

# Photoelectric sensors

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## OT300



qTarget®  
qTeach®

www.baumer.com

**Baumer**

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# Models with IO-Link

IO-Link

IO-Link Process Data Input									
IntegerT(16)	IntegerT(8)	8 bit							
Measurement Data Channel (MDC)	Scale	Baumer specific							
		7	6	5	4	3	2	1	0
				SSC4		Alarm	Quality	SSC2	SSC1

**SSC1/2/4:** Switching Signal Channels  
**MDC:** Distance value, quality value or switch counts (selectable)  
**Quality:** The quality bit signals a weak signal  
**Alarm:** The alarm bit signals a problem with the configuration or the functionality of the sensor  
**Scale:** Factor by power of ten, applicable to the value of the Measurement Data Channel (MDC)

**Available Commands:**  
 Teach-In commands, light emission on/off, Find Me (locating sensor) and more

**Available Parameters:**  
 Switching point, switching hysteresis, output function, time filters, measured value filtering, analog output characteristic, qTeach lock time, LED status indicators and more

**Available Additional Data:**  
 Switch counts, temperature, boot cycles, operating hours, device temperature, operating voltage, histograms

# Alignment Aid

OT300.S Lichtschranken verfügen über eine Ausrichthilfe. Diese ist im Teach Level 1 integriert und zeigt die Stärke des empfangenen Signals an.

OT300.S light barriers are equipped with an alignment aid, which is integrated in Teach Level 1. The alignment aid indicates the strength of the received signal.

Les barrières lumineuses OT300.S sont équipées d'un outil d'aide à l'alignement, qui est intégré au niveau 1 de la procédure de teach.

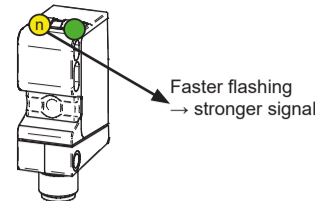
L'aide à l'alignement indique la force du signal reçu.

Le barriere fotoelettrica OT300.S sono dotate di indicazione di corretto allineamento. Questa funzione è integrata nel livello 1 di Teach-In e viene indicata l'intensità del segnale ricevuto.

Las barreras de luz OT300.S están equipadas con una ayuda de alineado integrada en el Nivel 1 de Teach.

La ayuda de alineado indica la potencia de señal recibida.

OT300.S 轻障的配备了对准辅助功能, 集成在设定级别1中. 对准辅助表明了接收信号的强度.



Sensor ausrichten, schnelles Blinken, besserer Empfang

Align sensor, faster flashing, better reception

Aligner le capteur, clignotement plus rapide, meilleure est la réception

Allineamento del sensore: più è veloce il lampeggiamento tanto più è forte il segnale

Sensor alineado, parpadeo más rápido, mejor recepción

对准传感器 · 闪烁越快 · 接收得更好

# Related Models

## OT300 Models:

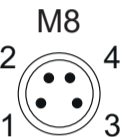
- OT300.D\* (Distance measuring sensors)
- OT300.G\* (Background suppression sensors)
- OT300.S\* (SmartReflect light barriers)
- OT300H\* (Hygienic design)
- OT300W\* (Washdown design)

More information related to these products can be found on our website (CAD, Beamcharts, CoC, Drawings, IODDs ...)



www.baumer.com

# Connection Diagrams



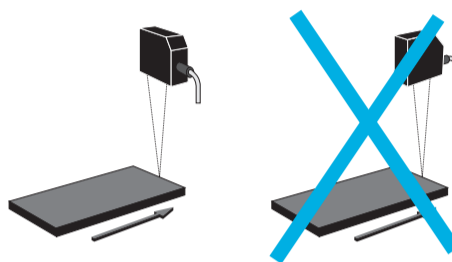
	Distance measuring sensors	Background suppression sensors	SmartReflect light barriers
OT300.D OT300W.D OT300H.D	OT300.G OT300W.G OT300H.G	OT300.S OT300W.S OT300H.S	
1 - Brown BN	+Vs		
2 - White WH	Teach-in / control	Teach-in / control or complementary to Output 1	Teach-in / control or complementary to Output 1
3 - Blue BU	0 V		
4 - Black BK	Analog U	IO-Link* / Output 1	

\*Only models with IO-Link

See packaging label for the specific wiring of your product

- Disconnect power before connecting the sensor.  
 - Voltage supply according UL 1310, Class 2  
 or device shall be protected by an external R/C or listed fuse, rated max. 30 VAC/3A or 24 VDC/4A

# Mounting Instructions



It is recommended that the object to be detected approaches the active area of the sensor from the side. This may avoid malfunctions caused by deflection of the light beam at edges. Exception: Sensors with line beam



qTarget®

The Baumer design aligns the sensor's light beam to the fixing holes (qTarget®). This allows for a fast and easy installation without fine-tuning as well as fast exchange.

