BOSCH

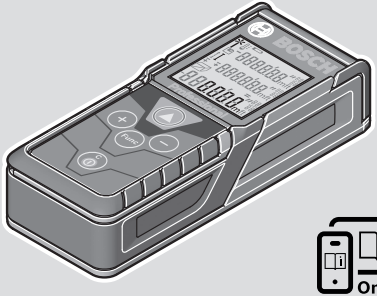
GLM 40-12 Professional

Robert Bosch Power Tools GmbH
70538 Stuttgart • GERMANY

www.bosch-professional.com

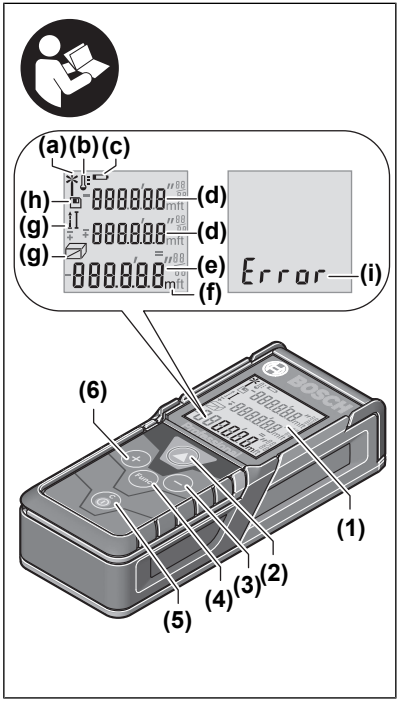
1 609 92A A4L (2024.10) O / 107

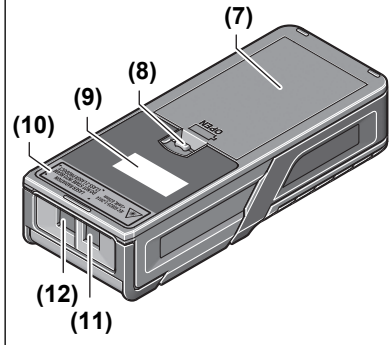
1 609 92A A4L

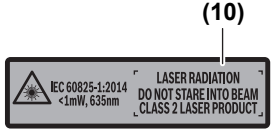


Online
operating instructions

Scan for more information
掃描以獲取更多資訊
请扫描，以了解更多信息
스캔하여 자세한 정보 확인하기
โปรดสแกนเพื่อดูข้อมูลเพิ่มเติม
Hãy quét các thông tin chi tiết
Pindai untuk informasi lebih lanjut


(a)
(b)
(c)
(h)
(g)
(g)
(d)
(d)
(e)
(f)
Error
(i)
(6)
(1)
(2)
(3)
(4)
(5)


(7)
(8)
(9)
(10)
(12)
(11)


(10)
IEC 60825-1:2014
<1mW, 635nm
LASER RADIATION
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT

English

Safety Instructions

All instructions must be read and observed in order for the measuring tool to function safely. The safeguards integrated into the measuring tool may be compromised if the measuring tool is not used in accordance with these instructions. Never make warning signs on the measuring tool unrecognisable. SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE AND INCLUDE THEM WITH THE MEASURING TOOL WHEN TRANSFERRING IT TO A THIRD PARTY.

- ▶ **Warning! If operating or adjustment devices other than those specified here are used or other procedures are carried out, this can lead to dangerous exposure to radiation.**
- ▶ **The measuring tool is delivered with a laser warning sign (marked in the illustration of the measuring tool on the graphics page).**
- ▶ **If the text of the laser warning label is not in your national language, stick the provided**

warning label in your national language over it before operating for the first time.

Do not direct the laser beam at persons or animals and do not stare into the direct or reflected laser beam yourself. You could blind somebody, cause accidents or damage your eyes.

- ▶ **If laser radiation hits your eye, you must close your eyes and immediately turn your head away from the beam.**
- ▶ **Do not make any modifications to the laser equipment.**
- ▶ **Have the measuring tool repaired only by a qualified specialist using only original replacement parts.** This will ensure that the safety of the measuring tool is maintained.
- ▶ **Do not let children use the laser measuring tool unsupervised.** They could unintentionally blind themselves or other persons.
- ▶ **Do not use the measuring tool in explosive atmospheres which contain flammable liquids, gases or dust.** Sparks may be produced inside the measuring tool, which can ignite dust or fumes.
- ▶ **Do not use the laser goggles (accessory) as protective goggles.** The laser goggles make

the laser beam easier to see; they do not protect you against laser radiation.

- ▶ **Do not use the laser goggles (accessory) as sunglasses or while driving.** The laser goggles do not provide full UV protection and impair your ability to see colours.

Product Description and Specifications

Intended Use

The measuring tool is intended for measuring distances, lengths, heights and clearances, and for calculating areas and volumes.

The measuring tool is suitable for indoor use.

Product Features

The numbering of the product features refers to the representation of the measuring tool in the images.

(1) Display

(2) ▲ Measuring button

(3) — Minus button

(4) Function button

(5) On/off button

(6) Plus button

(7) Battery compartment cover

(8) Locking mechanism of the battery compartment cover

(9) Serial number

(10) Laser warning label

(11) Reception lens

(12) Laser beam output

Display elements

(a) Laser switched on

(b) Temperature warning

(c) Battery warning

(d) Measured value lines

(e) Result line

(f) Unit of measurement

(g) Measuring function display

(h) Memory value display

(i) Error display **"Error"**

Technical data

Digital laser measure	**GLM 40-12**
Article number	**3 601 K72 9K1**
Measuring range[A)]	0.15–40 m
Measuring range (unfavourable conditions)[B)]	20 m
Measuring accuracy[A)]	±1.5 mm
Measuring accuracy (unfavourable conditions)[B)]	±3.0 mm
Smallest display unit	1 mm
General	
Operating temperature[C)]	–10 °C to +45 °C
Storage temperature	–20 °C to +70 °C
Relative air humidity max.	90 %
Max. altitude	2000 m
Pollution degree according to IEC 61010-1	2[D)]
Laser class	2
Laser type	635 nm, < 1 mW

Digital laser measure	**GLM 40-12**
Divergence of the laser beam	< 1.5 mrad (full angle)
Automatic switch-off after approx.	
– Laser	20 s
– Measuring tool (without measurement)	5 min
Batteries	2 × 1.5 V LR03 (AAA)

A) When measuring from the back edge of the measuring tool, this applies for high reflectivity of the target (e.g. a wall painted white), weak background lighting and a 20 °C operating temperature; a distance-dependent deviation of ±0.05 mm/m must additionally be factored in.

B) When measuring from the back edge of the measuring tool, this applies for high reflectivity of the target (e.g. a wall painted white), strong background lighting, 20 °C operating temperature and high elevation. In addition, a deviation of ±0.15 mm/m must be taken into account, depending on the distance.

C) In continuous measurement mode, the max. operating temperature is +40 °C.

D) Only non-conductive deposits occur, whereby occasional temporary conductivity caused by condensation is expected.

The serial number **(9)** on the type plate is used to clearly identify your measuring tool.

Inserting/Changing the Battery

ⓘ Always replace all the non-rechargeable batteries at the same time. Only use non-rechargeable batteries from the same manufacturer and which have the same capacity.

ⓘ When inserting the batteries, ensure that the polarity is correct according to the illustration on the inside of the battery compartment.

- ▶ **Take the batteries out of the measuring tool when you are not using it for a prolonged period of time**. The batteries can corrode during prolonged storage in the measuring tool.

Operation

Starting Operation

- ▶ **Never leave the measuring tool unattended when switched on, and ensure the measuring tool is switched off after use.** Others may be dazzled by the laser beam.
- ▶ **Protect the measuring tool from moisture and direct sunlight.**

- ▶ **Do not expose the measuring tool to any extreme temperatures or variations in temperature.** For example, do not leave it in a car for extended periods of time. In case of large variations in temperature, allow the measuring tool to adjust to the ambient temperature before putting it into operation. The precision of the measuring tool may be compromised if exposed to extreme temperatures or variations in temperature.
- ▶ **Avoid substantial knocks to the measuring tool and avoid dropping it.** After strong external influences on the measuring tool, you should always carry out an accuracy check (see "Accuracy Check", page 17) before further work.

Switching On and Off

» Press the ▲ button to switch the measuring tool and the laser on.

→ You can also switch on the measuring tool without the laser by pressing the $\overset{c}{\textcircled{i}}$ button.

» Press and hold the $\overset{c}{\textcircled{i}}$ button to switch off the measuring tool.

→ The measured values and device settings in the memory are retained.

All stored values are retained when the tool is switched off.

Measuring Process

Once switched on, the measuring tool is in the length measurement function.

The rear edge of the measuring tool is always the reference level for the measurement.

» Apply the measuring tool to the point at which you want to start the measurement (e.g. wall).

» If you have switched on the measuring tool with the C button, then briefly press the ▲ button to switch on the laser.

» Press the ▲ button to start the measurement.

Once the measurement process is complete, the laser beam will switch off. For a further measurement, repeat this process.

Measured values or end results can be added or subtracted.

In the continuous measurement function, the measurement begins immediately upon switching on the function.

For more information, you can access the online operating instructions at **www.bosch-pt.com/manuals**

The measuring tool must not be moved during a measurement. Therefore, place the measuring tool, as far as this is possible, against or on a firm stop or supporting surface.

The reception lens **(11)** and the laser beam output **(12)** must not be covered during the measuring process.

Basic settings

The measuring tool offers the following basic settings:

– Changing the unit of measurement
– Switching audio signals on and off

For more information, you can access the online operating instructions at **www.bosch-pt.com/manuals**

Measuring functions

Selecting/Changing Measuring Function

The measuring tool offers the following measuring functions:

- Length measurement
- Area measurement
- Continuous measurement
- Volume measurement
- Indirect distance measurement
- Indirect height measurement
- Addition/subtraction
- Memory function

For more information, you can access the online operating instructions at **www.bosch-pt.com/manuals**

Accuracy Check

Regularly check the accuracy of the distance measurement.

For more information, you can access the online operating instructions at **www.bosch-pt.com/manuals**

Error Message

If a measurement cannot be performed correctly, the error message will appear in the display.

» Try to perform the measuring process again.

» If the error message appears again, switch the measuring tool off and back on, and start the measurement again.

The measuring tool monitors correct operation in every measurement. If a defect is detected, all indicators on the display will flash. In this case, or if you are unable to rectify an error using the corrective measures, send the measuring tool to the Bosch after-sales service via your dealer.

Maintenance and Service

Maintenance and Cleaning

Keep the measuring tool clean at all times.

Never immerse the measuring tool in water or other liquids.

Wipe off any dirt using a damp, soft cloth. Do not use any detergents or solvents.

Take particular care of the reception lens **(11)**, which must be handled with the same level of care

you would give to a pair of glasses or a camera lens.

After-Sales Service and Application Service

Our after-sales service responds to your questions concerning maintenance and repair of your product as well as spare parts. You can find explosion drawings and information on spare parts at:
www.bosch-pt.com
The Bosch product use advice team will be happy to help you with any questions about our products and their accessories.

In all correspondence and spare parts orders, please always include the 10-digit article number given on the nameplate of the product.

