

# **SDE-19 Echo Sounder**

**User Manual** 



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# **Chapter 1: SDE-19 introduction**

### 1.1 Overview

SOUTH SDE-19 series echo sounder is a rugged, portable, professional and easy-to-use. SOUTH SDE-19 support WIFI, bluetooth or RS232 cable communication for data transmission, it can not only be used as portable type(Wireless connection), but also as professional type(RS232 connection). SDE-19 can work with SOUTH Android echo sounder software which installed in the Android tablet, it is a new and great experience for hydrographic surveyors.



#### 1.2 SDE-19 interface









Power button	Power on and off the SDE-19, when normally power on, the light will be
	blue
WiFi indicator	Show WiFi data link status, blinking blue is normal
Low frequency	
indicator	
High frequency	
indicator	
Power Indicator	Blue means power
Transducer	Connect the transducer
interface	
Power connector	External power supply, DC 12V
Five needles	Used as a serial output interface, you can view the output data of the host
	and debug the host through the serial software
Cable interface	External network cable

## 1.3 SDE-19 accessories



- (1): 12V DC power supply cable (2): RS232 data communicated cable
- (3): RS232 extended cable (4): SDE-19 echo sounder (5): transducer (6): survey pole



## 1.4 SDE-19 installation





#### Classical fix the transducer beside the boat



The position of the fixed transducer is best selected next to the middle side of the hull, avoiding the noise interference of the hull as far as possible, and then fixing it by pulling the rope at the front, rear and bottom.

#### Notice

During the whole depth measurement, the transducer rod shall be kept vertical at all times. When you find the rod is not vertical, you need to check the data. So, it is important to fixed the rod before you go to survey.



# Chapter 2: SDE-19 Web UI

### 2.1 WIFI connection and login the web UI.

 (1) Search the WIFI hot spot, the hot spot name is "SOUTH\_"+"the last 4 digital SN of SDE-19". Take "S26104A0000022" as the SDE-19 SN as example, we can search the WIFI hot spot is "SOUTH\_0022". Click to connected with this hot spot without password requirement.



(2) After connecting with the hot spot, then run the browser and input IP "10.1.1.1" to login the web UI as below picture:

10.1.1.1		야 ☆ 😩 :
		Language : Engish 🗸
	GNSS Web Server	
	username : admin	
	password :	
	(Ogin) Teser	

(3) Type the username and password **both** "admin", then click login to see the web UI configuration as below picture:



	Depth Information :
🖵 Status 📫	High Frequecy Depth 0.00 m Low Frequecy Depth 0.00 m
🗙 Configuration 🔒	System Information :
🎄 Sound config 🔠	Model: 260D
🛞 Network Config 🚹	Serial Number : 8261041A0000022
🕏 Firmware Update 🔒	PID : 7200230080150022
🕼 User Management 🛛 🔒	ExtPower Voltage : 6.23 v
🔟 System Log 🔢	Registration Date : 209
	Elapsed Time : 209 h
	Code : 123456789012345678901234567800000209 Register

