



TECHNICAL DESCRIPTION USER MANUAL



TEMPERATURE PROBES



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This manual contains information that must be observed in the interest of your own safety and to avoid material damage. This information is supported by symbols which are used in this manual as indicated. Please read this manual before starting up the device. Store this manual in a place that is accessible to all users at all times.

If difficulties occur during startup, please do not intervene in any way that could jeopardize your warranty rights!

The following standards and directives apply to the use of pairs of temperature probes for measuring the inflow and outflow temperature in a heat exchanger system:

- Product standard DIN EN 1434
- Product standard DIN EN 60751
- Directive 2014/32/EU, Annex I and MI-004
- German Weights and Measures Act (MessEG)
- German Weights and Measures Directive (MessEV)

Specifications for electrical installations must be observed.

All installation and maintenance work must be performed by specialist staff trained for this task.

All notes listed in the installation instructions must be observed.

Identification markings and metrology-relevant safety markings/main stamps must not be damaged or removed – otherwise the temperature probe is no longer admissible for use!

Route the measurement signal lines so that they are at least 50 mm away from other lines, such as grid supply lines and data transmission lines. We recommend installing lines and computer units 300 mm away from strong electromagnetic fields, e.g. from frequency-controlled pumps and high-voltage power lines.

To protect against damage and pollutants, the temperature probes must not be removed from their packaging until immediately before installation.

Do not wind, bend, extend, or shorten the temperature probe lines.

When connecting to a computer unit, always connect the temperature probe first before connecting the volume measuring unit.

Warning symbols



CAUTION!

Risk of burns!

The installation process must be carried out by trained personnel.

When using water additives (corrosion protection, etc.), the operator must make sure there is sufficient corrosion resistance before installing the temperature probe.

With direct mounting, the temperature probe is immersed in the pipeline without any additional immersion sleeve. During dismounting, always make sure that hot medium does not escape from the pipeline.

- Drain the pipeline system or seal off the temperature probe's installation location to relieve pressure.

TYPE OF PROBES

The standard DIN EN 1434 describes the requirements for heat meters and their components. When combining sub-components (flow sensor, set of temperature probes, computer unit) to form a heat meter, the standard prescribes platinum RTD temperature probes according to the standard DIN EN 60751 because these probes have enough temperature stability, accuracy, and interchangeability. These days, the latest heat meters use various nominal values on the computer unit side (resistance value at 0 °C). The nominal values are normally 100 Ω (Pt100), 500 Ω (Pt500) and 1000 Ω (Pt1000).

DT/DS PROBES



Technical Data

Temperature range

902428/50 0 to 150 °C

The maximum operating temperature of the immersion sleeves must be observed.

Immersion sleeve according to 90.279-F05, sheet 3: $T_{\max} = 105\text{ °C}$

Temperature difference

Minimum 3 K

Maximum 150 K

Maximum pressure

902428/50 PN25 with water flow velocity of 2 m/s

902438/50 With immersion sleeves according to 90.279-F05, sheet 3, 4, 5 and 6

PN25 with water flow velocity of 2 m/s

Electrical connection.

2-wire circuit

Maximum measuring current.

The maximum measuring current is calculated using the maximum admissible power loss of 5 mW.

Depending on the nominal values, this results in the following effective currents:

Pt100: 1783 μA

Pt500: 797 μA

Pt1000: 564 μA

Response times

Temperature probe, direct measurement 902428/50

Diameter 5.0 mm $t_{05} \leq 3.5\text{ s}$; $t_{09} \leq 10.5\text{ s}$

Diameter 6.0 mm $t_{05} \leq 5.0\text{ s}$; $t_{09} \leq 11.5\text{ s}$

Measurement stability 10 years (see also maintenance)

The manufacturer guarantees only English text available on our web site www.isoil.com

Installation

If the pair of temperature probes is connected to a computer unit, make sure that the probe's nominal value matches that of the processing computer unit.

Furthermore, make sure that the installation location is deep enough to prevent damage to the tip of the probe or immersion sleeve when screwing in.

The temperature probe must be installed in the pipeline so that a sufficient immersion depth is guaranteed and is always larger than the minimum immersion depth.

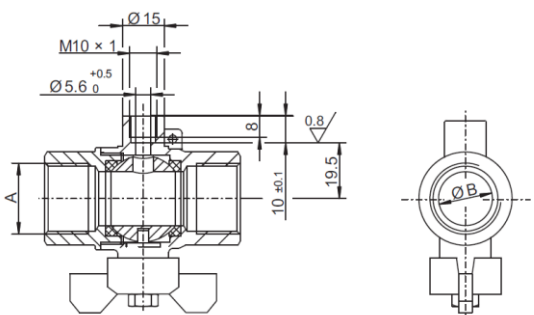
During installation, the connection cable must not be extended or shortened as this would impair compliance with the tolerances (for two-wire technology).

The connecting cable must not be laid alongside or wrapped around hot pipes because the line resistance and its temperature dependence are incorporated into the measurement result for thermometers using two-wire technology.

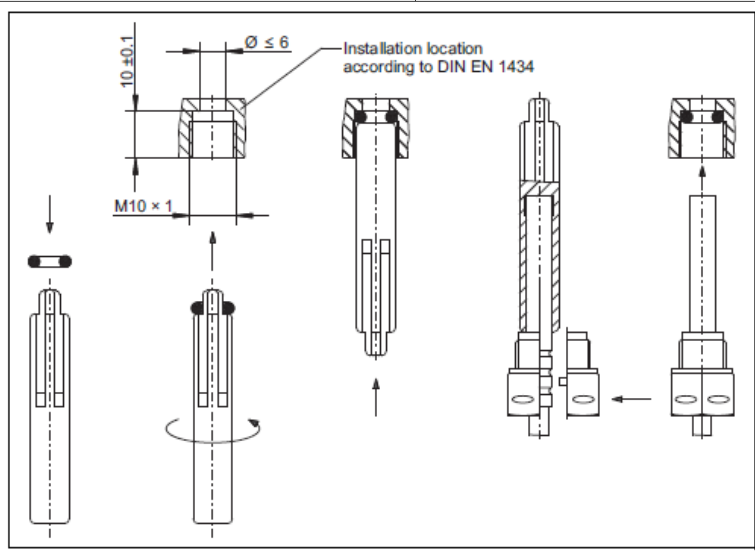
Following successful mounting, the temperature probes must be secured against manipulation with a seal. The sealing hole in the attachment screw or nameplate is intended for this purpose.

Direct Probe Mounting (902428/50)

If the temperature probe is installed directly, the installation locations must be designed according to the standard DIN EN 1434-2, picture A.8 (installation type B, C or D). The adapter's installation must be designed according to the assembly specifications. Make sure that the seal and sealing surface in the installation location is undamaged, clean and dry.