# LED Indication



## Legend

- LED on
- LED flashing 1 Hz
- LED flashing 2 Hz
- LED flashing 8 Hz

## Operating Mode

LED Indicators	Green	Yellow	Red	Blue
Power on	●			
Short circuit	①			
Output 1 active		●		
Signal close to threshold		⑧		
qTeach not locked				●
Teach-in mode				see Teach-in Instruction

# LED Anzeige



## Legende

- LED leuchtet
- LED blinkt 1 Hz
- LED blinkt 2 Hz
- LED blinkt 8 Hz

## Betriebsmodus

LED Indikatoren	Grün	Gelb	Rot	Blau
Betriebsanzeige	●			
Kurzschluss	①			
Ausgang 1 aktiv		●		
Signal nahe der Schwelle		⑧		
qTeach verwendbar				●
Teach-in Modus				siehe Teach-in Anweisung

# Teach-In Description Level 1 & 2

	OT300*.D, Distance measuring	OT300*.G, Background suppression	OT300*.S, SmartReflect light barriers	Optional Teach-In methods*
<b>Level 1</b>	<b>Not active</b> For distance measuring sensors, the teach level 1 is not active. If level 1 is entered, the sensor leaves the level immediately without any changes.	<b>1-Point Teach</b> Sets the switchpoint at the position of the object + TPO* (teach point offset) TPO. See packaging (typ. 5%). 	<b>1-Point Teach</b> Teaches the position of the reference (distance). Tolerance: See packaging (typ. +/- 10%). 	Pre-configurable via IO-Link <b>Window mode (OT300.G)</b> Level 1 / 1-Point Teach: Sets a window of +/- 5% (TPO*) around the position of the object Level 2 / 2-Point Teach: Sets a window of +/- 5%* around the position of the object
<b>Level 2</b>	<b>Scanning Range / Window Teach</b> Sets the scanning range related to the analogue value. Output 1 is active if an object is within the scanning range. 	<b>2-Point Teach</b> Sets the switchpoint in the middle of position A & B. 	<b>Not active</b> For SmartReflect Light barriers, the teach level 2 is not active. If level 2 is selected, the sensor exits the level immediately without any changes.	

\*This value is adjustable by IO-Link. Please check the IO-Link manual available on www.baumer.com

# Teach-In Beschreibung Level 1 & 2

	OT300*.D, Distanzmessend	OT300*.G, Hintergrundausblendung	OT300*.S, SmartReflect Lichtschranken	Optionale Teach-In Modi*
<b>Level 1</b>	<b>Nicht aktiv</b> Für die distanzmessenden Sensoren ist das Level 1 nicht aktiv. Wird das Teach-Level 1 ausgewählt, verlässt der Sensor den Teach-In Modus ohne jegliche Änderungen.	<b>1-Punkt Teach</b> Setzt den Schalterpunkt an der Position des Objektes + TPO* (Teach point offset, typ. 5%). 	<b>1-Punkt Teach</b> Lernt die Position der Referenz ein (Distanz). Toleranz: Siehe Verpackung (typ. +/- 10%). 	Voreinstellbar per IO-Link <b>Fenster-Modus (OT300.G)</b> Level 1 / 1-Punkt Teach: Definiert ein Fenster à +/- 5% (TPO*) um die Position des Objektes Level 2 / 2-Punkt Teach: Definiert ein Schalterfenster, innerhalb welchem ein Objekt erkannt werden soll
<b>Level 2</b>	<b>Messbereich / Fenster Teach</b> Definiert den mit dem analogen Ausgang verknüpften Messbereich. Ausgang 1 ist aktiv, wenn sich ein Objekt innerhalb des Messbereichs befindet.	<b>2-Punkt Teach</b> Setzt den Schalterpunkt in die Mitte von Position A & B. 	<b>Nicht aktiv</b> Für die SmartReflect Lichtschranken ist das Level 2 nicht aktiv. Wird das Teach-Level 2 ausgewählt, verlässt der Sensor den Teach-In Modus ohne jegliche Änderungen.	

