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You can read the recommendations in the user guide, the technical guide or the installation guide for OMRON E3X-DAC-S. You'll find the answers to all your questions on the OMRON E3X-DAC-S in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual OMRON E3X-DAC-S
User guide OMRON E3X-DAC-S
Operating instructions OMRON E3X-DAC-S
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Manual abstract:

10 mm Easy and Reliable ... Ease of Use and Smart Functions In addition to ensuring easy use, we have added a number of smart functions, such as remote control to simplify setup, and twin sensing and output to simultaneously distinguish two registered colors. (advanced models) First in Its Class This function guides the user to ensure that the workpiece is in an appropriate position for teaching. (Indicates OVER, OK, or LOW.) Reliable Setting guide function. Easy to Understand A double display for easy, precise setting. One push is all it takes. Easy Setting Easy and Reliable .

.. Simplified Wiring Connector Reduces Work Steps OMRON's unique simplified wiring connectors provide the power for each added Sensor. Up to 16 Units can be mounted, including a combination of Digital Fiber Sensors and other simplified wiring connector products such as Digital Laser Sensors. Power is supplied through the connector, so only one output wire is required.

(For adding Sensors) From left to right Digital Fiber Sensors: E3X-NA E3X-DA-S/MDA E3X-DAC-S Digital Laser Sensor: E3C-LDA Proximity Sensor: E2C-EDA Application Many Compact Heads Wide Range of Fiber Heads Available Select from a wide range of Fiber Heads to match the workpiece and working space. This makes installation possible even in small spaces. Long-distance Fiber Head E32-A09 23 mm General-purpose Fiber Head E32-CC200 9 mm 20 mm M6 screw Compact Fiber Head E32-C31 M3 screw Easy and Reliable Applications (Examples) Detecting Marks Detection distance: 30 mm Detection distance: 9 mm Detection distance: 3 mm Distinguishing Semi-transparent Objects Detecting Black Marks Because it distinguishes RGB ratios, detection is highly resistant to workpiece movement. Through-beam Fiber Heads are capable of detecting color differences in semi-transparent objects. In Black Mode, black seam tape and other black marks can be detected regardless of film color or patterns.

Distinguishing Trays Detecting Wafers Detecting Products on Conveyors Twin sensing and remote control functions simplify setup. Workpieces that absorb a specific wavelength can be detected with a wide range of wavelengths. If you teach the conveyor (i.e., the background), you can detect workpieces even if they have different colors, shapes, or gloss. E3X-DAC-S Ordering Information Amplifier Units Amplifier Units with Cables Item Appearance Functions Model

NPN output E3X-DAC11-S 2M PNP output E3X-DAC41-S 2M Standard models Timer, Response speed change Advanced models Standard models + Simultaneous determination (2 colors) AND/OR output, Remote setting E3X-DAC21-S 2M E3X-DAC51-S 2M Amplifier Units with Connectors (Amplifier Unit Connectors must be purchased separately.) Item Appearance Functions Model NPN output PNP output Standard models Timer, Response speed change E3X-DAC6-S E3X-DAC8-S Amplifier Unit Connectors (Order Separately) Item Master Connector 2m Slave Connector 1 Appearance Note: Protector seals are provided as accessories. Cable length No. of conductors 3 Model E3X-CN11 E3X-CN12 Combining Amplifier Units and Connectors Amplifier Units and Connectors are sold separately. Refer to the following tables when placing an order.

