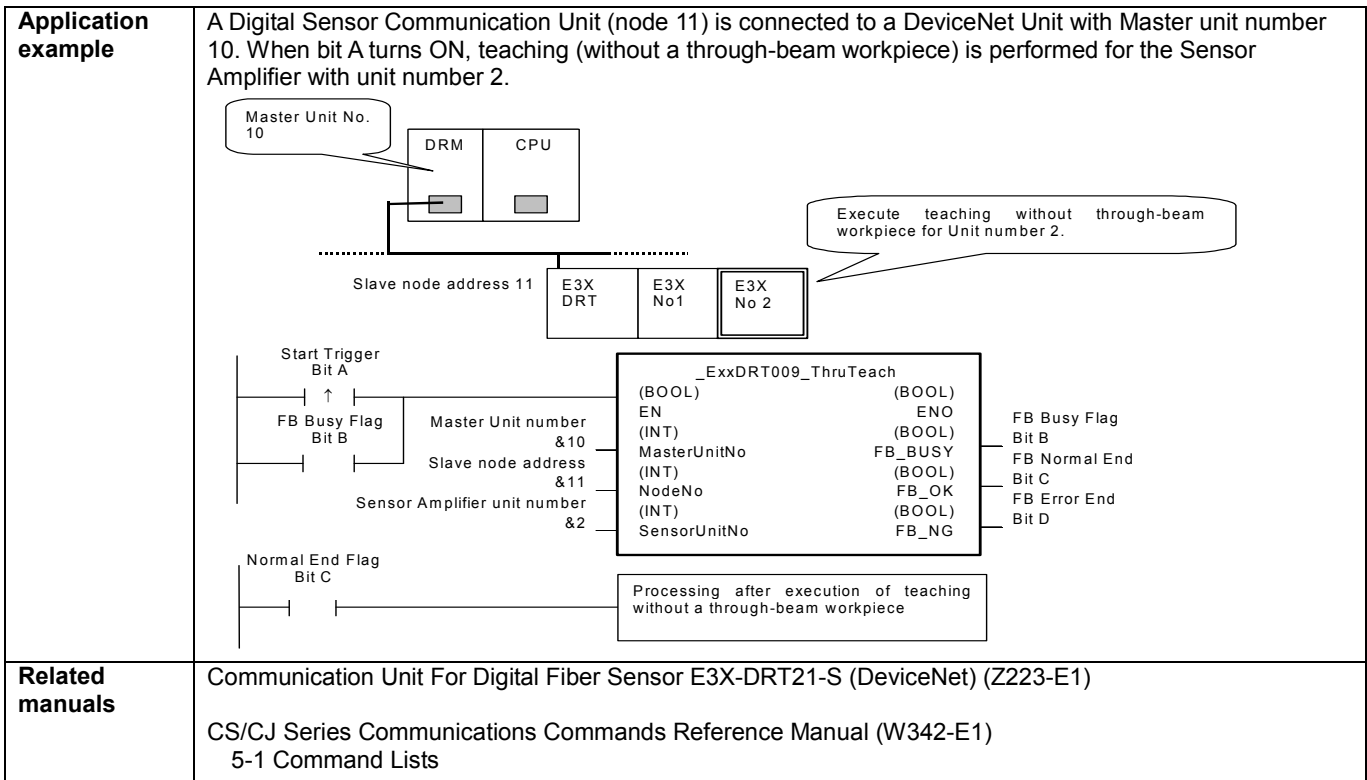| **ExxDRT 009**	Teaching Through-beam Sensor Without A Work Piece: _ExxDRT009_ThruTeach

Basic function	Executes teaching without a through-beam workpiece for a Digital Type Sensor in the DeviceNet network.
Symbol	
File name	Lib\FBL\omronlib\DigitalTypeSensor\ExxDRT_ExxDRT009_ThruTeach10.cxf
Applicable models	Applicable Master Units	CS1W-DRM21(-V1) and CJ1W-DRM21
	Applicable Slave Units	E3X-DRT21-S
	Applicable Sensor Amplifiers	E3X Series: E3X-DA-S, E3X-MDA, E3X-DATW-S, and E3X-DARM-S E3C Series: E3C-LDA two-output models and E3C-LDA input models E2C Series: Not supported.
	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
	CX-Programmer	Version 5.0 or higher

