



SD170E

User Manual

Safety Information

WARNING

- **NEVER** connect the transceiver to an AC outlet. This may pose a fire hazard or result in an electric shock.
- **NEVER** operate the radio transmitter without a suitable artificial load or antenna connected
- **DO NOT** allow children to operate transmitter-equipped radio equipment.

CAUTION

- **DO NOT** operate the transceiver near unshielded electrical blasting caps or in an explosive atmosphere unless it is a type especially designed and qualified for such use.
- **NEVER** modify a transceiver or accessory except as instructed in the service manual, engineering bulletins or formal communication as this may invalidate any warranty, guarantee or type approval.
- **NEVER** use the transceiver in an aircraft.
- **NEVER** use the transceiver near to sensitive medical equipment or in areas where instructed not to do so, e.g. Petrol filling stations.
- **NEVER** mount the transceiver unit on or near the Airbag or Airbag activation device.
- **NEVER** use an accessory not recommended or supplied by Maxon may cause damage to equipment or injury to personnel, and will invalidate warranty.
- **DO NOT** use or place the transceiver in areas with temperatures below -30°C or above +60°C, In areas subject to direct sunlight, such as the dashboard.
- **AVOID** placing the transceiver in excessively dusty environments.
- **DO NOT** fit the transceiver in such a manner that the antenna is next to, or touching, exposed parts of the body, especially the face or eyes, while transmitting.
- **ALWAYS** Install the SD170E using a suitable heat sinking surface.
- **NEVER** operate the radio transmitter without a suitable artificial load or antenna connected.
- **ALWAYS** Secure locking nuts on DB09 connector and always disconnect power supply before removing D-type connector.

For service or repair always return your radio to an authorised Maxon Dealer or warranty conditions will be invalid.

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About your SD170E Series data radio

About Your SD170 Radio

The SD-170E Series of RF Link Modules utilize the latest technology in their designs and manufacturing. SD-170E models are Phase Lock Loop Synthesizer (PLL)/microprocessor controlled, and offers 1/ 5 watt (Low/High) programmable output power with 16-channel capability. Multiple functions including 1200 to 9600 baud rates, AC and/or DC audio coupling, in these fully programmable RF Link Module units, to use FSK GMSK and FFSK modulation optional boards are provided. Programmable sub-audio squelch system (CTCSS & DCS) and two-tone squelch system are added to the signal level detect squelch system (RSSI). GPS Data handling is provided to interface and control an internal GPS receiver (optional board).

To assure satisfaction from the radio, we urge you to thoroughly read the operation and function information in this manual before operating your SD-171E/SD-174E.

Applications of some of the functions described in this manual are determined by the system you use. Your dealer will program your radio so that you have the greatest number of functions possible relative to your needs.

Should you have questions regarding the operation of the radio, please consult your Dealer.

General SD170E Specification

General specification	VHF	UHF
Equipment Type	Data radio (Wireless Modem)	Data radio (Wireless Modem)
Model Series	SD-171E	SD-174E
Performance Specifications	TIA/EIA-603 /ETS 300-113	TIA/EIA-603 /ETS 300-113
Frequency Range	146-174MHz	450-490MHz
RF Output	1-5W	1-5W
Channel Spacing	12.5KHz, 25KHz Programmable	
Modulation Type	F3D, F3E	
Intermediate Frequency	45.1MHz & 455KHz	
Number of Channels	16	
Frequency Source	Synthesizer	
Operation Rating	Intermittent 90 : 5 : 5 (Standby : RX : TX)	
Power Supply	Ext. Power Supply (12 VDC Nominal)	
Temperature Range		
Storage	From -40°C to +80°C	
Operating	From -30°C to +60°C	
Current Consumption		
Standby(Muted)	< 65mA	
Transmit 5Watts RF Power	< 2.0 A	
Transmit 2Watts RF Power	< 1.0 A	
Lock Time :	< 10ms	
TX to RX attack time	< 20ms (No Power Saving)	
RX to TX attack time	< 20ms	
Dimensions	(118mm)W X (63mm)H X (35mm)D	
Weight	266.5grams	

