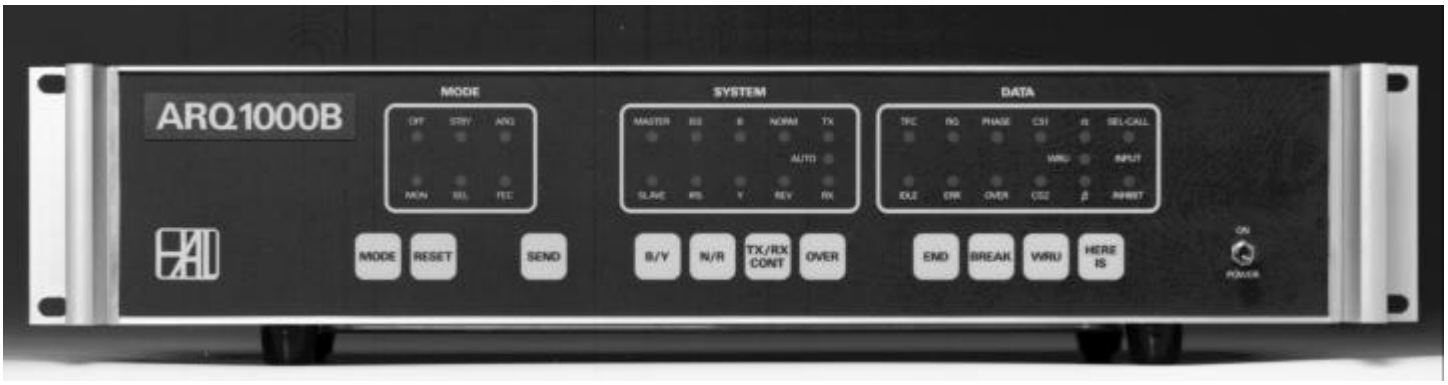
ARQ-1000B



ERROR CORRECTION TERMINAL

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ARQ-1000B

The ARQ1000B allows transmission and reception of radio teleprinter signals with the added feature of error correction. The ARQ1000B uses the ITU 7-unit code as defined by CCIR Recommendations 476 and 625. This code is also known by the commercial trade names of “TOR” and "SITOR." ” All features of 476 and 625 are supported in the ARQ1000B including “Mode A” (ARQ), , “Mode B Collective Broadcast” (FEC/CB), and “Mode B Selective Broadcast” (SEL-FEC/SB). A “monitor” mode is also available so that any of these modes may be received and displayed without requiring transmission of the normal “handshaking”receive station responses. Up to 9-digit selcals are automatically recognized and accommodated. Free signal recognition and stop scan features are standard. A by-pass mode is also included so that standard Baudot or ASCII encoded signals may be passed directly to the teleprinter without changing wires or using external switches. The ARQ1000B can also be controlled through the terminal keyboard by a series of simple commands. A command menu screen is available to assist the operator.

When used in the ARQ or “A” mode, the ARQ1000B communicates with another station by exchanging bursts of information. The station originating the message (Information Sending Station or " ISS") sends groups of three characters per data burst. The ARQ code is designed so that errors in reception of any character are, easily determined. The receiving station (Information Receiving Station or “IRS”) transmits a one character “accept” or “reject” control character back to the ISS to indicate correct or incorrect reception. If the 3-character block was received correctly, the ISS then transmits the next 3-character block; if not, the original block is repeated until it is correctly received. The process continues with repeats as necessary until the complete message has been passed. The direction of communications may be reversed at any time with a control signal so that error corrected text may be relayed in both directions. All ARQ error corrected data uses syn-chronous 100 baud data as defined by 476. The ARQ mode is only used for two-station communications and must originate with digital recognition of the receivestation’s call sign or access code. This access code is prgrammed from the terminal keyboard and stored in non-volatile memory.

The FEC (collective broadcast) is used to transmit a message to a number of receiving stations. A two-way accept/reject system is not used in this mode. Rather, the transmitted characters are sent twice, interleaved so that there is a time delay between the two sets of data, providing time diversity protection against reception of errors. The receiving station FEC terminal digitally sorts the interleaved codes, checks each letter for errors and passes the correct text to the printer. The FEC mode also uses 100 baud synchronous data.

The SEL-FEC mode is used for selective broadcast of messages only to stations whose selective-call code corresponds to that transmitted. Data transmitted using the SEL-FEC mode is sent in the same format as that used for FEC mode except that the polarity of the data pulses is inverted. The selective call code is also keyboard programmable and stored in non-volatile memory.