# 2.2 Web UI introduction





Configurati	ion:	edmin \$261041A0000822 [Doppad]	> Receiver Op	aradon		
comgulat		G Status	Vodala Sef-ch	THEX -		
This is similar y		🛪 Configuration 🧧	itsim	Noture Operation	Sizia	
		Réceiver Operation 🔳	1	OEV Check	No Acto	
operation opti	on, we can do some operation	A Sound config	2	Radio Chert	No Acts	<u>.</u>
like : self-cheo	ck, power off, reboot and so	Setting      Setting      Setting	4	WE Check	ND ACTO	
on		de User Management	5 5	Bustooth Check	No Acto	
011.		🗇 System Log 🔂	6	Seroce Check	No Acto	8
			7 1	Cieci	ND-Arbs	
				0	heck al	
			Cefast Setting	je - jaarden This operators wit tee	e arpeareten)	
	General Config.: Code: Register the echo sounder receiver. Draft: The depth of transducer. Sound velocity	Configuration     Sound config     General Config     High Frequency Config     Low Frequency Config     Second Config     Ferminare Update     Liver Managements     System Log	E de la commo	Bend Humber (2011) 414400         Ho         F0000 100000000000000000000000000000000	0002 012345679001234547560000200 012345679001234547560000200	Register
	High frequency config.:	admin		Enter	Cantel	
		\$261041A0000022 ( <u>logi</u>		<ul> <li>High Frequency Con</li> </ul>	19	
	weasuring condition. Open	🖵 Status	0	Measuring Condition :	Oper	~
Sound or close, for enable/disable the high frequency function. Measurement pattern: Auto		* Configuration		Measurement Pattern :	Auto	•
		Sound config		ClearWidth(m) =	0.8	
		High Frequency Confi		Power :	1.5	*
		Low Frequency Config		TVGCurve(LogR) :	20	*
Config.	and manual. Auto mode is	Network Conlig	-	Start Gain(db) :	30	*
0	auto adjust sounding	Le User Management		Threshould :	2	~
	parameters, and manual	System Log		ShallowSurvoy :	Crose	~
	mode can let client adjust					
	the sounding parameters				Enter	Cancel
	the sounding parameters.	-				
	Low from working .		-			
	Measuring condition: Open	admin \$261041A0000022 [log	out	Low Frequency Con	fig	
	or close, for enable/disable	🖵 Status	0	Measuring Condition :	Open	*
	the high frequency function.	☆ Configuration	0	Measurement Pattern :	Auto	~
	Measurement pattern: Auto	& Sound config		bWidh(mm) :	0.2	~
	and manual. Auto mode is	General Config	2	ClearWidth(m) :	0.8	v
	auto adjust sounding	High Frequency Confi	g = 1 = 1	Power :	1	v
	parameters, and manual	Network Config	8	TVGCurve(LogR) :	20	•
	mode can let client adjust	1. Firmware Undate		Start Gain(db) :	30	*
	the sounding parameters.	J User Mananament		Threshould :	1 Network	~
			截图(Alt + A)	Fiter :	Close	•
		Con System Log			Enter	Cancel
	1					



	Ethernet: Configure the WIFI mode of echo sounder, and SOUTH users need to operate under SOUTH engineer guide.	edmin S061041A0000022 [lossual Status I Configuration I Sound config I Network Config I Ethemet Config I PortForwarding I PortForwarding I Config I Firmware Update I Wari Config I User Management I System Log I	P Ethernet Config           Audomair: P acquisiton:              • Yes          No            IP Address         0         0         0         0           Subvet Mask         2255         2255         0         0           Dataset Galaxiery         192         168         1         1           DNS1         172         16         10         21           DNS2         202         36         126         1365           MTU :         1500         Enter         Cancel
Network Config.	IPv6 config.: Configure the IPv6 parameters.	admin S2810914A0C00022 [Indext]	IPV6 Config           IPV6P1           IPV6P1           IPV6D481:
	WIFI config.: Configure the WIFI parameters of echo sounder. SOUTH users need to operate under SOUTH engineer guide.	admin S261041A000022 [legouf] Status 2 K Configuration 2 Sound config 2 Network Config 2 Ethernet Config 2 IPV6 Config 2 WHE Config 2 WHE Config 2 RottForwarding 2 & Firmware Update 2 & User Management 2 System Log 2	> WIFI Contlig           Enable:           AP_BBD           SCUITH_0022           AP_Pessord           southgnss.com.cn           APEncose           APEncose           Open           APChannel:           DHCPP IPRange:           10255.255.00 Ensult)           011           0255.255.00 Ensult)           Enter           Cancel
	Port forwarding: Some default port value of network. SOUTH users need to operate under SOUTH engineer guide.	edmin S261041A000022 [logoul]	PortForwanding      HTTP Part : 60     FTP Part : 21     TELNET Part : 23     Enter Cancel



