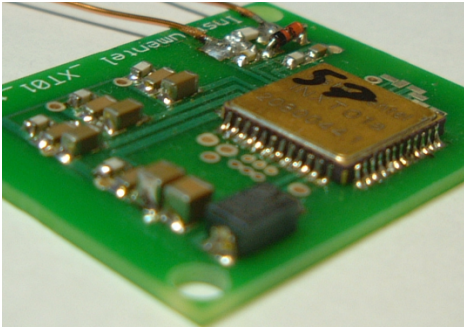


### Enhanced XT01 tag



- Extended temperature capability (-40 to +175°C), however proven @ temperatures of 1000+°C for short periods.
- Instrumentel's world leading XT01 transponder.
- On-board memory for autonomous data capture.
- Three sensor interfaces for pressure, strain and thermocouple gauges.
- Flexible and high speed sampling modes.
- Multiple trigger functions.
- wireless transmission at 2.5k samples/s per channel.
- 60k (8-bit) samples/s single on-board capture or
- 25k samples/s three channel capture mode.

## Introduction

The Enhanced XT01 tag is a remote wireless data acquisition system, taking the form of a small PCB module. This features the world leading XT01 near field telemetry transponder with battery power, non-volatile memory, sensor conditioning and multiplexing circuits.

The XT01 transponder is a silicon on insulator (SOI), application specific integrated circuit (ASIC) designed to sample sensors in real time and wirelessly over a near field channel without the need for battery power on the tag. Instrumentel have a considerable and growing reputation for delivering and operating their electronic devices to acquire data from extreme and awkward to access places as found in the process control, automotive, rail and nuclear industries. To tackle such applications, Instrumentel has invested in the design of the small, highly integrated XT01 transponder. This device has been proven to function reliably in extremes of temperature, radioactivity and mechanical shock.

Customers have requested additional functionality over that provided by the XT01, and to provide this, Instrumentel have created an enhanced tag design that uses the XT01 to relay commands to the on tag electronics and sample data using the integrated 8 bit analogue to digital converter.

In use, power and control signals are sent to the Enhanced XT01 tag, with sensor data retrieved via an inductively coupled near-field channel, which is created using an Instrumentel Diagnostic Hub.

## Specification

### XT01 ASIC

**Architecture:** High performance complex single Instruction CPU

**Operating temperature Range:** -40°C – +225°C

**Maximum input voltage:** 60V

**Current consumption:** <20mA

**Maximum functional temperature:** 250°C with performance de-rating

### Enhanced Peripheral features

**Operating Temperature:** -40 to + 175

**Memory:** 2M bit ferroelectric

**Condition circuits:** 3 Instrumentation amplifiers

**Gain Settings:** 1x, 2x, 5x, 10x, 20x, 50x and 100x

**Battery:** 2 x Li-Ion cells, 90mAh total

**Sensor Inputs:** Pressure, strain and thermocouple

**Wireless Sample Rate:** 2.5k samples/s per channel

**Memory sample rate:** up to 25k samples a second per channel

**Trigger:** Sensor level (positive and negative), direct connection or wireless interfaces

### Direct Connection

**Interface:** UART

**Baud rate:** 115200

**Parity:** None

**Data Bits:** 8

**Stop Bits:** 1

**Hardware Flow Control:** None

### Wireless Channel

**Carrier frequency:** 13.56MHz

**Sub-carrier:** 847.5 kHz

**Forward path modulation scheme:** OOK

**Forward path data rate:** 3.6kbs<sup>-1</sup>

**Forward path coding:** PWM Encoding

**Backward path modulation scheme:** ASK

**Backward path data rate:** 60kbs<sup>-1</sup>

**Backward path coding:** PWM encoding

**Protocol:** Instrumentel proprietary protocol

### Power Requirements

**Power:** Battery or DC power connection

**Power Input:** 5 VDC

### Product Family

