Digital Amplifier Detachable Photoelectronic Sensor

DS Series

Laser Type Sensor Head

DSR -800
DSR -5000
DSD -100
DSTC-200
DSTA-200
DSTC-200-M8
DSTA-200-M8

Instruction Manual

* Thank you for purchasing the DS Series. We hope you are fully satisfied with this product and enjoy its performance.
* Carefully read this instruction manual and keep it for future reference.

Safety Precautions

Carefully read and understand the safety precautions before operation.
The important information is provided to protect your health and property.
Do not apply any other installing or operating procedure other than that described in this manual.

■Meanings of Safety Symbols

⚠ WARNING	Indicates a possible hazard that may result in death, serious injury, or serious property damage if the product is used without observing the stated instructions.
⚠ CAUTION	Indicates a possible hazard that may result in personal injury or property damage if the product is used without observing the stated instructions.

Mandatory Requirements

⚠ WARNING

- This product is not an explosion-proof construction. Do not use the product under flammable, explosive gas or liquid environment.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- The light source of this product applies the visible light semiconductor laser.
- Do not disassemble or modify the product since it is not designed to automatically stop the laser emission when open. Disassembling or modifying at customer's end may cause personal injury, fire or electric shock.
- Do not stare into the laser beam directly, install at eye-level of the people around, nor expose the beam to the human body intentionally.
- Use the exclusive amplifier unit to connect the product. Not doing so may result in an accident or product damage.
- Wiring or disconnecting with the power ON is danger. Never fail to turn OFF the power supply.

This product cannot be used as a safety device to protect human body.

Operating Precautions

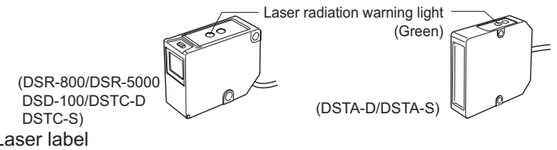
⚠ CAUTION

- Installing in the following places may result in malfunction:
  1. A dusty or steamy place
  2. A place generating corrosive gas
  3. A place directly receiving scattering water or oil
  4. A place suffered from heavy vibration or impact
- Do not use the sensor outside nor expose the detection surfacedirectly to ambient light (laser light, incandescent light and sunlight).
- Do not use the sensor in transient state after power on approx. 100 ms).
- The sensor performance may depend on the individual units.
- Wipe off dirt on the emitting/receiving parts to maintain correct detection. Also, avoid direct impact on the product.

Precautions for using laser

■Laser emission warning light

Confirmation of laser emission is available with the laser emission warning light.
It starts lighting after turning the power on and keeps lighting while the laser is being radiated. It is also possible to confirm with the exclusive amplifier unit.

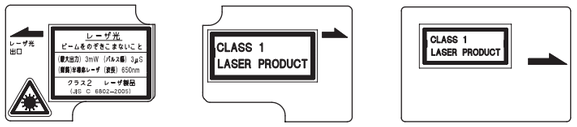


■Laser label

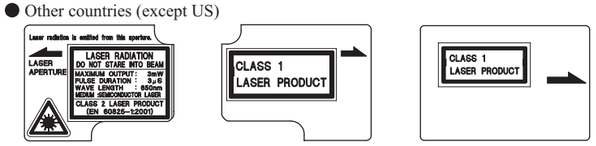
This product is classified as a Class 2 (II) Laser Product by JIS C6802 / IEC / FDA Laser Safety Standard as this radiates the visible laser beam. The warning label and the description label in English are attached on the side face of the sensor head indicating the CLASS 2/Class II.

* The emitters DSTC-D/DSTA-D and DSTC-S/DSTA-S of DST-200/M8 and DSTA-200/-M8 are rated as Class II by the FDA standard (when exporting to the US). However, the class 1 is applied for the JIS/IEC standard.
  Exchange the label enclosed with the product.

● Japan

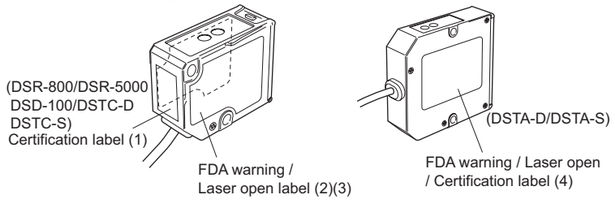


● Other countries (except US)



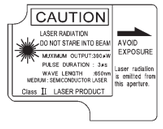
● US

When exporting this machine to the US, the US laser control, FDA (Food and Drug Administration) is applied. This product has been already reported to CDRH (Center for Devices and Radiological Health). For details, contact our Customer Service.



(1)

(3)



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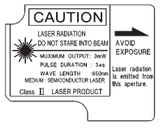

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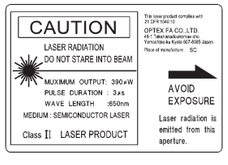


Specifications

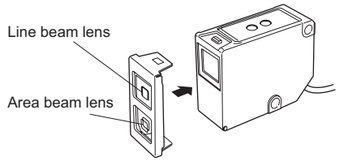
Model		Retro reflection type		Diffuse reflection type	Through beam type	Through beam/ Length measurement type
	Cable	DSR-		DSD-100	DSTC-200	DSTA-200
		800	5000		Emitter: DSTC-D	Emitter: DSTA-D
					Detector: DSTC-200	Detector: DSTA-200
	M8 Relay-type	-		-	DSTC-200-M8	DSTA-200-M8
	Emitter M8	-		-	DSTC-S	DSTA-S
	Detector M8	-		-	DSTC-R	DSTA-R
Adaptable amplifier unit		DSA-M□□ /DSA-M□-M8 / DSA-S□□				
Light source		Visible light semiconductor laser 650nm				
Output		max. 3mW			max. 390 μW	
IEC/JIS CLASS		CLASS 2			CLASS 1	
FDA CLASS		Class II				
Detection distance *1	Long	8 m	0.5…50 m	1 m	2 m	2 m
	Standard	5 m	0.3…35 m	0.7 m		Length measurement mode: 0.5 m
	Fast	2 m	0.1…20 m	0.25 m		(Only Long and Standard)
Beam size *2		Approx. 2 mmϕ (Distance: 2 m)		Approx. 1 mmϕ (Distance: 1 m)	Approx. 2 mmϕ (Distance: 2 m)	Approx. 30 x 2.5 mm (Distance: 2 m)
Repeat accuracy *3		0.2 mm		0.2 mm	0.2 mm	0.3 mm
Indicator light		Laser radiation indictor light: Green Output indicator light: Orange				
Operating temperature/humidity		-10 to +55°C/35 to 85 %RH (No condensation or freezing)				
Store temperature/humidity		-25 to +70°C/35 to 85 %RH (No condensation or freezing)				
Ambient light		3,000 lx (Incandescent light) 10,000 lx (Sunlight)				
Shock resistance		10 to 55 Hz Double-amplitude 1.5 mm 2 hours at each direction of X, Y and Z				
Protection category		IP67				
Material		PC (Case, Cover) PMMA / Glass (Front glass)				
Weight (including the codes)*4		45g			90g	115g

* 1 DSD-100 : With white paper (90 %) of 200 x 200 mm
  DSR-800 : With the reflector MP-45 (accessory)
  DSR-5000 : With the reflector P250F (accessory)
* 2 Defined with center strength $1/e^2$ (13.5%). There may be leak light other than the specified spot size. The sensor may be damaged when there is a highly reflective object around the targets
* 3 Right angle to sensing axis.(to 2m)
* 4 The weights of DSTC-200 and DSTA-200 include the emitter and the ditector.

Accessories and others

■Lens attachment (Model BL-W130L-1:Optional)

Installing the attachment to DSR-800・DSR-5000 allows two types of beam shape: Line beam and area beam. Attach the beam-shape lens and the optical axis to use together.



