GPS-equipped digital 4-point real-time leak noise correlator Model: LC-5000 Simple Operation Manual <Basic Correlation Method>

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(1) Attach the antenna or antenna base with cable + antenna to the preamplifier, and turn on the power of the main unit and the preamplifiers.



(2) Check the following on the main unit screen.



During daylight saving time, tap 'Equipment Settings' from the menu and enable daylight saving time.

	Menu
Save	Recording
	Data processing
FFT screen	Logger-data collection
Pipe conditions	White-noise method
Logger mode	Equipment setting

6 4%	1 2 3	4	9	09/11/	2022 09:20	
E	quipment settin	g	_			
	System info	mation	Display			
	Date & time		09/11/2022 09:20	DST OFF		
	Language		English	\bigwedge		
	Date & year	display order	dd/mm/yyy	Тар		
	Luminance			\sim		
	Power savin	g	60	min.		
C	ommon setting					
	Radio chann	el	5			
	Time zone		UTC+01:00	Adju	st time	zone
				befo	re turn	ing on DS
E 64%	1 2 3	4	50	09/11	/2022 10:20	
	Equipment setti	ng				
	System inf	ormation	Display			
	Date & tim	e	09/11/2022 10:20	DST ON		
	Language		English			
	Date & yea	r display order	dd/mm/yyyy			
	Luminance	•	× ^		<	
	Power savi	ng	60	min.		
	Common setting	ļ				
	Radio char	inel	5			
	Time zone		UTC+01:00			
		The die	nlav chanc	tos to D		and
		the sta				Maria
		the clo	ск адуалсе	es by or	ie nour	. You
		will no	t be able to	o chang	e the ti	me
		zone a	t this stage			

(3) Press the preamplifier switch to check and set the preamplifier conditions.



(4) If the antenna is attached directly to the preamplifier, replace the antenna of the preamplifier with the antenna base of the extension cable, and set up the preamplifier and antenna.





(5) Press the filter switch to set the filter items.



When the auto filter is executed, select the leak position detection screen from the menu.

C-500	Men	nu of FFT screen 🛞
	(Тар)	Recording
	Display support	Data processing
	Leak location screen	Logger-data collection

GPS-equipped digital 4-point real-time leak noise correlator Model: LC-5000 Simple Operation Manual <Basic Correlation Method>

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(6) Press the correlation switch to start the



(7) After confirming the waveform, press the correlation switch to stop the correlation and tap the graph



(8) Switch to the multiple correlation screen. To set the piping conditions, check the combination of preamplifiers that are correlated, and tap the screen.



(9) Be switched to the single screen of correlation again.



(10) Press the "Setting pipe conditions" switch to set the piping conditions.



(11) Press the correlation switch again to start the correlation process.

Start correlation



GPS-equipped digital 4-point real-time leak noise correlator Model: LC-5000 Simple Operation Manual <Basic Correlation Method>

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(13) Save to SD card.



		Menu
	Save	RenTap
	Display support	Data processing
	FFT screen	Logger-data collection
	Pipe conditions	White-noise method
	Logger mode	Equipment setting
	White-noise data Recording data SD card format	
	White-noise data Recording data SD card format	presents the saved data.
D 82%	White-noise data Recording data SD card format Recp	presents the saved data.
Ecskage	White-noise data Recording data SD card format Recp Iccation data	eresents the saved data.
Eeskage	White-noise data Recording data SD card format Recp tocation data File number San 25/1	ed date & time
Ecskage	White-noise data Recording data SD card format Recp Iocation data File number 25/1 000 25/1 001 25/1	ed date & time 1/2021 11:29-31 1/2021 11:29-47
62% Leakage ((((((())	White-noise data Recording data SD card format	eddate&time 1/2021 11:2947

File number 001 is the first saved data.

Tap the file number, then tap the "Data display" to be shown the correlation graph of the saved data.

<NOTE>

File number 000 is an automatically generate file, and each time the correlation is started and stopped, the same file as the latest saved data is overwritten.

For example, when the latest saved data is at 003, the data at 000 is recorded as same data as 003 in order to the internal function processing.

GPS-equipped digital 4-point real-time leak noise correlator Model: LC-5000 Simple Operation Manual <Explanation of Display>





The preamplifier will automatically power off in about 9 minutes when data collection is performed from the logging data pickup enabled state. After collecting data, turn off the main unit and preamp once.

The recording data is stored in the preamplifier when the logging data is performed enabled state, and the power can be turned off. However, the data will be overwritten when the logger mode is executed again.

Display description of the main unit LCD panel.



