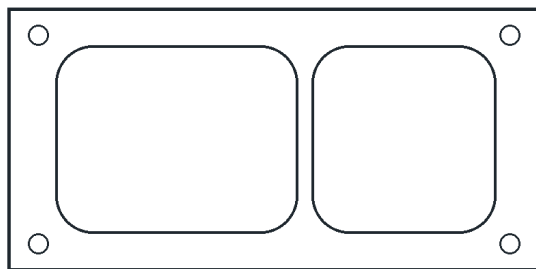


SPD1200D03

PDF-ONLY SOURCE-PRESERVING ENGINEERING REFERENCE

SPD1200D03 — PDF-DERIVED MECHANICAL REFERENCE

SOURCE-DERIVED CUSTOMER REFERENCE — NOT FOR MANUFACTURING



10.07 mm

LOCAL PDF

SOURCE TABLE

Nominal envelope

10.7 × 16.8 × 22 mm

DIMENSION
SOURCE DRAWING

4 × M1.4, depth 3 mm

Center-of-mass callouts retained
in the supplied PDF page 5



16.80 mm SOURCE DRAWING WIDTH

The supplied STEP has no usable solid/face geometry. Do not derive a CAD datum, connector orientation, or unlisted dimension from this reference.

SPD1200D03 / SOURCE-PRESERVING USER MANUAL

SECTION 01

Document Control and PDF Coverage

The supplied 11-page PDF is the only authoritative technical text source for this model. Every customer-visible technical value below is bound to that PDF; no sibling model is used to complete missing data.

The supplied STEP has no usable solid/face geometry and is not presented as a verified 3D model.

SOURCE PAGE	CONTENT	CONTROLLED PRESENTATION
PDF p1	Document identity	SPD1200D03 user manual v1.1, 2026.04
PDF pp2–3	Product overview and technical tables	English transcription retained below
PDF p4	Packing list, connector, pins, low-power procedure	English transcription retained below
PDF p5	Mechanical and center-of-mass drawing	Source-derived reference; not for manufacturing
PDF pp5–6	Optical-window recommendations and arrangements	English transcription and source-derived diagram retained
PDF pp7–8	Serial protocol	All source-listed frames and baud types retained
PDF pp9–10	Safety and application notes	English source-bound translation retained
PDF p11	Revision record	V1.1 and V1.0 source entries retained

SECTION 02

Product Overview

The source describes SPD1200D03 as an ultra-lightweight, compact 905 nm laser rangefinder module with a maximum source-stated range of at least 1200 m, a UART-TTL interface, and source-mentioned test software. It lists aviation, communications, geology, law enforcement, and outdoor sports among possible applications.

Application and performance statements remain source-stated and are not independent guarantees.

SECTION 03

Technical Specifications — PDF pp2–3

The table is an English transcription of the supplied PDF. Class, IEC, IP, and performance entries are source-stated references, not independently verified certification claims.

SOURCE CATEGORY	SOURCE PARAMETER	SOURCE-STATED VALUE
Electrical	Maximum range	≥1200 m @ 70% reflectivity, building target (visibility ≥ 6 km)
Electrical	Minimum range	0.2 m @ 90% reflectivity, whiteboard
Electrical	Ranging accuracy	d ≤ 100 m: ±0.3 m d > 100 m: ±(0.4 + 0.006 × d) m (d in meters)
Electrical	Measurement frequency	2–15 Hz, adaptive
Electrical	Valid measurement rate	≥98%
Electrical	False alarm rate	≤1%
Electrical	Baud rate	15200 bps (factory) / 9600 bps
Electrical	Interface	UART (TTL_3.3V)
Electrical	Supply voltage	DC 3.3–5 V
Electrical	Operating power (+3.3 V in)	≤0.45 W @ 25 °C ≤0.56 W @ 60 °C ≤0.35 W @ –20 °C
Electrical	Response time	≤200 ms
Optical	Laser wavelength / class	905 ± 5 nm Class 1 (IEC 60825-1)
Optical	Typical beam divergence	≤5 mrad
Optical	Average laser power	1.8 mW
Optical	Receive aperture	Diameter 7 mm
Physical	Weight	6 ± 0.5 g
Physical	Dimensions	10.7 × 16.8 × 22 mm
Physical	Shock	1000 g/ms (10 times/s along the optical axis)
Physical	Vibration	5–50–5 Hz, 1 octave/min, 2.5 g
Environmental	Operating temperature	–20 to +60 °C
Environmental	Storage temperature	–25 to +75 °C
Environmental	Reliability	MTBF ≥1500 h
Environmental	Protection rating	IP67

SECTION 04

Packing List and Electrical Interface — PDF p4

Source packing list: one laser rangefinder module and one power cable. Source connector: A1002WV-S-6P.