Amplifier Unit Model NPN output Standard models E3X-DAC6-S PNP output E3X-DAC8-S Applicable Connector (Order Separately) Master Connector Slave Connector + E3X-CN11 E3X-CN12 When Using 5 Amplifier Units Amplifier Units (5 Units) + 1 Master Connector 4 Slave Connectors Accessories (Order Separately) Mounting Bracket Appearance Model E39-L143 Quantity 1 End Plate Appearance Model PFP-M 1 Quantity 5 E3X-DAC-S Ratings and Specifications Amplifier Units Item Sensing distance Sensing object Light source (wavelength) Sensing method Number of registered colors Power supply voltage Power consumption Control output Remote control input Protection circuits Super-high-speed mode (See note 4.) High-speed mode Standard mode High-resolution mode Type Model Standard models E3X-DAC@-S@ (@: 11/41/6/8) Depends on the Fiber Unit. Refer to pages 8 to 10. Reflective models: Standard 11 color cards (See note 1.), Through-beam models: Opaque or translucent object White LED (420 to 700 nm) C Mode: RGB ratio determination (or I Mode: Light intensity determination for red, green, or blue, Black Mode: Determination of total light intensity for red, green, and blue) (See note 2.) 1 12 to 24 VDC $\pm 10\%$, ripple (p-p) 10% max. 960 mW max. (current consumption: 40 mA max. at power supply voltage of 24 VDC) NPN or PNP open collector Load power supply voltage: 26.4 VDC max.

Load current: 50 mA max. (residual voltage: 2 V max.) No-voltage input (contact/transistor) --(See note 3.) Reverse polarity for power supply connection, output short-circuit, Reversed output polarity protection Operate or reset: 60 μ s Operate or reset: 300 μ s Operate or reset: 1 ms Operate or reset: 4 ms Operate or reset: 120 μ s Operate or reset: 600 μ s Operate or reset: 2 ms Operate or reset: 8 ms 2 (simultaneous determination) Advanced models E3X-DAC@-S@ (@: 21/51) Response time Sensitivity setting (color registration, allowable range) Operating mode Timer function Functions Control outputs Remote control Display switch (See note 5.) Initialization Display Digital display Ambient illumination (Receiver side) Ambient temperature range (See note 6.

) Ambient humidity range Insulation resistance Dielectric strength Vibration resistance Shock resistance Degree of protection Connection method Weight (packed state) Materials Case Cover Teaching (one-point teaching or teaching with/without workpiece) or manual adjustment ON for match (ON for same color as registered color) or ON for mismatch (ON for different color from registered color) Timer type: OFF delay, ON delay, or one-shot Timer time: 1 ms to 5 s (variable) Output for each channel, AND output, and OR --output One-point teaching, teaching with/without work-piece, zero reset, and light emission OFF Seven patterns total: Match + Threshold, Margin + Threshold, Analog bar display, Peak + Bottom, etc. Initial reset (factory defaults) or user reset (saved settings) Operation indicator (orange)/I mode display indicator (orange) Channel 1 and channel 2 operation indicators (orange) 7-segment displays (Main display: Red, Sub-display: Green), display direction can be reversed. Incandescent lamp: 3,000 lux Sunlight: 10,000 lux Operating: -25°C to 55°C Storage: -30°C to 70°C (with no icing or condensation) Operating and storage: 35% to 85% (with no condensation) 20 M min. (at 500 VDC) 1,000 VAC at 50/60 Hz for 1 minute Destruction: 10 to 50 Hz with a 1.5-mm double amplitude for 2 hrs each in X, Y and Z directions Destruction: 500 m/s², for 3 times each in X, Y and Z directions IEC 60529 IP50 (with Protective Cover attached) Pre-wired or Amplifier Unit Connector (Units conPre-wired nected: 16 max.



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) Pre-wired model: Approx. 100 g, Amplifier unit connector model: Approx. 55 g Polybutylene terephthalate (PBT) Polycarbonate (PC) Instruction manual Accessories 6 E3X-DAC-S Note: 1. Sensing Object: Standard Color Card (230 Colors) from Japan Color Enterprise Co., Ltd.) Color (11 standard colors) White Red Yellow/red Yellow Yellow/green Green Blue/green Blue Blue/purple Purple Red/purple Black Munsell color notation N9.5 4R 4.5/12.0 4YR 6.0/11.

5 5Y 8.5/11.0 3GY 6.5/10.0 3G 6.5/9.0 5BG 4.5/10.0 3PB 5.0/10.0
0 9PB 5.0/10.0 7P 5.0/10.0 6RP 4.

