



# EU-TYPE EXAMINATION CERTIFICATE

Number: TCM 111/21 - 5801

Page 1 from 11 pages

**In accordance:** with Directive 2014/32/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments (implemented in Czech Republic by Government Order No. 120/2016 Coll.).

**Manufacturer:** Proton Products Europe N.V.  
Terspelt Business Park  
Koeweideblock 2/C13  
B-1785 Merchtem  
Belgium

**For:** length measuring instrument  
type: SL3060MID

Operating Speed	$0.3 < S \leq 3000$ m/min
Minimum length (L <sub>m</sub> ):	$\geq 10$ m
Scale interval:	= 1 mm
Accuracy class:	I

**Valid until:** 21 March 2031

**Document No:** 0511-CS-A013-21

**Description:** Essential characteristics, approved conditions and special conditions, if any, are described in this certificate.

**Date of issue:** 22 March 2021

Certificate approved by:



  
RNDr. Pavel Klenovský

## 1 Introduction

This pattern of length measuring instrument, designated the SL3060MID, is a noncontact laser Doppler speed and length gauge for the determination of the length of rope-type materials (e.g. cables, bands etc.) during feed motion of the product to be measured. The instrument is a Class 3B laser based measurement instrument housed in an IP 67 cast aluminium enclosure. The nominal supply voltage is +24 Vdc (Minimum 16V / Maximum 28V)

## 2 Functional description

### 2.1 Mechanical

The SL3060MID incorporates a laser head-works coupled to an AiG2MID display module (Figure 1).

The SL3060MID laser window is positioned 300 mm (stand-off),  $\pm 30$  mm (depth of field), from the product to be measured.

Due to the nature of the laser-based measurement, there is no physical contact with the material.

### 2.2 SL3060MID Laser Gauge

The SL3060MID (Figure 2) is designed to work in applications where the material to be measured moves at speeds between 0.3 and 3000 m/min. When the SL3060MID gauge is fitted with the direction wheel accessory (Figure 3) it has the ability to measure in both positive and negative directions. Where the direction wheel is not fitted the SL3060MID must be connected via an interlock between the shutter release (via the DB 25 interface) and the product feed mechanism to prevent measurement if the feed motion is reversed.

The front of the gauge body has the following LEDs:

- **PWR:** indicates red if gauge power is provided to the unit, or is not lit if there is no power,
- **PROFI:** indicates green if communication is online, or red if communication has failed, is not lit if there is no communication or there is a Profibus failure.
- **CAN:** flashes green if communications is online, or red if communication has failed,
- **EIP:** indicates yellow if communication is online, or is unlit if there is no Ethernet IP communication
- **GR:** indicates green [constant] if reading level is OK, flashing if level is low or not lit if no readings detected (or gauge power is off).
- **LASER status:** is lit if laser diode active, flashing if laser temp is “autoadjusting or laser shutter is closed whilst laser diode is on, or is not lit if laser is off (diode not active).

### 2.3 AiG2MID display module

The AiG2MID display module (Figure 4) is attached either directly to the SL3060MID gauge, or is connected to the gauge by a cable.

The screen of the display module indicates the velocity and length of the material moving under the beam of the laser, and has icons to indicate the status of:

- relays 1 and 2 (e.g. open/closed),
- the gauge, and
- the signal quality (via an indicator bar).

The screen is also used to indicate system error messages.

The display module is also fitted with membrane keypad having 4 “navigation keys” and 4 press button keys. The functions are shown in Figure 5.

### 2.4 Access levels

There are 2 levels of access to the parameters:

- User level – LOCK/UNLOCK
- Admin level – LOCK/UNLOCK



These levels allow access to the following:

ITEM	User LOCK	User UNLOCK	Admin LOCK	Admin UNLOCK
Basic page (speed and length)	Read only	Read only	Read only	Read only
Preset length	Read only	Read / Write	User Level	Read / Write
Interface	Read only	Read only	Read only	Read / Write
Communication	Read only	Read only	Read only	Read / Write
Gauge ID	Read only	Read only	Read only	Read only
Product info	Read only	Read / Write	User Level	Read / Write
SL gauge info	Read only	Hide	Hide	Read only
Factory info	Read only	Hide	Hide	Read only

**Table 1 - Access Levels**

## 2.5 Input/Output connections

The top of the SL3060MID has the following connections:

- DB9, PRINTER
- DB9, PROF/IEP
- DB9, CAN
- DB25 INTERFACE (SLR3060MID LASER Gauge to AiG2MID display module)
- Earthing stud

## 3 Principle of operation

### 3.1 Principle

The SL3060MID utilizes two laser beams, one to the left of centre and one to the right of centre, to create a laser Doppler fringe onto the surface of the product to be measured. The beams, which originate from the same single laser source, are collimated and angled so that they cross the plane of the surface of the product to be measured. The light is diffused onto the surface and the receiving optics collect the reflected Doppler signal which is then focussed by a lens onto a photo detector, and then processed to produce the measurement data.