\*Dieser Wert kann per IO-Link verändert werden. Weitere Details finden Sie im IO-Link Manual verfügbar auf www.baumer.com

# Teach-in Instruction

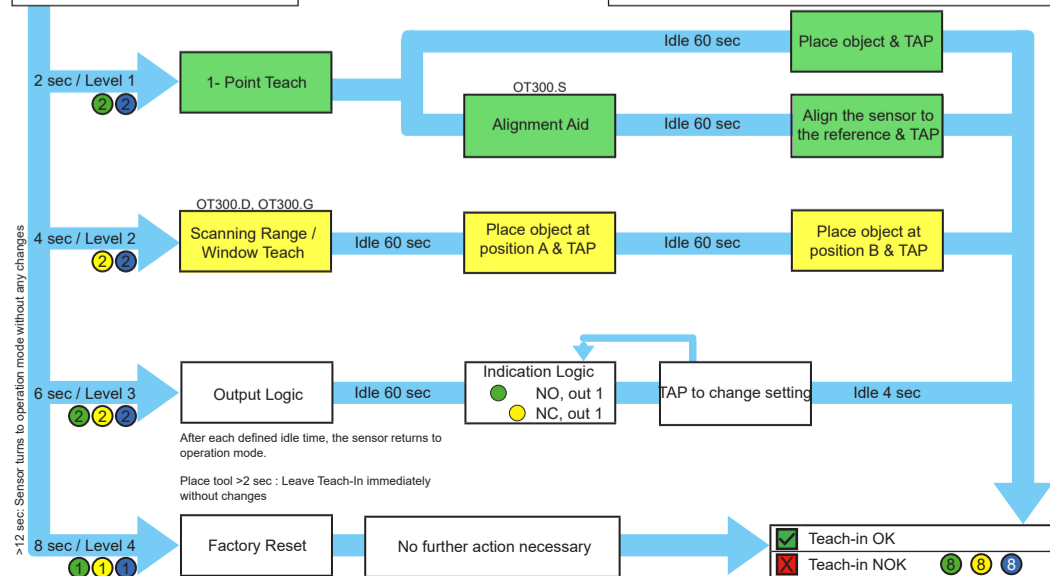
**Enter Teach Level**

- Place ferromagnetic tool as shown right to activate qTeach® or connect Teach-In wire to +Vs
- The blue LED gets brighter if tool / Teach-In is recognized properly
- Remove after n sec for desired level

A TAP is a short touch (>100 ms) of the tool as shown right (Teach Pen for OT300H)

**General Information**

- qTeach® locks 5 min after power up
- If locked, qTeach® can be reactivated by reapplying power or by connecting the Teach-In wire to +Vs
- External teach-in is always possible (no locking)
- In teach mode the output changes to 0V
- During operation the teach wire should be connected to 0V
- For external Teach-In connect Teach-In to +Vs
- Teach Pen 11137318 (11141124 for USA, CAN & JP)



