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DS

Print Mark Detection Sensor

User Manual V1.0

Hardware/Firmware Revision: 1.0
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1 Introduction

This manual contains the description of the DS and it´s funcionality.

All related documentation and functionality of the DS are subject to change.

The basic funcionality of the DS analog sensor corresponds to integrated analog sensor of the IDS-PN (Intelligent Sensor for Print Mark Detection).

Additional description of use, functions and parameters concerning the DS are located in the IDS-PN User Manual [1].

1.1 IDS-PN and DS

The (DS) is connected to the IDS-PN as additional sensor for extended tasks of print mark detection (mostly referred to as Sensor 2), see fig. 1.1. Therefore the interface “IDS-PN” of the DS is connected to the interface “Sensor extern” of the IDS-PN.

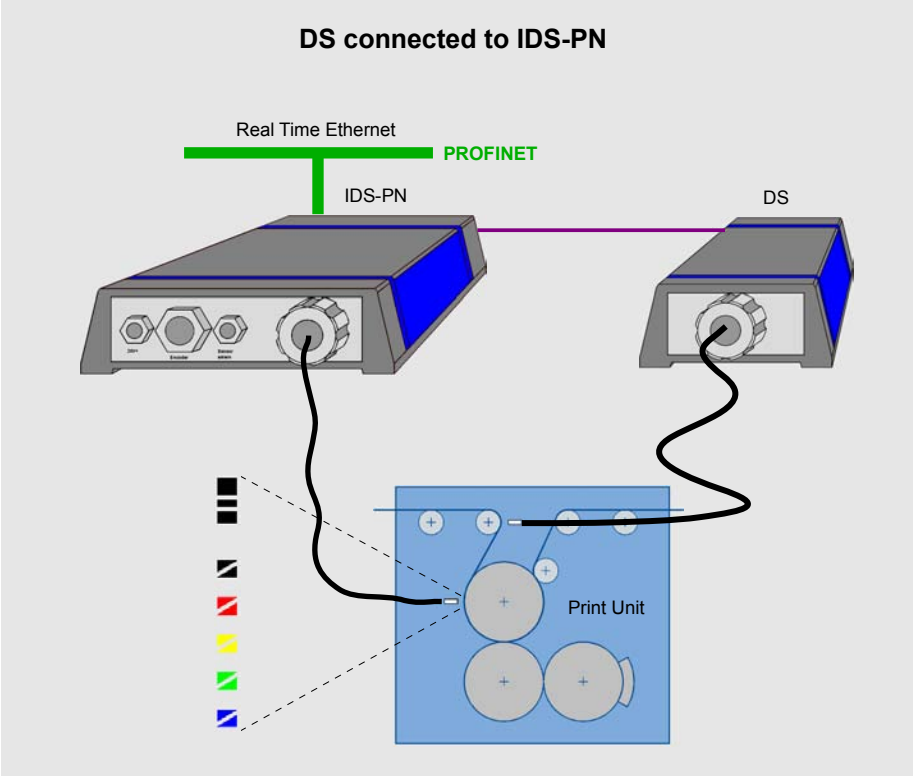


Figure 1.1: Overview DS and IDS-PN

2 Interfaces

2.1 Overview

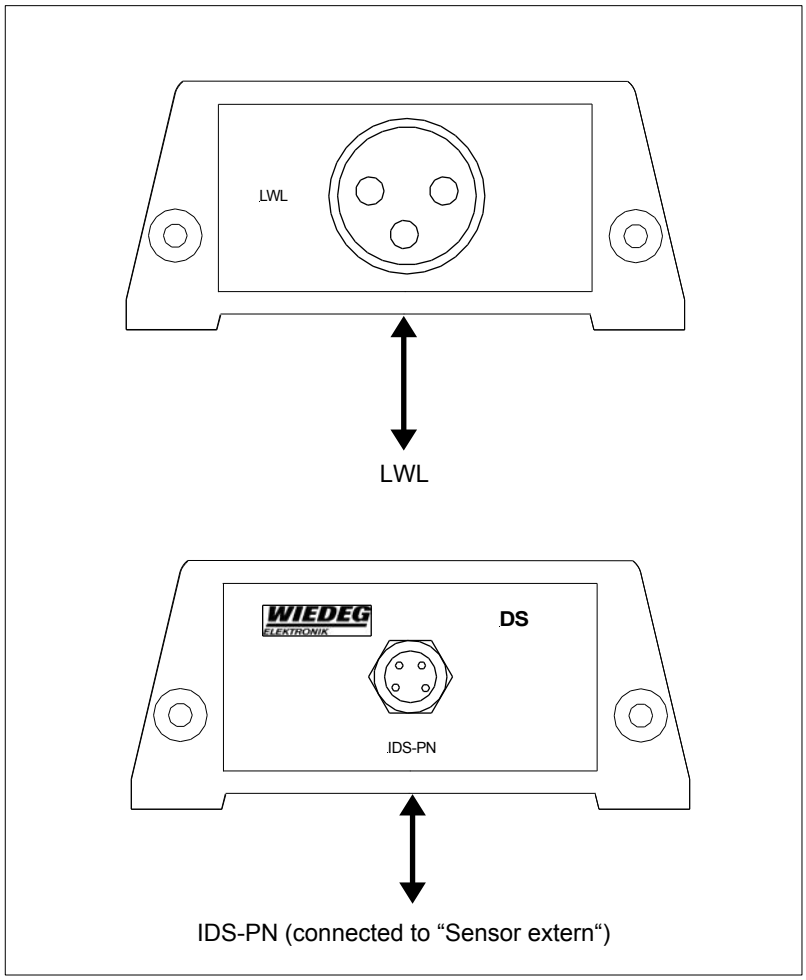


Figure 2.1: DS Overview

2.2 Pin Assignment

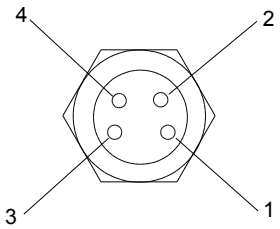
	Pin	Assignment
M8, 4-pin, female  	1	GND
	2	+12V DC input power supply
	3	IS, output sensor current signal (analog) max. 30 mA
	4	Input 1-wire Software UART, unidirectional, slave, TTL 3,3 V, signal is active low, transfer rate 2 kBit/s

Figure 1: Pin assignment „IDS-PN“

2.2.1.1 Connection cable