Beam shape

Line beam	Approx. 40 x 1 mm (Distance: 300 mm)
Area beam	Approx. 35 x 35 mm (Distance: 300 mm)

* The beam form may depend on the individual products.
* Do not use for DSD-100. Uninstallable to DSTA-200, DSTA-200-M8, nor DSTA-S.

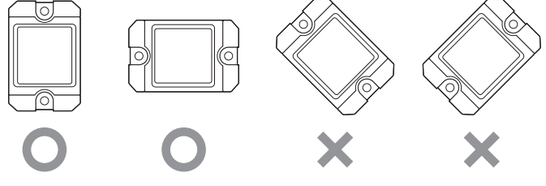
■MP-45 Reflector (attached to DSR-800・DSR-5000)

●Instruction for use

1. When cleaning, blow off or lightly wipe with a soft cloth.
   Do not use thinner, benzene or kerosene.
2. Avoid strong push of the reflecting surface or direct impact.
   Doing so may result in damaging the prism and deteriorating the performance.
3. Avoid using outside or under the environment where oil or water scatters.

●Installation procedure

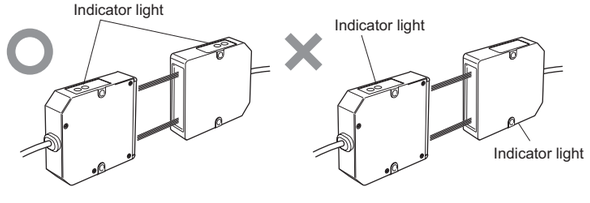
Refer to the figure below and use in the correct direction.
Improper installation may cause malfunction.



■Precautions in using DSTA-200 / DSTA-200-M8

When using DSTA-200 or DSTA-200-M8 for length measurement, follow the instructions below.

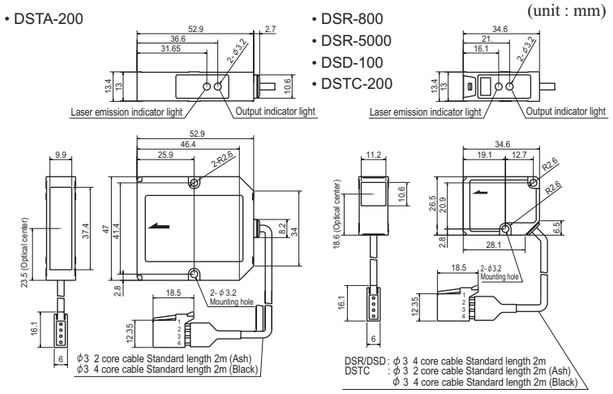
- Emitter is applied to gray cable and Receiver is applied to black one.
- Install the sensor so that the sensor of flood beam is positioned in the center of the light receiving part. (Install so that the indication value of amplifier unit is
- maximum.)
  Install the flooding/receiving device in the same direction.
  Refer to each label or indicator light as a standard.



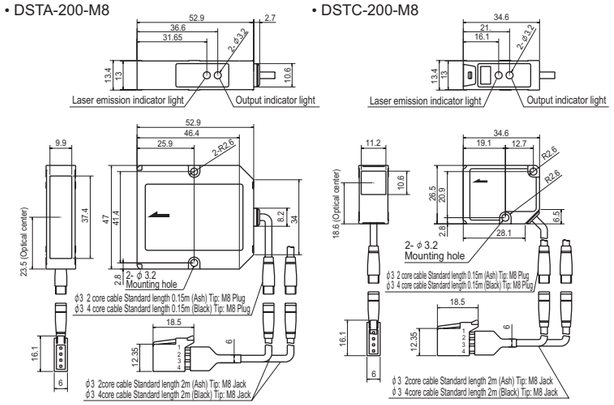
DIMENSIONAL DRAWING

(unit : mm)

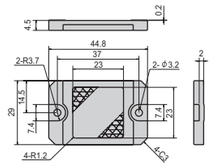
• DSTA-200
• DSR-800
• DSR-5000
• DSD-100
• DSTC-200



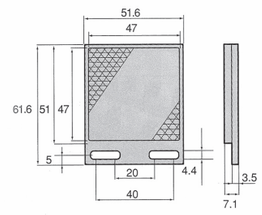
• DSTA-200-M8
• DSTC-200-M8



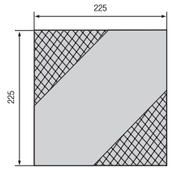
• MP-45



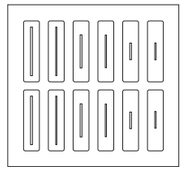
• P250F



・MP-225 (Cutting type)



・BL-W130L-2 [Slit for DSTA-200]



● The product specification may change without notice for improvement.
● For any inquiry, please contact the manufacture/vendor below.

OPTEX FA CO., LTD.
Head office: Mitsui Seimei Kyoto Yamashina BLDG 6F, 46-1 Takehanadounomae-cho, Yamashina-ku, Kyoto 607-8085 Japan
TEL: +81-(0)75-594-8123
FAX: +81-(0)75-594-8124
Website http://www.optex-fa.com

0536692

デジタルアンプ分離型光電センサ

DSシリーズ

レーザタイプセンサヘッド　DSR -800　DSR -5000　DSD -100　DSTC-200　DSTA-200　DSTC-200-M8　DSTA-200-M8

取扱い説明書

- お買い上げいただきありがとうございます、ご希望どおりの製品であることをご確認して下さい。
- 取扱い説明書は、ご使用前によくお読みいただき大切に保管して下さい。

安全にご使用いただくために

取扱い説明書に記載されている注意事項をよくお読みになり、内容を理解されるまではお使いにならないでください。
取扱い説明書には、お客様の健康や財産を守るための注意事項が記載されていますので記載の無い据付け・操作方法ではご使用にならないで下さい。

■記号表記について

⚠ 警告　この表示を無視して誤った取り扱いをすると、人が死亡または重症を負う可能性が想定される内容を示します。また、重大な物的損害を受ける恐れがあります。

⚠ 注意　この表示を無視して誤った取り扱いをすると、人が負傷する可能性が想定される内容、および物的損害の発生が想定される内容を示します。

安全上必ずお守りください

⚠ 警告

- この商品は防爆構造ではありませんので、引火性または爆発性ガス、液体の環境下では使用しないで下さい。
- この商品の光源は可視光半導体レーザを使用しています。
- この商品は分解したときに自動的にレーザ放射を停止する機能を備えておりませんので、分解・改造をしないで下さい。
  人体への障害・火災・感電の原因になります。
- レーザビームを直接覗き込んだり、周囲の人の目線高さに設置・故意に人体にむけて照射するなどはしないで下さい。
- この商品の接続には専用アンプユニットを使用して下さい、他のものを接続しますと事故・商品破損の原因となります。
- 電源が入ったままの配線作業・コネクタの脱着は危険です、必ず電源を切ってから行ってください。

この商品は人体保護を目的とした安全機器としてはご使用いただけません。

使用上の注意

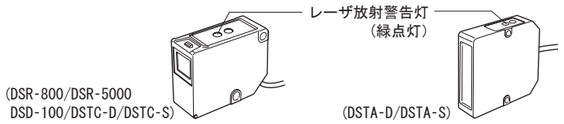
⚠ 注意

- 次のような場所への設置は誤動作の原因となる事がありますのでご注意ください。
  1. ホコリ・蒸気等の多い場所。
  2. 腐食性ガスの発生する場所。
  3. 水・油等が直接飛散する場所。
  4. 振動・衝撃等の激しい場所。
- 屋外・強い外乱光（レーザ光・太陽光・白熱ランプ）が直接受光面にあたる場所での使用は避けて下さい。
- 電源投入時（約100ms)の過度状態でのご使用は避けて下さい。
- 商品個々のばらつきや、対象物の状態によって検出特性に違いが生じることがあります。
- 投受光面にゴミ・ほこり等の汚れがありますと正しく検出できない場合があります、また直接衝撃を与えないで下さい。

