Light monitoring sensor

MDF series

MDF-T□ MDF-HT□
MDF-TM□ MDF-HTM□
MDF-TS□ MDF-HTS□

Instruction manual

- Thank you for purchasing MDF 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.

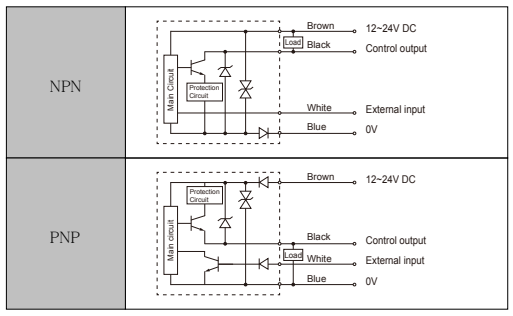
Carefully read and understand the safety precautions before operation.
The important information is provided to protect your health and property.
Do not apply any other installing or operating procedure other than that described in this manual.

Safety Precautions

⚠ CAUTION
- 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
  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.
- 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.

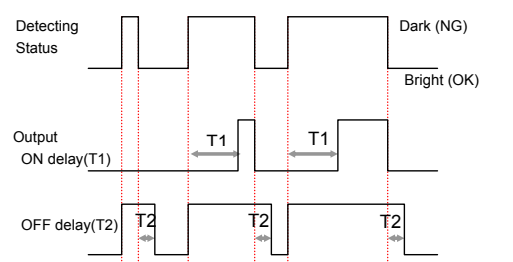
This product cannot be used as a safety device to protect human body.

Input/Output Schematic



*Slave model(MDF-TSN(P),MDF-HTSN(P) doesn't have power line (Brown, Blue)
External input:Input signal is different depends on Synchronous mode
Auto/OFF: External teaching (10msec minimum)
Lo-A/Hi-A: Synchronous input (100 sec minimum)

** High/Low threshold level adjustment
At RUN mode, the threshold is adjusted by pushing UP/Down buttons
blinking means that the level is adjustable
High and Low threshold level are adjustable individually
* Normally, it shows Low threshold level



** If you don't push any button for 5 seconds while adjusting, it turns to normal mode

** Error display while teaching
When error occurs, it shows following error codes
Please try adjusting again according to the information

Lo Err	Brightness is not enough
Hi Err	Brightness is too much
HYS Err	Threshold level are too close to set

** External teaching
Synchronous mode must be "Auto/OFF"
Input the signal to external input (white line) (10msec minimum)
When it's 0VDC at NPN type, it's active
and it's inactive when it's open or connected to power line

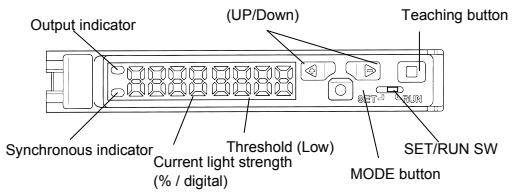
Teaching mode is same as the teaching mode done last time
Default teaching mode is Zone mode. If you want other teaching mode,
Please teach in the teaching mode that you need firstly.

** Timer chart

Specification

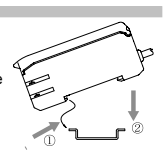
Type	Standard	High Sensitivity
	Stand alone MDF-T(N/P)	Stand alone MDF-HT(N/P)
	Interconnect M MDF-TM(N/P)	Interconnect M MDF-HTM(N/P)
	Interconnect S MDF-TS(N/P)	Interconnect S MDF-HTS(N/P)
Sensing brightness	Apprx. 300~50,000 lx (white light)	Apprx. 10~1,500 lx (white light)
Power supply	DC 12…24V±10% including ripples	
Power consumption	~45mA / 24VDC	
Response time	38.4ms (min)	
Control output	1 output NPN/PNP Open collector	
	100mA / 30V Max. Load: 100mA Max.	
Output type	L-ON/D-ON selectable	
Protection	Short protection	
Indicator	Output ON: Orange / 7 segment 8 digit display	
Sensitivity adjustment	Teaching / manual setting	
Timer function	OFF, ON delay, OFF delay, One shot	
Timer range	1～9999ms	
Input	External input (Synchronous input, External teaching)	
Operating Temp/Humid	-25~+55℃/35~85%RH (No freezing and no condensation)	
Storage Temp/Humid	-40~+70℃/35~85%RH (No freezing and no condensation)	
Vibration resistance	10~55Hz 1.5mm X,Y,Z 2 hours	
Degree of Protection	IP50	
Material	Case: PPE , Cover: PC	
Weight inc. cable	Approx. : 65g	

