DAPPRA DATASHEET

DPB Series

Front Ultra-Thin Industrial Area Sensor & Safety Light Curtain

Multiple Parallel Beam Through-Beam Detection with separate emitter and receiver units. Front ultra-thin **14.5 × 28 mm** aluminium alloy housing, available in **20 / 40 mm** optical-axis pitch with beam quantities up to **200**, **≤5 ms** response time, **0.1–3 m** detection distance and IP65 protection.

DOCUMENT

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CONTENTS

Datasheet Contents

DPB Series overview, features, model code, model selection, specifications, dimensions, installation, wiring, accessories, applications and FAQ.

01 · Product Overview SERIES INTRODUCTION AND POSITIONING	03
02 · Key Features ULTRA-THIN HOUSING, MULTI-PITCH, FAST RESPONSE	04
03 · Model Code MODEL NAMING RULES AND FIELD DEFINITIONS	05
04 · Model Selection — 20 mm BEAM QUANTITY, PROTECTION HEIGHT, TOTAL HEIGHT	06
05 · Model Selection — 40 mm BEAM QUANTITY, PROTECTION HEIGHT, TOTAL HEIGHT	07
06 · Technical Specifications ELECTRICAL, OPTICAL AND ENVIRONMENTAL PARAMETERS	08
07 · Dimensions HOUSING CROSS SECTION AND HEIGHT REFERENCES	09
08 · Installation TOP AND BOTTOM BRACKET MOUNTING	10
09 · Wiring Principle NPN AND PNP OUTPUT WIRING	11
10 · Accessories & Brackets MOUNTING BRACKETS AND ACCESSORY SET	12
11 · Applications INDUSTRIAL APPLICATION AREAS	13
12 · FAQ & Contact FAQ AND CONTACT INFORMATION	14

AT A GLANCE

20 / 40 mm	≤5 ms	0.1-3 m	IP65
OPTICAL-AXIS PITCH	RESPONSE TIME	DETECTION DISTANCE	PROTECTION RATING

DPB Series Overview

Front ultra-thin area sensor and safety light curtain for compact machines with limited installation space.

The DAPPRA DPB Series is a front ultra-thin Industrial Area Sensor and Safety Light Curtain series designed for applications where installation space is limited.

The DPB Series uses Multiple Parallel Beam Through-Beam Detection Technology with separate emitter and receiver units. Its front ultra-thin housing is only 14.5 mm thick, saving installation space for compact machines and automation equipment.

The series provides 20 mm and 40 mm optical-axis pitch configurations, with beam quantities from 4 up to 200, offering multiple protection heights and total heights for different industrial sensing and protection requirements.

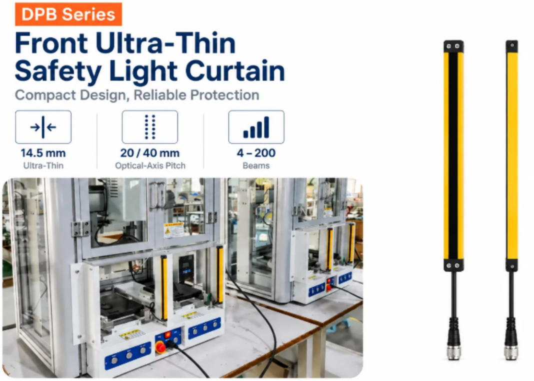

FIGURE 1 · DPB SERIES OVERVIEW

CORE SPECIFICATIONS

Series	DAPPRA DPB Series
Product Type	Front Ultra-Thin Industrial Area Sensor & Safety Light Curtain
Detection Principle	Multiple Parallel Beam Through-Beam Detection
Emitter / Receiver	Separate emitter and receiver units
Optical-Axis Pitch	20 / 40 mm
Beam Quantity	04 – 200
Response Time	≤ 5 ms
Detection Distance	0.1 – 3 m
Operating Voltage	DC 24 V ± 20 %

Output Type	NPN / PNP
Output Logic	NC / NO
Housing Cross Section	14.5 × 28 mm
Housing Material	Aluminium alloy
Protection Rating	IP65

02 · KEY FEATURES

DPB Series Key Features

Engineered for space-constrained industrial detection and machine protection applications.

