Analog Order Wire
Support and Capabilities

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Raven 416 Series Order Wire System
Time proven reliability

Raven's basic 416 Series Orderwire provides an interface to a 4-wire line, a frequency limited voice path and a wideband data path.

A 4-wire transmit port is provided by the 41651 Transmit module, which sums inputs from the handset MIC and a wideband data input. A low pass filter in the voice path band limits signals from the handset MIC.

A 4-wire receive port interfaces the 41650 Receive module. From this input, the 41650 Receive module provides a wideband data output and a voice frequency output (limited by a low pass filter) to the speaker or handset RCVR (to speaker when ON HOOK, and to the handset when OFF HOOK).

Low pass filter values, transmit and receive levels, and impedances can be provided as customer requirements necessitate. Typically, 3 kHz low pass filters are provided in the voice paths, with transmit and receive impedances of 600 ohms, balanced. Input/output levels of -46 dBm to +7 dBm can be accommodated by the transmit and receive modules.

BASIC MODELS

Raven's basic 416 Order Wire is available as a 41611 System or a 41610 System. The 41611 System contains a signaling oscillator on the 41651 Transmit module and a signaling detector on the 41650 Receive module for E&M (SF) party line signaling. All locations will receive a call alert whenever any location originates a call.

In addition to the basic modules the 41610 System contains a DTMF Encoder (Option -02 of the 416-159 Control Module) and DTMF Decoder (41632 module). This combination allows selective calling of any location.

The 41632 DTMF Address Decoder is configurable for 1-digit, 2-digit, 3-digit, or 4-digit correct address. The address code is field programmable.

Benefits

- **Front panel speaker, handset and headset connectors**
- **Font panel volume control**
- **Input / Output levels adjustable from –46 dbm to +7 dbm**
- **Up to six channel operation**
- **Font panel test points for ease of alignment**
- **DTMF selective signaling with "All Call" capabilities**
- **Wide range of input / output impedances**
- **Low pass, Band pass, High pass filter options**
- **Fault detect and recover (SONET) capabilities**
- **Manual or DTMF controlled line select for multiple large groups interconnect**

OPERATION

A wired-in 4 wire handset is provided with the Order Wire, with front mounted jacks available for a 4-wire headset. The receive level is adjustable via a panel-mounted volume control which controls the handset/headset level when OFF HOOK and the speaker level when ON HOOK. (The volume control does not adjust the audible call alert level.) The speaker monitors the RCV line when ON HOOK and provides an audible alert when incoming signaling is detected. An OFF HOOK state mutes the speaker to prevent acoustic coupling to the MIC.

CALLING FUNCTIONS

For a 41611 System, call origination is accomplished by depressing the call button on the front panel. As long as the button is depressed, a signaling tone

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will be transmitted. The signaling frequency can be either an in-band or out-of-band tone. Call detection by the system is displayed by an alert lamp and an audible alert through the speaker.

In the 41610 System, call origination is accomplished by going OFF HOOK and selecting the address code of the station to be called via the panel-mounted keyboard. DTMF signaling tones are transmitted to all stations with the called-station detecting its address and providing call indications. When ON HOOK, call detection by the system illuminates an alert lamp and an audible alert through the speaker.

Other panel-mounted accessories include a Power lamp, an OFF HOOK lamp, and all necessary test points for alignment of the basic Orderwire System.

OPTIONS

Starting with the basic 41610 or 41611 System, other plug-in modules can be added, providing a system configuration designed to specific requirements. A partial listing of the most frequently ordered optional modules appears on the last page.

The Raven 416 Basic System can be supplied with any LPF Fc, SF frequency or 4-wire impedance necessary to accommodate system criteria.

CUSTOM CONFIGURATIONS

However unique or complex your requirement, Raven has either already accomplished the task or will apply our flexibility and capability to do so, quickly and competitively.

System Specifications

4-WIRE INTERFACE

*Impedance: Transmit & Receive	600, 135, 124, 75 ohms
*Levels: Transmit & Receive	-46 to +7 dBm, adjustable.
**Crosstalk--Receive to Transmit	Less than -70 dB.

WIDEBAND DATA INTERFACE (Tx &Rx)

Impedance	600 ohms balanced.
*Levels	+7 dBm maximum, adjustable.
**Frequency Response	± 1 dB, 500Hz to 60 kHz.
**Signal /Noise Ratio	Greater than 70 dB.
Harmonic Distortion	Less than 1%.
Intermodulation Distortion	Greater than 60 dB below signal level.

V-F INTERFACE (Tx & Rx)

*/**Frequency Response	+1, -3 dB, 300 Hz to Fc Hz. (Greater than 55 dB down at 1/4 octave.)
*4W Input/Output Impedance	600 ohms or 75 ohms.
*4W Levels: Transmit Receive	-16 dBm, nominal.
Speaker Level	1W, maximum, adjustable.
Harmonic Distortion	Less than 1%.

SIGNALING

*Frequency	SF: 2600 Hz or 3825 Hz standard, other frequencies available. DTMF selective calling optional; 12 or 16 tone format.
"E" Relay Contacts	Single Form "C" rated 2 amps at 28 Vdc or 115 Vac.
External "M" Lead	Switched to -20 Vdc, current less than 5 mA.
Receive Bandwidth	± 2% nominal.
Transmit Frequency Accuracy	± .5%.

