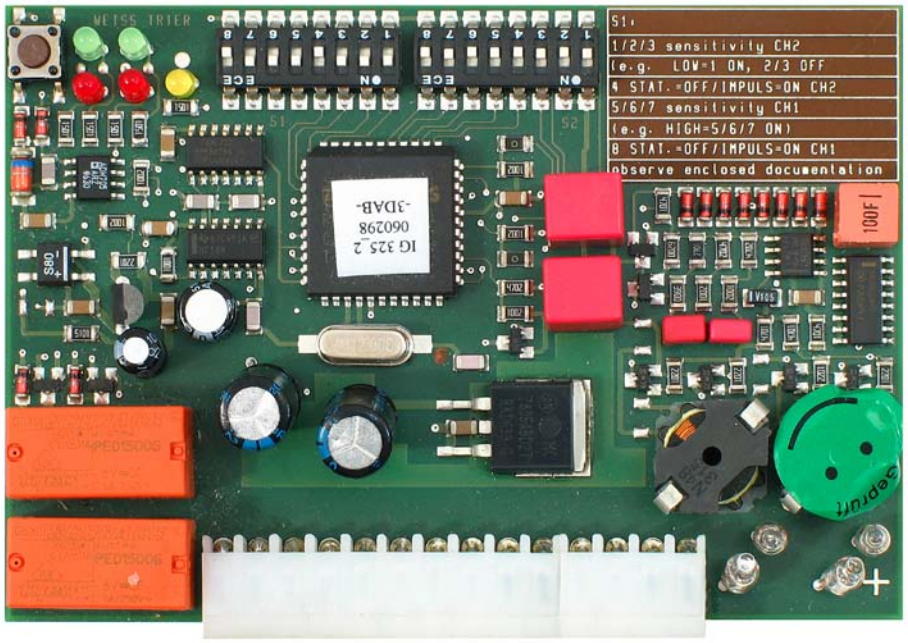
Connection and installation manual

Induction loop detector
ISD 4, ISD 4/2



tousek®
GATE AUTOMATION

Important warning and safety notes

- These installation and operating instructions form an integral part of the product**.** They have been specifically written for professional installers trained and skilled in the trade and should be carefully read in their full length before carrying out the installation. It concerns the control only, not of the overall device “automatic gate”. After the installation this manual has to be handed over to the user.
- **nstallation, connection, adjustments, putting into operation, and servicing may only be carried out by trained professionals in full accordance with these installation and operating instructions.**
- **Before carrying out works on the gate system, the power supply has to be turned off.**
- Before taking off the housing cover, always turn off the mains switch!
- The EU Machine Directive, laws and rules concerning the prevention of accidents, and laws and standards which are in force in the EU and in the individual countries have to be strictly followed.
- The TOUSEK Ges.m.b.H. can not be held liable for any claims resulting from disregards of the laws and standards in force during the installation and operation.
- The packaging materials (cardboard, plastic, EPS foam parts and filling material etc.) have to be properly disposed of in accordance with the applying recycling and environmental protection laws. They may be hazardous to children and therefore have to be stored out of children´s reach.
- The product is not suitable for installation in explosion-hazardous areas.
- The product may only be used in accordance with its original purpose, for which it has been exclusively designed, and which is described in these installation and operating instructions. The TOUSEK Ges.m.b.H. rejects any liability if the product is used in any way not fully conforming to its original purpose as stated herein.
- **Children have to be instructed** that the gate facility as well as the belonging parts may not be used improperly, e.g. for playing. Furthermore handheld transmitters have to be kept in safe places and other impulse emitters as buttons and switches have to be installed out of children‘s reach..
- Before beginning with the installation the installer has to make sure that all mechanical components of the gate facility, like carrier profile/rail, gate frame and panels, guiding elements etc. are sufficiently supportive and resistant for the purpose of gate automation.
- All electrical installations have to be made in full conformity with the applying rules and laws (e.g. using a fault current circuit breaker, proper grounding etc.).
- **An all-pole disconnecting main switch with a contact opening-gap of minimum 3 mm has to be foreseen.**
- **After installation the proper function of the gate facility and the safety devices has to be checked!**
- The TOUSEK Ges.m.b.H. rejects any liability for claims resulting from usage of the product in combination with components or devices which do not fully conform to the applying safety laws and rules.
- Only original spare and replacement parts may be used for repair of the product.
- The installer has to inform the user about all aspects of the automatic operation of the complete gate facility, as well as about emergency operation. The installer further has to supply to the user all instructions relating to the safe operation of the gate facility. The installation and operating instructions also have to be handed over to the user.