FRONT ULTRA-THIN DESIGN

The DPB Series features a front ultra-thin housing design for applications where installation space is limited.

20 / 40 MM OPTICAL-AXIS PITCH

The DPB Series provides 20 mm and 40 mm optical-axis pitch options for different sensing and protection requirements.

14.5 × 28 MM COMPACT HOUSING

The DPB Series uses a 14.5 × 28 mm compact aluminium alloy housing, saving installation space on compact machinery.

FAST RESPONSE TIME

Response time is ≤5 ms, providing fast and reliable detection for machine protection applications.

DC 24V ±20% WORKING VOLTAGE

The DPB Series operates on a DC24V ±20% power supply with protection against power overvoltage, reverse polarity and output overcurrent.

NPN / PNP OUTPUT OPTIONS

Output transistor type: NPN / PNP, with NC / NO output logic.

LINE SYNCHRONIZATION

The emitter and receiver use line synchronization for coordinated optical-beam operation, improving resistance to optical interference.

TYPE E SAFETY LEVEL

Designed to meet TYPE E safety level requirements with complete self-checking diagnostics and strong electromagnetic interference resistance.

03 · MODEL CODE

DPB Series Model Code

Select the appropriate DPB model according to the optical-axis pitch, beam quantity and output type.

Model Code Structure

`DPB - 04 20 - NPN - NC`

FIELD	MEANING	AVAILABLE VALUES
DPB	Series prefix	DPB
04	Beam Quantity — number of optical beams	04 – 200
20	Optical-Axis Pitch — distance between adjacent optical axes	20 / 40 mm
NPN	Output Type — transistor output configuration	NPN / PNP
NC	Output Logic — signal logic state	NC / NO

FIELD LEGEND

DPB

Series prefix — DAPPRA DPB Series Front Ultra-Thin Industrial Area Sensor & Safety Light Curtain.

04 — BEAM QUANTITY

Number of optical beams, from 04 to 200 depending on the model.

20 — OPTICAL-AXIS PITCH

Optical-axis pitch in mm: 20 / 40.

NPN — OUTPUT TYPE

Output transistor type: NPN / PNP.

NC — OUTPUT LOGIC

NC = Normally Closed; NO = Normally Open.

EXAMPLE

DPB-0420-NPN-NC = DPB Series, 4 beams, 20 mm optical-axis pitch, NPN output, Normally Closed logic.

04 · MODEL SELECTION

Optical Axis Pitch D = 20 mm

Beam quantity, protection height (H), total height (L) and corresponding model.

BEAM QUANTITY	PROTECTION HEIGHT (H) MM	TOTAL HEIGHT (L) MM	MODEL
4	60	100	DPB-0420-NPN-NC
6	100	165	DPB-0620-NPN-NC
8	140	205	DPB-0820-NPN-NC
10	180	245	DPB-1020-NPN-NC
12	220	285	DPB-1220-NPN-NC
14	260	325	DPB-1420-NPN-NC
16	300	365	DPB-1620-NPN-NC
18	340	405	DPB-1820-NPN-NC
20	380	445	DPB-2020-NPN-NC
22	420	485	DPB-2220-NPN-NC
24	460	525	DPB-2420-NPN-NC
26	500	565	DPB-2620-NPN-NC
28	540	605	DPB-2820-NPN-NC
30	580	645	DPB-3020-NPN-NC
32	620	685	DPB-3220-NPN-NC
34	660	725	DPB-3420-NPN-NC
36	700	765	DPB-3620-NPN-NC
38	740	805	DPB-3820-NPN-NC
40	780	845	DPB-4020-NPN-NC
42	820	885	DPB-4220-NPN-NC
44	860	925	DPB-4420-NPN-NC
46	900	965	DPB-4620-NPN-NC
48	940	1005	DPB-4820-NPN-NC
50	980	1045	DPB-5020-NPN-NC

20 mm optical-axis pitch models are available with beam quantities from 4 to 200. Intermediate beam quantities from 52 to 198 are available on request. Protection height H = (Beam Quantity − 1) × 20 mm. Total height L = H + 65 mm (for 4-beam models, L = H + 40 mm). Maximum model: DPB-20020-NPN-NC (200 beams, H = 3980 mm, L = 4045 mm).