レーザ使用に関する注意事項

■レーザ放射警告灯

レーザ放射がされていることをレーザ放射警告灯で確認していただけます、電源を入れたあと点灯し、放射されている間常時点灯します。また、専用アンプユニット側でも確認できます。

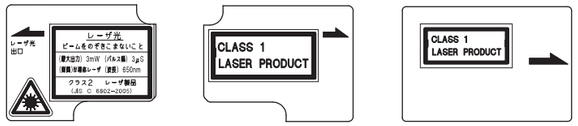


■レーザラベルについて

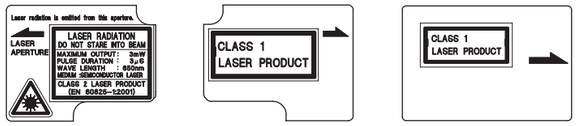
この商品は可視光レーザビームを放射しており、JIS C6802 / IEC / FDAレーザ安全規格のクラス２（Ⅱ）に相当します、センサヘッド側面にはCLASS２/ClassⅡを示す警告、説明ラベル（英文）をそれぞれ貼付済みです。

*DSTC-200/-M8・/DSTA-200/-M8の投光器DSTC-D/DSTA-D及びDSTC-S/DSTA-SはFDA規格（米国へ輸出される場合）ではクラスⅡですがJIS/IEC規格ではクラス1が適用されますので同梱されているラベルを張り替えて使用してください。

●日本国内

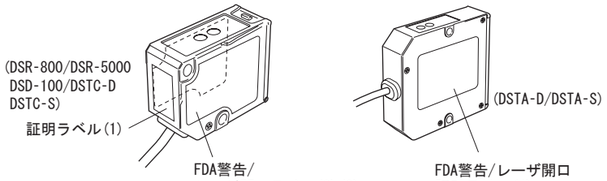


●諸外国（米国を除く）



●米国

機器搭載して米国へ輸出する場合、米国のレーザ規制ＦＤＡ（Food and Drug Administration）を受けます。この商品はCDRH（Center for Devices and Radiological Health）に届出済みです。詳細は別途お問い合わせください。



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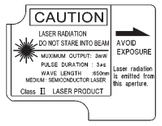

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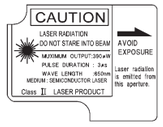

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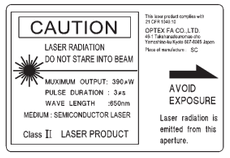
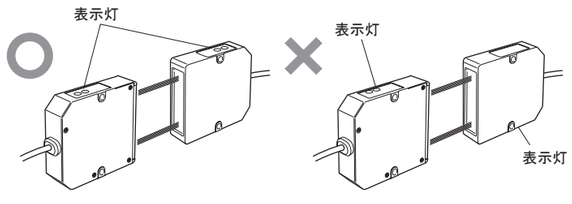


■DSTA-200/DSTA-200-M8使用時の注意

DSTA-200・-M8を測長用途で使用される場合は次のことに注意して下さい。

- 投光器は灰色ケーブル、受光器は黒色ケーブルに対応しています。
- センサの取付けは、投光ビーム中心が受光部中心に来るように設置してください。
  （アンプユニットの表示値が最大になるように設置してください。）
- 投・受光器の設置は同一方向になるようにしてください。各ラベルや表示灯を基準にしてください。



仕様

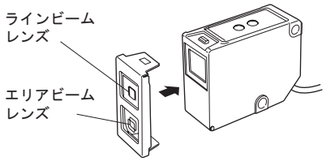
型式	ケーブル	同軸回帰反射型 DSR- 800	5000	同軸反射型 DSD-100	透過型 DSTC-200 / 投光器：DSTC-D / 受光器：DSTC-200	透過/測長型 DSTA-200 / 投光器：DSTA-D / 受光器：DSTA-200
	M8中継型	-		-	DSTC-200-M8	DSTA-200-M8
	投光器M8	-		-	DSTC-S	DSTA-S
	受光器M8	-		-	DSTC-R	DSTA-R
適合アンプユニット		DSA-M□□ /DSA-M□-M8 / DSA-S□□				
光源		可視光半導体レーザ 650nm				
出力		最大出力 3mW			最大出力 390μW	
IEC/JIS CLASS		CLASS 2			CLASS 1	
FDA CLASS		Class Ⅱ				
検出距離 *1	Long	8m	0.5…50m	1m	2m	2m 測長モード：0.5m (Long ,Standardのみ)
	Standard	5m	0.3…35m	0.7m		
	Fast	2m	0.1…20m	0.25m		
ビームサイズ *2		約φ2mm (距離2m)		約φ1mm (距離1m)	約φ2mm (距離2m)	約30x2.5mm (距離2m)
繰り返し精度 *3		0.2mm		0.2mm	0.2mm	0.3mm
表示灯		レーザ放射表示灯：緑色　出力表示灯：橙色				
使用周囲温度・湿度		-10～+55℃/35～85%RH （氷結・結露しないこと）				
保管周囲温度・湿度		-25～+70℃/35～85%RH （氷結・結露しないこと）				
使用周囲照度		3,000 lx（白熱ランプ） 10,000 lx （太陽光）				
耐振動		10～55Hz 複振幅1.5mm X,Y,Z各方向2時間				
保護構造		IP67				
材質		PC（ケース,カバー） PMMA / ガラス （前面窓）				
質量（コード含む）*4		45g			90g	115g

*1 DSD-100　：200x200mm 白紙（90%）にて
　DSR-800　：MP-45リフレクタ（付属）にて
　DSR-5000　：P250Fリフレクタ（付属）にて
*2 中心強度の1/e²（13.5%）で定義しています。規定のスポットサイズ以外にも漏れ光があり対象物の周囲に反射率の高いものがある場合その影響を受ける場合があります。
*3 検出軸に直角方向(2mまで)
*4 DSTC-200・DSTA-200は投・受光器込みの質量です。
＊ M8中継型は投光器・受光器のみの交換が可能です。

付属品・その他

■レンズアタッチメント（型式 BL-W130L-1:オプション）

DSR-800・DSR-5000　にアタッチメントを取り付けて、ラインビーム・エリアビームの２種で検出が可能です、ご使用になるビーム形状レンズと光軸をあわせて取り付けてください。



ビーム形状

ラインビーム	約40 x 1mm (距離300mm)
エリアビーム	約35 x 35mm (距離300mm)

*製品個々のばらつきによりビーム形状に違いが生じることがあります。
*DSD-100には適しません、またDSTA-200・M8/DSTA-Sに取り付けることはできません。

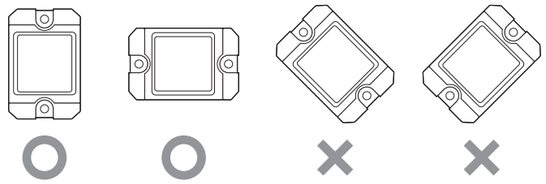
■MP-45リフレクタ（DSR-800・DSR-5000に付属）

●使用上の注意

1. 清掃される場合はエアで吹き飛ばすかやわらかい布で軽くふき取ってください。シンナー、ベンジン、灯油類は使用しないでください。
2. 反射面を強く押したり、直接衝撃を与えたりしますと、プリズムが破損し性能の低下が起こる恐れがあります。
3. 屋外や油・水が飛散する環境下での使用は避けてください。