5/12.5 (N2.0) PNP Shorted to Vcc (sinking current: 3 mA max.). OFF: Open or shorted to 0 V.

ON: NPN ON: 3. Input Specifications Contact input (relay or switch) Shorted to 0 V (sourcing current: 1 mA max.). OFF: Open or shorted to Vcc. ON: Non-contact input (transistor) 1.5 V max. (sourcing current: 1 mA max.) OFF: Vcc - 1.5 V to Vcc (leakage current: 0.1 mA max.)

) Vcc - 1.5 V to Vcc (sinking current: 3 mA max.) OFF: 1.5 V max. (leakage current: 0.1 mA max.) ON: 2. When teaching with/without a workpiece, the best sensing method will be automatically selected (RGB ratio (C Mode) or light intensity determination (I Mode)). If color differences are not strong enough and RGB ratios would result in unstable detection, then light intensity determination (I Mode) will be selected. The detection mode can also be set to C, I, or Black Mode.

4. Mutual interference prevention cannot be used in super-high-speed mode, and light intensity determination (I Mode) must be used. 5. With light intensity determination (I Mode), the correlation is not displayed, but rather the light intensity is displayed. 6.

The allowable ambient operating temperature changes according to the number of Units that are linked. 2 Units: -25 to 55°C, 3 to 10 Units: -25 to 50°C, and 11 to 16 Units: -25 to 45°C Amplifier Unit Connectors Item Rated current Rated voltage Contact resistance Model 2.5 A 50 V 20 m max. (20 mVDC max., 100 mA max.)

) (The figure is for connection to the Amplifier Unit and the adjacent Connector. It does not include the conductor resistance of the cable.) Destruction: 50 times (The figure for the number of insertions is for connection to the Amplifier Unit and the adjacent Connector.) Polybutylene terephthalate (PBT) Phosphor bronze/gold-plated nickel Approx. 25 g E3X-CN11 E3X-CN12 No. of insertions Housing Contacts Materials Weight (packed state) Approx. 55 g 7 E3X-DAC-S Sensing Distance Reflective Models Sensing object Highresolution mode E32-DC200 E32-D11R/E32-D12R/ E32-D15XR/E32-D11N/ E32-DC200BR (B4R) E32-D14LR Generalpurpose E32-D15YR/E32-D15ZR E32-D211/E32-DC200E/ E32-D22/E32-D25X/ E32-DC200F (F4) E32-D24 E32-D25Y/E32-D25Z E32-D11/E32-D15XB Breakresistant E32-D21B/E32-D221B E32-D21/E32-D22B E32-D25XB Fluorine coating Longdistance, high power Specialbeam models E32-D11U E32-A09 E32-D11L E32-D21L/E32-D22L E32-CC200 E32-CC200R/E32-C11N Coaxial E32-D32L E32-C31/E32-D32 E32-C31N Area sensing Environment resistive models E32-D36P1 E32-D51 Heat-resistant E32-D81R-S/E32-D61-S E32-D73-S Chemical resistant E32-D12F E32-D14F 70 42 11 10 20 8.8 5.8 42 19 8.8 14 42 White paper Standard mode 54 32 8.

5 7.5 16 6.7 4.5 32 15 6.7 10 32 Highspeed mode 46 26 7 6.5 14 5.8 3.8 26 13 5.8 9 26 Superhighspeed mode 18 11 2.5 2.
5 5 2.1 1.4 11 4.5 2.1 3 11 --22 8 16 9 9 4.

5 2.1 9 14 5 3.5 6 2 (Unit: mm) Standard color card (11 colors) (mutual determination) Highresolution mode 14 8.5 2.4 2.
1 4.5 1.8 1.2 8.5 4.1 1.8 3 8.5 Standard mode 10 6 1.7 1.5 3 1.

