802.15.4

α-ONE-2400

RADIO DATA MODEM

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DIRECT SEQUENCE SPREAD SPECTRUM – 2.4 GHZ – 802.15.4 COMPATIBLE α-ONE RADIO DATA MODEM

The DSSS 2.4 GHz 802.15.4 compatible α-ONE-2400 radio data modem implements the "Guaranteed Time Slots" (GTS) channel access mode. The 802.15.4 defined physical protocol layer is used for compatibility reasons, but the MAC protocol layer is proprietarily defined regarding support for industrial remote-control tasks including repeater units for range extension or wide area coverage. The α-ONE-2400 radio data modem does support point-to-point data communication (cable replacement mode), point-to-multipoint data communication (one transmitter controls multiple receiver units) and multipoint-to-multipoint data communication (master / slave takeover OR pitch & catch).

DATA MODEM TECHNICAL DATA

RADIO DATA MODEM TYPE	FREQENCY / CHANNELS	USE CASES
α-ONE-2400	2400.0 MHz – 2483.5 MHz 16 channels (11 – 26) PSK, 1 … 63 mW Tx power (250 kBd data rate)	▪ Point-to-Point ▪ Point-to-Multipoint ▪ Multipoint-to-Multipoint

POWER SUPPLY

| INPUT TYPE	FUNCTIONAL DESCRIPTION	ELECTRICAL SPEZIFICATION
POWER INPUT	3.3 V and 150 mA maximum.	Up to 3 power saving modes are available. Deep-sleep mode requires only 45 uA, wakeup time is less then 10 ms.

COMMUNICATION INTERFACES

INTERFACE TYPE	BUS STANDARD	USE CASE EXPLANATION
SERIAL COMMUNICATION INTERFACE – 1	RS422 full duplex communication link OR RS485 semi-duplex communication link.	9600 kBd … 500 kBd 1 start bit 1, 1.5 & 2 stop bits 5…8 data bits Even, odd or no parity An additional GPIO port input can enable this communication interface as bootloader port for reprogramming.
SERIAL COMMUNICATION INTERFACE – 2	RS422 full duplex communication link OR RS485 semi-duplex communication link.	9600 kBd … 500 kBd 1 start bit 1, 1.5 & 2 stop bits 5…8 data bits Even, odd or no parity

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ADDITIONAL FEATURES

INTERFACE TYPE	USE CASE	USE CASE EXPLANATION
ANALOGUE INPUTS	2 * analogue input for measuring voltages between 0V … 3V.	These measurement values are part of the radio protocol and inform the base station about the power situation of this radio data modem.
DIGITAL OUTPUTS	2 * digital output 0V or 3.3V.	Each output is set, if a valid base station link is established. For the base station, each output is set if at least one remote station linked up (safety use case).
DIGITAL INPUTS	2 * digital inputs are available, and their state is transmitted through the radio protocol.	Each input state is cyclically transmitted through the radio protocol (safety use case).
SERIAL FLASH MEMORY	Storage of new firmware, configuration data or long-time log-file.	For over-the-air firmware update and configuration data update. Through the configuration data, the built-in logger function can be activated to record the operation of the data modem.

MECHANICAL CASE OUTLINE & DIMENSIONS
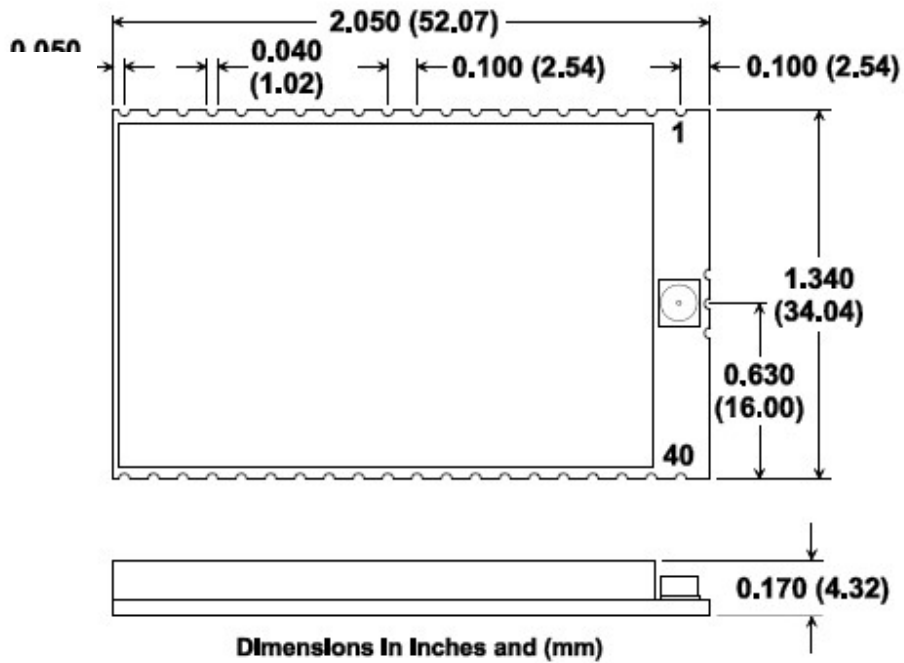
ALPHA-ONE-2400 – Mechanical Dimensions