Declaration of Conformity: The company Tousek Ges.mbH, Zetschegasse 1, 1230 Vienna, says that the product conforms to ITS 4, ITS 4/2 with purpose “vehicle detection,” is in accordance with Article 3 of the R & TTE Directive 1999/5/EC and the following standards were applied :

1. Safety / health (Article 3.1.a of the R & TTE Directive)
   Applied standards: DIN EN 50364
   DIN EN 60950-1

2. Electromagnetic compatibility (Article 3.1.b of the R & TTE Directive)
   Applied standards: ETSI EN 301 489-1 V1.6.1
   ETSI EN 301 489-3 V1.4.1

3. Efficient use of radio frequency spectrum (Article 3.2 of the R & TTE Directive)
   Applied standards: ETSI EN 300 330-1 V1.5.1
   ETSI EN 300 330-2 V1.3.1

Vienna, 9. 12. 2009

Parameter adjustment

by DIP switch S1:

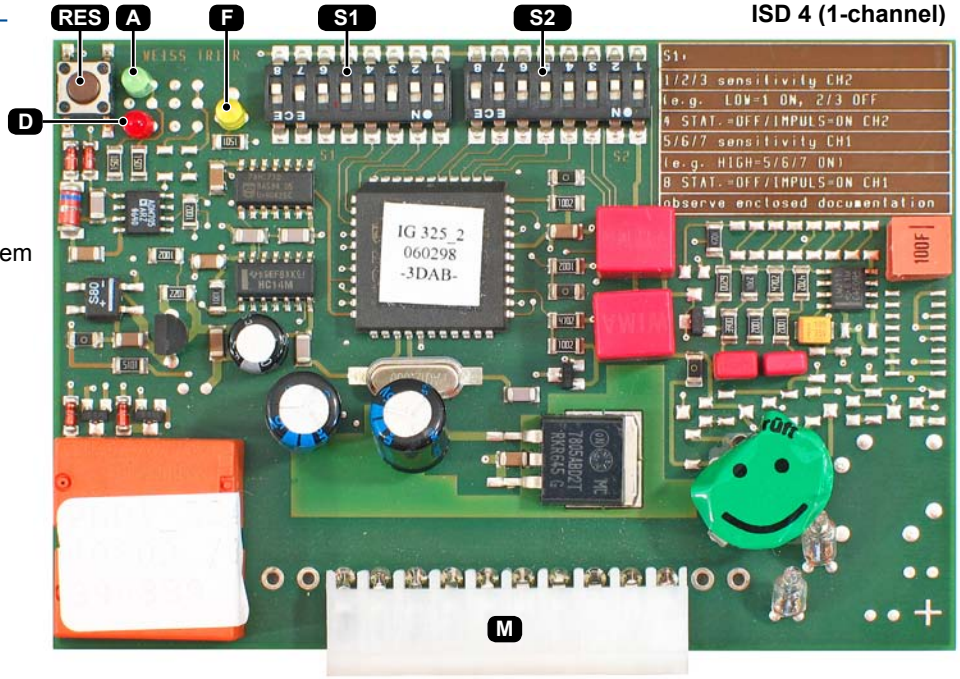
- Sensitivity
- Hold time

by DIP switch S2:

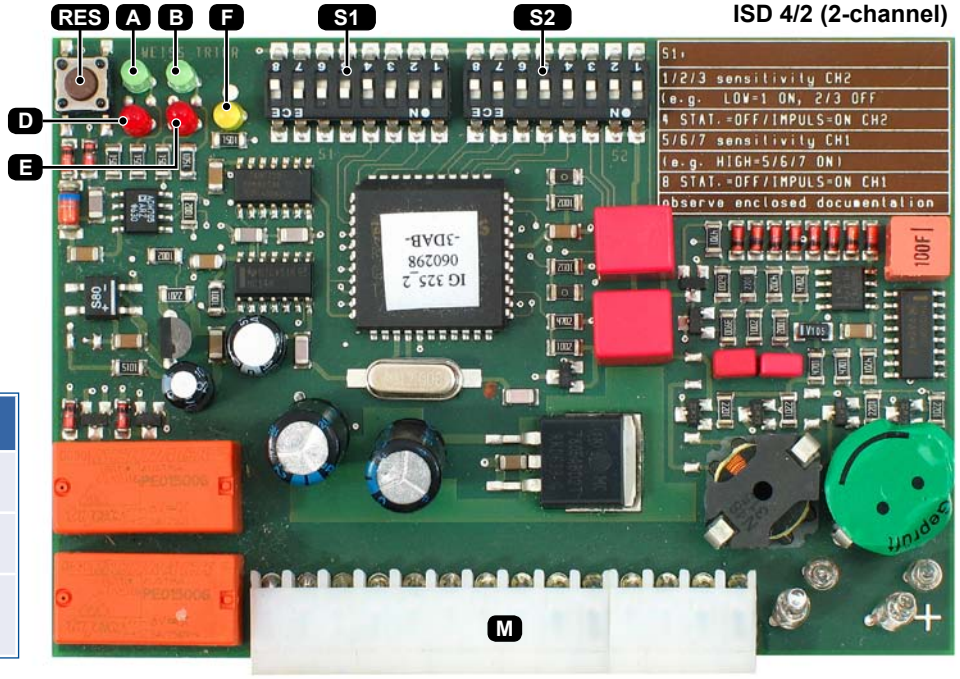
- Frequency of the measuring system
- Fault relay (ISD 4) or Direction logic (ISD 4/2)
- Pulse on exit from the loop
- on delay
- Automatic adjustment
- Busy message

CE

ISD 4 (1-channel)



ISD 4/2 (2-channel)



S1, S2 DIP-switch
RES Reset-button
M Molex strip

LED´s	for channel	display
A (green)	1	detection
B (green)	2	
D (red)	1	defect
E (red)	2	
F (yellow)		blinks during adjustment/ Power

General information

The induction impulse ISD 4 and ISD 4/2 evaluates laid loops in the ground. These represent the inductance of a high frequency oscillator circuit. A vehicle passing the loop causes due to its metal parts, a change in frequency of the resonant circuit. These are evaluated by the loop detector, a switching signal via potential-free relay contact output and displayed on the LEDs on the front page. The analysis of the loop frequency is performed by a microprocessor system that automatically adjusts to the corresponding loop and compensates changing loop by temperature, humidity, or aging of components.

Switching outputs:

The switching state „loop (s) occupied“ is signaled by the green channel LEDs (A) for channel 1 and (B) for channel 2.
A disorder of the loop (s) is due to short circuit, open circuit or a loop inductance outside the permitted range, is shown by the red channel LEDs (D) for channel 1 and (e) for channel 2.

Warning

- The operator must ensure that the chosen means of operation will not cause damage to equipment or danger to persons and that all protective and safety devices are installed and functioning.
- Before installation and initial operation make sure you follow the instructions first.
- The manual must be available on site at all time. It has to be read thoroughly and be applied by the person who is entrusted with the operation, maintenance or repair of the device.

