



Digital Fiber Sensor
E3X-DA□□TW-S / E3X-DA□□RM-S
INSTRUCTION SHEET

Thank you for selecting an OMRON product. This sheet primarily describes precautions required in installing and operating the product.

TRACEABILITY INFORMATION:
Representative in EU:
Manufacturer:
Omron Corporation,
Omron Europe B.V.,
Wegalaan 67-69,
2132 JD Hoofddorp,
The Netherlands

The following notice applies only to products that carry the CE mark:
Notice:
This is a class A product. In residential areas it may cause radio interference, in which case the user may be required to take adequate measures to reduce interference.

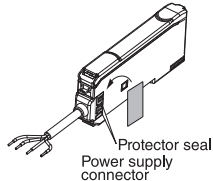
1636621-2E

PRECAUTIONS FOR SAFE USE

- Please observe the following precautions for safe use of the product.
1) Do not use the Amplifier Unit in environments subject to flammable or explosive gases.
2) Do not use the Amplifier Unit in environments subject to exposure to water, oil, chemicals, etc.
3) Do not attempt to disassemble, repair, or modify the Amplifier Unit in any way.
4) Do not apply voltages or currents that exceed the rated ranges.
5) Wire the Amplifier Unit correctly, e.g., do not reverse the polarity of the power supply.
6) Connect the load correctly.
7) Do not short both ends of the load.
8) Do not use the Amplifier Unit if the case is damaged.
9) When disposing of the Amplifier Unit, treat it as industrial waste.

PRECAUTIONS FOR CORRECT USE

- Please observe the following precautions to prevent failure to operate, malfunction, or undesirable effects on product performance.
1) The optical fibers are made out of methacrylic resin. Do not use them in atmospheres where organic solvents are present.
2) Wire the Amplifier Unit separately from power supply or high-voltage lines. If the Amplifier Unit wiring is wired together with or placed in the same duct as high-power lines, inductive noise may cause operating errors or damage the Amplifier Unit.
3) For extending wires, use a cable 0.3mm² min., and 100m max. in length. When using the cable as a Korea's S-mark certified product, use the cable of less than 10m in length.
4) Do not exceed the following force values applied to the cable. Tensile : 80N max., torque : 0.1N·m max., pressure : 20N max, flexure : 3kg max.
5) The Amplifier Unit is ready to operate 200 ms after the power supply is turned ON. If the Amplifier Unit and load are connected to power supplies separately, turn ON the power supply to the Amplifier Unit first.
6) Please turn on the power supply at the same time when you connecting use the amplifier units with cables.
Mutual interference prevention might not operate normally or mobile console might not be able to be used when the difference between connected amplifiers at the power supply turning on time is 30ms or more.
7) Always keep the protective cover in place when using the Amplifier Unit.
8) Connector Short-circuit Protection (for Amplifier Units with Connectors)
To prevent electric shock or short-circuits, attach the protector seals provided with E3X-CN-series Connectors to the sides of power supply connectors that are not being used.
9) Always turn OFF the power supply before connecting, separating, or adding Amplifier Units.
10) If the data is not written to the EEPROM correctly due to a power failure or static-electric noise, initialize the settings using the keys on the Amplifier Unit.
11) Using a Mobile Console
Use the E3X-MC11-SV2 Mobile Console for the E3X-DA-S series Amplifier Units. However, there is a function which cannot be used in part. Other Mobile Consoles, such as the E3X-MC11, cannot be used.
12) Optical communications are not possible with an E3X-DA-N Amplifier Unit.
13) Depending on the application environment, time may be required for the incident light level to stabilize after the power supply is turned ON.
14) Do not use thinners, benzene, acetone, or kerosene for cleaning the Amplifier Unit.
15) Do not pull or apply excessive pressure or force (exceeding 9.8 N·m) on the Fiber Unit when it is mounted to the Amplifier Unit.
16) Output pulses may occur when the power is interrupted and so turn OFF the power to the load or load line before turning OFF the power to the Sensor.



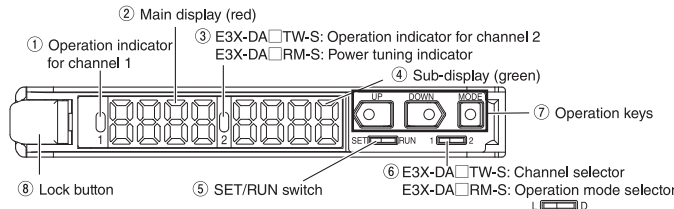
- Confirming the Package Contents
• Amplifier Unit: 1
• Instruction Sheet (this sheet): 1

1. Ratings and Specifications

Table with columns: Type, Connection method, Model number, Supply voltage, Power consumption, Control output, Timer, Differential detection mode, Power tuning, APC function, Mutual interference prevention, I/O settings.

1: When using individually or as a master, obtain the E3X-CN21 Master Connector (4-conductor), and when using as a slave, obtain the E3X-CN22 Slave Connector (2-conductor).
2: Communications are disabled if SHS is selected for the detection mode, and the communications functions for mutual interference prevention and the Mobile Console will not function.
3: Mutual interference prevention can be used for only up to 6 Units if power tuning is enabled.

2. Nomenclature



- ① Lit when the output is ON.
E3X-DA□□TW-S: Lit when the output for channel 1 is ON.
② Displays the incident light level or the function name.
E3X-DA□□TW-S: Lit when the output for channel 2 is ON.
E3X-DA□□RM-S: Lit when power tuning is set.
④ Displays supplemental detection information, the setting of a function, etc.
⑤ Used to switch the mode.
⑥ E3X-DA□□TW-S: Used to select the channel to display or set.
E3X-DA□□RM-S: Used to select dark-ON or light-ON operation.
⑦ Used to change the display, set functions, etc.
⑧ Used to connect and disconnect the Fiber Unit.

3. Basic Operating Information

Setting the Mode

The mode is set using the SET/RUN switch. Set this switch according to the operation to be performed.

Table with columns: Mode, Description. Rows: SET (Select to set detection conditions), RUN (Select for actual detection operation or to set the following).

Key Operations

The operation keys are used to switch the displays and set detection conditions. The functions of the keys depend on the current mode.

Table with columns: Key, Function (RUN mode, SET mode). Rows: UP key (Increases threshold), DOWN key (Decreases threshold), MODE key (Depends on MODE key setting).

Time to Press Keys
If a specific time for pressing a key is not given in a procedure, press the key for approximately 1 second. For example, if the procedure says 'press the UP key', then press the UP key for approximately 1 second and then release it.

Reading Displays

The information displayed on the main display and sub-display depends on the current mode. For the default settings, the RUN mode displays will appear when the power supply is turned ON for the first time.

Table with columns: Mode, Main display (red), Sub-display (green). Rows: SET, RUN (See note).

Note: The information that appears on the displays can be set using the display switch function. Refer to 5. Detailed Settings.

4. Basic Settings

1. Setting the Operation Mode

E3X-DA□RW-S: Select either Light-ON or Dark-ON operation with the operation mode selector. As shown below:
E3X-DA□TW-S: Set the 'operation mode' under SET MODE. Refer to 5. Detailed Settings.

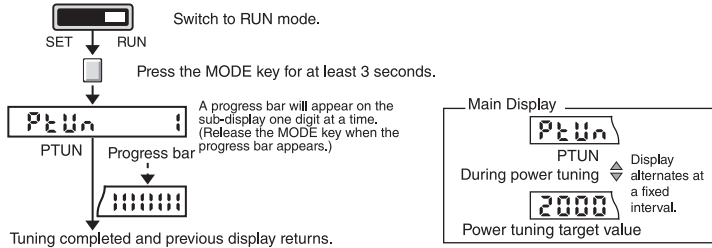
Table with columns: Operation mode, LON(light-ON), DON(dark-ON). Row: Setting (L, D).

