**Department of Physics, Indian Institute of Technology**

**IIT.P.O. Madras-600 036**

Date: 23 / 03 / 2017

Dear Sir,  **Due date: 15/ 04 / 2017**

1. Quotations are invited in duplicate for the item specified below/overleaf/ enclosed.
2. The quotations duly sealed and superscribed on the envelope with the Reference No. and due date, should be addressed to the undersigned so as to reach him/her on or before the due date stipulated above.
3. The quotations should be valid for sixty days from the due date and the period of delivery required should also be clearly indicated.
4. If the item is under DGS &D RATE CONTRACT, RC No.and the price must be mentioned. It may be also please be indicated whether the supply can be made direct to us at the Rate Contract price. If so, please send copy of the RC ( Please note that we are not Direct Demanding Officers)
5. Relevant literature pertaining to the items quoted with full specifications ( and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples if called for, should be submitted free of charges, and collected back at the supplier’s expenses.
6. **Local Firms** : Quotations should be for free delivery to this Institute. If Quotations are for Ex-godown . delivery charges should be indicated separately.
7. **Firms outside Chennai**: Quotations should be for F.O.R. Chennai. If F.O.R.

consignor station, freight charges by passenger train/lorry transport must be indicated. If Ex-godown, packing, forwarding and freight charges must be indicated.

1. The rate of Sales/General Taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim, for Sales/General taxes will be admitted at any stage and on any ground whatsoever . **The taxes leviable should take into consideration that we are entitled to have concessional Sales Tax applicable to non-Government Educational Institutions run with no profit motive for which a concession. Sales tax Certificate will be issued at the time of final settlement of the bill**.
2. Goods should be supplied carriage paid and insured.
3. Goods shall not be supplied without an official supply order.
4. Payment: Every attempt will be made to make payment within 30 days from the date of receipt of bill/acceptance of goods, whichever is later.

**SPECIFICATION ENCLOSED**

Yours Sincerely,

**Dr. Sivarama Krishnan**

**Head / Co-ordinator**

Department of Physics,

Indian Institute of Technology Madras, Chennai - 600036, India.

Telephone : +91 44 2257 4850

**Minimum specification for Digital Delay/Pulse Generator**

**(Quantity - 1 unit)**

|  |  |  |
| --- | --- | --- |
| **Sl. No** | **Parameter** | **Value** |
|  | **Delays** | |
| 1 | Channels | Four independent delay outputs |
| 2 | Range | 0 to 999.999,999,999,995 seconds |
| 3 | Resolution | 5 ps |
| 4 | Accuracy | 1500 ps + timebase error × delay |
| 5 | Timebase | Standard: 25 ppm crystal oscillator |
| 6 | Optional: 1 ppm TCXO (opt. 03) |
| 7 | External: 10.0 MHz reference input |
| 8 | RMS jitter | <100 ps + (10-8 × delay) |
| 9 | Trigger delay (typ.) | 85 ns (ext. trigger to T0 output) |
|  | **External Trigger** | |
| 10 | Rate | DC to 1/(1 µs + longest delay) |
| 11 | Threshold | ±2.56 VDC |
| 12 | Resolution | 10 mV |
|  | **Internal Rate Generator** | |
| 13 | Rate | Single shot, 0.001 Hz to 1.000 MHz, or Line |
| 14 | Resolution | Four digits, 0.001 Hz below 10 Hz |
| 15 | Accuracy | Same as timebase |
| 16 | Jitter | 1:10,000 |
| 17 | Settling | <2 seconds for any rate change |
| 18 | Burst mode | 2 to 32766 pulses per burst at integer multiples (4 to 32767) of the trigger period |
|  | **Outputs** | |
| 19 | Load | 50 Ω or high impedance |
| 20 | Rise time | 2 to 3 ns (typ.) |
| 21 | Slew rate | 1 V/ns |
| 22 | Overshoot | <100 mV + 10 % of pulse amplitude |
| 23 | Levels | TTL: 0 to 4 VDC (normal or inverted) |
| ECL: -1.8 to -0.8 VDC (normal or inverted) |
| NIM: -0.8 to 0.0 VDC (normal or inverted) |
| VAR: Adjustable offset and amplitude between -3 and +4 VDC with 10 mV resolution. 4 V maximum transition. |
| 24 | Accuracy | ±(50 mV + 3 % of pulse amplitude) |
| 25 | Option 02 | Rear panel 1 µs pulses corresponding to T0, A, B, C, D outputs with nominal amplitude of 8× the front-panel outputs at 1kHz rep rate. Output level reduced by 2 V/mA of additional average output current. |
|  | **Fast Rise Time (opt. SRD1)** | |
| 26 | Output amplitude | +0.5 to 2.0 VDC |
| 27 | Output offset | -0.8 VDC (typ.) |
| 28 | Transition time | Rise (20/80 %) - 100 ps (max.) , Fall (20/80 %) - 2000 ps (max.) |
| 29 | Pulse aberrations | Foot - 4 % (typ.), Ring - ±5 % (typ.) |
|  | **Fast Fall Time (opt. O4B)** | |
| 30 | Output amplitude | -0.5 to -2.0 VDC |
| 31 | Output offset | +0.8 VDC (typ.) |
| 32 | Transition time | Rise (20/80 %) - 2500 ps (max.) , Fall (20/80 %) - 100 ps (max.) |
| 33 | Pulse aberrations | Foot - 4 % (typ.), Ring - ±5 % (typ.) |
|  | **General** | |
| 38 | Power | 70 W, 100/120/220/240 VAC, 50/60 Hz |
| 39 | Warranty | One year parts and labor on defects in materials and workmanship |

**Please provide prices of individual units of the accessories, if any. Accessory prices will be compared if needed.**

**Please provide a clear warranty statement**

**Please provide a single bid with both technicals and financials in a sealed envelope.**

**Please mark tender number on top of the cover envelope**

**Sivarama Krishnan**