Thread size A	Inner diameter B
G 1/2 B	18.5 mm
G 3/4 B	24 mm
G 1 B	30.5 mm
G 1 1/4 B	39 mm
G 1 1/2 B	45 mm



1. Remove the plug and seal or the old probe and O-ring so that no residue is left behind.
 2. Place the O-ring from the supplied assembly set onto the assembly aid.
 3. Place the O-ring with the assembly aid into the installation location using a rotating motion according to DIN EN 1434.
 4. Place the O-ring into the final installation location using the other end of the assembly aid.
 5. Pull the assembly aid with the end over the temperature probe sleeve – up to the limit stop in the assembly aid (to determine the probe installation length).
- Grasp the two halves of the black plastic quick-release screw directly above the assembly aid and press into the recesses (beads) on the temperature probe sleeve. Press both halves of the screw connection firmly together.
- Remove the assembly aid from the temperature probe.
- Push both halves of the screws firmly together.
6. Press the temperature probe with the black plastic quick-release screw into the installation location and screw it into the limit stop so that it is hand-tight (tightening torque of 3 to 5 Nm).
 7. Check that there is no leakage and seal the temperature probe.

NOTE!

The minimum immersion depth for the temperature probe is 15 mm.

NOTE!

A new O-ring must be used after each dismounting process.

Our standard codes are:

- 26DT0001 DT-2-2-1-PM45B-PO0-0 Cable length 1,5 meters
- 26DT0002 DT-2-2-5-PM45B-PO0-0 Cable length 5 meters

The manufacturer guarantees only English text available on our web site www.isoil.com

PLT PROBES

The PT-500 heat-resistant thermometers are designed for temperature measurement and specifically the PLT series is used as a component and heat meter assembly.

PLT type temperature sensors are produced according to EN1434 - 2: standard version with shaft and well.

Furthermore, they are temperature sensors according to EN 60751 + A2: 2000 which are selected in pairs and calibrated together according to EN1434: 2007.

Torque temperature sensors meet the essential requirements of the technical rule of measuring instruments, of 30 March 2006 (in implementation of Directive 2004/22 / EC of 31 March 2004 relating to the instruments of measure):

- Annex I Essential requests
- Annex MI-004 Energy meters

Encoding of the combination of the pair of temperature probes (or individual sensors) PLT:

	PLT - □ □ □ □ - □ □ *
Tipo	
Pt/model (MID)	Pt500 -2
Connection type	2-wire - 2 4-wire - 4
Cable length	3, 5 or 10
Paired sensors	P
Double paired sensors (three sensors)	PD
Individual sensor (on request)	
OLD VERSION: Mounting set depending by the DN NEW VERSION: - Is indicated the value "0" because the mounting set (pockets) has separate codes.	
No mounting set:	(omitted) -

Nota: * - numeri indicano solo la codifica dell'ordine (non sono utilizzati per la marcatura del sensore).

Technical data

Temperature measurement range: 0°C ... 150°C.

Measurement range of the temperature difference: 3°C ... 100°C.

Maximum admissible fluid temperature: 150°C

Tolerance class: B according to EN 60751

Length of cables: 3m, 5m, 10m

Type of cable for 4-wire connection Without screen: 4 x 0.35mm² (permanently connected)

Cable type for 2-wire connection Without screen: 2 x 0.5mm² (permanently connected)

Maximum permissible RMS value of the sensor current: 0.5 mA

Response Time: $\tau_{0.5}$ · · 10 s.

Total resistance of signal loads (2-wire connection)

0.22 · - per length 3m

0.36 · - per length 5m

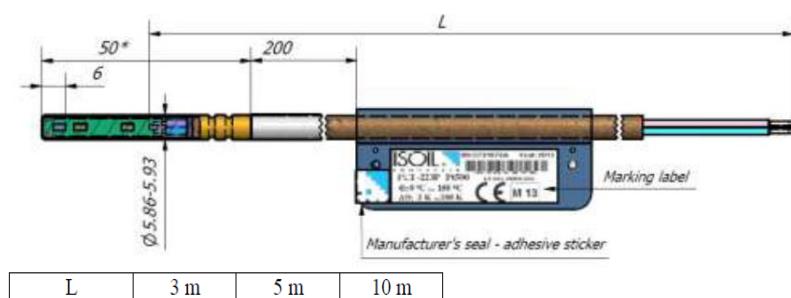
0.72-per length 10m

Ambient temperature: + 5°C ... + 55°C

Mechanical Environmental Class: M1

Electromagnetic Environmental Class: E1

Dimensions

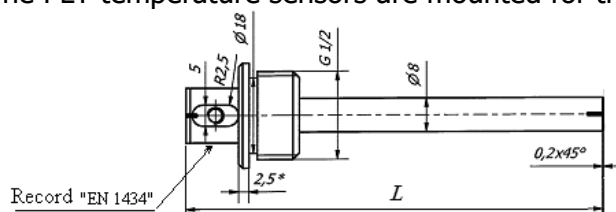


OPERATING PRINCIPLE

PLT temperature sensors are platinum resistance temperature sensors used for the temperature measurement. Output parameter of the temperature sensor is the electrical resistance. The operating principle is based on the variation of the electrical resistance of the sensitive element proportionally to the change in temperature of the measured fluid. Temperature dependent resistance of the heat transfer fluid, and depending on the type of Pt-choice according to the standards EN 60751.

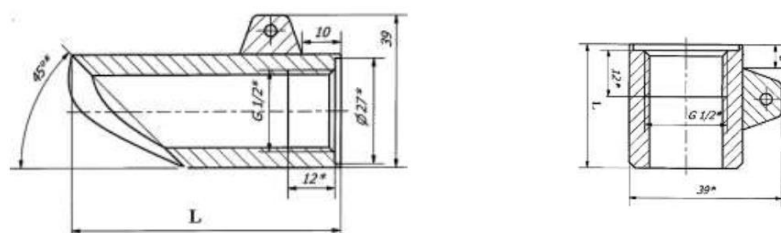
INSTALLATION

The PLT temperature sensors are mounted for their own suitable length for the pocket supplied



Nominal Diameter	POCKET LENGTH
DN20...DN100	100
DN125...DN150	135
DN200	225

They must also have a sleeve suitable for the type of assembly and length



For installations in lines with DN <65mm

Our standard codes are:

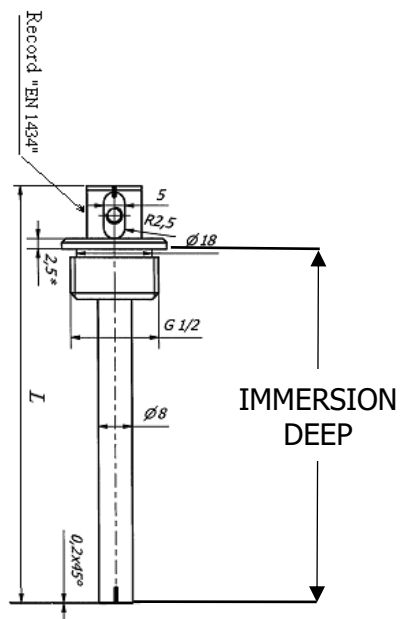
PROBES

- 26PL0064 PLT-2-2-3-P-PO0-0 PAIRED PROBES PT500-MID 2 WIRES 3 METERS
- 26PL0032 PLT-2-2-5-P-PO0-0 PAIRED PROBES PT500 MID 2 WIRES 5 METERS
- 26PL0037 PLT-2-4-10-P-po0-0 PAIRED PROBES PT500 MID 2 WIRES 10 METERS