2. Adjusting the Power (as Required)

Power tuning can be used to adjust the incident light level that is currently being received to the power tuning target value (default: 2,000). Before tuning ON the power, always secure the detection object and Head and be sure that the incident light level is stable.

Setting Method

Confirm that the MODE key setting is PTUN (power tuning) in advance. PTUN is the default setting. Refer to 5. Detailed Settings.



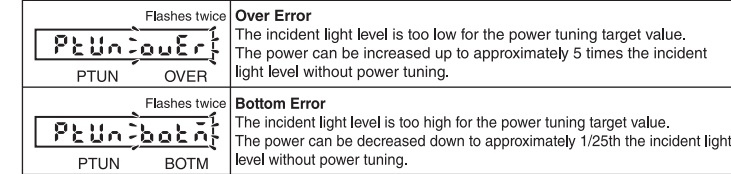
The power tuning target value can be changed. Refer to 5. Detailed Settings.

If power is tuned when SHS is selected for the detection method, the power will be set to the minimum value.

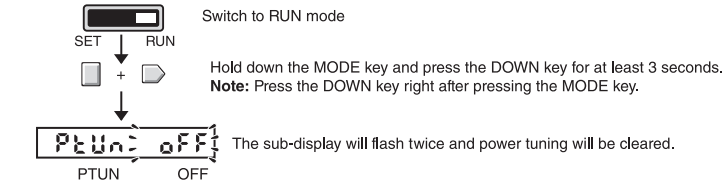
Power tuning will be cleared whenever the detection method is changed from STND, HRES, or SHS.

Power tuning Errors

An error has occurred if one of the following displays appears after the progress bar is displayed.

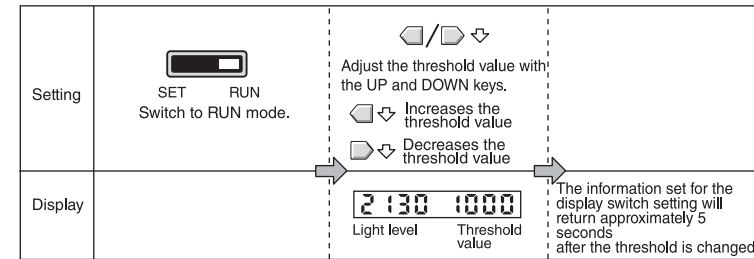


Clearing Method



3. Setting Thresholds

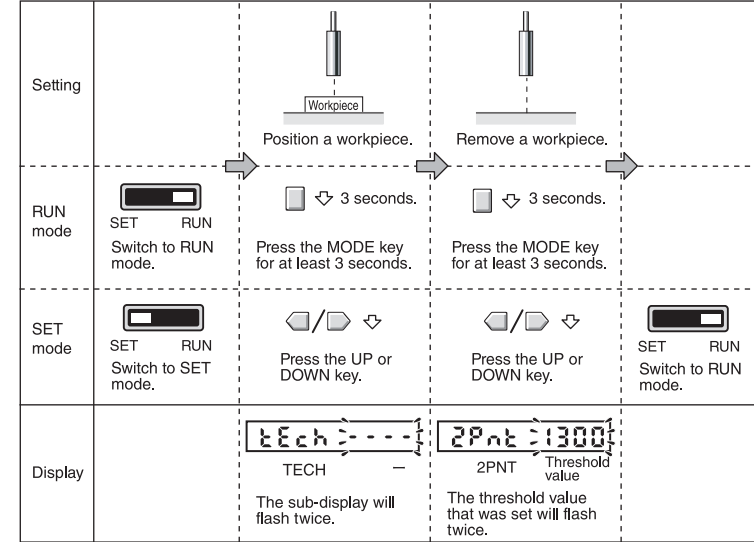
1) Manually Setting



2) Teaching

Teaching With and Without a Workpiece

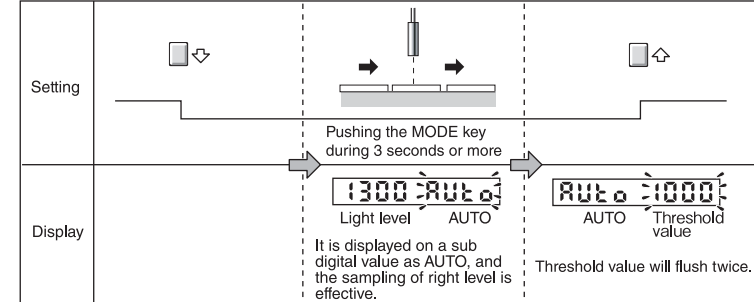
Teaching can be performed twice, once with and once without a workpiece, and the value between the two measured values is set as the threshold. RUN mode and SET mode - each mode can be set up. PTUN is the default setting. Refer to 5. Detailed Settings.



If DIFF (differential operation) is set for the detection method, the threshold value will be set to half of the difference between the two measured values.

Automatic-teaching (It sets up at move work.)

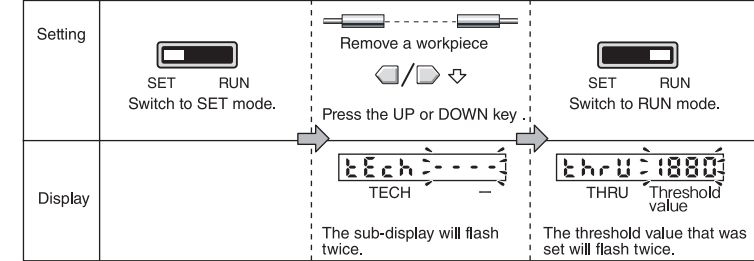
While continuing pushing a key, the middle of the detected maximum and the minimum value can be set up as a threshold. PTUN is the default setting. Refer to 5. Detailed Settings.



This method cannot be used to set the threshold when the detection method has been set to DIFF (differential operation).

Teaching for Through-beam Sensor Heads

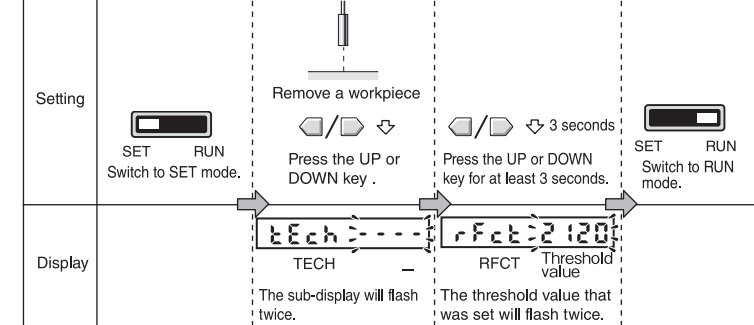
Teaching for a Through-beam Sensor Head is performed without a workpiece. A value about 6% less than the incident light level with no workpiece is set as the threshold value. This method is ideal to stably detect very small differences in light level.



If DIFF (differential operation) is set for the detection method, the threshold value will be set to the minimum value below the incident light level without a workpiece that will enable stable detection.

Teaching for Reflective Sensor Heads

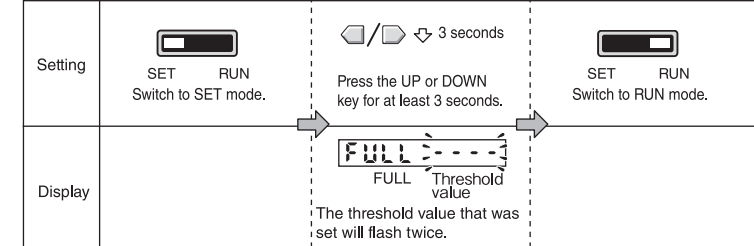
Teaching for a Reflective Sensor Head is performed without a workpiece (i.e., for the background). A value about 6% greater than the incident light level is set as the threshold value. This method is ideal to stably detect very small differences in light level.