Part name

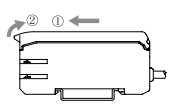


Installin

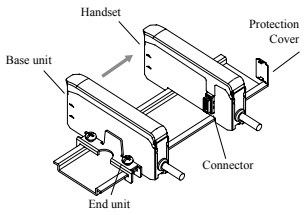
- Installing amplifier
  Hook the claw on the connecting side of fiber cable to the DIN rail. Then press down the hook until it locks.



- Removing amplifier
  Pushing the unit to the direction of ①, hold up the connecting side of fiber cable and remove the unit.

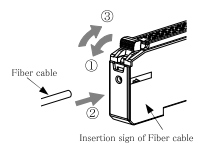


- Interconnection of amplifiers
  Slide and hook up each amplifier units to DIN rail. And fix it with End units from the both sides.
  Interconnection up to 8 units is available.



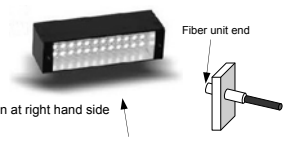
⚠ CAUTION
- Make sure to turn off the power before connection.
- Make sure to use the DIN rail and the end unit (BEF-BE01-W190) in interconnection amplifiers.
- To avoid shorting terminals, attach the protection cover at the end of the connection
- Do not remove the combined units all together from DIN rail.

- Installing fiber unit
  1. Open fiber lock lever
  2. Insert fiber into holes until it stops (Approximately 15mm: refer fiber guide sign)
  3. Return fiber lock lever until it stops



Adjusting

■Installing fiber unit



Change to SET
SET RUN

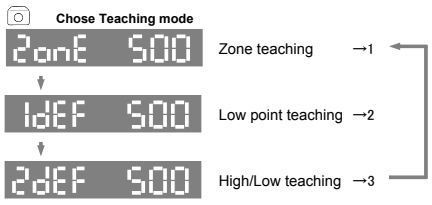
Current light strength is shown at right hand side

* Maximum: 1000(digital)

Adjust angle and position of fiber unit end to get the display shows around **400 ~ 900** . Install the fiber unit end tight so that the sensor work stably.
* You can change the sensitivity if the display shows too small or too big number and also change the position and angle of the fiber unit end..

Adjust sensitivity (Gain: 1~5)

Chose Teaching mode

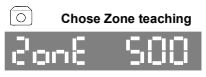


* When you changed the position and angle of the fiber unit end, please teach again.

1. Zone teaching

Threshold will be set automatically. Threshold level is adjustable. Default is +/- 10% that can be changed by "Threshold percentage" parameter in "Expert mode" of setup.

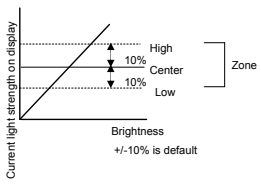
Chose Zone teaching



Push teaching button

Change to RUN
SET RUN

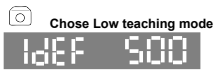
Threshold level is blinked and change to % or digit display

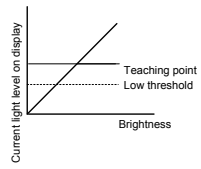


2. Low teaching

Setup default level and low threshold level at expected brightness for each.