Malaysia
Robert Bosch Sdn. Bhd.(220975-V) PT/SMY
No. 8A, Jalan 13/6
46200 Petaling Jaya
Selangor
Tel.: (03) 79663194
Toll-Free: 1800 880188
Fax: (03) 79583838
E-Mail: **kiathoe.chong@my.bosch.com**
www.bosch-pt.com.my

You can find further service addresses at:
www.bosch-pt.com/serviceaddresses

Disposal

Measuring tools, accessories and packaging should be recycled in an environmentally friendly manner.

Do not dispose of measuring tools or batteries with household waste.

中文

安全规章

必须阅读并注意所有说明，以安全可靠地操作测量仪。如果不按照给出的说明使用测量仪，可能会影响集成在测量仪中的保护功能。测量仪上的警戒牌应

保持清晰可读的状态。请妥善保存本说明书，并在转交测量仪时将本说明书一起移交。

- ▶ **小心 – 如果使用了与此处指定的操作或校准设备不同的设备，或执行了不同的过程方法，可能会导致危险的光束泄露。**
- ▶ **本测量仪交付时带有一块激光警戒牌（在测量仪示意图的图形页中标记）。**
- ▶ **如果激光警戒牌的文字并非贵国语言，则在第一次使用前，将随附的贵国语言的贴纸贴在警戒牌上。**

不得将激光束指向人或动物，请勿直视激光束或反射的激光束。
可能会致人炫目、引发事故或损伤眼睛。

- ▶ **如果激光束射向眼部，必须有意识地闭眼，立即从光束位置将头移开。**
- ▶ **请不要对激光装置进行任何更改。**

- ▶ **仅允许由具备资质的专业人员使用原装备件修理测量仪。**如此才能够确保测量仪的安全性能。
- ▶ **不得让儿童在无人看管的情况下使用激光测量仪。**可能意外地让他人或自己炫目。
- ▶ **请勿在有易燃液体、气体或粉尘的潜在爆炸性环境中使用测量仪。**测量仪器内可能产生火花并点燃粉尘和气体。
- ▶ **激光视镜（附件）不得用作护目镜。**激光视镜用于更好地识别激光束；然而对激光束并没有防护作用。
- ▶ **激光视镜（附件）不得用作太阳镜或在道路交通中使用。**激光视镜并不能完全防护紫外线，还会干扰对色彩的感知。

产品和性能说明

按照规定使用

本仪器适用于测量距离，长度，高度和间距。也可以使用本仪器计算面积和体积。

本测量仪器适合在室内使用。

插图上的机件

图示组件的编号和测量仪插图上的一致。

(1) 显示屏

(2) ▲ 测量键

(3) — 减号键

(4) Func 功能键

(5) C ⏻ 起停开关

(6) + 加号键

(7) 蓄电池盒盖

(8) 蓄电池盒盖止动件

(9) 序列号

(10) 激光警示牌

(11) 接收镜头

(12) 激光束出口

显示元件

(a) 激光已接通

(b) 温度警告

(c) 电池电量警告标志

(d) 测量值行

(e) 结果行

(f) 尺寸单位

(g) 测量功能显示

(h) 存储值显示

(i) 错误显示**“Error”**

技术参数

数字式激光测距仪	GLM 40-12
物品代码	**3 601 K72 9K1**
测量范围[A)]	0.15至40米
测量范围（不利条件下）[B)]	20米
测量精度[C)]	2级
最小显示单位	1毫米

数字式激光测距仪	GLM 40-12
常规信息	
工作温度[D)]	–10摄氏度至 +45摄氏度
仓储温度	–20摄氏度至 +70摄氏度
最大相对湿度	90 %
基准高度以上的最大使用高度	2000米
脏污程度符合IEC 61010-1	2[E)]
激光等级	2
激光种类	635纳米，< 1毫瓦
激光束发散角	< 1.5毫弧度（全角）
自动断开时间约	
– 激光	20秒
– 测量仪（不测量）	5分钟

数字式激光测距仪	**GLM 40-12**
蓄电池	2 × 1.5伏 LR03（AAA）

A) 从测量仪的后缘起测量时，适用于目标反射能力强（例如涂刷白色的墙壁）、背景照明暗且工作温度为20摄氏度的情况。

B) 从测量仪的后缘起测量时，适用于目标反射能力强（例如涂刷白色的墙壁）、背景照明亮且工作温度为20摄氏度的情况。

C) JJG 966-2010

D) 在持续测量功能中，最大工作温度为+40摄氏度。

E) 仅出现非导电性污染，不过有时会因凝结而暂时具备导电性。

型号铭牌上的序列号(9)是测量仪唯一的识别码。

安装/更换蓄电池

ⓘ 务必同时更换所有的电池。请使用同一制造厂商所生产的相同容量电池。

ⓘ 根据电池盒内部的图示，注意电极是否正确。

▶ **长时间不用时，请将电池从测量仪中取出。**在长时间存放于测量仪中的情况下，电池可能会腐蚀。

工作

投入使用

- ▶ **测量仪接通后应有人看管，使用后应关闭。**激光可能会让旁人炫目。
- ▶ **不可以让湿气渗入仪器中，也不可以让阳光直接照射在仪器上。**
- ▶ **请勿在极端温度或温度波动较大的情况下使用测量仪。**比如请勿将测量仪长时间放在汽车内。温度波动较大的情况下，使用测量仪之前先使其温度稳定下来。在极端温度或温度波动较大的情况下，测量仪的精度可能会受到影响。
- ▶ **避免让测量仪发生剧烈碰撞或使其掉落。**测量仪受到强烈的外部作用之后，在重新使用之前务必进行精度检查(参见 “精度检查”, 页 30)。

接通/关闭

» 按压按键▲，以接通测量仪和激光。

→ 按压按键 c，您便可以在没有激光的情况下，也能接通测量仪。

» 按住按键 c，以关闭测量仪。

→ 存储器中的数值和设备设置继续保留。

关闭后所有已保存的数值继续保留。

测量过程

开机后，测量仪处于长度测量功能中。

测量点基准面始终为测量仪的后缘。

» 将测量仪放到需要的开始点（如墙壁）上。

» 当通过按钮 启动测量仪后，短按按键▲以接通激光。

» 按压按键▲，以触发测量。

在测量过程后，激光束将关闭。如要进行下一次测量，请重复这个过程。

测量值或最终结果可以进行加或减操作。

选择了连续测量的功能之后，只要一开机仪器便开始测量。

如要了解更多信息，请访问在线操作说明书：

www.bosch-pt.com/manuals

测量期间不允许移动测量仪。因此将测量仪尽可能放在固定的止档面或支承面上。

ⓘ 测量时，不得遮挡接收镜头**(11)**和激光束出口**(12)**。

基本设置

本测量仪提供以下基本设置：
- 切换尺寸单位
- 接通/关闭声音信号

如要了解更多信息，请访问在线操作说明书：

www.bosch-pt.com/manuals

测量功能

选择/更改测量功能

本测量仪提供以下测量功能：
- 长度测量
- 面积测量
- 持续测量
- 体积测量
- 间接距离测量
- 间接高度测量
- 相加/相减
- 储存功能

如要了解更多信息，请访问在线操作说明书：

www.bosch-pt.com/manuals

精度检查

定期检查距离测量的精度。

如要了解更多信息，请访问在线操作说明书：

www.bosch-pt.com/manuals

故障信息

如果测量无法正确进行，则显示屏上会显示故障信息。

» 请重新尝试执行测量过程。

» 如果再次出现故障信息，请关闭测量仪再重新接通，然后再次启动测量。

每次测量时，测量仪都会监控功能是否正常。如果发现故障，显示屏内的所有显示都会闪烁。在这种情况下或者如果解决措施无法排除故障，请将测量仪通过经销商交给博世客户服务部。

维修和服务

维护和清洁

测量仪器必须随时保持清洁。

不可以把仪器放入水或其它的液体中。

使用潮湿，柔软的布擦除仪器上的污垢。切勿使用任何清洁剂或溶剂。

请像对待眼镜或照相机镜头那样特别小心地保养接收镜头**(11)**。

客户服务和应用咨询

本公司顾客服务处负责回答有关本公司产品的修理、维护和备件的问题。备件的展开图纸和信息也可查看：**www.bosch-pt.com**

博世应用咨询团队乐于就我们的产品及其附件问题提供帮助。

询问和订购备件时，务必提供机器铭牌上标示的10位数物品代码。

中国大陆
博世电动工具（中国）有限公司
中国　浙江省　杭州市
滨江区　滨康路567号
102/1F 服务中心
邮政编码：310052
电话：(0571)8887 5566 / 5588

传真：(0571)8887 6688 x 5566# / 5588#

电邮：**bsc.hz@cn.bosch.com**

www.bosch-pt.com.cn

制造商地址：
Robert Bosch Power Tools GmbH
罗伯特·博世电动工具有限公司
70538 Stuttgart / GERMANY
70538 斯图加特 / 德国

其他服务地址请见：

www.bosch-pt.com/serviceaddresses

废弃处理

必须以符合环保要求的方式回收再利用测量仪，附件和包装材料。

请勿将测量仪和电池/蓄电池扔到生活垃圾里。

产品中有害物质的名称及含量

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr^{+6})	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
外壳的金属部分	X	O	O	O	O	O
外壳的非金属部分（包括玻璃）	O	O	O	O	O	O
组合印刷电路板	X	O	O	O	O	O
附件 A)	X	O	O	O	O	O
碱性锰电池系统	O	O	O	O	O	O
充电电池系统 B)	X	O	O	O	O	O
键盘	O	O	O	O	O	O
显示器 C)	O	O	O	O	O	O
激光模块 D)	X	O	O	O	O	O

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr^{+6})	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
内部连接电缆	O	O	O	O	O	O

A) 适用于采用附件的产品

B) 适用于采用充电电池电供的产品

C) 适用于采用显示器的产品

D) 适用于采用激光模块的产品

本表是按照SJ/T 11364的规定編制

O：表示该有害物质在该部件所有物质材料中的含量均在GB/T 26572规定的限量要求以下。

X：表示该有害物质至少在该部件的某一物质材料中的含量超出GB/T 26572规定的限量要求，且目前业界没有成熟的替代方案，符合欧盟RoHS指令环保要求。

产品环保使用期限内的使用条件参见产品说明书。

繁體中文

安全注意事項

為確保能夠安全地使用本測量工具，您必須完整詳讀本說明書並確實遵照其內容。若未依照現有之說明內容使用測量工具，測量工具內部所設置的防護措施可能無法發揮應有功效。謹慎對待測量工具上的警告標示，絕對不可讓它模糊不清而無法辨識。請妥善保存說明書，將測量工具轉交給他人時應一併附上本說明書。

- **小心 – 若是使用非此處指明的操作設備或校正設備，或是未遵照說明的操作方式，可能使您暴露於危險的雷射光照射環境之下。**
- **本測量工具出貨時皆有附掛雷射警示牌（即測量工具詳解圖中的標示處）。**
- **雷射警示牌上的內容若不是以貴國語言書寫，則請於第一次使用前將隨附的當地語言說明貼紙貼覆於其上。**

