、D、Z或X;

e代表过程连接口径, 可为A、B、D、E、F、G、H、J或X;

f代表接数字式温度计数量, 可为0、1、5、K、M、P或X;

g代表数字式温度计布置, 可为C、F或X;

h代表认证机构, 为N;

i代表保护类型, 为I;

j代表适用气体组别, 可为3;

k代表测量单位, 可为F、M或U; ;

代表测量管长度，可为XXX.XXin、XXX.XXft或XX.XXXmm（实际表示时不含小数点）；

m代表特殊选项，可为S、E、R或F；

n代表HI开关位置，可为任意5位数字。

● 模式式变送器LPL **b c d e f g h i j k l m n**，（LevelLimit）

b代表输出信号，可为1、2、5或7；

c代表测量管，可为B、M、N、P或S；

d代表过程连接类型，可为1、6、7、8、A、B、C、D、Z或X；

e代表过程连接口径，可为A、B、D、E、F、G、H、J或X；

f代表接数字式温度计数量，可为0、1、5、K、M、P或X；

g代表数字式温度计布置，可为C、F或X；

h代表认证机构，为N；

i代表保护类型，为I；

j代表适用气体组别，可为3；

k代表测量单位，可为F、M或U；；

代表测量管长度，可为XXX.XXin、XXX.XXft或XX.XXXmm（实际表示时不含小数点）；

m代表特殊选项，可为S、E、R或F；

n代表HI开关位置，可为任意5位数字。

注：上述代码所代表具体意义详见使用说明书。

一、 产品安全使用特殊条件

防爆合格证编号后的X表示其安全使用特殊条件，具体如下：

- 当变送器外壳为轻金属材质且应用于设备保护级别（EPL）为Ga级的爆炸性气体危险场所时，其安装方式应可防止冲击或摩擦产生的点燃危险。
- 当变送器外壳为非金属材质或带有非金属部件且应用于爆炸性气体危险场所时，应严禁干擦以防静电积累危险。
- 变送器的最高使用环境温度为+71℃，在爆炸性气体危险场所使用时应注意过程介质温度及其他可能外部热源影响，以防最高使用环境温度超过限值。

二、 产品使用注意事项

1. 变送器的使用环境温度范围为-50℃~+71℃。

2. 变送器的本质安全参数如下:

2.1 数字式变送器

2.1.1 LP *abcdefghijklmnop*, (Tank Slayer, RefineME, Chambered或SoClean)

- 电源 (端子+24V, GND)

$U_i=28V$ $I_i=100mA$ $P_i=0.7W$ $C_i \approx 0\mu F$ $L_i \approx 0mH$

- 通讯 (端子Rx/Tx-, GND)

$U_i=8.6V$ $I_i=10mA$ $P_i=21.5mW$ $C_i \approx 0\mu F$ $L_i \approx 0mH$

- 通讯 (端子Rx/Tx+, GND)

$U_i=8.6V$ $I_i=10mA$ $P_i=21.5mW$ $C_i \approx 0\mu F$ $L_i \approx 0mH$

2.1.2 LPL *bcdefghijklmn*, (LevelLimit)

- 电源 (端子+24V, GND)

$U_i=28V$ $I_i=100mA$ $P_i=0.7W$ $C_i \approx 0\mu F$ $L_i \approx 0mH$

- 通讯 (端子Rx/Tx-, GND)

$U_i=8.6V$ $I_i=10mA$ $P_i=21.5mW$ $C_i \approx 0\mu F$ $L_i \approx 0mH$

- 通讯 (端子Rx/Tx+, GND)

$U_i=8.6V$ $I_i=10mA$ $P_i=21.5mW$ $C_i \approx 0\mu F$ $L_i \approx 0mH$

- 开关量

$U_i=28V$ $I_i=5mA$ $P_i=140mW$ $C_i \approx 0\mu F$ $L_i=7.59mH$

2.2 模拟式变送器:

2.2.1 LP *abcdefghijklmnop*, (Tank Slayer, RefineME, Chambered或SoClean)

- LOOP1 (端子LOOP1+, LOOP1-)