To connect a DS to the IDS-PN two shielded ready-to-use cables of different length are available:

Notation	Order-No. / Design-No.	Length
B/W IDS-DS Cable 0,5m	6AU1671-0KD00-1AA5 / 1452935	0,5 m
B/W IDS-DS Cable 10m	6AU1671-0KD00-1BA0 / 1452936	10,0 m

3 DS-Data Interface

The DS is configured for operation via DS-Data. Sending a command (negative edge at DS-Data) activates the Microprocessor of the DS and the command is processed immediately.

Via the RS232 Interface of the IDS-PN commands to the DS can be sent
Format: “7001 <command> <value>“):

```
IDS> 7001 15
```
=> Reset DS

3.1 Data frame format

The data line DS-Data to the DS operates active low. A data frame consists of 1 start bit, 12 bit user data, 1 parity bit (odd parity) and 1 stop bit (data frame 15 Bit).

A typical data frame is displayed in Fig. 3.1 (command = 0x4, value = 0xA5).

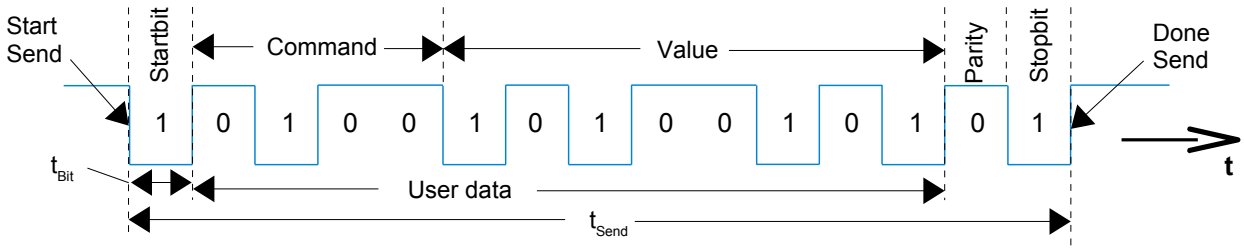


Figure 3.1: Data frame with command = 0x4 and value = 0xA5

3.2 User commands

Command	Value	Description
0x2	-	Store data sets in EEPROM and switch to sleep mode
0x4	0...255	Write digital voltage divider “Increase”
0x5	0...255	Write digital voltage divider “Threshold”
0x7	0...255	Write digital voltage divider “Input Gain”
0x8 [1), 2), 4)]	-	Automatic biasing diode current
0x9 [3)]	0...3	Data selection Sensor Adjustment: 0: 1. data set 2,5 m LWL 1: 2. data set 5 m LWL 2: Reset to Factory Settings
0xF		Reset DS