SD170E Transmitter Specification

Transmitter specification	VHF	UHF
Carrier Power (Nom. Max. Min.) Hi Power Low Power	5W < 6W > 4.5W 1W<1.5W>0.8W	5W < 6W > 4.5W 1W<1.5W>0.8W
Sustained Transmission Time 5 10 30Sec (Nominal Conditions)	Power : >90% >85% >80%	Power : >90% >85% >80%
Frequency Error Nominal condition Extreme condition	< 0.5 KHz ±2.5 ppm	< 0.75 KHz ±2.5 ppm
Frequency Deviation 25 KHz Channel Spacing 12.5 KHz Channel Spacing	Peak ±5.0, Min. ±3.8KHz Peak ±2.5, Min. ±1.9KHz	
Audio Frequency Response	Within +1/-3dB of 6dB octave @ 300 Hz to 2.55 kHz for 12.5 kHz C.S. @ 300 Hz to 3.0 kHz for 25 kHz C.S.	
Adjacent Channel Power 25 KHz Channel Spacing 12.5 KHz Channel Spacing	< 70 dBc @ Nominal Condition , < 65 dBc @ Extreme Condition < 60 dBc @ Nominal Condition , < 55 dBc @ Extreme Condition	
Conducted Spurious Emission	< -36 dBm	< -36 dBm
Modulation Sensitivity	100mV RMS @ 60% Peak Dev.	
Hum & Noise : 25 KHz Channel Spacing 12.5 KHz Channel Spacing	> 40 dB (without PSOPH) > 40 dB (with PSOPH)	
Modulation Symmetry	< 10% Peak Dev @ 1KHz input for nominal dev. + 20dB	
Load Stability	No osc at ≥ 10:1 VSWR all phase angles and suitable antenna No destroy at ≥ 20:1 all phase angle	
Peak Deviation Range Adjustment @ 1 KHz, Nom Dev + 20dB 25 KHz Channel Spacing 12.5 KHz Channel Spacing	Min. 3.5, Max. 6.0 Min. 1.5, Max. 4.0	

SD170E Receiver Specification

Receiver Specification	VHF	UHF
Sensitivity (@ 12dB SINAD) 25 KHz Channel Spacing 12.5 KHz Channel Spacing	< 0.28uV < 0.30uV	< 0.28uV < 0.30uV
Sensitivity (1/100 Error Rate) With ACC-513 With ACC-514	< -113dBm < -110dBm	< -113dBm < -110dBm
Amplitude Characteristic	> -3dB , < +3dB	> -3dB , < +3dB
Adjacent Channel Selectivity 25 KHz Channel Spacing(Nom.) (Extreme Condition) 12.5 KHz Channel Spacing(Nom.) (Extreme Condition)	> 70 dB > 60 dB > 65 dB > 50 dB	> 70 dB > 60 dB > 65 dB > 50 dB
Spurious Rejection(100KHz ~ 4GHz)	> 70 dB	> 70 dB
Image / Half IF Rejection	> 70 dB	> 70 dB
Intermodulation Response Rejection ±25 kHz/ 50 kHz ±50 kHz/ 100 kHz	> 70 dB > 70 dB	> 70 dB > 70 dB
Conducted Spurious Emission 9 KHz - 1 GHz 1 GHz - 4 GHz	< -57 dBm < -47 dBm	< -57 dBm < -47 dBm
RX Spurious Emissions (Radiated) 9 KHz - 1 GHz 1 GHz - 4 GHz	< -57 dBm < -47 dBm	< -57 dBm < -47 dBm
AF Distortion Nominal condition Extreme condition	< 3% < 10%	< 3% < 10%
RX Hum & Noise (only audio) 25 KHz Channel Spacing 12.5 KHz Channel Spacing	< 40 dB without PSOPH < 40 dB with PSOPH	< 40 dB without PSOPH < 40 dB with PSOPH
Receiver Response Time :	< 16 ms	< 16 ms
Squelch (factory pre-set) Open Close	-113dBm -116dBm	
Squelch Attack Time RF Level at Threshold RF Level at Threshold + 20dB	< 20 ms (RSSI), < 40 ms (Analog) < 10 ms (RSSI), < 30 ms (Analog)	
Squelch Decay Time	5 ms Min., 20ms Max.	
Antenna Socket Input Match	> 10 dB Return Loss	
Temperature Stability for L.O. Frequency	1st < 5 ppm, 2nd < 15 ppm from -30° to + 60° C	
L.O. Frequency Aging Rate	±2 ppm/ year	

Unpacking Information

Remove and carefully inspect the contents of your package(s) for the following items:

1. Radio
2. User Manual

* If any items are missing or damaged please contact your Dealer or Maxon

Compatible accessory list (sold separate)

ACC-513E	9600 baud GMSK modem
ACC-514E	4800 baud FFSK modem
ACC – FSK2	1200 Baud FSK modem
ACC-515E	GPS optional board
ACC-516	PCB Interface - used to separate digital and RF board for alignment
ACC-916E	Personality programming software
ACC-2016E	Individual USB programming cable