If DIFF (differential operation) is set for the detection method, the threshold value will be set to the minimum value above the incident light level without a workpiece that will enable stable detection.

Setting the Threshold at the Maximum Sensitivity

The threshold can be set at the maximum sensitivity. This is convenient when using the longest sensing distance.



It does not matter whether or not there is a workpiece. The value that is set will depend on the detection method and power adjustment settings. This method cannot be used to set the threshold when the detection method has been set to DIFF (differential operation).

Teaching Error

After performing teaching, when the following is displayed on sub digital display, the error has occurred. However, the threshold might not be able to be detected correctly though is set within the possible range.

Table with columns: Error type (Over error, Low error, Near error), Description, Remedies.

5. Detailed Settings

The following functions can be set in SET mode. The default settings are shown in the transition boxes between functions.
All settings except for the operation mode and timer settings are the same for both channels.
*: The values shown for thresholds, incident light levels, percentages, etc., are examples only. Actual displays may vary.

Teaching
SET RUN
(Light level/Threshold display)
Note: Refer to 4. Basic Settings for teaching methods.
A display is changed in fixed time.

0. Operation Mode (For the E3X-DA□TW-S Only)
LON Light-ON
DON Dark-ON

1. Detection Method
STND Standard mode Response Time: 1ms
HRES High-resolution mode: Response Time: 4ms
DIFF Differential operation mode Operation is according to the change in the incident light level. The output for channel 2 is always an alarm output for the absolute light level.
SHS Super-high-speed mode For the E3X-DA□TW-S: 80 ms For the E3X-DA□RM-S with Counter Disabled Models with NPN outputs: Operation: 48 ms, Reset: 55 ms For the E3X-DA□RM-S with Counter Enabled: 80 ms
HS High-speed mode Response time: 250ms

Differential Edge Selection
Single edge Either the rising or falling edge is detected.
Double edge Both the rising and falling edge are detected.

Differential Response Time
This setting depends on the setting for the differential edge selection.

2. Timer
Timer disabled.
OFFD OFF-delay timer
OND ON-delay timer
1SHT One-shot timer

Timer Time
Setting range: 1 to 5,000

3. Twin Outputs (For the E3X-DA□TW-S Only)
2OUT Output for each channel.
AREA Output if level is between the two thresholds.
SELF Self-diagnosis output Output when the incident light level is not stable, i.e., when the light level is $\pm 10\%$ of the threshold value for 300 ms or longer.

The output for channel 1 functions according to the detection mode selection. This setting is not value if DIFF (differential operation) is set for the detection method. (The output for channel 2 is always an alarm output for differential operation.)

3. External Input (For the E3X-DA□RM-S Only)
THRU Through-beam, no-workpiece teaching
RFCT Reflective, no-workpiece teaching
2PNT With/Without workpiece teaching
AUTO Automatic teaching The maximum and minimum light levels are sampled while the input is ON and, when the input turns OFF, the average of these values is set as the threshold value. Disabled if the detection function is set to "DIFF" (differential operation).

4. MODE Key Setting
4-nd PTUN

5. Display Switch
5-dP

6. Display Orientation
6-ru d123

7. External Input Memory (For the E3X-DA□RM-S Only)
7-EP ON

8. Counter (For the E3X-DA□RM-S Only)
8-ct OFF

9. Package Setting (For the E3X-DA□RM-S Only)
8-rc ich

Power tuning
If the MODE key is pressed while PTUN is set, the power tuning target value is displayed.

Zero reset

Light OFF (The light will remain OFF as long as the input is ON.)

Counter reset Resets the current counter value.

Effective Pulse Widths

Selection	Pulse width
PTUN	0.1 to 2 s
ORST	Executing: 0.1 to 2 s Clearing: 3 s or longer
LOFF	Effective ON pulse width: 0.1 s min.
CRST	Effective pulse width: 3 s

The function of the MODE key in RUN mode can be selected.

Setting range: 100 to 3,900

The information displayed in RUN mode can be selected. When going to SET mode, this setting will be ignored and the incident light level and threshold value will be displayed.

The peak incident level and no incident light bottom level.

Analog bar display. The current detection status is displayed as an analog bar. The bar will lengthen from the right as ON status is reached.

The current incident light level and the peak incident light level.

The incident light level and the channel.

Counter value display A present counter value is displayed when the counter function is set.

Whether external input execution results are written to EEPROM can be selected. Disable this function if the external input is turned ON frequently. (The write life is approximately 100,000 writes.)

Disables counter.

The count is incremented from 0 each time an object is detected, and the output is turned ON when the count reaches the specified count value.

The count is decremented from the specified count value each time an object is detected, and the output is turned ON when the count reaches 0.

A package setting is done to the amplifier with which the contents set up in an external input.

6. Convenient Functions

Zeroing the Main Display

The incident light level displayed on the main display can be zeroed. The threshold displayed in the sub-display is shifted by an amount corresponding to the amount the incident light level was changed.
Confirm that the MODE key setting is ORST (zero reset) in advance. PTUN (power tuning) is the default setting. Refer to 5. Detailed Settings.

Zero-reset is not possible if the detection function is set to "DIFF" (differential operation).

Setting Method

Switch to RUN mode.
Press the MODE key for at least 3 seconds. The display of the incident light level will stop changing.
The display will be zeroed, i.e., the incident light level will be displayed as 0.

Clearing Method

Switch to RUN mode.
Hold down the MODE key and press the DOWN key for at least 3 seconds. Press the DOWN key right after pressing the MODE key.
The zero reset function will be cleared.

Key Lock

All key operations can be disabled to help prevent key operating errors. Only the operation keys are disabled. The switches and selectors will still function.

Setting Method

Switch to RUN mode.
Hold down the MODE key and press the UP key for at least 3 seconds. Press the UP key right after pressing the MODE key.
The sub-display will flash twice and key input will be disabled.

Clearing Method

Switch to RUN mode.
Hold down the MODE key and press the UP key for at least 3 seconds. Press the UP key right after pressing the MODE key.
The sub-display will flash twice and key input will be enabled.

If a key is pressed while key operations are locked, "LOC ON" will flash twice on the display to indicate that key operations have been disabled.

Initializing Settings

This procedure can be used to return all the settings to the original default values.

Setting Method

Switch to SET mode.
Press the UP and DOWN key together for at least 3 seconds.

Settings not initialized.
Settings initialized.

Initialization has been completed.

7. Installing the Amplifier Unit

Mounting Units

Catch the hook on the Fiber Unit connector end of the Unit on the DIN Track and then press down on the other end of the Unit until it locks into place.

Always attach the Fiber Unit connector end first. If the incorrect end is attached first, the mounting strength will be reduced.

Removing Units

Press the Unit in the direction indicated by "1" and then lift up on the Fiber Unit connector end of the Unit in the direction indicated by "2."

Joining Amplifier Units (for Units with Connectors)

Up to 16 Units can be joined.

- Mount the Amplifier Units one at a time onto the DIN Track.
- Slide the Amplifier Units together and press the Amplifier Units together until they click into place.

Secure the Units with an End Plate (PEP-M) if there is a possibility of the Amplifier Units moving, e.g., due to vibration.

Reverse the above procedure to separate and remove the Units. Do not attempt to remove Amplifier Units from the DIN Track without separating them first.

