

Using the CEE LINE™ Echo Sounder with Trimble Access or Geometius' BathySurvey App on the TSC3 Data Collector.

The CEE HydroSystems CEE LINE[™] is a super-rugged echo sounder system that brings hydrographic grade, non-recreational transducers and advanced control unit processors to entry level hydrographic surveying using GNSS data collectors. The CEE LINE[™] is powered by the data collector through a USB connection and data are transferred over a COM data link with a single cable. With a 10Hz data rate, 5x faster than competing units, sounding accuracy is increased and bottom tracking is maintained even into very shallow water. The CEE LINE[™] is by definition "PLUG AND PLAY". No charging, no batteries, no Bluetooth pairing and no headaches. This article describes the basic procedures to use the CEE LINE[™] with the Trimble TSC3.

OPTION 1 - Using Trimble Access

Echo sounder support is added to the TSC3 by copying the "echo sounder protocol description file" to the "System Files" folder on the controller. The download page can be found <u>HERE</u>. It is recommended that the "Generic NMEA" option is used, with a SDDBT (depth below transducer) standard output message selected in the CEE LINE. This is the factory default output. Note that the CEE LINE can be configured to output any standard industry format, for single or dual frequency operation. The CEE STAR format should not be used.

The Trimble download page is shown below:

berefere beerefere beerefe					
Number of the sand Planes Needs Notes the sand Planes Needs Notes the sand Planes Needs Number of the sand Plan	nioads				
bonclead to the plot and collead to the plot of the spectra plot with you find a stantane to running TAM data used as: The a stantaneous theorem you find a stantaneous to running the spectra plot to running TAM data used as the plot bence to the spectra plot to the contract with the used has been to running. The spectra plot to running	table Access Help Files and Release Notes on 5 he bit det viscous on will a color viscous of all the Timble Access Modules Help and Release hotes in a PDF format				
timbe instantion Marger TRMN Transie relation from the trans	viload the Update Office Software package for Trimble Access is a standates reference software under times your cites othere compatible with your field software. It is an alternative to running TAM office updates.				
Shark a start of search or UBHY been to search or UBHY been to make A coast J who let is in order to eask cachen a sept of benetic on your of the campaie. Using Carl and any part of beam hashing a start of the search or ubeak to make A coast j who has to the the search or ubeak to a sept of beam hashing a start of the search or ubeak to a sept of the search or ubeak to a search or ub	Also Installation Manager (TIM) Timble negative Manager installs the Timble Access application updates and licenses to your controller. It updates your Timble office software so that it can communicate with the updates being installed to the controller. It is also used to update inceller fittmare, cotions, and rare information critics are available here.	dio settings for the connecte	d Trimble R8	s receiver	
Care Trainible Access Jobits (1988) Devided the uity provide backbackbackback by the statule to Trainba Access Job or JobDA. He. to uity works by reacting the specified totions to Job or JobDA. He. to uity works by reacting the specified totions to Job or JobDA. He. to uity work by reacting the specified totions to Job or JobDA. He. to uity work by reacting the specified totions to Job or JobDA. He. to uity work by reacting the specified totions to Job or JobDA. He. to uity work by reacting the specified totions to Job or JobDA. He. to uity work by reacting to uity or JobDA. He. to uity work by reacting the specified totions to Job or JobDA. He. to uity work by reacting the specified totions to Job or JobDA. He. to uity work by reacting to uity or JobDA. He. to uity work by reacting to uity or JobDA. He. to uity work by reacting the specified totions to uity or JobDA. He. to uity work by reacting the specified totions to uity or JobDA. He. to uity work by reacting the specified totions to uity or JobDA. He. to uity work by reacting to uity or JobDA. He. to uity work by reacting the specified totic to	ligh A SCIF Tiele Generator Utility winded the utility progen to apply synthy sheets to Trimble Access Trimble Survey. Controller JobXXII. or job files in order to create custom export formats or reports on your office computer.				
