

Digital Ultrasonic Flaw Detector KUB100 series



KUB100 series are portable and digital Ultrasonic Flaw Detector, the detector can rapidly, non-destructively and accurately test, locate and evaluate multi-defects, such as welding bead, crack, slag and blowhole etc.. The detector can be used in the laboratory, also can be used at the project site. The detector is widely used in the manufacturing, steel metallurgy, metal processing industry, chemistry etc. that the fields need testing defect and control ling quality, it is also widely used in in-service inspection and life span evaluation for the fields of aircraft, railway traffic, boiler, pressure vessels etc.

Safety tips

- ◇ The detector is the device for industry ultrasonic non-destructive testing, can not use to medical testing;
- ◇ To ensure safety operation, the operator must have special knowledge of non-destructive testing;
- ◇ The detector must be used under allowed environment condition, especially, the detector can not be used under the strong magnetic field and strong corrosion environment;
- ◇ To avoid unnecessary loss and ensure safety, please operate the detector according to the manual.
- ◇ Contact us when the detector appear fault, please don't disassemble and repair it by yourself.

Declaration: Our company has no responsibilities for any consequences caused by misuse, please operate the detector in proper according to the manual.

Features

KUB100 series Ultrasonic Flaw Detector are all digital, and have features of high speed, high accuracy, high efficiency, high reliability, good over-all properties, and real-time operation. The detectors designed using advance technology, so they have outstanding site properties.

Multi-channel inspection, you can choose save as, it is useful for inspection.

Large capacity storage for waveform, the waveform can be loaded.

High speed and long time video for inspection process.

Multi- shortcuts key, menu operation, digital shuttle roller, convenient to operate, advanced technology.

- ◇ TFT color screen with 5.7 inches, the color and bright can be set according to environment.
- ◇ Disassemble battery, online charging, offline charging and charge while working, convenient to change battery. Long time working outside and no worries. Small volume, light weight and portable.
- ◇ Damping match meets working requirement with different sensitivity and resolution .
- ◇ Four working modes: normal probe, angle probe, dual-crystal probe, through probe.
- ◇ Amplify receive

Real-time sample: high speed ADC, fully display the wave detail.

Rectify: Full, positive, negative, reflective

Gate: dual-gate , support time gate and sound path gate.

Gain: Multi-grade adjustable, has basic gain, scan gain, compensation gain, Support gain locked and auto gain.

- ◇ Alarm type

Beep alarm and led alarm.

- ◇ Alarm condition

It can be chosen among wave in gate, wave out gate, wave in curve and wave out curve

- ◇ Data save

The detector designs save shortcut key, very convenient to operate. The save as, load, play and delete can be carried out quickly.

- ◇ Inspection function

Peak memory: Search the highest wave in real-time, recording the maximum value of the defect.

Echo envelope: Peak trace depiction for defect echo, it provides detail info for judging defect.

Crack height measurement: Automatically measure and calculate crack height.

B-SCAN: Real-time scan, cross-section display, B-SCAN can display the workpiece shape which make the result displayed directly.

Aperture: Auto calculating flaw equivalent i.e. Φ value.

DAC, AVG: normal/angle probe inspect forged piece and the detector can find the highest wave of the defect and automatically calculate equivalent Φ , the DAC and AVG can be done in section.

Record: Record waveform in real-time, save and play.

Defect location: Horizontal value L, depth H, sound path S.

Defect quantitative: Flexible displays according to setting reference.

Defect qualitative: Manual experience judgment by envelope waveform.

Curved surface correction: Inspection for curved surface workpiece, revise the curvity conversion.

◇ Real-time clock record

Date, time tracking record and save.

◇ Communication

High speed USB provides transportation data.

◇ Screen protection

While standby, the screen bright will decrease or shut off automatically, this make the detector save energy, and extend life span.

Functions

The functions of KUB100 series are shown in the Table 1.