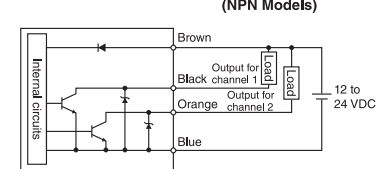
8. Connecting the Fiber Unit

- Open the protective cover
- Press up the lock button.
- Insert the fibers all the way to the back of the connector insertion opening.
- Return the lock button to its original position to secure the fibers.

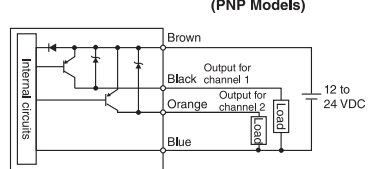
Reverse the above procedure to disconnect the Fiber Unit.

9. I/O Circuits

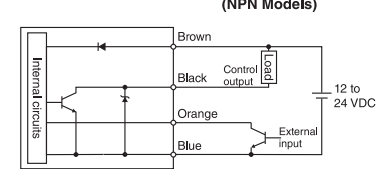
E3X-DA11TW-S and E3X-DA6TW-S (NPN Models)



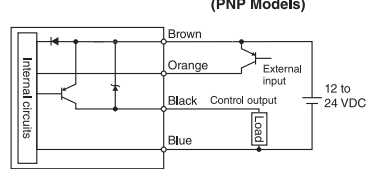
E3X-DA41TW-S and E3X-DA8TW-S (PNP Models)



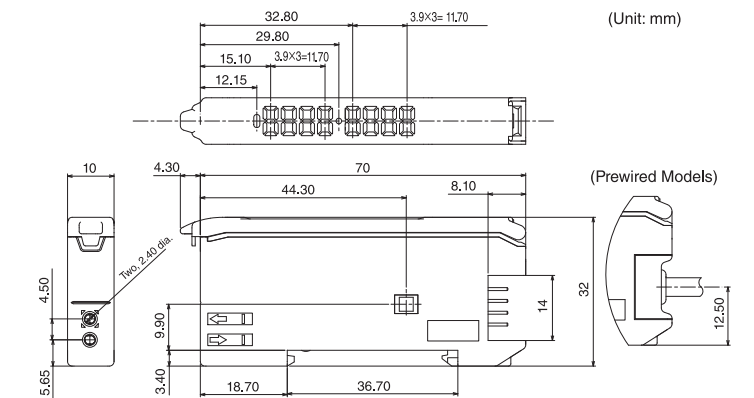
E3X-DA11RM-S and E3X-DA6RM-S (NPN Models)



E3X-DA41RM-S and E3X-DA8RM-S (PNP Models)



10. Dimensions



Suitability for Use

THE PRODUCTS CONTAINED IN THIS SHEET ARE NOT SAFETY RATED. THEY ARE NOT DESIGNED OR RATED FOR ENSURING SAFETY OF PERSONS, AND SHOULD NOT BE RELIED UPON AS A SAFETY COMPONENT OR PROTECTIVE DEVICE FOR SUCH PURPOSES. Please refer to separate catalogs for OMRON's safety rated products.

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the products in the customer's application or use of the product.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used. Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM. See also Product catalog for Warranty and Limitation of Liability.

- EUROPE
OMRON EUROPE B.V. Sensor Business Unit
Carl-Benz Str.4, D-71154 Nufringen Germany
Phone: 49-7032-811-0 Fax: 49-7032-811-199
- NORTH AMERICA
OMRON ELECTRONICS LLC
One Commerce Drive Schaumburg, IL 60173-5302 U.S.A.
Phone: 1-847-843-7900 Fax: 1-847-843-7787
- ASIA-PACIFIC
OMRON ASIA PACIFIC PTE. LTD.
No. 438A Alexandra Road #05-05-08(Lobby 2),
Alexandra Technopark, Singapore 119967
Phone: 65-6835-3011 Fax: 65-6835-2711
- CHINA
OMRON(CHINA) CO., LTD.
Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Phone: 86-21-5037-2222 Fax: 86-21-5037-2200

OMRON Corporation

© OCT, 2009

OMRON

デジタルファイバセンサ

形E3X-DA□□TW-S
形E3X-DA□□RM-S

取扱説明書

このたびは、本製品をお買い上げいただきまして、まことにありがとうございます。
ご使用に際しては、次の内容をお守りください。

- ・電気の知識を有する専門家が扱ってください。
- ・この取扱説明書をよくお読みになり、充分にご理解の上、正しくご使用ください。
- ・この説明書はいつでも参照できるように大切に保管ください。

オムロン株式会社
© OMRON Corporation 2005-2010 All Rights Reserved.

1636621-2E

2.各部の名称とはたらき

①動作表示灯(1CH) ②メインデジタル(赤色表示) ③形E3X-DA□TW-S:動作表示灯2CH側
形E3X-DA□RM-S:パワーチューニング表示灯 ④サブデジタル(緑色表示) ⑦操作キー

⑧ロックレバー ⑤SET / RUN切替スイッチ ⑥形E3X-DA□TW-S:チャンネル切替スイッチ
形E3X-DA□RM-S:動作モード切替スイッチ

- ① 1CHの出力がONしたときに点灯します。
- ② 受光量や機能の名称を表示します。
- ③ 形E3X-DA□TW-Sの場合、2CH側の出力がONしたときに点灯します。
形E3X-DA□RM-Sの場合、パワーチューニングを設定すると点灯します。
- ④ 検出時の補助的な情報や機能の設定値を表示します。
- ⑤ モードの切替えを行います。
- ⑥ 形E3X-DA□TW-Sの場合、表示や設定を行うチャンネルを選択します。
形E3X-DA□RM-Sの場合、入光時にONするか遮光時にONするかを選びます。
- ⑦ 表示の切替えや機能の設定操作を行います。
- ⑧ ファイバを着脱するときに使います。

3. 操作の基礎知識

■モードの切替え

モードの切替えは「SET / RUN切替スイッチ」で行います。
目的にあったモードに切替えて操作してください。

モード	内 容
SET	検出条件やティーチングによりしきい値を設定するときに選びます。
RUN	実際に検出を行うときや以下の設定を行うときに選びます。 しきい値マニュアル調整、ティーチング、パワーチューニング、ゼロリセット、キーロック

■キー操作

表示の切替えや検出条件の設定操作は、操作キーで行います。
キーの役割は、現在選んでいるモードによって変わります。

キーの種類	キーのはたらき	
	RUNモード	SETモード
UPキー ◀	しきい値を上げます。	設定内容によってはたらきが変わります。 ・ティーチングを実行 ・設定値の変更 (順方向)
DOWNキー ▶	しきい値を下げます。	設定内容によってはたらきが変わります。 ・ティーチングを実行 ・設定値の変更 (逆方向)
MODEキー □	[MODEキー設定]によってはたらきが変わります。 ・ティーチング ・パワーチューニング実行 ・ゼロリセット実行	設定したい機能の表示を切り替えます。

■表示の見方

メインデジタルとサブデジタルに表示される内容は、現在選んでいるモードによって異なります。
工場出荷後、初めて電源を入れるとRUNモードの内容が表示されます。

モード	メインデジタル(赤色表示)	サブデジタル(緑色表示)
SET	キー操作によって受光量や機能名称を順番に表示します。 * [検出機能]に [DIFF] (微分動作) を設定している場合でも受光量表示となります。	キー操作によってしきい値やメインデジタルに表示している機能の設定値を順番に表示します。 * [検出機能]に [DIFF] (微分動作) を設定している場合は受光量変化に対するしきい値を表示します。
RUN※	現在の受光量を表示します。「検出機能」に [DIFF] (微分動作) を設定している場合は受光変化量を表示します。	現在のしきい値を表示します。「検出機能」に [DIFF] (微分動作) を設定している場合は受光量変化に対するしきい値を表示します。

