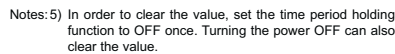


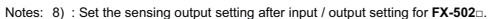
SET
→: Press the SET key.

+ , -
↔: Press the UP (+) key or DOWN (-) key.

Automatic
----▶: Automatically move to next



	Input time
2 point teaching	
Limit teaching	20 to under 500ms
Display adjust	
Full auto teaching	600ms or more (sampling during input)
Emission OFF, Logic setting	
Copy lock	2ms or more (conducted during inputting)
Data bank loading	
Data bank saving	Input pulse of the specified channel number (1 pulse: 16 to 300ms). However, the pulse cycle is under 500ms.



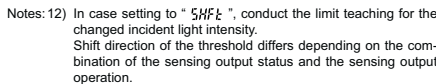
9) In case using in differential mode, set threshold value 20 or more when the hysteresis setting is "H-01" and set threshold value 80 or more when the hysteresis setting is "H-02" or "H-03".

10) After external input, the time given until an answer back output is as follows. However, in case timer of the sensing output 2 is valid, the output time is different from the following table.

	Input time
2 point teaching	After 20ms from the input end, the answer back
Limit teaching	output is read out when result of the teaching is "Good".
Full auto teaching	
Display adjust	After 20ms from the input end, the answer back output is read out.
Data bank loading	After 520ms from rising of last input pulse, the answer back output (pulse) of the number of channel in the data bank is read out.
Data bank saving	

11) Incident light intensity depends on the response time as table below

Response time	Incident light intensity
"Std", "H-SP", "FRSt"	Max. 4,000
"Long"	Max. 8,000
"U-Lg", "HYPr"	Max. 9,999



Sensing output status	Sensing output operation	Shift direction
Sensing output ON	Light-ON	-
Sensing output ON	Dark-ON	+
Sensing output OFF	Light-ON	+
Sensing output OFF	Dark-OFF	-

	Item	Default setting	Description
PRO1 mode	Response time setting	5PEd5td	Set response time.
	Timer setting	dELy nan	Set operation and period of the timer.
	Hysteresis setting	HYSH-02	Hysteresis can be set when the normal mode or the window comparator mode is selected. When setting to "H-01", it becomes low sensibility.
	Shift amount setting	SHFt---P	Set shift amount of threshold value in limit teaching.
	Emission power setting	PcLtL H-P	Set emission power. "RuLo": Saturated incident light intensity can be automatically adjusted "H-P": High emission power (25 to 100%) "n-P": Middle emission power (25 to 100%) "L-P": Low emission power (25 to 100%)
	Timer range setting	trng ns	Change unit time of timer.
PRO2 mode	Teaching lock setting	t-Lc oFF	Be able to prevent from wrong operation of teaching. "oFF": Teaching mode is valid "on": Teaching mode is invalid
	Digital display item setting	dISPd19t	Incident light intensity can be displayed in percentage or the peak / bottom value can be displayed on the digital display (red).
	Digital display turning on setting	turOn oFF	Sets the viewing orientation of the digital display.
	ECO setting	EcO oFF	Power consumption can be lowered. "oFF": ECO OFF "on": If any key operation is not carried out for 20 sec. in RUN mode, the digital display turns OFF. "FULL": If key operation is not done in 20 sec. or setting the key lock function in Run mode, all indicators turns OFF.
	Period hold setting	HoLd oFF	"oFF": Peak / bottom value in the digital display refreshing condition can be displayed. "on": Peak / bottom value in the hold condition can be displayed.
PRO3 mode	Data bank loading setting	chLd ldcH	Load a setting from specified data bank. (1 to 8 channel)
	Data bank saving setting	chSR ldcH	Save a setting to specified data bank. (1 to 8 channel)
	Back up setting	b_uP on	Select to save or not to save the threshold value by teaching in EEPROM.
	Input / output setting (FX-502□ only)	I_O ouT	Select either sensing output 2 or external output.
PRO4 mode	Copy setting	—	Using optical communications, be able to copy setting contents in main amplifier to all of the sub amplifiers connected from the main amplifier. FX-502□ cannot send or receive threshold value when conducting copy.
	Copy action setting	CRct dRdJ	Copy of items in display adjustment setting and incident light intensity are conducted or canceled by using optical communication. In case incident light intensity does not have enough margin, automatically set optimum value. "dRdJ": Display adjustment of main amplifier and sub amplifiers can be conducted. Set to the target value of display adjustment in each amplifier. "dCPY": Incident light intensity of main amplifier can be copied to sub amplifier. However, when the difference between main amplifier and sub amplifier is big, it will not be copied. "RdoF": Display adjust of main and sub amplifier can be set to OFF. Do not press down the SET key many times when display is "RdoF". When "RdoF" is not displayed in confirmation, also do not press down set key many times.
	Copy lock setting	t-Lc oFF	When conducting the setting of copy setting or data bank loading / saving from the main amplifier via optical communications, it is possible that only the sub amplifier which is set to copy lock ON "t-Lc on" does not receive the set contents. However, even if copy lock ON "is" set, the copy action setting is communicated.
	Communication protocol setting	t_Pr H.Pr	When conducting the copy setting or setting of data bank loading / saving from the main amplifier via optical communications, the optical communications through a sub amplifier which is set to communication emission halt "t_Pr oFF" and the following sub amplifiers can be halted.
	External input setting (Only FX-502□, FX-505□-C2)	InPt SEtF	Set external input.
PRO5 mode	Code setting	00300020	Consistent setting can be done by inputting 8-digit code instead of independent setting. In addition, present setting can be confirmed.
	Display adjustment setting	dRdJ oFF	Set incident light intensity to target value. If conducting display adjustment setting when incident light intensity does not have enough margin, "dUER" is blinked "oFF": Display adjustment OFF "SEt": Slide to (smaller side) incident light intensity from the set of target setting. "tSEt": Set incident light intensity to value you want (negative side). In case setting to 0-adjustment, set to 0.
	Reset setting	—	If setting to "yE S", returns to default settings (factory settings).
	CUSTOM setting	CuSt 5PEd	Select an item in CUSTOM mode to display.