●取り付け方法

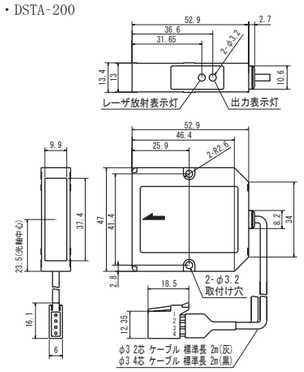
取り付けは下図を参考に正しい方向で使用してください、誤った取り付けを行うと誤動作の原因となります。



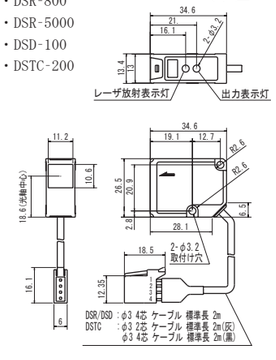
外形寸法図

（単位：mm）

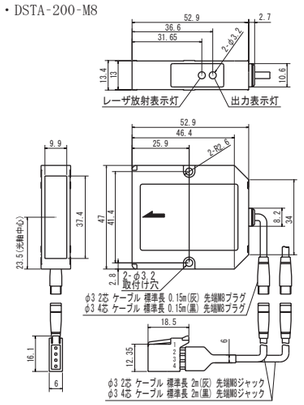
・DSTA-200



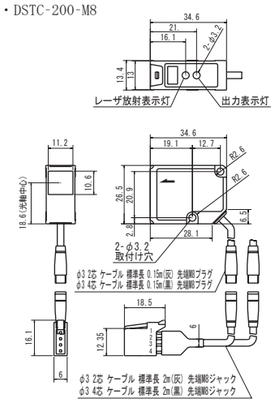
・DSR-800
・DSR-5000
・DSD-100
・DSTC-200



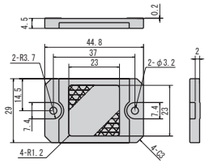
・DSTA-200-M8



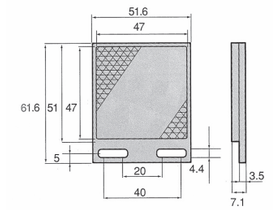
・DSTC-200-M8



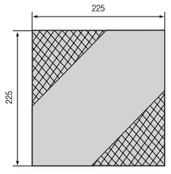
・MP-45



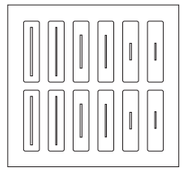
・P250F



・MP-225(フリーカット)



・BL-W130L-2[DSTA-200用スリット]



- 製品の仕様は改良のため予告なく変更する事があります。
- 製品に関するお問い合わせ、御意見等は製造・発売元の下記まで御連絡下さい。

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TEL(03)3344-5770 FAX (03)3344-3367
オプテックス・エフエーホームページ　http://www.optex-fa.jp

0536692

Digital Amplifier Detachable Photoelectronic Sensor

D2SA Series

Laser Type Amplifier Unit

D2SA-M☐ D2SA-M☐3
D2SA-S☐ D2SA-S☐1
D2SA-M☐-M8 D2SA-S☐-M8

Instruction Manual

- Thank you for purchasing DSA Series. We hope you are fully satisfied with this product and enjoy its performance.
- Carefully read this instruction manual and keep it for future reference.

Safety Precautions

Carefully read and understand the safety precautions before operation.
The important information is provided to protect your health and property.
Do not apply any other installing or operating procedure other than that described in this manual.

■Meaning of Safety Symbols

⚠ WARNING	Indicates a possible hazard that may result in death, serious injury, or serious property damage if the product is used without observing the stated instructions.
⚠ CAUTION	Indicates a possible hazard that may result in personal injury or property damage if the product is used without observing the stated instructions.

Mandatory Requirements

⚠ WARNING

- This product is not an explosion-proof construction. Do not use the product under flammable, explosive gas or liquid environment.
- Do not use the product in water.
- Do not disassemble, repair, or convert the product. Failure to do this may cause failure, fire, or electric shock.
- Operate within the rated range.

This product cannot be used as a safety device to protect human body.

Operational Precautions

⚠ CAUTION

- Use the specified sensor head to connect this product. Any use other than specified will cause accident or product damage.
- It is dangerous to wire or attach/remove the connector with the power on. Make sure to turn off the power before operation.
- Make sure to use the product with the protective cover attached and closed.
- Installing in the following places may result in malfunction:
  1. A dusty or steamy place
  2. A place generating corrosive gas
  3. A place directly receiving scattering water or oil.
  4. A place suffered from heavy vibration or impact.
- The product is not designed for outdoor use.
- Do not use the sensor in transient state after power on (approx. 100 ms).
- Do not wire with the high voltage cable or the power line. Failure to do this will cause malfunction by induction or damage.
- The sensor performance or digital display values may depend on the individual units or the condition of detected product.

Specification

Model		Advanced Model (2CH)		Standard Model (1CH)	
		Base unit	Handset	Base unit	Handset
	Cable type	D2SA-M(N/P)	D2SA-S(N/P)	D2SA-M(N/P)3	D2SA-S(N/P)1
	M8 connector type	-	-	D2SA-M(N/P)-M8	D2SA-S(N/P)-M8
Adaptable sensor head		DS Series			
Power source, voltage		12 - 24 V DC ± 10 % including a ripple			
Consumption current		45 mA or less / 24 V			
Response time		60µs/500µs/2ms (Fast/Standard/Long)			
Control output		NPN / PNP Open collector Load current: 100 mA or less Residual voltage:1.8 V or less			
Indicator light		Laser emission indicator light: Green, Output Indicator light: Orange (1·2CH) Teaching indicator light: Red Channel indicator light: Green (1·2CH)			
Digital display		7 segment 8 digit display			
Timer function		OFF, On delay, Off delay, One-shot			
Timer time		1 ms - 9 s			
Mutual interference prevention function		Yes: Up to 4 machines			
Output method		Light on / Dark on Switching type in the function			
Analog output		Current output:4 - 20 mA		-	
Setting input/output		External input setting (teaching, synchronizing input, floodlight off, counter reset) Output setting (2CH output + Alarm output)		External input setting (teaching, synchronizing input, floodlight off, counter reset) * Settable only with D2SA-M☐-M8	
Operating temperature/humidity *1		-25 to +55°C / 35 to 85 % RH (No freezing)			
Store temperature/humidity		-40 to +70°C / 35 to 85 % RH (No condensation)			
Shock resistance		10 to 55 Hz Double amplitude 1.5 mm 2 hours for each direction of X, Y, and Z			
Protective category		IP50			
Material		PC: Case and cover			
Weight (including the codes)		Cable type: 65 g M8 connector type: 30 g			

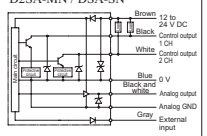
*1 Operating temperature may differ according to the number of connection.
See as follows:
1 - 3 machine(s): -25 to +55°C
4 - 8 machines: -25 to +50°C * When not using analog output.

* Base units and handsets of the advanced or standard models can be connected with any combination.
However, some combination may be restricted. For details, contact our Customer Service.

Input/Output Schematic

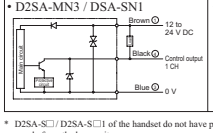
NPN

• D2SA-MN / DSA-SN



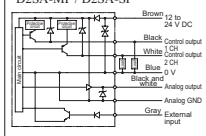
• D2SA-MN-M8 / D2SA-SN-M8

• D2SA-MN3 / DSA-SN1



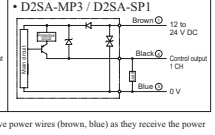
PNP

• D2SA-MP / D2SA-SP



• D2SA-MP-M8 / D2SA-SP-M8

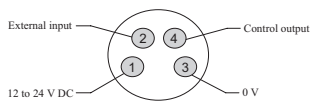
• D2SA-MP3 / D2SA-SP1



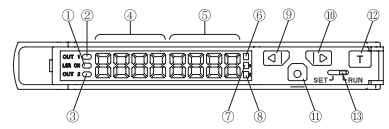
* D2SA-S☐/ D2SA-S☐1 of the handset do not have power wires (brown, blue) as they receive the power supply from the base unit.

