Intraplex® VF-15 – VF-18A Voice Modules
2-Wire FXO/FXS Voice Frequency Modules

The GatesAir Intraplex® voice modules provide digital transport of voice grade audio for telephone, intercom, fax, and modem circuits.

Two-wire voice frequency modules are suited for foreign exchange lines, PBX tie lines between offices, off-premises extensions and automatic ring down applications. Two-wire voice modules come in two configurations: Foreign Exchange Office (FXO) and Foreign Exchange Station (FXS).

These modules plug into Intraplex access products, allowing voice channels to be combined with other types of payload channels for transport over T1 (1.5 Mbps), E1 (2 Mbps), or other high-speed digital lines.

<table>
<thead>
<tr>
<th>Coding</th>
<th>T1 and Variable-Rate Systems</th>
<th>E1 Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>FXO PCM</td>
<td>VF-15</td>
<td>VF-15E</td>
</tr>
<tr>
<td>FXS PCM</td>
<td>VF-16A</td>
<td>VF-16AE</td>
</tr>
<tr>
<td>FXO ADPCM</td>
<td>VF-17</td>
<td>VF-17E</td>
</tr>
<tr>
<td>FXS ADPCM</td>
<td>VF-18A</td>
<td>VF-18AE</td>
</tr>
</tbody>
</table>

Key Features

- Two independent voice channels per module
- Optional ADPCM coding for efficient time slot utilization
- Selectable loop start or ground start signaling
- Automatic Ring Down capability when FXS modules are used at both ends of the circuit
- Input and output attenuation over an 18 dB range in 0.1 dB increments
- Support for fax or modem transmission up to 9600 bps (PCM) or 2400 bps (ADPCM)
- Built-in ring generator and talk battery on FXS modules
## Specifications

*Specifications and designs are subject to change without notice*

### General

| Modules | VF-15/15E (FXO), VF-16A/16AE (FXS): Two-channel PCM  
|         | VF-17/17E (FXO), VF-18A/18AE (FXS): Two-channel ADPCM  

| System Compatibility | The VF-15, VF-16A, VF-17, and VF-18A are compatible with Intraplex T1 & variable-rate access products.  
|                      | The VF-15E, VF-16AE, VF-17E, and VF-18AE are compatible with Intraplex E1 access products.  

### Analog

| Frequency Response | 300 to 3000 Hz, +0.5 to –1.0 dB  
| Input/Output Level (Nominal) | 0 dBm in, 0 dBm out  
| Input Signal Level (Max) | +11 dBm (VF-15), +8.0 dBm (VF-16A)  
| Output Signal Level (Max) | +4.0 dBm  
| Input/Output Impedance | 600 Ω  
| Idle Channel Noise | Less than 23 dBmC0  
| Signal to Distortion | 1004 Hz input, 0 to –30 dBm: Greater than 33 dB, C message  

### Signaling

#### FXO Signaling (VF-15/15E, VF-17/17E)

<table>
<thead>
<tr>
<th>Detection</th>
<th>Resistance</th>
</tr>
</thead>
</table>
| Loop Start Off-Hook | 1800 Ω or less  
| On-Hook | 10K Ω or more  
| Ground Start Off-Hook | 850 Ω  
| On-Hook | 10K Ω or more  
| Answering Off-Hook | 1800 Ω  
| On-Hook | 10 Ω  

#### FXO Signaling (VF-16A/16AE, VF-18A/18AE)

<table>
<thead>
<tr>
<th>Detection/Transmission</th>
<th>External Resistance</th>
</tr>
</thead>
</table>
| Loop Start Off-Hook | 650 Ω or less  
| On-Hook | 10K Ω or more  
| Ground Start Ring-Gnd | 1500 Ω connected to –5V or less  

| Ringing Voltage | 48 VRMS, 20/30 Hz, 3 REN maximum load  
| Automatic Ring Down (ARD) | Requires FXS module on each end of circuit  
|                     | Ring 2 seconds on, 4 seconds off  
|                     | Ring back tone 300 Hz  

### Network Interface

| Coding and Data Rate | VF-15/16A: μ-law PCM, 64 kbps per channel  
|                      | VF-15E/16AE: A-law PCM, 64 kbps per channel  
|                      | VF-17/18A: μ-law ADPCM, 32 kbps per channel  
|                      | VF-17E/18AE: A-law ADPCM, 32 kbps per channel  

| Time Slot (DS0) Assignment | VF-15/15E, VF-16A/16AE  
|                            | One-channel operation occupies one selectable time slot  
|                            | Two-channel operation occupies two selectable contiguous time slots  
|                            | VF-17/17E, VF-18A/18AE  
|                            | Both channels occupy a single selectable time slot  

### Input/Output Modules

| Connector | RJ-11 jacks on MA-303 module adapter  

### Status and Diagnostics

| LED Indicators | Service on/off (one per card); busy (one per channel)  

### Physical and Environmental

| Nominal Power Consumption | VF-15: 1.2W; VF-16A off-hook: 4.4W; VF-16A on-hook: 2.5W  
| Temperature | 0 °C – 50 °C operating  
| Humidity | 0% – 90% noncondensing  
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