SD170E Features

Synthesized Operation with 16 channel capability

1 / 5 Watt programmable output power

Programmable 12.5 / 25 KHz channel spacing

Channel scan

Busy channel lockout

16 channel

RSSI Level check

TX Time-out timer

Power Save

Marked Idle

TX Delay

Dumb mode

Data transmission and reception through FSK modem (Optional Board)

Data transmission and reception through GMSK modem (Optional Board)

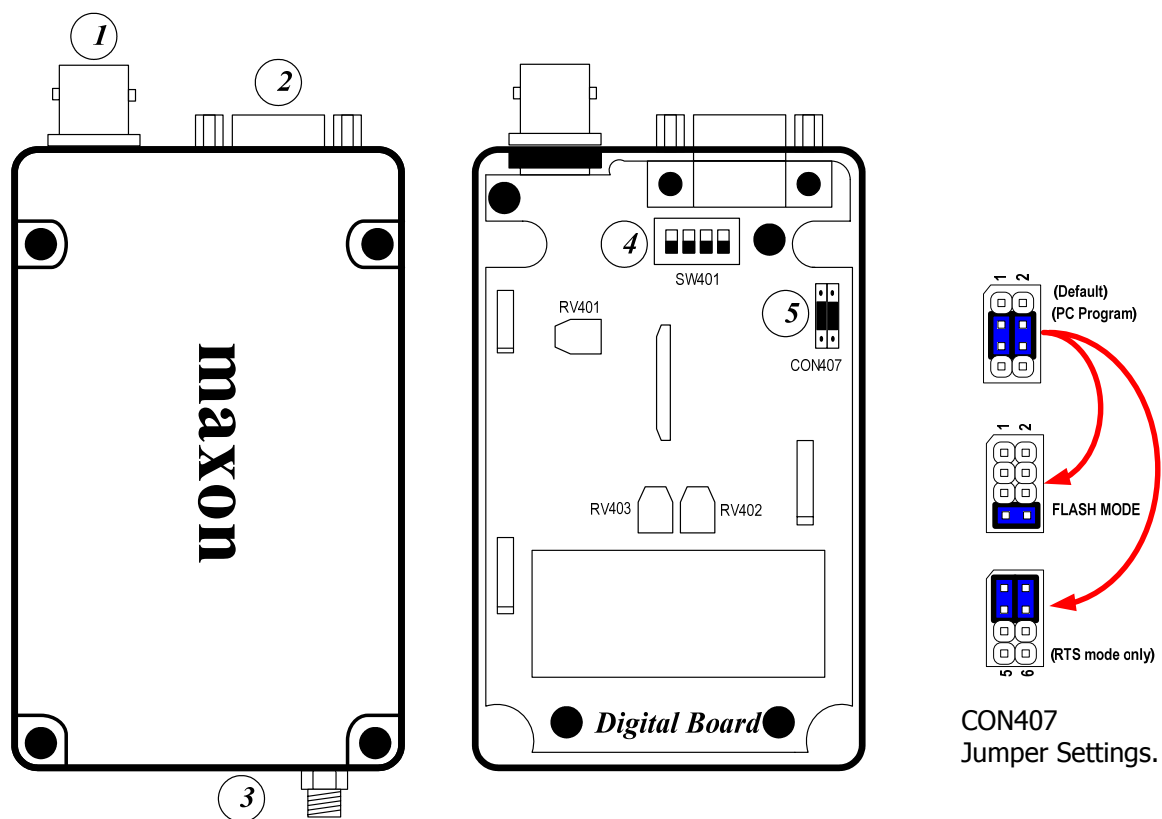
Data transmission and reception through FFSK modem (Optional Board)

Support transmission of global position data using GPS receiver board (Optional Board)

Description of Radio Components

- 1) Antenna connector
- 2) DB-15 connector
- 3) GPS Antenna connector (optional)
- 4) Channel DIP-S/W
- 5) Jumper selector (see configuration below right).

Exterior View



Antenna installation

Fasten the antenna to the radio by turning the antenna cable clockwise onto the BNC receptacle on left of radio when looking at front of radio.

Programming

Programming the SD170E series uses the ACC-916E programmer.