POCKET

- 26PO0000 POCKET PO100/85* BRASS
- 26PO0002 POCKET PO135/120* BRASS
- 26PO0001 POCKET PO225/210* STAINLESS STEEL

* total lenght(L)/immersion deep



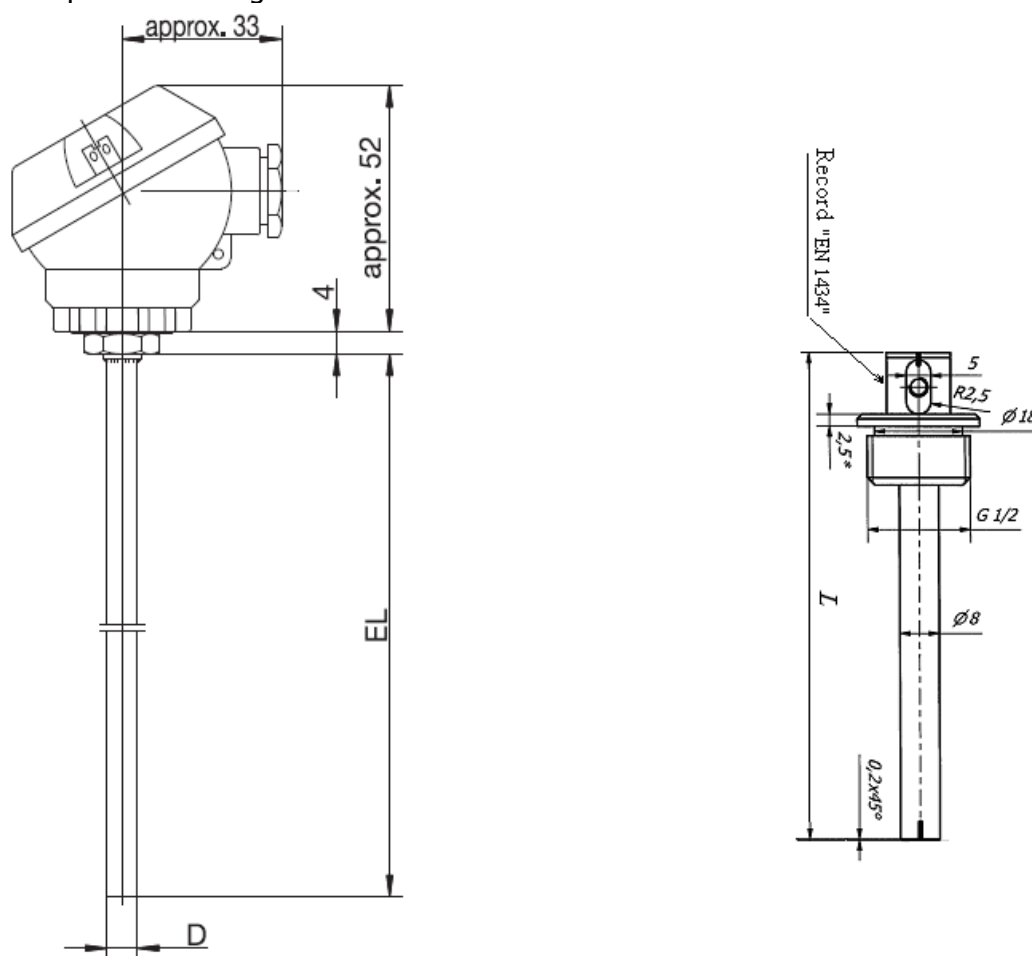
PLH PROBES

These days, the latest heat meters use various nominal values on the computer unit side (resistance value at 0 °C). The nominal values are normally 100 Ω (Pt100), 500 Ω (Pt500) and 1000 Ω (Pt1000). The RTD temperature probes from the type series 902437/10 for installation in immersion sleeves are type-tested according to the European Measuring Instruments Directive 2014/32/EU (MID) including Annexes I and MI-004. The paired temperature probes are suitable for being connected to a computer unit for a heat meter and measuring the difference between the inflow and outflow temperature in a heat exchanger system.

The temperature probes are made up of a corrosion-resistant protection fitting.

In order to meet the metrological requirements of the European Measuring Instruments Directive 2014/32/EU (MID) and the Annex MI-004, the temperature probes are calibrated at three temperatures and paired according to a special mathematical process in order to comply with the tolerances for temperature differences. The lower limit for temperature differences is 3 K.

PLH, and pocket drawing:



Pocket and probes' drawing can change without any notification.

MID VERSION

ISOIL Industria Spa is using two different PLH probes with MID approval, PT100 (67PL0001) and PT500 (67PL0018). Both probes are Class A accordingly to DIN EN 60751.

We can supply the same probes with a test report for CAR use, these probes have the following codes 67PL1001 (PT100) and 67PL1018 (PT500).

The MID versions indicated below have a Basic type #902437/10, with the „B“ module as per MID, and an approval number DE-06-MI004-PTB015.

On the probes a label is reporting the code of the single pair. For decoding the probes' code read the code meaning below.

Code Meaning

Basic Type

- 902437/10
 - o Screw-in RTD temperature probe with continuous sheath, design PL as per DIN EN1434 (2003)

Operating Temperature

- 824
 - o 0 to 150°C
- 830
 - o 0 to 180°C

Measuring Insert

- 1003
 - o 1 x PT100 in 2-wire circuit
- 1004
 - o 1 x PT500 in 2-wire circuit

Tolerance class as per DIN EN 60751

- 2
 - o Class A

Sheath Diameter D in mm

- 6
 - o Ø 6mm (Tolerances as per DIN EN 1434-2)

Fitting Length EL in mm

- 140
 - o 140mm

Extra Code

- 761
 - o Version paired with CE and metrology sign (first calibration)

The pocket used for the MID version has a length of 120mm.

Our standard codes are:

67PL0001(67PL1001)	902137/10 – 830 – 1003 – 2 – 6 – 140/761
67PL0018(67PL1018)	902137/10 – 830 – 1004 – 2 – 6 – 140/761

NON-MID VERSION

For the NON-MID version, we can supply different probes with different solutions.

The probe has an AISI316 shaft with 6mm of external diameter, the length depends from the request.

Precision class accordingly to IEC751, maximum pression acceptable 4.000kPa.

The probe's case is IP66.