請勿將雷射光束對準人員或動物，您本人亦不可直視雷射光束或使雷射光束反射。 因為這樣做可能會對他人眼睛產生眩光，進而引發意外事故或使眼睛受到傷害。

- ▶ **萬一雷射光不小心掃向眼睛，應立刻閉上眼睛並立刻將頭轉離光束範圍。**
- ▶ **請勿對本雷射裝備進行任何改造。**
- ▶ **本測量工具僅可交由合格的專業技師以原廠替換零件進行維修。**如此才能夠確保本測量工具的安全性能。
- ▶ **不可放任兒童在無人監督之下使用本雷射測量工具。** 他們可能會不小心對他人或自己的眼睛造生眩光。
- ▶ **請不要在存有易燃液體、氣體或粉塵等易爆環境下操作本測量工具。**測量工具內部產生的火花會點燃粉塵或氣體。
- ▶ **請勿將雷射眼鏡當作護目鏡（配件）使用。**雷射眼鏡是用來讓您看清楚雷射光束：但它對於雷射光照射並沒有保護作用。
- ▶ **請勿將雷射眼鏡當作護目鏡（配件）使用，或在道路上行進間使用。**雷射眼鏡無法完全阻隔紫外線，而且還會降低您對於色差的感知能力。

產品和規格

依規定使用機器

該測量工具是用來測量距離、長度、高度、間距，並具有計算面積及體積之功能。
本測量工具適合在室內使用。

插圖上的機件

機件的編號和儀器圖示上的編號一致。

(1) 顯示器
(2) ▲ 測量按鈕
(3) — 減號按鈕
(4) Func 功能按鈕
(5) ⏻ 電源開關
(6) + 加號按鈕
(7) 電池盒蓋
(8) 電池盒蓋鎖扣
(9) 序號
(10) 雷射警示牌
(11) 接收點

(12) 雷射光束出口

指示元件

(a) 已啟動雷射
(b) 溫度警示燈
(c) 電量警示燈
(d) 測量值顯示列
(e) 測量結果顯示列
(f) 測量單位
(g) 測量功能指示器
(h) 儲存值顯示器
(i) 錯誤指示器 **「Error」**

技術性數據

數位雷射測距儀	GLM 40-12
產品機號	**3 601 K72 9K1**
測量範圍[A)]	0.15–40 m
測量範圍（在不利條件下）[B)]	20 m
測量準確度[A)]	±1.5 mm
測量準確度（在不利條件下）[B)]	±3.0 mm
最小顯示單位	1 mm

數位雷射測距儀	GLM 40-12
一般資訊	
工作溫度[C)]	−10 °C ... +45 °C
儲藏溫度	−20 °C ... +70 °C
最大空氣相對濕度	90 %
最高適用海拔	2000 m
根據 IEC 61010-1 之污染等級	2[D)]
雷射等級	2
雷射種類	635 nm, < 1 mW
雷射光束發散角	< 1.5 mrad（全角度）
自動關機的執行時間點，約略值	
– 雷射	20 秒
– 測量工具（未進行測量）	5 分

數位雷射測距儀	GLM 40-12
電池	2 × 1.5 V LR03 (AAA)

A) 以測量工具後緣為測量起點、目標物反射率高（例如白漆牆）、背景照明微弱、操作溫度為 20 °C；應額外再依距離誤差 ±0.05 mm / m 列入計算。

B) 以測量工具後緣為測量起點、目標物反射率高（例如白漆牆）、背景照明強烈、操作溫度為 20 °C 和高海拔。應額外再依距離誤差 ±0.15 mm/m 列入計算。

C) 使用連續測量功能時的操作溫度最高為 +40 °C。

D) 只產生非傳導性污染，但應預期偶爾因水氣凝結而導致暫時性導電。

從產品銘牌的序號 **(9)** 即可確定您的測量工具機型。

裝入 / 更換電池

務必同時更換所有的電池。請使用同一製造廠商，容量相同的電池。

此時請您注意是否有依照電池盒內側上的電極標示正確放入。

▶ **長時間不使用時，請將測量工具裡的電池取出。**電池可能因長時間存放於測量工具中不使用而腐蝕。

操作

操作機器

- ▶ **不可放任啟動的測量工具無人看管，使用完畢後請關閉測量工具電源。**雷射可能會對旁人的眼睛產生眩光。
- ▶ **不可以讓濕氣滲入儀器中，也不可以讓陽光直接照射在儀器上。**
- ▶ **勿讓測量工具暴露於極端溫度或溫度劇烈變化的環境。**例如請勿將它長時間放在車內。測量工具歷經較大溫度起伏時，請先讓它回溫後再使用。如果儀器曝露在極端溫度下或溫差較大的環境中，會影響儀器的測量準確度。
- ▶ **測量工具須避免猛力碰撞或翻倒。**測量工具遭受外力衝擊後，一律必須先檢查其精準度 (參見 「準確度測試」, 頁 44) 並進行校正，然後才能繼續使用。

啟動 / 關閉

» 按一下按鈕 ▲，即可開啟測量工具和雷射功能。

→ 您也可以透過按下按鈕 $\overset{c}{\textcircled{i}}$ 在沒有雷射的情況下開啟測量工具。

» 按住按鈕 $\overset{c}{\textcircled{i}}$，即可關閉測量工具。

→ 記憶體中的測量值及裝置設定將繼續留存。

關閉時，會保留所有儲存值。

探測程序

測量工具開機後的模式為長度測量功能。

測量的基準點永遠是測量工具的後緣。

» 將測量工具置於所需的測量起點上（例如：牆壁）。

» 若您已使用按鈕 ^{c}ⓘ 啟動測量工具，則短按按鈕 ▲，以啟動雷射。

» 按一下按鈕 ▲，即可開啟測量程序。

測量過程結束後，雷射光束隨即關閉。若要進行另一次測量，請重複此程序。

測量值或最後的計算結果可進行加減。

選擇了持續測量的功能之後，只要一開機儀器便開始測量。

如需更多資訊，請造訪線上操作說明書:

www.bosch-pt.com/manuals

ⓘ 進行測量期間，測量工具不得有任何移動。因此，請將測量工具儘可能放置在固定的擋塊或托架平面上。

測量時，接收點 **(11)** 和雷射光束出口 **(12)** 不得有遮蓋物。

基本設定

測量工具提供下列基本設定:
– 切換尺寸單位
– 啟動 / 關閉聲音訊號

如需更多資訊，請造訪線上操作說明書:
www.bosch-pt.com/manuals

測量功能

選擇 / 更改測量功能

測量工具提供下列測量功能:
– 長度測量
– 面積測量
– 連續測量
– 體積測量
– 間接長度測量
– 間接高度測量
– 相加 / 相減
– 儲存功能

如需更多資訊，請造訪線上操作說明書:
www.bosch-pt.com/manuals

準確度測試

請定期檢查距離測量準確度。

如需更多資訊，請造訪線上操作說明書:
www.bosch-pt.com/manuals

故障訊息

如果無法正確執行測量程序，螢幕上將出現故障訊息 。

» 請嘗試重新執行測量過程。

» 如果故障訊息再次出現，請關閉測量工具、再次啟動並重新開始測量。

測量工具在進行每次測量時會監控功能是否正常。若確認出現故障，顯示器上的所有指示燈會閃爍。在這種情況下，或補救措施無法排除故障情形時，請將該測量工具交由您的經銷商轉給博世維修中心或各區維修站。

維修和服務

保養與清潔

測量儀器必須隨時保持清潔。

不可以把儀器放入水或其它的液體中。

使用柔軟濕布擦除儀器上的污垢。切勿使用清潔劑或溶液。

進行保養時需格外小心接收點 **(11)**，務必請您比照眼鏡或攝影鏡頭的處置方式。

顧客服務處和顧客咨詢中心

本公司顧客服務處負責回答有關本公司產品的維修、維護和備用零件的問題。以下的網頁中有分解圖和備用零件相關資料:

www.bosch-pt.com

如果對本公司產品及其配件有任何疑問，博世應用諮詢小組很樂意為您提供協助。

當您需要諮詢或訂購備用零件時，請務必提供本產品型號銘牌上 10 位數的產品機號。

台灣進口商
台灣羅伯特博世股份有限公司
建國北路一段90 號6 樓
台北市10491
電話: (02) 7734 2588
傳真: (02) 2516 1176
www.bosch-pt.com.tw

制造商地址:
Robert Bosch Power Tools GmbH
羅伯特· 博世電動工具有限公司
70538 Stuttgart / GERMANY
70538 斯圖加特/ 德國

以下更多客戶服務處地址:

www.bosch-pt.com/serviceaddresses

廢棄物處理

必須以符合環保要求的方式回收再利用損壞的儀器、配件和包裝材料。

不得將測量工具與電池當成一般垃圾丟棄!

한국어

안전 수칙

측정공구의 안전한 사용을 위해 모든 수칙들을 숙지하고 이에 유의하여 작업하시기 바랍니다. 측정공구를 해당 지침에 따라 사용하지 않으면, 측정공구에 내장되어 있는 안전장치에 안 좋은 영향을 미칠 수 있습니다. 측정공구의 경고판을 절대로 가려서는 안 됩니다. 안전 수칙을 잘 보관하고 공구 양도 시 측정공구와 함께 전달하십시오.

- ▶ **주의 – 여기에 제시된 조작 장치 또는 조정 장치 외의 용도로 사용하거나 다른 방식으로 작업을 진행하는 경우, 광선으로 인해 폭발될 위험이 있습니다.**
- ▶ **본 측정공구는 레이저 경고 스티커가 함께 공급됩니다(그림에 측정공구의 주요 명칭 표시).**
- ▶ **처음 사용하기 전에 함께 공급되는 한국어로 된 레이저 경고 스티커를 독문 경고판 위에 붙이십시오.**

사람이나 동물에게 레이저 광선을 비추거나, 광선을 직접 또는 반사시켜 보지 마십시오. 이로 인해 눈이 부시게 만들어 사고를 유발하거나 눈에 손상을 입을 수 있습니다.

- ▶ **눈으로 레이저 광선을 쳐다본 경우, 의식적으로 눈을 감고 곧바로 고개를 돌려 광선을 피하십시오.**
- ▶ **레이저 장치를 개조하지 마십시오.**
- ▶ **측정공구의 수리는 해당 자격을 갖춘 전문 인력에게 맡기고, 수리 정비 시 순정 부품만 사용하십시오.** 이 경우에만 측정공구의 안전성을 오래 유지할 수 있습니다.
- ▶ **어린이가 무감독 상태로 레이저 측정공구를 사용하는 일이 없도록 하십시오.** 의도치 않게 타인 또는 자신의 눈이 부시게 할 수 있습니다.
- ▶ **가연성 유체나 가스 혹은 분진 등 폭발 위험이 있는 곳에서 측정공구를 사용하지 마십시오.** 측정공구에 분진이나 증기를 점화하는 스파크가 생길 수 있습니다.
- ▶ **레이저 보안경(액세서리)을 일반 보안경으로 사용하지 마십시오.** 레이저 보안경은 레이저 광선을 보다 잘 감지하지만, 그

렇다고 해서 레이저 광선으로부터 보호해주는 것은 아닙니다.

▶ **레이저 보안경(액세서리)을 선글라스 용도 또는 도로에서 사용하지 마십시오.** 레이저 보안경은 자외선을 완벽하게 차단하지 못하며, 색상 분별력을 떨어뜨립니다.

제품 및 성능 설명

규정에 따른 사용

본 측정공구는 거리, 길이, 높이 및 간격을 측정하고 면적과 체적을 계산하는 데 사용해야 합니다.

측정공구는 실내용입니다.

제품의 주요 명칭

제품의 주요 명칭에 표기되어 있는 번호는 측정공구의 그림이 나와있는 면을 참고하십시오.

