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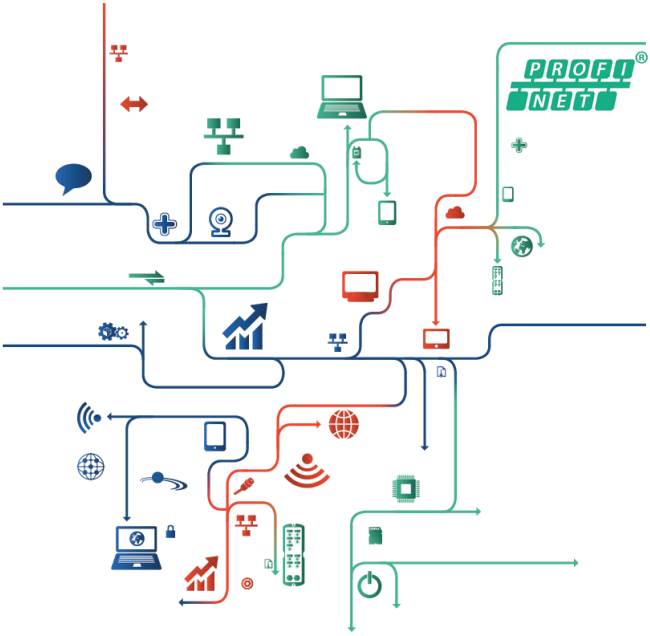
OY2TA104P0150P
Function Block
Step7 Classic



Project Engineering Instructions

Available as PDF file only
Revision level: 2 May 2016

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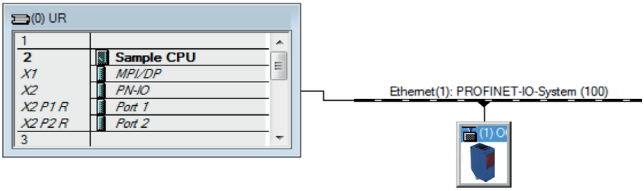
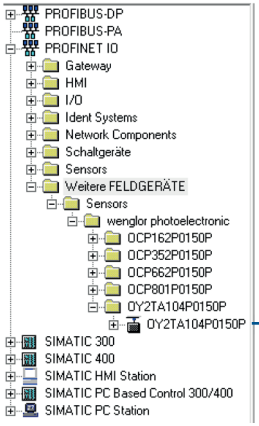


Device description files (GSDML) can be obtained directly from wenglor:
www.wenglor.com ➔ Product World ➔ Product Search (Enter the product number) ➔ Download ➔ Product Description File
When the CPU with associated interface and connection has been set up, the participant (in this case the OY-2TA104P0150P sensor) can be added.
The respective participant and the CPU are then capable of communicating with each other.



The OY2TA104P0150P sensor can be found in the directory after the GSDML file of the device have been generated.

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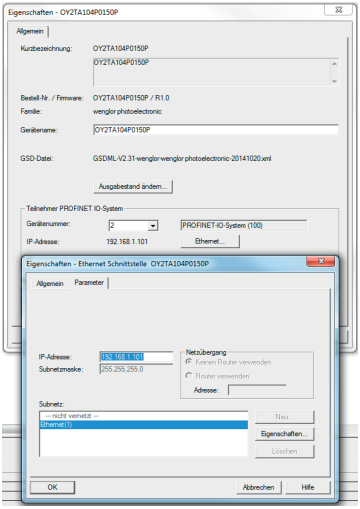


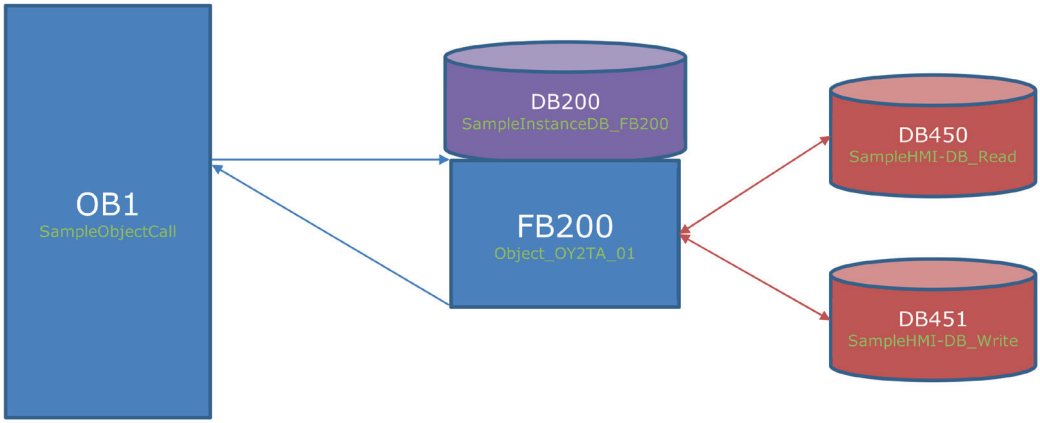
A menu window can be opened in the hardware configuration by double clicking the OY2TA104P0150P sensor. Amongst other settings, the IP address can be selected in this window.