Here below the list of options available:

Sensing element (-200 ... +400°C)

- RTD100
- RTD500
- RTD1000

Tolerance Class

- A. A
- B. 1/3 DIN
- C. 1/5 DIN
- D. 1/10 DIN

Connection

- 2 2 CONNECTORS
- 3 3 CONNECTORS
- 4 4 CONNECTORS
- 5 2+2 CONNECTORS (DOUBLE ELEMENT)
- 6 3+3 CONNECTORS (DOUBLE ELEMENT)

Case

- B DIN B
- J J
- AD ATEX with ADPE CASE
- Ex ATEX EeXia
- M Mignon
- P PVC

Process connection

- 0 Without tread
- 1 Fixed 1/2" GM
- 2 Fixed 1/2" NPT
- 3 Sliding 1/2" with brass cone
- 4 Sliding 1/2" with inox cone and inox pawl
- 5 Sliding 1/2" with inox cone and Teflon pawl

Output signal

- A. Ohm
- B. 4-20mA
- C. 4-20mA Atex EeXia certified
- D. 4-20mA + HART Atex EeXia certified

Pocket

- 0 None
- 1 From pipe 8mm, L=100mm, 1/2", 40bar
- 2 From pipe 8mm, L=100mm. 1/2", 350bar

Reports/Certifications

- A. None
- B. Test report with Accredia reference (2 points) used for CAR application
- C. Pair selection
- D. Pair selection + Test report
- E. Accredia Certificate on 3 points
- F. Accredia Certificate on 5 points

Execution

- 0 Standard closed for liquids
- 1 Perforated for air application

EXAMPLE OF CODE

Code:	RTD500 - A - 4 - B - 0 - A - 1 - C - 0 -	L=240- LP=220
Description:		
Probe:	500ohm a 0°C	
Class:	A	
Connection:	4 connectors	
Case:	B	
Process connection:	Without threaded	
Output:	Ohm	
Pocket/s:	dn8mm from pipe L=100mm 1/2" - 40 bar	
Reports:	Paired	
Probe's type:	Standard probe closed for liquid	
Probe's length/pocket:	Probe=240mm-Pocket=220mm	

OLD CODE DESCRIPTION

PLH-1-4-Pxxx-Pxxxx

PLH= **P**ocket needed; type „L“; with **H**ead

1= Pt100 thermistor

4= Number of wires connectables

Pxxx= Probe' shaft length (mm)

Pxxxx= Pocket immersion (mm)

PLH-2-4-Pxxx-Pxxxx

PLH= **P**ocket needed; type „L“; with **H**ead

2= Pt500 thermistor

4= Number of wires connectables

Pxxx= Probe' shaft length (mm)

Pxxxx= Pocket immersion (mm)

All the PLH probes are paired for energy calculation and class „B“ as per IEC751

The probe' shaft is usually at least 20mm longer than the value of pocket immersion.

Examples:

PLH-2-4-P220-PO200

PLH probes (paired) with Pt500 thermistor, probe's shaft 220mm and pocket immersion 200mm

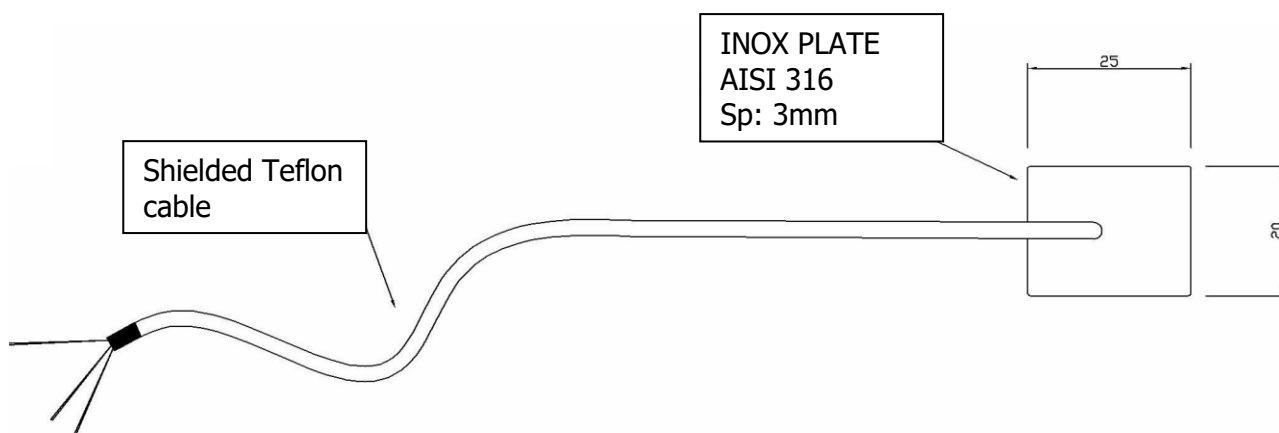
EXCEPTIONS

- 67PL0020 PLH-2-4-P100-PO100 Coppia sonde PT500 classe **B** 4 fili con pozzetti
 - PLH-2-4-P100-PO100 Paired probes PT500 class **B** 4 wires with pocket
- 67PL1073 PLH-2-4-P70-PO50 Coppia sonde PT500 classe A-4 fili con pozzetti
 - PLH-2-4-P70-PO50 Paired probes PT500 class A 4 wires with pocket
 - **Are both using a thermoelement Pt500 class „A“ as per IEC751.**
- 67PL0020 PLH-2-4-P**100**-PO100 Coppia sonde PT500 classe B 4 fili con pozzetti
 - PLH-2-4-P**100**-PO100 Paired probes PT500 class B 4 wires with pocket
 - **The probe' shaft length is 120mm.**

PLS PROBES

The PLS probes are SKIN POINT probes using thermistors. The PLS probes are usually used for measuring the temperature from the external part of the pipe.

The most significant use of this probes is with the CLAMP-ON ultrasonic flow and heat meter.



TECHNICAL FEATURES

Thermistor Pt100 single element (PT500 on request)

Execution 2 -3- 4 wires on request

Range -50÷+250°C

Precision class ½ DIN IEC751 (Class A)

Insulation >MOhm @ 500Vac

Dielectric Rigidity >2000 Vac

Shielded Teflon cable

Cable's length to be defined

INSTALLATION RECOMMENDATIONS

If the pair of temperature probes is connected to a computer unit, make sure that the probe's nominal value matches that of the processing computer unit.

Furthermore, make sure that the installation location is deep enough to prevent damage to the tip of the probe or immersion sleeve when screwing in.

The temperature probe must be installed in the pipeline so that a enough immersion depth is guaranteed that is greater than the minimum immersion depth in all cases.

During installation, the connection cable must not be shortened or extended as this would impair compliance with the tolerances (for two-wire technology).

To avoid an inductive effect, the connecting cable should not be wound.

The connecting cable must not be laid alongside or wrapped around hot pipes because the line resistance and its temperature dependence are considered in the measurement result for temperature probes using two-wire technology.