(1) 디스플레이

(2) ▲ 측정 버튼

(3) — 마이너스 버튼

(4) Func 기능 버튼

(5) ⏻ 전원 버튼

(6) ✚ 플러스 버튼

(7) 배터리 케이스 덮개

(8) 배터리 케이스 덮개 잠금쇠

(9) 일련 번호

(10) 레이저 경고판

(11) 수신 렌즈

(12) 레이저빔 발사구

표시 요소

(a) 레이저 켜진 상태

(b) 온도 경고 표시

(c) 배터리 경고 표시

(d) 측정값 표시열

(e) 결과 표시열

(f) 측정 단위

(g) 측정 기능 표시

(h) 메모리값 표시

(i) 오류 표시 **"Error"**

제품 사양

디지털 레이저 거리 측정기	GLM 40-12
품번	**3 601 K72 9K1**
측정 영역[A)]	0.15–40 m
측정 영역(부적절한 조건)[B)]	20 m
측정 정확도[A)]	±1.5 mm
측정 정확도(부적절한 조건)[B)]	±3.0 mm
최소 표시 단위	1 mm
일반 사항	
작동 온도[C)]	–10 °C ... +45 °C
보관 온도	–20 °C ... +70 °C
상대 습도 최대	90 %
기준 높이를 초과한 최대 사용 높이	2,000 m
IEC 61010-1에 따른 오염도	2[D)]
레이저 등급	2
레이저 유형	635 nm, < 1 mW

디지털 레이저 거리 측정기	GLM 40-12
레이저빔의 편차	< 1.5 mrad(전체 각도)
자동 꺼짐 기능이 활성화되는 대략적인 시간	
– 레이저	20 s
– 측정공구(측정 미포함)	5 min
배터리	2 × 1.5 V LR03 (AAA)

A) 측정공구의 뒷모서리부터 측정할 경우, 표적물(예: 흰색으로 칠한 벽)의 반사율을 높게, 배경 조명을 약하게 조성해야 합니다. 작동 온도는 20 °C입니다. 그 외에도 거리에 따라 ±0.05 mm/m 정도 차이가 있을 수 있음을 고려해야 합니다.

B) 측정공구의 뒷모서리부터 측정할 경우, 표적물(예: 흰색으로 칠한 벽)의 반사율을 높게, 배경 조명을 강하게 조성해야 합니다. 작동 온도는 20 °C이며, 높이가 높습니다. 그 외에도 거리에 따라 ±0.15 mm/m 정도 차이가 있을 수 있음을 고려해야 합니다.

C) 연속 측정 기능의 경우 최고 작동 온도는 +40 °C입니다.

D) 비전도성 오염만 발생하지만, 가끔씩 이슬이 맺히면 임시로 전도성이 생기기도 합니다.

측정공구를 확실하게 구분할 수 있도록 타입 표시판에 일련 번호 **(9)** 가 적혀 있습니다.

배터리 삽입하기/교환하기

ⓘ 모든 배터리는 항상 동시에 교체하십시오. 한 제조사의 동일한 용량의 배터리로만 사용하십시오.

ⓘ 이때 전극이 배터리 케이스 안쪽에 나와있는 것처럼 올바로 끼워야 합니다.

▶ **오랜 기간 사용하지 않을 경우 측정공구의 배터리를 빼두십시오.** 배터리를 측정공구에 오래 두면 부식됩니다.

작동

기계 시동

▶ **측정공구가 켜져 있는 상태에서 자리를 비우지 말고, 사용 후에는 측정공구의 스위치를 끄십시오.** 레이저빔으로 인해 다른 사람의 눈을 일시적으로 안 보이게 할 수 있습니다.

▶ **측정공구가 물에 젖거나 직사광선에 노출되지 않도록 하십시오.**

▶ **극한의 온도 또는 온도 변화가 심한 환경에 측정공구를 노출시키지 마십시오.** 예를 들어 장시간 차량 안에 측정공구를 두지 마십시오. 온도 변화가 심한 경우 측정공구를 작동시키기 전에 먼저 온도에 적

응할 수 있게 하십시오. 극심한 온도에서나 온도 변화가 심한 환경에서 사용하면 측정공구의 정확도가 떨어질 수 있습니다.

- ▶ **측정공구가 외부와 세게 부딪히거나 떨어지지 않도록 주의하십시오.** 측정공구에 외부 영향이 심하게 가해진 후에는 계속 작업하기 전에 항상 정확도 점검 (참조 „정확도 점검“, 페이지 57) 을 해야 합니다.

전원 켜기/끄기

» 버튼 ▲을 누르면, 측정공구 및 레이저의 전원이 켜집니다.

→ 버튼 ⏻ᶜ 을 누르면, 레이저를 켜지 않은 채로 측정공구의 전원을 켤 수 있습니다.

» 버튼 ⏻ᶜ 을 계속 누르고 있으면, 측정공구의 전원이 꺼집니다.

→ 메모리에 저장된 값들과 장치 설정은 그대로 유지됩니다.

꺼질 때 저장된 모든 값은 그대로 유지됩니다.

측정 과정

전원을 켜면 측정공구는 길이 측정 기능에 위치합니다.

측정의 기준면은 항상 측정공구의 뒷 모서리가 됩니다.

» 측정공구를 원하는 측정 시작점(예: 벽)에 두십시오.

» 버튼 ⓒ을 눌러 측정공구의 전원을 켠 후, 버튼 ▲을 짧게 눌러 레이저를 켜십시오.

» 측정을 진행하려면, 버튼 ▲을 누르십시오.

측정을 진행한 후에는 레이저빔이 꺼집니다. 다시 측정하려면 상기 과정을 반복하십시오.

측정값 또는 최종 결과는 더하거나 뺄 수 있습니다.

연속 측정 기능의 경우 기능을 선택함과 동시에 측정이 시작됩니다.

보다 자세한 정보는 온라인 사용 설명서 **www.bosch-pt.com/manuals**를 참고해주시기 바랍니다.

ⓘ 측정하는 동안 본 측정공구를 움직여서는 안 됩니다. 따라서 측정공구는 최대한 단단한 고정면 또는 설치면에 올려두십시오.

ⓘ 측정 시 수신 렌즈 **(11)** 및 레이저빔 발사구 **(12)** 가 가려지지 않도록 하십시오.

기본 설정

본 측정공구에 제공되는 기본 설정은 다음과 같습니다.

– 단위 변경하기

– 음향 신호 켜기/끄기

보다 자세한 정보는 온라인 사용 설명서 **www.bosch-pt.com/manuals**를 참고해주시기 바랍니다.

측정 기능

측정 기능 선택하기/변경하기

본 측정공구에 제공되는 측정 기능은 다음과 같습니다.

– ⌶ 길이 측정

– ▭ 면적 측정

– 연속 측정
– 체적 측정
– 간접 거리 측정
– 간접 높이 측정
– 더하기/빼기
– 메모리 기능

보다 자세한 정보는 온라인 사용 설명서 **www.bosch-pt.com/manuals**를 참고해주시기 바랍니다.

정확도 점검

거리 측정의 정확도를 정기적으로 검사하십시오.

보다 자세한 정보는 온라인 사용 설명서 **www.bosch-pt.com/manuals**를 참고해주시기 바랍니다.

오류 메시지

측정을 정확하게 실행할 수 없는 경우, 디스플레이에 오류 메시지 가 표시됩니다.

» 측정 과정을 다시 한번 시도하십시오.

» 오류 메시지가 다시 나타나는 경우, 측정 공구의 전원을 껐다가 다시 켠 후 측정을 새로 시작하십시오.

본 측정공구는 측정할 때마다 제대로 작동하는지 감시합니다. 결함이 발견되면, 디스플레이에 모든 표시가 깜박입니다. 모든 표시가 깜박이는 경우 또는 제시된 해결 방법으로 고장을 해결할 수 없는 경우, 대리점을 통해 보쉬 서비스 센터에 측정공구를 보내십시오.

보수 정비 및 서비스

보수 정비 및 유지

항상 측정공구를 깨끗이 유지하십시오.

측정공구를 물이나 다른 액체에 넣지 마십시오.

물기있는 부드러운 천으로 오염된 부위를 깨끗이 닦으십시오. 세척제 또는 용제를 사용하지 마십시오.

특히 수신 렌즈 **(11)** 는 안경이나 카메라 렌즈를 다루듯이 조심스럽게 관리하십시오.

AS 센터 및 사용 문의

AS 센터에서는 귀하 제품의 수리 및 보수정비, 그리고 부품에 관한 문의를 받고 있습니

다. 대체 부품에 관한 분해 조립도 및 정보는 인터넷에서도 찾아 볼 수 있습니다 - **www.bosch-pt.com**
보쉬 사용 문의 팀에서는 보쉬의 제품 및 해당 액세서리에 관한 질문에 기꺼이 답변 드릴 것입니다.
문의나 대체 부품 주문 시에는 반드시 제품 네임 플레이트에 있는 10자리의 부품번호를 알려 주십시오.
콜센터
080-955-0909

다른 AS 센터 주소는 아래 사이트에서 확인할 수 있습니다:

www.bosch-pt.com/serviceaddresses

처리

측정공구, 액세서리 및 포장 등은 친환경적인 방법으로 재활용될 수 있도록 분류하십시오.

측정공구 및 배터리를 가정용 쓰레기에 버리지 마십시오!

ไทย

กฎระเบียบเพื่อความปลอดภัย

ส่งเครื่องมือวัดให้ช่างผู้เชี่ยวชาญตรวจซ่อมและใช้อะไหล่เปลี่ยนของแท้เท่านั้น หากไม่ใช้เครื่องมือวัดตามคำแนะนำเหล่านี้ ระบบป้องกันเบ็ดเสร็จในเครื่องมือวัดอาจได้รับผลกระทบ อย่าทำให้ป้ายเตือนที่อยู่บนเครื่องมือวัดนี้ลบเลือน เก็บรักษาคำแนะนำเหล่านี้ไว้ให้ดี และหากเครื่องมือวัดนี้ถูกส่งต่อไปยังผู้อื่น ให้ส่งมอบคำแนะนำเหล่านี้ไปด้วย

- ▶ **ข้อควรระวัง - การใช้อุปกรณ์ทำงานหรืออุปกรณ์ปรับเปลี่ยนอื่นๆ นอกเหนือไปจากที่ระบุไว้ในที่นี้ หรือการใช้วิธีการอื่นๆ อาจนำไปสู่การสัมผัสกับรังสีอันตรายได้**

- ▶ **เครื่องมือวัดนี้จัดส่งมาพร้อมป้ายเตือนแสงเลเซอร์ (แสดงในหน้าภาพประกอบของเครื่องมือวัด)**
- ▶ **หากข้อความของป้ายเตือนแสงเลเซอร์ไม่ได้เป็นภาษาของท่าน ให้ติดสติกเกอร์ที่จัดส่งมาที่พิมพ์เป็นภาษาของท่านทับลงบนข้อความก่อนใช้งานครั้งแรก**

อย่าเล็งลำแสงเลเซอร์ไปยังคนหรือสัตว์ และตัวท่านเองอย่าจ้องมองเข้าในลำแสงเลเซอร์โดยตรงหรือลำแสงเลเซอร์สะท้อน การกระทำดังกล่าวอาจทำให้คนตาพร่า ทำให้เกิดอุบัติเหตุ หรือทำให้ดวงตาเสียหายได้

