The 9785 is a programmable 10 W On/Off carrier system which fully complies with ANSI C93.5. The system is packaged in a single 3U high chassis and includes full-feature transmitter and receiver sections. The unit can be optionally equipped with voice capability and checkback functions. External amplifiers can be used to boost the output power if required.

Dimensions: 19” x 5.25” x 15.25”

Supply voltage: 48/125 Vdc (38 to 150 Vdc 85 W) 250 Vdc (200 to 300 Vdc 85 W)

Approximate Weight: 17.5 lbs.

Operating Temperature: -20°C to 60°C

Humidity: 0 to 95% non-condensing

ESD protection (per IEEE PC 37.90.3, 2001), Dielectric and surge withstand: Per ANSI C93.5

Transmitter
The transmitter is a fully programmable Direct Digital Synthesis (DDS) generator followed by a 10 W power amplifier and filter. If the voice option is installed the audio signal is AM modulated onto the carrier.

Frequency step size: 10 Hz
Frequency setting method: Direct reading rotary switches
Rated output power: 10 Watts
Output impedance: 50 Ohms (with load-matching adjustment)

Carrier Level Indicator:
Display: Front panel 3-½ digit direct reading (in dB)
Range: ±10 dB

Receiver
The receive circuit consists of an input normalizer, programmable frequency detector, and carrier level indicator.

Receiver sensitivity: 5 mVrms
Maximum receive level: >25 Vrms

Table 1. Signals Monitored

<table>
<thead>
<tr>
<th>Point Number</th>
<th>9785</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Start</td>
</tr>
<tr>
<td>2</td>
<td>Stop</td>
</tr>
<tr>
<td>3</td>
<td>Reserve Key</td>
</tr>
<tr>
<td>4</td>
<td>Remote Initiate</td>
</tr>
<tr>
<td>5</td>
<td>Transmitter Fail</td>
</tr>
<tr>
<td>6</td>
<td>Checkback Fail</td>
</tr>
<tr>
<td>7</td>
<td>Block Output</td>
</tr>
<tr>
<td>8</td>
<td>Power Up</td>
</tr>
<tr>
<td>9</td>
<td>Power supply # 1 fail</td>
</tr>
<tr>
<td>10</td>
<td>Power supply # 2 fail</td>
</tr>
</tbody>
</table>

Table 2. Minimum permissible channel spacings and delay times.

<table>
<thead>
<tr>
<th>Nominal Bandwidth</th>
<th>Delay *</th>
<th>Channel Spacing w/Voice</th>
<th>Channel Spacing w/o Voice</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 Hz</td>
<td>5 ms</td>
<td>4 kHz</td>
<td>1 kHz</td>
</tr>
<tr>
<td>1000 Hz</td>
<td>3 ms</td>
<td>4 kHz</td>
<td>2 kHz</td>
</tr>
<tr>
<td>1500 Hz</td>
<td>1.5 ms</td>
<td>4 kHz</td>
<td>3 kHz</td>
</tr>
</tbody>
</table>

* The delay times specified have been established per ANSI C93.5, section 5.7.3, and 6.3.21. The electromechanical block output contacts will add an additional 7 ms delay.

Optional Sequence of Events
System status points are checked every millisecond; changes in system status (events) are recorded in the log with time and date stamps. The events are stored in non-volatile memory and are recalled most recent event first. The forty most recent events are retained. The local clock is automatically synchronized to an externally supplied IRIG-B signal if available.

IRIG-B input: 1000 Hz modulated or direct TTL

Signals monitored: See Table 1.

Output Ratings
Solid State Outputs
- Maximum continuous current: 1 Amp
- Maximum 1 minute current: 2 Amps
- Maximum 100 mSec current: 10 Amps
- Maximum open circuit voltage: 280 Volts

Trip Relay Outputs
- Maximum continuous current: 5 Amps
- Maximum 200 mSec current: 30 Amps
- Maximum open circuit voltage: 280 Volts

Alarm Relay Outputs
- Maximum continuous current: 1 Amp
- Maximum breaking current (125 Vdc): 1 Amp, non-inductive
- Maximum breaking current (280 Vdc): 0.25 Amp, non-inductive
- Maximum open circuit voltage: 280 Volts

Note: Logic level (5 volt nominal) outputs are available.

Specifications subject to change without notice.
**Input Ratings**

**48 Volt Inputs**
- Will not operate at or below: 28 Volts
- Will operate at or above: 35 Volts
- Minimum pulse duration: 100 µSec
- Input current: <10mA, 5mA typical

**125 Volt Inputs**
- Will not operate at or below: 70 Volts
- Will operate at or above: 90 Volts
- Minimum pulse duration: 100 µSec
- Input current: <10mA, 5mA typical

**250 Volt Inputs**
- Will not operate at or below: 140 Volts
- Will operate at or above: 175 Volts
- Minimum pulse duration: 100 µSec
- Input current: <10mA, 5mA typical

**Note:** Logic level (5 volt nominal) outputs are available.

**Two Wire Operation**
The RF transmitter output and receiver input are jumpered together with two UHF connectors, J5 and J7. Either connector can be connected to the line tuning equipment. This provides a maximum continuous output power of 10 Watts with a nominal input/output impedance of 50 Ohms.

**Four Wire Operation**
The RF transmitter output and receiver input are isolated utilizing separate UHF connectors. The transmitter output, J5, provides a maximum continuous output power of 10 Watts with a nominal output impedance of 50 Ohms. In four wire operation the receiver input signal is connected to J7. The receiver input impedance is jumper selectable between a 50 Ohm termination mode and a high impedance (>30 KΩ) non-terminated mode. The 50 Ohm termination mode has a maximum continuous power dissipation of 1 Watt.

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![Figure 1. Typical RFL® 9785 Programmable ON/OFF Powerline Carrier System Block Diagram.](image)