### 3.2 Characteristics

The SL3060MID has the following characteristics:

Operating Speed (S)	$0.3 \leq S \leq 3000$ m per min
Minimum length (Lm):	$\geq 10$ m
Scale interval:	= 1 mm
Accuracy class:	I
Standoff Distance:	300 mm
Measurement Depth of Field:	60 mm
Lower & Upper temperature limits:	+5°C to +40°C
Climatic Environment:	Closed, Non-condensing
Mechanical Environment:	M3
Electromagnetic Environment:	E2



### 3.3 System specifications

The SL3060MID has the following system specification:

Maximum Laser Power	0.040 watt
Beam power	0.025 watts/beam
Laser Wavelength	0.658 micrometers
Laser Spot Size	3 mm diameter
Power requirement	15 – 25 Vdc, 20 watts

Table 5 - system specification

### 3.4 Software

#### 3.4.1 Software type

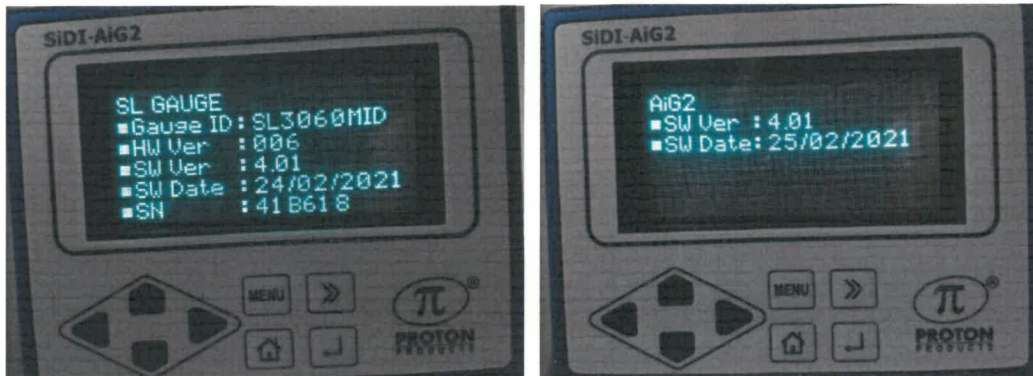
Risk class [B]	P	U	L	T	S	D	Ix
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> [1-6]

#### 3.4.2 Software identification

SL3060 MID: software version: **4.01**

AIG2 MID: software version: **4.01**

The versions of legally relevant software are possible to show on the display after press the button menu under “Gauge identification”.



#### 3.4.3 Integrity software verification

Both legally relevant software are protected with HW seals. The measurement data and specific device parameters are protected with HW jumper and terminal cover sealing. The setting of communication is protected with passwords that are accessible for the user.

#### 3.4.4 Software environment short description

- User interfaces:
  - SL3060 MID gauge head: switch for internal laser shutter, LED indicators.
  - The AIG2 MID module: display, buttons: page key, right, left, up, down, menu, home, select button.
- Communication interfaces:
  - The AIG2MID module: CAN under seal.
  - SL3060MID gauge head: CAN under seal, RS-232 (printer), I-BUS-DB9 connector (industrial bus, ethernet), DB25 connector (5x digital inputs, 3x relay outputs).

Complete results of SW validation are given in the protocol No. 6011-PT-SW006-21.





## 4 Peripheral devices and interfaces

### 4.1 Interfaces

The SL3060MID has the following Inputs/Outputs via the interface:

- 5 digital inputs that can be used to:
  - Length reset,
  - Line direction,
  - End of reel (print initiation),
  - Laser enable,
  - Sutter enable.
- 3 relay outputs
  - Preset length 1 reached,
  - Preset length 2 reached,
  - Low warning of Good Reading (GR) level, less than 60 %.
- 2 pulse outputs
  - Output 1: Opto-Isolated quadrature pulse,
  - Output 2: Pulse 2 index pulse

### 4.2 Peripheral devices

The instrument may be connected to any peripheral device that has been issued with Parts Certificate by a Notified Body responsible for Module B under Directive 2014/32/EU and bears the CE marking of conformity to the relevant directives; or

A peripheral device without a Parts certificate may be connected under the following conditions:

- it bears the CE marking for conformity to the EMC Directive;
- it is not capable of transmitting any data or instruction into the measuring instrument, other than to release a printout, checking for correct data transmission or validation;
- it prints measurement results and other data as received from the measuring instrument without any modification or further processing; and
- it complies with the applicable requirements of Paragraph 8.1 of Annex I.