	Item	Default setting	Description																														
PRO5 mode	Interference prevention setting	$I_n P_r \text{ } IP - I$	Number of adherence mounting of sensor head depends on response time of interference prevention function. " $IP - I$ ": Set when using the interference prevention function by optical communication. Maximum adherence mounting of sensor head is 12 units " $IP - F$ ": Set when using interference prevention function by changing emitting frequency. The maximum adherence mounting by setting 3 types of emission frequency is 3 units.																														
PRO6 mode	Sensing output mode	$P_r a d . . f -$	Set sensing output 1 mode and sensing output 2 mode. " $. . f -$ " (Normal mode) • Sets a threshold value for ON / OFF operation. " $. f .$ ": Window comparator mode (Except sensing output 2 of FX-502□ , FX-505□-C2) • Sets two threshold values and judges they are within the required range or not. This can be selected in 1 / 2 / 3-point teaching. " $d . f$ " (Rising differential mode) • Only drastic rises in incident light intensity are detected. " $d \bar{f}$ " (Trailing differential mode) • Only drastic drops in incident light intensity are detected. " $H . f$ " (Hysteresis mode) • Changes hysteresis to ignore small change of incident light intensity. • This can be selected in 1 / 2 / 3-point teaching. " $SELF$ " (Self diagnosis output mode) (Only displayed in FX-502□ , FX-505□-C2 but except sensing output 1. • Conduct self diagnosis output " RnS " (Answer back output mode) (Only displayed in FX-502□ but except sensing output1) • Conduct Answer back output toward external input. " an ": Forced ON output mode • Sets forcibly the output to ON. " oFF ": Forced OFF output mode • Sets forcibly the output to OFF.																														
PRO6 mode	Logical operation setting	$L o g i c a l$	Select for logical operation and set logical operation methods (and, or, xor). " $nSEn$ ": Logical operation is sensing output 1 of this device and conduct logical operation between the sensing output 1 and sensing output 1 of this device. The calculation result of upper amplifiers and this product is output from the sensing output 1 of this product. " $E - In$ ": Logical operation is sensing output 1 of an upper adjacent amplifier and conduct logical operation between the sensing output and sensing output 1 of this device. (Only displayed in FX-502□ , FX-505□-C2) " $SELF$ ": Logical operation is outer input and conduct logical operation between the output and sensing output 1 of this device. (Only displayed in FX-502□ , FX-505□-C2) <table><tr><th>Logical operation</th><th>Sensing output 1 of this device</th><th colspan="3">Setting of logical operations</th></tr><tr><th></th><th></th><th>and</th><th>or</th><th>xor</th></tr><tr><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td></tr><tr><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr><tr><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>ON</td></tr><tr><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr></table>	Logical operation	Sensing output 1 of this device	Setting of logical operations					and	or	xor	ON	ON	ON	ON	OFF	ON	OFF	OFF	ON	ON	OFF	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
Logical operation	Sensing output 1 of this device	Setting of logical operations																															
		and	or	xor																													
ON	ON	ON	ON	OFF																													
ON	OFF	OFF	ON	ON																													
OFF	ON	OFF	ON	ON																													
OFF	OFF	OFF	OFF	OFF																													
	Setting of threshold value tracking	$Trck \text{ } oFF$	This mode can change the threshold value depending on the cycle (1 to 9,999 sec.) that is set with the variations of the incident light intensity. The tracking shift amount is the one which is set at the shift setting.																														
	Sensing output setting	$bASE \text{ } oFF$	Selects whether tracking threshold when the output is OFF or when the output is ON.																														
	Storage cycle setting	$rEc \text{ } oFF$	Selects a threshold storage cycle in EEPROM from 1 to 250 times.																														
	Algorithm setting	$Rt S \text{ } SHft$	When setting to limit teaching, threshold value is followed up on the bases of shift amount. Furthermore, when setting to auto teaching, threshold value be followed up on the bases of each cycle.																														