Firmware update:	
For updating firmware. SOUTH users need to operate under SOUTH engineer guide.	admin     tsatsoriuscocco Bascult     Status     Status     Status     Coningusation     Sound contig     Sound contig
	Network Config      Lozar Update      Finnware Lipidate      Discuss      System Log      Data Update      Data Update
User management:	Sadmin Executionences [popul] > User Management
For webUI user management. SOUTH users	🖵 Status 🧰 Add Uber
need to operate under SOUTH engineer	% Configuration         Configuration         Construction         Construct
guide.	Administration Office Date Edit
	Bit User Management         Itality         Liter         Astronomy of the Datagement         Ent           Citer Management         Itality         Ent         Ent         Ent           Citer Management         Itality         Ent         Ent         Ent
System log.	admin admin
For receiver test. SOUTH users need to	\$2351041A0000022         [[cgguil]           \$\$ System Log           \$\$ System LogEnable :
	Configuration     Image: DownLoad (Configuration)       Sound config     Image: DownLoad (Configuration)       Network Configuration     Image: DownLoad (Configuration)       Image: DownLoad (Configuration)     Image: DownLoad (Configuration)



# Chapter 3: Quick guide for SDE-19 with Seastar software

#### 3.1 Seastar connect with SDE-19 and GNSS receiver.

Install and power on SDE-19, also prepare the GNSS receiver and power on.

A. Run the Seastar software in N80 and search the GNSS receiver bluetooth in the "settings - BT manage", then click "search" to search the receiver SN, then select the SN and click connect, see as below pictures:

BT manager	CONFIGURE	< BT manager	CONFIGURE	: BT manager	CONFIGUR
Connection mode	BT >	Connection mode	BT >	Connection mode	нт >
Device Type:	South >	Device Type;	South >	Device Type:	South
Available devices	BT MAC Address	Available devices	HT MAC Address	Available devices	BT MAC Address
		& Unknown device	2D:42:28:2F:04:8C	\$G50B8148601662	74:76:58:17:9B:07
		# DESKTOP-1 MOR1N8	AC:D5:64:38:48:8A	\$SG61AB133365680	00:80:25:08:F3:65
		#S261041A0000022	00.25 CA 38 F2 0C	\$SG11B1133372192	00-80:25 D8 EC C0
		\$S65084148506723	58:D3:91:92:25 DB	\$SG13A7132354140	00:25:CA:54:76:EA
		# PC-201809131050	80 FC 36 50 05 DE	\$826A5126347055	00:80:25:E0:13:02
		© Unknown device	76:E7:2E-90:60:53	\$ \$4A5B4145368569	00:25:CA:49:08:85
		# LYWSD02	E7:2E:00:F1:D4:0D	\$SG1199133326421	00:80:25:DF:69:62
		# Unknown device	76:12:83:36:80:92	\$ D910B6148509585	90:25:CA:5F:61:DA
				* SEDIGATE //UATER	101001253111412
Current connected device:		Current connected device:		Surrent connected device:	SG50B4148506723

B. Enable the N80 WIFI and connect with the echo sounder WIFI hot spot, then back to Seastar and click "Setting - Sounder - South Sounder ", turn on the "Sounder network connect", see as below pictures:

# SOUTH



C. Input the value of sound speed(velocity) and draught. The sound velocity depends on the water environment, normally we can use sound velocity sensor to get the value of sound velocity, or we can use bar check to calculate the sound velocity, even sometimes, we manual edit the velocity to match the depth which echo sounder display with the real depth.

YING INDER	SOUTH		SOUTH 18S SOUNDER
Sounder Ne	etwork Co	onnect	
Sounder re	gistration	1	>
General Se	et		
Sound enor	ed (m/	Correct	1480
s) :			
s) : Draught de	pth (m)	:	0.5



The draught is the depth of transducer. Normally we put transducer into water at 0.5 meters depth, and our survey pole also have the red mark to show 0.5m line.



