



CNS Lon Radio Control Module

Features

- ≠ 3150 based control module
- ≠ Low power RF transceiver on board
- ≠ License exempt operation on 418MHz MPT1340, 433MHz ETC300-220, 914MHz FCC
- ≠ 19.5 kilobits per second plus, half duplex network bit rate
- ≠ Range:
 - 30 metre typical range within buildings, 120 metres open ground at 418 MHz; dependant upon aerial
 - 100 metre typical range within buildings, 200 metres open ground at 433 MHz, dependant upon aerial
- ≠ Common form factor allows interchangeability with other Echelon control modules



CNS Lon Radio Control Module

Description

The CNS433C provides a simple, cost-effective way of adding LonWorks technology to any control system where local conditions make an RF solution ideal for network communications. The control module integrates a 3150 with a low power UHF transceiver and only requires the addition of a suitable aerial and programmed EPROM to provide a complete system. The 18-pin I/O connector provides access to Power, Ground, Reset, Service Pin, and the 11 I/O pins of the 3150. The 6pin connector, which normally acts as the network connector for control modules, is unconnected. The board itself mounts the 3150, an external memory socket, suitable for both OTP EPROM and Flash memory, the UHF transceiver, the oscillator circuit, a DSP chip to provide robust and reliable operation over the RF medium, and an under-voltage sensing reset circuit, important for long term stability of the EEPROM writes in the 3150.

The module in all aspects performs exactly as the wired versions it can replace. In terms of performance, we always recommend that Acknowledge messaging service is used for the LonTalk protocol and that advice is sought from a local radio aerial specialist regarding the best type of aerial technology you should use in your particular application.

Hardware Overview

22-Pin Connector Pin-out

| | | | |
|----|--------|----|------|
| 1 | N/C | 2 | IO0 |
| 3 | GND | 4 | IO1 |
| 5 | GND | 6 | IO2 |
| 7 | GND | 8 | IO3 |
| 9 | /RESET | 10 | IO4 |
| 11 | IO5 | 12 | +5v |
| 13 | IO6 | 14 | IO9 |
| 15 | IO7 | 16 | IO10 |



Antenna

An SMA socket is provided for connection to an antenna. Helical stub or whip antennas are suitable types. A whip antenna can be formed from a straight length of wire 16.5cm long for 418MHz and 15.5cm long for 433MHz. A helical stub antenna can be formed from 0.5mm enameled copper wire close wound on a 3.2mm diameter former; 26 turns for 418MHz, and 24 turns for 433MHz. It is preferable to source these items encapsulated in a plastic or rubber sheath to prevent damage to the RF module during EMC susceptibility testing. These can be obtained from Radio aerial specialist companies in your area.

RF Type Approval

The RF module used in these products is approved to MPT1340 for use in the UK and ETS-300-220 for use in Europe. In order to maintain conformance the following rules must be applied:

1. The transmitting antenna must be one of 3 types; whip, helical stub, or loop. Antenna structures, which yield ERP gain, are not permitted.
2. The module must be directly and permanently connected to the transmitting antenna without the use of an external feeder. Increasing the RF power by any means is not permitted.
3. The module must not be modified nor used outside its specification limits.
4. The equipment in which the module is used must carry an inspection mark located on the outside of the equipment and be clearly visible. The minimum dimensions of the inspection mark shall be 10x15mm and the letter and figure height must be no less than 2mm. The wording shall read:

"MPT 1340 W.T. LICENSE EXEMPT"

5. Products intended for UK commercial application must be notified to the Radiocommunications Agency (RA) on form RA249 (Cat I), obtainable from the RA's library service, Tel: 0207 211 0502/0505.

Specifications

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|--------------------------|----------------------------------------------------------------------------------------------------------------------|
| RF Module: | 418MHz license exempt MPT1340 single channel FM module or 433MHz license exempt ETS300-220 single channel FM module |
| Network Bit Rate: | 19.5Kb/s + |
| Aerial: | Aerial SMA socket provided for helical stub or whip aerial. |
| Operating Input Voltage: | +5vDC ±5% |
| Operating Input Current: | 60 mA |
| Processor Neuron: | 3150 |
| Crystal Oscillator: | 10 MHz |
| Memory Socket: | 32pin PLCC for OTP 32k x 8 EPROM or Flash e.g. - AMD AM27C256 EPROM e.g. - Atmel AT29C256 Flash |
| I/O Connectors: | 2 x 9 pins on 0.1"(2.54mm) centres 1 x 6 pins on 0.1"(2.54mm) centres - these pins are not electrically connected |



| | |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Plugs: | 2 x 9 pin socket - Toby PHF2-18S-020 Samtech SSW-109-01-G-D 1 x 6 pin socket - Toby PHF1-06S-020 Samtech SSW-106-01-G-S |
| Mounting Pillars: | 3 x metal pillars 12mm/0.5" in height M3 pitch, required for mechanical mounting and good grounding connection for EMC compliance |
| Operating Temperature: | 0c to + 55c |
| Dimensions: | 61mm x 40mm x 23mm |

Ordering Information

CNS418B RF control module with 418MHz radio module fitted
CNS433B RF control module with 433MHz radio module fitted
CNS914B RF control module with 914MHz radio module fitted

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