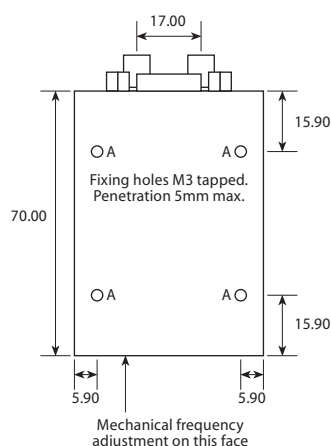
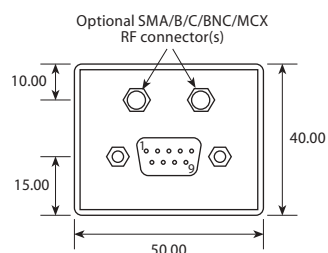




| PIN | CONNECTION         |
|-----|--------------------|
| 1   | Freq adjust (+ve)  |
| 2   | Fine adjust        |
| 3   | Freq adjust (-ve)  |
| 4   | Isolated RF output |
| 5   | Isolated RF output |
| 6   | + Supply           |
| 7   | DO NOT USE         |
| 8   | - Supply           |
| 9   | Case               |

Scale 1:2

## Features

- Temperature stability down to 1ppb
- Twin RF outputs available
- Oven alarm option on D9 connector
- Custom options available

## Standard Models

| Freq    | Specification | Ageing per day          | Temperature stability           | Part No |
|---------|---------------|-------------------------|---------------------------------|---------|
| 5.0MHz  | HCD220/DRFND  | $\pm 1 \times 10^{-9}$  | $\pm 1 \times 10^{-8}$ -20+70°C | MA05197 |
| 5.0MHz  | HCD220/FTFND  | $\pm 2 \times 10^{-10}$ | $\pm 3 \times 10^{-9}$ -20+70°C | MA05621 |
| 10.0MHz | HCD220/DRFNA  | $\pm 1 \times 10^{-9}$  | $\pm 1 \times 10^{-8}$ -20+70°C | MA05622 |
| 10.0MHz | HCD220/FTFNA  | $\pm 2 \times 10^{-10}$ | $\pm 3 \times 10^{-9}$ -20+70°C | MA01842 |

## Ordering Information

Product name + option code + frequency

eg: **HCD220/DRFND 10.0MHz**

**HCD220/FTFNA 5.0MHz**

Option code X (eg HCD220/X) denotes a custom specification.

## Specifications

| Parameters                                                                                                                                                                                   | Product<br>HCD220     | Option<br>Codes        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|
| <b>Frequency range:</b> 5.0 ~ 16.0MHz                                                                                                                                                        | ■                     |                        |
| <b>Ageing per day (at despatch):</b><br>$< \pm 1 \times 10^{-9}$<br>$< \pm 2 \times 10^{-10}$<br>$< \pm 1 \times 10^{-10}$ (<10MHz only)                                                     | ■<br>■<br>□           | D<br>F<br>G            |
| <b>Frequency stability:</b><br>$< \pm 2 \times 10^{-8}$ per year<br>$< \pm 1 \times 10^{-9}$ per 10% change in $V_{DD}$<br>$< \pm 5 \times 10^{-10}$ per 10% change in load                  | ■<br>■<br>■           |                        |
| <b>Short term stability:</b><br>$< \pm 5 \times 10^{-12}$ over 1 sec (5.0MHz)<br>$< \pm 1 \times 10^{-11}$ over 1 sec (10.0MHz)                                                              | ■<br>■                |                        |
| <b>Temperature stability:</b> $< \pm 1 \times 10^{-8}$<br>$< \pm 5 \times 10^{-9}$<br>$< \pm 3 \times 10^{-9}$<br>$< \pm 1 \times 10^{-9}$                                                   | ■<br>□<br>■<br>□      | R<br>S<br>T<br>V       |
| <b>Operating temperature range:</b><br>0 to +50°C<br>-10 to +60°C<br>-20 to +70°C<br>-40 to +70°C                                                                                            | □<br>□<br>■<br>□      | A<br>C<br>F<br>G       |
| <b>Storage temperature range:</b><br>-40 to +90°C                                                                                                                                            | ■                     |                        |
| <b>Output waveform:</b><br>Sine wave, 7dBm ( $\pm 1$ dBm) into 50Ω<br>Other options from 3 to +13dBm                                                                                         | ■<br>□                | specify                |
| <b>Frequency adjustment:</b><br>$\pm 5 \times 10^{-7}$ (typ) over +0.5 to +8V<br>(sufficient for 10 years ageing min)<br>Stabilised +8V supply provided<br>Mechanical $\pm 5 \times 10^{-7}$ | ■<br>■                |                        |
| <b>Supply voltage (<math>V_{DD}</math>):</b><br>+12V ( $\pm 0.5$ V)<br>+24V ( $\pm 0.5$ V)<br>Other options from 12~30V                                                                      | ■<br>■<br>□           | N<br>T<br>specify      |
| <b>Power consumption:</b><br>5.0W max at switch on<br>2.0W typ when stabilised at 25°C                                                                                                       | ■<br>■                |                        |
| <b>Warm up:</b><br>$< \pm 1 \times 10^{-8}$ after 12mins at +25°C                                                                                                                            | ■                     |                        |
| <b>Phase noise (@ 10.0MHz):</b><br>$< -130$ dBc/Hz @ 10Hz<br>$< -140$ dBc/Hz @ 100Hz<br>$< -155$ dBc/Hz @ 1kHz<br>$< -158$ dBc/Hz @ 10kHz<br>$< -160$ dBc/Hz @ 50kHz                         | ■<br>■<br>■<br>■<br>■ |                        |
| <b>External connectors:</b> D9<br>D9 + single SMA<br>D9 + twin SMA<br>Other (BNC, single or twin SMB/C/MCX)                                                                                  | ■<br>□<br>□<br>□      | D<br>A<br>G<br>specify |
| <b>Harmonics:</b> $< -30$ dB wrt carrier                                                                                                                                                     | ■                     |                        |
| <b>Shock:</b> IEC 68-2-27 Test Ea<br>50G for 11ms                                                                                                                                            | ■                     |                        |
| <b>Vibration:</b> IEC 68-2-06 Test Fc<br>10-55Hz, 1.5mm. 55-500Hz, 10G                                                                                                                       | ■                     |                        |

■ Standard. □ Optional - Please specify required codes when ordering