



**Train Detect-88 (TD-88)**  
(s88-transfer structure / version 1.4)  
(14.03.2006)

**Short description:**

With the **Train number-Identification system** according to the **transponder procedure** is it possible to identify every train by an "**electronic fingerprint**".

For this purpose the **trains** have to be **equipped with transponders** and at suitable **identification locations** the **reader (COL-10)** have to be installed below the layout base. The transponders will transmit their unique identification to the reader during passing the reading area.

**TrainDetect-88** controls up to **31 reader units and** transfers the received **train number information (transponder number)** into the **s88-feedback-bus**.

**TrainDetect-88** will be included into the **s88-feedback bus** as **any other feedback module** and gives a **16 Bit** information out via the feedback bus.

The **feedback data** and **train numbers** will be transferred e.g. via the **Märklin-Interface** or the **High-Speed-Interface (HSI-88)** to the **PC**.

**Information structure:**

S88-Bitnumber:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Information:	L	L	L	L	L	X	N	N	T	T	T	T	T	T	T	T

Meaning: L --- **Reader number**. Bit 1 to 5 includes the reader unit number which reports the following transponder number. A maximum of 31 reader can be connected to the TD-88.

X --- **Type of transponder**. Bit 6 is "0" if the following transponder-number has been received from a **Read Only (RO) Transponder**. The transponder number is therefore unique.  
Bit 6 is "1" if the following transponder number has been received from a **Read / Write (RW) Transponder**. The single Bits of the transponder number can now have a specific meaning. E.g. will it be possible to recognize by one Bit within an equal transponder number of two transponders the train front and the train end. The RW-transponder are writeable transponder. Presently those transponder will not be used; therefore is the X-Bit always "0".



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N --- **Transponder byte number.** The width of the train number–identification is 32 Bit and will be transferred by four following s88 reading cycles of 8 Bit each (1 byte). Bit 7 and 8 includes the number of the following transponder bytes (0 to 3 for four s88 reading cycles).

T --- **Transponder number.** Bit 9 to 16 transfers with each s88 reading cycle one of four transponder bytes.

## Example: Transponder data

The reader with the address 9 has a Read Only Transponder identified. With four s88 reading cycles the 32 Bit wide transponder number (e.g.: 0 1 0 0 0 0 0 0 / 1 0 1 1 1 0 0 0 / 0 0 0 1 1 1 1 0 / 0101 1111) will be given out via the s88 feedback bus.

### 1. s88 reading cycles:

S88-Bitnumber:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Information:	L	L	L	L	L	X	N	N	T	T	T	T	T	T	T	T
	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0

### 2. s88 reading cycles:

S88-Bitnumber:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Information:	L	L	L	L	L	X	N	N	T	T	T	T	T	T	T	T
	1	0	0	1	0	0	0	1	1	0	1	1	1	0	0	0

### 3. s88 reading cycles:

S88-Bitnumber:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Information:	L	L	L	L	L	X	N	N	T	T	T	T	T	T	T	T
	1	0	0	1	0	0	1	0	0	0	0	1	1	1	1	0

### 4. s88 reading cycles

S88-Bitnumber:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Information:	L	L	L	L	L	X	N	N	T	T	T	T	T	T	T	T
	1	0	0	1	0	0	1	1	0	1	0	1	1	1	1	1



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Is a reading section vacant includes the L-Bits 1 to 5 the reader unit number; the N-Bits 7 and 8 a "1" and the X-Bit and the T-Bit 9 to 16 a "0".

## Example: reading section vacant

The transponder has left the reading section with the address 9.

S88-Bitnumber:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Information:	L	L	L	L	L	X	N	N	T	T	T	T	T	T	T	T
	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0

Even after switching-on the interface TD-88 will transfer this Bit-sequence via the s88 bus. With reference to the number and addresses of the installed reader units will have the L-Bits 1 to 5 a decimal value at a range of 1 to 31.

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