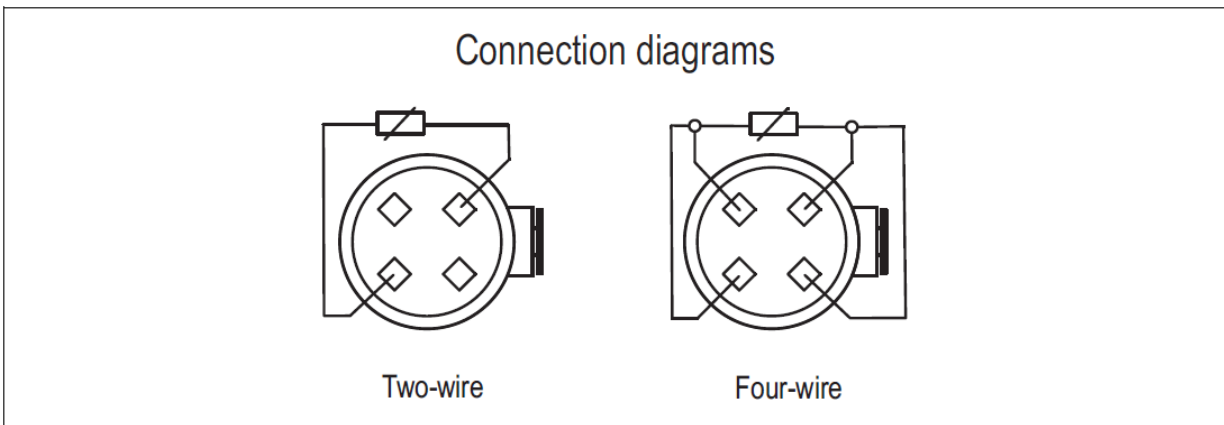
Following successful mounting, the temperature probes must be secured against manipulation with a seal. For this, the seal holes in the fastening screw at the terminal head, or special sealing eyelets, are provided. The sealing set is available as part no. 00650727.

The maximum length for connecting cables in two-wire technology depends on the conductor cross section and the nominal value according to DIN EN 1434-2. If the maximum permissible length, which

may be connected to the calculator, has a lower value, this value applies (to be taken from the type examination certificate).

Conductor cross section in mm ²	Maximum length for Pt100 in m	Maximum length for Pt500 in m	Maximum length for Pt1000 in m
0.22	2.5	12.5	25.0
0.50	5.0	25.0	50.0
0.75	7.5	37.5	78.0
1.50	15.0	75.0	150.0

When choosing a connecting cable, make sure that the sheath material is sufficiently age resistant. The connecting cable's outer diameter should be chosen so that there can be a secure seal for the cable entry to the terminal head (terminal head shape J: outer diameter 4 to 9 mm; terminal head shape B: outer diameter 5 to 12.5 mm).



In order to reduce additional installation-related measurement errors to a minimum, the temperature probes in the flow and return must be installed the same. This applies to the pipe diameters and installation fittings used, and the choice of the same immersion depth, which must be greater than the minimum immersion depth, and the external thermal insulation. This is intended to ensure that the possible measurement deviations depending on the installation location are canceled out in the first approximation when determining the difference.

IN THREADED PIPE FITTING.

DN:15,20,25,32 and 40

USE BALL VALVE, PROBE AXIS PERPENDICULAR TO AXIS OF FITTING AND IN THE SAME PLANE.

IN BEND.

DN≤50

INSTALL IN BEND WITH 70mm TEMPERATURE BOSS, AGAINST FLOW, PROBE AXIS COINCIDENT WITH PIPE AXE

ANGLED PROBES.

DN≤50

INSTALL WITH 45° TEMPERATURE BOSS, AGAINST FLOW

PERPENDICULAR PROBE

Dn65≤DN≤DN250

INSTALL WITH 70mm TEMPERATURE BOSS, PROBE AXIS PERPENDICULAR TO AXIS AND IN THE SAME PLANE.

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EU Konformitätserklärung

EU Declaration of Conformity / Déclaration UE de conformité

Dokument-Nr. <i>Document No. / Document n°</i>	CE 450	
Hersteller <i>Manufacturer / Etabli par</i>	JUMO GmbH & Co. KG	
Anschrift <i>Address / Adresse</i>	Moritz-Juchheim-Straße 1, 36039 Fulda	
Produkt <i>Product / Produit</i>	Beschreibung Typ/ Serie Typenblatt-Nr.	Widerstandsthermometer für Wärmehalter, TYP DL und PL mit Anschlusskopf 902427/10; 902427/11; 902427/12 und 902437/10; 902437/12; 902424 und 902434

Wir erklären in alleiniger Verantwortung, dass das bezeichnete Produkt die Schutzanforderungen der Europäischen Richtlinien erfüllt.

*We hereby declare in sole responsibility that the designated product fulfills the safety requirements of the European directives.
Nous déclarons sous notre seule responsabilité que le produit remplit les directives européennes.*

Richtlinie
Directive / Directive

2004/22/EG [MID]

Ausgabe: 04.2004

Datum der Erstanbringung des
CE-Zeichens auf dem Produkt
*Date of first application of the CE mark to the product
Date de 1ère application du sigle CE sur le produit*

09.2008

EG-Baumusterprüfbescheinigung
Type examination / Tests échantillon

DE-06-MI004-PTB015 (Rev. 2)

Angewendete Normen/Spezifikationen
Standards/Specifications applied / Normes/Spécifications appliquées

DIN EN 1434-1	Ausgabe: 05.2007
DIN EN 1434-2	Ausgabe: 05.2007
DIN EN 1434-4	Ausgabe: 05.2007
DIN EN 1434-5	Ausgabe: 05.2007
DIN EN 60751	Ausgabe: 05.2009

Anerkannte Qualitätssicherungssysteme der Produktion
Recognized quality assurance systems used in production / Organisme notifié agréé

nach Richtlinie 2004/22 EG (MID) Modul D / EU Directive 2004/22/EG module D /
Directive européenne 2004/22/EG module D
PTB Zertifizierungsstelle für Messgeräte
Kennnummer 0102 / Identification No. 0102 / N° d'identification 0102

Aussteller:
Issued by: / Etabli par:

Firma / Company / Société
JUMO GmbH & Co. KG, Fulda

Ort, Datum:
Place, date: / Lieu, date:

Fulda, 2014-11-26

Rechtsverbindliche Unterschrift
*Legally binding signature
Signature juridiquement valable*

Geschäftsbereichsleitung Verkauf und Produktion
*Head of Division Sales and Production
Direction du département Ventes et Production*
ppa. Wolfgang Vogl



LIETUVOS ENERGETIKOS INSTITUTAS
ŠILUMINIŲ ĮRENGIMŲ TYRIMO IR
BANDYMŲ LABORATORIJA



KONTROLĖ
ISO/IEC 17020

LIETUVOS
NACIONALINIS
AKREDITACIJOS
BIURAS

Nr. LA. 06.005

EB-TIPO TYRIMO SERTIFIKATAS EC-TYPE EXAMINATION CERTIFICATE Nr. LT-1621-MI004-011

Kas išdavė:

Issued by:

Lietuvos energetikos instituto Šiluminių įrengimų tyrimo ir bandymų laboratorija, EB notifikuotos įstaigos numeris 1621
Heat Equipment Research and Testing Laboratory of Lithuanian Energy Institute, EC-Notified Body number 1621

Išdavimo data:

Date of issue:

2013-03-25

Kam išduota:

Issued to:

ISOIL Industria SpA
Via F.lli Gracchi 27
20092 Cinisello Balsamo (MI) Italy

Matavimo priemonės tipas:

Type of instrument:

Temperatūros jutiklių pora
Temperature sensor pair

Tipo pavadinimas:

Type designation:

PLT

Nuorodos Nr.:

Reference No.:

LEI-12-MP-016.13

Atliktas pagal:

In accordance with:

Matavimo priemonių techninį reglamentą, patvirtintą VMT direktoriaus 2006-03-30 įsakymu Nr. V-31, įgyvendinantį 2004 m. kovo 31 d. Europos Parlamento ir Tarybos direktyvą 2004/22/EB
Technical regulation on measuring instruments approved by the Director of State metrology service 2006-03-30 Order No. V-31 which implements the Directive 2004/22/EC of the European Parliament and Council of 31 March 2004 on measuring instruments

Taikomi esminiai reikalavimai:

Applicable essential requirements:

I priedas (esminiai reikalavimai) ir MI-004 (šilumos skaitikliai)
Annex I (essential requirements) and annex MI-004 (heat meters)

Galioja iki:

Valid until:

2023-03-25

Prie šio sertifikato pridedama:

Appended to this certificate:

Prietaiso aprašymas, techniniai duomenys, patikros tvarka, matavimų apsauga, žymėjimas ir užrašai (4 lapai).

Description, technical data, verification, security measures, labeling and inscriptions (4 pages).



Įvertinimą atliko
Evaluator

Handwritten signature of Mindaugas Mockevičius

Mindaugas Mockevičius

Laboratorijos vadovo pavaduotojas
Deputy Head of the Laboratory

Handwritten signature of Gediminas Zygmantas

Gediminas Zygmantas

Šis sertifikatas be rašinio Šiluminių įrengimų tyrimo ir bandymų laboratorijos leidimo gali būti dauginamas tik pilnai.

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Apie bet kokius pakeitimus atliktus gaminyje gamintojas privalo pranešti Šiluminių įrengimų tyrimo ir bandymų laboratorijai patikrinti užsakymų patikrinimui ar šis sertifikatas lieka galioti.

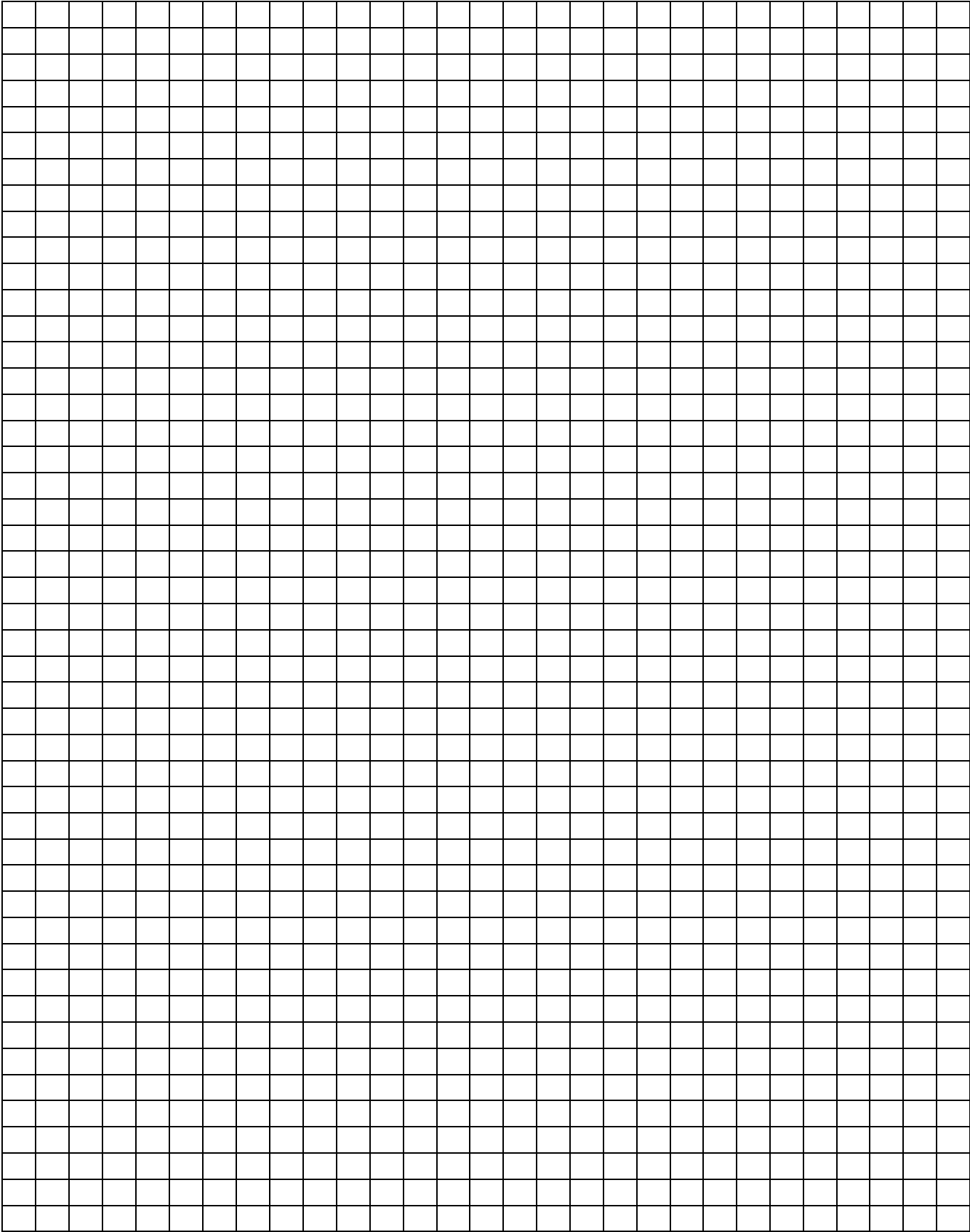
The manufacturer shall immediately inform Heat equipment research and testing laboratory of all modifications of instrument and place an order for check whether the certificate remains in force.