About the measurement gear, it is the maximum depth value. It is very important for auto adjust parameter survey mode("measure mode - Auto" in "High frequency setting"). So if you already know in this area, it will not deeper than a value, please select the pear as below picture, if you don't know the value, select the "Auto".

Setting	
Auto	0
8m	0
15m	0
30m	۲
60m	0
120m	0
240m	0
300m	0

D. Select the measure state "On", then select the measure mode "Auto", then click "Send", see as below screen shot. If configure done, you can see a feedback message "Sounder parameters sent successfully", then we can back to the main interface of Seastar.

Measure state:		On >
Measure Mode	Manual	Auto
Pulse width(ms):		0.2 >
Restrain water depth(mm)	;	0.8 >
Power:		2 >
TVG curve (LogR) :		20 >
Initial gain (db) :		10 >
Send	0	



# 3.2 Create a new project, input the coordinate system parameters and localization.

A. Click "project - New project", then input the project name, then click "OK", then we can click the "coordinate system", then click "new system", then type a coordinate system name in the "coordinate system", then select and input your local coordinate system parameters. Then click "OK" and apply to current project.

(2) 20211111	A o	< New Projec	t		< System Parameter	
	6	Project name		Test 🛞		Coordinate System
	Y	Project location	SOUTHGNSS_Se	aStar5/ProjectData	Coordinate system	CGCS2000
New Project		Copy mode		Copy project >		
Open Project	· •				Destination	CGC\$2000 >
Smart Share	>				ellipsoid	
Import/Export	2				Designation	Terroretter
Mute Receiver	6				Projection	Transverse Mercator 7
Receiver Rese	4 <b>x</b>					
Switch Off Res	ceiver				7-parameter	Close >
Exit EGStar5.0	About	Cance	el	ОК	4-parameter	Close >

Coordinate System		10:51 AM 🌑 🖬 🖼 🗃	
File location /SOUTHGNSS_SeaStar5/CoordSys	MultiSelect	New system	
CGCS2000 sys		Coordinate system	
		Destination ellipsoid	CGCS2000
		Projection	Transverse Mercator
		7-parameter	Close
		4-parameter	Close
		Correction parameter	Close
		Height fitting	Close
		Vertical adjustment	Close
		Geoid algorithm	Disable
		Save the parameters and	apply to current project
		Cancel	ак



B. Localization:

B-1. UHF RTK mode.

B-1-1. Set base at know point. After connecting with base station, then click "setting - instrument setting - Base setting" Then input the base parameters and base coordinate as below pictures:

😂 defaul	t. 🆌	<b>•</b>		< Base setting	
				Message format	RTCM32 >
F				Emission Fre	1>
+				Base position	Manual Start Base >
				Antenna height	Vertical, 1.800 >
Proi	ect Settinos			Mask angle	10 >
E	Project Options	< Instrument Setting		PDOP	3.5 >
	System Parameter	Rover setting	>	Datalink	Internal UHF >
· ·	Coordinate System	C Hore certing		Data source	>
	Instrument Setting	Base setting	>	Log raw data	
	Internal UHF				
( -	BT Manage	<ul> <li>Static setting</li> </ul>	>		
	Sounder	Advanced settings	>		
				Sti	ut base

Normally, we use RTCM32 as message format, Emission frequency as 1 second. Then we can select the "Base position" as Manual start base, and input the coordinate.

We also need input the antenna height and select the data link(Internal radio or external radio), for internal radio we can select the radio data source to configure the radio parameters.

After setting above, we can click "start base", if the GNSS satellites PDOP is less than 3.5, the base will start transmit correction data via UHF radio.

B-1-2. Then we can use Seastar connect with rover, and set the same radio parameters to get fixed.





B-2. CORS mode. If connect with CORS, we don't need to do the localization step.