- ▶ **ถ้าแสงเลเซอร์เข้าตา ต้องปิดตาและหันศีรษะออกจากลำแสงในทันที**
- ▶ **อย่าทำการเปลี่ยนแปลงใดๆ ที่อุปกรณ์เลเซอร์**
- ▶ **ส่งเครื่องมือวัดให้ช่างผู้เชี่ยวชาญตรวจซ่อมและใช้อะไหล่เปลี่ยนของแท้เท่านั้น** ทั้งนี้เพื่อให้มั่นใจได้ว่าจะสามารถใช้งานเครื่องมือวัดได้อย่างปลอดภัยเสมอ

- ▶ **อย่าให้เด็กใช้เครื่องมือวัดด้วยเลเซอร์โดยไม่ควบคุมดูแล** เด็กๆ อาจทำให้บุคคลอื่นหรือตนเองตาพร่าโดยไม่ตั้งใจ
- ▶ **อย่าใช้เครื่องมือวัดในสภาพแวดล้อมที่เสี่ยงต่อการระเบิด ซึ่งเป็นที่ที่มีของเหลว แก๊ส หรือฝุ่นที่ติดไฟได้** ในเครื่องมือวัดสามารถเกิดประกายไฟซึ่งอาจจุดฝุ่นละอองหรือไอระเหยให้ติดไฟได้
- ▶ **อย่าใช้แว่นสำหรับมองแสงเลเซอร์ (อุปกรณ์เสริม) เป็นแว่นนิรภัย** แว่นสำหรับมองแสงเลเซอร์ใช้สำหรับมองลำแสงเลเซอร์ให้เห็นชัดเจนยิ่งขึ้น แต่ไม่ได้ช่วยป้องกันรังสีเลเซอร์
- ▶ **อย่าใช้แว่นสำหรับมองแสงเลเซอร์ (อุปกรณ์เสริม) เป็นแว่นกันแดดหรือใส่ขับรถยนต์**แว่นสำหรับมองแสงเลเซอร์ไม่สามารถป้องกันรังสีอัลตราไวโอเลต (UV) ได้อย่างสมบูรณ์ และยังลดความสามารถในการมองเห็นสี

รายละเอียดผลิตภัณฑ์และข้อมูลจำเพาะ

ประโยชน์การใช้งาน

เครื่องมือวัดนี้ใช้สำหรับวัดระยะทาง ความยาว ความสูง ระยะทาง และสำหรับคำนวณพื้นที่และปริมาตร
เครื่องมือวัดนี้เหมาะสำหรับใช้ภายในอาคาร

ส่วนประกอบที่แสดงในภาพ

ลำดับเลขของส่วนประกอบผลิตภัณฑ์อ้างถึงส่วนประกอบของเครื่องมือวัดที่แสดงในหน้าภาพ
ประกอบ

(1) จอแสดงผล

(2) ▲ ปุ่มวัด

(3) — ปุ่มลบ

(4) Func ปุ่มฟังก์ชั่น

(5) ⏻ ปุ่มเปิด-ปิด

(6) + ปุ่มบวก
(7) ฝาช่องใส่แบตเตอรี่
(8) ตัวล็อคฝาช่องใส่แบตเตอรี่
(9) หมายเลขลำดับการผลิต
(10) ป้ายเตือนแสงเลเซอร์
(11) เลนส์รับแสง
(12) ทางออกของลำแสงเลเซอร์

องค์ประกอบการแสดงผล

(a) เลเซอร์เปิดสวิทช์อยู่
(b) การเตือนอุณหภูมิ
(c) ไฟเตือนแบตเตอรี่
(d) บรรทัดแสดงค่าที่วัดได้
(e) บรรทัดผลลัพธ์
(f) หน่วยของการวัด
(g) ตัวแสดงฟังก์ชั่นการวัด
(h) การแสดงค่าในหน่วยความจำ
(i) การแสดงความผิดพลาด **"Error"**

ข้อมูลทางเทคนิค

เครื่องวัดระยะด้วยเลเซอร์แบบดิจิตอล	GLM 40-12
หมายเลขสินค้า	**3 601 K72 9K1**
ขอบเขตการวัด[A)]	0.15–40 ม.
ช่วงการวัด (สภาวะที่ไม่เหมาะสม)[B)]	20 ม.
ความแม่นยำในการวัด[A)]	±1.5 มม.
ความแม่นยำในการวัด (สภาวะที่ไม่เหมาะสม)[B)]	±3.0 มม.
หน่วยแสดงผลต่ำสุด	1 มม.
ข้อมูลทั่วไป	
อุณหภูมิในการทำงาน[C)]	–10 °C ... +45 °C
อุณหภูมิในการเก็บรักษา	–20 °C ... +70 °C
ความชื้นสัมพัทธ์สูงสุด	90 %
ความสูงในการใช้งานสูงสุดเหนือระดับอ้างอิง	2000 ม.
ระดับมลพิษตาม IEC 61010-1	2[D)]
ระดับของเลเซอร์	2

เครื่องวัดระยะด้วยเลเซอร์ แบบดิจิตอล	GLM 40-12
ชนิดของเลเซอร์	635 นาโนเมตร, < 1 มิลลิวัตต์
การเบี่ยงเบนของลำแสงเลเซอร์	< 1.5 mrad (มุมเต็ม)
ปิดการทำงานอัตโนมัติหลังจากเวลาผ่านไปประมาณ	
– เลเซอร์	20 วินาที
– เครื่องมือวัด (เมื่อไม่มีการวัด)	5 นาที

เครื่องวัดระยะด้วยเลเซอร์แบบดิจิตอล	GLM 40-12
แบตเตอรี่	2 × 1.5 V LR03 (AAA)

A) สำหรับการวัดจากขอบหลังของเครื่องมือวัด ใช้ได้กับเป้าหมายที่มีการสะท้อนแสงมาก (เช่น ผนังทาสีขาว) แสงไฟพื้นหลังอ่อน และอุณหภูมิใช้งาน 20 °C นอกจากนี้ค่าเบี่ยงเบนที่ขึ้นกับระยะทางมีค่าเท่ากับ ±0.05 มม./ม.

B) สำหรับการวัดจากขอบหลังของเครื่องมือวัด ใช้ได้กับเป้าหมายที่มีการสะท้อนแสงมาก (เช่น ผนังทาสีขาว) แสงไฟพื้นหลังเข้ม และอุณหภูมิใช้งาน 20 °C และระดับความสูงที่มีความสูงมาก นอกจากนี้ต้องนำส่วนเบี่ยงเบน ±0.15 มม./ม. โดยขึ้นอยู่กับระยะห่างมาพิจารณาด้วย

C) ในฟังก์ชันการวัดต่อเนื่องอุณหภูมิใช้งานสูงสุดคือ +40 °C

D) เกิดขึ้นเฉพาะมลพิษที่ไม่นำไฟฟ้า ยกเว้นบางครั้งนำไฟฟ้าได้ชั่วคราวที่มีสาเหตุจากการกลั่นตัวที่ได้คาดว่าจะเกิดขึ้น

หมายเลขเครื่อง **(9)** บนแผ่นป้ายรุ่นสามารถระบุเครื่องมือวัดของท่านได้อย่างชัดเจน

การใส่/การเปลี่ยนแบตเตอรี่

ⓘ เปลี่ยนแบตเตอรี่ทุกก้อนพร้อมกันเสมอ โดยใช้แบตเตอรี่จากผู้ผลิตรายเดียวกันทั้งหมดและมีความจุเท่ากันทุกก้อน

ⓘ ขณะใส่แบตเตอรี่ต้องดูให้ขั้วแบตเตอรี่อยู่ในตำแหน่งที่ถูกต้องตามที่กำหนดไว้ที่ด้านในช่องใส่แบตเตอรี่

- ▶ **เมื่อไม่ใช้งานเครื่องมือวัดเป็นเวลานาน ต้องถอดแบตเตอรี่ออก** แบตเตอรี่อาจเกิดการกัดกร่อนได้หากจัดเก็บไว้ในเครื่องมือวัดเป็นเวลานาน

การปฏิบัติงาน

การเริ่มต้นปฏิบัติงาน

- ▶ **อย่าวางเครื่องมือวัดที่เปิดสวิทช์ทิ้งไว้โดยไม่มีผู้ดูแลและปิดสวิทช์เครื่องมือวัดเมื่อเลิกใช้งาน** คนอื่นอาจตาพร่าจากแสงเลเซอร์ได้
- ▶ **ป้องกันไม่ให้เครื่องมือวัดได้รับความชื้นและโดนแสงแดดส่องโดยตรง**

- ▶ **อย่าให้เครื่องมือวัดได้รับอุณหภูมิที่สูงมากหรือรับอุณหภูมิที่เปลี่ยนแปลงมาก** ด. ย. เช่น อย่าปล่อยเครื่องไว้ในรถยนต์เป็นเวลานาน ในกรณีที่อุณหภูมิมีการเปลี่ยนแปลงมาก ต้องปล่อยให้เครื่องมือวัดปรับตัวเข้ากับอุณหภูมิรอบด้านก่อนใช้งาน ในกรณีที่ได้รับอุณหภูมิที่สูงมากหรือรับอุณหภูมิที่เปลี่ยนแปลงมาก เครื่องมือวัดอาจมีความแม่นยำน้อยลง
- ▶ **หลีกเลี่ยงอย่าให้เครื่องมือวัดตกหล่นหรือถูกกระทบอย่างรุนแรง** เมื่อเครื่องมือวัดถูกกระทบจากภายนอกอย่างแรง ขอแนะนำให้ทำการตรวจสอบความแม่นยำ (ดู "การตรวจสอบความแม่นยำ", หน้า 72) ทุกครั้งก่อนนำมาใช้งานต่อ

การเปิด-ปิดเครื่อง

» กดปุ่ม ▲ เพื่อเปิดเครื่องมือวัดและเลเซอร์
→ คุณยังสามารถเปิดเครื่องมือวัดโดยไม่ต้องใช้เลเซอร์ได้โดยกดปุ่ม ⓘ

» กดปุ่ม ⓘ ค้างไว้เพื่อปิดเครื่องมือวัด

→ ค่าและการตั้งค่าอุปกรณ์ที่บันทึกไว้ในหน่วยความจำจะยังคงอยู่

ค่าที่เก็บไว้ทั้งหมดจะยังคงอยู่เมื่อปิดอุปกรณ์

วิธีดำเนินการวัด

เมื่อเปิดสวิทช์ เครื่องมือวัดจะอยู่ในฟังก์ชั่นการวัดความยาว

ระดับอ้างอิงสำหรับการวัดคือขอบด้านหลังของเครื่องมือวัดเสมอ

» วางเครื่องมือวัดที่จุดเริ่มต้นที่ต้องการวัด (ต. ย. เช่น ผนังห้อง)

» หากคุณเปิดใช้งานเครื่องมือวัดโดยใช้ปุ่ม ⏻ ให้กดปุ่ม ▲ แล้วปล่อยเพื่อเปิดใช้งานเลเซอร์