$U_i=28V$ $I_i=120mA$ $P_i=840mW$ $C_i \approx 0\mu F$ $L_i=5\mu H$

- LOOP2 (端子LOOP2+, LOOP2-)

$U_i=28V$ $I_i=120mA$ $P_i=840mW$ $C_i \approx 0\mu F$ $L_i=5\mu H$

2.2.2 LPL *bcdefghijklmn*, (LevelLimit)

- LOOP1 (端子LOOP1+, LOOP1-)

$U_i=28V$ $I_i=120mA$ $P_i=840mW$ $C_i \approx 0\mu F$ $L_i=5\mu H$

- LOOP2 (端子LOOP2+, LOOP2-)

$U_i=28V$ $I_i=120mA$ $P_i=840mW$ $C_i \approx 0\mu F$ $L_i=5\mu H$

- 开关量

$U_i=28V$ $I_i=5mA$ $P_i=140mW$ $C_i \approx 0\mu F$ $L_i=7.59mH$

3. 变送器必须与已通过防爆认证的关联设备配套共同组成本安防爆系统方可使用于现场存在爆炸性气体混合物的危险场所。其系统接线必须同时遵守产品和所配关联设备的使用说明书要求，接线端子不得接错。
4. 变送器与关联设备的连接电缆应为带绝缘护套的屏蔽电缆，其屏蔽层应接地。
5. 用户不得自行随意更换该产品的电气零部件，应会同产品制造商共同解决运行中出现的故障，以免影响防爆性能和损坏现象的发生。
6. 产品的安装、使用和维护应同时遵守产品使用说明书、GB/T 3836.13-2021“爆炸性环境 第13部分：设备的修理、检修、修复和改造”、GB/T 3836.15-2017“爆炸性环境 第15部分：电气装置的设计、选型和安装”、GB/T 3836.16-2017“爆炸性环境 第16部分：电气装置的检查与维护”、GB/T 3836.18-2017“爆炸性环境 第18部分：本质安全电气系统”及GB 50257-2014“电气装置安装工程爆炸和火灾危险环境电气装置施工及验收规范”的有关规定。

三、制造厂责任

1. 产品制造厂必须将上述产品安全使用特殊条件和使用注意事项纳入该产品的使用说明书中。
2. 制造厂必须严格按照NEPSI认可的文件资料生产。

上海仪器仪表自控系统检验测试所有限公司
国家级仪器仪表防爆安全监督检验站
二〇二二年五月十二日



(GYJ22.1809X)

(Attachment I)

Attachment I to GYJ22.1809X

LP series Level Plus Level Transmitter, manufactured by Temposonics LLC, has been certified by National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation (NEPSI). The Level Plus Level Transmitter accords with following standards:

GB/T 3836.1-2021 Explosive atmospheres-Part 1: Equipment – General requirements

GB/T 3836.4-2021 Explosive atmospheres-Part 4: Equipment protection by intrinsic safety "i"

Level Plus Level Transmitter has the Ex marking Ex ia II C T4 Ga.

The certified type codes are as following:

Level Plus Digital Level Transmitters (Tank Slayer, RefineME, Chambered or SoClean)

LP **a b c d e f g h i j k l m n o p**, in which:

a indicates unit, which could be T (Tank Slayer), R (RefineME), C (Chambered) or S (SoClean).

b indicates output, which could be M, D or U.

c indicates housing type, which could be A, B, C, D, E, L or Y.

d indicates electronics mounting, which could be 1, 2, 3, 4, 5, 6, 7 or 8.

e indicates sensor pipe, which could be B, C, D, E, F, M, N, P, S, R, Y or X.

f indicates material of construction (wetted parts), which could be 1, 2, 3, A or 9.

g indicates process connection type, which could be 1, 2, 4, 5, 6, 7, 8, A, B, C, D or X.

h indicates process connection size, which could be A, B, C, D, E, F, G, H, J or X.

i indicates number of DT'S (Digital Thermometer), which could be 0, 1, 5, K, M, P or X.

j indicates DT placement, which could be F, C, B, E, K or X.

k indicates notified body, which could be N.

l indicates protection method, which could be I.

m indicates gas group, which could be 3.

n indicates unit of measure, which could be F, M or U.

o indicates length (no decimal places), which could be XXX.XXin, XXX.XXft or XX.XXXmm.

p indicates special, which could be S, E, R or F.