Low-power procedure: pull EN low to enter normal operating mode for measurement; after measurement, pull EN high to return to low-power mode. The source does not release a production-harness mating orientation.

PIN	SOURCE SIGNAL	SOURCE-STATED FUNCTION
1	GND	Power ground
2	VCC	Positive supply, 3.3–5 V
3	NC	No connection
4	TXD	Serial transmit, TTL_3.3 V level
5	RXD	Serial receive, TTL_3.3 V level
6	EN	Enable pin; source procedure pulls low for normal operation

SECTION 05

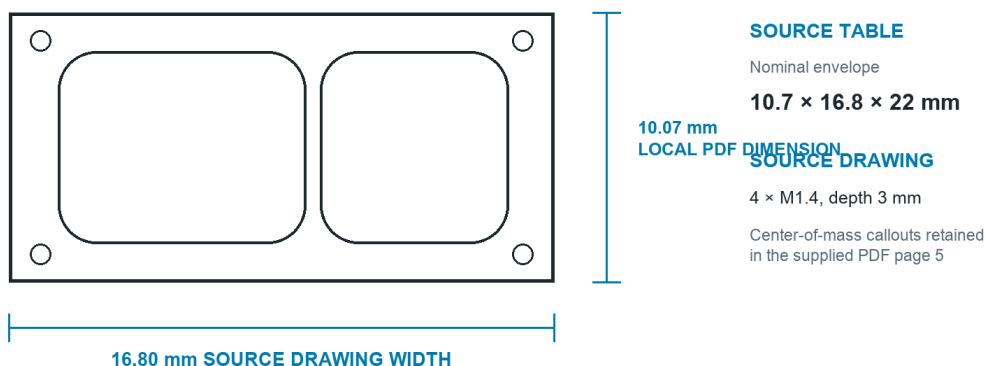
Mechanical and Center-of-Mass Reference — PDF p5

Source-derived customer reference — not for manufacturing. The source table states $10.7 \times 16.8 \times 22$ mm, while the drawing also shows a local 10.07 mm dimension. Both remain visible pending engineering confirmation.

The source drawing also shows 4 × M1.4 with 3 mm depth and center-of-mass callouts. No production datum or connector orientation is released.

SPD1200D03 — PDF-DERIVED MECHANICAL REFERENCE

SOURCE-DERIVED CUSTOMER REFERENCE — NOT FOR MANUFACTURING



The supplied STEP has no usable solid/face geometry. Do not derive a CAD datum, connector orientation, or unlisted dimension from this reference.

Source-derived customer reference — not for manufacturing.

SECTION 06

Optical Window Recommendations — PDF pp5-6

Material: the source recommends H-K9L optical glass or fused silica for the 300–2100 nm range.

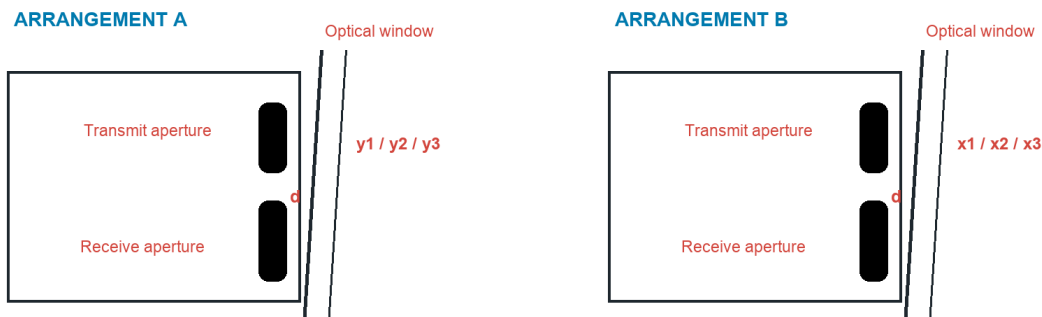
Manufacturing: source-recommended wedge-angle tolerance $\leq 3'$ (grade ≤ 7) and surface roughness Ra 0.012.

Coating: source-recommended 855–955 nm antireflection coating with transmittance $\geq 99.5\%$; optional hydrophobic or hard outer coatings; remaining source-stated requirements refer to GJB 2485-95 with transmittance $\geq 98\%$. These are recommendations, not independently validated standard-equivalence claims.

Use: source-recommended window thickness 2–4 mm, transmit optical axis parallel to the window normal, and air gap $d < 0.5$ mm. The source formulas and variables are retained in the diagram without geometric reinterpretation.