3 0.9 6 3 1.3 2.1 6 Highspeed mode 8.5 5 1.4 1.3 2.5 1.1 0.7 5 2.
4 1.1 1.7 5 Superhighspeed mode 6 3.5 1 0.9 1.
5 0.7 0.5 3.5 1.5 0.
7 1.1 3.5 --7.5 2.5 4 3 3 1.5 0.7 3 4.5 1.5 1.2 2 0.

6 Type Standard models 20 to 38 24 to 36 26 to 32 90 35 60 35 35 17 7.7 35 55 20 13 22 9 70 26 45 26 26 13 6 26 42 15 10 17 7 60 22 35 22 22 11 4.8 22 36 13 8.5 15 6 20 to 38 24 to 3 3 5 3 3 10 6 6 4 3 5 5 3 3 8 3 2 5 3 2 3 4 2 3 2 2 8 () 3 5 10 2 4 2 2 3 6 4 3 6 4 4 3 Sensing distance: 9 mm (i.e., the teaching distance) : Detection possible, x: Detection not possible. * Use 2-point teaching to distinguish between white and black. Color Detection Characteristics E3X-DAC@-S+E32-CC200 Correlation (Digital Display) 1000 Color Detection Capability vs. Distance E3X-DA@-S+E32-CC200 E3X-DAB/G@-S+E32-CC200 (Model with single-color light source) Number of colors differentiated (combinations) 140 120 100 80 60 40 20 0 900 800 700 600 500 400 300 200 100 Yellow/green Yellow/red White Green Blue/green Blue Blue/purple Purple Red/purple Sensing distance: 9 mm (i.e., the teaching distance) E3X-DAC-S For 2-point teaching Registered Color Red Yellow Green Blue Purple Red Model with blue light source E3X-DAB-S Model with green light source E3X-DAG-S X For one-point teaching 0 0 5 10 15 20 25 30 35 Sensing distance X (mm) = Teaching distance Sensing object color Correlation vs. Distance E3X-DAC@-S+E32-CC200 Change in correlation (%) 5 0 -5 -10 -15 -20 -25 -40 Correlation vs. Angle E3X-DAC@-S+E32-CC200 Change in correlation (%) Sensing distance: 9 mm (i.e., the teaching distance) 5 0 -5 -10 -15 -20 -25 -20 + - 5 10 15 20 Sensing distance: 9 mm (= Teaching distance) X Registered Color Sensing object -30 -20 -10 0 10 20 30 40 Registered Color Red Green Blue Red Green Blue Sensing object -15 -10 -5 0 Change in distance X (%) Angle of incline (°) 11 E3X-DAC-S Output Circuit Diagrams NPN Output Model Operation mode ON for match E3X-DAC11-S E3X-DAC6-S ON for mismatch Timing charts Match Mismatch Operation ON indicator (orange) OFF ON Output transistor OFF Load Operate (relay) Reset (Between brown and black leads) Match Mismatch Operation ON indicator (orange) OFF ON Output transistor OFF Load Operate (relay) Reset (Between brown and black leads) Match Mismatch Operation ON indicator (orange) OFF ON Output transistor OFF Load Operate (relay) Reset (Between brown and black leads) Operation selector LIGHT ON (L-ON) Display Operation indicator (Orange) Output circuit I mode indicator (orange) Brown Black Load Control output 12 to 24 VDC Photoelectric Sensor main circuit DARK ON (D-ON) Blue ON for match E3X-DAC21-S ON for mismatch LIGHT ON (L-ON) Display Ch2 operation indicator (orange) Brown Black Load Load 12 to 24 VDC Ch1 operation indicator (orange) Photoelectric Sensor main circuit Orange Pink Blue Ch1 control output Ch2 control output DARK ON (D-ON) External input PNP Output Model Operation mode Timing charts Match Mismatch Operation ON indicator (orange) OFF ON Output transistor OFF Load Operate (relay) Reset (Between blue and black leads) Match Mismatch Operation ON indicator (orange) OFF ON Output transistor OFF Load Operate (relay) Reset (Between blue and black leads) Match Mismatch Operation ON indicator (orange) OFF ON Output transistor OFF Load Operate (relay) Reset (Between blue and black leads) Match Mismatch Operation ON indicator (orange) OFF ON Output transistor OFF Load Operate (relay) Reset (Between blue and black leads) Operation selector Output circuit ON for match E3X-DAC41-S E3X-DAC8-S ON for mismatch LIGHT ON (L-ON) Display I mode indicator (orange) Brown Operation indicator (Orange) Photoelectric Sensor main circuit Control output Black Load Blue 12 to 24 VDC DARK ON (D-ON) ON for match E3X-DAC51-S ON for mismatch LIGHT ON (L-ON) Display Ch2 operation indicator (orange) Brown Ch1 operation indicator (orange) Pink Photoelectric Sensor main circuit External input Ch1 control output Black Orange Blue Ch2 control output 12 to 24 VDC Load Load DARK ON (D-ON) Note: 1.



