



XU-2200 Ultrasonic Flaw Detectors

Features of the XU-2200

- Switchable spike/square wave (300 volt) Pulsar
- High Rep rate, up to 10 KHz
- Separate analog and digital amplitude alarm outputs for gates 1-8
- Cyclic gating allows 16 separate Alarm Gate functions
- DGC and AGC signal enhancement for thickness measurement
- Button per function front panel controls
- RS-232 and high speed RS-485 serial computer interfaces
- Single or multiple-channel—stand alone or rack mount
- Exceptional 2-year limited warranty



The XU-2200 series are high speed ultrasonic flaw detectors for systems applications. The XU-2230 is an advanced pulser/receiver. The XU-2240 adds an amplitude alarm gate and storage of front panel setups. The XU-2250 includes a thickness gauge.

The XU-2200 series of ultrasonic flaw detectors support a wide range of applications in diverse industries such as aerospace, automotive, petrochemical, energy, metal working, military, research laboratories. The XU-2200 series ultrasonic instruments are a solid choice for applications requiring high resolution or deep penetrating power and high sensitivity.

Leading edge technology makes the XU-2200 series truly advanced flaw detectors, suitable for highly automated ultrasonic test systems. The high energy square wave pulser coupled with the low noise, high resolution receiver makes the XU-2200 series a powerful tester for hard-to-penetrate materials. A spike pulser adds an extra dimension for high frequency applications. Multiple gating permits repositioning the gate in a predefined cyclic sequence over successive pulser firings. This results in unmatched flexibility in devising sophisticated ultrasonic tests.

HIGH RESOLUTION...

Wideband, fast recovery receiver amplifiers coupled with a fast rise pulser make the XU-2200 series high resolution ultrasonic instruments. This permits detecting and displaying tiny near - surface echoes.

BUILT FOR SPEED...

Test systems for in-line production often must operate at high speeds to maintain manufacturing throughput. The XU-2200 series employs a number of techniques to achieve high speed system operation. First, the high pulse repetition rate allows the system to operate up to the maximum allowed by the ultrasonic test geometry. Second, multi-channel systems are easily controlled with the advanced computer interface and control software for the XU-2200 series of instruments. Finally, sophisticated analog and digital signal processing techniques provide local data reduction within the XU-2200 instruments. This allows a system controller to control and acquire data from many more test channels.

EASY TO OPERATE...

Operation of the XU-2200 series instruments is direct and user-friendly with the push button front panel controls. The straightforward button-per-function approach eliminates the frustration of searching through function menus that are several levels deep. Most of the functions are accessible with the touch of a single button. Adjustments are easy with the coarse adjust keys and fine control knob. Flexible visual and audible alarms alert the operator to the defective part conditions.

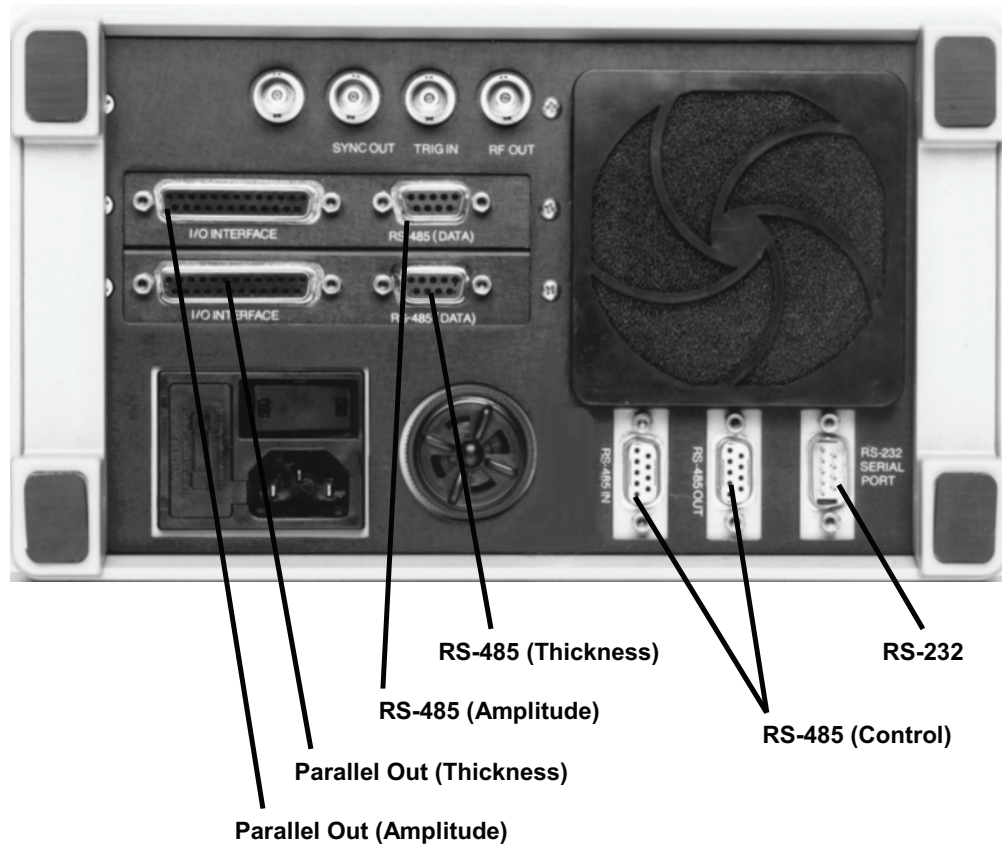
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COMPUTER CONTROLLED...