SD-170E Series Operation

Channel select / SCAN

Your radio's channel can be selected by inner DIP-S/W or serial command inputted from external control system. To change channel by inner DIP-S/W (4), you should open the upper cover and then look for the DIP-S/W (4) on the digital board of the bottom cover. Once located change the DIP-S/W to select wanted channel according to channel dip switch chart (see channel chart on page 11).

To use a serial command for channel selection, it should be inputted by external equipment or device (ex. Personal computer or PLC) through Pin 8 of DB-15 connector. See the message format for serial command for full details.

If your radio has been programmed the channel scan, you must enter the scan mode by serial command.

Transmit

The transmission will be made by various inputs such as PTT signal (Pin 3 of DB-15 connector), TX serial command and Serial data input (Pin 10 of DB-15 connector: This input is only available when a modem option board is installed). TTL level is used as PTT signal and is active low. If you installed an option modem board, you can use RS-232 level as a PTT signal instead of TTL level. To maintain transmission, continuous PTT signal input is required. If you use TX serial command for transmission, normally, it's released by Rx serial command. If RF activity is present; it will not be illuminated if the radio indicates a "clear" channel. When the channel is "clear", input the PTT signal or TX serial command and transmit data or audio. Remove the PTT signal or input Rx serial command when you have finished transmission.

CAUTION: Operation of the transmitter without a proper antenna installed may result in permanent damage to the radio.

Receive

When you have finished transmission, remove the PTT signal or input Rx serial command. You will receive data from another radio or hear another person talking from the connected external speaker.

Scan modes

Scanning is a dealer programmable feature that allows you to monitor a number of channels. Your dealer will help you define a scanning mode and your channel "scan list"

Channel scan

Once the scan list has been established, initiate scan by serial commands. If a conversation is detected on any of the channels in the scan list, the radio will stop on that channel and you will be able to hear the conversation. At that time, busy channel data is sent to external equipment or device through serial command. So, you can identify busy channel data as decoding of received serial command from your radio in the external equipment or device.

Normally, if you try to transmit during scanning, the transmission will be made on the channel that the call was received during the programmable scan delay time. The scan delay time is the amount of time the radio will stay on that channel once activity has ceased. Dealer programming of 4 ~ 7 seconds is typical). The radio will resume scanning once the scan delay time has expired, and will continue to scan until the serial command for scan stop is inputted by external equipment. After the scan resumes, if a transmission is made, the radio will transmit on the selected priority channel. This feature is similar to priority scan TX except for selection of priority channel. You can assign a priority channel by inner dip switch only.

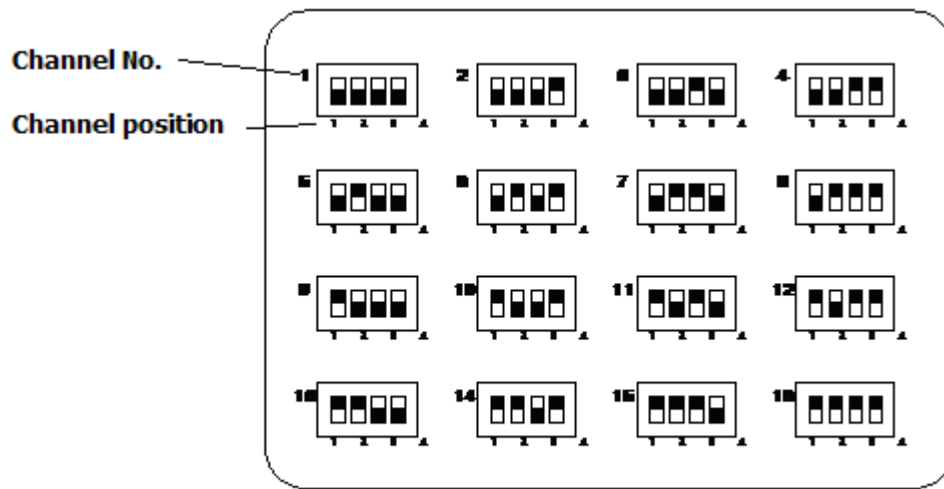
Scan channel delete

To temporarily delete a channel from the scan list, simply input the serial command for scan deletion to the radio while scanning and stopped on the channel to be deleted. This will temporarily remove that channel from the scan list until the scan is closed or the radio's power is reset.

CTCSS / DCS Scanning

To help to block out unwanted calls to your radio, the SD-170E series can be programmed by your dealer to scan for tones.

Channel dip switch chart



SW401 Channel Select Switch

Serial Command

Serial RX/TX Data Format

- (1) Asynchronous Serial Data Transfer
- (2) Baud Rate : 4,800 bit/sec
- (3) Data Bit : 8bit , Non Parity
- (4) Stop Bit : 1bit
- (5) MSB first transmission

Each serial command is consist of 3 bytes.

