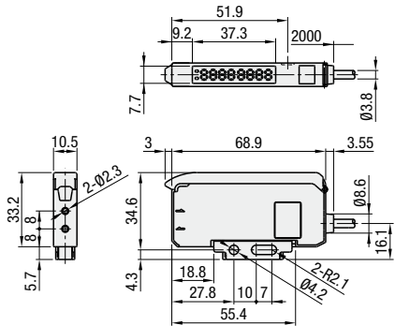
Note that, for some of the types shown here, order might be unable to be received by the MISUMI Thailand, Singapore, Indonesia, and/or India offices.

Fiber Sensor (Amplifier)

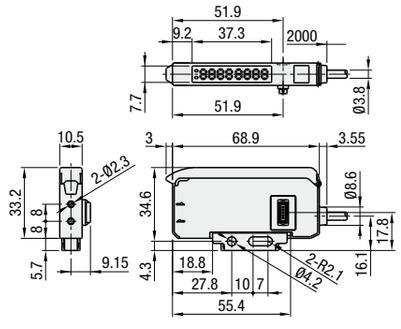
Ultrahigh-speed Digital Type, Potentiometer Type

■The best quality products in the market are sold at the economical prices. Use in combination with Fiber Units on **P.2043**~**P.2044**. Two types are available: Ultrahigh-speed Digital Type to be linked up to 16 units, and economical Potentiometer Type manually adjustable by hand.

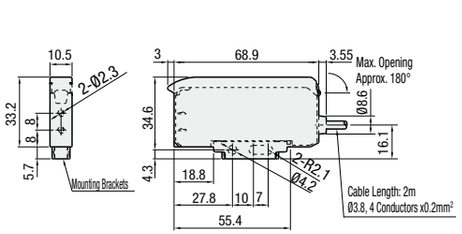
MFAD-M1 (Ultrahigh-speed Digital Type, Link Type Base Unit)



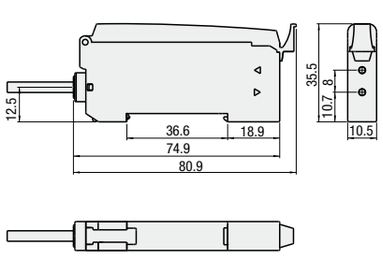
MFAD-S1 (Ultrahigh-speed Digital Type, Link Type Support Unit)



MFAD-1 (Ultrahigh-speed Digital Type, Independent)



MFAT-1 (Potentiometer Type)



Part Number	Adjustment Method	Type	Number of Output	Output	Light Source	Unit Price 1 ~ 5 pc(s).	Volume Discount Rate 6 ~ 10 pcs.	11 ~ 30 pcs.
MFAD-M1	Digital Teaching Type	Link Type (Base Unit)	2 Output	NPN	Red 4 Element LED			
MFAD-S1		Link Type (Support Unit)						
MFAD-1		Independent	1 Output					
MFAT-1	Potentiometer				Red LED			

Ordering Example: Part Number MFAD-1

For orders larger than indicated quantity, please check with WOS.

■Achieved Stable High Speed and Long Distance Detections

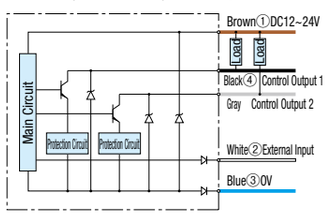
A problem of the existing single pulse emitting type is that it is sensitive to ambient light of the same pulse width and period. MFAD Series, however, is less influenced by ambient light as it emits light with two types of pulse width (long/short), which achieved both stable high speed and long distance detections. Combination with the high-powered LED and a high efficiency collection lens offers the detection distance equal to or more than the equivalent products from competitors.

■Performance Comparison with Products from Competitors

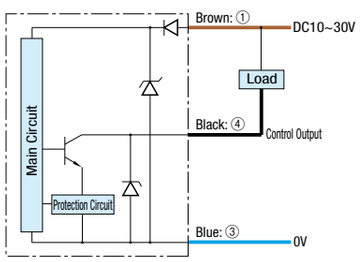
Detection Method	Fiber Unit Types	MFAD Series (7-EL Mode, 8ms)	Products from Competitors	Comparison
Through Beam Type	MFUSM-T1	4000mm	3600mm	x 1.1
	MFUCD-T1	3600mm	3600mm	x 1
Retroreflective Type	MFUSM-D6	180mm	130mm	x 1.4
	MFUSM-D5	300mm	300mm	x 1

■Schematics

MFAD-1,MFAD-M1,MFAD-S1



MFAT-1



■About Connections

When external input is not in use, disconnect lead wires and cover them with the insulating tape to avoid contact with other terminals.

■Cautions

Connect Frame Ground Terminal to the ground when using Switching Regulator for power.

Separate the sensor wiring and high voltage circuits or power lines to avoid malfunction and breakage due to noise.

Avoid using during the power-on transitional state (approx. 300ms).

* Independent 1 Output Type does not have Control Output 2.