Table 1 Functions of KUB100 series

MODEL	KUB100 Series				
	KUB100	KUB110	KUB120	KUB130	KUB140
SCREEN	TFT	TFT	TFT	TFT	TFT
DAC	√	√	√	√	√
AVG	×	√	√	√	√
STANDARD INSIDE	×	√	√	√	√
GATE ALARM	√	√	√	√	√
CURVE ALARM	√	√	√	√	√
WAVE FREEZE	√	√	√	√	√
CHANNEL	10	10	100	100	100
WAVE	100	100	1000	1000	1000
Video	×	5min×10	5min×20	5min×20	5min×20
				60min×1	60min×1
AUTO CALIBRATION	√	√	√	√	√
REJECT	√	√	√	√	√
PEAK MEMORY	√	√	√	√	√
ECHO ENVELOPE	×	√	√	√	√
THICKNESS B-SCAN	×	√	√	√	√
COLOR B-SCAN	×	×	×	√	√
AUTO GAIN	√	√	√	√	√
ECHO CODE	×	×	√	√	√
APERTURE CALCULATION	×	×	√	√	√
WELDING GRAPH	×	×	×	×	√
CRACK HEIGHT MEASUREMENT	×	×	×	×	√
CURVED SURFACE CORRECTION	×	×	√	√	√

PC SOFTWARE	√	√	√	√	√
BATTERY	1	1	2	2	2

√: HAVE THE FUNCTION ×: HAVE NO THE FUNCTION

Specifications

The specifications of KUB100 series are shown in the Table 2.

Table 2 Specifications of KUB100 series

	KUB100	KUB110	KUB120	KUB130	KUB140
TESTING RANGE	0~6000mm		0~9999mm		0~25000mm
VELOCITY	1000~9999m/s			400~20000m/s	
GAIN	0dB~110dB				
DISPLAY DELAY	-20μs~+3400μs				
PROBE DELAY	0μs~99.99μs				
FREQUENCY	0.2~10MHz	0.2~15MHz		0.2~20MHz	
NOISE LEVEL	≤10%				
PROBE DAMPING	100Ω, 150Ω, 200Ω, 500Ω				
PROBE REPEATING FREQUENCY	10~1000Hz			10~2000Hz	
SENSITIVITY	>62dB (DEPTH: 200mm, FLAT-BOTTOM HOLE Φ2)				
RESOLUTION	>40dB (5P14)				
LINEARITY REJECT	0~80% (DIGITAL REJECT)				
VERTICAL LINEARITY ERROR	≤3%				
HORIZONTAL LINEARITY ERROR	≤0.1%				
DYNAMIC RANGE	≥32dB				
PULSE	SQUARE WAVE				
PULSE ENERGY	FIXED		MULTI-GRADES ADJUSTABLE		
PULSE WIDTH	50~300ns		AUTO MATCH/ 50~1000ns		
ENVIROMENT TEMPERATURE	-10°C ~ 50°C				
ENVIROMENT HUMIDITY	20%~95% RH				
POWER VOLTAGE	DC:7.2V; AC:220V				
WORKING HOURS	≥ 20 hours				
SIZE	220×175×59 (mm)				
WEIGHT	1.3 kg including battery				

Unit

The face of KUB100 series Ultrasonic Flaw Detector is shown in the Fig. 1.