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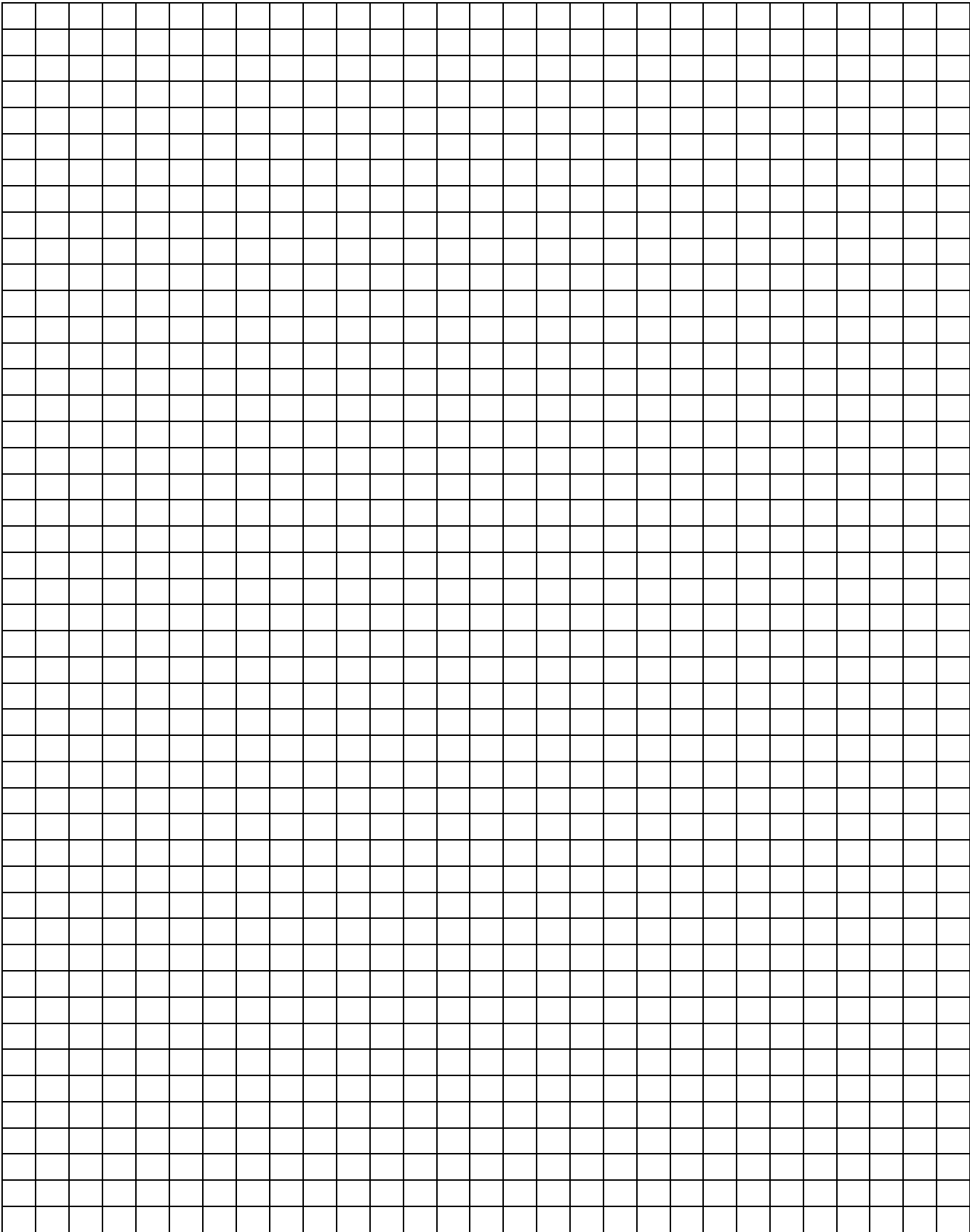
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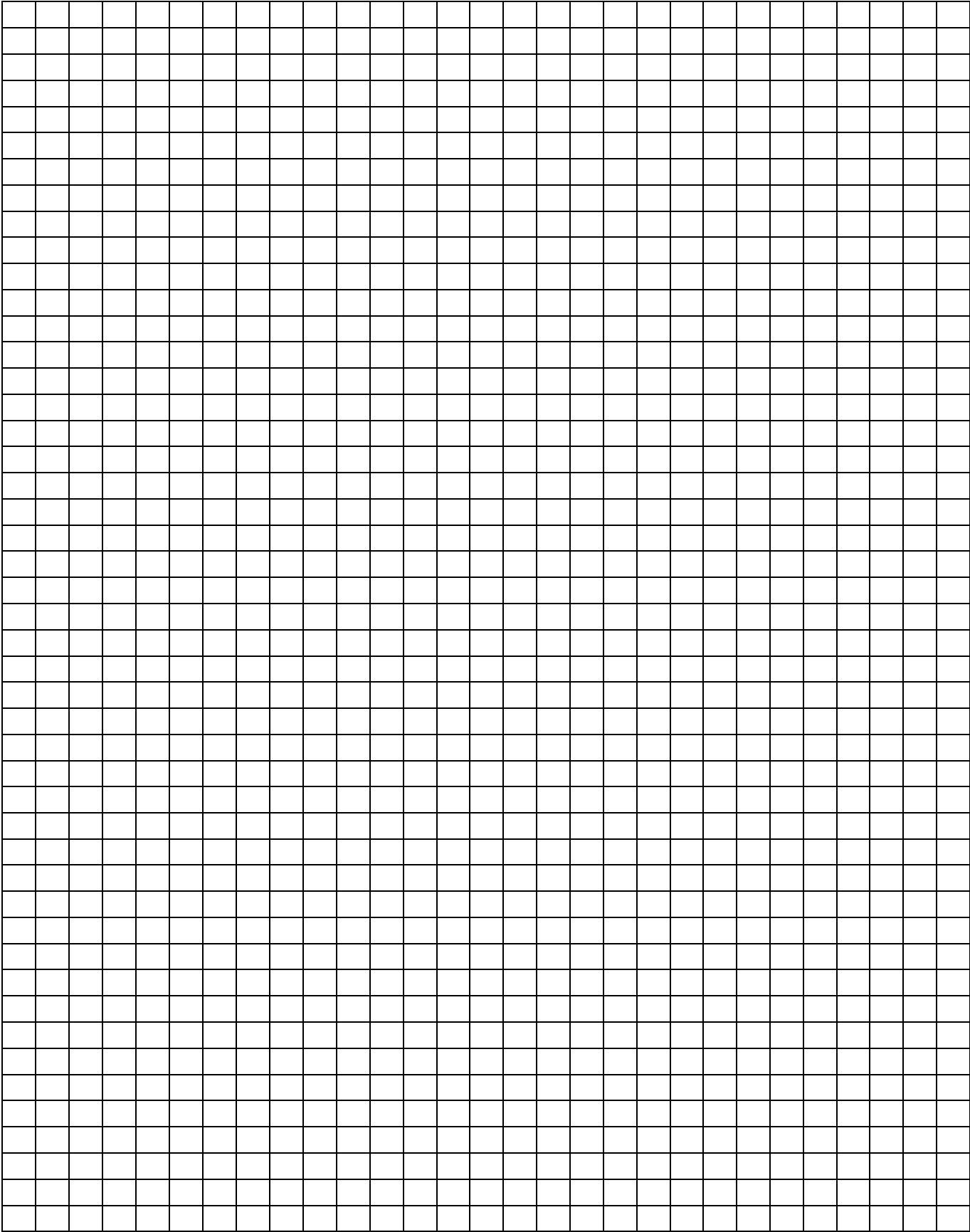