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05 · MODEL SELECTION

Optical Axis Pitch D = 40 mm

Beam quantity, protection height (H), total height (L) and corresponding model.

BEAM QUANTITY	PROTECTION HEIGHT (H) MM	TOTAL HEIGHT (L) MM	MODEL
4	120	185	DPB-0440-NPN-NC
6	200	265	DPB-0640-NPN-NC
8	280	345	DPB-0840-NPN-NC
10	360	425	DPB-1040-NPN-NC
12	440	505	DPB-1240-NPN-NC
14	520	585	DPB-1440-NPN-NC
16	600	665	DPB-1640-NPN-NC
18	680	745	DPB-1840-NPN-NC
20	760	825	DPB-2040-NPN-NC
22	840	905	DPB-2240-NPN-NC
24	920	985	DPB-2440-NPN-NC
26	1000	1065	DPB-2640-NPN-NC
28	1080	1145	DPB-2840-NPN-NC
30	1160	1225	DPB-3040-NPN-NC
32	1240	1305	DPB-3240-NPN-NC
34	1320	1385	DPB-3440-NPN-NC
36	1400	1465	DPB-3640-NPN-NC
38	1480	1545	DPB-3840-NPN-NC
40	1560	1625	DPB-4040-NPN-NC
42	1640	1705	DPB-4240-NPN-NC
44	1720	1785	DPB-4440-NPN-NC
46	1800	1865	DPB-4640-NPN-NC
48	1880	1945	DPB-4840-NPN-NC

50	1960	2025	DPB-5040-NPN-NC

40 mm optical-axis pitch models are available with beam quantities from 4 to 200. Intermediate beam quantities from 52 to 198 are available on request. Protection height H = (Beam Quantity − 1) × 40 mm. Total height L = H + 65 mm. Maximum model: DPB-20040-NPN-NC (200 beams, H = 7960 mm, L = 8025 mm).

06 · TECHNICAL PARAMETERS

DPB Series Technical Specifications

Confirmed electrical, optical and environmental parameters for the DAPPRA DPB Series.

Detection Principle	Multiple Parallel Beam Through-Beam Detection
Optical-Axis Pitch	20 / 40 mm
Beam Quantity	20 mm pitch: 4 – 200 · 40 mm pitch: 4 – 200
Detection Distance	0.1 – 3 m
Response Time	≤ 5 ms
Operating Voltage	DC 24 V ± 20 %
Output Type	NPN / PNP
Output Logic	NC / NO
Synchronization	Line synchronization
Safety Level	TYPE E
Protection Circuitry	Power over-voltage protection, reverse-polarity protection, output over-current protection
Housing Cross Section	14.5 × 28 mm
Housing Material	Aluminium alloy
Protection Rating	IP65
Operating Temperature	−10 ~ 55 °C
Operating Humidity	< 85 % RH at 20 °C

07 · DIMENSIONS

DPB Series Dimensions

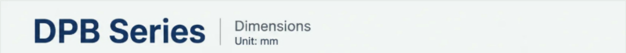
Front ultra-thin 14.5 × 28 mm aluminium alloy housing for space-constrained installations.

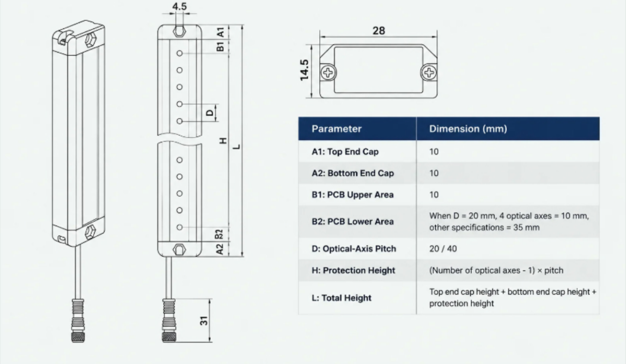
The DPB Series uses a front ultra-thin industrial housing with a confirmed cross section of 14.5 × 28 mm.

Protection height and total height vary according to the beam quantity and optical-axis pitch of each model.

For complete mechanical dimensions, refer to the corresponding DPB model page and CAD drawing.