1st byte is command and 2nd is data required by command and 3rd is check sum to decide validity of total contents.

Byte0

ST	1 st Byte (Command)	SP
----	--------------------------------	----

Byte1

ST	2 nd Byte (Data)	SP
----	-----------------------------	----

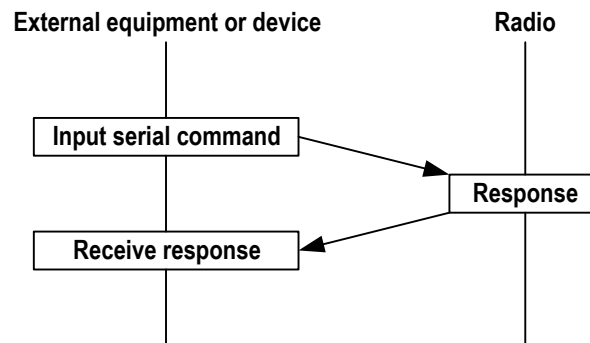
Byte2

ST	3 rd Byte (Check Sum)	SP
----	----------------------------------	----

Data Protocol

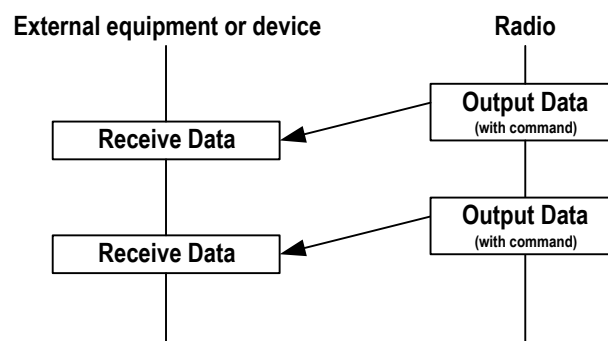
Protocol for input Serial command

Protocol of data transmission from external equipment or device (: PC) to radio:



Protocol for output data

Protocol of data transmission from radio to external equipment or device (: PC)



Serial Commands

Transmit Command & data

Mode		Transmit Command (BYTE0)	Transmit data (BYTE1)	Check sum (BYTE2) Transmit Command + data
Channel Change		0x64	0x?? : Current channel	(0x64 + Channel)
RTX Mode Send.		0x61	R(0x72) : Rx mode T(0x74) : TX mode	(0x61+0x72) (0x61+ 0x74)
Scan Mode	From PC To Radio	0x62	F(0x46) : Scan Stop S(0x73) : Scan Start O(0x4F) : Scan Delete	(0x62+ 0x46) (0x62+ 0x73) (0x62+ 0x4F)
	From Radio To Pc	0x66	0x00 : 1 Channel 0x01 : 2 Channel 0x02 : 3 Channel 0x0f : 16 Channel	0x66 + 0x00 0x66 + 0x01 *Only for Unmute Channel, Correct Call Channel
	Error Message	0x65	- It occurs when Scan Delete command comes except for Busy/Correct Call - It occurs when PTT key is pushed except for Busy/Correct Call. - It occurs when channel change command exists during Scanning.	
GPS mode	Control of GPS Power	0x6a	0x00 : GPS Power Off 0x01 : GPS Power On	(0x6a + 0x00) (0x6a + 0x01)
	Control of GPS Data	0x63	0x00 : GPS Data Disable 0x01 : Release GPS Data to DB-15 0x02 : Release GPS Data to Modem	(0x63 + 0x00) (0x63 + 0x01) (0x63 + 0x02)
Modem test mode		0x75	0x78 : Enable test data 0x79 : Disable test data	(0x75 + 0x78) (0x75 + 0x79)
Modem alignment mode	GMSK	0x7a	0x00 : Disable 0x01 : Enable	(0x7a + 0x00) (0x7a + 0x01)
	FFSK	0x7c	0x00 : Disable 0x01 : Enable Mark data	(0x7c + 0x00) (0x7c + 0x01)
		0x7e	0x00 : Disable 0x01 : Enable Space data	(0x7e + 0x00) (0x7e + 0x01)

Receive Command & data

Mode	Transmit Command (BYTE0)	Transmit data (BYTE1)	Check sum(BYTE2) : Transmit Command + data
Process Complete Commands	0xaa	ACK	
	0x55	NACK	

Note)

This command is return signal for receiving command.