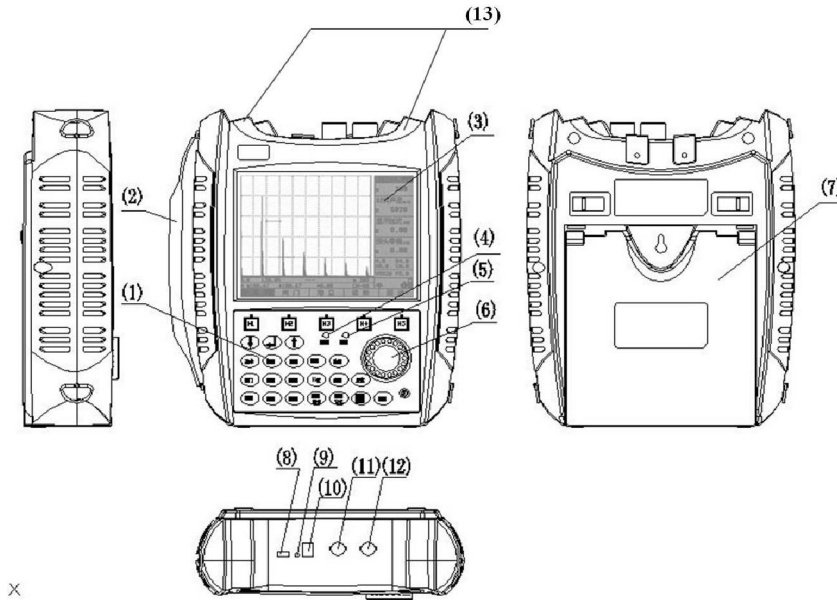


Fig. 1

- (1) Keypad (2) Hand-belt (3)TFT screen (4) Power indicator (5)Alarm indicator
 (6) Digital shuttle roller (7)supporter (8)USB port (9)Reset and off port
 (10) Charging port (11) Receiving port (12) Receiving/transmitting port (13) Protecting shell

Keypad introduction

The detector keypad is as shown in the Fig.2.

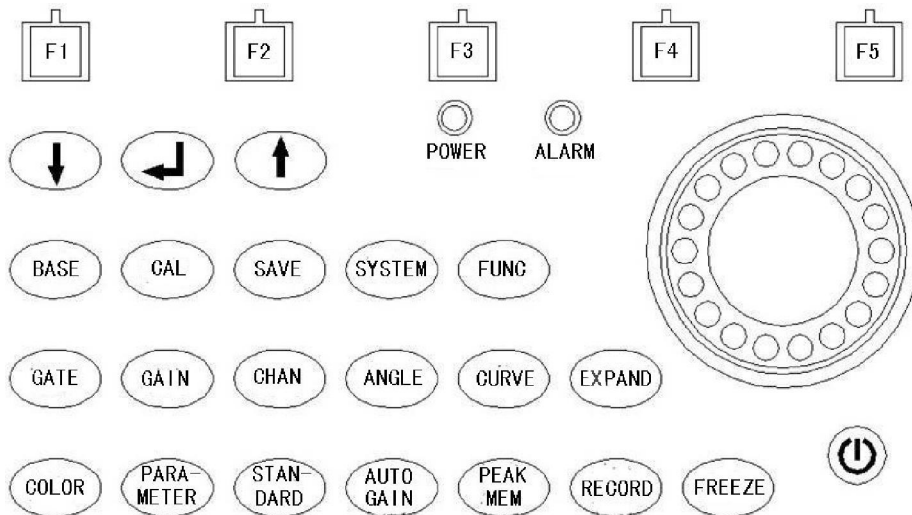


Fig.2

F1 — F5 function selecting keys

- ↓ Down arrow, use to use to select KUB menu downward.
- ↵ ENTER key, to confirm each operation.



Up arrow, use to select KUB menu upward.



POWER Power indicator



ALARM Alarm indicator



Base function keys, it includes RANGE, GATES, GAIN, MODE and ECHO, the detail info. refer to Table3.



Calibration function keys, it includes PROBE, CAL, ANGLE, PULSER and SETUP, the detail info. refer to Table3.



Save function keys, it includes CHNL, WAVE, VIDEO, RESET and RESV, the detail info. refer to Table3.



System function keys about the detector, it includes DISP, SCALE, ALARMS, SETUP and INFO, the detail info. refer to Table3.



Function keys about the special function of the detector, it includes SCAN, WELD, DIAM, CRACK and CSC, the detail info. refer to Table3.



Gate shortcuts key, the detail info about gate can be set directly by pressing **GATE** key.



Gain shortcuts key, the detail info about gain can be set directly by pressing **GAIN** key.



Channel shortcuts key, the detail info about channel can be checked directly by pressing **GAIN** key.



Angle shortcuts key, the detail info about angle can be set and calibrated directly by pressing **ANGLE** key



Curve function key, DAC and AVG can be switched by pressing **CURVE** key.



