

User Manual

of the

Continental Automotive

**Tire Pressure Sensor (Wheel Unit)
TIS-23 / TIS-24**

1.	TECHNICAL DESCRIPTION FOR UHF	3
2.	TECHNICAL DESCRIPTION FOR BLUETOOTH LOW ENERGY	3
3.	TYPICAL USAGE PATTERN	3
3.1.	AVERAGE FACTOR CALCULATION (Standard 47 CFR Part 15C (periodic intentional transmitter))	3
4.	PRODUCT INFORMATION	4
4.1.	General information	4
4.2.	PICTURES	4
5.	LABELS AND USER MANUAL STATEMENTS	5
5.1.	Europe (TIS-23)	5
5.2.	USA & Canada (TIS-23 & TIS-24)	5
5.3.	Great Britain (TIS-23)	6

1. TECHNICAL DESCRIPTION FOR UHF

Carrier frequency:	433.92MHz for TIS-23 (EU) 433.92MHz for TIS-23 (US) 315MHz for TIS-24 (US)
Frequency FSK deviation:	± 40 kHz
Number of channels:	1
Type of modulation:	Frequency Shift Keying (FSK) and Amplitude Shift Keying (ASK)
Baud rate:	9600kbps/19200bds -> for 433MHz 9600kbps/19200bds, 4200kbps/8400bds, 4096kbps/8191bds and 1820kbps/3640bds -> for 315MHz
Rated Output Power:	< 10mW
Antenna:	Internal
Voltage supply:	1 Lithium battery 3V (CR2450)
Voltage supply range:	2.1 up to 3.6V

2. TECHNICAL DESCRIPTION FOR BLUETOOTH LOW ENERGY

Bandwidth frequency:	2.4GHz – 2.48GHz (for all frequencies)
Frequency GFSK deviation:	± 250 kHz
Number of channels:	40
Type of modulation:	Gaussian Frequency Shift Keying (GFSK)
Baud rate:	1Mb/s/, 1Msym/s
Rated Output Power:	< 10mW
Antenna:	Internal
Voltage supply:	1 Lithium battery 3V (CR2450)
Voltage supply range:	2.1 up to 3.6V

3. TYPICAL USAGE PATTERN

3.1. AVERAGE FACTOR CALCULATION (STANDARD 47 CFR PART 15C (PERIODIC INTENTIONAL TRANSMITTER))

For TIS-23 433MHz:

RF frames maximum duration = 41,66ms

Averaging factor = $20 \times \log(41,66/100) = -7.6\text{dB}$

Calculation is based on the identified worst-case protocol described in chapter:

Fehler! Verweisquelle konnte nicht gefunden werden.

For TIS-24 315MHz:

RF frames maximum duration = 23.44ms

Averaging factor = $20 \times \log((8.33+30.22/2)/100) = -12.51\text{dB}$

Calculation is based on the identified worst-case protocol

4. PRODUCT INFORMATION

4.1. GENERAL INFORMATION

- Manufacturer: Continental Automotive GmbH
Address: Vahrenwalder Straße
930165 Hannover
Germany
- Production plant: Toulouse (FR)
Address: 1 Avenue Paul Ourliac
31100 Toulouse
France

4.2. PICTURES



Exploded view



External view – housing + valve

5. LABELS AND USER MANUAL STATEMENTS

5.1. EUROPE (TIS-23)



5.2. USA & CANADA (TIS-23 & TIS-24)

FCC ID: KR5TIS-23
FCC ID: KR5TIS-24

IC: 7812D-TIS23
IC: 7812D-TIS24

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This device complies with FCC/ISED radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the ISED radio frequency (RF) Exposure rules. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The antenna should be installed and operated with minimum distance of 20 cm between the radiator and your body.

Le présent appareil est conforme à l'exposition aux radiations FCC / ISED définies pour un environnement non contrôlé et répond aux directives d'exposition de la fréquence de la FCC radiofréquence (RF) et RSS-102 de la fréquence radio (RF) ISED règles d'exposition. L'émetteur ne doit pas être colocalisé ni fonctionner conjointement avec à autre antenne ou autre émetteur. L'antenne doit être installée de façon à garder une distance minimale de 20 centimètres entre la source de rayonnements et votre corps.

5.3. GREAT BRITAIN (TIS-23)