Conditions for usage	Sensor
	• If a Mobile Console is connected when the power is turned ON, the function cannot be used because communications cannot be established with the Sensor.
	• The Sensor must be in RUN mode. The function cannot be used when the Sensor is in another mode, i.e., SET mode.
	CPU Unit Settings
	  PLC Setup: Shared Settings for Communications Instructions in FBs
	• DeviceNet Response Timeout Time (default: 2 s)
	  A Timeout time of 10 s or higher is recommended.
	• Number of retries (default: 0)
	Shared Resources
	• Communications ports (internal logical ports)
	Other
	• Communications must be within one network and cannot cross to another network.

Function description	Executes teaching without a through-beam workpiece for the Sensor Amplifier in the DeviceNet network with the specified Master Unit number, Slave node address, and Sensor Amplifier unit number.
FB precautions	• The FB is processed over multiple cycles. The FB_BUSY output variable can be used to check whether the FB is being processed. • *FB_OK* or *FB_NG* will be turned ON for one cycle only after processing is completed. Use these flags to detect the end of FB processing. ■ Timing Chart
EN input condition	Connect EN to an OR between an upwardly differentiated condition for the start trigger and the FB_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 FB_BUSY output variable to the EN input variable to ensure that the FB is processed to completion (see *Symbol*). • Do not turn the FB_BUSY output variable ON or OFF outside the FB.

Application example	A Digital Sensor Communication Unit (node 11) is connected to a DeviceNet Unit with Master unit number 10. When bit A turns ON, teaching (without a through-beam workpiece) is performed for the Sensor Amplifier with unit number 2.
	  Master Unit No. 10 DRM CPU Execute teaching without through-beam workpiece for Unit number 2. Slave node address 11	E3X DRT	E3X No1	E3X No 2 | Start Trigger Bit A ↑ FB Busy Flag Bit B Master Unit number &10 Slave node address &11 Sensor Amplifier unit number &2 _ExxDRT009_ThruTeach (BOOL) EN ENO (BOOL) (INT) MasterUnitNo FB_BUSY (BOOL) (INT) NodeNo FB_OK (BOOL) (INT) SensorUnitNo FB_NG (BOOL) FB Busy Flag Bit B FB Normal End Bit C FB Error End Bit D Normal End Flag Bit C Processing after execution of teaching without a through-beam workpiece
Related manuals	Communication Unit For Digital Fiber Sensor E3X-DRT21-S (DeviceNet) (Z223-E1) CS/CJ Series Communications Commands Reference Manual (W342-E1) 5-1 Command Lists

Variable Tables
Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Master Unit No.	MasterUnitNo	INT	&0	&0 to &15 #0 to #F	Specify the unit number of the DeviceNet Unit.
Slave node address	NodeNo	INT	&0	&0 to &63	Specify the node address of the slave.
Sensor Amplifier unit number	SensorUnitNo	INT	&1	&1 to &13 or &1 to &16	Depending on the communication mode setting, the maximum number of connectable Units is either 13 or 16 Units. Specify a unit number within the allowed range. Refer to the *Related Manuals* for details.

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.
FB Busy Flag	FB_BUSY	BOOL		Automatically turns OFF when processing is completed.
FB Normal End	FB_OK	BOOL		Turns ON for one cycle when processing ends normally.
FB Error End	FB_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 FB_NG Flag turns ON, the following internal variables can be monitored to obtain information on the error.

Name	Variable name	Data type	Range	Description
FINS error code	FINS_ErrorCode	WORD		The FINS error code is output. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.
Explicit message error code	Explicit_ErrorCode	WORD		Outputs the explicit message error code. A code of #0000 is output for a normal end. Refer to the *Related Manuals* for details on the error codes.

Explicit Error Code Details

Code	Contents	Meaning
#0000	Normal end	---
#16FF	No Sensor Amplifier	There is no Sensor Amplifier with the specified unit number.
#0CFF	Not executable	The specified command cannot be executed. • A Mobile Console is connected. • There is an error in communications with the Sensor Amplifier. • The Sensor Amplifier is in an operation mode other than RUN mode. • The FB was executed for a Sensor Amplifier that is not supported.
#20FF	Not supported.	The specified command is not supported.

Version History

Version	Date	Contents
1.00	2005.4.	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.