- (1) Battery level in the main unit.
- (2) Preamplifier in communication.
- (3) Headphone connection in progress.
- (4) SD card being inserted
- (5) Number of addition times of correlation
- (6) Wireless indicator.
- (7) Current date and time.
- (8) Correlation waveform (single or multiple)
- (9) Main unit reception strength, data arrival rate.
- (10) Preamplifier reception strength, remaining battery power.

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(1) Attach the antenna to the preamplifier and turn on the power of the main unit and the preamplifier.



(2) Check the following on the main unit screen.



During daylight saving time, tap 'Equipment Settings' from the menu and enable daylight saving time.



	Equipment setting System information Date & time Language Date & year display order Luminance Power saving	Display 09/11/2022 09:20 D English dd/mm/yyy	ST OFF
	System information Date & time Language Date & year display order Luminance Power saving	Display 09/11/2022 09:20 D English dd/mm/yyy	ST OFF
	Date & time Language Date & year display order Luminance Power saving	09/11/2022 09:20 D English dd/mm/yyy	ST OFF
	Language Date & year display order Luminance Power saving	English dd/mm/yyy	2
	Date & year display order Luminance Power saving	dd/mm/yyy	
	Luminance Power saving		
	Power saving		ap
		60 min	
	Common setting		
	Radio channel	5	
	Time zone	UTC+01:00	Adjust time zone
	System information Date & time Language Date & year display order Luminance	Display 09/11/2022 10:20 C English dd/mm/yyyy	IST ON
	rower saving	00	
	Common setting		
	Radio channel	5	
	Time zone	UTC+01:00	
	The d the cl will n zone.	isplay change ock advances ot be able to o	s to DST ON and by one hour. You change the time
Pres	s the menu sw	vitch and tap	the logger mode.

-5000	Me	nu	\otimes
	Save	Recording	
	Display support	Data processing	
	FFT screen	Logger-data collection	
	P conditions	White-noise method	
	Logger mode	Equipment setting	

(4) Tap the Quick mode.

Logger mode	\otimes
Quick mode	
High precision mode	

(5) Select any operation mode.

Operation mode	\otimes
Logger mode: Rec. 5min.	
Logger mode: Rec. 1min.	
Logger mode: Rec. 1min. x 3	

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(6) Enter the time until recording starts. (Set after 3 to 30 minutes)



(7) Transit to the preamplifier setting screen. Check the settings and tap Send Settings.



(8) Make sure that all the LEDs of the preamplifier are lit.



(9) Remove the antenna of preamp and install its preamplifier.

At this time, in order to prevent damage due to flooding, cover the antenna connector with the attached cap to make it completely waterproof.



(10) Recording will start at the specified time.



(11) When the recording is finished, the LED of the preamplifier will be as follows. In the place where the radio wave from the main unit reaches, it becomes like (13).



- Turn on Blinking Turn off (12) Attach again the antenna to the preamplifier and bring it near the main unit. At this time, leave the power of the preamplifier and the main unit turned on.
- (13) The post-processing of the quick mode is performed, and the LED of the preamplifier is as follows. Make sure that the LEDs on all preamps you have installed look like this.



(14) Check that three or more antennas are shown for the preamplifier symbol at the bottom of the screen. At this time, the data arrival rate next to the antenna is not displayed.



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(15) Press the menu switch and tap Logger Data Collection.



Menu of F	FFT screen 🛞
	Recording
Display support	Data proce Tap
Leak location screen	Logger-data collection
Frequency range	White-noise method
X axis scale	Equipment setting
Logger mode	

(16) Check the file number and tap Start Collection.

93% 1	2 3 4	50	• 22/11/2021 17:42
Logger-data co	llection		
Fil	e number	Saved date &	time
	001	29/07/2021 10:	16:00
	002	04/08/2021 13:	54:00
	003	04/08/2021 13:	54:00
	K?		Тар
Save number	004		Start
100% أله. 📥		100% (100\% (100\%)(100\%))))))))))	

(17) While collecting data, confirm that all preamp numbers installed in the message screen are displayed. A radio reach rate of 75% or higher is desirable. If the radio reach rate is less than 75% during collection, the warning display will flash. Tap 'CANCEL', move the location, and start over from (14).

■ 46% 1 2 3	4 🛛	• 14/11/2022 14:21
File numbe	r Saved date & time	(OK?)
O 031	26/10/2022 13:22:00	
	Under data transmission Pre-amplifier	~
0	Recording time 0:37	firm that the reach is 75% or more.
Save number 032		Start

If you exit without pressing 'CANCEL', the following screen will appear. If you want to collect data again, move to a place with a good wireless environment and tap 'RETRY'.

