

SenseTime Controller SPECIFICATION



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Disclaimer

The information in this manual was accurate and reliable at the time of its release. However, we reserve the right to change the specifications of the product described in this manual without notice at any time.

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Approved by:

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SenseTime Controller Contains FCC ID: AMUBUM

Manufacturer: SCR Engineers Ltd.

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.

The FCC Wants You to know

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Warning

Changes or modifications to this equipment not expressly approved by the party responsible for compliance (SCR Engineers Ltd.) could void the user's authority to operate the equipment

Warning

The LDU Module along with the SCR designed and manufactured antenna, are designed to work according to strict worldwide standards and limits.

The SenseTime Controller, that contains both Module and Antenna, is assembled and then closed, and is designed to be mounted at height.

It is forbidden to replace or exchange any parts inside the SenseTime Controller.

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1 System Overview (SenseTime Controller – Tag)

The Cow Tag* enables farmers to monitor the cow health condition and the readiness of the cow for insemination.

The SenseTime Controller is connected to the main computer or server in the cowshed by Ethernet connection and transfer messages between the computer and the cow tags using RF communication.

Each tag is mounted on a collar that is placed around the cow's neck and has the following key features:-

Measure the activity and rumination of the cow, process the data and transmit the Information to the SenseTime Controller via RF communication autonomously every 20 minutes or upon request from the control system.

The RF communication of the cow tags with the SenseTime Controller enables monitoring the cows remotely up to a range of 500 meters **.

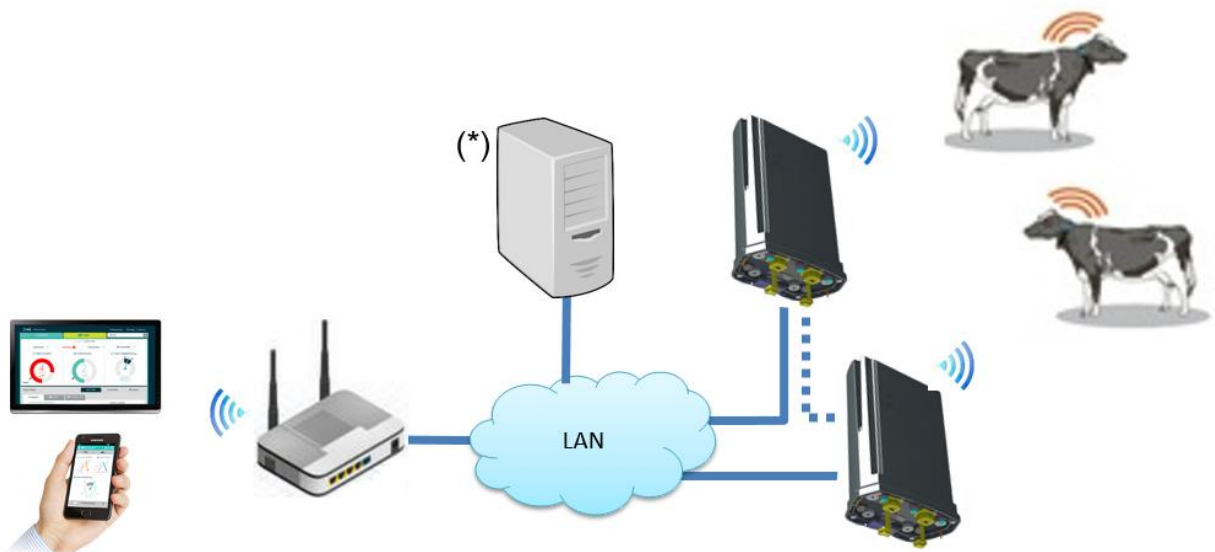
One SenseTime Controller is used for the long distance communication in each cowshed. The SenseTime Controller can communicate with up to 1000 cow tags using RF communication.

The SenseTime Controller is an outdoor unit powered by LPS POE Injector according to IEEE802.3at.

Approved POE Injector MicroSemi, Model 9001GR/AT/AC or equivalent.