■Pin layout

• D2SA-M☐-M8
• DSA-S☐-M8



Each Part



No.	Name	Function
①	Laser emission indicator light	Turns on while the amplifier is powered.
②	1 CH output indicator light	Turns on when the output of 1 CH is ON.
③	2 CH output indicator light	Turns on when the output of 2 CH is ON.
④	Main monitor (Red)	Displays light intensity, function, and the number of counts.
⑤	Sub monitor (Green)	Displays the threshold, function selection, and the number of counts.
⑥	Teaching mode indicator light	Turns on in the Teaching mode.
⑦	Valid channel indicator light (1 CH)	Keeps turning ON when the monitor display value, adjustment, and the function setting are valid to 1 CH.
⑧	Valid channel indicator light (2 CH)	Keeps turning ON when the monitor display value, adjustment, and the function setting are valid to 2 CH.
⑨	UP button	RUN mode: Displays or changes the threshold.
⑩	DOWN button	Function mode: Selects the function or changes the numerical values.
⑪	Mode button	RUN mode: Switches to the Function mode. (0.5 s ≧) Function mode: Fix the selection.
⑫	Teaching button	RUN mode: Switches the channel. Function mode: Returns to RUN mode or performs scaling. Set mode: Run the teaching.
⑬	SET/RUN selection switch	Switches between Teaching mode and RUN mode.

* The button function varies in each mode: RUN mode, Function mode, and SET mode.
* As D2SA-M☐3/D2SA-S☐1/D2SA-M☐-M8/D2SA-S☐-M8 are 1 output (1 CH) type, ③and ⑧ do not turn on.The channel switching of ⑫ also becomes invalid.

Adjustment

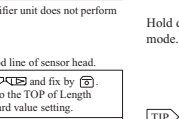
The available teaching depends on "5.3 Detection Mode setting." Refer to below:

Stn (Standard detection)	All teachings are valid.
hd⌜ / hd⌝ (Edge detection)	No teaching are valid.
dIFF (Differential detection)	Only one point teaching is valid.

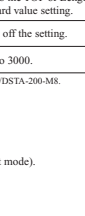
■Setting Maximum Sensitivity

Switch to SET.
SET RUN
Select the one-point teaching.
1Pt
Press the teaching button.
1Pt
1Pt good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Transmission type
Regressive Reflection type: Perform adjustment when there is an object.



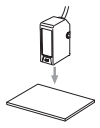
Reflection type: Perform adjustment when there is no object.



■One Point Teaching

Switch to SET.
SET RUN
Select the one point teaching.
1Pt
Press the teaching button.
1Pt
1Pt good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Reflection type: Perform adjustment with the background without object.



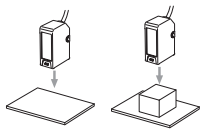
Threshold — FaSt +15% / Stnd +5% / Long +1%

Set the threshold to +□% against the amount of received light.
(Depends on the response speed setting.)

■Zone Teaching

Switch to SET.
SET RUN
Select the zone teaching.
ZonE
Press the teaching button.
ZonE
ZonE good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Reflection type: Perform adjustment with the background without object, and when there is an object.



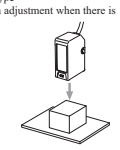
Threshold — Near / Upper limit 10% / Lower limit 10% / Far — Zone

Set the zone (detection range) to ±10 % against the amount of received light.

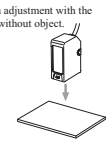
■Two Points Teaching

Switch to SET.
SET RUN
Select the two points teaching.
2Pt 1Pt
Press the teaching button.
2Pt 1Pt
2nd point: Press the teaching button.
2Pt 2Pt
2Pt good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Reflection type
1st: Perform adjustment when there is an object.



2nd: Perform adjustment with the background without object.



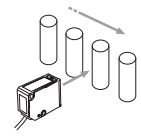
Threshold — 1st / 2nd

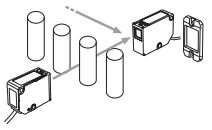
Set the threshold at the center between the 1st and the 2nd points.

■Auto Teaching

Switch to SET.
SET RUN
Select the auto teaching.
Auto Strt
Start: Press the teaching button.
Auto Strt
End: Press the teaching button.
Auto StoP
Auto good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Reflection, Transmission, Regressive Reflection Type
Start and End: Perform adjustment while the object is passing.

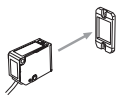




■Teaching Transparent Object

Switch to SET.
SET RUN
gLAS
Press the teaching button.
gLAS
gLAS good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Rotating reflection type: Perform when there is no object.



Reflection side of reflector — -10% — Threshold

Set the threshold to -10 % against the amount of received light.

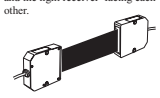
■Teaching Length Measurement

Valid only when the length measurement function is set. Allows to determine the size or the length of object.

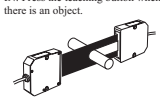
* Not displayed on the teaching mode menu unless the application of length measurement is selected in the detection mode setting.
* Teaching length measurement or length measurement mode does not measure the actual length of object accurately.

Switch to SET.
SET RUN
SET: Press the teaching button.
LnthSEt
IN: Press the teaching button.
LnthIn
Lnth good
Switch to RUN.
SET RUN
The upper limit flashes and the display returns to normal.

Transmission Type (In length measurement)
SET: Press the teaching button when there is no object with the flood light and the light receiver facing each other.



IN: Press the teaching button when there is an object.



■Manual Adjustment

Pressing the UP/DOWN button in the RUN mode flashes the threshold. It indicates that adjustment is possible. Adjust to any value using the UP/DOWN button.

When using the zone teaching, the threshold of upper/lower limit can be set individually.

①Normal
300 350
Automatically returns to the normal display 5 seconds after completion of the setting (no operation).

②When using zone teaching
Setting Lower Limit (Far): FAr 100 30
Setting Upper Limit (Near): nEAr 100 150
Automatically returns to the normal display 5 seconds after completion of the setting (no operation).

* No operation state for 5 seconds during setting automatically returns the display to normal as well.

■Error Display in Teaching

An error message is displayed in the event of error during adjustment.

Refer to the table below for readjustment.

Err1	Indicates shortage of light intensity or no difference of light intensity.
Err2	Indicates a sampling error in teaching of a moving object.
Err3	Indicates a calculation error.
not cPLt	Indicates that the teaching is interrupted.

Function Setting

■Precautions for Function Setting

* Some function settings automatically delete the invalid settings or settings, of which concomitant use is not allowed, from the displayed items. This does not indicate any failure.
* Some functions are not incorporated or not settable to D2SA-M☐3 /D2SA-S☐1 /D2SA-M☐-M8 /D2SA-S☐-M8.
* Hold down the operation button for approx. 0.3 seconds if not especially specified.
* Analog output and Analog setting is available when response time setting is "Long" or "Standard".
* The sub monitor starts flashing when each setting selection becomes available.
* The monitor in use of the counter function displays "U" when the up-counter is selected, and displays "d" when the down-counter is selected.
* For functions other than Operation setting and Timer setting, both settings of 1 CH and 2 CH are changed when the setting of each function is modified.
* The "all setting" described in 5.8 to 5.10 is reflcted only on the amplifier unit connected to the right side from the cable connector of operated amplifier unit.

■Switching Channel

Pressing the T button during the RUN mode allows switching. At the same time the channel indicator light switches.

1000 1200 ⇔ (T) ⇔ 2000 2200

* D2SA-M☐3/D2SA-S☐1/D2SA-M☐-M8/D2SA-S☐-M8 cannot be switched as they have a single output (1CH).