FX-501 □ / Code

setting table

● Green digital display (right side is the first digit)

Code	Fourth digit	Code	Third digit	Code	Second digit	Code	First digit
	Sensing output operation mode		Timer operation		Timer period		CUSTOM setting
0	Light-ON	0	No timer	0	0.5ms	0	Response time setting
1	Dark-ON	1	OFD	1	1ms	1	Emission power setting
2	—	2	OND	2	3ms	2	Hysteresis setting
3	—	3	ONOF	3	5ms	3	—
4	—	4	OSD	4	10ms	4	—
5	—	5	ONOS	5	30ms	5	—
6	—	6	—	6	50ms	6	—
7	—	7	—	7	100ms	7	—
8	—	8	—	8	300ms	8	—
9	—	9	—	9	500ms	9	—
A	—	A	—	A	1 sec.	A	—
b	—	b	—	b	2 sec.	b	—
c	—	c	—	c	3 sec.	c	—
d	—	d	—	d	4 sec.	d	—
E	—	E	—	E	5 sec.	E	—

OFFD: OFF-delay timer, OND: ON-delay timer, ONOF: ON / OFF-delay timer, OSD: One-shot timer

ONOS: ON-delay / One-shot timer

- Red digital display (right side is the first digit)

- Red digital display

- Red digital display (right side is the first digit)

Code	Forth digit		Code	Third digit		Code	Second digit		Code	First digit	
	Copy lock setting	Hysteresis setting		Setting items in digital display setting	Back up setting		Response time setting	Sensing output setting			
	Copy lock OFF	H-02		Incident light intensity	Back up ON		H-SP		Normal mode		
	Copy lock ON	H-02		Incident light intensity	Back up OFF		FAST		WC mode		
	Copy lock OFF	H-03		Displayed in percentage	Back up ON		STD		Rising differential mode		
	Copy lock ON	H-03		Displayed in percentage	Back up OFF		LONG		Trailing differential mode		
	Copy lock OFF	H-01		Peak / bottom value	Back up ON		U-LG		HYS mode		
	Copy lock ON	H-01		Peak / bottom value	Back up OFF		HYPR		—		

(WC mode: Window comparator mode, HYS mode: Hysteresis mode)

FX-502 □ / Code

setting table

● Green digital display (right side is the first digit)

Code	Forth digit		Code	Third digit		Code	Second digit		Code	First digit	
	Sensing output operation mode			Timer operation			Timer period	CUSTOM setting			
	Sensing output 1	Sensing output 2		Sensing output 1	Sensing output 2						
1	Light-ON	Light-ON	1	No timer	No timer	1	0.5ms	1	Response time setting		
2	Light-ON	Dark-ON	2	OFD	No timer	2	1ms	2	Emission power setting		
3	Dark-ON	Light-ON	3	OND	No timer	3	3ms	3	Hysteresis setting		
4	Dark-ON	Dark-ON	4	ONOF	No timer	4	5ms	4	—		
5	—	—	5	ONOS	No timer	5	30ms	5	—		
6	—	—	6	No timer	OFD	6	50ms	6	—		
7	—	—	7	No timer	OND	7	100ms	7	—		
8	—	—	8	No timer	OSD	8	300ms	8	—		
9	—	—	9	—	—	9	500ms	9	—		
A	—	—	A	—	—	A	1 sec.	A	—		
B	—	—	B	—	—	B	2 sec.	B	—		
C	—	—	C	—	—	C	3 sec.	C	—		
D	—	—	D	—	—	D	4 sec.	D	—		
E	—	—	E	—	—	E	5 sec.	E	—		

OFD: OFF-delay timer, OND: ON-delay timer, ONOF: ON / OFF-delay timer, OSD: One-shot timer

