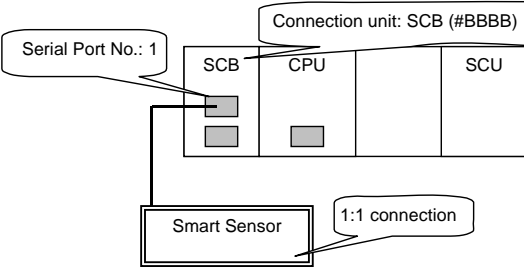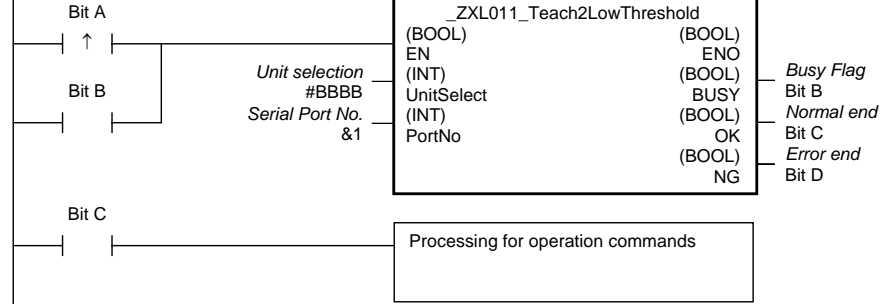| ZXL -011	Teach 2-point Low Threshold: _ZXL011_Teach2LowThreshold

Basic function	Uses two points to teach the low threshold.
Symbol	
File name	Lib\FBL\omronlib\LaserSensor\ZXL_ ZXL011_Teach2LowThreshold10.cxf
Applicable models	Laser Sensor ZX-LDA-N
	CPU Unit CS1*-CPU**H Unit version 3.0 or higher CJ1*-CPU**H Unit version 3.0 or higher CJ1M-CPU** Unit version 3.0 or higher CP1H CP1L (except 10 points CPU)
	Serial Communications Units/Boards CS1W-SCU21-V1, CJ1W-SCU21-V1, CJ1W-SCU41-V1 Unit Version 1.2 or higher CS1W-SCB21-V1 and CS1W-SCB41-V1 Unit Version 1.2 or higher
	CX-Programmer Version 5.0 or higher

Conditions for usage	External Connections
	• Can be used only for 1:1 connections.
	  (FB "_ZXLN***" can be used for 1:N connections)
	• Communications must be within one network and cannot cross to another network.
	Communications Settings
	  The communications settings of the serial port must be the same as those of the Laser Sensor.
	• The communications settings of the specified serial port can be set to the default Laser Sensor settings using the Set Communications Port (_ZXL600_SetComm) function block, and the other Laser Sensor settings using the Set Serial Gateway Mode (_SCx604_SetPortGATEWAY) function block.
	CPU Unit Settings
	  PLC Setup: Shared Settings for Communications Instructions in FBs
	• Communications Instruction Response Timeout Time (default: 2 s) 5 s recommended
	• Number of retries (default: 0)
	Shared Resources
	• Communications ports (internal logical ports)

Function description	When the Start Trigger turns ON, the low threshold is taught using 2 points for the Smart Sensor connected to the Serial Port specified by the *Connection unit* and *Serial port No*. This FB sets to low threshold to the value midway between the value currently displayed on the main digital display and the currently set low threshold. An execution error will occur if the display value is not being held or if the resulting low threshold would be higher than the high threshold.
FB precautions	• The FB is processed over multiple cycles. The BUSY output variable can be used to check whether the FB is being processed. • OK or NB will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. **Time Chart**
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the BUSY output from the FB.
Restrictions Input variables	• Always use an upwardly differentiated condition for EN. • If the input variables are out of range, the ENO Flag will turn OFF and the FB will not be processed.
Output variables	• This FB requires multiple cycles to process. Always connect an OR including the BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the BUSY output variable ON or OFF outside the FB.
Other	• Up to 3 seconds may be required for this FB to be completed (i.e., from EN turning ON until the OK or NG Flag turns ON).

Application example	A Smart Sensor is connected 1:1 to serial port 1 on a Serial Communications Board (SCB). When bit A turns ON, the low threshold is taught using two points. Connection unit: SCB (#BBBB) Serial Port No.: 1 SCB / CPU / SCU Smart Sensor — 1:1 connection Bit A ↑ Bit B Bit C *Unit selection* #BBBB *Serial Port No.* &1 _ZXL011_Teach2LowThreshold (BOOL) EN — ENO (BOOL) (INT) UnitSelect — BUSY (BOOL) *Busy Flag* Bit B (INT) PortNo — OK (BOOL) *Normal end* Bit C — NG (BOOL) *Error end* Bit D Processing for operation commands
Related manuals	ZX-L-N Series Smart Sensors Laser Type User's Manual (Z197) ZX Series Smart Sensors Operation Manual (Z157)
Related FBs	Teach 1-point High Threshold (_ZXL008_Teach1HighThreshold) Teach 1-point Low Threshold (_ZXL009_Teach1LowThreshold)

■ Variable Tables
Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started. 0 (OFF): FB not started.
Unit selection	UnitSelect	INT	&0	At right.	Specify the Unit and the serial port.
Serial Port No.	PortNo	INT	&1	&1 to &2	Only serial port 2 of CP1H/CP1L M-type CPU unit is possible to use this FB. ■ Connected to CPU Unit Unit selection #FFFF Serial port No. Not accessed. (CP1H/CP1L-M: Serial Port2 CP1L-L14/20: Serial Port1) ■ Connected to Serial Communication Board(SCB) Unit selection #BBBB Serial port No. &1: Serial Port 1 &2: Serial Port 2 ■ Connected to Serial Communication Unit(SCU) Unit selection SCU Unit No. (&0 to &15) Serial port No. &1: Serial Port 1 &2: Serial Port 2

Output Variables

Name	Variable name	Data type	Range	Description
ENO (May be omitted.)	ENO	BOOL		1 (ON): FB processed normally. 0 (OFF): FB not processed or ended in an error.
Busy Flag	BUSY	BOOL		Automatically turns OFF when processing is completed.
Normal end	OK	BOOL		Turns ON for one cycle when processing ends normally.
Error end	NG	BOOL		Turns ON for one cycle when processing ends in an error.

Internal Variables

Internal variables are not output from the FB.

If the NG Flag from the FB turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
Error code	ErrorCode	WORD		The results information from the Smart Sensor is output to the Error Code. See below.

Error Code Details

Code	Contents	Meaning
#0000	Normal end	
#2203	Operation error	• A setting is incorrect. Refer to the *Smart Sensor Operation Manual* for setting error conditions for teaching and the zero reset function.
#2204	Operation error	• The Sensor is not in RUN mode.

Version History

Version	Date	Contents
1.00	2004.6.	Original production

Note

This manual is a reference that explains the function block functions.

It does not explain the operational limitations of Units, components, or combinations of Units and components. Always read and understand the Operation Manuals for the system's Units and other components before using them.