Ngh Shert She she take a continued life that can be updat to Trittle Access plot by I files to perevise custom reports can be generated on the controler, some can be generated using the Trintle ACOII File Generator. Trittle Access Ploglines She and can be updated to Trittle Access plot by I files to generate custom report. Some custom report can be generated on the controler, some can be generated using the Trintle ACOII File Generator. The Sourcess Ploglines She and can be update to Trittle Access plot by I files to generate custom report. Some custom report services and the control of the services The Sourcess Plot Book Some Services and the custom custom report defotions. Some of the service to devolution that the defotions. Some of the service to access and the service to access and the custom report services and the trittle Access and Plot Book Some of Plot Custom Files. Some of the service to access and the service to access a	Convert Timble Access Job Files (19 70) index the URL program balances Job graph type the leads to Trimble Access Job of JobXXI, files, The utility vorkis by searching the specified fidders for Job or JobXXI, files, and automatically creating files or reports from the specified Style Sheets using the ASCII File Generator	Utility.			
Timble Access Pipelines Swith webs and life of the Timble Access Pipelines Trading Cache Timble Access Pipelines Swith webs and life of the Timble Access Pipelines Trading Cache Timble Access Pipelines Swith Webs and life of the Pipeline as assence is the reaction uncent mont all addentates in the Timble Access Pipelines Swith Webs and life of the Pipeline assence is the reaction uncent mont all addentates and and the oppet to be used Webs Swith Webs and the detailed discrition that. There there can be models, if required, to add addentate do sander model suppert, and then oppet to the "hytem Fiar" Soler on the comparison to be used Timble Access The Swith Webs Access Life Mark SWITH Access The Timble Access Swith Webs Access The Swith Webs Access Swith Webs Access The Swith Webs Access Timble Mark SWITH Access The Swith Webs Access Actes The Swith Webs Access Access The Webs Access Access The Webs Access Access The Webs Access Access Th	e Sheets is hereds are usammized files that can be applied to Trimble Access job or jul files to generate custom reports can be generated on the controller, some can be generated using the Trimble ASCII File Generator.				
In solume to explore to provide some substance is an explore outstance in sport developed. The Solume to explore file is an explore outstance in sport developed. Solume to explore file is an explore to explore file is an explore outstance in sport developed. Solume to explore file is an explore to explore file is an explore outstance in sport developed. Solume to explore file is an explore to explore file is an explore outstance is an explore to explore file is an explore to explore to explore file is an explore to explore file is an explore to explore t	Uela Access Pipelines te index of the transmission of the second s				
and Form Meta and Meta Protocol Description Tiles Demonstrate Neuter Not description Demonstrate Neuter	ting Custom Import Definitions (197.88) document defoued to provide some ansistance in the creation custom import definitions.				
and search Protect Description Files Description Files Tests these rates rates and ended escription files. These these can be models, if required, to add additional echo tourder model support, and then copies to the "system Filer" toler on the controller to be used NEA SDDDBS device Ludim Radiomister is auto-ordput mode Cests files is com Frequency Cests files ic com Frequency Cests files	M Files				
NMER SDDDS device Curdum Radiomstein stauto-utput mole Tritten Indas / Name ConstMine CeeStar Basic Low Frequency CeeStar Basic Low Frequency CeeStar Basic Low Frequency Case Star Basic Low Frequency ConstMine DEV Device ODOM Low Zee Merite on heave Attar DES 25 Fost ODOM Low Zee Merite on heave Attar DES 25 Zee Fost ODOM Levice Merite on heave Attar DES 25 Zee Fost Could Start Start Merite on heave Attar DES 25 Zee Fost COUD Mine Zee Merite Start S	o Sounder Protocol Description Files unload the latest echo sounder protocol description files. These files can be modified, if required, to add additional echo sounder model support, and then copied to the "System Files" tolder on the controller to be used				
Ludim Radiomster is auto-otiput mode Triche Radio Teche Radio Cece Star Radio	IMEA SDDBS device				
Trikeh Basic Soma Mile Ges Basic Low Frequency Ges Bas	udium Radiometer in auto-output mode				
SonafMa CeeSar Back Hajh Frequency CeeSar Back Hajh Frequency Tritech MML A RoUT device 0000 Mul 2rd frequency Mattic no heave Altan USS 25 Feet 0000 It befance Mattic no heave Altan USS 25 Feet 0000 It befance Mattic no heave Altan USS 25 Auf Freq Keet Landing Sonaffike Drives to Trihibe Access Altan USS 25 Auf Freq Keets Mattic Sto 25 Auf Freq Keets Sonaffike ITX Shaje Beam	ritech Basic				
CeeSar Bask Low Frequency CeeSar Bask Low Frequency CeeSar Bask Low Frequency Mick De No2 Foreur ODOM Dual 2nd frequency Mick no heave Allas DES 25 Not Networks ODOM EchaTes Metric no heave Allas DES 25 Nat Freq Netts Dealer Allas DES 25 Nat Freq Netts Dom EchaTes Mick with heave NEEK SDORT device NEEK SDORT device NEEK SDORT device NEEK SDORT device Networks	ionarMite				