■Returning to Normal Display with One Button

Pressing the T button for 2 seconds or more in setting each function enables to return to the normal display (RUN mode) without using Eit (Exit).

* Invalid while setting the timer time, number of count, or span slant.

■Key Lock

Cancels all the operations. Useful to prevent accidental operation.

Hold down the ◁▷ buttons for 2 seconds or more simultaneously in the RUN mode. Operate in the same way to cancel as well.

In locking: Loc 300 ⇔ When cancelled: uLoc 300

TIP During key lock, no command such as all teaching/copy is accepted from other sensors.

■Reset "Peak/ Bottom hold"

Peak/Bottom hold can be reset by operating with amplifier itself at the time of analog output.

SET RUN
① ②

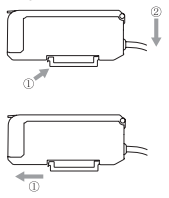
Confirm the position of "SET/RUN" switch is snapped to "RUN" side.
Move the position to "SET" side and return to "Run" side again.

Setting Amplifier Unit

■Attaching and Removing to/from DIN rail

○Attachment of Amplifier Unit
Hook the claw on the connecting side of sensor head to the DIN rail. Then press down the hook until it locks.

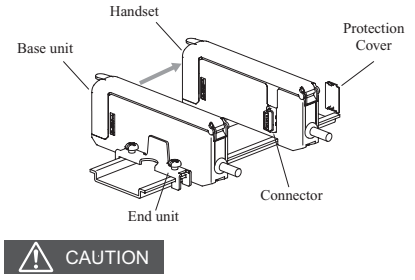
○Removal of Amplifier Unit
Pushing the unit to the direction of ①, hold up the connecting side of sensor head and remove the unit.



■Expansion of Amplifier Unit

Slide and hook up each amplifier units to DIN rail. And fix it with End units from the both sides.

As many as 8 units can be combined with the relay connector.

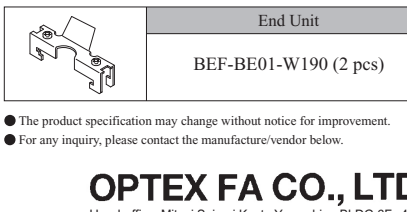


⚠ CAUTION

* Make sure to turn off the power before operation.
* Make sure to use the DIN rail and the end unit (BEF-BE01-W190) in expanding the amplifier unit.
* After expansion, make sure to check the operating temperature (See "Specification").
* To avoid short of connecting terminal, protection cover need to be attached to ones which are not in use.
* Do not remove the combined units all together from DIN rail.

Connecting Sensor Head

Open the protective cover and plug the connector into the amplifier unit with the lock lever facing up.
Make sure that it clicks.
When removing, hold down the lock lever and pull out the connector.



⚠ CAUTION

• Do not attach any sensor head other than the specified one (DS Series).
• When removing the connector, do not pull on the cable.
Failure to do so will break the cable or damage the product.

Dimensional drawing

(Unit: mm)

• D2SA-M☐
• D2SA-M☐3
• D2SA-S☐
• D2SA-S☐1

Options

	End Unit
	BEF-BE01-W190 (2 pcs)

- The product specification may change without notice for improvement.
- For any inquiry, please contact the manufacture/vendor below.

OPTEX FA CO., LTD.
Head office: Mitsui Seimei Kyoto Yamashina BLDG 6F, 46-1 Takehanadounomae-cho, Yamashina-ku, Kyoto 607-8085 Japan
TEL: +81-(0)75-594-8123
FAX: +81-(0)75-594-8124
Website http://www.optex-fa.com

Digital Amplifier Detachable Photoelectronic Sensor

D2SA Series

Laser Type Amplifier Unit D2SA-M□S
D2SA-M□3S
D2SA-M□S-M8

Instruction Manual

● Thank you for purchasing DSA Series. We hope you are fully satisfied with this product and enjoy its performance.
● Carefully read this instruction manual and keep it for future reference.

Safety Precautions

Carefully read and understand the safety precautions before operation.
The important information is provided to protect your health and property.
Do not apply any other installing or operating procedure other than that described in this manual.

■Meaning of Safety Symbols

⚠ WARNING	Indicates a possible hazard that may result in death, serious injury, or serious property damage if the product is used without observing the stated instructions.
⚠ CAUTION	Indicates a possible hazard that may result in personal injury or property damage if the product is used without observing the stated instructions.

Mandatory Requirements

⚠ WARNING

● This product is not an explosion-proof construction. Do not use the product under flammable, explosive gas or liquid environment.
● Do not use the product in water.
● Do not disassemble, repair, or convert the product. Failure to do this may cause failure, fire, or electric shock.
● Operate within the rated range.

This product cannot be used as a safety device to protect human body.

Operational Precautions

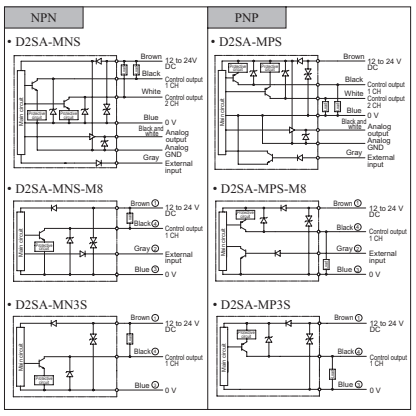
⚠ CAUTION

● Use the specified sensor head to connect this product. Any use other than specified will cause accident or product damage.
● It is dangerous to wire or attach/remove the connector with the power on. Make sure to turn off the power before operation.
● Make sure to use the product with the protective cover attached and closed.
● Installing in the following places may result in malfunction:
1. A dusty or steamy place
2. A place generating corrosive gas
3. A place directly receiving scattering water or oil.
4. A place suffered from heavy vibration or impact.
● The product is not designed for outdoor use.
● Do not use the sensor in transient state after power on (approx. 100 ms).
● Do not wire with the high voltage cable or the power line. Failure to do this will cause malfunction by induction or damage.
● The sensor performance or digital display values may depend on the individual units or the condition of detected product.

Specification

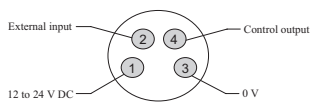
Model		Advanced Model (2CH)	Standard Model (1CH)
	Cable type	D2SA-M(N/P)S	D2SA-M(N/P)3S
	M8 connector type	-	D2SA-M(N/P)S-M8
Adaptable sensor head		DS Series	
Power source, voltage		12 - 24 V DC ± 10 % including a ripple	
Consumption current		45 mA or less / 24 V	
Response time		60μs/500μs/2ms (Fast/Standard/Long)	
Control output		NPN / PNP Open collector Load current: 100 mA or less Residual voltage:1.8 V or less	
Indicator light		Laser emission indicator light: Green, Output Indicator light: Orange (1·2CH) Teaching indicator light: Red Channel indicator light: Green (1·2CH)	
Digital display		7 segment 8 digit display	
Timer function		OFF, On delay, Off delay, One-shot	
Timer time		1 ms - 9 s	
Output method		Light on / Dark on Switching type in the function	
Analog output		Current output:4 - 20 mA	-
Setting input/output		External input setting (teaching, synchronizing input, floodlight off, counter reset) Output setting (2CH output + Alarm output)	External input setting (teaching, synchronizing input, floodlight off, counter reset) * Settable only with DSA-M□S-M8
Operating temperature/humidity		-25 to +55°C / 35 to 85 % RH (No freezing)	
Store temperature/humidity		-40 to +70°C / 35 to 85 % RH (No condensation)	
Shock resistance		10 to 55 Hz Double amplitude 1.5 mm 2 hours for each direction of X, Y, and Z	
Protective category		IP50	
Material		PC: Case and cover	
Weight (including the codes)		Cable type: 65 g M8 connector type: 30 g	