Level Plus Analog Level Transmitters (Tank Slayer, RefineME, Chambered or SoClean)

LP **a b c d e f g h i j k l m n o p**, in which:

a indicates unit, which could be T (Tank Slayer), R (RefineME), C (Chambered) or S (SoClean).

b indicates output, which could be 1, 2, 3, 4, 5, 6 or 7.

c indicates housing type, which could be A, B, C, D, E, L or Y.

d indicates electronics mounting, which could be 1, 2, 3, 4, 5, 6, 7 or 8.

e indicates sensor pipe, which could be B, C, D, E, F, M, N, P, S, R, Y or X.

f indicates material of construction (wetted parts), which could be 1, 2, 3, A or 9.

g indicates process connection type, which could be 1, 2, 4, 5, 6, 7, 8, A, B, C, D or X.

h indicates process connection size, which could be A, B, C, D, E, F, G, H, J or X.

i indicates number of DT'S (Digital Thermometer), which could be 0, 1, 5, K, M, P or X.

j indicates DT placement, which could be F, C, B, E, K or X.

k indicates notified body, which could be N.

l indicates protection method, which could be I.

m indicates gas group, which could be 3.

n indicates unit of measure, which could be F, M or U.

o indicates length (no decimal places), which could be XXX.XXin, XXX.XXft or XX.XXXmm.

p indicates special, which could be S, E, R or F.

Level Plus Digital Level Transmitters (LevelLimit)

LPL **b c d e f g h i j k l m n**, in which:

b indicates output, which could be M.

c indicates sensor pipe, which could be B, M, N, P or S.

d indicates process connection type, which could be 1, 6, 7, 8, A, B, C, D, Z or X.

e indicates process connection size, which could be A, B, C, D, E, F, G, H, J or X.

f indicates number of DT'S (Digital Thermometer), which could be 0, 1, 5, K, M, P or X.

g indicates DT placement, which could be F, C, or X.

h indicates notified body, which could be N.

i indicates protection method, which could be I.

j indicates gas group, which could be 3.

k indicates unit of measure, which could be F, M or U.

l indicates length (no decimal places), which could be XXX.XXin, XXX.XXft or XX.XXXmm.

m indicates special, which could be S, E, R or F.

n indicates HI Switch Position, which could be any 5 numerical digits.

Level Plus Analog Level Transmitters (LevelLimit)

LPL **b c d e f g h i j k l m n**, in which:

b indicates output, which could be 1, 2, 5 or 7.

c indicates sensor pipe, which could be B, M, N, P or S.

d indicates process connection type, which could be 1, 6, 7, 8, A, B, C, D, Z or X.

e indicates process connection size, which could be A, B, C, D, E, F, G, H, J or X.

f indicates number of DT'S (Digital Thermometer), which could be 0, 1, 5, K, M, P or X.

g indicates DT placement, which could be F, C, or X.

h indicates notified body, which could be N.

i indicates protection method, which could be I.

j indicates gas group, which could be 3.

k indicates unit of measure, which could be F, M or U.

l indicates length (no decimal places), which could be XXX.XXin, XXX.XXft or XX.XXXmm.

m indicates special, which could be S, E, R or F.

n indicates HI Switch Position, which could be any 5 numerical digits.

Note: See instruction manual for detail specification of each code.

1. Special conditions for safe use

The suffix "X" placed after the certificate number indicates that this product is subject to special conditions for safe use:

- The apparatus enclosure contains aluminum and is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction. (When installed in a Ga approval)
- The maximum permitted ambient temperature of the Level Plus Digital/Analog Level Transmitter is 71°C. To avoid the effects of process temperature and other thermal effects care shall be taken to ensure the surrounding ambient inside the transmitter housing does not exceed 71°C.
- Some models contains non-metallic enclosure parts, to prevent the risk of electrostatic sparking the non-metallic surface should only be cleaned with a damp cloth.