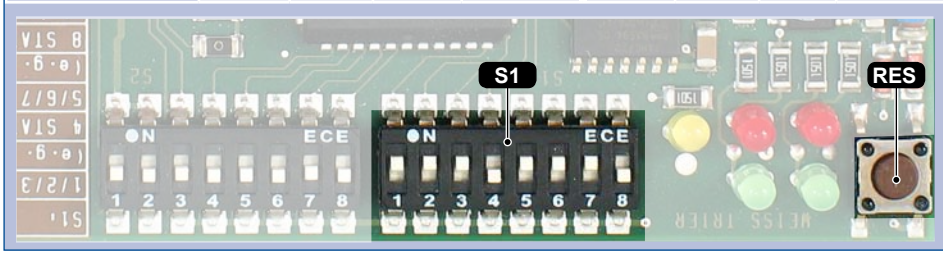
Important

- The device is intended for mounting on a compact controller board. The compact control system must be installed in an enclosure with additional IP54 insulation.
- <u>Specific instructions for loop:</u>

  The safe operation of the device depends mainly on the technically correct installation and relocation of the loops, since they are the sensors of the device. The loop must not be mechanically stressed or agitated. The loop cable is about 20 to 50 times twisted per meter and to be separated from power cables.
- After each device setting a recalibration is to be made by pressing the reset button (RES).

DIP-switch S1 - Setting the sensitivity and hold time

Sensitivity	Channel 2 (for ISD 4/2)				Channel 1 (for ISD 4 and ISD 4/2)			
	S1.1	S1.2	S1.3	S1.4 hold time	S1.5	S1.6	S1.7	S1.8 hold time
high	ON	ON	ON	fix on OFF	ON	ON	ON	fix on OFF
	OFF	ON	ON		OFF	ON	ON	
	ON	OFF	ON		ON	OFF	ON	
medium	OFF	OFF	ON		OFF	OFF	ON	
	ON	ON	OFF		ON	ON	OFF	
	OFF	ON	OFF		OFF	ON	OFF	
low	ON	OFF	OFF		ON	OFF	OFF	
Test mode	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

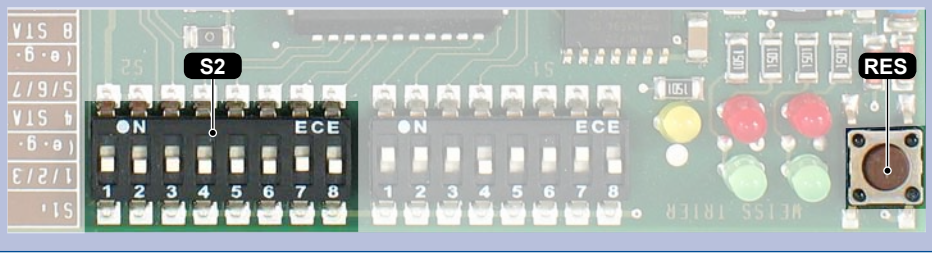


Important

- After each device setting a recalibration is to be made by pressing the reset button (RES) .

DIP-switch S2

DIP S2		function	explanation
S2.1		with these two DIP-switches different operating frequencies can be adjusted	In order to prevent coupling two or more detectors should not work at the same frequency.
S2.2			
S2.3		ON: Switch-off delay 2s	The switching signal is switched off with a delay of 2 seconds after release of the loop **(not in impulse mode operation).**
S2.4	**with ISD 4:**	ON no function	/
	with ISD 4/2:	ON: direction logic active	The detector registers the attenuation of the first loop, indicated by blinking LED on the channel (there is still no relay switched). Only when also the second loop is attenuated on the second channel and remains on until both loops are free again.
S2.5		**OFF: Fixed** (no function)	/
S2.6		ON: delay for turning on is on	The switching signal is activated with a delay of 1 second after driving over he loop.
S2.7		ON: automat. adjustment with disorder active	The detector readjusts in the event of a fault loop off automatically after about 12 seconds. Should there be a prolonged disturbance, the detector will try to match as long as new until the fault is over. The relays and LEDs (D + E) will remain until the recalibration in the „fault“ condition.
		OFF: For safety use	/
S2.8		ON: occupancy report with disorder active	A loop fault is displayed on the LEDs (D + E), and in addition, the associated channel relay is set on. **In combination with S2.7 ON then S2.8 must be OFF, because, otherwise, the detector realigns for about 12 seconds and may not recognize anymore a stationary vehicle in the loop.**