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Timing Charts for Timer Function Settings (T: Set Time) ON delay Match Mismatch ON L-ON OFF ON D-ON OFF T T OFF delay Match Mismatch ON L-ON OFF ON D-ON OFF T T One-shot Match Mismatch ON L-ON OFF ON D-ON OFF T T 2. Control Output (AND, OR, Sync) and Timing Chart for Timer Settings (T: Set Time) CH1 CH2 ON OFF ON CH1 CH2 ON OFF ON T T OFF OUT ON (AND) OFF OUT ON (OR) OFF OFF ON delay ON (AND) OFF OFF delay ON (AND) OFF One-shot ON (AND) OFF 12 E3X-DAC-S Nomenclature Amplifier Units Standard Models E3X-DAC@-S (@: 11/41/6/8) Main Display (Red) Incident level, function, etc. Advanced Models E3X-DAC@-S (@: 21/51) Operation Keys Function setting operations UP DOWN MODE Sub-Display (Green) Threshold, function settings, etc. Main Display (Red) Lock lever Locks the fiber. Sub-Display (Green) Operation Keys Function setting operations UP DOWN MODE Incident level, function, etc.

Threshold, function settings, etc. Lock lever Locks the fiber. Operation Selector Operation Indicator (orange) ON when output is ON. I Mode Indicator OFF when output is OFF. Channel Switch Ch1 Operation Indicator Ch2 Operation Indicator ON when output is ON. OFF when output is OFF. ON when output is ON. OFF when output is OFF. Used to select the channel to display and set. Mode Selector Use to select SET or RUN mode.

Use to switch between Light ON and Dark ON modes. Lit orange: Operation in I Mode. Mode Selector Use to select SET or RUN mode. Safety Precautions WARNING This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes. Precautions for Safe Use The following precautions must be observed to ensure safe operation of the Sensor. 1. Do not use the Sensor in an environment where explosive or flammable gas is present. 2. Do not use the Sensor in a location subject to splattering of water, oils, or chemicals.

3. Do not attempt to disassemble, repair, or modify the Sensor. 4. Do not apply voltages or currents that exceed the rated range to the Sensor. 5. Do not use the Sensor in an ambient atmosphere or environment that exceeds the ratings. 6. Wire the power supply correctly, including the polarity. 7. Connect the load correctly. 8. Do not short-circuit the load at both ends. 9. Do not use the Sensor if the case is damaged. 10. Dispose of the Sensor as industrial waste. 11. Do not use the Sensor in locations subject to direct sunlight. 12. Burn injury may occur.

The Sensor surface temperature rises depending on application conditions, such as the ambient temperature and the power supply voltage. Use caution when operating or performing maintenance on the Sensor. CAUTION Do not use the product with voltage in excess of the rated voltage. Excess voltage may result in malfunction or fire. Never use the product with an AC power supply. Otherwise, explosion may result. High-temperature environments may result in burn injury. 13 E3X-DAC-S Precautions for Correct Use Do not use the product in atmospheres or environments that exceed product ratings. Adding and Removing Amplifier Units Adding Amplifier Units 1. Mount the Amplifier Units one at a time onto the DIN track.

