Model SR5716/SR5796
Wireless Tension Monitoring Ratchet Tie-Down Straps

BCM SENSOR

Description

Model SR5716/SR5796 Wireless Tension Monitoring Ratchet Tie-Down Straps (WTM-RTS) are specially developed by BCM SENSOR to work with a WSN1000 wireless monitor in order to form a Wireless Tension-Detect-and-Alert System (WTDAS) for cargo safety in truck transportation.

One WTM-RTS consists of one ratchet frame, two straps with hooks, and one model 5716/5796 wireless load pin (WLP). Functioning as one of the bolts of the ratchet, the 5716/5796 WLP is fixed in the ratchet frame where the strap is attached on it. The SR5716/SR5796 WTM-RTS possesses IP66 protection and can be used in wet weather conditions.

Model SR5716 consists of one sensor made from nickel-plated mild steel while SR5796 is composed of one sensor made from stainless steel. Multiple of such the WTM-RTS can work with one WSN1000 monitor.
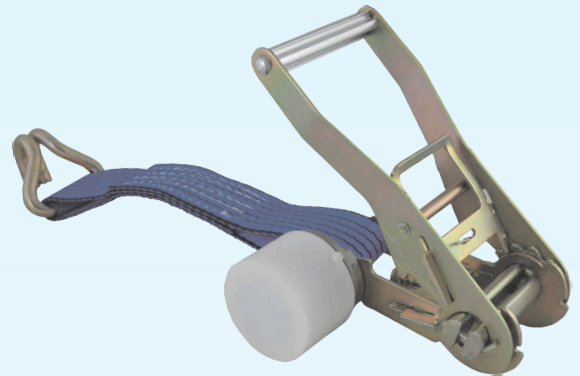
On the monitor, there are 16 LED's. Each LED employs three colors to indicate three different statuses of the WTM-RTS – green refers to fastened straps, red to loosened straps, and orange to an error status (e.g., low battery, disconnection, damaged sensor, …). In case one WTM-RTS becomes loosened during transportation, this WTM-RTS will inform the monitor wirelessly about its status change, and the monitor which is fixed on the dashboard in the driver cabin will alert the driver by turning the corresponding LED from green to red color and having its alarm triggered. Once the loosened WTM-RTS is tightened again, the corresponding LED goes back to green color and the alarm stops.

In one WTDAS the WSN1000 monitor communicates with up to 16 WTM-RTS at 2.4GHz radio frequency (RF), without need of any computer. Each of the WTDAS works independently so that the different WTDASs do not interfere each other among different trucks.

For customer applications where more than 16 WTM-RTS are needed, BCM SENSOR can further develop the WTDAS so as to tailor it to meet customer's needs.

SR5716/SR5796 WTM-RTS

5716/5796 WLP

WSN1000 Monitor

Features

- robust design;
- internal antenna;
- license-free 2.4GHz RF;
- suitable for all-weather conditions.

Applications

- cargo safety in truck transportation

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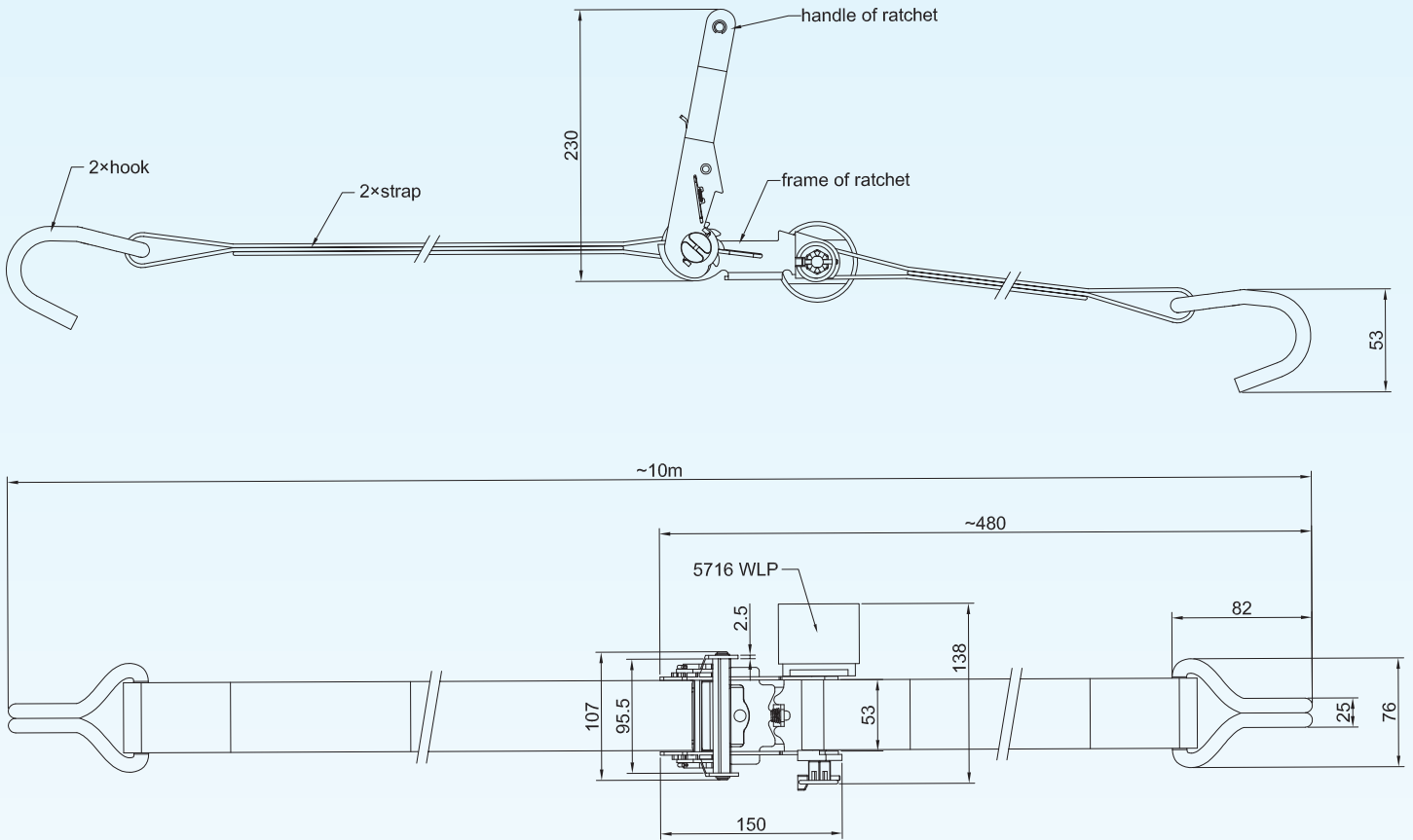
Dimensions