The monitor mode allows the station to receive and decode a message whether it is sent using ARQ, FEC, or SEL-FEC mode. In monitor mode, the ARQIOOOB automatically switches to the correct mode and prints received text: reception of either the ARQ access code or SEL-FEC selective call code is not required. Since two-wav error correction IS not available in ARQ monitor mode, re-synchronizing time delays are reduced and the ARQIOOOB quickly synchronizes to an ARQ transmission. The monitor mode is an additional feature of the ARQIOOOB not formally defined by CCIR recommendations

The ARQIOOOB is a code conversion device and connects between the RTTY demodulator and terminal. A wide selection of I/O inter-face options are available for connectron to the demodulator and terminal. Separate (full duplex) connections are provided for the terminal’s keyboard and printer. Handshaking control signals are provided for interfacing with the printer, keyboard, tape transmitter, or video terminal. Either Baudot or ASCII terminals may be used at data rates from 45 to 300 baud. Outputs are also provided for indication of reception of the selective call code and to control the transmit-receive line of the radio system. When the ARQIOOOB is turned off, demodulator data is connected directly to the terminal.

The ARQ1000B is designed to interface HAL Communications RTTY terminals such as the DS3200 and ST8000. A total of 30 LED indicators and 11 front panel switches are provided to give full control and status indications of ARQIOOOB operation. The ARQ access code, SELCAL code, and WRU/HERE IS response text are kevboard programmable and stored in non-volatile memory. The ARQIOOOB mav be either rack mounted or placed on the operating table (tilt bail included). The ARQIOOOB operations from 105-130/210-250 VAC 50/60 Hz power.

Options for the ARQIOOOB include a built-in demodulator (M1700), a high voltage loop supply (LP1200A), and an encryption option (ARQ-X10).

ARQ1000B
SPECIFICATIONS

Control **Indicator**

MODE: OFF: By-pass ARQ conversion; connect TTY to demodulator
STBY: "Rest mode" for automatic switching to ARQ, FEC, and SEL transmit-receive modes.
ARQ: Select normal ARQ transmit-receive mode.
FEC: Select FEC collective broadcast mode.
SEL : Select SEL-FEC selective broadcast mode.
MON: "Rest mode" for automatic switching to ARQ, FEC, and SEL receive-only modes.

RESET: Force full reset of ARQ1000B processing.

SEND: Manual initiation of transmission; may also be made by keyboard control.

B/Y: Force transmission of alternate 1 second B and Y ARQ code to the demodulator for testing.

N/R: NORM: Reverse demodulator data sense.
REV:

TX/RX CONT: TX: Transmit continuously until switched off
AUTO: Automatic TX/RX control (normal)
RX: Receive only until switched off

OVER: Force change in direction of traffic; also made by keyboard control.

END: Signal end of message to other station; also made by keyboard control.

BREAK: Force terminal keyboard continuous space condition; used to indicate entry to pro-gram mode for ARQ and SEL-FEC codes; also made by keyboard BREAK key or "BRK" command.

WRU: WRU: Turn on/off WRU response message to reception of WRU ARQ code (FIGS D).

HERE IS: Manually transmit WRU response message to identify station.

Indicators

MASTER: Station that originated communications.
SLAVE: Original receiving station.

ISS: Information Sending Station at a given time.
IRS: Information Receiving Station at a given time.

TFC: Normal traffic is being processed.
IDLE: Idle signals are being sent or received.

RQ: Repeat request in ARQ mode.
ERR:A reception error has been detected.

PHAS: ARQ1000B is synchronizing with remote station.
OVER: ARQ system is changing direction.
CS1:
CS2: Show reception of indicated ARQ control codes.
alpha:
beta:

SEL-CAL: Indicate reception of programmed SEL-CAL code.

INPUT INHIBIT: Indicate keyboard/TD wait control signal.

Interface Specifications

Data To/From Demodulator:

Code, Rate:	100 Baud ARQ code as defined by CCIR 476 and 625.
Levels:	RS232C or TTL.
Control:	Tone enable when transmitting.

Data To/From Terminal (TTY):

Codes:	Baudot (CCITT No. 2) or ASCII.
Rates:	45, 50, 57, 74, 110, 134.5, 150, 300 baud.
Connection:	Full duplex.
Levels:	RS232C or TTL.
Control:	Printer busy input and keyboard wait output; input from terminal KOS control.

Data to Transmitter/Receiver:

Control:	Transmit/receive control (KOS)
I/O Connections:	DB-25 connectors for terminal and external modem con nections. DE-9 connector for radio connections with optional Ml700 internal modem.

General

Size:	3.5" H x 16.75" W x 10.375" D (8.9 x 42.5 x 26.4 cm)
Weight:	16 Ibs net; 19 Ibs shipping (7.3 kg net; 8.6 kg shipping)
Color:	Aluminum cabinet with black front panel.
Style:	Table mounting with tilt bail or 19" rack mounting.
Power:	105-130, 210-250 VAC 50/60 Hz; 30 Watts.

Options Available

M1700:	Receive-transmit demodulator board. Installs in ARQ1000B: 1700 Hz +/- 85 Hz standard.
LP1200A:	High voltage loopsupply: neutral (0-12OV) or polar (- 60/ + 60V), 20 or 60 ma. Optically isolated RS232 I/O. Separate cabinet, 3.5"H, rack width, rack or table style.
ARQ-X10:	Encryption option: subject to export control.

Specifications subject to change without notice.

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