Modern flaw detectors such as the XU-2200 series ultrasonic instruments can rapidly generate an enormous volume of test data. The XU-2200 series instruments incorporate sophisticated data reduction firmware to minimize this problem. Nonetheless, a significant amount of data may need to be transported to a computer for subsequent storage and analysis.

To meet this need Xactex pioneered the use of high speed serial communication for data acquisition and control. Modeled after the EIA RS-485 standard, the Xactex high speed serial interface is a highly reliable, versatile, low-cost method of communication.

The XU-2200 series instruments include a standard RS-232 link, an easy interface to virtually any IBM® -compatible PC. It is intended for those applications which do not require high data rates.



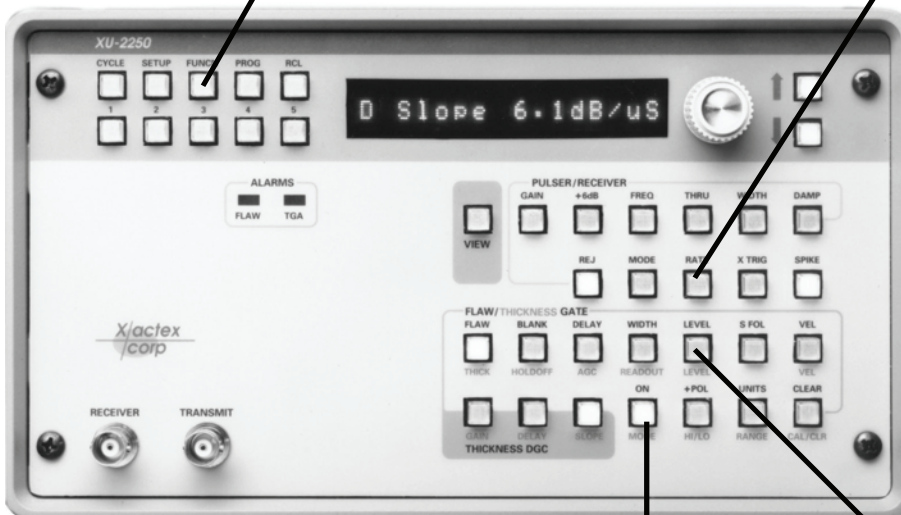
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PROGRAMMING

CYCLE	Used with PROG key to define individual gate cycles
SETUP	Defines setups
FUNCN	Accesses special functions, including serial baud rate and device address selection.
PROG	Accesses stored setup features and cyclic gate parameters
RCL	Recalls setups and activates certain functions
1,2,3,4,5	Accesses functions one through five

PULSER/RECEIVER

GAIN	Adjusts receiver gain
+6dB	Adds 6dB to Gain
FREQ	Sets receiver frequency
THRU	Pulse/echo or pitch/catch operation
WIDTH	Controls pulser pulse width
DAMP	Selects pulser damping
REJ	Sets reject level
MODE	Selects display mode (+, -, ±, HR±, RF)
RATE	Controls rep rate
XTRIG	Selects external or internal triggering
SPIKE	Selects spike or squarewave



ALARM GATE (XU-2240, XU-2250)

BLANK	Adjusts interface blank period
DELAY	Sets gate delay
WIDTH	Sets gate width
LEVEL	Sets alarm level and filter
S FOL	Activates the surface follower or interface mode
VOL	Sets ultrasonic velocity
ON	Activates gate
+POL	Sets instrument to alarm on signals greater than alarm level
UNITS	Selects unit of measure

FLAW/THICKNESS GATE (XU-2250)

FLAW/THICK	Selects Gate Flaw/Thickness button functions
VIEW	Selects source of scope output
MODE	Selects a thickness measurement mode
CAL/CLR	Calibrates contact transducer for thickness measurement
HOLDOFF	Adjusts thickness blanking pedestal
AGC	Selects AGC mode
DGC GAIN	Adjusts DGC gain change
DGC DELAY	Sets start of DGC gain change
DGC SLOPE	Sets thickness amplifier gain change rate
READOUT	Sets thickness measurement detection and display modes
LEVEL	Sets thickness measurement alarm level thresholds
HI/LO	Selects threshold adjusted by the LEVEL key
RANGE	Sets thickness measurement range (1 inch, or 10 inch)