Note: All dimensions are in mm.

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Technical Data

Parameters		Units	Specifications	Notes
capacity		kg	300, 500, 750	1&2
safe overload		%fs	150	3
ultimate overload		%fs	200	
communication signal			2.4GHz RF	
communication distance		m	up to 100 through open space	
sampling	measuring data rate		10 data/second, adjustable to fit applications	
	sending data rate		1 time per 5 minutes, adjustable to fit applications	
accuracy of tension monitoring		%fs	±5	4
threshold			±10% of set load, adjustable to fit applications	5
supply voltage		Vdc	3.6 via two 1/2 AA batteries	
battery life			depending on use conditions	6
operating temperature range		°C	-20 ~ +60	
storage temperature range		°C	-20 ~ +60	
load pin body material			SR5716: nickel-plated mild steel, SR5796: stainless steel	
material of housing for electronics			PTFE	
environment protection			IP66	
net weight		gram	~500	

Notes: 1. The capacity refers to the maximum tension load which can be set for a WLP by WSN1000 monitor.

2. For customized capacity, consult BCM.

3. "fs" refers to full scale of capacity.

4. accuracy = sqrt(non-linearity^2 + hysteresis^2 + repeatability^2).

5. If the set load is 500kg by the WSN1000 monitor, the lower threshold will be 450kg (= 500kg x 90%) while the upper threshold will be 550kg (= 500kg x 110%). This means, in case the strap becomes loosened and the WLP senses that the tension is lower than 450kg, the corresponding LED on the WSN1000 monitor will be switched from green to red color and the alarm will go off.

6. Under the conditions of 25°C, 5m communication distance without obstacles, and sampling rate as listed above, the battery life is about one year. A lower temperature, a higher sampling rate, or a further communication distance will lead to a shorter battery life.

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Ordering Information

position (pos.) 1: model								
SR5716: made from nick-placed mild steel (standard) SR5796: made from stainless steel								
	pos. 2: capacity							
	300kg 500kg 750kg							
		pos. 3: measuring data rate						
		10 = 10 data per second						
			pos. 4: sending data rate					
			1/5 = 1 time per 5 minutes					
				pos. 5: accuracy				
				5%fs				
					pos. 6: threshold			
					10%			
						pos. 7: environment protection		
						IP66		
							pos. 8: total length of strap	
							10m = 10 meters	
								pos. 9: customized spec's
								"(*)" is necessary only if any customized parameter is required, otherwise it is neglectable.
pos.1	pos. 2	pos. 3	pos. 4	pos. 5	pos. 6	pos. 7	pos. 8	pos. 9

Examples of Ordering Code

- standard WTM-RTS:

  SR5716-750kg-10-1/5-5%fs-10%-IP66-10m

- customized WTM-RTS:

  SR5796-500kg-10-1/20-5%fs-10%-IP66-10m-(*)

  (*): Customized sending data rate = 1 time per 20 minutes.

The listed dimensions, specifications and ordering information are subject to change without prior notice.

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