■Specifications

Part Number		MFAD-1	MFAD-M1 (Link Type Base Unit)	MFAD-S1 (Link Type Support Unit)	MFAT-1
Light Source		Red 4 Element LED (Wavelength: 632nm)			Red LED
Number of Output		1 Output	2 Output		1 Output
Response Time (*1)	1-HS Mode	16µs	16µs (Single Use) / 22µs (Linked)	22µs	250µs
	2-FS Mode	70µs	70µs (Single Use) / 85µs (Linked)	85µs	
	3-ST Mode	250µs			
	4-LG Mode	500µs			
	5-PL Mode	1ms			
	6-UL Mode	2ms			
	7-EL Mode	8ms			
Sensitivity Adjustment		Teachings and Manual Adjustment			10-turn Potentiometer
Indicator Light		1 Output Type: Output Indicator (Orange), 2 Output Type: Output Indicator (Orange) x2			Output Indicator: Orange LED Stability Indicator: Green LED
Digital Indicator		7 Segments 8-digit Indication (Red: 4 Digits, Green: 4 Digits)			-
Control Output (*2)		NPN Open Collector Load Current: 100mA or Less (* 3), Applied Voltage: 30V DC or Less, Residual Voltage: 1.8V or Less			NPN Open Collector Max. 100mA / DC30V
External Input		Teaching (*4), Light Emission Stop, Synchronization, Counter Reset (*5)			-
Timer Function		No Delay, ON Delay, OFF Delay, One shot, ON Delay + OFF Delay, ON Delay + One Shot Available Setting Range: 0.1 ~ 9999ms			OFF Delay 40ms Fixed (Cancel Available)
Output Mode		Light ON / Dark ON Switchable in Function			Light ON / Dark ON Switchable with Switch
Number of Linked Sensors (Including Base Unit)		Link Not Available	Up to 16 pcs.		Link Not Available
Number of sensors to avoid interference (*6)	1-HS Mode	-	2 pcs. (Eco Mode (*7): OFF, for diSP), 4 pcs. (Eco Mode: rESP, for ALL)		-
	2-FS Mode		4 pcs. (Eco Mode: OFF, for diSP), 8 pcs. (Eco Mode: rESP, for ALL)		
	3-ST Mode				
	4-LG Mode		8 pcs. (Eco Mode: OFF, for diSP), 16 pcs. (Eco Mode: rESP, for ALL)		
	5-PL Mode				
	6-UL Mode		12 pcs. (Eco Mode: OFF, for diSP), 16 pcs. (Eco Mode: rESP, for ALL)		
	7-EL Mode				
Connecting Type		Cable Length: 2m, Ø3.8mm			Cable Length: 2m, Ø3.8mm
Dielectric Strength		20MΩ or More (at DC500V)			20MΩ or More (at DC500V)
Rating	Power Supply Voltage	DC 12 ~ 24V±10% Ripple 10% Included			DC 10 ~ 30V Ripple 10% Included
	Power Consumption (Normal State)	1 Output Type: 864mW (36mA or less for 24V) 2 Output Type: 936mW (39mA or less for 24V)			Current Consumption: 25mA or Less (at DC12V)
	Power Consumption (Eco All)	1 Output Type: 600mW (25mA or less for 24V) 2 Output Type: 672mW (28mA or less for 24V)			-
Noise Resistant	IEC Standard	CE Compliance			CE Compliance
Environmental Protection	Service Ambient Temperature / Humidity	-25 ~ 55°C (*8) / 35 ~ 85%RH (No Freezing / Condensation)			-25 ~ 55°C 35 ~ 85%RH (No Freezing / Condensation)
	Service Environment luminosity	Sun Light: 10,000ℓx or Less, Incandescent Light 3,000ℓx or Less			
	Vibration Resistance	10 ~ 55Hz, Full Wave Amplitude 1.5mm in Respective X, Y, Z Direction 2 hours			
	Shock Resistance	Approx. 50G (500m/s2) in Respective X, Y, Z Direction 3 times			
	Protection Structure	IEC Standard: IP50			IEC Standard: IP66
Material		Case: PPE, Cover: Polycarbonate			Case: PBT, Cover: Polycarbonate
Mass		Approx. 71g			Approx. 20g
Accessory		Mounting Brackets			

*1 When Eco Mode is rESP or ALL, the response becomes 2 times longer. The mode with shorter response time has shorter detection distance; the longer the response time is, the longer the detection distance becomes.
*2 The control output of 2 Output Type is Output 1 and Output 2, and the individual settings for threshold value adjustment, timer setting and light ON / dark ON are available. For ASC, only Control Output 1 is effective.
*3 For single use, or 2 to 3 units are linked including a base unit. Use under 50mA or less when 4 to 8 units are linked, 20mA or less when 9 to 16 units are linked.
*4 Teaching by external output is conducted in the mode which was previously operated in the main unit (Default: 2-Point Teaching).
*5 Counter function is equipped for 2 Output Type only, thus 1 Output Type has no Counter Reset Input.
*6 Number of sensors to avoid interference may become less than indicated above when linked with different response time settings.
*7 For Eco Mode, display on the sub-monitor is off and the display on the main monitor is darker to save power.
*8 When the single unit or total 2 to 3 units are linked including a base unit. Use between -25 and +50°C when the total 4 to 8 units are linked, -25 and +45°C when the total 9 to 16 units are linked.

Fiber Sensor glossary is listed on **P.2047.**