XU-2200 Ultrasonic Flaw Detectors **Specifications**

Pulser

Type Switchable Spike Square
Amplitude 300 volts into 500 ohms
Pulser Width (square)..... Adjustable 30 to 650 ns
Repetition Rate..... 100 Hz to 10 KHz in 100 Hz steps
Pulser Rise Time Less than 15 ns
Damping Selectable 30,34,40,50,70,100,1k ohms

Receiver

Tuned Frequencies..... 1,2,25,5,10, 15 MHz
Wideband Bandwidths..... 1-20,3-20,5-30, 5-30 MHz
Gain Adjustable -28 to +81.8dB in .05dB steps
+6dB Switch Increases receiver gain by 6dB
Display Output..... Switchable RF, Detected RF
Detected RF Presentation +,-,±,Hi Res ±
Reject..... Linear reject adjustable 0-80% f.s.
Mode Pulse/Echo, Pitch/Catch (THRU)
Eq. Input Noise (rms)..... 20 µvolts WB1 (1 to 20 MHz),
45 µvolts WB4 (.5 to 30 MHz)

Computer Interface

RS-232 Serial..... 9.6 Kbaud, allows software control of
the functions and cyclic operation of a single instrument.
RS-485 High Speed Serial Command Link..... Selectable
9.6, 62.5, 100, 250 Kbaud; Allows control of the func
tions, cyclic operation for single or multiple XU-2200
series instruments.
RS-285 High Speed Data Serial Link..... (XU-2240,
XU-2250) Gate Amplitude, Thickness: 1Mbaud
transmission rate with external synchronous data clock.
Allows high speed data acquisition on each rep.
Optimized for use with the Xactex XT-3032 RS-485 serial
board.
Isolated Parallel..... Outputs parallel 8-bit data.

Power

AC Input User selectable 90-264 VAC, 47 to 63 Hz
Power Consumption 60 Watts

Physical

Size Standard 6.3"Hx10.1"Wx17"D
(1/2 rack unit) 6.25"Hx8.75"Wx16.25"D

Warranty

The XU-2200 Series Ultrasonic Flaw Detectors carry a 2-
year limited warranty

Accessories

XU-2202 Rack mount adapter
(mounts 2 ea.—specify at time of order)

Amplitude Gate (XU-2240, XU-2250)

Modes Normal, Interface
Blanking Interval Adjustable .05-1000 µsec (.006-112
inches steel)
Delay Interval..... Adjustable .05-1000 µsec (.006-112
inches steel)
Alarm Polarity Selectable Hi/Lo
Alarm Level..... Adjustable 0-100% f.s.
Alarm Noise Filter Adjustable 1-15
Peak Detector Operation..... Each Rep is a new sample,
thus the speed of the Peak Detector is limited only by
the rep rate
Detector Output..... 0-10 volts analog, 8 bits
digital
Detector Output Hold Selectable 0-1000 milliseconds or
reps
Alarm Output..... TTL level compatible, "HI" on alarm & no
test
Alarm Output Hold Selectable 0-1000 milliseconds or
rep rates and external clear
Alarm Indicators Visual and audible
Cyclic Operation..... Allows up to 16 separate gate
positions, each having independent blanking, delay
width, alarm level, alarm polarity and alarm filter.
Separate amplitude values are available for each gate
position. The peak amplitude of all of the cycles is
also available. Gate cycles are sequenced on
successive reps.

Thickness Gate (XU-2250)

Modes Selectable contact, delay line (immersion) or thin
wall
Ranges Selectable .03" to 1",.1" to
10"
Display (LED readout)..... 3 digits, .999,9.99
Display Resolution0.001" at (.01" to 1"),.01" at (1" to 10")
AGC..... Adjustable
The AGC averages the signal level over the selected
number of reps. This results in slowing the AGC
function to avoid errors arising from conditions such as
temporary signal loss, etc. The AGC is independent of
the receiver gain and will not affect signals in the
amplitude (flaw) gate.
DAC Delay: Adjustable 0-200 µsec
Slope:..... Adjustable 0-25.5 dB
Suppression: Adjustable 0-25.5 dB
The DAC allows extremely fast testing by pulling all
signals up to a constant level, and acting on every rep.
DAC operation is fully programmable via the RS-485
serial link.
Thickness Output 0-10 volts analog, 10 bits digital
Resolution 10 bits
Alarms Hi, Lo & No-Test (TTL level compatible)