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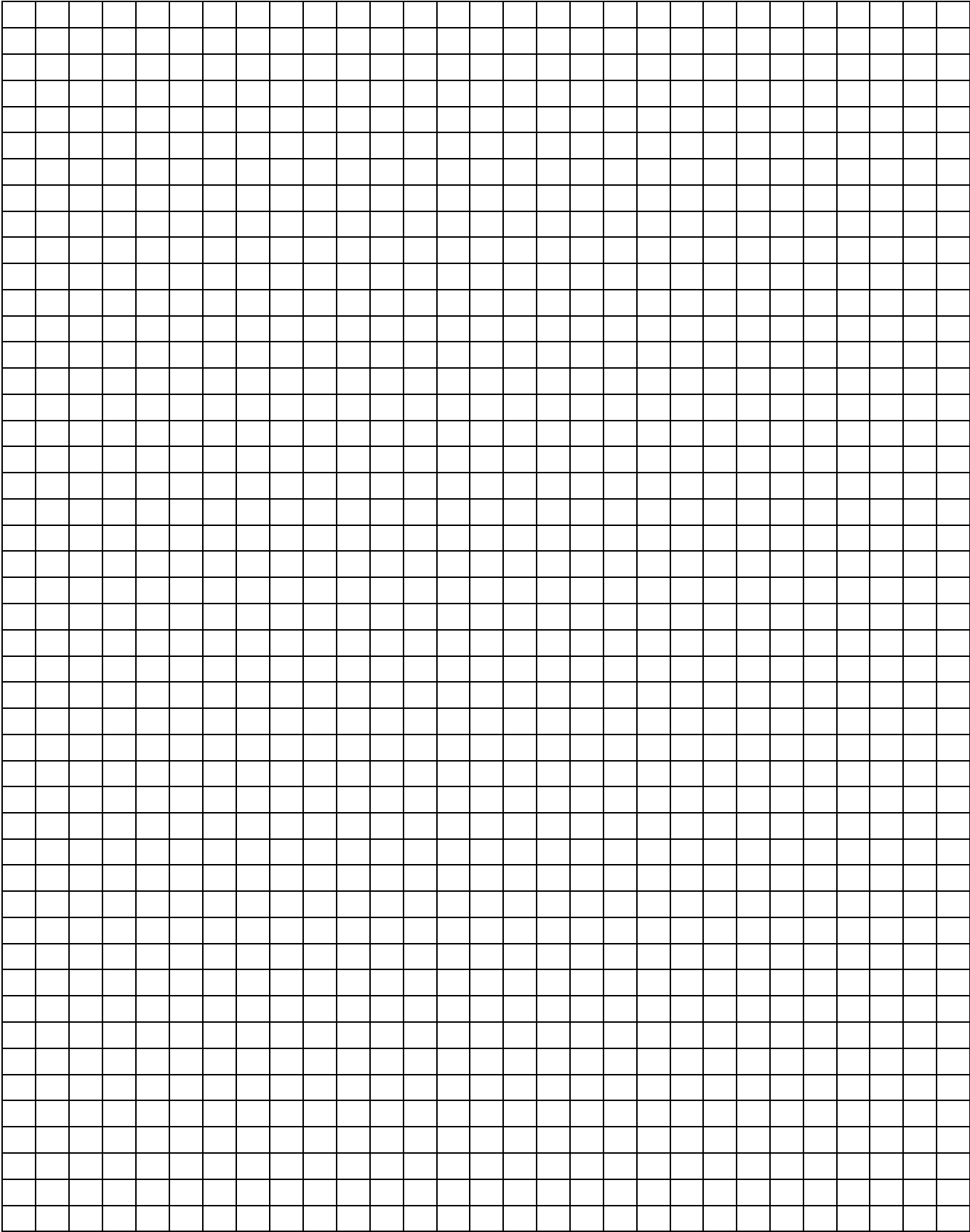
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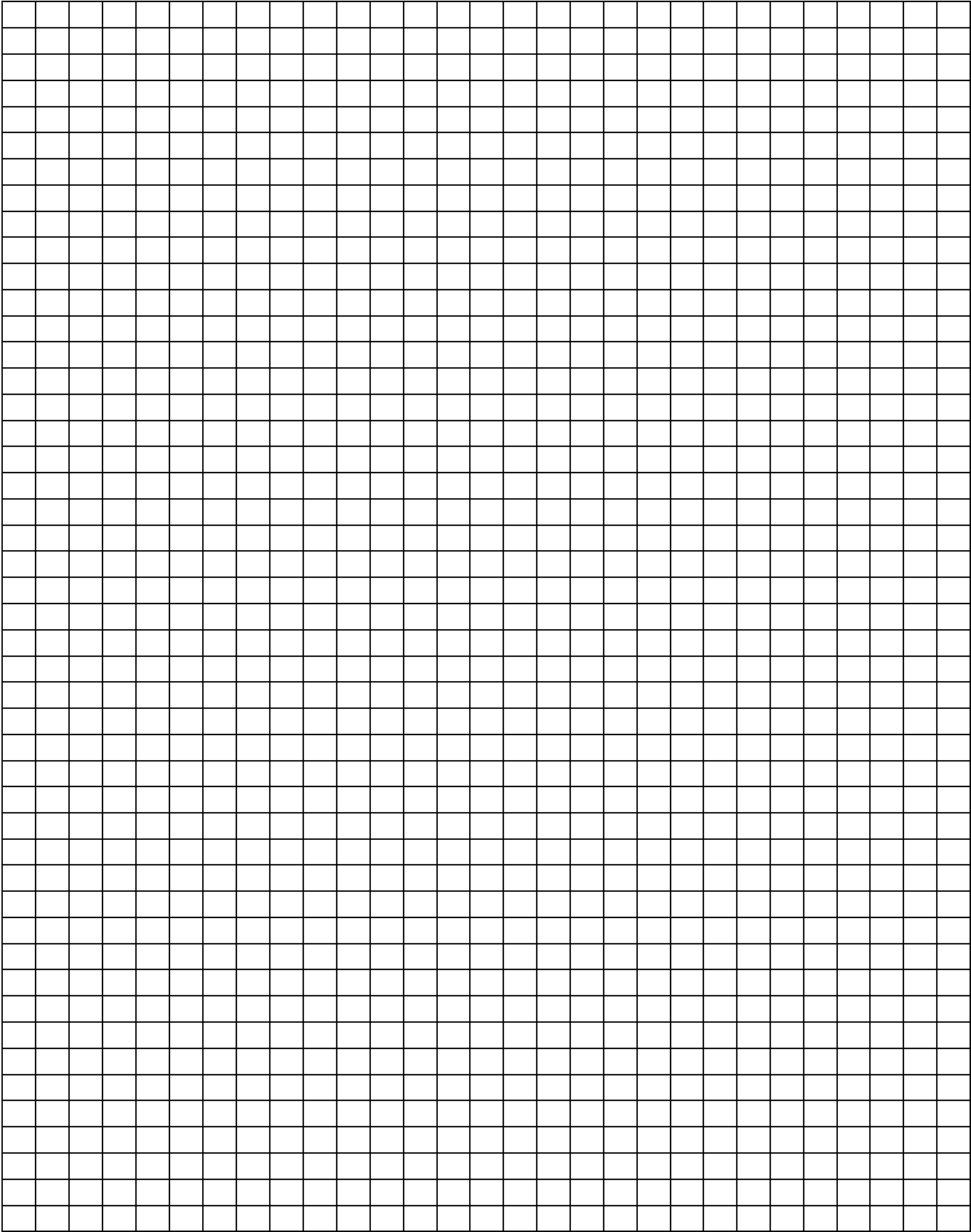


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