FS6000 Series Channelized BDA
450-512 MHz

FS61C-40
Digital Narrowband Signal Booster

- Ideally suited for Public Safety applications
- 40 Watts Output Power Amplifiers
- Up to 20 full duplex channels in 6U rack space
- 140 dB System Gain per channel
- Individual AGC, Rx Squelch and CTCSS settings per channel
- Fiber-Fed DAS Configurations
- Programmable Filters Bandwidth, Selectivity & Group Delay

Fiber-Span’s FS61C-40 Narrowband Digital Technology integrates uplink and downlink programmable front-end narrowband filters with broadband Multi-Carrier Power Amplifiers (MCPAs), to deliver a Bi-Directional Narrowband Signal Booster.

The FS61C-40 uplink amplifiers can be specified as truly channelized narrowband filters tuned to transmit only your licensed channels, in compliance with the FCC definition for Class-A Signal Boosters.

It can be configured with up to 10 or 20 fully programmable filters per path, Uplink and Downlink. The downlink path filters can be broader for reduced delays to accommodate the digital modulation signals timing constraints in the overlap coverage areas.

Each filter-window may have an input sensitivity of -115 dBm and up to 140 dB of gain (subject to external duplexers and physical limitations)

The FS61C-40 is a patent-pending design for multi-carrier two-way rebroadcast systems, where significantly high dynamic range is required on a channel-per-channel basis, while delivering lower & flatter group delay.

The individual AGC per channel feature essentially eliminates the uplink near-far concern prevalent in many Public Safety broadband DAS systems.

The filter’s bandwidths & selectivity can be specified by the user in order to achieve very narrow filters windows, such as, for example, 70 dB rejection at 200 kHz offset for less than 13 μsec, or 70 dB rejection at 90 kHz offset at the expense of 30 μsec delay.

The individual receive threshold level (RF Squelch) per filter ensures clean output spectrum with no amplified noise if inactive.

A variety of pre and post-rebanded internal duplexer options are available for additional interference protection and multi-service/multi-band compatibility over broadband DAS systems.

Also available are configuration options that exclude the portable side duplexer and downlink MCPA for direct compatibility with Fiber Optic DAS systems.

Consult Fiber-Span Sales team for custom Bi-Directional Amplifier configurations and fiber optic options including WDM.

Refer to separate data sheets for VHF & 700/800MHz models.

Applications:
• Shopping Malls • Warehouses • Parking Garages • Airports • Justice Centers • Manufacturing Facilities

Fiber-Span is a world-leading manufacturer of RF ON FIBER® Communication Network Products for in-building, in-tunnel and outdoor coverage extension systems serving the Commercial Wireless, Public Safety, Government and Military markets.
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| Frequency range:                                                            | 450-512 MHz  
The actual passbands may be Custom defined                                                                                   |
| Narrowband filters Selectivity – Adjacent Channel Rejection (ACR)          | 20-70 dB. The Filters Response-Type, Group Delay, Bandwidth and Selectivity are software-defined.                                           |
| Absolute Group Delay                                                        | 10-120 uSec Programmable                                                                                                                   |

NOTE: Absolute Group Delay, Selectivity and Response-type are software selectable off a standard library of filters or custom-filters upon order. Lower group delays are feasible at greater channel bandwidths. For example, one option can deliver ~30 usec with 70 dB rejection @ 90 kHz offset, and another option delivers <13 usec with 70 dB rejection at 200 kHz offset. Please consult Sales with your specific requirements.

| System net gain per filter window                                           | 140 dB max.                                                                                                                                  |
| Automatic Gain Control (AGC) range, on a per filter-window basis            | 50 dB                                                                                                                                       |
| Constant Output level regardless of input level variations, per filter     | +/- 2 dB                                                                                                                                    |
| Broadband Input Automatic Level Control (iALC) range to prevent front-end undesired saturation, per path UL/DL | 30 dB                                                                                                                                       |
| Broadband input power attenuator adjustment range, per path UL/DL           | 25 dB                                                                                                                                       |
| Maximum input power (composite) for no-damage, per path UL/DL              | -30 dBm                                                                                                                                     |
| Input (Rx) IM Rejection                                                     | >60 dB                                                                                                                                       |
| System OIP3                                                                 | >58 dBm                                                                                                                                     |
| Output Multi-Carrier Power Amplifier (MCPA) capacity                       | >46 dBm (40 W)                                                                                                                                |
| FCC Certified maximum output power per carrier                             | 37 dBm (5 W)                                                                                                                                  |
| System Output Power Automatic Level Control (ALC), composite power variable set-point | 29 ~ 37 dBm (5 W)                                                                                                                             |
| Output power level adjustment range                                         | 20 dB                                                                                                                                       |
| Output power level adjustment resolution                                    | 1 dB steps                                                                                                                                   |
| Recommended maximum operating composite output power, for typical 13 dB back-off | 2W (+33 dBm)  
For example:  
4-carriers @ +27 dBm/each  
8-carriers @ +24 dBm/each  
16-carriers @ +21 dBm/each                                                                 |
| Maximum output power per carrier to comply with out-of-channel spurious emission limit (two-tone CW test) |  
FCC Mask B for 25 kHz spacing= -13 dBm  
FCC Mask D for 12.5 kHz spacing= -20 dBm  
(mandatory for all services beginning on Jan 2013)  
Europe ETSI= -36 dBm  
+31 dBm/carrier  
+27 dBm/carrier  
+20 dBm/carrier                                                                 |
| RF Input & Output impedance (typ)                                           | 50 Ohm 1.5:1 VSWR, MCPA with built-in output circulators for infinite mismatch or open load protection.                                      |
### User Selectable Software Defined Features
- Filters selectivity and bandwidth (factory personality, upon order)
- Filters central frequency (Fo) in 3.125 KHz steps
- Input (Rx) Threshold level (Squelch), per filter window
- Output power AGC set-point level, per filter window
- CTCSS code select
- Output ALC set-point and Composite output power per path (UL/DL)
- RF Power Out per path (UL/DL)
- Save & Load system settings, personality
- Several alarm thresholds and calibration settings

### Mechanical & Environmental
- Rackmount 19 in. shelf. Optional wallmount enclosure upon request.
- Up to 10 channels per path: 4RU, 22 in. depth
  - 6RU, 22 in. depth
- Up to 20 channels per path:
- Weight: 4U enclosure: 44 lbs. (20 Kg), 6U enclosure: 55 lbs. (25 Kg)
- Operating ambient temperature range: -30 to +50° Celsius
- MTBF: > 90,000 hours
- Power Requirements, 100-240 Vac 50/60Hz: 350Watt

### Interface and Alarms
- Human-Machine-Interface: LCD display with 7-button keypad, LED Indicators
- Computer Interface, Ethernet port: Graphical User Interface (GUI)
- Summary Alarms Discrete I/O: 4 Form-C Relays, 4 Opto-isolated inputs (dry-contacts)