ONOS: ON-delay / One-shot timer

OFD: OFF-delay timer, OND: ON-delay timer, ONOF: ON / OFF-delay timer, OSD: One-shot timer

ONOS: ON-delay / One-shot timer

- Red digital display (right side is the first digit)

Code	Forth digit		Code	Third digit		Code	Second digit		Code	First digit	
	Copy lock setting	Hysteresis setting		Setting items in digital display setting	Back up setting		Response time setting	Sensing output setting (Note)			
	Copy lock OFF	H-02		Incident light intensity	Back up ON		H-SP		Normal mode		
	Copy lock ON	H-02		Incident light intensity	Back up OFF		FAST		WC mode		
	Copy lock OFF	H-03		Displayed in percentage	Back up ON		STD		Rising differential mode		
	Copy lock ON	H-03		Displayed in percentage	Back up OFF		LONG		Trailing differential mode		
	Copy lock OFF	H-01		Peak / bottom value	Back up ON		U-LG		HYS mode		
	Copy lock ON	H-01		Peak / bottom value	Back up OFF		HYPR		—		

(WC mode: Window comparator mode, HYS mode: Hysteresis mode)

Note: It is a setting only for sensing output 1. Sensing output 2 cannot be set.

FX-505 □ -C2 / Code

setting table

● Green digital display (right side is the first digit)

Code	Forth digit		Code	Third digit		Code	Second digit	Code	First digit
	Sensing output operation mode			Timer operation			Timer period		CUSTOM setting
	Sensing output 1	Sensing output 2		Sensing output 1	Sensing output 2				
0	Light-ON	Light-ON	0	No timer	No timer	0	0.5ms	0	Response time setting
1	Light-ON	Dark-ON	1	OFD	No timer	1	1ms	1	Emission power setting
2	Dark-ON	Light-ON	2	OND	No timer	2	3ms	2	Hysteresis setting
3	Dark-ON	Dark-ON	3	ONOF	No timer	3	5ms	3	—
4	—	—	4	OSD	No timer	4	10ms	4	—
5	—	—	5	ONOS	No timer	5	30ms	5	—
6	—	—	6	No timer	OFD	6	50ms	6	—
7	—	—	7	No timer	OND	7	100ms	7	—
8	—	—	8	No timer	OSD	8	300ms	8	—
9	—	—	9	—	—	9	500ms	9	—
A	—	—	A	—	—	A	1 sec.	A	—
b	—	—	b	—	—	b	2 sec.	b	—
c	—	—	c	—	—	c	3 sec.	c	—
d	—	—	d	—	—	d	4 sec.	d	—
E	—	—	E	—	—	E	5 sec.	E	—

OFD: OFF-delay timer, OND: ON-delay timer, ONOF: ON / OFF-delay timer, OSD: One-shot timer

ONOS: ON-delay / One-shot timer

OFD: OFF-delay timer, OND: ON-delay timer, ONOF: ON / OFF-delay timer, OSD: One-shot timer

ONOS: ON-delay / One-shot timer

- Red digital display (right side is the first digit)

Code	Forth digit		Code	Third digit		Code	Second digit		Code	First digit	
	Copy lock setting	Hysteresis setting		Setting items in digital display setting	Back up setting		Response time setting	Sensing output setting			
								Sensing output 1		Sensing output 2	
0	Copy lock OFF	H-02	0	Incident light intensity	Back up ON	0	H-SP	0	Normal mode	Normal mode	
1	Copy lock ON	H-02	1	Incident light intensity	Back up OFF	1	FAST	1	Normal mode	Rising differential mode	
2	Copy lock OFF	H-03	2	Displayed in percentage	Back up ON	2	STD	2	Normal mode	Trailing differential mode	
3	Copy lock ON	H-03	3	Displayed in percentage	Back up OFF	3	LONG	3	Normal mode	HYS mode	
4	Copy lock OFF	H-01	4	Peak / bottom value	Back up ON	4	U-LG	4	Normal mode	Self-diagnosis output mode	
5	Copy lock ON	H-01	5	Peak / bottom value	Back up OFF	5	HYPR	5	Normal mode	Answer back mode	
6	—	—	6	—	—	6	—	6	WC mode	Normal mode	
7	—	—	7	—	—	7	—	7	WC mode	HYS mode	
8	—	—	8	—	—	8	—	8	Rising differential mode	Trailing differential mode	
9	—	—	9	—	—	9	—	9	HYS mode	Normal mode	

(WC mode: Window comparator mode, HYS mode: Hysteresis mode)