Data tra	nsfer error.	
The Data was not to	ransferred succe	esfully.
177	178 179	
Try again in better o Select CAN	ommunication co NCEL to close.	ondition.
RETRY		CANCEL

Press Cancel to return to the Logger Data Collection screen. Files that can be collected normally are displayed in black, and files with missing data are displayed in red.

Fi	le number	Saved date & time	
	031	26/10/2022 13:22:00	~
	032	14/11/2022 14:06:00	
	033	14/11/2022 14:12:00	_ ^
	034	14/11/2022 14:18:00	
			- ·
Save number	035		Start

⁽¹⁸⁾ Check the file number of the collected (saved) data.



(19) When the collection is completed, press the menu switch to display the menu screen and tap Data processing.

Menu ⊗	
Recording	
Data processing	Tap)
Logger-data collection	
White-noise method	
Equipment setting	

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(20) Tap the recording data.



(21) Tap the saved file number and tap Re-correlation.



(22) Displays a Quick menu.



(23) Tap the replay button ►. After a while, the correlation graph will be displayed.



(24) After playing the recorded data, tap the graph.



(25) Switches to the multiple correlation screen. To set the piping conditions, check the combination of preamplifiers that are correlated and tap the screen.



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(26) Switch to the single correlation screen again.



(27) Setting for piping conditions press the switch to set the piping conditions.



By tapping the preamplifier number, you can select and set piping conditions for combinations other than preamplifiers 1 and 2.

(28) Display the Quick menu.



(29) Tap the replay button► to display the correlation graph. Check the correlation position.



(31) After executing the logger mode, turn off the power of the main unit and the preamp once.

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(1) Attach the antenna to the preamplifier and turn on the power of the main unit and the preamplifier.



(2) Since the preamplifier receives weak radio waves from artificial satellites, take it outdoors. Please do it in a place where you can see the sky and there is nothing blocking your view such as buildings. Wait for the LED for GPS among the 4 LEDs to switch from blinking to lit out. It may take 5 to 10 minutes to synchronize the GPS signal from the satellite with the preamplifier.



(3) Check the following on the main unit screen.



During daylight saving time, tap 'Equipment Settings' from the menu and enable daylight saving time.



. 04	% 1 2 3 4	100	09/11/2022 09:20	
	Equipment setting			
	System information	Display		
	Date & time	09/11/2022 09:20	DST OFF	
	Language	English		
	Date & year display order	dd/mm/yyy	Гар	
	Luminance			
	Power saving	60 mi	in.	
	Common setting			
	Radio channel	5		
	Time zone	UTC+01:00		
> 64	% 1 2 3 4	Adj bef	ust time zoo ore turning 09/11/2022 10:20	ne on D!
> 64	% 1 2 3 4 Equipment setting	Adj bef	ust time zon ore turning 09/11/2022 10:20	ne on D
64	76 1 2 3 4 Equipment setting System information	Adj bef	ust time zon ore turning 09/11/2022 10:20	ne on DS
64	% 1 2 3 4 Equipment setting System information Date & time	Display 09/11/2022 10:20	UST TIME ZOI ORE TURNING 09/11/2022 10:20	ne on D:
64	% 1 2 3 4 Equipment setting System information Date & time Language	Adj bef ⊡ 09/11/2022 10:20 English	UST TIME ZOI ORE TURNING 09/11/2022 10:20	ne on D:
64	% 1 2 3 4 Equipment setting System information Date & time Language Date & year display order	Display 09/11/2022 10:20 English dd/mm/yyyy	UST TIME ZOI ORE TURNING 09/11/2022 10:20	ne on D
0 64	% 1 2 C 4 Equipment setting System information Date & time Language Date & year display order Luminance	Display Display 09/11/2022 10:20 English dd/mm/yyyy	UST TON	ne on D
5 64	% 1 2 3 4 Equipment setting System information Date & time Language Date & year display order Luminance Power saving	Display 09/11/2022 10:20 English dd/mm/yyyy 60 mi	UST TON	ne on DS
64	% 1 2 3 4 Equipment setting System information Date & time Language Date & year display order Luminance Power saving Common setting	Display Display 09/11/2022 10:20 English dd/mm/yyyy 60 mi	UST TON	ne on D
5 64	% 1 2 3 4 Equipment setting System information Date & time Language Date & year display order Luminance Power saving Common setting Radio channel	Display 09/11/2022 10:20 English dd/mm/yyyy 60 mi	UST TON	ne on DS
5 64	 % 1 2 3 4 Equipment setting System information Date & time Language Date & year display order Luminance Power saving Common setting Radio channel Time zone 	Display 09/11/2022 10:20 English dd/mm/yyyy 60 mi	UST TIME ZOI OP/11/2022 10:20 DSTON	ne on D

(4) Press the menu switch and tap the logger mode.

zone.