» กดปุ่ม ▲ เพื่อเรียกการวัด

ลำแสงเลเซอร์จะปิดหลังกระบวนการวัด สำหรับการวัดต่อไปให้ทำซ้ำขั้นตอนนี้

ท่านสามารถเพิ่มหรือลดค่าจากการวัดหรือผลลัพธ์สุดท้ายได้

ในฟังก์ชันวัดการวัดต่อเนื่อง การวัดจะเริ่มต้นทันทีที่ท่านเปิดฟังก์ชั่น

สำหรับข้อมูลเพิ่มเติม กรุณาศึกษาคู่มือการใช้งานออนไลน์:
www.bosch-pt.com/manuals

ⓘ ห้ามเคลื่อนย้ายเครื่องมือวัดในระหว่างการวัด หากเป็นไปได้ ให้วางเครื่องมือวัดไว้บนพื้นหรือพื้นผิวรองรับที่มั่นคง

ⓘ เลนส์รับ **(11)** และช่องปล่อยลำแสงเลเซอร์ **(12)** ต้องไม่ถูกบดบังในระหว่างการวัด

การตั้งค่าพื้นฐาน

เครื่องมือวัดนี้มีการตั้งค่าพื้นฐานดังต่อไปนี้:
- การเปลี่ยนหน่วยของการวัด
- การเปิด/ปิดใช้งานสัญญาณเสียง

สำหรับข้อมูลเพิ่มเติม กรุณาศึกษาคู่มือการใช้งานออนไลน์:
www.bosch-pt.com/manuals

ฟังก์ชั่นการวัด

การเลือก/เปลี่ยนฟังก์ชั่นการวัดต่างๆ

เครื่องมือวัดนี้มีฟังก์ชั่นการวัดดังต่อไปนี้:

- การวัดความยาว
- การวัดพื้นที่
- การวัดต่อเนื่อง
- การวัดปริมาตร
- การวัดระยะทางทางอ้อม
- การวัดความสูงทางอ้อม
- การเพิ่ม/การลด
- ฟังก์ชั่นหน่วยความจำ

สำหรับข้อมูลเพิ่มเติม กรุณาศึกษาคู่มือการใช้งานออนไลน์:
www.bosch-pt.com/manuals

การตรวจสอบความแม่นยำ

ตรวจสอบความแม่นยำของการวัดระยะห่างเป็นประจำ

สำหรับข้อมูลเพิ่มเติม กรุณาศึกษาคู่มือการใช้งานออนไลน์:
www.bosch-pt.com/manuals

ข้อความแสดงข้อผิดพลาด

หากไม่สามารถทำการวัดทำได้อย่างถูกต้องจะปรากฏข้อความแสดงข้อผิดพลาด บยจอแสดงผล

» ลองทำการวัดอีกครั้ง

» หากข้อความแสดงข้อผิดพลาดปรากฏขึ้นอีกครั้ง ให้ปิดและเปิดสวิตช์เครื่องมือวัดแล้วเริ่มการวัดอีกครั้ง

เครื่องมือวัดจะตรวจสอบการทำงานที่ถูกต้องของแต่ละการวัด เมื่อพบความบกพร่อง ตัวบ่งชี้ทั้งหมดจะกะพริบบนจอแสดงผล ในกรณีเช่นนี้ หรือเมื่อมาตรการแก้ไขต่างๆ ไม่สามารถแก้ไขข้อผิดพลาดได้ โปรดส่งเครื่องมือวัดเข้ารับการตรวจสอบที่ศูนย์บริการของบ๊อชผ่านทางตัวแทนจำหน่ายของคุณ

การบำรุงรักษาและการบริการ

การบำรุงรักษาและการทำความสะอาด

รักษาเครื่องมือวัดให้สะอาดตลอดเวลา
อย่าจุ่มเครื่องมือวัดลงในน้ำหรือของเหลวอื่นๆ
เช็ดสิ่งสกปรกออกด้วยผ้านุ่มที่เปียกหมาดๆอย่าใช้สารซักฟอกหรือตัวทำละลาย
ดูแลรักษาเลนส์รับแสง **(11)** เป็นพิเศษเหมือนกับการดูแลรักษาแว่นตาหรือเลนส์กล้องถ่ายภาพ

การบริการหลังการขายและการให้คำปรึกษาการใช้งาน

ศูนย์บริการหลังการขายของเรายินดีตอบคำถามของท่านที่เกี่ยวกับการบำรุงรักษาและการซ่อมแซมผลิตภัณฑ์รวมทั้งเรื่องอะไหล่ ภาพเขียนแบบการประกอบและข้อมูลเกี่ยวกับอะไหล่ กรุณาดูใน: **www.bosch-pt.com**

ทีมงานที่ปรึกษาของ บ๊อช ยินดีให้ข้อมูลเกี่ยวกับผลิตภัณฑ์ของเราและอุปกรณ์ประกอบต่างๆ เมื่อต้องการสอบถามและสั่งซื้ออะไหล่ กรุณาแจ้งหมายเลขสินค้า 10 หลักบนแผ่นป้ายรุ่นของผลิตภัณฑ์ทุกครั้ง

ไทย

ไทย บริษัท โรเบิร์ต บ๊อช จำกัด
เอฟวายไอ เซ็นเตอร์ อาคาร 1 ชั้น 5
เลขที่ 2525 ถนนพระราม 4
แขวงคลองเตย เขตคลองเตย กรุงเทพฯ 10110
โทร: +66 2012 8888
แฟกซ์: +66 2064 5800
www.bosch.co.th

ศูนย์บริการซ่อมและฝึกอบรม บ๊อช
อาคาร ลาซาลทาวเวอร์ ชั้น G ห้องเลขที่ 2
บ้านเลขที่ 10/11 หมู่ 16
ถนนศรีนครินทร์ ตำบลบางแก้ว อำเภอบางพลี
จังหวัดสมุทรปราการ 10540
ประเทศไทย
โทรศัพท์ 02 7587555
โทรสาร 02 7587525

สามารถดูที่อยู่ศูนย์บริการอื่นๆ ได้ที่:

www.bosch-pt.com/serviceaddresses

การกำจัดขยะ

เครื่องมือวัด อุปกรณ์ประกอบ และหีบห่อ ต้องนำไปแยกประเภทวัสดุเพื่อส่งเข้าสู่กระบวนการรีไซเคิลที่เป็นมิตรต่อสิ่งแวดล้อม

อย่าทิ้งเครื่องมือวัดและแบตเตอรี่ลงในขยะบ้าน!

Bahasa Indonesia

Petunjuk Keselamatan

Petunjuk lengkap ini harus dibaca dan diperhatikan agar tidak terjadi bahaya dan Anda dapat bekerja dengan aman saat menggunakan alat ukur ini.

Apabila alat ukur tidak digunakan sesuai dengan petunjuk yang disertakan, keamanan alat ukur dapat terganggu. Janganlah sekali-kali menutupi atau melepas label keselamatan kerja yang ada pada alat ukur ini. SIMPAN PETUNJUK INI DENGAN BAIK DAN BERIKAN KEPADA PEMILIK ALAT UKUR BERIKUTNYA.

- ▶ **Perhatian – jika perangkat pengoperasian atau perangkat pengaturan atau prosedur lain selain yang dituliskan di sini digunakan, hal ini dapat menyebabkan terjadinya paparan radiasi yang berbahaya.**
- ▶ **Alat pengukur dikirim dengan tanda peringatan laser (ditandai dengan ilustrasi alat pengukur di halaman grafis).**
- ▶ **Jika teks pada tanda peringatan laser tidak tertulis dalam bahasa negara Anda, tempelkan label yang tersedia dalam bahasa negara Anda di atas label berbahasa Inggris sebelum Anda menggunakan alat untuk pertama kalinya.**

Jangan melihat sinar laser ataupun mengarahkannya kepada orang lain atau hewan baik secara langsung maupun dari pantulan. Sinar laser dapat membutakan seseorang,

menyebabkan kecelakaan atau merusak mata.

- ▶ **Jika radiasi laser mengenai mata, tutup mata Anda dan segera gerakkan kepala agar tidak terkena sorotan laser.**
- ▶ **Jangan mengubah peralatan laser.**
- ▶ **Perbaiki alat ukur hanya di teknisi ahli resmi dan gunakan hanya suku cadang asli.** Dengan demikian, keselamatan kerja dengan alat ukur ini selalu terjamin.
- ▶ **Jangan biarkan anak-anak menggunakan alat ukur laser tanpa pengawasan.** Hal ini dapat menyilaukan orang lain atau diri sendiri secara tidak sengaja.
- ▶ **Jangan mengoperasikan alat ukur di area yang berpotensi meledak yang di dalamnya terdapat cairan, gas, atau serbuk yang dapat terbakar.** Di dalam alat pengukur dapat terjadi bunga api, yang lalu menyulut debu atau uap.
- ▶ **Jangan gunakan kacamata pelihat laser (aksesori) sebagai kacamata pelindung.** Kacamata pelihat laser digunakan untuk mendeteksi sinar laser dengan lebih baik, namun tidak melindungi dari sinar laser.
- ▶ **Jangan gunakan kacamata pelihat laser (aksesori) sebagai kacamata hitam atau di jalan raya.** Kacamata pelihat laser tidak

menawarkan perlindungan penuh terhadap sinar UV dan mengurangi persepsi warna.

Spesifikasi produk dan performa

Tujuan penggunaan

Alat pengukur ini cocok untuk mengukur jarak, panjang, tinggi, sela serta untuk menghitung luas dan isi.

Alat pengukur ini cocok untuk penggunaan di dalam gedung.

Ilustrasi komponen

Penomoran ilustrasi komponen mengacu pada ilustrasi alat ukur pada halaman ilustrasi.

(1) Display

(2) ▲ Tombol pengukuran

(3) — Tombol minus

(4) Func Tombol fungsi

(5) C ⏻ Tombol on/off

(6) + Tombol plus

(7) Penutup kompartemen baterai

(8) Penguncian penutup kompartemen baterai

(9) Nomor seri

(10) Label peringatan laser

(11) Lensa penerima

(12) Outlet sinar laser

Elemen indikator

(a) Laser dinyalakan

(b) Peringatan suhu

(c) Peringatan baterai

(d) Baris nilai pengukuran

(e) Baris hasil

(f) Satuan pengukuran

(g) Display fungsi pengukuran

(h) Tampilan nilai yang disimpan

(i) Tampilan kesalahan **"Error"**

Data teknis

Laser pengukur jarak digital	**GLM 40-12**
Nomor barang	**3 601 K72 9K1**

Laser pengukur jarak digital	**GLM 40-12**
Area pengukuran[A)]	0,15–40 m
Jangkauan pengukuran (kondisi tidak menguntungkan)[B)]	20 m
Akurasi pengukuran[A)]	±1,5 mm
Akurasi pengukuran (kondisi tidak menguntungkan)[B)]	±3,0 mm
Unit terkecil pada display	1 mm
Umum	
Suhu pengoperasian[C)]	–10°C ... +45°C
Suhu penyimpanan	–20°C ... +70°C
Kelembapan relatif maks.	90%
Tinggi penggunaan maks. di atas tinggi acuan	2000 m
Tingkat polusi sesuai dengan IEC 61010-1	2[D)]
Kelas laser	2
Jenis laser	635 nm, < 1 mW
Divergensi sinar laser	< 1,5 mrad (sudut penuh)
Penonaktifan otomatis setelah sekitar	

Laser pengukur jarak digital	**GLM 40-12**
– Laser	20 s
– Alat pengukur (tanpa pengukuran)	5 min
Baterai	2 × 1,5 V LR03 (AAA)

A) Saat mengukur dari tepi belakang alat pengukur, berlaku untuk daya pantul objek yang tinggi (misalnya dinding yang dicat putih), pencahayaan latar belakang yang lemah dan suhu pengoperasian sebesar 20 °C; selain itu, penyimpangan tergantung jarak sebesar ±0,05 mm/m harus diperhitungkan.