## 5 Approval Conditions

The certificate is issued subject to the following conditions:

### 5.1 Legends and inscriptions

The instrument bears the following legends:

- 'CE' marking
- Supplementary metrology marking
- Notified body identification number
- Accuracy class
- Manufacturers mark or name
- EU-type examination certificate number
- Operating Speed (S)
- Minimum length (Lm)
- Scale interval.



Where the product feed can be reversed the SL3060MID gauge shall either:

- be fitted with the direction wheel accessory, or
- connected, via an interlock, to the product feed mechanism to prevent a measurement if the feed motion is reversed.

The instrument is not approved for the measurement of textiles, characterised by the characteristic factor “K” for the stretchability and force per unit area.

Where:

- the measurement is non-repeatable and;
- the measuring instrument is normally intended for use in the absence of one of the trading parties.

The measuring instrument shall record by a durable means the measurement result accompanied by information to identify the particular transaction.

## **6 Location of seals and verification marks**

Set-up data is stored within the non-volatile memory of the SL3060MID.

The ‘CE’ marking, supplementary metrology marking and certificate number are located on the instrument enclosure. The markings shall be impossible to remove without damaging them. The certificate number may also be stored in the “Gauge Identification Parameters”.

The markings and inscriptions shall fulfil the requirements of Paragraph 9 of Annex I of the Directive 2014/32/EU.

Components that may not be dismantled or adjusted by the user will be secured by either a wire and seal (Figure 6) or tamper evident label and securing mark.



7 Illustrations

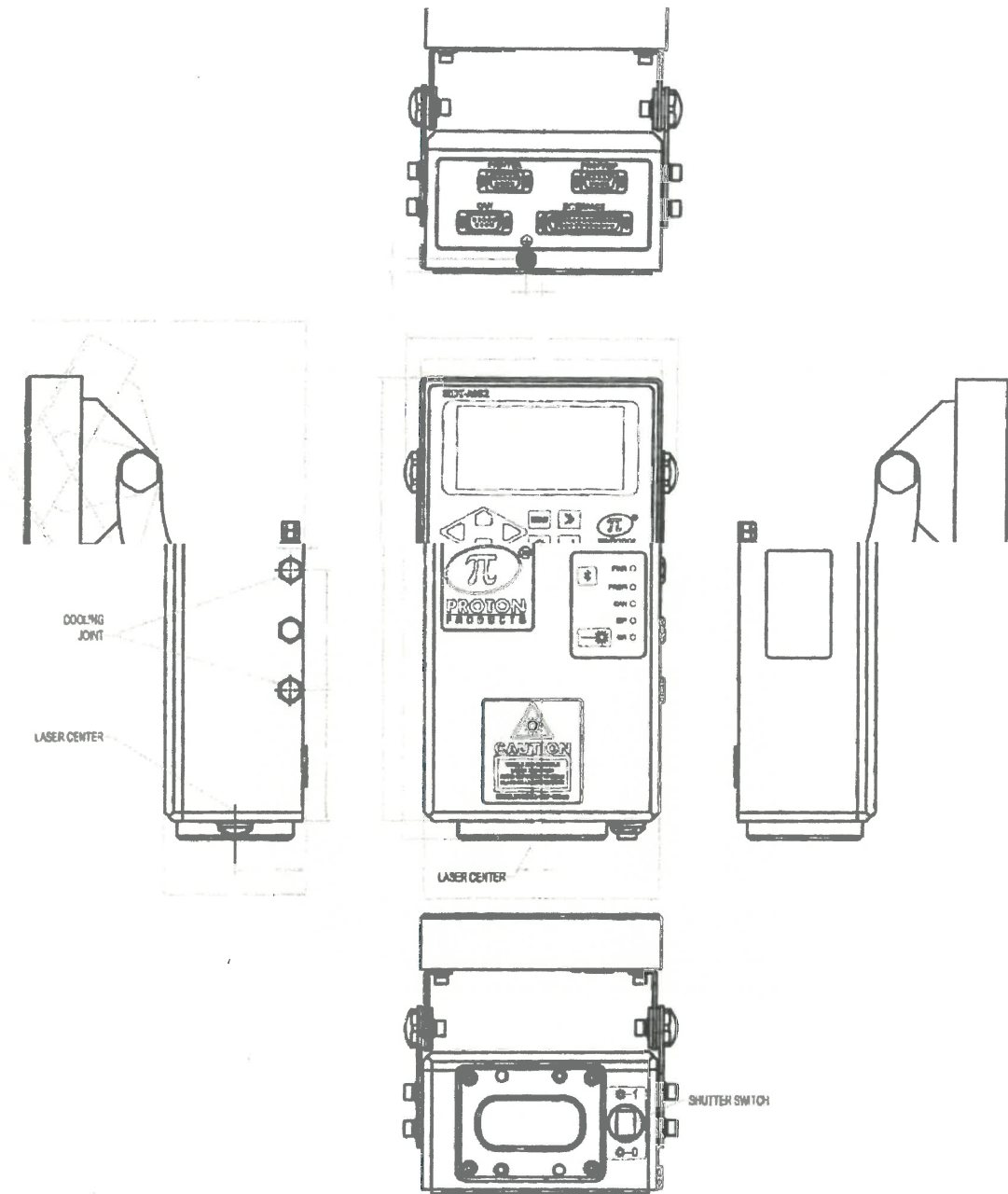
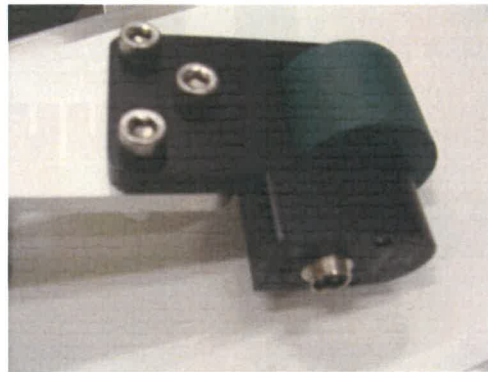