Housing Cross Section	14.5 × 28 mm
Top Cap (A1)	10 mm
Bottom Cap (A2)	10 mm
PCB Upper Blind Zone (B1)	10 mm
PCB Lower Blind Zone (B2)	10 mm (4 beams @ 20 mm) / 35 mm (other models)
Optical-Axis Pitch (D)	20 / 40 mm
Protection Height (H)	(Beam Quantity − 1) × Pitch
Total Height (L)	Caps + Blind Zones + Protection Height
Mounting	Top and bottom bracket mounting





Parameter	Dimension (mm)
A1: Top End Cap	10
A2: Bottom End Cap	10
B1: PCB Upper Area	10
B2: PCB Lower Area	When D = 20 mm, 4 optical axes = 10 mm, other specifications = 35 mm
D: Optical-Axis Pitch	20 / 40
H: Protection Height	(Number of optical axes - 1) × pitch
L: Total Height	Top end cap height + bottom end cap height + protection height

FIGURE 2 · DPB SERIES MECHANICAL DIMENSIONS

Measurement unit: mm. Data is manually measured and may contain minor deviations — please refer to the actual product for final dimensions.

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08 · INSTALLATION

DPB Series Installation

The DPB Series uses a top and bottom bracket mounting configuration. The emitter and receiver are fixed to the machine frame through the mounting brackets at both ends of the housing.

The DPB Series uses a single mounting configuration: the emitter and receiver are secured by the top and bottom mounting brackets at both ends of the aluminium alloy housing.

Each unit is fixed with the standard bracket set — M4 screws, nuts, washers and spring washers — so the sensor pair can be mounted directly onto compact machines and space-constrained automation equipment.

MOUNTING POSITION

Top and bottom ends of the emitter and receiver housing.

BRACKET SET

Standard top and bottom mounting brackets with M4 screws, nuts, washers and spring washers.

ALIGNMENT

The emitter and receiver must be mounted parallel with the optical axes facing each other, so the beams stay aligned across the detection distance.

INSTALLATION SPACE

The 14.5 × 28 mm front ultra-thin housing allows mounting where installation space is limited.

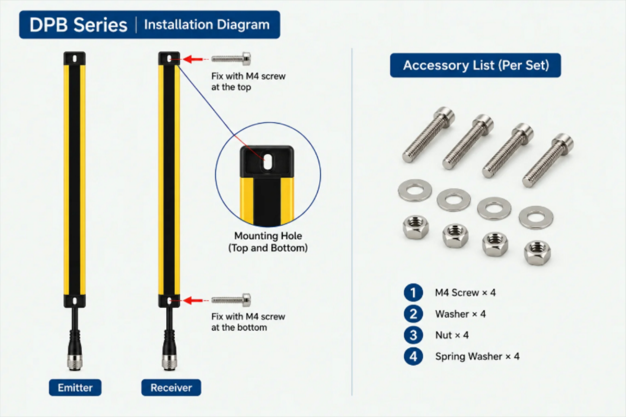
DPB Series | Installation Diagram
Fix with M4 screw at the top
Mounting Hole (Top and Bottom)
Fix with M4 screw at the bottom
Emitter
Receiver
Accessory List (Per Set)
1 M4 Screw × 4
2 Washer × 4
3 Nut × 4
4 Spring Washer × 4

FIGURE 3 · DPB SERIES INSTALLATION METHOD

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09 · WIRING PRINCIPLE

DPB Series Wiring Principle

The DPB Series supports both NPN and PNP output wiring configurations. Select the wiring method according to the output type of the selected model.

NPN Output Wiring

The NPN output switches the signal line to 0 V (GND) when the optical beam is interrupted. Connect the receiver output to the PLC or controller input configured for NPN (sinking) input. Connect the emitter and receiver to DC24V according to the wiring diagram.

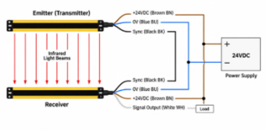

FIGURE 4 · NPN OUTPUT WIRING

PNP Output Wiring

The PNP output switches the signal line to +24 V when the optical beam is interrupted. Connect the receiver output to the PLC or controller input configured for PNP (sourcing) input. Connect the emitter and receiver to DC24V according to the wiring diagram.