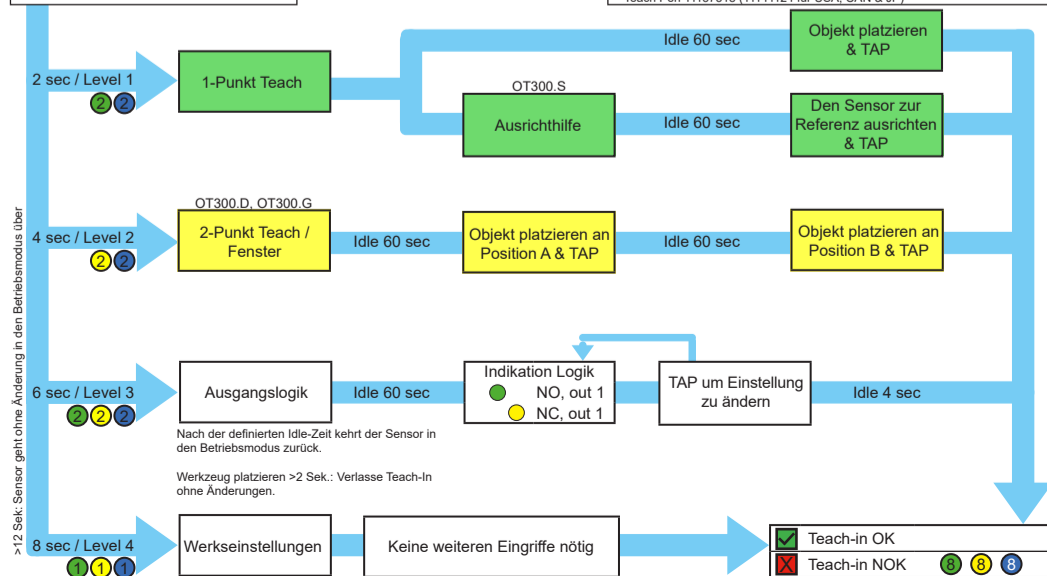
# Teach-in Anleitung

**Teach Level auswählen**


- Platzieren das ferromagnetische Werkzeug wie rechts dargestellt um qTeach® zu aktivieren oder verbinde die Teachleitung mit +Vs
- Die blaue LED leuchtet auf, wenn das Werkzeug korrekt erkannt wird
- Nach n Sek. entfernen, um das gewünschte Level auszuwählen
- Ein TAP ist eine kurze Berührung (>100 ms) des Werkzeugs (Teach Pen für OT300H).

**Allgemeine Information**

- qTeach® verriegelt 5 min nach dem Einschalten
- Falls gesperrt, kann qTeach® durch ein erneutes Einschalten oder durch den Anschluss der Teach-In-Leitung für >15 Sek. an +Vs reaktiviert werden
- Externes Teach-In ist immer möglich (keine Verriegelung)
- Im Teachmodus wechselt der Ausgang auf 0V
- Im Normalbetrieb muss die Teachleitung auf 0V gelegt werden
- Für externes Teach-In, Teachleitung entsprechend mit +Vs verbinden
- Teach Pen 11137318 (11141124 für USA, CAN & JP)



### Indication LED



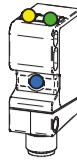
### Légende

- LED ON
- LED clignotante 1 Hz
- LED clignotante 2 Hz
- LED clignotante 8 Hz

### Mode de fonctionnement

Indicateurs LED	Vert	Jaune	Rouge	Bleu
Power On	●			
Court-circuit	①			
Sortie 1 activée		●		
Signal proche du seuil		⑧		
qTeach disponible				●
Mode Teach-In	Voir Instructions Teach-In			

### Indicazioni LED



### Legenda

- LED acceso
- LED lampeggia a 1 Hz
- LED lampeggia a 2 Hz
- LED lampeggia a 8 Hz

### Modalità operativa

Indicazioni LED	Verde	Giallo	Rosso	Blu
Power On	●			
Corto circuito	①			
Uscita 1 attiva		●		
Prossima alla soglia		⑧		
qTeach utilizzabile				●
Modalità di Teach-In	see Teach-In Instruction			

### Description Teach-In Niveau 1 & 2

	OT300*.D, Mesure de la distance	OT300*.G, Suppression d'arrière-plan	OT300*.S, Barrière SmartReflect	Méthodes de Teach-in optionnelles*
<b>Niveau 1</b>	<b>Pas active</b> Pour le capteur de distance le Teach niveau 1 n'est pas actif Si le niveau 1 est activé, le capteur quitte immédiatement ce niveau sans changement	<b>Teach 1-point</b> Régler le point de commutation à la position de l'objet + TPO* (Teach point offset, typ. 5%)	<b>Teach 1-point</b> Apprendre la position de la référence (distance) Tolerance: Voir l'emballage (typ. +/- 10%)	Pre-configurable via IO-Link <b>Mode fenêtre (OT300.G)</b> Niveau 1 / Teach 1-point: Régler une fenêtre de +/- 5% (TPO*) autour de la position de l'objet Niveau 2 / Teach 2-point: Régler une fenêtre dans laquelle l'objet sera détecté
<b>Niveau 2</b>	<b>Teach 2 Points / Fenêtre</b> Régler la zone de mesure correspondante à la sortie analogique. La Sortie 1 est active si l'objet est dans la zone définie.	<b>Teach 2-point</b> Régler le point de commutation entre la position A & B	<b>Pas active</b> Pour la barrière SmartReflect, le Teach niveau 2 n'est pas actif Si le niveau 2 est activé, le capteur quitte immédiatement ce niveau sans changement	