If Byte2 and sum of Byte0 and Byte1 among received data are same, Radio would send ACK data and execute command. If not, Radio sends Nack data.

User would go into next step if receives ACK data. If user receives Nack data, user should send command again.

Example: If user changes from 1st Channel to 2nd Channel,

User should send Channel Change Command (0x64, 0x02, (0x64 + 0x2)) to Radio.

If Byte2 and sum of Byte0 and Byte1 among received data are same, Radio sends ACK data to user and changes to 2nd channel. If not, Radio would send Nack data.

Audible alert tones

Your SD-170E series data radio has a sophisticated microprocessor control which provides a range of audible tone. If you connect the Speaker filtered OUT (Pin 9 of DB-15 connector) to an external speaker, you can hear audible tones at the following conditions:

- Attempt to transmit on a channel that is already in use when busy channel lockout has been programmed into the radio
- Transmission time has exceeded time-out timer programmed length
- When the other group or people finished transmission using repeater

See the status audible alert tones chart for full details.

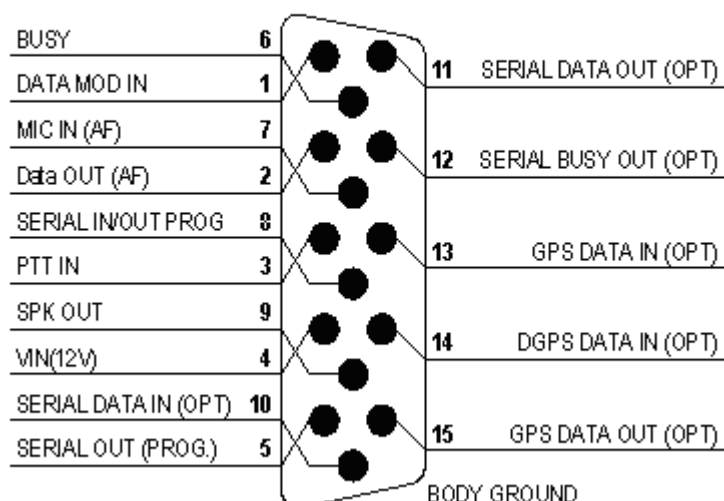
Status	Description	Audible tone
Warning	Busy Channel lockout	Single Beep Tone
	Before 5S T-O-T	Single Beep Tone
	Transmit Hang on time	Single Beep Tone

DB 15 PIN descriptions with input/output level

D-Type Pin No.	Function	Description	Signal Type	Input/Output
1	Data modulation IN (TX Mod)	Signal is directly injected to MOD through data low pass filter without pre-emphasis.	Analog signal 1KHz audio at 60% peak system deviation input level = 100 to 120mVrms	I/P
2	Data unfiltered OUT (RX disc)	Discriminator audio from the SD-170E. This is the unprocessed AF signal prior to tone filtering and de-emphasis.	Analog signal 1KHz audio at 60% peak system deviation produces 200 to 300mVrms	O/P
3	PTT In (TX Key)	Signal from the 'external device' to key the SD-170E transmitter. This line has an internal pull up resistor to +5V. Pulling the line to 0V turns on the transmitter. Note: If you installed option modem board, you can select RS-232 signal level by Jumper (CON407, Ⓢ) on the digital board.	TTL level 0V = TX o/c = RX RS-232 level (option) +12V = TX -12V = RX	I/P
4	Power	Power connection to Out of the radio.	DC +12V	
5	Serial Data Out (TXD)	Serial data output for radio control or program. It uses asynchronous data format.	TTL level	O/P
6	Busy (CD)	Logic level output from SD-170E to indicate whether a carrier is present or not Note: If you installed an option modem board, you can select RS-232 signal level by Jumper (CON407, Ⓢ) on the digital board.	TTL level 0V = carrier 5V = no carrier RS-232 level (option) +12V = carrier -12V = no carrier	O/P
7	Microphone filtered audio IN	This signal is injected to the MOD at the point through audio-amplification, pre-emphasis and high pass filtering where sub-audio tone is mixed with audio.	Audio 1KHz audio at 60% peak system deviation input level = 6 to 8mV rms	I/P
8	Serial data IN/OUT (RXD/TXD)	Serial command or data input and data output for radio control or program. It uses asynchronous data format.	TTL level	I/O/P
9	Speaker filtered OUT	Audio output from the audio amplifier. It's filtered by tone-filter, de-emphasis circuit.	Audio 1KHz audio at 60% peak system deviation produces Nominal 1Vrms @ 8Ω	O/P