SPD1200D03 — SOURCE-DERIVED OPTICAL-WINDOW REFERENCE

NOT FOR MANUFACTURING — SOURCE VARIABLES AND FORMULAS RETAINED



SOURCE FORMULAS — RETAINED WITHOUT GEOMETRIC REINTERPRETATION

Arrangement A: $y2 - y1 \geq 2 \text{ mm}$ $y3 - y2 \geq 1.5 \text{ mm}$ $d < 0.5 \text{ mm}$

Arrangement B: $x2 - x1 \geq 2 \text{ mm}$ $x3 - x2 \geq 1.5 \text{ mm}$ $d < 0.5 \text{ mm}$

Source-derived optical-window reference — variables and formulas retained; not for manufacturing.

SECTION 07

Serial Protocol Transcription — PDF pp7–8

The PDF protocol section states 115200 bps as default, while the technical table states 15200 bps (factory) / 9600 bps. Do not select a host baud rate until the delivered unit configuration is confirmed.

Transmit and reply checksums use different source-defined byte scopes. All source data are hexadecimal.

SOURCE LOCATION	VISIBLE SOURCE TRANSCRIPTION
PDF p7 / transport	Serial communication; 115200 bps (default); 8 data bits; 8-byte frame.
PDF p7 / transmit frame	55 AA Function D1 D2 D3 D4 SUM; transmit checksum uses the lower eight bits of Function + DATA1 + DATA2 + DATA3 + DATA4.
PDF p7 / reply frame	55 AA Function D1 D2 D3 D4 SUM; reply checksum uses the lower eight bits of Header H + Header L + Function + DATA1 + DATA2 + DATA3 + DATA4.
PDF p7 / single request	55 AA 88 FF FF FF FF 84
PDF p7 / single reply	55 AA 88 STA FF DIS_H DIS_L SUM[1:7]
PDF p7 / continuous request	55 AA 89 FF FF FF FF 85

SOURCE LOCATION	VISIBLE SOURCE TRANSCRIPTION
PDF p7 / continuous reply	55 AA 89 STA FF DIS_H DIS_L SUM[1:7]
PDF p8 / stop request	55 AA 8E FF FF FF FF 8A
PDF p8 / stop reply	55 AA 8E STA FF FF FF SUM[1:7]
PDF p8 / self-test reply	55 AA 80 STA 00 00 ErrCode SUM[1:7]
PDF p8 / baud request	55 AA 01 FF FF FF TYPE SUM[3:7]
PDF p8 / baud reply	55 AA 01 STA FF FF FF SUM[1:7]
PDF p8 / baud types	TYPE 01 = 9600; 02 = 14400; 03 = 19200; 04 = 38400; 05 = 57600; 06 = 115200; 07 = 230400 bps. Restart required.

SECTION 08

Safety Warnings and Application Conditions — PDF pp9–10

The following English statements are source-bound translations of the supplied safety and application pages.

Do not look directly into the laser emission aperture; the source identifies Class 1.

Operating ambient temperature: –20 to +60 °C. Avoid high temperature, humidity, rain, snow, and dusty environments.

Do not disassemble the module; doing so may invalidate warranty coverage or damage the unit.

Primarily intended for civilian integration; must not be used in equipment for any military purpose.

The spot-adjustment mode is for developers only. Do not aim it at human eyes.

Target reflectivity, target shape, measurement angle, sunlight, water vapor, suspended particles, rain, fog, snow, and haze affect range capability and response time.

The source states illustrative target examples of 1200 m for medium reflectivity, at least 1500 m for high reflectivity, and 600 m for low reflectivity; it separately repeats 600/800/300 m examples. These are source narrative examples, not replacements for the formal technical table.

The source defines its range under a medium-reflectivity building-wall target, a reflective surface perpendicular to the laser direction, clear weather, and no direct sunlight.

For long-distance measurement, the source recommends mounting the module on a tripod to reduce vibration.

Suitable source-listed targets include highway traffic signs, building walls, trees, golf flagsticks, and animals. Range decreases as reflectivity decreases.

SECTION 09

Source Revision Record — PDF p11

VERSION	SOURCE-STATED CHANGE
V1.1	Updated rendering; updated dimensions and receiver field-of-view parameter.
V1.0	Initial release.

SECTION 10

Source Discrepancy — Engineering Confirmation Required

The following PDF-source boundaries remain unresolved and are not normalized in this transcription.

1. Keep the source 15200 bps factory/9600 statement separate from the source 115200 default baud-rate statement.
2. The only authoritative text source is the 11-page PDF; its mechanical reference must be source-derived and marked not for manufacturing.
3. The supplied D03 STEP has no usable solid/face geometry and must not be presented as a verified 3D model.