### Descrizione dei livelli 1 e 2 Teach-In

	OT300*.D, Misurazione della distanza	OT300*.G, Sensori a soppressione di sfondo	OT300*.S, Sensori SmartReflect	Configurazioni opzionali*
<b>Livello 1</b>	<b>Non attivo</b> Per i sensori di distanza, il Teach-In al livello 1 non è attivo Accedendo a tale livello, non si apportano modifiche	<b>Teach a 1 punto</b> Impostazione del punto di commutazione alla posizione desiderata + TPO* (Teach point offset, typ. 5%)	<b>Teach a 1 punto</b> Teach-In della posizione dello sfondo Tolerance: Vedere imballaggio (typ. +/- 10%)	Pre-configurable tramite IO-Link <b>Funzionamento a finestra (OT300.G)</b> Livello 1/Teach 1 punto: Viene impostata una finestra di +/-5% (TPO*) relativa alla posizione dell'oggetto da rilevare Livello 2/Teach a 2 punti: Viene impostata una finestra tra due punti all'interno dei quali l'oggetto deve essere rilevato
<b>Livello 2</b>	<b>Teach del range di misura a 2 punti</b> Impostare il range relativo all'uscita analogica. Se l'uscita digitale non viene impostata nel livello 1 rimane sempre attiva all'interno del range di misura.	<b>Teach a 2 punto</b> Impostazione del punto di commutazione a metà tra la posizione A e la posizione B	<b>Non attivo</b> Per le fotocellule SmartReflect, il Teach-In al livello 2 non è attivo Accedendo a tale livello, non si apportano modifiche	

### Instructions Teach-In

**Entrée en mode Teach:**

- Placer l'outil ferromagnétique comme indiqué ci-contre pour activer qTeach® ou connecter le fil Teach-In au +Vs
- La LED bleue devient plus brillante si l'outil / Teach-In est reconnu correctement
- Enlever après n sec pour le niveau souhaité
- Un TAP est une courte touche (>100 ms) de l'outil comme présenté ci-contre (Teach Pen pour OT300H)

**Information Générale**

- qTeach® se verrouille 5 min après la mise sous tension.
- Si il est verrouillé, qTeach® peut être réactivé en réappliquant l'alimentation ou en connectant le fil de Teach-In pendant >15 sec. à +Vs
- Le Teach externe est toujours disponible (Pas de verrouillage)
- En mode normal l'entrée Teach est à 0V
- Pour un Teach externe, connecter l'entrée Teach correspondant au +Vs
- Teach Pen 11137318 (11141124 pour USA, CAN & JP)