※表示内容は「表示切替」機能で変更することができます。「5.詳細設定」参照

4.基本設定

1. 動作モードを設定する

E3X-DA□RM-Sの場合、入光時にONするか遮光時にONするかを選びます。動作モードにて切り替えます。下記の図参照。
E3X-DA□TW-Sの場合、SETモードの「動作モード」で設定します。「5.詳細設定」参照。

動作モード	LON(入光時ON)	DON(しゃ光時ON)
設定		

2. パワーを調整する(必要に応じて)

現在検出中の受光量を「パワーチューニング目標値(2000:工場出荷時設定)」近くに調整したいときに行う操作です。パワーチューニングは必ず検出物体とヘッドを固定して、受光量が安定している状態で実行してください。
■設定方法
あらかじめ、「MODEキー設定」機能の設定が [PTUN] (パワーチューニング) になっていることを確認してください。
工場出荷時は、[PTUN] が設定されています。「5.詳細設定」参照

調整が完了し、操作前の表示に戻ります。

■パワーチューニングエラー

進捗バー表示後、以下の内容が表示された場合は、エラーが発生しています。

	オーバーエラー パワーチューニング目標値に対して現在の受光量が小さすぎたためのエラー。パワーは調整されません。パワーを上げることができるのは、パワーチューニングを設定していない状態の受光量から約5倍までです。
	ボトムエラー パワーチューニング目標値に対して現在の受光量が大きすぎたためのエラー。最小パワーで調整されます。パワーを下げることは、パワーチューニングを設定していない状態の受光量から約1/25までです。

■解除方法

RUNモードに切替え

MODEキーを押しながら、DOWNキーを3秒以上押す
(注) MODEキーを押した後すぐにDOWNキーを押してください。

サブデジタルが2回点滅し、パワーチューニングが解除されます。

3. しきい値を設定する

1) マニュアル設定

しきい値を手動で設定します。

約5秒後、表示設定にて設定している表示に戻ります。

2) ティーチング設定

①ワークありなしティーチング
ワークありとワークなしの2点をそれぞれ検出し、その中間値の光量をしきい値として設定します。RUNモード、SETモードいずれのモードでも設定できます。RUNモードにて設定する場合、あらかじめ、「MODEキー設定」機能の設定が [2PNT] になっていることを確認してください。工場出荷時は、[PTUN] が設定されています。「5.詳細設定」参照

「検出機能」に [DIFF] (微分動作) を設定している場合、ワークありとワークなしの2点の受光量の差の半分の値をしきい値とします。

②オートマティクティーチング(移動ワークにて設定)
キーを押し続けている間の受光量を検出して、その最大値と最小値の中間をしきい値として設定できます。あらかじめ、「MODEキー設定」機能の設定が [AUTO] になっていることを確認してください。工場出荷時は、[PTUN] が設定されています。「5.詳細設定」参照

「検出機能」に [DIFF] (微分動作) が選択されている場合、オートマティクティーチングは無効となります。

③透過形ワークなしティーチング
透過形ファイバ用の設定方法でワークがない状態にて行います。(ワークなし状態)受光量の約-6%の値をしきい値として設定します。微妙な光量差を安定して検出できます。

「検出機能」に [DIFF] (微分動作) を設定している場合、(ワークなし状態の)受光量の下側で安定して検出できる最小の位置にしきい値が設定されます。

④反射形ワークなしティーチング
反射形ファイバ用の設定方法でワークがない(背景)状態にて行います。(ワークなし状態)受光量の約+6%の値をしきい値として設定します。微妙な光量差を安定して検出できます。

「検出機能」に [DIFF] (微分動作) を設定している場合、(ワークなし状態の)受光量の上側で安定して検出できる最小の位置にしきい値が設定されます。

⑤最大感度設定
最大感度でしきい値を設定します。検出距離を最も長くしたい場合に便利な方法です。

ワークのあり／なしは設定に関係ありません。設定される値は、「検出機能」や「パワーチューニング」の設定内容によって変わります。「検出機能」に [DIFF] (微分動作) を設定している場合、この方法を使ったしきい値の設定はできません。

・ティーチングエラー

ティーチングを実行後、サブデジタル表示に下記が表示された場合はエラーが発生しています。ただし、しきい値は可能な範囲にて設定されますが、正しく検出できない場合があります。

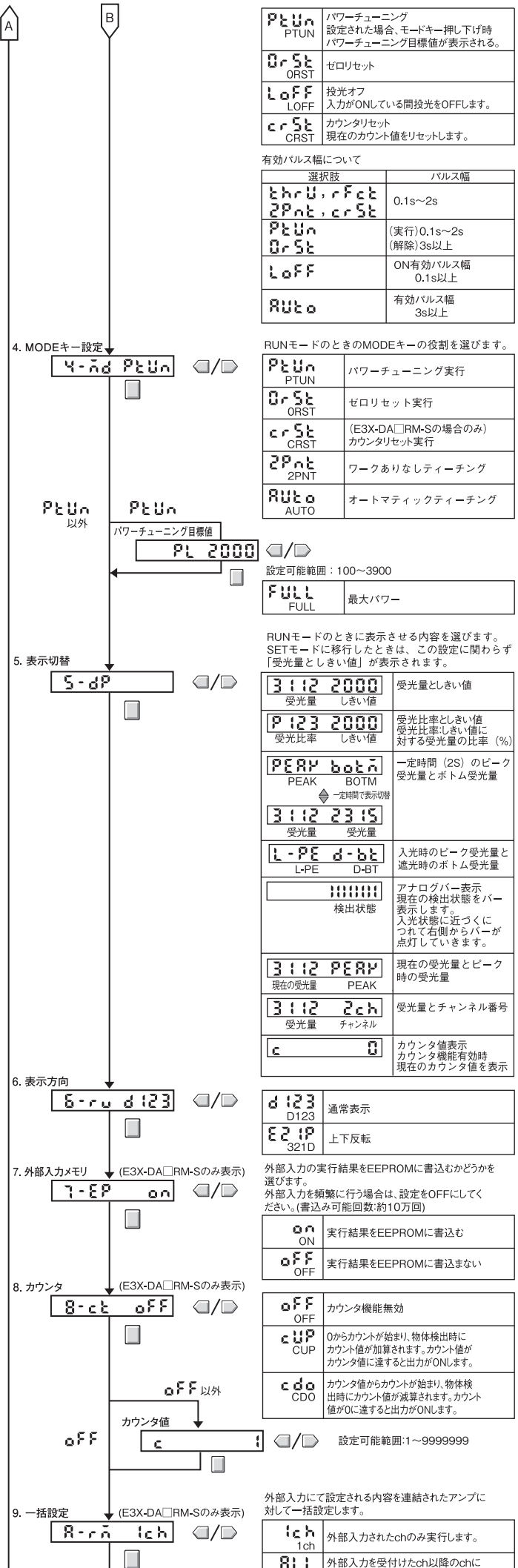
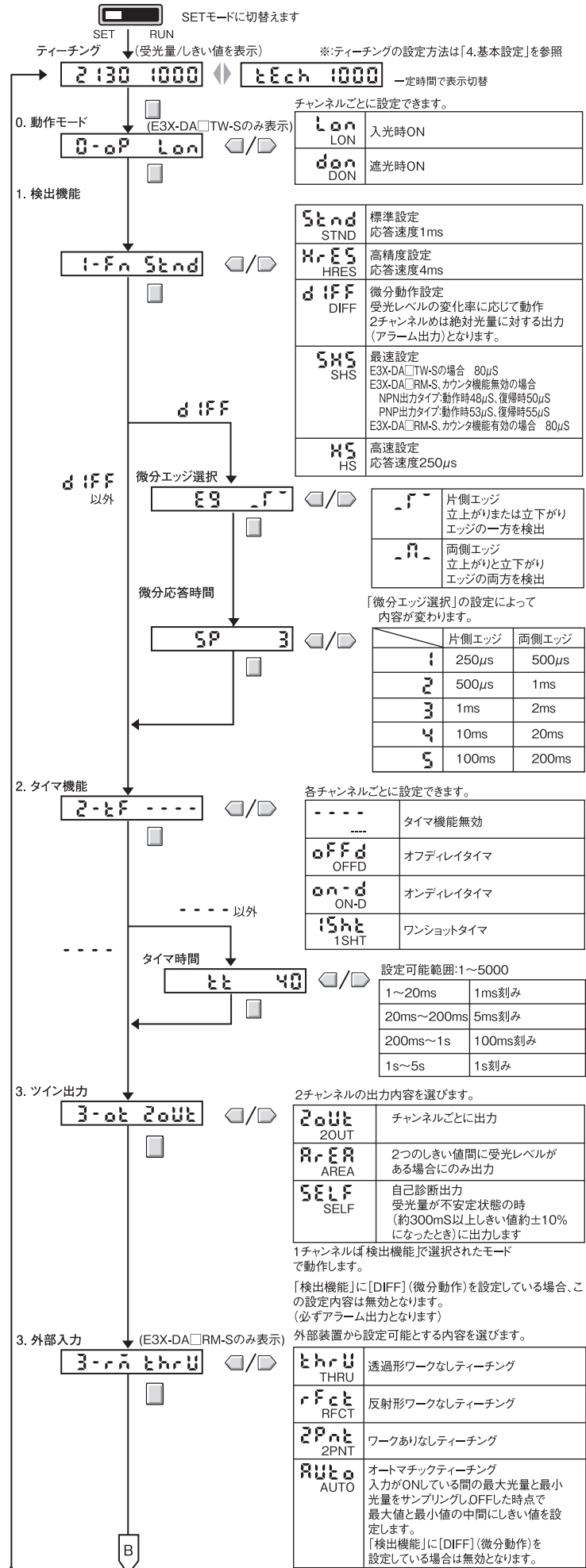
	OVERエラー 受光量が大きすぎます。 次のどちらかを行った後、再度ティーチング実行ください。 ・受光量が小さくなるようにヘッドを設定 ・パワーチューニング実行
	LOWエラー 受光量が小さすぎます。 次のどちらかを行った後、再度ティーチング実行ください。 ・受光量が大きくなるようにヘッドを設定 ・パワーチューニング実行
	NEARエラー 受光量の変化が小さすぎます。 受光量の変化が大きくなるようにヘッドを設定後、再度ティーチング実行ください。