Chose Low teaching mode



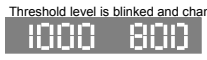


Push teaching button with the default brightness to set default level

Push teaching button with expected low limit brightness to set Low threshold

Change to RUN
SET RUN

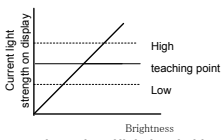
Threshold level is blinked and change to % or digit display



3. High/Low teaching

Setup default level, high and low threshold level at expected brightness for each.

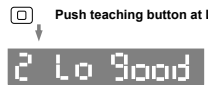
Chose High/Low teaching mode



push teaching button at High brightness point and set High threshold

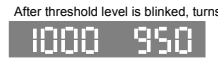
Push teaching button at default brightness point and set default level

Push teaching button at Low brightness point and set Low threshold

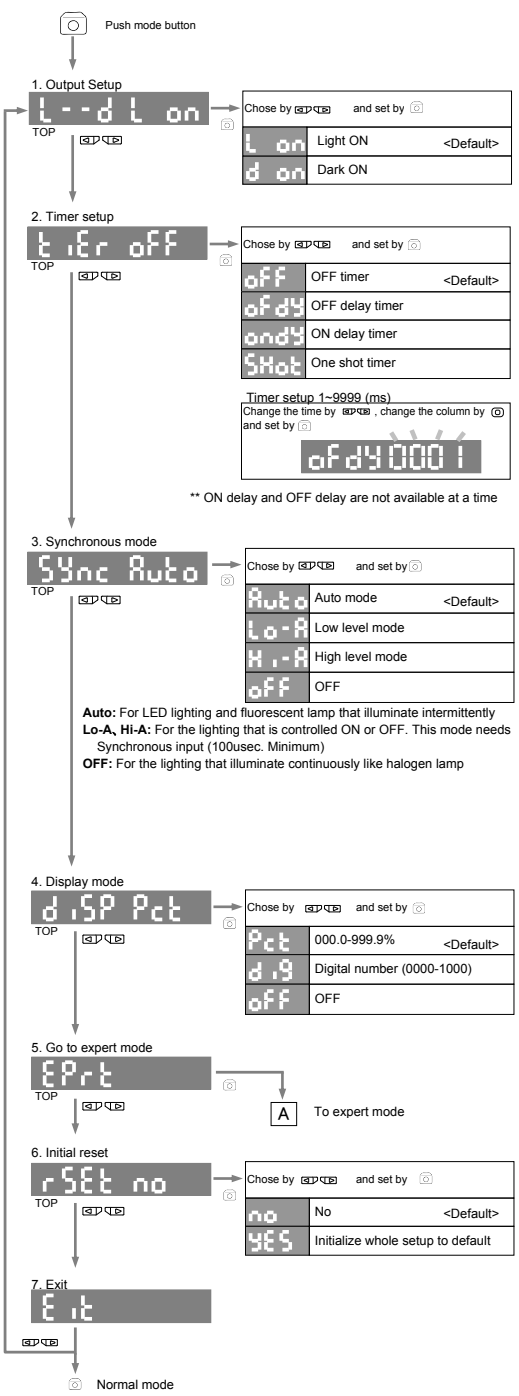


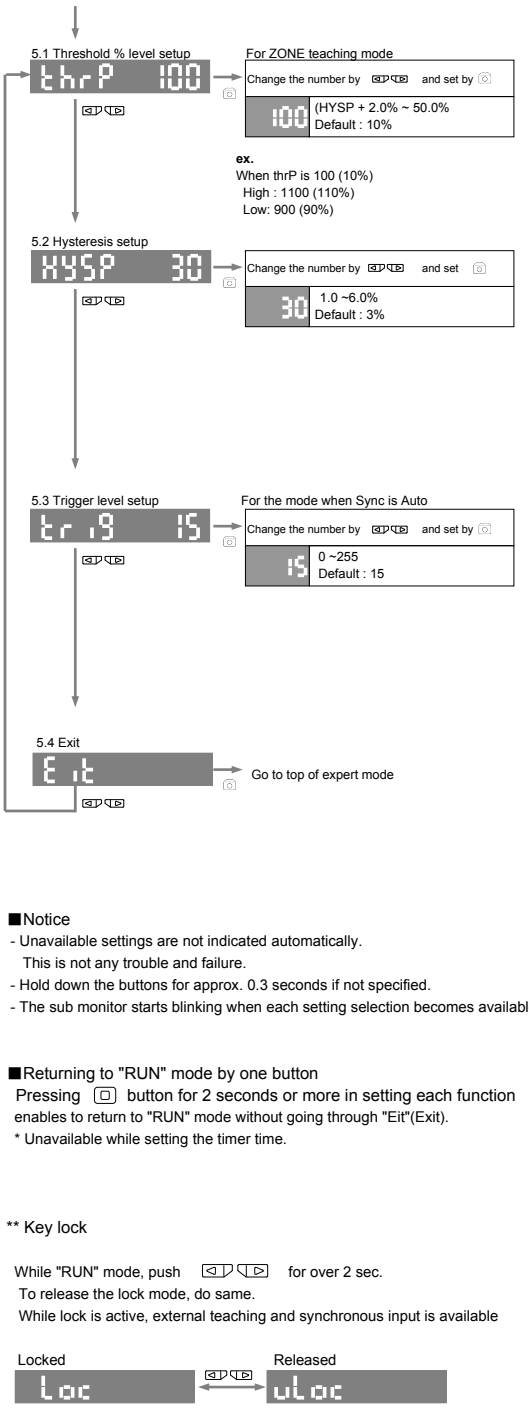
Change to RUN
SET RUN

After threshold level is blinked, turns to display of percent (or digit)



Function setup





■Notice
- Unavailable settings are not indicated automatically.
  This is not any trouble and failure.
- Hold down the buttons for approx. 0.3 seconds if not specified.