2. Conditions for safe use

2.1 The ambient temperature range is -50°C~+71°C.

2.2 The intrinsic safety parameters are as following:

● Level Plus Digital Level Transmitter (Tank Slayer, RefineME, Chambered or SoClean)

Supply: $U_i=28V$	$I_i=100mA$	$P_i=0.7W$	$C_i \approx 0\mu F$	$L_i \approx 0mH$
Rx/Tx-: $U_i=8.6V$	$I_i=10mA$	$P_i=21.5mW$	$C_i \approx 0\mu F$	$L_i \approx 0mH$
Rx/Tx+: $U_i=8.6V$	$I_i=10mA$	$P_i=21.5mW$	$C_i \approx 0\mu F$	$L_i \approx 0mH$

● Level Plus Digital Level Transmitters (LevelLimit)

Supply: $U_i=28V$	$I_i=100mA$	$P_i=0.7W$	$C_i \approx 0\mu F$	$L_i \approx 0mH$
Rx/Tx-: $U_i=8.6V$	$I_i=10mA$	$P_i=21.5mW$	$C_i \approx 0\mu F$	$L_i \approx 0mH$
Rx/Tx+: $U_i=8.6V$	$I_i=10mA$	$P_i=21.5mW$	$C_i \approx 0\mu F$	$L_i \approx 0mH$
Switch: $U_i=28V$	$I_i=5mA$	$P_i=140mW$	$C_i \approx 0\mu F$	$L_i=7.59mH$

● Level Plus Analog Level Transmitter (Tank Slayer, RefineME, Chambered or SoClean)

LOOP1: $U_i=28V$	$I_i=120mA$	$P_i=840mW$	$C_i \approx 0\mu F$	$L_i=5\mu H$
LOOP2: $U_i=28V$	$I_i=120mA$	$P_i=840mW$	$C_i \approx 0\mu F$	$L_i=5\mu H$

● Level Plus Analog Level Transmitters (LevelLimit)

LOOP1: $U_i=28V$	$I_i=120mA$	$P_i=840mW$	$C_i \approx 0\mu F$	$L_i=5\mu H$
LOOP2: $U_i=28V$	$I_i=120mA$	$P_i=840mW$	$C_i \approx 0\mu F$	$L_i=5\mu H$
Switch: $U_i=28V$	$I_i=5mA$	$P_i=140mW$	$C_i \approx 0\mu F$	$L_i=7.59mH$

2.3 The Level Plus Level Transmitter must be used together with safety barriers to form an intrinsic safety system thus can be used in hazardous locations. The wiring and installation must fulfil the requirements from instruction manuals of the Level Plus Level Transmitter and chosen safety barriers.

2.4 The connection cable between the transmitter and associated apparatus should be two-core shielded cable with insulating sheath. The shielding layer should be grounded in safe area and insulated from the enclosure.

2.5 Forbid end user to change the configuration to ensure the equipment's explosion protection performance.

2.6 When installation, use and maintenance of Level Plus Level Transmitter, observe following standards:

GB/T 3836.13-2021 "Explosive atmospheres - Part 13: Equipment repair, overhaul and reclamation"

GB/T 3836.15-2017 "Explosive atmospheres - Part 15: Electrical installations design, selection and erection"

GB/T 3836.16-2017 "Explosive atmospheres - Part 16: Electrical installations inspection and maintenance"

GB/T 3836.18-2017 "Explosive atmospheres - Part 18: Intrinsically safe electrical systems"

GB 50257-2014 "Code for construction and acceptance of electric equipment on fire and explosion hazard electrical equipment installation engineering"

3. Manufacturer's Responsibility

3.1 Special condition for safe use specified above should be included in the instruction manual.

3.2 Manufacturing should be done according to the documentation approved by NEPSI.

Shanghai Inspection and Testing Institute of Instruments and Automation Systems Co., Ltd.
National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation

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