iVALET

Ultrasonic Vehicle Sensor

Proprietary Information only for use with the iVALET Parking Management System.

OPERATOR INSTRUCTIONS

(production – February 21, 2006)

This self-contained battery operated ultrasonic sensor provides a status output signal that corresponds to the absence or presence of an object at or beyond its limit setting. The output status is provided as a DIO bit on the Millennial Net iB-5409 iBean wireless endpoint digital interface.

Battery installation – The top dome of the sensor case is separated from the flat base by twisting the dome clockwise about a 3 degree rotation. This will allow the dome to be separated from the flat base plate. Install a single 3.6 volt lithium AA battery oriented in the battery holder with the battery minus toward the spring. Reassemble the case by lining up the three forked tabs of the flat base with the three slots in the dome and turn the dome counter-clockwise about 3 degrees until it won't rotate any further. The sensor will now be operational.

Sensor interface – The sensor uses Millennial Net iBean line DIO 3 for the status output and DIO 2 for the Teach input.

DIO 3 – A "1" on this line indicates the presence of a vehicle in the parking space, "0" indicates empty. This line is updated every 9 seconds when the sensor completes its sample. This will maintain its output while the sensor is in sleep mode between samples.

DIO 2 – This is an input from iBean that commands the sensor to sample the ground to set its limit. A "1" on this line will cause the sensor to go into teach mode the next time it wakes up. When in teach mode the sensor will take a sample and the first target it sees will be considered the ground. The sensor will continue to set its limit every sample as long as DIO 2 is set to "1". If the sensor does not see any target during Teach then it retains its previous limit. When a limit is set, the actual limit is 30.5cm(12 in) closer the sensor. This provides a hysteresis band to prevent false sampling.

Changes or modifications not expressly approved by Hyde Park Electronics LLC could void the user's authority to operate the equipment.

General Specifications

Power Supply: (for both sensor and wireless interface)

Batteries:	Single 3.6volt lithium AA 1.9 Ahr
	Saft model LS 14500
	Tadiram model TL-5104
	or equivalent
Battery Voltage Requirement:	2.9 to 3.6 VDC 10 mA max during scan and transmit for 50 msec max. 120uA during sleep mode in between scans
Protection:	reverse-polarity

Output;

iBean interface signal:	DIO 3
Status:	"0" = parking space empty
	"1" = Parking space occupied

Teach input:

iBean interface signal:	DIO 2
Status:	"0" = normal operation
	"1" = Teach Ground Level

Response Time: 19 seconds max due to sensor and wireless latency

Operating Temperature: -30°C to 50°C (-22°F to 122°F)

Sensing: [T_A=20°C (68°F)] -Large Flat Target

Range:	1.25m (48in) to 3.5m (138 in)
Maximum plane-reflector angle:	+/- 8°
Sonic Cone Angle:	+/- 30°
Window-edge accuracy:	±50 mm (2 in.) @ constant temperature
Minimum object size flat plane:	1.5 m (60 in) square at 3.05m (120") range, 0° tilt
Factory Set sensing window	2.75m (108in.) to max range of 3.5m (138 in)
Temperature Compensation	NOT Temperature Compensated

Sensor Dimensions: 17cm(6.75in) dia. by 5.1cm(2.0in) tall

Sensor Connector Cable: n/a

Sensor Materials:

Housing:	PC-ABS
Transducer face:	Aluminum
Cable:	n/a
LED:	n/a

Sensor Ratings and Approvals: FCC Part 15