Amplifier Unit Designing Operation after Turning Power ON The Sensor is ready to detect within 200 ms after the power supply is turned ON. If the Sensor and load are connected to separate power supplies, be sure to turn ON the Sensor first. Time may be required for the incident level to stabilize after the power supply is turned ON. Operation When Turning Power OFF Output pulses may occur when the power is turned OFF. Turn OFF the power supply to the load and the load line before turning OFF the power supply to the Sensor.

Mounting Connecting and Disconnecting Connectors Mounting Connectors 1. Insert the Master or Slave Connector into the Amplifier Unit until it clicks into place. 2. Slide the Amplifier Units together, line up the clips, and press the Amplifier Units together until they click into place. Click into place Removing Amplifier Units Slide Amplifier Units away from each other, and remove from the DIN track one at a time.

(Do not attempt to remove Amplifier Units from the DIN track without separating them first.) Note: 1. The specifications for ambient temperature will vary according to the number of Amplifier Units used together. For details, refer to Ratings and Specifications. 2. Always turn OFF the power supply before joining or separating Amplifier Units. Insert 2. Attach the protector seals (provided as accessories) to the sides of master and slave connectors that are not connected. Mounting the End Plate (PFP-M) An End Plate should be used if there is a possibility of the Amplifier Unit moving, e.g.

, due to vibration. Seal Note: Attach the seals to the sides with grooves. End Plate Removing Connectors 1. Slide the slave Amplifier Unit(s) for which the Connector is to be removed away from the rest of the group. 2. After the Amplifier Unit(s) has been separated, press down on the lever on the Connector and remove it. (Do not attempt to remove Connectors without separating them from other Amplifier Units first.) Press down Lever Fiber Connection The E3X Amplifier Unit has a lock button for easy connection of the Fiber Unit. Connect or disconnect the fibers using the following procedures: 1. Connection Open the protective cover, insert the fibers according to the fiber insertion marks on the side of the Amplifier Unit, and lower the lock lever.

Remove Lock button Protective cover Locked Unlocked Insertion position Fiber insertion mark Fiber 9 mm Note: Do not pull on, compress, or otherwise exert excessive force on the fibers after connecting them to the Amplifier Unit. (Do not exert more than 0.3 N·m.) 14 E3X-DAC-S 2. Disconnecting Fibers Remove the protective cover and raise the lock lever to pull out the fibers.

Fiber Unit Design Precautions Applicable Fiber Units Refer to the sensing distance tables on pages 8 to 10 for the Fiber Units that can be used and the sensing distances. Retro-reflective, Limited-reflective, Ultra-compact, and Application-specific Fiber Units, which are not listed, cannot be used. @@@@2. @@@@Check the connection of the load. @@ERR/EEP will flash on the display when a writing error has occurred. @@@@32 9.9 3.4 16 28.1 18.7 44.3 Two, 3.2 dia. @@@@2.6 mm dia. 70 10 4.

3 8.1 Connector Two, 2.4 dia. Dia. @@@@No. @@Setting Thresholds Manually in RUN Mode. Used to executes various teaching and zero-reset operations. Page 19 Refer to 2. @@Registering Workpiece Colors with Teaching in SET Mode. Switching setting items Page 20 Refer to 4. @@ Page 21 Refer to 5. Convenient Functions. Returns the system to its initial state. Page 21 Refer to 5. @@Operation mode Match ON Mismatch ON L-ON D-ON L 2-2.

@@This method is ideal for setting thresholds with margins or performing judgments with low match. Set the SET/RUN Mode Selector to SET. SET Match Threshold Operation (Factory-set) D * Advanced Models The operation mode is set in SET mode.