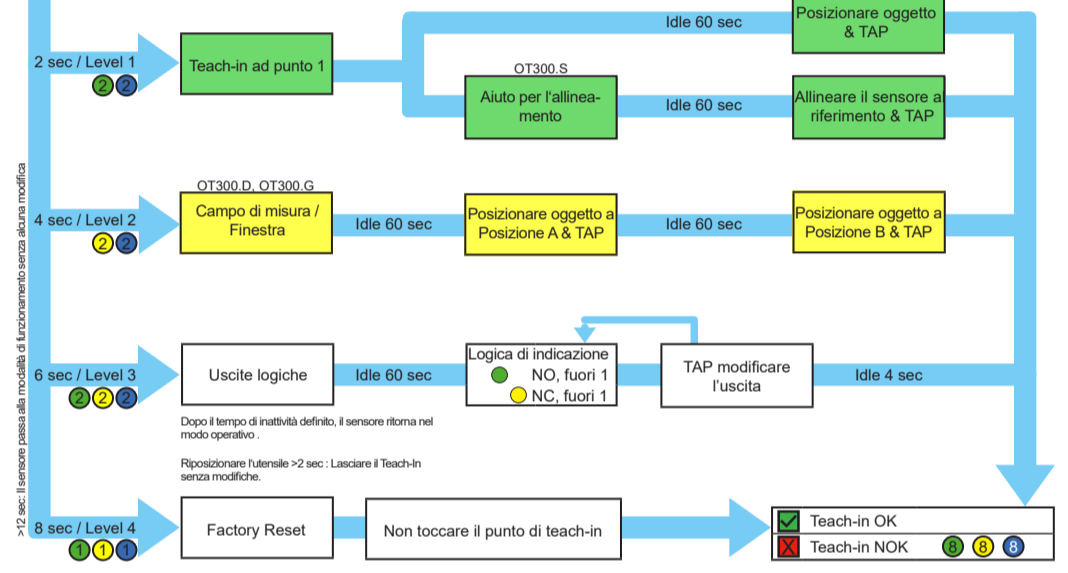
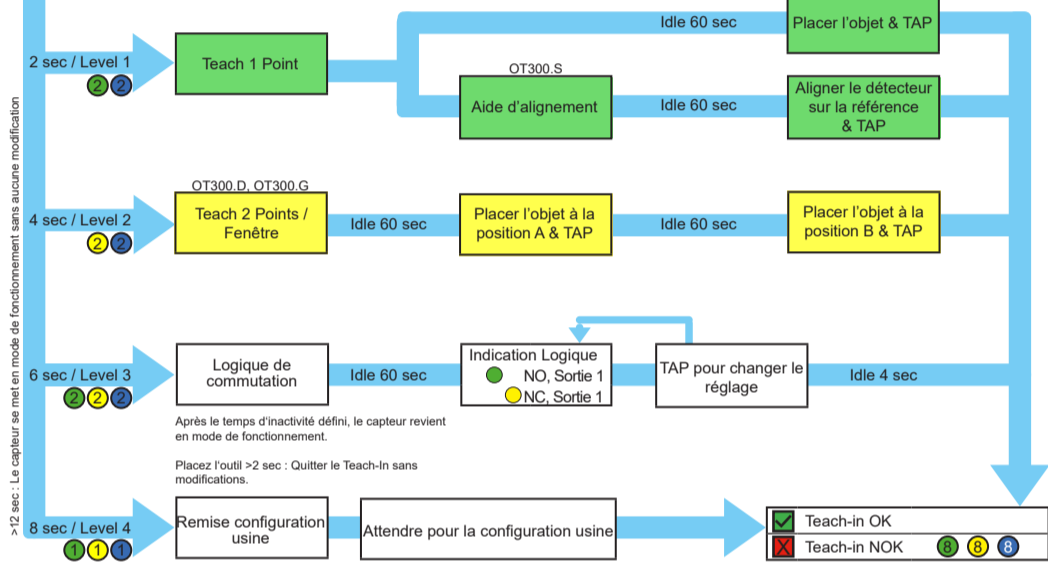
### Istruções Teach-In

**Selezionare il livello di Teach-In**

- Posizionare l'utensile ferromagnetico mostrato a destra di attivare qTeach® o collegare il cavo Teach-In a +Vs
- L'illuminazione del LED blu aumenta di intensità se l'utensile Teach-In viene riconosciuto correttamente.
- Rimuovere dopo n sec. per il livello desiderato

**Informazione generali**

- La funzione di qTeach® si disattiva dopo 5min dall'accensione del sensore\*
- Se disabilitato qTeach® può essere riattivato mediante riapplicazione dell'alimentazione o collegando il filo Teach-In per >15 sec. a +Vs
- In modalità Teach-In l'output assume un valore pari a 0V
- Il Teach-In da remoto è sempre possibile (non si disattiva dopo 5 min)
- Durante il normale funzionamento del sensore il cavo Teach-In va messo a 0V
- Per il Teach-In da remoto, connettere il cavo di teach a +Vs
- Teach Pen 11137318 (11141124 per USA, CAN & JP)



### Información LED



### Leyenda

- LED ON
- LED parpadeo 1 Hz
- LED parpadeo 2 Hz
- LED parpadeo 8 Hz

### Modo operativo

LED Indicators	green	yellow	red	blue
Power On	●			
Cortocircuito	①			
Salida 1 activa		●		
Señal dentro del intervalo		⑧		
qTeach disponible				●
Modo Teach-In	Ver instrucciones Teach-In			

### LED 指示灯



### 图例

- LED 亮
- LED 闪烁 1 Hz
- LED 闪烁 2 Hz
- LED 闪烁 8 Hz

### 操作模式

LED 指示灯	绿	黄	红	蓝
通电	●			
短路	①			
输出 激活		●		
信号 接近阈值		⑧		
qTeach 可使用				●
Teach-in 模式	详见 Teach-in 说明			