Input/Output Schematic

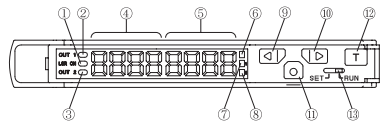


■Pin layout

• D2SA-M□-M8



Each Part



No.	Name	Function
①	Laser emission indicator light	Turns on while the amplifier is powered.
②	1 CH output indicator light	Turns on when the output of 1 CH is ON.
③	2 CH output indicator light	Turns on when the output of 2 CH is ON.
④	Main monitor (Red)	Displays light intensity, function, and the number of counts.
⑤	Sub monitor (Green)	Displays the threshold, function selection, and the number of counts.
⑥	Teaching mode indicator light	Turns on in the Teaching mode.
⑦	Valid channel indicator light (1 CH)	Keeps turning ON when the monitor display value, adjustment, and the function setting are valid to 1 CH.
⑧	Valid channel indicator light (2 CH)	Keeps turning ON when the monitor display value, adjustment, and the function setting are valid to 2 CH.
⑨	UP button	RUN mode: Displays or changes the threshold.
⑩	DOWN button	Function mode: Selects the function or changes the numerical values.
⑪	Mode button	RUN mode: Switches to the Function mode. (0.5 s ≧) Function mode: Fix the selection.
⑫	Teaching button	RUN mode: Switches the channel. Function mode: Returns to RUN mode or performs scaling. Set mode: Run the teaching.
⑬	SET/RUN selection switch	Switches between Teaching mode and RUN mode.

* The button function varies in each mode: RUN mode, Function mode, and SET mode.
* D2SA-M□3S/D2SA-M□S-M8 are 1 output (1 CH) type, ③ and ⑧ do not turn on.The channel switching of ⑫ also becomes invalid.

Adjustment

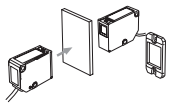
The available teaching depends on "5.3 Detection Mode setting." Refer to below:

Stn (Standard detection)	All teachings are valid.
hd┌ / hd┐ (Edge detection)	No teaching are valid.
dIFF (Differential detection)	Only one point teaching is valid.

■Setting Maximum Sensitivity

Switch to SET.
SET RUN
Select the one-point teaching.
1Pt
T Press the teaching button.
1Pt
1Pt good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Transmission type
Regressive Reflection type: Perform adjustment when there is an object.

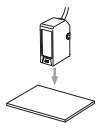


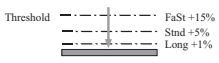
Reflection type: Perform adjustment when there is no object.

■One Point Teaching

Switch to SET.
SET RUN
Select the one point teaching.
1Pt
T Press the teaching button.
1Pt
1Pt good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Reflection type: Perform adjustment with the background without object.



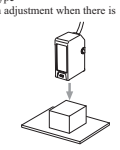


Set the threshold to +□% against the amount of received light.
(Depends on the response speed setting.)

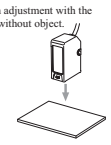
■Two Points Teaching

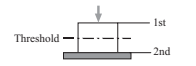
Switch to SET.
SET RUN
Select the two points teaching.
2Pt 1Pt
T 1st point: Press the teaching button.
2Pt 1Pt
T 2nd point: Press the teaching button.
2Pt 2Pt
2Pt good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Reflection type
1st: Perform adjustment when there is an object.



2nd: Perform adjustment with the background without object.



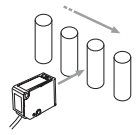


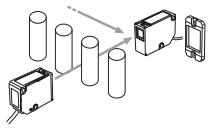
Set the threshold at the center between the 1st and the 2nd points.

■Auto Teaching

Switch to SET.
SET RUN
Select the auto teaching.
Auto Strt
T Start: Press the teaching button.
Auto Strt
T End: Press the teaching button.
Auto StoP
Auto good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Reflection, Transmission, Regressive Reflection Type
Start and End: Perform adjustment while the object is passing.

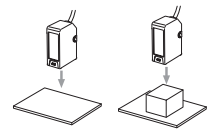


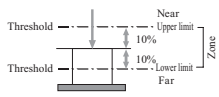


■Zone Teaching

Switch to SET.
SET RUN
Select the zone teaching.
ZonE
T Press the teaching button.
ZonE
ZonE good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Reflection type: Perform adjustment with the background without object, and when there is an object.



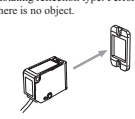


Set the zone (detection range) to ±10 % against the amount of received light.

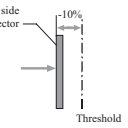
■Teaching Transparent Object

Switch to SET.
SET RUN
gLAS
T Press the teaching button.
gLAS
gLAS good
Switch to RUN.
SET RUN
The threshold flashes and the display returns to normal.

Rotating reflection type: Perform when there is no object.



Reflection side of reflector
-10%
Threshold



Set the threshold to -10 % against the amount of received light.

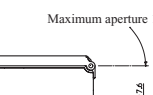
■Teaching Length Measurement

Valid only when the length measurement function is set. Allows to determine the size or the length of object.

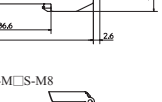
* Not displayed on the teaching mode menu unless the application of length measurement is selected in the detection mode setting.
* Teaching length measurement or length measurement mode does not measure the actual length of object accurately.

Switch to SET.
SET RUN
T SET: Press the teaching button.
LnthSEt
T IN: Press the teaching button.
LnthIn
Lnth good
Switch to RUN.
SET RUN
The upper limit flashes and the display returns to normal.

Transmission Type (In length measurement)
SET: Press the teaching button when there is no object with the flood light and the light receiver facing each other.



IN: Press the teaching button when there is an object.



■Manual Adjustment

Pressing the UP/DOWN button in the RUN mode flashes the threshold. It indicates that adjustment is possible. Adjust to any value using the UP/DOWN button.

When using the zone teaching, the threshold of upper/lower limit can be set individually.

①Normal
300 350
Automatically returns to the normal display 5 seconds after completion of the setting (no operation).

② When using zone teaching
Setting Lower Limit (Far)
FAr
100 30
Setting Upper Limit (Near)
nEAr
100 150
Automatically returns to the normal display 5 seconds after completion of the setting (no operation).

* No operation state for 5 seconds during setting automatically returns the display to normal as well.

■Error Display in Teaching

An error message is displayed in the event of error during adjustment.

Refer to the table below for readjustment.

Err1	Indicates shortage of light intensity or no difference of light intensity.
Err2	Indicates a sampling error in teaching of a moving object.
Err3	Indicates a calculation error.
not cPLt	Indicates that the teaching is interrupted.

Function Setting

Press the mode button.

1. Operation setting
L–dL on
Select an operation mode.
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Operation setting.

Lon	ON when light comes in.
don	ON when light is blocked.

* The timer can be set individually for 1CH and 2CH.

2. Response speed setting
rESP Long
Select a response speed.
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Response speed setting.

Long	High accuracy setting 2 ms
Stnd	Standard setting 500 μs
FASt	Fastest setting 60 μs

3. Timer setting
tIEr oFF
Select a timer and the time.
Select by using ◁▷ and fix by ⊙. OFF moves to the TOP of Timer setting and others move to the Timer setting.

oFF	Timer off
oFdy	Off delay timer
ondy	On delay timer
SHot	One shot timer

Timer Time Setting 1-9000 (1 ms - 9 s)
◁▷ is for time changing, T is for digit change, and ⊙ is to fix. Then the screen returns to Timer setting TOP.
oFdy 0001
* The timer can be set individually for 1CH and 2CH.
* Parallel use of On delay timer and Off delay timer in the same channel same channel is not possible.