B) Saat mengukur dari tepi belakang alat pengukur, berlaku untuk daya pantul objek yang tinggi (misalnya dinding yang dicat putih), pencahayaan latar belakang yang kuat, suhu pengoperasian sebesar 20 °C, dan altitudo yang besar. Selain itu, penyimpangan tergantung jarak sebesar ±0,15 mm/m harus diperhitungkan.

C) Suhu pengoperasian maksimal pada fungsi pengukuran kontinu yakni +40 °C.

D) Hanya polusi nonkonduktif yang terjadi, namun terkadang muncul konduktivitas sementara yang disebabkan oleh kondensasi.

Untuk mengidentifikasi alat pengukur secara jelas terdapat nomor seri **(9)** pada label tipe.

Memasang/mengganti baterai

ⓘ Selalu ganti semua baterai sekaligus. Hanya gunakan baterai dari produsen dan dengan kapasitas yang sama.

ⓘ Pastikan baterai terpasang pada posisi kutub yang benar sesuai gambar di dalam kompartemen baterai.

- ▶ **Keluarkan baterai dari alat pengukur jika alat tidak digunakan untuk waktu yang lama**. Baterai dapat berkarat jika disimpan di dalam alat pengukur untuk waktu yang lama.

Penggunaan

Cara penggunaan

- ▶ **Jangan biarkan alat ukur yang aktif berada di luar pengawasan dan matikan alat ukur setelah digunakan.** Sinar laser dapat menyilaukan mata orang lain.
- ▶ **Lindungilah alat ukur dari cairan dan sinar matahari langsung.**
- ▶ **Jauhkan alat ukur dari suhu atau perubahan suhu yang ekstrem.** Jangan biarkan alat ukur berada terlalu lama di dalam kendaraan. Biarkan alat ukur menyesuaikan suhu

lingkungan sebelum dioperasikan saat terjadi perubahan suhu yang drastis. Pada suhu yang ekstrem atau terjadi perubahan suhu yang drastis, ketepatan alat ukur dapat terganggu.

- ▶ **Hindari guncangan atau benturan yang keras pada alat ukur.** Setelah terjadi guncangan atau benturan keras pada alat ukur, disarankan untuk selalu memeriksa akurasi alat (lihat „Pemeriksaan akurasi“, Halaman 87) sebelum menggunakan kembali.

Menghidupkan/mematikan

» Tekan tombol ▲ untuk menghidupkan alat ukur dan menyalakan laser.

→ Alat ukur juga dapat dihidupkan tanpa menyalakan laser dengan menekan tombol $\overset{c}{\textcircled{1}}$.

» Tekan dan tahan tombol $\overset{c}{\textcircled{1}}$ untuk mematikan alat ukur.

→ Pengaturan alat dan nilai yang disimpan pada memori akan tetap tersimpan.

Semua nilai yang tersimpan tetap tidak berubah saat alat dimatikan.

Prosedur pengukuran

Setelah dihidupkan, alat pengukur berada dalam fungsi pengukuran panjang.

Tepi belakang alat pengukur selalu menjadi bidang acuan untuk pengukuran.

» Letakkan alat pengukur pada titik awal pengukuran yang diinginkan (misalnya dinding).

» Jika alat ukur dihidupkan dengan tombol ⓒ, selanjutnya tekan singkat tombol ▲ untuk mengaktifkan laser.

» Tekan tombol ▲ untuk memulai pengukuran.

Sinar laser akan dimatikan setelah proses pengukuran selesai. Ulangi prosedur ini untuk pengukuran selanjutnya.

Nilai pengukuran atau hasil akhir dapat ditambah atau dikurangi.

Pada fungsi pengukuran kontinu, pengukuran segera dimulai jika fungsi diaktifkan.

Untuk informasi tambahan, kunjungi panduan pengoperasian online: **www.bosch-pt.com/manuals**

Alat ukur tidak boleh digerakkan selama pengukuran berlangsung. Oleh karena itu,

sebisa mungkin letakkan alat ukur di atas permukaan atau dudukan yang kokoh dan stabil.

Lensa penerima **(11)** dan outlet sinar laser **(12)** tidak boleh terhalang saat pengukuran berlangsung.

Pengaturan dasar

Alat pengukur menawarkan pengaturan dasar berikut:

- Mengubah satuan ukur
- Menghidupkan/mematikan sinyal suara

Untuk informasi tambahan, kunjungi panduan pengoperasian online: **www.bosch-pt.com/manuals**

Fungsi pengukuran

Memilih/mengubah fungsi pengukuran

Alat pengukur menawarkan fungsi pengukuran berikut:

- Pengukuran panjang
- Pengukuran luas
- Pengukuran kontinu
- Pengukuran volume
- Pengukuran jarak tidak langsung

– Pengukuran tinggi tidak langsung
– Penambahan/pengurangan
– Fungsi memori

Untuk informasi tambahan, kunjungi panduan pengoperasian online:
www.bosch-pt.com/manuals

Pemeriksaan akurasi

Periksa akurasi pengukuran jarak secara berkala.

Untuk informasi tambahan, kunjungi panduan pengoperasian online:
www.bosch-pt.com/manuals

Pesan gangguan

Jika pengukuran tidak dapat dilakukan dengan benar, laporan kesalahan akan muncul pada display.

» Cobalah kembali untuk melakukan proses pengukuran.

» Jika laporan kesalahan kembali muncul, matikan alat pengukur dan hidupkan kembali lalu mulai kembali pengukuran.

Alat pengukur memantau ketepatan fungsi pada setiap pengukuran. Apabila terdapat kerusakan,

semua tampilan pada display akan berkedip. Pada situasi tersebut, atau jika tindakan perbaikan tidak dapat memperbaiki kesalahan, lakukan pemeriksaan alat pengukur di layanan pelanggan Bosch melalui dealer Anda.

Perawatan dan servis

Perawatan dan pembersihan

Jaga kebersihan alat.

Jangan memasukkan alat pengukur ke dalam air atau cairan lainnya.

Jika alat kotor, bersihkan dengan lap yang lembut dan lembap. Jangan gunakan bahan pembersih atau zat pelarut.

Rawat lensa penerima **(11)** secara khusus, sama halnya seperti merawat kacamata atau lensa kamera.

Layanan pelanggan dan konsultasi penggunaan

Layanan pelanggan Bosch menjawab semua pertanyaan Anda tentang reparasi dan perawatan serta tentang suku cadang produk ini. Gambaran teknis (exploded view) dan informasi mengenai suku cadang dapat ditemukan di: **www.bosch-**

pt.com
Tim konsultasi penggunaan Bosch akan membantu Anda menjawab pertanyaan seputar produk kami beserta aksesorinya.

Jika Anda hendak menanyakan sesuatu atau memesan suku cadang, selalu sebutkan nomor model yang terdiri dari 10 angka dan tercantum pada label tipe produk.

Indonesia
PT Robert Bosch Indonesia
Arkadia Green Park Tower G – 7th floor
Jl. Let. Jend. TB. Simatupang Kav.88
Jakarta 12520
Tel.: (021) 3005 5800
Fax: (021) 3005 5801
E-Mail: **boschpowertools@id.bosch.com**
www.bosch-pt.co.id

Alamat layanan lainnya dapat ditemukan di:

www.bosch-pt.com/serviceaddresses

Cara membuang

Alat pengukur, aksesori, dan kemasan harus didaur ulang dengan cara yang ramah lingkungan.

Jangan membuang alat pengukur dan baterai bersama dengan sampah rumah

tangga!

Tiếng Việt

Hướng dẫn an toàn

Phải đọc và chú ý mọi hướng dẫn để đảm bảo an toàn và không bị nguy hiểm khi làm việc với dụng cụ đo. Khi sử dụng dụng cụ đo không phù hợp với các hướng dẫn ở trên, các thiết bị bảo vệ được tích hợp trong dụng cụ đo có thể bị suy giảm. Không bao giờ được làm cho các dấu hiệu cảnh báo trên dụng cụ đo không thể đọc được. HÃY BẢO QUẢN CẨN THẬN CÁC HƯỚNG DẪN NÀY VÀ ĐƯA KÈM THEO KHI BẠN CHUYỂN GIAO DỤNG CỤ ĐO.

- **Thận trọng - nếu những thiết bị khác ngoài thiết bị hiệu chỉnh hoặc thiết bị điều khiển được nêu ở đây được sử**

dụng hoặc các phương pháp khác được tiến hành, có thể dẫn đến phơi nhiễm phóng xạ nguy hiểm.

- ▶ **Máy đo được dán nhãn cảnh báo laser (được đánh dấu trong mô tả máy đo ở trang đồ thị).**
- ▶ **Nếu văn bản của nhãn cảnh báo laser không theo ngôn ngữ của bạn, hãy dán chồng nhãn dính được cung cấp kèm theo bằng ngôn ngữ của nước bạn lên trên trước khi sử dụng lần đầu tiên.**

Không được hướng tia laze vào người hoặc động vật và không được nhìn vào tia laze trực tiếp hoặc phản xạ. Bởi vì bạn có thể chiếu lóa mắt người, gây tai nạn hoặc gây hỏng mắt.

- ▶ **Nếu tia laze hướng vào mắt, bạn phải nhắm mắt lại và ngay lập tức xoay đầu để tránh tia laze.**
- ▶ **Không thực hiện bất kỳ thay` đổi nào ở thiết bị laser.**
- ▶ **Chỉ để người có chuyên môn được đào tạo sửa dụng cụ đo và chỉ dùng các phụ tùng gốc để sửa chữa.** Điều

này đảm bảo cho sự an toàn của dụng cụ đo được giữ nguyên.

- ▶ **Không để trẻ em sử dụng dụng cụ đo laser khi không có người lớn giám sát.** Có thể vô tình làm lóa mắt người khác hoặc làm lóa mắt chính bản thân.
- ▶ **Không làm việc với dụng cụ đo trong môi trường dễ nổ, mà trông đó có chất lỏng, khí ga hoặc bụi dễ cháy.** Các tia lửa có thể hình thành trong dụng cụ đo và có khả năng làm rác cháy hay ngún khói.
- ▶ **Không sử dụng kính nhìn tia laser (Phụ kiện) làm kính bảo vệ.** Kính nhìn tia laser dùng để nhận biết tốt hơn tia laser; tuy nhiên kính không giúp bảo vệ mắt khỏi tia laser.
- ▶ **Không sử dụng kính nhìn tia laser (Phụ kiện) làm kính mát hoặc trong giao thông đường bộ.** Kính nhìn tia laser không chống UV hoàn toàn và giảm thiểu thụ cảm màu sắc.

Mô Tả Sản Phẩm và Đặc Tính Kỹ Thuật

Sử dụng đúng cách

Dụng cụ đo được thiết kế để đo khoảng cách, chiều dài, chiều cao, khoảng hở hoặc để tính toán diện tích hay khối lượng.

Dụng cụ đo thích hợp để sử dụng trong nhà.

Các bộ phận được minh họa

Sự đánh số các biểu trưng của sản phẩm là để tham khảo hình minh họa dụng cụ đo trong hình minh họa.