10	Serial data IN for option modem	The Serial data to be transmitted is input to this pin. It's only available when option modem board is installed. Inputted data are modulated by modem IC and then injected to MOD. It uses asynchronous data format.	RS-232 level	I/P
11	Serial data Out for option modem	The recovered asynchronous serial data output from the receiver. It's only available when option modem board is installed. It uses asynchronous data format.	RS-232 level	O/P
12	Serial data busy for option modem (reserved)	To eliminate data loss according to buffer overrun of slave MCU's memory, it indicates buffer status.	RS-232 level	O/P
13	GPS data input	Data input for initial setting of GPS module. It follows NMEA 0183 format and uses asynchronous data format.	TTL level	I/P
14	DGPS data input	Data input for DGPS Correction of GPS module. It follows NMEA 0183 format and uses asynchronous data format.	TTL level	I/P
15	GPS data output	Position data output from the GPS module. It follows NMEA 0183 format and uses asynchronous data format.	TTL level	O/P

DB - 15 Connector



Modem option for data communication

Description

The ACC-513 and ACC-514 are internal option-modems, which are applied to the SD-170E series to increase capability for data applications. The goal of an internal modem is to improve the efficiency for data transmission and provide maximum flexibility for user applications. The most obvious method of increasing the data efficiency is to maximize the data signaling speed in the limited channel bandwidth. But, FSK, called direct FM modulation, has a very wide transmission bandwidth requirement. To solve this problem a GMSK (Gaussian Filtered Minimum Shift Keying) internal option-board can be used. Generally data has a wider bandwidth than audio. So, direct application of data is not matched with an audio system and its application. For instance, if sub-audio (Tone) SQ system applied to a data application, its frequency conflicts with that of sub-audio. Moreover, the inputted data is filtered by the audio filter circuit resulting in broken data transmission. To overcome these problems and provide maximum flexibility, an FFSK (Fast Frequency Shift Keying) internal option-board can be used.

Communication between DTE and Option-Board

Our internal modem options consist of Slave MCU, Modem IC, and extra circuitry. These option-boards directly communicate with DTE (Data Terminal Equipment) to send and receive meaningful data through the DB-15 connector on the digital board of the SD-170E. These modems are designed to accept RS232 serial data format and are also capable of high speed wireless data-transmission between two or more devices. More detailed information for the modem option boards is given in the technical manual for the ACC-513/514. Your dealer will help you define a TX On/Off delay time, RX On delay time, Baud Rate, Modem Enabled, Modem Baud Rate, Data flow control, and Test Mode.

Table for modem speed

Available Baud rate for **FFSK** modem

Channel Space	DTE Baud Rate	Modem Baud Rate
Narrow (12.5KHz)	1200	1200
	2400	2400
Standard (25KHz)	1200	1200
	2400	2400
	4800	4800

Available Baud rate for **GMSK** modem

Channel Space	DTE Baud Rate	Modem Baud Rate
Narrow (12.5KHz)	4800	4800
Standard (25KHz)	4800	4800
	9600	9600

ACC-515E GPS Option board

Transmission GPS Data through Modem

The SD-170E supports GPS data handling. That may help your implementation for a system related to GPS. If it is not enough for your application, received position data from the GPS module placed in an SD-170E can be reprocessed by your own application. The ACC-515E is a GPS module for the SD-170E, which releases 11 different output data according to the NMEA-0183 format, which can be selected by you, the available data should be processed by your application. Received data from the ACC-515E will be released via the DB-15 connector of the SD-170E and/or transmitted to another system through an installed modem. More detailed information for the GPS option board is given in the technical manual for the ACC-515E.

GPS Option board pin-outs

Pin No.	Function	Description	Input/Output
1	VCC	6V to 12V Power Input	I/P
2	VBAT	Backup Power Input (3.3V)	I/P
3	ENABLE	GPS Data Out Enable	I/P
4	PSAVE	GPS Power Enable (& Power save input for GPS)	I/P
5	GND	Ground	
6	GPS_OUT	Position Data Output	O/P
7	DGPS_IN	DGPS Correction Data Input	I/P
8	GPS_IN	Initial Setting Data Input	I/P
9	+5V	5V Power Input	I/P