Important

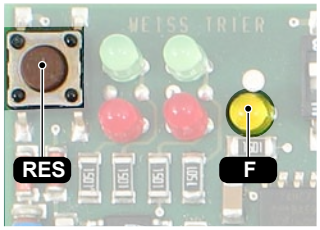
- **After each device setting a recalibration has to be made by pressing the reset button (RES) .**

Adjustment

- When the operating voltage, power failure or by pressing the reset button (RES), the loop detector automatically adjusts to the connected loop (s) and switches the relay in the switch position “loop (s) is not attenuated.” For the duration of the calibration the yellow power LED (F) blinks a few seconds. At low sensitivity the detector is immediately ready for use. After matching, the power LED is lit (F) all the time.

Important

- **During the calibration phase a vehicle can not be located on the loop, since it will not be detected.**

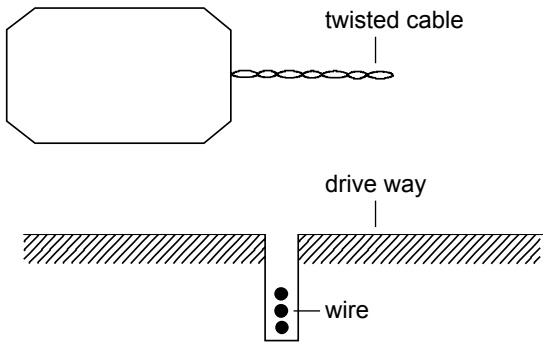


Loop geometry

- The loop size should always be a rectangle. The number of turns/windings of the loop is dependent on the size of the loop circumference.

Example:

0,6 x 1,5m	5 windings
0,8 x 1,75m	4 windings
1,0 x 2,0m	4 windings
1,5 x 2,5m	3 windings
2,0 x 3,0m	3 windings



Laying the loop

- Prior to installation of the loop is to mill the roadway in an approximately 5-8mm wide and at least 30-40mm deep groove
- At the corners of the loop should not be laid at a right angle but 45 ° beveled.
- Where possible, the long side of the loop parallel to the direction of travel.
- After the wire (YF 1.52) was carefully inserted into the groove, is has to be shed moisture proof.

- **The loop has to be laid so that when driving onto it there is no mechanical changes.**
- **230V lines may not be installed in the I-loop (at least 1 m apart)!**

Lay the loop lead

- The supply line to the loop must be firmly twisted (at least 20 twists per meter) and can run either in an empty pipe or in a groove to the detector.

- **cable length> 30m should be avoided.**
- **If a longer lead is required, or if there is a likely influence by a 230V (400V) lines then a twisted pair cable with screen has to be used (for example, A-2YF telecommunications cable 0,8 mm2)..**

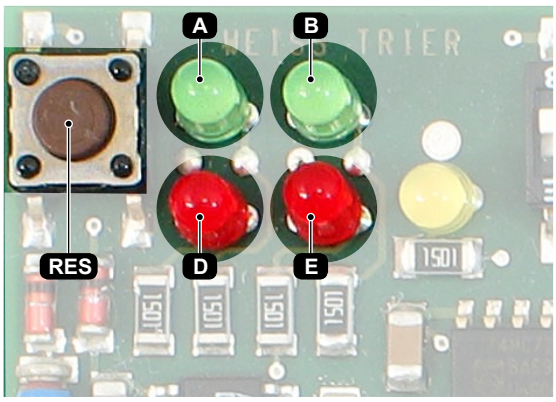
Foreign influence on the loop

To avoid function disturbances, the following minimum distances must be observed:

• **Rolling gates, sliding gates, etc.: 1m**	• **Steel reinforcements in the roadway at least 15 cm below the loop**
• **Non moving metal parts (Hydrants, channel covers, ...): 0.5 m**	• **Minimum distance to supply lines ≥ 230V: 1m**

Shift indicator and fault indicator

- The switching state “loop (s) occupied” is signaled by lighting the LEDs greenen channel (A) for channel 1 and (B) for channel 2.
- A disorder of the loop (s) by a short circuit, open circuit or a loop inductance outside the permissible range, is indicated by the red channel LEDs (D) for channel 1 and (E) are displayed for channel 2.