*1:単品、親機でご使用の場合はE3X-CN21(親コネクタ4芯)、子機としてご使用の場合はE3X-CN22(子コネクタ2芯)を別途お求めください。どちらのコネクタも使用できます。
*2: [検出機能]に [SHS] を設定している場合は通信機能が無効となり、相互干渉防止機能および、モバイルコンソールとの通信機能は使用できません。
*3: パワーチューニングを有効にした場合の相互干渉防止可能台数は6台までです。

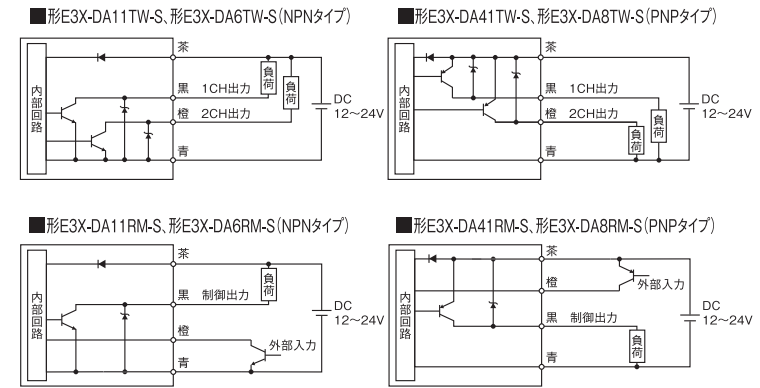
5.詳細設定

SETモードでは以下の機能設定ができます。
機能遷移に表示している内容は、工場出荷時の内容です。
「動作モード」と「タイマ」以外はチャンネル共通の設定となります。

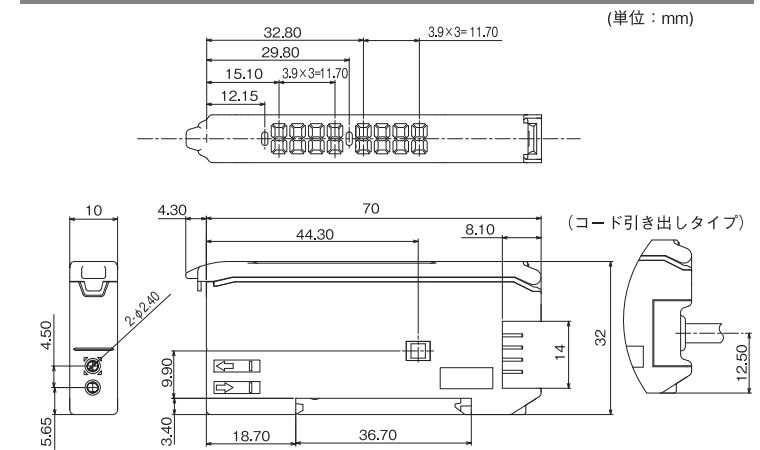
*しきい値、受光量、比率など数値の表示内容は一例であり、実際の表示とは異なります。



9.出力段回路図



10.外形寸法図



ご使用に際してのご承諾事項

- 安全を確保する目的で直接的または間接的に人体を検出する用途に、本製品を使用しないでください。同用途には、当社センサカタログに掲載している安全センサをご使用ください。
 - 下記用途に使用される場合、当社営業担当者までご相談のうえ仕様書などによりご確認いただくとともに、定格・性能に対し余裕を持った使い方や、万一故障があっても危険を最小にする安全回路などの安全対策を講じてください。
 - 屋外の用途、潜在的な化学的汚染あるいは電氣的妨害を被る用途またはカタログ、取扱説明書等に記載のない条件や環境での使用
 - 原子力制御設備、焼却設備、鉄道・航空・車両設備、医用機械、娯楽機械、安全装置、および行政機関や個別業界の規制に従う設備
 - 人命や財産に危険が及びうるシステム・機械・装置
 - ガス、水道、電気の供給システムや24時間連続運転システムなどの高い信頼性が必要な設備
 - その他、上記 a) ~ d) に準ずる、高度な安全性が必要とされる用途
- *上記は適合用途の条件の一部です。当社のベスト、総合カタログ・データシート等最新版のカタログ、マニュアルに記載の保証・免責事項の内容をよく読んでご使用ください。

オムロン株式会社 インダストリアルオートメーションビジネスセンター

●お問い合わせ先
カスタマサポートセンター
フリーコール
0120-919-066
携帯電話・PHSなどではご利用いただけませんので、その場合は下記電話番号へおかけください。
電話 055-982-5015 (通話料がかかります)

[技術のお問い合わせ時間]
●営業時間:8:00~21:00
●営業日:365日
●上記フリーコール以外のセンシング機器の技術窓口:
電話 055-982-5002 (通話料がかかります)

[営業のお問い合わせ時間]
●営業時間:9:00~12:00/13:00~17:30 (土・日・祝祭日は休業)
●営業日:土・日・祝祭日 春期・夏期・年末年始休暇を除く