1. General Information on the OY2TA104P0150P Sensor

Systemdaten	---	---	---	SDB
OB1	SampleObjectCall	FUP	348	Organisationsbaustein
FB200	Object_OY2TA_01	FUP	1552	Funktionsbaustein
DB200	SampleInstanceDB_FB200	DB	152	Instanzdatenbaustei...
DB450	SampleHMI-DB_Read	DB	60	Datenbaustein
DB451	SampleHMI-DB_Write	DB	60	Datenbaustein
SFC14	DPRD_DAT	AWL	---	Systemfunktion
SFC20	BLKMOV	AWL	---	Systemfunktion

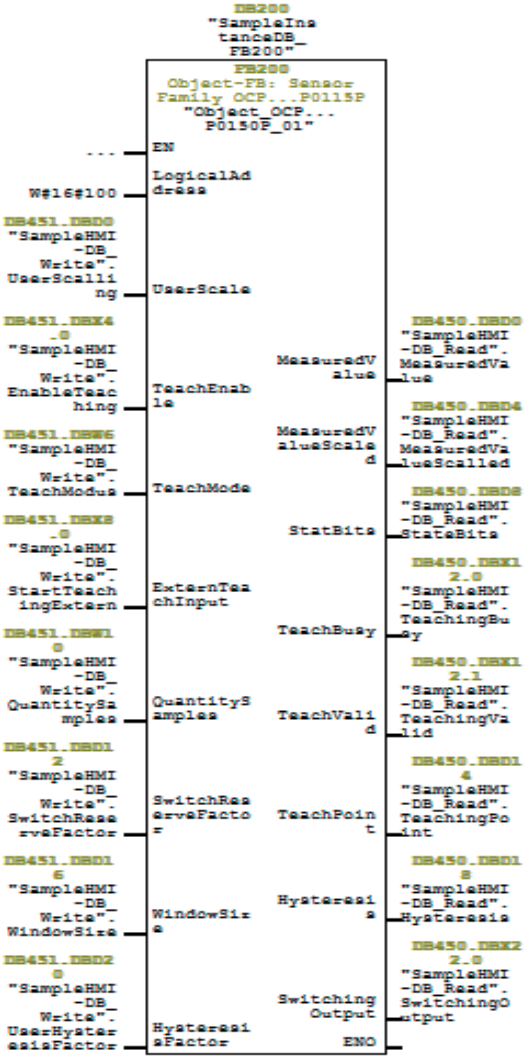
Overview of the blocks which are required in order to invoke (call) the teach-in function, the teach-in modes etc. of the OY2TA104P0150P sensor

2. Call Structure of the Blocks of the OY2TA104P0150P Sensor



3. OB1 – Network1

3.1. Overview



3.2. Call

The “Object_OY2TA1_01” (FB200) function block and the associated
“SampleInstanceDB_FB200” (DB200) instance data block are called from the user program.

This function block evaluates the temporary measurement signals:
InputdataBasicModule.MesVal (DINT; displacement measurement value),
InputdataBasicModule.StatBit (array of 32 Bool; array with possible error messages).

The OY2TA104P0150P is a Distance Sensor with the help of which distances or path lengths can be measured, making it possible to detect objects. The FB200 is programmed such that a hysteresis range can be specified for these objects. The distances of the objects must lie within this range in order that they can be detected at a certain distance after being taught in to the sensor. This range can be set manually via the user entries for “Teach Mode”, “Switch Reserve Factor”, “Window Size” and “User Hysteresis Factor”. Furthermore, the scaling factor for the read-out of path length can be manually adjusted by the user, and the number of measured values recorded during teach-in can be selected.

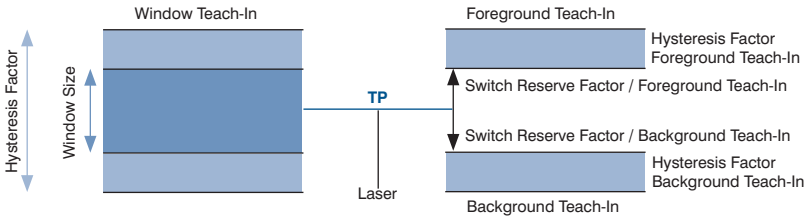
3.3. Parameter Descriptions

Name	Declaration	Type	Value Range	Description
LogicalAd-dress	INPUT	WORD	W#16#0000 W#16#FFFF	Planned start address from the block’s E-range from which reading should take place. The ad-dress must be entered in hexadecimal format. The logic address is assigned as soon as the scanner is connected to the CPU.
UserScale	INPUT	REAL	1, 10, 1000	A control variable which converts the original measured value from the sensor into scaled length specifications. The original measured value is divided by the scaling factor. Factor 1: [mm] Factor 10: [cm] Factor 1000: [m]
TeachEn-able	INPUT	BOOL	FALSE (0) TRUE (1)	A condition variable which controls whether or not a new teach-in point can be set with the ex-isting user-defined settings via an external signal (external teach-in).