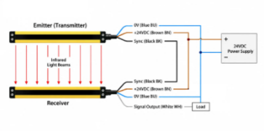

FIGURE 5 · PNP OUTPUT WIRING

The actual wiring should follow the wiring diagram provided for the selected DPB model. Verify the output type (NPN / PNP) and output logic (NC / NO) before connecting to the machine control circuit.

10 · ACCESSORIES

DPB Series Accessories & Mounting Brackets

The DPB Series includes the emitter and receiver as the main sensing components. Connection cables and mounting accessories are used for installation and system connection.

Emitter & Receiver Set

One set of emitter and receiver units is included as the main sensing components of the DPB Series.

Signal Connection Cables

Two signal connection cables, approximately 2 m each. Custom lengths are available on request.

Top & Bottom Mounting Brackets

Standard mounting brackets with M4 screws, nuts, washers and spring washers for conventional installation.

The exact accessory configuration may vary according to the selected DPB model and mounting requirements.

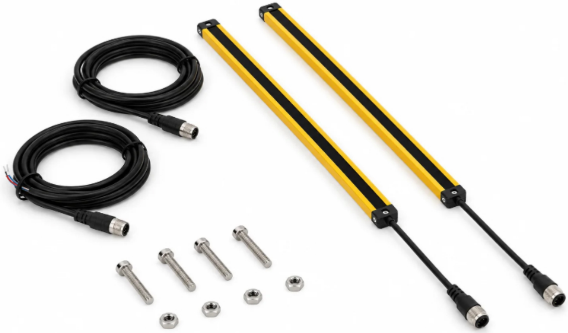

FIGURE 6 · DPB SERIES ACCESSORIES & MOUNTING BRACKETS

11 · APPLICATIONS

DPB Series Industrial Applications

The DPB Series is suitable for industrial automation, machine area detection, machine protection, personnel protection, object detection, conveyor monitoring, packaging equipment and other automated machinery.

- Machine Protection
- Personnel Protection
- Machine Area Detection
- Object Detection
- Material Detection
- Conveyor Monitoring
- Automated Equipment
- Packaging Machinery
- Cutting Equipment
- Hydraulic Machinery
- Robotic Equipment
- Compact Machine Guarding

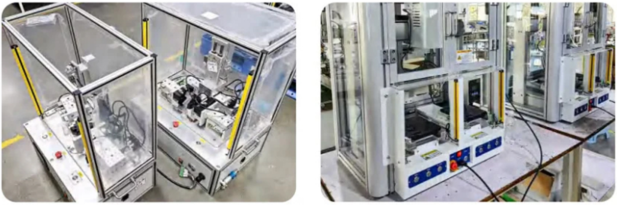

FIGURE 7 · DPB SERIES INDUSTRIAL APPLICATIONS

12 · FAQ & CONTACT

FAQ & Contact Information

Frequently asked questions and DAPPRA contact details.

What is the DAPPRA DPB Series?

The DAPPRA DPB Series is a front ultra-thin Industrial Area Sensor and Safety Light Curtain series designed for applications where installation space is limited.

What optical-axis pitches are available in the DPB Series?

The DPB Series provides 20 mm and 40 mm optical-axis pitch configurations.

What is the housing thickness of the DPB Series?

The DPB Series uses a front ultra-thin housing with a confirmed cross section of 14.5 × 28 mm, saving installation space for compact machines.

What is the response time of the DPB Series?

The confirmed DPB Series response time is ≤5 ms.

What is the protection rating of the DPB Series?

The DPB Series uses an IP65 protection configuration with an aluminium alloy housing.

What is the maximum beam quantity of the DPB Series?

The DPB Series supports up to 200 optical beams for both 20 mm and 40 mm optical-axis pitch configurations.

Does the DPB Series support NPN NC output?

Yes. DAPPRA DPB NPN NC models are available within the DPB Series, together with PNP output options.

Contact DAPPRA

For product selection, technical support, samples or quotation, please contact us through the channels below.

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PRODUCT CATEGORY
dappra.com/product-category/sensor/sensor-area/

Notice: Specifications, dimensions and model availability in this datasheet are subject to change without prior notice. Please refer to the latest DAPPRA official documentation or contact DAPPRA for the most current information. DPB Series Datasheet · Doc No. DPB-DS-001 · Rev. 1.0 · 2021-01.