●FAXによるお問い合わせは下記をご利用ください。
カスタマサポートセンター お客様相談室 FAX 055-982-5015

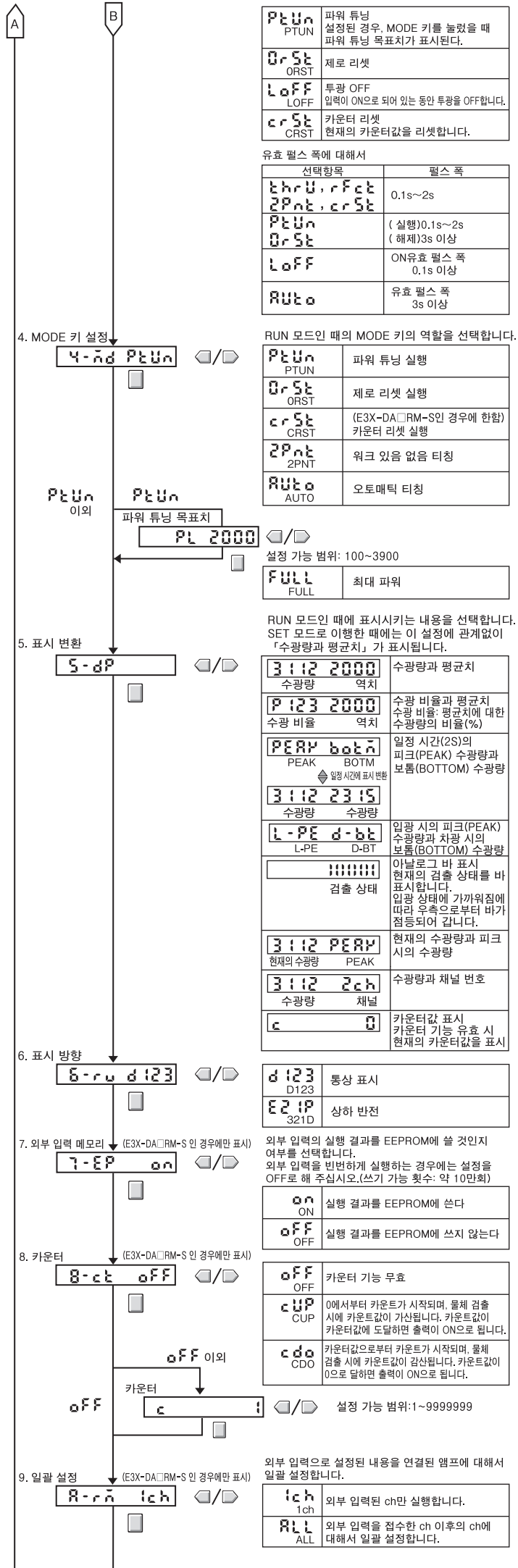
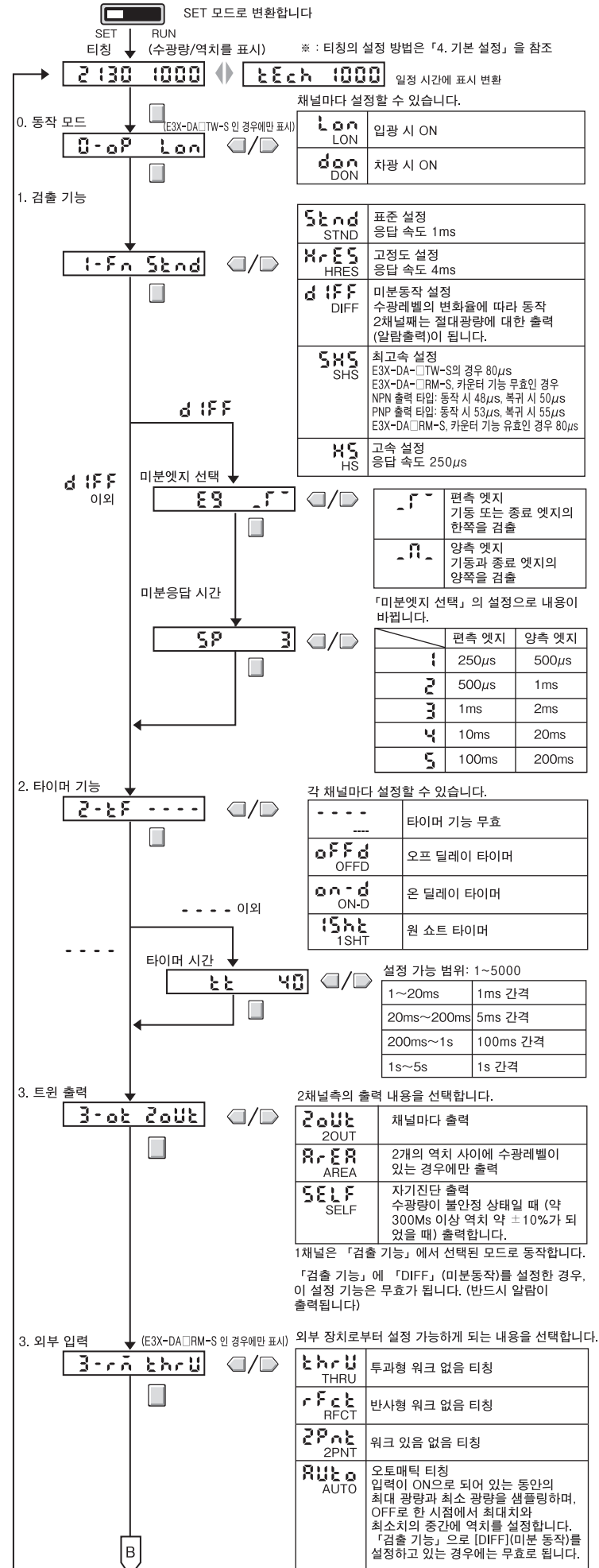
●その他のお問い合わせ先
納期・価格・修理・サンプル・仕様書は貴社のお取引先、または貴社担当オムロン営業員にご相談ください。

© 2009年10月

5.상세 설정

SET 모드에서는 아래와 같은 기능 설정을 할 수 있습니다.
기능 천이에 표시되고 있는 내용은 공장 출하 시의 내용입니다.
「동작 모드」와 「타이머」 이외에는 채널 공통의 설정으로 됩니다.

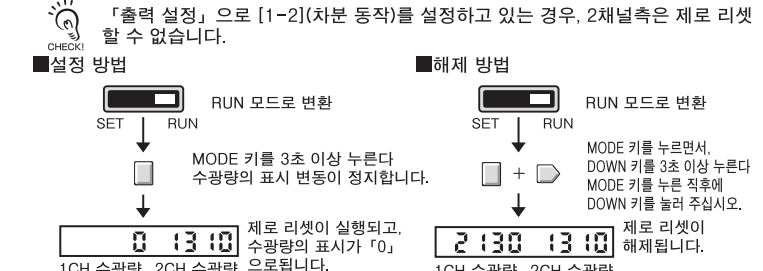
* : 역치, 수광량, 비율 등의 수치의 표시 내용은 일레이며, 실제 표시와는 다릅니다.