ACC-514E FFSK Option board

Connector No.	Pin No.	Function	Description	Input/Output
Connector 1	1	VCC	6V to 12V Power Input	I/P
	2	GND	Ground	
	3	PTT	Signal from the digital board to transmit data key the SD-170 transmitter	I/P
	4	TXD_EN	It ensures that the radio has stabilized in transmission before the data is processed for modulation.	I/P
	5	TX_END	To finish transmission, it indicates memory buffer of Master MCU of digital board is empty.	O/P
	6	MUTE (Busy)	Logic level input from digital board to indicate whether a carrier is present or not	I/P
	7	MODEM_EN	Modem Enable input	I/P
	8	POWER_SAVE	Power save input for modem board.	I/P
	9	CMD_EN	It indicates that command for Modem programming is effective.	I/P
	10	CMD_IN/OUT	Data Input and Output for Modem programming.	I/P, O/P
	11	CMD_CLK	Clock Input for Modem programming.	I/P
	12	MODEM_SEL	It Indicates modem type to Master MCU for programming.	O/P
	13	RX_IN	The FFSK/MSK signal input for the receiver of modem IC.	I/P
	14	TX_OUT	The FFSK/MSK signal output when the transmitter is enabled.	O/P
Connector 2	1	Serial_IN	The Serial data to be transmitted is input to this pin.	I/P
	2	Serial_OUT	The recovered asynchronous serial data output from the receiver.	O/P
	3	Busy	To eliminate data loss according to buffer overrun of slave MCU's memory, it indicates buffer status.	O/P
	4	Carrier_Detect	Handshake signal for RTS control mode. It indicates whether Slave MCU of modem has decoded data or not.	O/P
	5	PTT_IN	Handshake signal for RTS control mode. It requests data transmission to Slave MCU of modem.	I/P
	6	PROGRAM	It's reserved input for firmware upgrade.	I/P

ACC-513E GMSK Option board

Connector No.	Pin No.	Function	Description	Input/Output
Connector 1	1	VCC	6V to 12V Power Input	I/P
	2	GND	Ground	
	3	PTT	Signal from the digital board to enable transmitter circuit of modem board.	I/P
	4	TXD_EN	It ensures that the radio has stabilized in transmission before the data is processed for modulation.	I/P
	5	TX_END	To finish transmission, it indicates memory buffer of Master MCU of digital board is empty.	O/P
	6	MUTE (Busy)	Logic level input from digital board to indicate whether a carrier is present or not	I/P
	7	MODEM_EN	Modem Enable input	I/P
	8	POWER_SAVE	Power save input for modem board.	I/P
	9	CMD_EN	It indicates that command for Modem programming is effective.	I/P
	10	CMD_IN/OUT	Data Input and Output for Modem programming.	I/P, O/P
	11	CMD_CLK	Clock Input for Modem programming.	I/P
	12	MODEM_SEL	It Indicates modem type to Master MCU for programming.	O/P
	13	RX_IN	The GMSK signal input for the receiver of modem IC.	I/P
	14	TX_OUT	The GMSK filtered TX output signal.	O/P
Connector 2	1	Serial_IN	The Serial data to be transmitted is input to this pin.	I/P
	2	Serial_OUT	The recovered asynchronous serial data output from the receiver.	O/P
	3	Busy	To eliminate data loss according to buffer overrun of slave MCU's memory, it indicates buffer status.	O/P
	4	Carrier_Detect	Handshake signal for RTS control mode. It indicates whether Slave MCU of modem has decoded data or not.	O/P
	5	PTT_IN	Handshake signal for RTS control mode. It requests data transmission to Slave MCU of modem.	I/P
	6	PROGRAM	It's reserved input for firmware upgrade.	I/P

User Statement

SD170E Series

This product is marked with

Declaration of Conformity

CE 0678

In accordance with the Class II product requirement specified in the R&TTE Directive 1999/5/EC.

This equipment is intended for use in:-

Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland & United Kingdom

and requires authorisation (individual licence) for use.

We hereby declare that the above named product is in conformity to all the essential requirements of Directive 1999/5/EC.

Con la presente si dichiara che il prodotto sopra menzionato è conforme ai requisiti essenziali della Direttiva 1999/5/CE.

Declaramos que el producto mencionado más arriba cumple todos los requisitos esenciales de la Directiva 1999/5/CE.

Wir möchten hiermit bekanntgeben, daß das oben genannte Produkt in Übereinstimmung mit allen erforderlichen Bedürfnissen der 1999/5/EC Direktive steht

Nous déclarons que le produit référencé ci-dessus satisfait aux exigences R&TTE 1999/5/EC qui lui sont applicables.

If you wish to see the whole Declaration of Conformity, please email nancy.nute@maxonic.co.uk

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