POWER

*Imputs	-24 to -56 Vdc or 110/220 Vac 47 to 63 Hz.
Consumption	450 mA peak, 100 mA standby @ -24 Vdc.
*Mounting	19" rack 2 vertical spaces (3 1/2").

*Customer Specified
**4-Wire and Data Interface set for 0 dBm 600Ω IN and OUT @ 1 kHz.

NOTICE: specifications subject to change without notice.

System Options

SYSTEM	UNIT DESCRIPTION	FUNCTIONAL DESCRIPTION
41611D 41611A	E&M SIGNALING for DC input or supervisory signaling, in-band or out-of-band. E&M SIGNALING for 117-240 Vac 50 or 60 Hz.	Provides all facilities to achieve voice communications with an added facility to achieve and audible alarm; for keying the unit M-lead from an external location and an extended E-lead to an external lamp or buzzer or both. System operation is from a -24 Vdc to -48 Vdc input source. 4-wire impedances are 600 or 75 ohms.*
41610D 41610A	DTMF SELECTIVE CALL for DC input. DTMF SELECTIVE CALL for 117-240 Vac, 50 or 60 Hz.	Provides all facilities for achieving voice communication, audible Alarm, selective station addressing (up to 999) with optional features Of 'All Call' and 'All Clear' on a common channel or party line. System Operation is designed for a -24 to -48 Vdc input. 4-wire impedance of 600 or 75 ohms available.*
	AUXILIARY CONTROL UNITS	Used primarily in satellite communications. Provides control and Switching functions for multiple satellite down links and transmit ports, inherent to satellite systems. Intelsat A and B ESC application.

*Customer specified impedances available upon request.

Module Options

SYSTEM	UNIT DESCRIPTION	FUNCTIONAL DESCRIPTION
41640 41641	DEMODULATOR MODULATOR	Provides translation required to interface a .3-4 kHz VF channel to a Group A FDM, SSB (4 to 60 kHz) 4 kHz channel.
41642	LINE SELECTOR	Provides a selective path interface for one or two 4-wire lines. Line selection is made by front mounted push-button switches or by external inputs. Uses 3400 Hz supervisor tone to monitor line and 880 Hz outputs to all outputs on connection make and break. Used in 41610D-640/42S to provide fault detect and recover (SONET) capabilities.
41657	DUAL LOW PASS FILTER	Provides filtering of all transmitted and received signals; specify frequency and impedance.
41666	DUAL HIGH PASS-LOW PASS FILTER	Provides a Low Pass and High Pass filter combination with amplifiers, for splitting, combining, bandpass or band reject; specify frequencies and impedance.
41676	DUAL HIGH PASS FILTER	Provides filtering of all transmitted and received signals in Speech-Plus applications; specify frequency and impedance.
41661	DECIMAL DECODER	Provides 12 control functions with DTMF orderwire systems.
42067	EXTENDER	Aids in servicing modules by extending plug-in length.
41670	TELEPHONE INTERFACE	Connects an external telset to the orderwire voice circuits; provides talk battery, ringing, ringback, off-hook control. Specify 2-wire or 4-wire telset application.

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Module Options (continued)

SYSTEM	UNIT DESCRIPTION	FUNCTIONAL DESCRIPTION
41645	CALL CONTROL	Provides lockout of all party line orderwire stations not addressed in DTMF systems; time-out feature prevents line seizure. Also has SCPC F1/F2 control for DOMSAT.
41673	4W-2W HYBRID	Contains two independent 4W-2W hybrid circuits, consisting of dual-coil hybrids with external compensation, strappable 2 wire current source-sink, plug-in attenuator pads in 4-wire legs.
41675	SWITCHED NETWORK INTERFACE	Connects a 2-wire line to the orderwire voice circuits; provides current sink, ring detection, input/output pulse control. FCC Part 68 approved.
41680 41681	FSK RECEIVER FSK TRANSMITTER	Modem interface to allow data exchange over VF channel. Converts FSK tones into a serial binary data stream; standard TTY channel spacing and frequency shifts per CCITT; provides carrier detect output and receive squelch input with output to interface into logic levels, telegraph loop, or RS-232.
41685	4W-4W BRIDGE (Active)	Provides interconnect and level adjustment between the orderwire and three balanced 4W lines. Individual 25 dB level adjustments on each leg. Specify impedance.
41685-01	6W-4W BRIDGE (Active)	Provides interconnect between orderwire and five 4-wire balanced lines; individual 25 dB level adjustments on each leg; specify impedance.
41688	8W-4W BRIDGE (Active)	Provides interconnect between orderwire and seven 4-wire balanced lines; individual 25 dB level adjustments on each leg; specify impedance.
41680 41681	ALARM MASTER UNIT ALARM REMOTE UNIT	Provides a means of monitoring up to 14 alarm or status points (control functions also available).

Additional Module functional configurations are available upon request for unusual applications not listed above. Specialty functions can be provided in accordance with customer specifications.

About Raven Electronics Corporation

Raven Electronics Corporation is currently enjoying more than a quarter century of success in the telecommunications industry. An Original Equipment Manufacturer of voice and data switching equipment, Raven serves a variety of domestic and international customers including telephone and utility companies, government agencies, the military, satellite communications companies, and OEMs. We are committed to providing our customers with high performance, high quality, competitively-priced equipment that keeps pace with changing industry requirements.

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