Expand shortcuts key, the wave in the gate will expand automatically by pressing **EXPAND** key.



Color shortcuts key, you can directly set the color of the screen according to your requirement by pressing **COLOR** key.



Parameter shortcuts key, you can enter into the parameter setting GUI to set each parameter, it includes almost all parameters.



Standard shortcuts key, you can enter into the standard setting GUI to select the standard according to your requirement.



Auto gain shortcuts key, the wave in the gate will arrive the reserved height (default value)



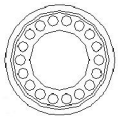
Peak memory shortcuts key, the peak memory and echo envelope will be opened or switched by pressing **PEK MEM** key.



Record shortcuts key, the detector will directly enter into the video operation GUI, or stop recording by pressing **RECORD** key.



The wave will be frozen by pressing **FREEZE** key.



Digital shuttle roller, mainly used to increase or decrease, step selection.

The keypad area is divided into three parts as shown in the Fig.2. The first part is the first row, that is function selection key composed of F1,F2,F3,F4 and F5. You can select the function option in accordance with the main menu below the screen by pressing these five keys.

Second part is the second row includes three basic operation buttons which are **UP**, **ENTER**, **DOWN** key, different parameters at the right screen in the KUB menu can be switched by pressing **UP** and **DOWN** key, press **ENTER** key to confirm operation and enter into the next step.

The third part is the area of function group and shortcuts.

Menu structure

The menu structure of the KUB100 series is shown in the Table3.

BASE		CAL		SAVE		SYSTEM		CURVE				FUNC	
RANGE	RANGEmm	PROBE	P-TYPE	CHAN	SELECT	DISP	LIGHT	DAC	DRAW	AVG	DRAW	SCAN	B-SCAN
	MTLVELm/s		P-FREQ		SAVE		COLOR		DB-BAS		DB-BAS		B-DIR
	D-DLY us		X-VAL		DELETE		ECHO-H		ECHO-H		PERIOD		
	P-DLY us		P-SIZE		SAVE AS		GSTART		GSTART		A-SCAN		
GATES	SELECT	CAL	AUTO	WAVE	SELECT	SCALE	GRID	EDIT	ADJUST	EDIT	ADJUST	WELD	PARAM
	GSTART		MANUAL		SAVE		UINITS mm		INDEX		INDEX		
	WIDTH mm		FRONT		LOAD		H-AXIX		ECHO-H		ECHO-H		
	THRESH		P-DLY		DELETE		GSTART		GSTART		GSTART		

									mm				
GAIN	DB-BAS dB	ANGLE	AUTO	VIDEO	SELECT	ALARMS	KEY SND	OFFSET	DAC-RL	OFFSET	AVG-HL	DIAM	EOU DIAM
	DB-STP dB		MANUAL		RECORD		BEEP ALM		DAC-SL		AVG-ML		GSTART
	DB-SCN dB		ANGLE		PLAY		LED ALM		DAC-EL		AVG-LL		P-SIZE
	DB- CMP dB		ANGLE-K		DELETE		ALM TYPE		ALM REF		ALM REF		P-FREQ
MODE	LOGIC	PULSER	ENERGY	RESET	ALL CHNL	SETUP	STANDARD	SETUP	FLAW TYP	SETUP	AVG REF	CRACK	HEIGHT
	AUTOSNAP		P-WIDTH		ALL WAVE				FLAW-D		REF-D		PT-A mm
	DETECT		PRF		ALL VDO				FLAW-L		P-SIZE		PT-B mm
			P-DAMP		RECALL		SHUTDOWN		DAC REF		P-FREQ		GSTART mm
ECHO	RECTIFY	SETUP	THICK	RESV		INFO	YY-MM-DD	DISP	DAC SHOW	DISP	AVG SHOW	CSC	O-DIAM
	REJECT		AUTO-80				HH:MM		TYPE		TYPE		I-DIAM
	FILL		PEAK MEM				FW VER		FITTING		FITTING		CSC
	ECHO ENC		ENVELOPE				OTHER		DELETE		DELETE		

Table 3 Menu structure