Important

- **After each change of a setting or correction of a defect the reset button (RES) has to be pushed!**

Error	Possible reason	Solution
Detector does not adjust, yellow LED not lit	no power supply	check power supply connection
Red LED illuminates, green LED blinks long, long, long	detector detetcs “loop channel 1 interrupted”	check loop and loop connection
Red LED illuminates, green LED blinks short, long, short	detector detects “loop channel 2 short circuited”	check loop and loop connection
Yellow and green LEDs illuminate, relay is permanently put	Test mode „relay is activated“ is enabled	deactivate test mode (see table Sensitivity and hold time setting)
	loop is being moved mechanically	check loop installation, observe the installation of loop
Detector is not activated despite successful alignment	Test mode „relay fallen off“ is enabled	deactivate test mode (see table sensitivity and hold time setting)
	Sensitivity is too low	gradually increase sensitivity until vehicles are reliably detected
Yellow LED blinks permanently	vehicle movement on the loop	Loop kept free during the calibration
	loop is being moved mechanically	check loop installation, observe the installation of loop
	Electromagnetic interference at the loop	remove cause of the couplings, note the instructions to the loop transfer

Technical Data

Induction loop detector ISD 4, ISD 4/2			
Power supply	24 V DC +/-10 %	Adjustment	autom. after turning on of power supply, after pressing the reset button; via external Reset
Power consumption	3 W		
Operating temperature	-25°C up to +70°C	Output	potential free relay contacts Umax = 48 V, Imax = 2 A, Pmax = 60 W (ohmsche Last)
Stock temperature	-40°C up to +80°C		
Dimensions	H = 70mm, B = 100mm, T = 22mm	Display elements	LED red = loop defect, LED green = detection, LED gelb = blinks during adjustment/ Power-display
Connection	via 10- hence 14-pole Molex plug (Type 2145/3215 KK 3,96 mm)		
Weight	70 g	Protection circuit loop input	galvanic isolation by transformer, glow lamps
Induction range suggested range:	15 µH bis 2000 µH 100 µH bis 300 µH bei max. 30 Ω		
Sensititivity	adjustable in 7 steps (from High 0,01% to Low 0,9%)	Art.-No. ISD 4 (1-channel): ISD 4/2 (2-channels):	13430100 13430110
Hold time	impulse mode and static hold time		

www.tousek.com

tousek PRODUCTS

- sliding gate operators
- cantilever systems
- swing gate operators
- garage door operators
- folding door operators
- traffic barriers
- carpark management system
- window operators
- domelight operators
- sliding door operators
- electronic controls
- radio remote controls
- key operated switches
- access control
- safety devices
- accessories

Tousek Ges.m.b.H. Austria
A-1230 Vienna
Zetschegasse 1
Tel. +43/1/667 36 01
Fax +43/1/667 89 23
info@tousek.at

Tousek GmbH Germany
D-83395 Freilassing
Traunsteiner Straße 12
Tel. +49/86 54/77 66-0
Fax +49/86 54/5 71 96
info@tousek.de

Tousek GmbH Switzerland
CH-6275 Ballwil
Bahnhofstraße 14
Tel. +41/0/41 448 2965
Fax +41/0/41 448 2966
info@tousek.ch

Tousek Sp. z o.o. Poland
PL 43-190 Mikołów (k/Katowic)
Gliwicka 67
Tel. +48/32/738 53 65
Fax +48/32/738 53 66
info@tousek.pl

Tousek s.r.o. Czech Republic
CZ-130 00 Praha 3
Jagellonská 9
Tel. +420/2/2209 0980
Fax +420/2/2209 0989
info@tousek.cz

tousek®
GATE AUTOMATION

your service partner:

tousek
E_ISD4_02
04. 09. 2014