LC-5000	Menu		\otimes
	Save	Recording	
	Display support	Data processing	
	FFT screen	Logger-data collection	
	onditions	White-noise method	
	Logger mode	Equipment setting	

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(5) Tap the Quick mode.

(6) Select any operation mode.

Operation mode	\otimes
Logger mode: Rec. 5min.	
Logger mode: Rec. 1min.	
Logger mode: Rec. 1min. x 3	

(7) Enter the recording start time. (24-hour display)



(8) Transit to the preamplifier setting screen.Check the setting contents and tap "Send settings".

Pre-amplifier setting					
All 1	23	4			
Battery Level		RSSI			
Mode	Logger mode	Start time	15:00		
	5min.	Sensitivity	10		
Filter	Standard	Auto-sens.	OFF		
GPS	ON	Sen Tar	uilt in		
N d m s E a					
Send settings					

(9) When all the LEDs of the preamplifier light up, turn off the power of the main unit.



(10) Install the preamplifier.

At this time, in order to prevent damage due to flooding, cover the antenna connector with the attached cap to make it completely waterproof.



(11) Recording will start at the specified time.



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(12) Recording and post-processing are complete when all lights except the power LED of the preamplifier go out.

The power of the preamplifier is automatically turned off.



(13) Attach the antenna to the preamplifier again and turn on the power of the main unit and the preamplifier.



(14) Check that three or more antenna symbols of the preamplifiers are shown at the bottom of the screen.



(15) Press the menu switch and tap Logger-data collection.

Menu of FFT screen Recording Tap Display support Data processin Leak location screen Logger-data collection Frequency range White-noise method X axis scale Equipment setting Logger mode

(16) Check the file number and tap Start Collection.



(17) While collecting data, confirm that all preamp numbers installed in the message screen are displayed. A radio reach rate of 75% or higher is desirable. If the delivery rate is less than 75% during collection, the warning display will flash. Tap Cancel, move the location, and start over from (14).

File num	per Saved date & time	• (OK?)
0 031	26/10/2022 13:22:0	0
0	Under data transmission	
0	Pre-amplifier 1234	~
	Data No 1/1	
0	Recording time 0:37 033	Display warning an
0	CANCEL	Display warning an
Save number 032		target file number when delivery rate

If you exit without pressing 'CANCEL', the following screen will appear. If you want to collect data again, move to a place with a good wireless environment and tap 'RETRY'.

Data tr	ansfer error.
The Data was not t	transferred successfully.
177	178 179
Try again in better Select CA	communication condition. NCEL to close.
RETRY	CANCE

Press Cancel to return to the Logger Data Collection screen. Files that can be collected normally are displayed in black, and files with missing data are displayed in red.

F	ile number	Saved date & time	
	031	26/10/2022 13:22:00	
	032	14/11/2022 14:06:00	,
	033	14/11/2022 14:12:00	
	034	14/11/2022 14:18:00	
Save number	035		Start

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(18) Check the file number of the collected (saved) data.

	File number	Saved date & time	
	001	29/07/2021 10:16:00	
	002	04/08/2021 13:54:00	
	003	04/08/2021 13:54:00	
	004	18/11/2021 16:32:00	
	5	01/0	Ť
	(UK?)	
Save numb	er 005		Start

(19) When the collection is complete, press the menu

switch to display the menu screen and tap Data processing.



(20) Ta	p the	recording	data.
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	Data processing 🛛 🛞
Тар	Leakage location data
	FFT data
	White-noise data
	Recording data
	SD card format

(21) Tap the saved file number and tap Re-correlation.



(22) Displays a Quick menu.



(23) Tap the replay button ►. After a while, the correlation graph will be displayed.



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(24) After playing the recorded data, tap the graph.



(25) Switches to the multiple correlation screen. To set the piping conditions, check the combination of preamplifiers that are correlated and tap the screen.



(26) Switch to the single correlation screen again.



(27) Setting for piping conditions press the switch to set the piping conditions.



By tapping the preamplifier number, you can select and set piping conditions for combinations other than preamplifiers 1 and 2.

(28) Display the Quick menu.



(29) Tap the replay button► to display the correlation graph. Check the correlation position.



power of the main unit and the preamp once.