B-2-1. We need insert the SIM card in the GNSS receiver(we need configure the APN information in the GNSS receiver) and then set GNSS receiver as "Internal GSM" mode, then click into the CORS setting

< Rover setting			
Datalink Internal GSM >		6	(F)
Intelligent Setting	< Instrument Setting		<u> </u>
CORS Setting		Settinoş	Project
Network Correction Router	Rover setting	Options Parameter	Project Op System P
> Radio router Internal UHF router >	<ul> <li>Base setting</li> </ul>	nate System	Coordinat
> Mask angle 10 >	Static setting	ent Setting	Instrumer
	•	GSM	Internal G
> Tilt compensation	Advanced settings	age	BT Manag
Log raw data		r	Sounder

B-2-2. Then we can add the CORS network parameters as below pictures: "Add" and input the CORS connection name, then input the CORS parameters, set the APN, then click "Mount point" and click "Refresh access point", then select the correct access point, and click OK. Then you can select your CORS connection just added, and click "connect". If all connect successfully, it will show a tick with "logon server"



K NTRIP connections - Internal GSM	< Data source - Intern	al GSM	< NTRIP conne	ections - Internal	GSM
	Select server	>	Test<192.1680.1	.1:2000>	
	Name	Test			
	IP				
	Port				
	Username	1			
U	Password	99			
No NTRIP connection	Mountpoint	0000_MSM4 >			
	Router mode	NTRIP(Rover Mode) >			
	APN Setting	cmnet >			
	SIM卡选择	外插SIM卡>			
网络制式	自动 >		网络制式		>
Add Edit Dele	te		Add	Edit	Delete
Connect Galacticoci Of	Previous setting	Cancel DK	Connect	discovered.	ОК

## 3.3 Sea survey/hydrographic survey/bathymetry.

After we finish the devices connection, devices parameters setting and coordinate system setting. Then we can start the hydrographic survey.

3.3.1 Click into the hydrographic survey function, click "survey - sea survey".





3.3.2 Click "Option" into the collection setting(Mark set.), then select the mark mode(by

CSea Survey	₩ 6-	< Mark Set.	
	Concerne -	Mark Mode	Distance     Time
101 V 72 (		Distance interval	5.0 >
121-22		Show track	
	A A	Save track	
and the second second	- ART	Show track grid	
<	ER .	Map following	
)   142m	DE CEL	Sounder	>
ánt ID 🦼	N 2544887.023	Wiring form	No wiring >
397674.061	HF depth 0.970 _d		
ffAge.1s and ME18:46:23 xed	PDOP/1.030 H:0.000 V:0.000 G7+021+E4	Line lock	
Save View De	pth Manual Option	Choose line	Select >

3.3.3 Select the Wiring form as "zone wiring", then click "OK", then you can click the screen to add the points as the boundary of survey area, then click "complete" icon. You will see the "wiring setting" parameters interface, then input the Tilt angle and line spacing, and click "OK", then you can see the plan lines in the survey area. See as below pictures:

A MIGHT OF L		< accounted			★ 0+			
Mark Mode	Distance     Time				12/			
Distance interval	5.0 >				08			
Show track		$\sim$		N.C.		< Wiring Settin	g	
Save track						Tilt angle		45
Show track grid		the state				Line		20
Map following						d items totally	Dans 1/1 analy	
Sounder	>	1000			X	4 items totany	Lade 1/ i hades	
Wiring form	Zone wiring >		1		Complet	Name	Northing	Easting
		OX//	A		×	1	2535779.825	40:
Line lock						2	2536037.611	40:
Choose line	Select >	Point ID	P92 "d	N	2544886.962	3	2535689.794	40:
Display Depth Data		Bottom Ele(LF) Uncohn DiffAge:1s	acted 🔏	HF depth PDOP:1.03	Unconnected A	4	2535263.334	40:
Display Point Name		TIME:13:46:24 Fixed		H:0.000 V: G7+C21+E	0.000			_
Cancel	ОК	Save View	De	pth Man	ual Option	Cancel	OF	

#### distance or by time)





3.3.4 Auto survey function(by time or by distance). Click "Manual and Auto" to switch the collecting mode(the icon show "Auto" means now it is auto survey mode). Then click "Measure" and input the point name and antenna height, then Seastar will collect points automatically. We can click "View" to check the data.