Table 2: DS commands

1) This command can be carried out at every time, even without a connected fiber optic.
2) After the automatic biasing the DS behaves analog to command 0x2
3) The selection of the 1st or 2nd data set is stored permanently in the EEPROM, so that after Power-Up / Reset the corresponding settings are loaded and written to the digital voltage dividers.
4) These commands should only be used by trained personnel.

3.3 Electrical Grounding

At the bottom side of the DS two aluminum mounting bars are attached to provide an extensive electrical grounding (s. fig. 3.2).

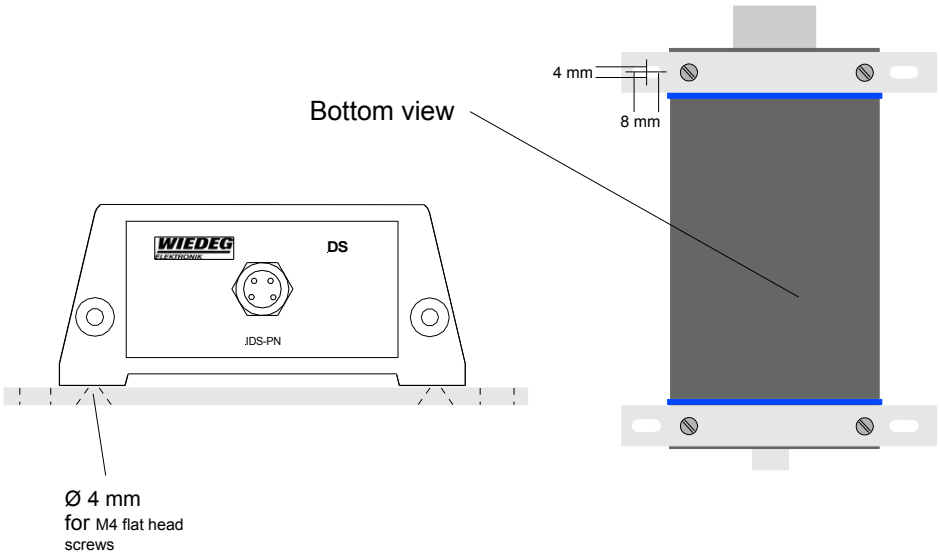


Figure 3.2: Mounting bars DS

The devices have to be mounted conductive on an extensive electrical grounded surface or grounded by a compensating line (cable cross-section ≥ 10 mm²) as pictured in fig. 3.3.