* Supported TAGs:- H-TAG-LD, HR-TAG-LD, HR-TAG-LDn & eSense TAG Family

** Typical range: 200 x 500m based on site survey.



2 Part 2: Technical Specifications

2.1 SenseTime Controller Block Diagram

The SenseTime Controller unit includes:

- Isolated DC/DC converter that converts the POE input to 12VDC → 5VDC → 3.3VDC
- Ethernet 10/100 BaseT / POE interfaces for connection to the main computer
POE PD – Power In - Powered Device according to IEEE802.3at
POE PSE – Power Out - Power Sourcing Equipment IEEE802.3at
- 2 RF modules FCCID: AMUBUM that are connected to internal Patch Antenna
- I2C
- SD CARD
- NFC (Passive complies ISO15693)
- Diagnostic port (For Technician usage)
- USB OTG (For Technician usage)

2.2 SenseTime Controller RF Parameters

- Two RF Modules FCC ID: AMUBUM
 - RF Frequency Tx/Rx: 2.4GHz
 - IEEE 802.15.4 standard
 - Channels 11(2.405 GHz) to 26(2.480 GHz) for a total of 16 RF Channels.
 - Baud Rate: 250K Bit/Sec (Not configurable)
 - Output RF Power: 10mW Maximum
 - Internal Antenna type: Internal diversity patch antenna, ~10dBi, directional
 - Contains vertical and Horizontal antennas, RF transmitting done ALWAYS only via one antenna, as default via Vertical antenna. Second antenna (horizontal) always at Rx mode.
- NFC
 - Passive complies ISO15693

2.3 Technician Interfaces

- USB OTG
- Diagnostic port

2.4 External connections

- ETH / POE PD 802.3at
- ETH / POE PSE 802.3at
- Optional – RS 485
- Optional – Unit power from limited source of 24VDC +/-10%(*)
- Optional I/O – one input and one output 24VDC/GND

Note:- * In case of using 24VDC as power source no POE over PSE interface

3 TAG / SenseTime Controller communication overview

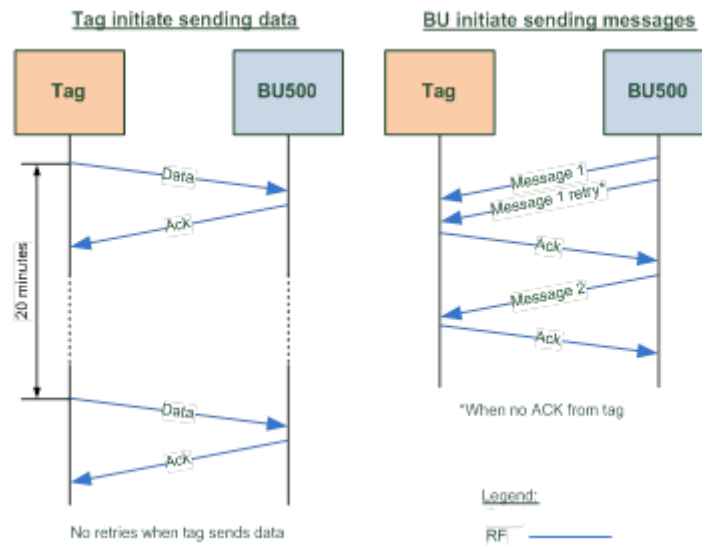
- SenseTime Controller – TAG communication

The tag initiates message every 20 minutes

The SenseTime Controller is synchronized to the tag timing according to the received messages from the tag

The SenseTime Controller can send messages to the tag from the cowshed computer.

Each message is replied by acknowledge

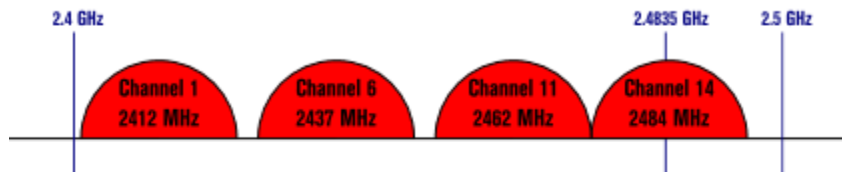


4 RF Requirements

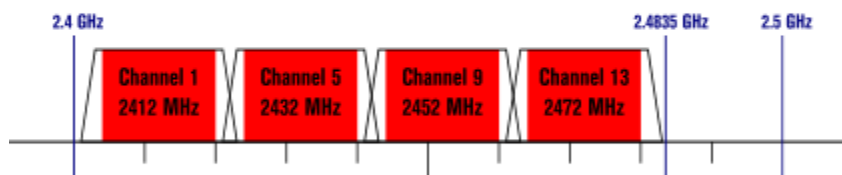
Wi Fi system working in the same area according to IEEE802.11 or IEEE802.15.4 (see below) should not have a frequency that overlaps the working frequency band of the system.