Name         Depth         Pt name         Pt	
24 items totally         Page 1/1 pages         Multis           Name         Bottom Ele(HF)         Bottom Ele(         Pi24         41.690         42.900           P Pt23         41.810         43.000         43.000         43.000         14.810         14.800	2
Name         Bottom Ele(HF)         Bottom Ele(           PI24         41.690         42.900           PI23         41.810         43.000	lect
P         PI24         41.690         42.900           P         PI23         41.810         43.000	.F)
P Pt23 41.810 43.000	
Pt22 41,810 43,000	
Pt21 41.710 42.900	
P120 41.710 42.900	
₱         ₽19         43.000         43.000	
Pt18 43.000 43.000	
Pt17         42.900         42.900	
Pt16 43.000 43.000	
Point ID Pt24 N 2544887.452 🛉 Pt15 42.900 42.900	
E 397473.761 HF depth Unconnected 7 Pt14 41.930 42.900	
DiffAge:1s attl PDOP:1.030 T Pt13 41.910 42.900	
Fixed G7+C21+E4	
Save View Depth Manual Option Import Export Add	

3.3.5 Data export. Back to main interface of Seastar click "Projec - Import/Export - WaterDepthFile", then input the exported file name and file type(data format), then click "OK". After export successfully, we can copy out the .dat file and open it as CSV file(rename the extension ".dat" as ".CSV" ).

😬 itefault 🦟 🔶-	< WaterDepthFileExport MULTI DIRECTORY	WaterDepthFileExport MULTI DIRECTORY
New Project	Obtained From The Original Data       File name     20211112160943       File type     Cass file(Bottom Ele-HF)(*.dat)       /storoge/em     Cass file(Depth-HF)(*.dat)       Retur     Cass file(Depth-HF)(*.dat)	Obtained From The Original Data         File name       20211112160945         File type       Cass file(Bottom EleHFF)(*.dat)         /storage/emulated/       /SOLITHENSS_SeaStar5/Export         mathematical       Pactor
Smart Share > Im Import File Mi Export File Re WaterDepthFile Switch Off Receiver	Cass file(Bottom Ele-HF)(*.dat) Cass file(Bottom Ele-LF)(*.dat)	DIKK
Exit EGStar5.0           Tools         About           P : Fixed with         S: 67+621+64           H: 0.000         V : 0.000		
Berno 🗍 Time 16:06:44	Cancel OK	Cancel OK



File Manager 🛛 🔍 🚦

Storage Recent Docs Videos

#### 20211112160945.dat

1.19 KB | 11/12/21 4:10 PM

	Α	В	С	D	E	F	G
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2	Pt2	2544887.027	397473.6132	41.94	FOIL	thame	
3	Pt3	2544886.939	397473.9361	41.94			
4	Pt4	2544886.945	<del>- 397473.950</del>		Nort	th	
5	Pt5	2544887.326	397473.6716	42.04			
6	Pt6	2544887.035	397473.5791	41.94			
7	Pt7	2544887.016	397473.6442		Fast	ting	
8	Pt8	2544887.248	397473.8744	41.9	Las	ing	
9	Pt9	2544887.034	397473.5699	42.01			
10	Pt10	2544887.437	397473.7281	42.01	🔶 VVa	ater bot	tom
11	Pt11	2544887.122	397473.5904	41.91	ele	vatin	
12	Pt12	2544887.097	397473.9827	42.01			
13	Pt13	2544887.249	397473.7502	41.91			
14	Pt14	2544887.415	397473.718	41.93			