Figure 1 Schematic





**Figure 2 SL3060MID gauge**



**Figure 3 Direction wheel**





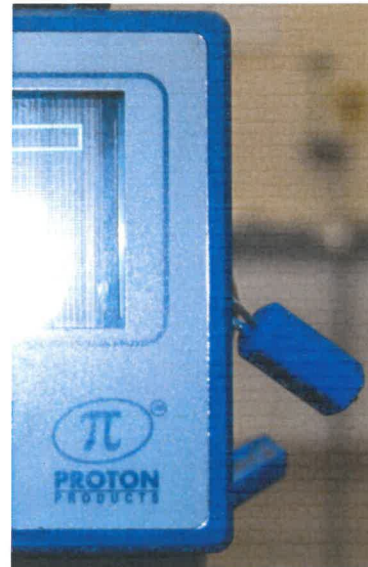
Figure 4 AiG2MID display

	<p><b>'Page key'</b> Step through the pages of a parameter group. After last page it returns to page 1 of that group.</p>
	<p>Step right or left between digits and functions. Press together to reset speed and length</p>
	<p>Increase or decrease the value of digits when altering parameters and presets Step up &amp; down through menus. Step up &amp; down through options for fixed-option parameters</p>
	<p>Go to the Menu page (for a list of parameter groups) See 'MENU PAGE', page 34.</p>
	<p>Go to the Length &amp; Speed display page (home page) See 'HOME PAGE', page 34.</p>
	<p>Select a group: When highlighted on the menu, go to page 1 of that group</p> <p>When an option is highlighted: show option screen</p> <p>In the parameter change sequence: save value and move to the next value</p> <p><i>Note that items are initially saved to RAM when ↵ is pressed, they are transferred to non-volatile memory when leaving the menu group [effectively this means that the Menu or Home key acts as save to non-volatile memory].</i></p>

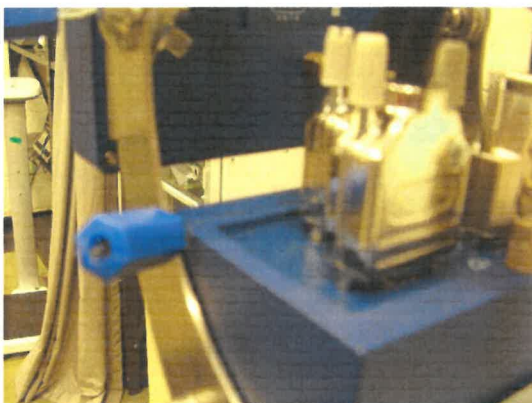
Figure 5 Keypad – functions



Left side of Indicator



Right side of Indicator



Top of Gauge



Bottom of gauge

**Figure 6 Position of securing devices**



**Figure 7**      **Securing arrangement for interconnecting data wires and for connection to the evaluation unit AiG2 – securing from the other side**