Non-Overlapping Channels for 2.4 GHz WLAN

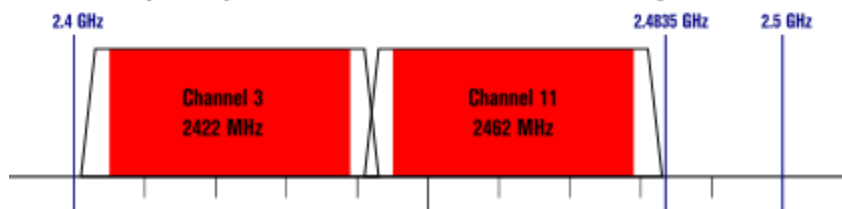
802.11b (DSSS) channel width 22 MHz



802.11g/n (OFDM) 20 MHz ch. width - 16.25 MHz used by sub-carriers



802.11n (OFDM) 40 MHz ch. width - 33.75 MHz used by sub-carriers

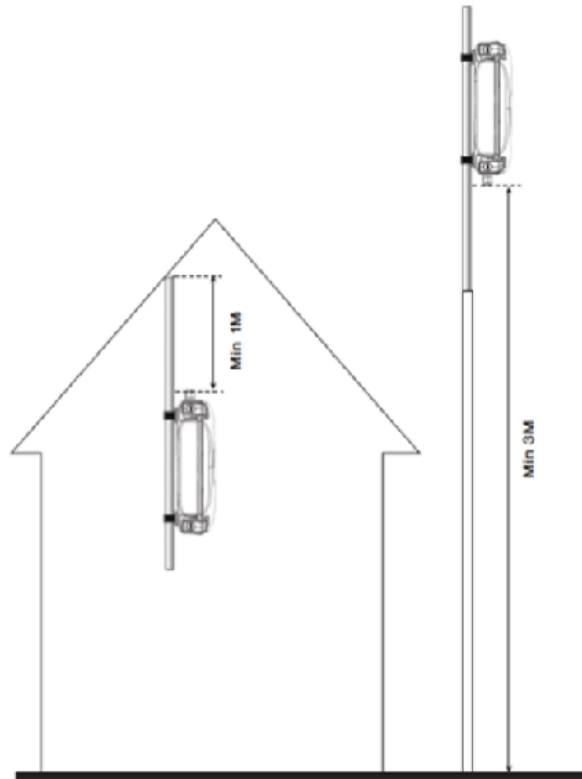


5 SenseTime Controller Installation

Reference: Installation Manual

Note: The SenseTime Controller must be installed at least 3 Meters above ground or 1 Meter below the rafters when installed inside a building.

Cable:- use Shielded Cat5E outdoor cable



6 Operational and Environmental Conditions

Operation and Storage	-30°C to +50 °C
Relative Humidity	0-95%
IP standard	complies to IP65
Transportation	Complies with ETS 300 019 -2-2 T2.3 Complies with ETS 300 019 -2-1 T 1.2

7 Radio, EMC, POE and Safety

Radio

Number	Market	Standard	Procedure
1	Europe	EN 300 440	Compliance testing and report
2	USA/Canada	47CFR PART 15, Sub C, sec 15.247	Compliance testing, report application and TCB approval
3	AUS/NZ	AUS/NZS 4268	Test report

EMC

Number	Market	Standard	Procedure
4	Europe	EN 301 489-1 EN 301 489-3	Compliance testing and report
5	USA/Canada	47 CFR PART 15, Sub B/ICES-003:04;	Compliance testing and report
6	AUS/NZ	AUS/NZS CISPR 22:2009+A1(10)	Test report

POE

Number	Market	Standard	Procedure
1	PD	IEEE802.3at	TBD
2	PSE	TBD	TBD

Safety

Number	Market	Standard	Procedure
1	Europe	EN 60950-1:06 + A11:09+A1:10+A12:11+A2:13; AS/NZS 60950.1:03 + A1:06+ A2:08+ A3:08; EN 60950-22:06+ A11:08	Compliance testing and report

Appendix A - Product Data

Product name	SenseTime Controller
Product Catalog #	CLT00xxx xxx – optional marketing part numbers as specific PN for specific customer or optional interfaces .
Rating	40-57VDC (48V Nominal) 0.1A from LPS POE according to IEEE802.3at Or (Optional) 24VDC±10% from LPS
Color	TBD
s/w version	TBD

Product mechanical dimensions

Length:	250mm
Width:	1815mm
Height:	114mm
Wight:	~1.5Kg

