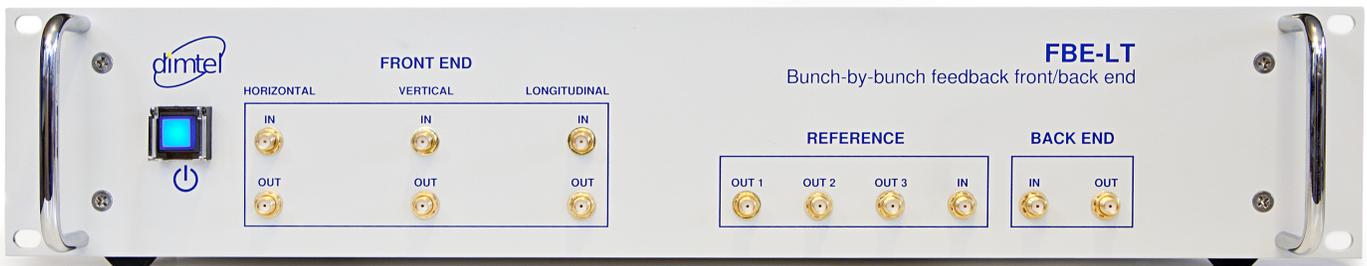


FBE-LT – Longitudinal/Transverse Front and Back End



FBE-LT series of RF signal processors incorporates front-end and back-end electronics for bunch-by-bunch feedback in three planes. Three front-end channels are designed to convert BPM hybrid network outputs to baseband signals which can be directly digitized by the iGp12. Front-end channels are designed for detection frequencies around 1.5 GHz (dependent on the RF frequency) and use comb filters to lengthen beam signals and reduce front-end sensitivity to sampling clock drifts and jitter.

The back-end channel upconverts the baseband longitudinal kick signal to the kicker frequency for driving the power amplifier and the kicker. FBE-LT interfaces to the iGp12 digital I/O port for control of front- and back-end attenuators and phase shifters. The same interface is also used to read out unique FBE-LT device ID, monitor its internal temperature, and control the cooling fan speed.

| Parameter | Value |
|------------------------------|---------------|
| Gain adjustment range, FE/BE | 31.5 dB |
| Front end output pulse width | 1.5 ns |
| Front end 3 dB bandwidth | 600 MHz |
| Phase shifter step size | < 0.2 degrees |
| Bunch to bunch isolation | 40 dB |

Dimtel Products

| | |
|---------------|--|
| LLRF9 | A 9-channel low-level RF controller for storage rings and boosters |
| iGp12 | Bunch-by-bunch signal processor, 2 ns minimum bunch spacing |
| iGp12H | Slice-by-slice feedback signal processor for proton accelerators |
| FBE-LT | Front/back end for a bunch-by-bunch feedback system, three front end channels, one back end |
| Actico | Active kick combiner |
| BPMH | BPM hybrid network, 20–2000 MHz, four BPM inputs converted to ΔX , ΔY , and Σ |

Commissioned Dimtel Systems

Bunch-by-bunch feedback

| | | |
|------------------------|-------------|----------------|
| ALS | DELTA | Photon Factory |
| ANKA | Duke SR-FEL | Sirius |
| APS | ELSA | SPring-8 |
| Australian Synchrotron | HLS | SPEAR3 |
| BEPC-II | Indus-2 | SSRF |
| BESSY II | LNLS UVX | Super KEKB |
| CLS | MAX IV | TLS |
| CesrTA | MLS | TPS |
| DAΦNE | NSLS-II | |

Low-Level RF

ANKA
DELTA
ELSA
SESAME

Intra-bunch feedback

J-PARC

About Dimtel:

Dimtel is a provider of analog and digital signal processing solutions for particle accelerators. Our primary focus is on bunch-by-bunch feedback for storage rings, bunch-by-bunch diagnostics, and low-level RF. Turnkey solutions from Dimtel allow the accelerator physicists and engineers to get the systems up and running in hours rather than years. We also provide support for beam commissioning and control system integration of our products. Contact us: info@dimtel.com; +1 650 862 8147

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