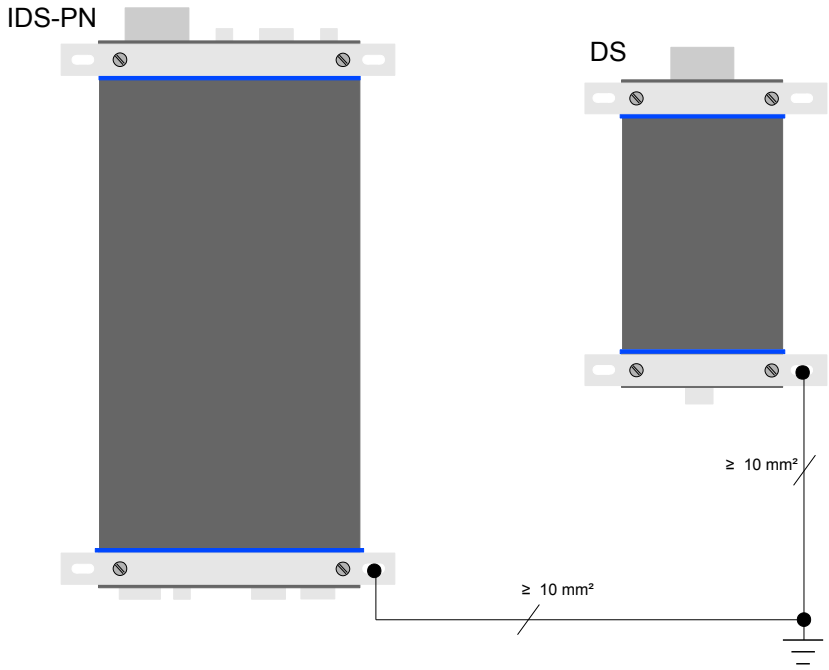


Figure 3.3: Electrical grounding of DS and IDS-PN

4 Technical data

Technical data DS	
Power supply	+12 V DC ±25%
Internal supply PIC16	+5 V DC
Rated current	0...20 mA
Max. output current	30 mA
Protection class	IP65
CE Label	CE
Environment temperature (operation)	0...40 °C (32...104 °F)
Weight (without fiber optic)	300 g

Table 3: Technical data DS

5 Type label

A type label for identification of the DS is located on the bottom of the device (s. fig. 5.1).

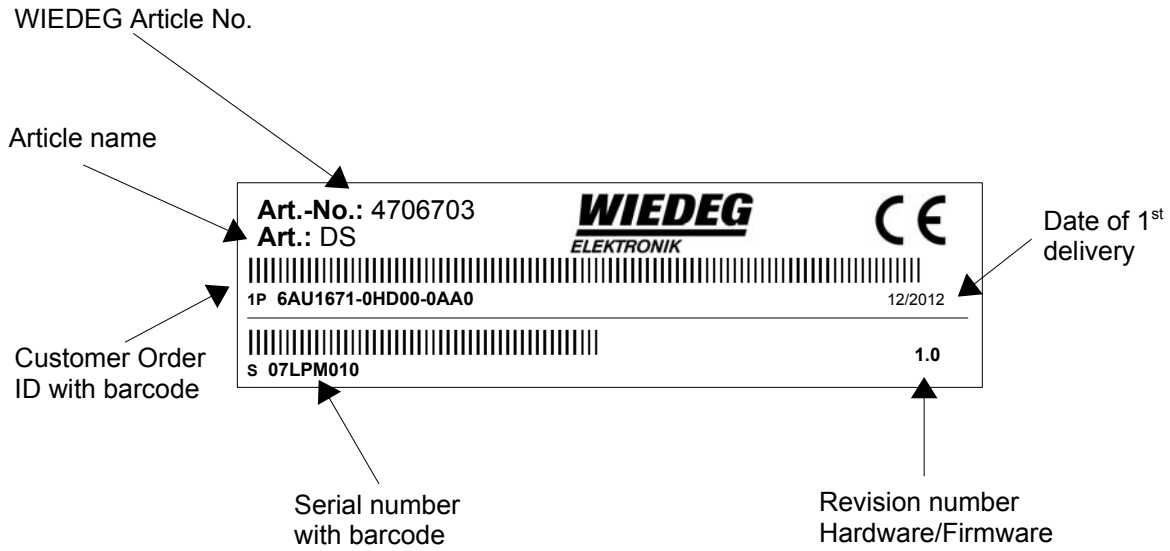


Figure 5.1: DS Type label

6 Related documents

[1] „IDS-PN User Manual en V2.0.pdf“, by WIEDEG

7 Declaration of Ex-Protection-Confirmation

WIEDEG ELEKTRONIK

WD/HO
17.02.12

Declaration of Ex-Protection-Confirmation

For the use in explosion risk areas with grade **zone 2** we declare for our products

IDS-PN Intelligent Print Mark Detection Sensor PROFINET and
DS Print Mark Detection Sensor

ex-protection confirmation according to the ATEX directive (94/9/EG) with the following classification/designation

Device group	II
Device category	3 G
Ignition protection type	[Ex op is]
Explosion group	IIC
Temperature class	T6
Device protection level	Gc
Operational conditions	X

Operational conditions have to be established in order that only fibre optic cables with microobjectives are situated within the explosion risk area. The sensor electronic has to be placed outside of this area.

This declaration is based on our test report with ex-protection classification dated 02/16/2012.

WIEDEG Elektronik GmbH

(G. W. Wiederstein)