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* Advanced Models Set the Channel Selector to the desired channel before making any adjustments or settings. This is true for all adjustments and settings. UP DOWN Teaching with Workpiece Workpiece Match Press either button for 1 s. Threshold 2 Registering Workpiece Colors with Teaching in SET Mode The set condition will flash twice. UP DOWN * Workpiece colors must always be taught to perform judgment for registered workpiece colors. * With the factory settings, 1-point teaching can be executed in RUN mode. (Press the MODE Key for 3 s.) Teaching without Workpiece Match Press either button for 1 s. Threshold 2-1. One-point Teaching Along with registering the workpiece colors, the threshold can be set at approximately 10% of the match.

The setting is completed in a simple operation with one press of a button. Set the SET/RUN Mode Selector to SET. SET Match Threshold The set threshold will flash twice. RUN To RUN * When teaching is performed, position the workpiece by using the OVER, OK, and LO messages displayed on the sub-display (green) as guides. OVER : Move the workpiece away. UP DOWN Teaching with Workpiece Workpiece Match Press either button for 1 s. OK LO : Teaching is possible. : Move the workpiece closer. Threshold The set condition will flash twice. RUN 3 Setting Thresholds Manually in RUN Mode A threshold can be set manually.

A threshold value can also be fine-tuned using manual setting after teaching. Set the SET/RUN Mode Selector to SET. RUN (Factory-set to RUN) UP DOWN To RUN * The threshold level can be changed if the teaching level function is used in SET mode. * If BLACK mode is selected as the judgment mode in SET mode, the threshold will be set to a level of approximately 10% higher than the displayed degree of matching. Match Threshold Increases threshold.

Decreases threshold. * Even if the display method for the Display Switch Function is changed, the threshold will appear on the sub-display when the key is pressed. 19 E3X-DAC-S 4 Setting Functions in SET Mode Function Transitions Page 19 Refer to 2. Registering Workpiece Colors with Teaching in SET Mode. *.

The displays shown in the function transitions are for the default settings. *. Items shown in the function transitions may increase depending on detailed settings. *. The items enclosed by dotted red lines are for advanced models only. * Set the SET/RUN Mode Selector to SET. SET Teaching Operation mode (To set the operation mode) Detection (To increase the response speed or detection precision) Timer (To use the timer setting) MODE key (To change the function of the MODE key during operation) Teaching level (To change the teaching level) MODE Judgment mode (Used to set the judgment mode) External input memory (Refer to instructions provided with the product.) External input (To change function controlled by external input.) Output setting (To change the channel 2 output) Display orientation (To reverse the orientation of the display.) Display switch (To change the display method) Set the SET/RUN Mode Selector Switch to RUN .

RUN Functions Use the UP and DOWN Keys to change the settings. Function Operation mode Match: ON Settings (display) , Mismatch: Description Page 19 Refer to 1. Setting the Operation Mode. Detection Super-high-speed: , High-speed: , Standard: , High-resolution: Note: If the detection function is changed, be sure to teach the workpiece color. Used to increase the response speed or detection precision. Note: Only I Mode (light intensity determination for red, green, or blue) can be used with Super-high-speed mode. Timer Timer time (timer enabled) Enabled: , OFF-delay timer: ON-delay timer: , One-shot timer: 1 to 5000 ms: to (1 to 20: 1-ms increments, 20 to 200 ms: 5-ms increments, 200 to 1000: 100-ms increments, 1000 to 5000: 1000-ms increments) Used to set control output timers. Used to change timer times. The timer can be set from 1 ms to 5 s. MODE key 1-point teaching: , Teaching with workpiece: Used to change the function of the MODE key during Zero-shift reset: Page 21 Refer to 5-1.

Zeroing the Display (Zero Reset). operation. Teaching level 0 to 99P: to Used to change the threshold setting level during 1-point teaching. Example: The threshold level at the default setting () is . When the setting is , the threshold level is .

Display switch 1. Used to display the degree of matching and the threshold. 2. Used to display the excess gain (i.e.