(1) Hiển thị

(2) ▲ Nút đo

(3) — Nút trừ

(4) Func Phím bấm chức năng

(5) C ⏻ Nút bật/tắt

(6) + Nút cộng

(7) Nắp đậy pin

(8) Lấy cài nắp đậy pin

(9) Mã seri sản xuất

(10) Nhãn cảnh báo laser

(11) Thấu kính

(12) Lỗ chiếu luồng laser

Hiển thị các Phần tử

(a) Laze hoạt động
(b) Cảnh báo nhiệt độ
(c) Đèn báo dung lượng pin thấp
(d) Các hàng giá trị đo được
(e) Hàng kết quả
(f) Đơn vị đo
(g) Hiển thị chức năng đo
(h) Hiển thị giá trị bộ nhớ
(i) Hiển thị lỗi **"Error"**

Thông số kỹ thuật

Máy định tầm laser kỹ thuật số	**GLM 40-12**
Mã số máy	**3 601 K72 9K1**
Phạm vi đo[A)]	0,15–40 m

Máy định tầm laser kỹ thuật số	**GLM 40-12**
Biên độ đo (trong điều kiện đo khó)[B)]	20 m
Độ đo chính xác[A)]	±1,5 mm
Sai số (trong điều kiện đo khó)[B)]	±3,0 mm
Đơn vị biểu thị nhỏ nhất	1 mm
Giới thiệu chung	
Nhiệt độ hoạt động[C)]	−10 °C ... +45 °C
Nhiệt độ lưu kho	−20 °C ... +70 °C
Độ ẩm không khí tương đối tối đa.	90 %
Chiều cao ứng dụng tối đa qua chiều cao tham chiếu	2000 m
Mức độ ô nhiễm theo IEC 61010-1	2[D)]
Cấp độ Laser	2
Loại laser	635 nm, < 1 mW
Phân kỳ tia laser	< 1,5 mrad (Góc đầy)

Máy định tầm laser kỹ thuật số	**GLM 40-12**
Tắt tự động sau khoảng.	
– Laser	20 s
– Dụng cụ đo (không đo)	5 min
Bộ nguồn	2 × 1,5 V LR03 (AAA)

A) Đo từ mép phía sau của dụng cụ đo, áp dụng cho mục tiêu có khả năng phản xạ cao (ví dụ như một bức tường sơn trắng), ánh sáng nền yếu và nhiệt độ làm việc là 20 °C; ngoài ra cần tính đến độ lệch ±0,05 mm/m phụ thuộc khoảng cách.

B) Đo từ mép phía sau của dụng cụ đo, áp dụng cho mục tiêu có khả năng phản xạ cao (ví dụ như một bức tường sơn trắng), ánh sáng nền mạnh và nhiệt độ làm việc là 20 °C và độ cao lớn. Thêm vào đó cần tính tới một mức sai lệch phụ thuộc khoảng cách khoảng ±0,15 mm/m.

C) Trong chức năng Đo liên tục, nhiệt độ hoạt động tối đa là +40 °C.

D) Chỉ có chất bẩn không dẫn xuất hiện, nhưng đôi khi độ dẫn điện tạm thời gây ra do ngưng tụ.

Số xêri **(9)** đều được ghi trên nhãn mác, để dễ dàng nhận dạng loại máy đo.

Lắp/thay bộ nguồn

ⓘ Luôn luôn thay tất cả pin cùng một lần. Chỉ sử dụng pin cùng một hiệu và có cùng một điện dung.

ⓘ Xin hãy lưu ý lắp tương ứng đúng cực pin như được thể hiện mặt trong ngăn chứa pin.

- ▶ **Tháo ắc quy ra khỏi dụng cụ đo nếu bạn không muốn sử dụng thiết bị trong thời gian dài**. Pin có thể hư mòn sau thời gian bảo quản lâu trong dụng cụ đo.

Vận Hành

Bắt Đầu Vận Hành

- ▶ **Không cho phép dụng cụ đo đang bật một cách không kiểm soát và hãy tắt dụng cụ đo sau khi sử dụng.** Tia Laser có thể chiếu vào những người khác.
- ▶ **Bảo vệ dụng cụ đo tránh khỏi ẩm ướt và không để bức xạ mặt trời chiếu trực tiếp vào.**
- ▶ **Không cho dụng cụ đo tiếp xúc với nhiệt độ khắc nghiệt hoặc dao động**

nhiệt độ. Không để nó trong chế độ tự động quá lâu. Điều chỉnh nhiệt độ cho dụng cụ đo khi có sự dao động nhiệt độ lớn, trước khi bạn đưa nó vào vận hành. Trong trường hợp ở trạng thái nhiệt độ cực độ hay nhiệt độ thay đổi thái quá, sự chính xác của dụng cụ đo có thể bị hư hỏng.

- ▶ **Tránh va chạm mạnh hoặc làm rơi dụng cụ đo.** Sau khi có tác động mạnh từ bên ngoài lên dụng cụ đo, cần tiến hành kiểm tra độ chính xác trước khi tiếp tục (xem „Kiểm tra độ chính xác“, Trang 101).

Bật Mở và Tắt

» Bấm vào nút ▲ để bật dụng cụ đo và laser.

→ Bạn cũng có thể bật dụng cụ đo mà không cần laser bằng cách nhấn nút $\overset{c}{\textcircled{i}}$.

» Nhấn giữ nút $\overset{c}{\textcircled{i}}$ để tắt dụng cụ đo.

→ Các giá trị và các thiết lập thiết bị hiện có trong bộ nhớ sẽ được giữ lại.

Tất cả các giá trị đã lưu trữ sẽ được giữ lại khi tắt.

Quy trình đo

Sau khi bật lên, dụng cụ đo ở chế độ đo độ dài.

Mức tham chiếu để đo luôn là mép phía sau của dụng cụ đo.

» Đặt dụng cụ đo ở điểm đầu tiên muốn đo (ví dụ như bức tường).

» Nếu bạn bật dụng cụ đo bằng nút $\overset{c}{\textcircled{i}}$, nhấn nhanh nút ▲ để bật laser.

» Nhấn vào nút ▲ để kích hoạt đo.

Sau quá trình đo, chùm tia laser bị tắt. Đối với phép đo tiếp theo hãy lặp lại quy trình này.

Các giá trị đo hoặc kết quả cuối cùng có thể được cộng vào hoặc bị trừ.

Trong chế độ đo liên tục, sự đo bắt đầu ngay sau khi mở chức năng hoạt động.

Để biết thêm thông tin hãy truy cập hướng dẫn vận hành trực tuyến:

www.bosch-pt.com/manuals

Không được di chuyển dụng cụ đo trong quá trình đo. Do đó, hãy đặt

dụng cụ đo trên một bề mặt chặn hoặc đỡ chắc chắn nếu có thể.

ⓘ Ống kính thu nhận **(11)** và đầu ra của tia laser **(12)** không được bị che khi đo.

Các thiết lập ban đầu

Dụng cụ đo cung cấp các cài đặt cơ bản sau:

– Thay Đổi Đơn Vị Đo Lường
– Bật/tắt tín hiệu âm thanh

Để biết thêm thông tin hãy truy cập hướng dẫn vận hành trực tuyến:

www.bosch-pt.com/manuals

Các chức năng đo

Chọn/thay đổi các chức năng đo

Dụng cụ đo cung cấp các chức năng đo sau:

– Đo Chiều Dài
– Đo Diện Tích
– Đo liên tục
– Đo khối lượng

– ∠ đo khoảng cách gián tiếp
– ∠ đo chiều cao gián tiếp
– ± Cộng/trừ
– Chức năng bộ nhớ

Để biết thêm thông tin hãy truy cập hướng dẫn vận hành trực tuyến:
www.bosch-pt.com/manuals

Kiểm tra độ chính xác

Thường xuyên kiểm tra độ chính xác của phép đo khoảng cách.

Để biết thêm thông tin hãy truy cập hướng dẫn vận hành trực tuyến:
www.bosch-pt.com/manuals

Thông báo lỗi

Khi phép đo đúng không thực hiện được, thông báo lỗi sẽ được hiển thị trong màn hình hiển thị.

» Thử thực hiện lại quá trình đo.

» Nếu thông báo lỗi lại xuất hiện, hãy tắt và bật lại dụng cụ đo và bắt đầu lại phép đo.

Dụng cụ đo kiểm soát độ chính xác của mỗi phép đo. Nếu phát hiện ra lỗi, thì toàn bộ chữ trên màn hình sẽ nháy. Trong trường hợp này, hoặc nếu các biện pháp khắc phục không thể loại bỏ lỗi, xin hãy chuyển dụng cụ đo đến bộ phận dịch vụ khách hàng của Bosch thông qua đại lý bán hàng của bạn.

Bảo Dưỡng và Bảo Quản

Bảo Dưỡng Và Làm Sạch

Luôn luôn giữ cho dụng cụ đo thật sạch sẽ.

Không được nhúng dụng cụ đo vào trong nước hay các chất lỏng khác.

Lau sạch bụi bẩn bằng một mảnh vải mềm và ẩm. Không được sử dụng chất tẩy rửa.

Chăm sóc thấu kính **(11)** một cách cẩn thận giống như khi xử lý kính hoặc ống kính máy ảnh.

Dịch vụ hỗ trợ khách hàng và tư vấn sử dụng

Bộ phận phục vụ hàng sau khi bán của chúng tôi trả lời các câu hỏi liên quan đến việc bảo dưỡng và sửa chữa các sản phẩm cũng như phụ tùng thay thế của bạn. Sơ đồ mô tả và thông tin về phụ tùng thay thế cũng có thể tra cứu theo dưới đây:
www.bosch-pt.com
Đội ngũ tư vấn sử dụng của Bosch sẽ giúp bạn giải đáp các thắc mắc về sản phẩm và phụ kiện.

Trong tất cả các phản hồi và đơn đặt phụ tùng, xin vui lòng luôn luôn nhập số hàng hóa 10 chữ số theo nhãn của hàng hóa.

Việt Nam
CN CÔNG TY TNHH BOSCH VIỆT NAM TẠI TP.HCM
Tầng 14, Ngôi Nhà Đức, 33 Lê Duẩn
Phường Bến Nghé, Quận 1, Thành Phố Hồ Chí Minh
Tel.: (028) 6258 3690
Fax: (028) 6258 3692 - 6258 3694
Hotline: 1900 9988 50
Email:
tuvankhachhang-pt@vn.bosch.com
www.bosch-pt.com.vn

Xem thêm địa chỉ dịch vụ tại:

www.bosch-pt.com/serviceaddresses

Sự thải bỏ

Dụng cụ đo, phụ kiện và bao bì phải được phân loại để tái chế theo hướng thân thiện với môi trường.

Không vứt dụng cụ đo và pin cùng trong rác thải của gia đình!

Legal Information and Licenses

CMSIS Cortex-M0 version 4.0

Copyright (c) 2009 - 2014 ARM LIMITED

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,

PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

STM32CubeF0/STM32F0xx CMSIS version 2.3.3

Copyright (c) 2014-2016 STMicroelectronics

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR

CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Warranty Disclaimer

This product contains Open Source Software components which underly Open Source Software Licenses. Please note that Open Source Licenses contain disclaimer clauses. The text of the Open Source Licenses that apply are included in this manual under "Legal Information and Licenses".