- The sub monitor starts blinking when each setting selection becomes available.

■Returning to "RUN" mode by one button
Pressing button for 2 seconds or more in setting each function enables to return to "RUN" mode without going through "Eit"(Exit).
* Unavailable while setting the timer time.

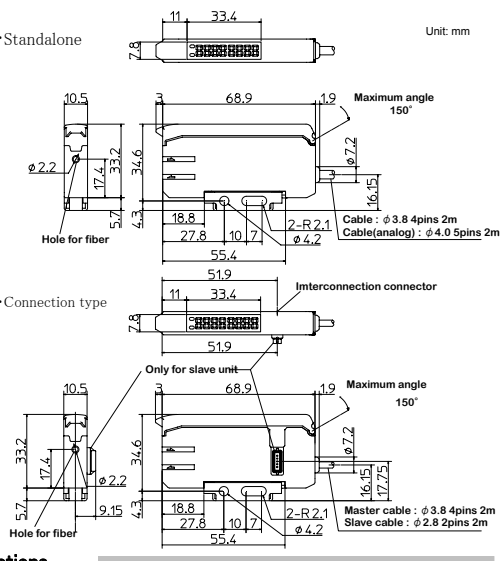
** Key lock

While "RUN" mode, push for over 2 sec.
To release the lock mode, do same.
While lock is active, external teaching and synchronous input is available

Dimensions

Unit: mm

・Standalone



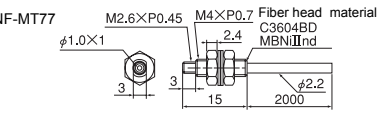
・Connection type

Options

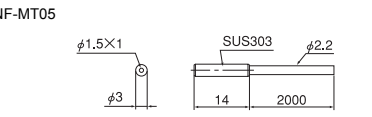
●Fiber unit

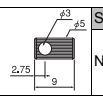
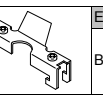
Part number	Tip shape	Min. bending radius
NF-MT77	M4	R=2mm
NF-MT05	3 cylindrical	R=2mm

・NF-MT77



・NF-MT05



	Side view lens NF-MTA02 for NF-MT77
	End unit BEF-BE01-W190 including 2 pieces

→ http://www.optex-fa.com/rohs_cn/

- Specifications and equipment are subject to change without any notice.
- For more information, questions and comments regarding products, please contact us below.

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