, percentage of matching relative (1) Match/threshold: to threshold) and the threshold. (2) Margin/threshold: 3. Used to display the peak and bottom degrees of matching at a fixed (3) Peak/Bottom refreshed every 2 s: interval. (4) Peak/Bottom refreshed every time the output is switched: 4. Used to display the peak degree of matching when there is a match and the bottom degree of matching when there is no match. 5. Used to show the detection status with a bar display. Red bars will be (5) Analog bar display: displayed if the degree of match exceeds the threshold. (6) Match/peak (updated periodically): 6. Used to display the present degree of matching and the peak degree (7) Match/channel: of matching.

7. Used to display the degree of matching and channel number. Display orientation Normal display: Each channel: , Upside down display: , AND: , OR: Used to change the orientation of the display. Used to change the item output on control output 2. Used to set timers for the AND/OR control output. Output setting Timer function Timer time Enabled: , OFF-delay timer: ON-delay timer: , One-shot timer: 1 to 5000 ms: to (1 to 20: 1-ms increments, 20 to 200 ms: 5-ms increments, 200 to 1000: 100-ms increments, 1000 to 5000: 1000-ms increments) Used to change timer time. The timer can be set from 1 ms to 5 s. Used to change the functions to be remotely controlled with external input. (For the effective pulse width and other information, refer to the instructions provided with the product.) Used to set whether to write the control results to memory.

(Refer to the instructions provided with the product.) External input 1-point teaching: Zero-shift reset: , Teaching without workpiece: , Light OFF: External input memory Judgment mode Write: , Do not write: C/I automatic judgment: BLACK mode: , C mode: , I mode: Used to set the judgment mode (detection method). BLACK mode: The total light intensity for red, green, and blue is used for the judgment. 20 E3X-DAC-S 5 Convenient Functions 5-1. Zeroing the Display (Zero Reset) The incident light level on the main display can be set to 0.

This is useful when the reference display is to be reset to zero because the match display and the threshold are shifted at the same time. * Change the function to ORST (zero reset) with the MODE key.



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The default setting is 1PNT. Page 20 Refer to 4. Setting Functions in SET Mode.

5-3. Saving a Set State (Saving User Settings) Set the SET/RUN Mode Selector to SET. SET UP MODE Press both buttons for 5 s. SAVE MODE YES? UP DOWN SAVE MODE NO? Set the SET/RUN Mode Selector to RUN RUN (Factory-set to RUN) MODE 3s User settings saved. Operation canceled. * Be sure to register (i.e., teach) the workpiece colors if the detection functions have been changed. To return to original value for incident light level: Set the SET/RUN Mode Selector to RUN RUN (Factory-set to RUN) 5-4. Initializing Settings (Initialization and User Reset) DOWN MODE * Press both buttons for 3 s.

All settings will be initialized and returned to the factory settings or to a saved state. Set the SET/RUN Mode Selector to SET. SET UP DOWN * Press the DOWN key right after pressing the MODE key. Press both buttons for 5 s. 5-2. Locking the Keys (Key Lock) All key operations can be disabled. Set the SET/RUN Mode Selector to RUN RUN (Factory-set to RUN) UP MODE * Press both buttons for 3 s. RST MODE INIT UP DOWN RST MODE USER LOC ON "ON" will flash twice and key operations will be disabled. USER YES? UP DOWN USER MODE NO? To release the lock: Set the SET/RUN Mode Selector to RUN RUN (Factory-set to RUN) UP MODE MODE * Press both buttons for 3 s. Settings initialized.

Operation canceled. The section enclosed by dotted lines applies to user-saved settings. LOC OFF INIT NO? INIT YES? "OFF" will flash twice and key operations will be enabled. * If a key is pressed while key operations are locked, "LOC" will flash twice on the display to indicate that key operations have been disabled. * Press the UP key right after pressing the MODE key.

MODE UP DOWN MODE Operation canceled. Initialized. 21 E3X-DAC-S 22 E3X-DAC-S READ AND UNDERSTAND THIS DOCUMENT Please read and understand this document before using the products. Please consult your OMRON representative if you have any questions or comments. WARRANTY OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

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