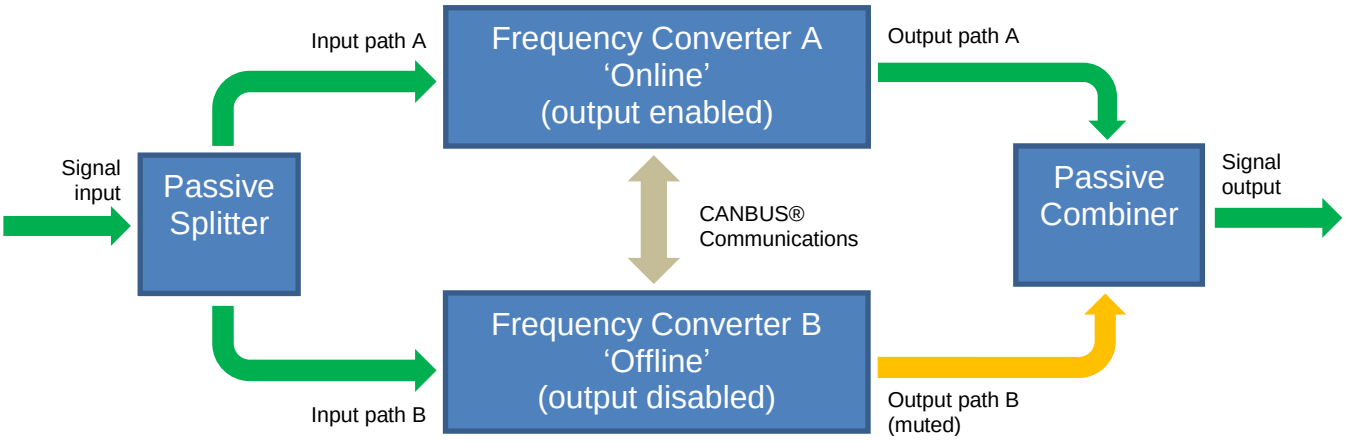
Application Note AN006

P7xxx series converters in 1+1 passive redundancy

Any two identical P7xxx series synthesised converters will operate as a 1+1 passive redundant pair, with no other equipment except for a single interconnecting CANBUS® control lead, two power splitters /combiners and RF cables to connect the units in parallel.



Both converters operate continuously, performing their conversion function on the incoming signals, but only one unit enables its output.
In the event of a catastrophic fault, such as a power supply disconnection etc., the control circuitry (which is distributed between the two units) will disable the faulty unit and enable the operational unit.
Note; this configuration includes 2-way splitters & combiners, each with a theoretical 3dB loss, so the associated overall loss through the system will typically be higher than on a traditional co-axial 'switched redundant' system.

Operation

As the passive system has no tell-back facility from relay contacts, this normal feature has to be disabled to allow the passive redundant system to function correctly, this achieved by selecting the 'IGNORE COAXIALSWITCH' from the Modify Parameters -> Unit menu (see operation manual for details).
Each converter, operating continuously, provides a regularly updated status to the other unit's 1+1 control logic. There is no pre-assigned master and slave unit.
Changeovers are minimised, i.e. a unit disabled due to a reported fault, will remain disabled even if it returns to the non-alarm state. If it does return to the non-alarm state then it will act as the offline unit.
The software provides the necessary delays of status to the control logic, to prevent unnecessary changeovers. There is no delay in the case of catastrophic faults, when the hardware performs the changeover regardless of the software.
The 1+1 system has no 'memory', i.e. a unit taken off line because of a detected fault, will be put back online, but in the disabled state, if it recovers.

Peak Communications Ltd., Unit 1, The Woodvale Centre, Woodvale Road, Brighouse, West Yorkshire, HD6 4AB, U.K.
Tel; +44 (0)1484 714200 Sales; +44 (0)1484 714229 Fax; +44 (0)1484 723666 Email; sales@peakcom.co.uk Web; www.peakcom.co.uk

Detected faults

A detected fault is defined as either a failure of the unit, or a catastrophic (power) failure. The units will change over if a fault is detected on the enabled unit, and the offline unit indicates that it is still operational. If both units fault simultaneously (which is likely to be caused by external circumstances), then no changeover takes place.
External faults will also cause a changeover and the front panel status LED to change from green to flashing green and an alarm report to be displayed.

Manual changeovers

The units are able to ‘give away’ operation to the other unit of the pair, if instructed to do so from the front panel. The changeover over will only occur if the other unit indicates that it is OK, and is performed by momentarily simulating a fault in the on-line equipment.

Peak Communications Ltd., Unit 1, The Woodvale Centre, Woodvale Road, Brighouse, West Yorkshire, HD6 4AB, U.K.
Tel; +44 (0)1484 714200 Sales; +44 (0)1484 714229 Fax; +44 (0)1484 723666 Email; sales@peakcom.co.uk Web; www.peakcom.co.uk