TeachMode	INPUT	INT	1 to 3	A control variable, which determines the extent to which the manually selected hysteresis range (input: SwitchReserveFactor, HysteresisFactor, WindowSize) should be offset against the respective teach-in point (Output: Teachpoint) after the sensor has been taught in. Three modes can be selected to this end. **TeachMode 1: foreground teach-in** SwitchReserveFactor: positive shift HysteresisFactor: hysteresis range **TeachMode = 2: background teach-in** SwitchReserveFactor: negative shift HysteresisFactor: hysteresis range **TeachMode = 3: window teach-in** WindowSize: switch-on points HysteresisFactor: switch-off points
Extern-TeachInput	INPUT	BOOL	FALSE (0) TRUE (1)	A condition variable which starts teach-in (mean value generation of the measured values which have been read out) of the sensor.
Quanti-tySamples	INPUT	INT	+32768	A control variable which specifies the maximum number of recorded measured values for the teach-in point during teach-in.
Switch-Reserve-Factor	INPUT	REAL	1,568 E+04	A control variable which shifts the previously selected hysteresis range away from the teach-in point by a certain distance in modes 1 and 2.
WindowSize	INPUT	REAL	1,568 E+04	A control variable which determines the two switch-on points (object is detected) in the window teach-in mode.
Hysteresis Factor	INPUT	REAL	1,568 E+04	The “HysteresisFactor” output is generated from the difference between the minimum and the maximum measured values and multiplied by a factor of 1.5. This hysteresis range can be enlarged by the user with the help of the “HysteresisFactor” control variable. This hysteresis range determines the tolerance within which objects can be detected after the sensor has been taught in.
Measured-Value	OUTPUT	DINT	-2147483648 to +2147483648	Reads out the sensor’s raw data. Measured value 1 ≙ 10 nm
Measured-ValueScaled	OUTPUT	REAL	1,568 E+04	Reads out the sensor’s measured values (User-Scale) which have been scaled to plausible units of measure (e.g. mm, cm, m).

StatBits	OUTPUT	DWORD	DW#16#0000 0000 – DW#16#FFFF FFFF	Provides feedback indicating which error has occurred. Indicator bit 0: general error Indicator bit 1: object distance too small Indicator bit 2: object distance too large Indicator bit 3: no signal Indicator bit 4: signal too weak Indicator bit 5: signal too strong Indicator bit 6: warm-up procedure Indicator bit 7: temperature too high
TeachBusy	OUTPUT	BOOL	FALSE (0) TRUE (1)	The teach-in procedure is currently being executed.
TeachValid	OUTPUT	BOOL	FALSE (0) TRUE (1)	The teach-in procedure has been successfully completed (no errors have occurred during teach-in).
TeachPoint	OUTPUT	REAL	1,568 E+04	Mean value generated from recorded measured values.
Hysteresis	OUTPUT	REAL	1,568 E+04	Indicates the calculated value for the hysteresis range.
Switching-Output	OUTPUT	BOOL	FALSE (0) TRUE (1)	Indicates whether or not an object is within the previously specified hysteresis range after teach-in. In this respect it must be noted that the “SwitchingOutput” is calculated from user entries for “HysteresisFactor” and “SwitchReserveFactor”! And thus the hysteresis range is determined first, after which hysteresis displacement to the teach-in point is determined.

4. Explanation of the Three Teach-In Modes



The “HysteresisFactor” output
This mode specifies a hysteresis range after path length has been taught in. This range is above (large distance) the taught in measuring point. Based on the teach-in point, the hysteresis range can be shifted and its size can be specified with the help of the two user entries for “SwitchReserveFactor” and “HysteresisFactor”.

TeachMode 2: background teach-in
This mode specifies a hysteresis range after path length has been taught in. This range is below (small distance) the taught in measuring point. Based on the teach-in point, the hysteresis range can be shifted and its size can be specified with the help of the two user entries for “SwitchReserveFactor” and “HysteresisFactor”.

TeachMode 3: window teach-in
This mode specifies a hysteresis range after path length has been taught in. As a unique feature, this range generates two different switch-on and switch-off points. The two switch-on points, i.e. the inner limits within which an object is detected (Output: SwitchingOutput is set), can be specified with the user entry for “WindowSize”. As soon as an object’s switch-on point has been detected, the hysteresis range is expanded out to the switch-off point (HysteresisFactor). If the measured value subsequently exceeds the outer limits (switch-off points), the “SwitchingOutput” is reset and the object is thus no longer detected.