### Descripción Teach-In Nivel 1 & 2

	OT300*.D, Medición de la distancia	OT300*.G, con supresión de fondo	OT300*.S, Barreras SmartReflect	Métodos Teach-In opcionales*
<b>Nivel 1</b>	<b>No activo</b> Para los sensores de distancia, el nivel 1 no está activo Si se entra en el nivel 1, el sensor deja el nivel sin cambios inmediatamente	<b>1-Point Teach</b> Define el punto de conmutación en la posición del objeto + TPO* (Teach point offset, typ. 5%)	<b>1-Point Teach</b> Aprende la posición de la referencia (Distancia) Tolerance: Ver embalaje (typ. +/- 10%)	Pre-ajutable vía IO-Link <b>Modo ventana (OT300.G)</b> Nivel 1 / 1-Point Teach: Define una ventana de +/- 5% (TPO*) alrededor de la posición del objeto Nivel 2 / 2-Point Teach: Define una ventana donde se detectará el objeto
<b>Nivel 2</b>	<b>2-Point Teach/Ventana</b> Definir el intervalo de medición respecto a la salida analógica. La salida 1 se activa si detecta un objeto dentro del intervalo.	<b>2-Point Teach</b> Define el punto de conmutación en la posición media entre A y B	<b>No activo</b> Para las barreras SmartReflect, el nivel 2 no está activo Si se entra en el nivel 2, el sensor deja el nivel sin cambios inmediatamente	

### Teach-In 说明 1 级 & 2 级

	OT300*.D 距离测量	OT300*.G 背景抑制漫反射	OT300*.S 智能反射	可选的设置方式*
<b>1级</b>	<b>未激活</b> 距离测量传感器，1级设定未被激活 如果进入1级设定，传感器将在不做任何改动下立即离开该设定。	<b>1点设定</b> 将开关点设置在被测物位置后TPO* (Teach point offset) TPO: 查看包装 (通常为5%)	<b>1点设定</b> 设定参考面的位置 (距离) Tolerance: 查看包装 (通常为 +/-10%)	通过IO-Link配置 窗口模式 (OT300.G) 1级/1点设定 设定大约在被测物±5% TPO*位置的窗口
<b>2级</b>	<b>2点设定</b> 设置与模拟值相对应的测量范围。如果被测物处于测量范围内，则输出1处于激活状态	<b>2点设定</b> 设定开关点在A和B位置的中间	<b>未激活</b> 对于智能反射传感器，2级设定未被激活 如果进入2级设定，传感器将在不做任何改动下立即离开该设定。	2级/2点设定 设定前后两个位置之间的窗口动态模式

### Instrucciones Teach-In

**Entrar en modo Teach:**

- Colocar la herramienta ferromagnética como indica la imagen para activar qTeach® o conectar el cable Teach-In a +Vs
- El led azul se ilumina si la herramienta o señal teach-in se reconoce correctamente.
- Retirar tras n segundos para el nivel deseado
- Un TAP es un toque corto (>100 ms) de la herramienta (Teach Pen para OT300H)

**Información general**

- qTeach® se bloquea 5 min después de la alimentación\*
- Si está bloqueado, qTeach® puede ser reactivado volviendo a dar alimentación o conectando el cable de Teach-In durante >15 seg. a +Vs
- El teach-in externo está siempre disponible (no se bloquea)
- En modo teach la salida cambia a 0V
- En modo normal el cable de teach se pone a 0V
- Para teach-in externo, conectar el cable de teach a +Vs
- Teach Pen 11137318 (11141124 para USA, CAN & JP)

### 设定说明

**进入设定等级:**

- 如右图所示放置金属工具或连接设定线至 +Vs
- 蓝色LED 变得更亮, 如果工具或设定被正确识别
- 在 n 秒后当设定所需的等级是拿开触点是如右图所示用工具快速靠近感应区域 (Teach Pen for OT300H)

**总览:**

- qTeach® 开启5分钟后自行锁定
- 锁定之后, qTeach® 可以通过重新上电或者把外部示教线连接到 +Vs上大于15秒后进行激活
- 在设定模式下输出变为 0 V
- 在通常情况下设定先接至 0 V
- 对于外部设定, 将设定线连接至 +Vs
- 外部设定线永久有效 (无自锁)
- Teach Pen 11137318 (11141124 for USA, CAN & JP)