6.편리한 기능

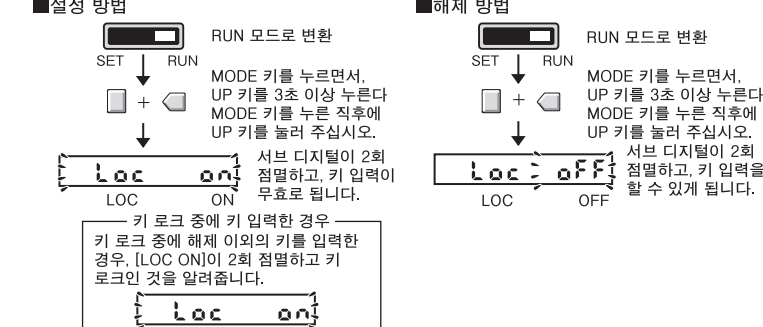
■ 디지털 표시를 제로로 한다(제로 리셋)

메인 디지털에 표시되어 있는 수광량의 표시를 「0」으로 합니다. 서브 디지털에 표시되어 있는 평균치도 수광량을 「0」으로 한 만큼 시프트됩니다. 미리 「MODE 키 설정」기능의 설정을 [ORST](제로 리셋)로 변경해 두십시오. 공장 출하 시에는 [PTUN]이 설정되어 있습니다. 「5. 상세 설정」 참조



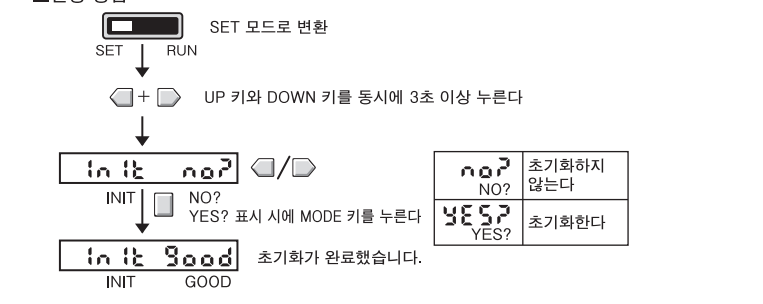
■ 키 로크

키 조작을 모두 무효로 합니다. 키의 오조작을 방지하는 데에 도움을 줍니다. 무효로 할 수 있는 것은 조작 키 만입니다. 각 변환 스위치는 무효로 되지 않습니다.

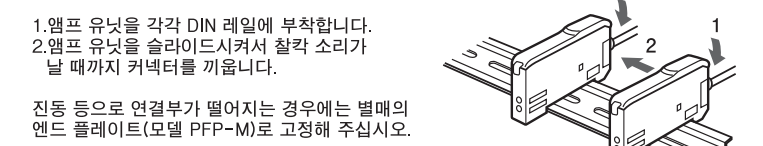
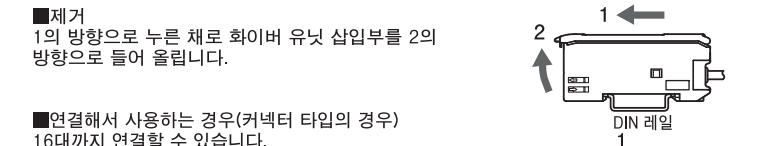
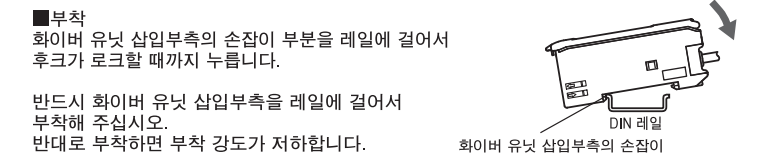


■ 설정 데이터를 초기화한다(설정 초기화 처리)

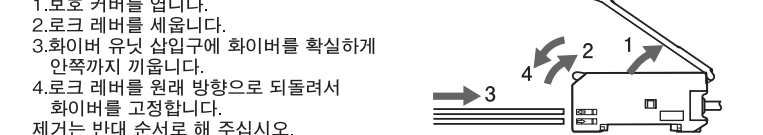
설정 내용을 모두 초기화해서 공장 출하 시의 상태로 되돌립니다.



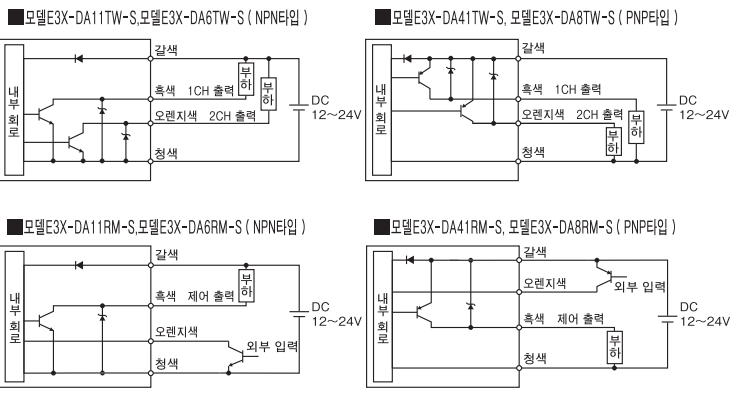
7.앰프 유닛의 설치



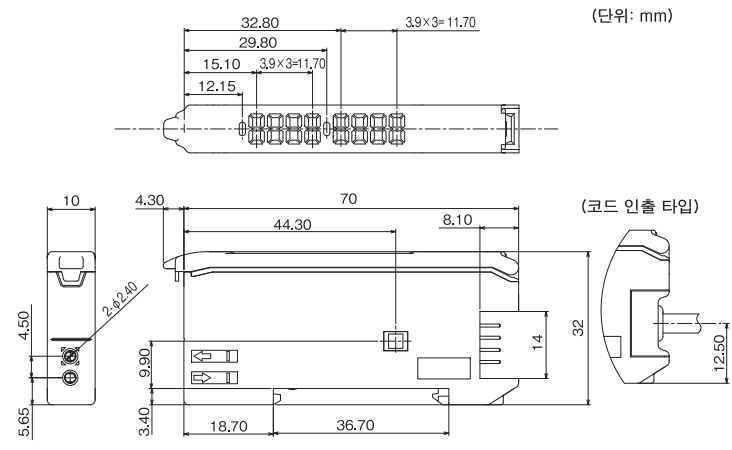
8.화이버 유닛의 부착



9.출력단 회로도



10.외형 치수도



사용 시의 승낙사항

- ① 안전을 확보할 목적으로 직접적 또는 간접적으로 인체를 검출하는 용도로 본 제품을 사용하지 마십시오. 그러한 용도에는 당사 센서 카탈로그에 게재되어 있는 안전 센서를 사용하여 주십시오.
 - ② 아래와 같은 용도로 사용될 경우, 당사의 영업 담당자와 상담하신 후, 사양서 등을 확인하시고 동시에 정격·성능에 대해 여유를 가지고 사용하시거나 고장이 발생할 경우 위험을 최소화 하는 안전화로 등의 안전대책을 마련하여 주십시오.
 - a) 실외 용도. 잠재적인 화학적 오염 또는 전기적 방해를 받는 용도 또는 카탈로그, 사용설명서 등에 기재되지 않은 조건이나 환경에서의 사용
 - b) 원자력 제어설비, 소각설비, 철도·항공·차량설비, 의료기계, 오락기계, 안전장치 및 행정기관이나 개별업체의 규제를 받는 설비
 - c) 인명이나 재산에 위험을 미칠 수 있는 시스템·기계·장치
 - d) 가스, 수도, 전기의 공급 시스템이나 24시간 연속 운전 시스템 등의 높은 신뢰성이 필요한 설비
 - e) 기타 상기 a)~ d)에 준하는 고도의 안전성을 필요로 하는 용도
- * 상기는 적합한 용도의 조건을 나타내는 일부입니다. 최신판 카탈로그, 매뉴얼에 기재된 보증·면책사항의 내용을 잘 읽고 사용하여 주십시오.

한국 OMRON 제어기기 주식회사
전화: 82-2-519-3988
<한국어/영어/일본어>