4. Sensitivity correction setting
tunE on
Correct to the optimal value when sensitivity is not enough.
Tune on using ⊙. The progressing status is displayed in bar chart. After the end, the screen returns to the TOP of Sensitivity correction.

on	Tune on the sensitivity correction.
oFF	Tune off the sensitivity correction.

* Settings are only for tuning on (ON) or tuning off (OFF).

5. Detailed setting (Expert mode)
EPrt
Moves to the Detailed setting menu. → A

6. Initialization setting (Initial reset)
rSEt no
Initialize all settings.
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Initialization setting.

no	Not initialize
yES	Initialize

Initializing changes all settings to the factory default.

7. End of setting
Elt
Returns to the normal display.

A

5.1 Zero-reset setting
0rSt oFF
Set the displayed value on the main monitor to "0."
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Zero reset setting.

oFF	Turn off Zero reset.
on	Turn on Zero reset.

5.2 Display setting
dISP dIg
Select a display method of normal main sub monitor.
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Display setting.

dIg	Displayed in numeric display.
bAr	Displayed in bar display.
Pct	Displayed in percent (%) display.
cnt	Displayed in normal count display.
tcnt	Displayed in total count display.
oFF	No display.

"cnt" or "tcnt" can be select only when the counter function is valid.

5.3 Detection mode setting
PrcS Stnd
Select a detection method from the list below:
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Detection mode setting.

Stn	Sets to the normal detection.
hd┌	Sets to the rising edge detection.
hd┐	Sets to the trailing edge detection.
Lnth	Detects for length measurement.

5.4 Counter setting
cnt oFF
Select counter function ON/OFF and a increasing/decreasing direction of value.
Select by using ◁▷ and fix by ⊙. OFF moves to the TOP of Counter setting, and the others to number of count setting.

oFF	Counter off
uP	Sets the count value to the increasing direction.
dnc	Sets the count value to the decreasing direction.

Number of count setting 0 - 9999999
◁▷ is for count change, T is for digit change, and ⊙ is to fix. The screen returns to the Timer Setting TOP.
E000 0020
* D2SA-M□3S 1 do not allow these settings.
* External teaching can be available in several teachings which are chosen by appropriate adjusting methods.

5.5 Output setting
out n–n
Select an output method of 1CH and 2CH.
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Output setting.

n–n	1, 2CH: Control output
n–A	1CH: Control output, 2CH: Alarm output

* D2SA-M□3S/D2SA-M□S-M8 do not allow these settings.

5.6 External input setting
InPt tch
Select an assignment of external input.
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of External input setting.

tch	Sets to the external teaching input.
LoFF	Sets to the laser off input.
Sync	Sets to the synchro input. (available only in use of length measurement function)
crSt	Sets to the counter value reset input.
hrSt	Sets to the hold reset input.

* D2SA-M□3S 1 do not allow these settings.
* External teaching can be available in several teachings which are chosen by appropriate adjusting methods.

5.7 Analog function setting
AnLg
Moves to the analog function setting detail menu. → D

C

B

5.11 Length measurement standard value setting
LrEF oFF
Select a width of flood line of sensor head.
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Length measurement standard value setting.

oFF	Turns off the setting.
3000	Sets to 3000.

Valid only for DSTA-200/DSTA-200-M8.

5.12 End of Detail Setting (Expert mode)
Elt
Returns to the TOP of Detail Setting (Expert mode).

D

5.7.1 Analog output setting
AoutoFF
Select either read out or turn off the analog output.
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Analog output setting.

oFF	Turns off.
out	Reads out.

5.7.2 Span setting
SPAn 4 A
Set the slant of output.
Select by using ◁▷ and fix by ⊙. The screen moves to each detail setting.

4A	Set 4 mA.
20A	Set 20 mA.

Slant setting
◁▷ is for slant change, T is for digit change, and ⊙ is to fix. The screen returns to the TOP of Span setting.
4 A 0000 20 A 0000
After end of 4A setting, the screen moves to 20A setting.
* Full scale of the default is as follows:
Transmission, Regressive reflection, or Reflection type: 0 - 4000 (Amount of received light)
Transmission type and in setting length measurement: 0 - 3000 (Received light = Line width)

5.7.3 Output clamp hold setting
cLP cLP
Select a measurement value state when measurement is impossible.
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Output clamp hold setting.

cLP	Set the output to approx. 24 mA.
hoLd	Hold just before measurement becomes impossible.

5.7.4 Average counter setting
Acnt 1
Select a number of times of sampling.
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Average counter setting.

1 ~ 2048	Set. Average counter 1/4/8/16/32/64/128/256/512/1024/2048

5.7.5 Hold setting
hoLd oFF
Select a hold state.
Select by using ◁▷ and fix by ⊙. The screen returns to the TOP of Hold setting.

oFF	Normal measurement
PEA	Peak hold
btt	Bottom hold
P–P	Peak to Peak hold

5.7.6 End of Analog function setting
Elt
Returns to the TOP of Analog function setting.

■Precautions for Function Setting

* Some function settings automatically delete the invalid settings or settings, of which concomitant use is not allowed, from the displayed items. This does not indicate any failure.
* Some functions are not incorporated or not settable to D2SA-M□3S /D2SA-M□S-M8.
* Hold down the operation button for approx. 0.3 seconds if not especially specified.
* Analog output and Analog setting is available when response time setting is "Long" or "Standard".
* The sub monitor starts flashing when each setting selection becomes available.
* The monitor in use of the counter function displays "U" when the up-counter is selected, and displays "d" when the down-counter is selected.
* For functions other than Operation setting and Timer setting, both settings of 1 CH and 2 CH are changed when the setting of each function is modified.

■Switching Channel

Pressing the T button during the RUN mode allows switching. At the same time the channel indicator light switches.
1000 1200 ⇔ (T) 2000 2200
* D2SA-M□3S/D2SA-M□S-M8 cannot be switched as they have a single output (1CH).

■Returning to Normal Display with One Button

Pressing the T button for 2 seconds or more in setting each function enables to return to the normal display (RUN mode) without using Eit (Exit).
* Invalid while setting the timer time, number of count, or span slant.

■Key Lock

Cancels all the operations. Useful to prevent accidental operation.

Hold down the ◁▷ buttons for 2 seconds or more simultaneously in the RUN mode. Operate in the same way to cancel as well.

In locking Loc 300 ⇔ When cancelled uLoc 300

■Reset "Peak/ Bottom hold"

Peak/Bottom hold can be reset by operating with amplifier itself at the time of analog output.

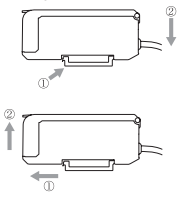
Confirm the position of "SET/RUN" switch is snapped to "RUN" side. Move the position to "SET" side and return to "Run" side again.

Setting Amplifier Unit

■Attaching and Removing to/from DIN rail

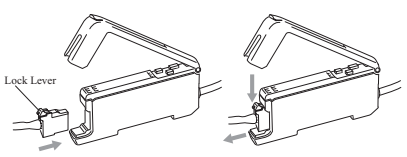
○Attachment of Amplifier Unit
Hook the claw on the connecting side of sensor head to the DIN rail. Then press down the hook until it locks.

○Removal of Amplifier Unit
Pushing the unit to the direction of ①, hold up the connecting side of sensor head and remove the unit.



Connecting Sensor Head

Open the protective cover and plug the connector into the amplifier unit with the lock lever facing up.
Make sure that it clicks.
When removing, hold down the lock lever and pull out the connector.



⚠ CAUTION

• Do not attach any sensor head other than the specified one (DS Series).
• When removing the connector, do not pull on the cable. Failure to do so will break the cable or damage the product.

Dimensional drawing

• D2SA-M□S
• D2SA-M□3S
(Unit: mm)

Options

	End Unit BEF-BE01-W190 (2 pcs)

● The product specification may change without notice for improvement.
● For any inquiry, please contact the manufacture/vendor below.

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