

finepitch[™]—a family of single-chip integrated circuit solutions for musical instrument tuning applications.

finepitch[™] digital tuning technology is scalable allowing price and performance to be optimised for different market segments and time-to-market to be substantially reduced.

By scaling *finepitch*[™] technology, it is possible to significantly reduce the pitch-measurement time. This makes possible real-time pitch tracking of monophonic musical instruments; a technology dubbed *finepitch*[™]EXPRESSION.

The new *finepitch*[™] FPE100 integrated circuit provides a single-chip digital solution for electronic or acoustic instrument tuning applications with integrated real-time monophonic pitch-to-MIDI and is pin-compatible with the *finepitch*[™] GTC100 tuner chip.

With breakthrough price/performance at a cost of \$8 per unit (10,000 quantity)* and requiring only low-cost external components, the *finepitch*[™] FPE100 facilitates production of high-quality, low-cost OEM products.

For an example application area, see the *finepitch*[™]EXPRESSION Soloist concept design.

- Tuning range C1 to C6; Middle C = C4
- Real-time MIDI range C2 to E6
- Pitch-to-MIDI conversion time of 35 ms
- Velocity-sensitive MIDI note output
- Accurate MIDI pitch bend scaled for ± 2 semitones
- Minimum tuning accuracy of 0.8 cents; better than 0.5 cents over most of the tuning range
- Sub-cent visual tuning capability
- Extremely fast tuning response
- Automatic note detection
- Reference frequency A₄₄₀ adjustable from 437 Hz to 443 Hz in 1 Hz steps
- Accurate reference tone output—square wave
- Instrument temperaments—Equal tempered, Pythagorean (string), Just Major (wind)
- High noise rejection—useful when tuning acoustic instruments
- 7-segment LED interface for note display
- 7 LED tuning meter display via direct connection to chip—no glue logic required. Unique display allows visual tuning to better than 1.0 cent accuracy
- Clip indication via “note sharp” LED
- MIDI output enable line simplifies integration of multiple FPE100 in polyphonic applications. This can also be used as a “MIDI latch” function
- On-board ADC reduces component count and simplifies design
- Low current consumption makes the chip ideal for use in portable applications—typically <6 mA @3.3V operation
- EXPRESSION mode consumes <8 mA for ultra-long battery life (including external LEDs)
- Small footprint (9 mm × 9 mm) simplifies embedded applications
- Pin-compatible with the *finepitch*[™] GTC100

JHC Software Limited and Wired Audio Technology Limited are continually working to improve their products. If a product in our product range does not exactly fit your needs, a customer-specific customisation service is available to tailor a particular product to your requirements.

*. Budgetary price guideline in USD. Formal quotations are available on request.

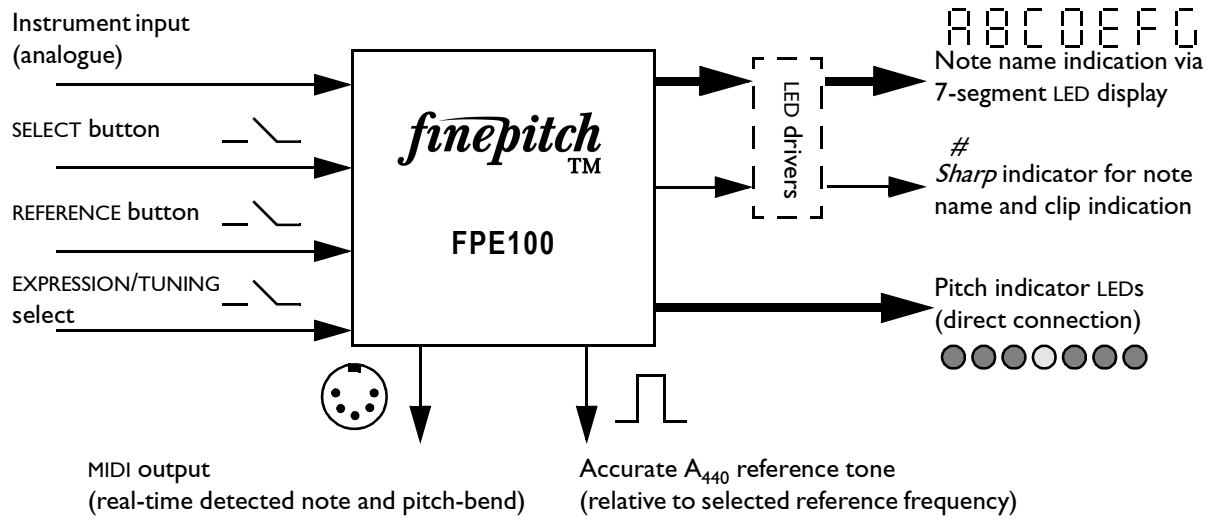


Figure 1: Block diagram of the *finepitch*TM FPE100.

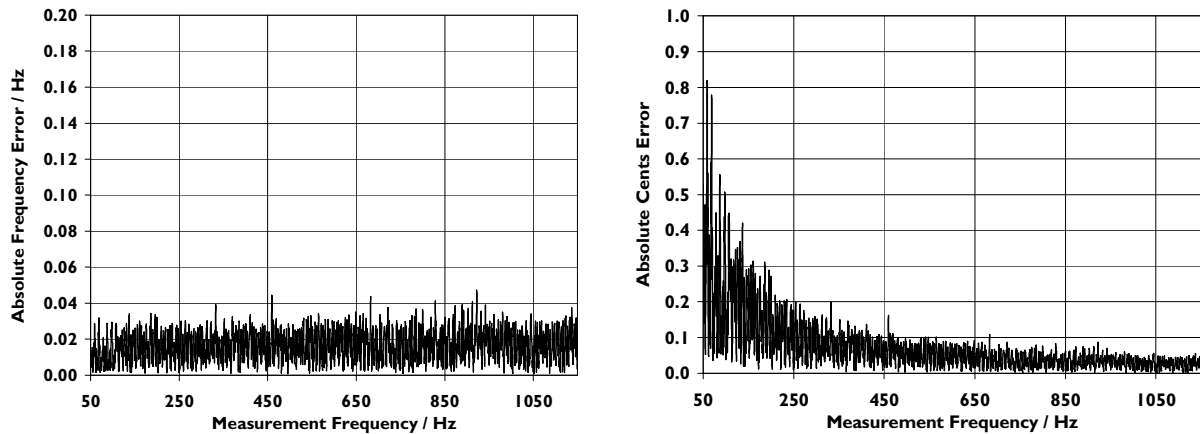


Figure 2: Maximum measurement errors for a sinusoidal input signal, in TUNING mode.

www.tuneric.com—for the latest information on all *finepitch*TM integrated-circuit products.

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