CaeStan Shakir Kipi Frequency Tricker MMLR ANDET dwice 0000 Muzi Zuf frequency Metric no heave Atlan DES DS Fort 0000 Lich Fire Matrix Ro heave 0000 Lich Fire Metrix Ro heave Atlan DES DS Z Zuf Freq Enet 0000 Lich Fire Metrix Ro heave Atlan DES DS Z Zuf Freq Enet DODO Lich Fire Metrix Ro heave Atlan DES DS Z Zuf Freq Enet DODO Lich Fire Metrix Ro heave Atlan DES DS Zuf Freq Enet DODO Lich Fire Metrix Ro heave Atlan DES DS Zuf Freq Enet DODO Lich Fire Metrix Ro heave Atlan DES DS Zuf Freq Enet DODO Lich Fire Metrix Ro heave Mater SD DS Zuf Freq Enet DODO Lich Lich Fire Metrix Buff Lich Lich Lich Lich Lich Lich Lich Lich	leeStar Basic Low Frequency				
Tritech MRLA PADDT device OOOM Data Zind requency Metric no heave Atas DE S0 25 Feet OOOM Data Zind requency Metric no heave Atas DE S0 25 Feet OOOM Lata Zind requency Metric no heave Atas DE S0 25 Metric No heave OOOM Echor Text Metric No heave Atas DE S0 25 Zind Freq Metric DOOM Data Zind requency Metric No heave Atas DE S0 25 Zind Freq Metric DOOM Data Zind requency Metric No heave Atas DE S0 25 Zind Freq Metric DOOM Data Zind requency Metric No heave Atas DE S0 25 Zind Freq Metric DOOM Data Zind requency Metric No heave Sonardfile ITX Single Beam Sonardfile ITX Single Beam	ceoStar Basic High Frequency				
000M bal 2vd frequency Metric no heave Alato DES 02 Freet 000M Dat 2vd frequency Metric no heave Alato DES 02 Star Free Alato DES 02 Star Free Alato DES 02 Star Free National Derivents Tar Share Alato DES 02 Star Free National Derivents Tar Share National Derivents Tar Share N	ritech NMEA PADBT device				
Attes DES 02 35 Feet OODM DMI 2014 Zoff requery Metric no heave Attes DES 02 25 Metrics ODOM Echo Tex Metric no heave Attes DES 02 25 Metrics ODOM Echo Tex Metric no heave Attes DES 02 25 Metrics ODOM Echo Tex Metric No heave Attes DES 02 25 Metrics ODOM Echo Tex Metric No heave Attes DES 02 25 Metrics ODOM Echo Tex Metric No heave SonarMite ITX Single Beam SonarMite ITX Single Beam	DDOM Dual 2nd frequency Metric no heave				
000M bal 2ad frequency Metric no heave Adda DE 502 SM Writes 000M EchorIse Metric so heave Adda DE 502 SM Freq Metrics Colombia C	utas DESO-25 Feet				
Attes DES A23 Meries ODOM Ectoryrac Metris no heave Atta DES A25 Ard Freq Feet Landing SonarMite Drivers to Trimble Access Atta DES A25 Ard Freq Feet Code Code Code Code Code Code Code Code	DDM Dual 2nd frequency Metric no heave				
000M EchoTex Metric no heave Alida DE 503 2204 Freq feet Loading SamaMile Drivers to Trimble Access Alida DE 503 2204 Freq Metris ODOM Lickofter Activity Annue Access ODOM Lickofter Activity Annue Access NME AS DOOT divice NME AS DOOT divice ODOM Data Strict Argumery Metric in heave SomaMile ITX Single Beam SomaMile ITX Single Beam	utas DESO-25 Metres				
Attes DES 25 Zhu Freq Feet Loading SonarMite Drivers to Trimike Access Attas DES 25 Zhu Freq Metres ODOM EctorTex Metric with heave MMEA SDDDIT divice ODOM Dust Stratequency Metric no heave SonarMite IEX Single Beam SonarMite IEX Single Beam	JDOM EchoTrac Metric no heave				
Laading Sonardille Driver to Timbib Access Atlas DESO 25 7nd Freq Metres ODOBLECk-Track Methic with heave NMEA SODOT device ODOD Use After Tax Methic with heave Sonardline ETX Single Beam Sonardline ETX Single Beam	utlas DESO-25 2nd Freq Feet				
Atlas DE 50-25 Zind Freq Mottes ODOM Exclorizes Motic with Neev MMEA SDD0T Exclores Motic with Neev MMEA SDD0T Exclores Motic no heave SonatMite IFX Shaple Beam SonatMite IFX Shaple Beam	onding SonarMite Drivers to Trimble Access				
ODOM Exclorates Metric with heree NMEA SDOUT device ODOM Dual fits frequency Metric no heree Sonanthine EFX Single Beam Sonanthine EFX Single Feamery	atlas DESO-25 2nd Freq Metres				
NMEA SDDDT device ODOM Dual 1st frequency Motic no heave SonarMine BTX Single Beam SonarMine FX Device I requency	DDM EchoTrac Metric with heave				
000M Daal 1st frequency Metric no heave SonarMite ITX Single Beam SonarMite ITX Daal Fereneracy	IMEA SDDBT device				
SonarMite DX Shigle Beam	JDOM Dual 1st frequency Metric no heave				
Sonar/Mito DEX. Dual Frequency	onarMite BTX Single Beam				

The correct Survey Style is then configured for the project. Within the Survey Style menu, "Echo sounder" will be listed as an option. The Echo sounder field / EDIT should be selected to configure the interface for the device.

<u>چ</u>	CORnet VRS		- > Ø	? - X
Rove	r options			
Rove	r data link			
Торо	point			
Obse	rved control poin	t		
Rapio	d point			
Conti	inuous points			
Stake	eout			
Site o	alibration			
Dupli	cate point toleran	ce		
Lase	r rangefinder			
Echo	sounder 🔶			
F				- Jia
ESC	Store			Edit

The echo sounder type is selected, in this case the echo sounder name is defined by the output data format. For the CEE LINE it is convenient to use NMEA SDDBT (NMEA Depth Below Transducer) generic device.

The CEE LINE "combo" USB / 9 pin power data cable is provided for the TSC3 data collectors, which sends the CEE LINE data output to the physical DB9 port of the TSC3 - always assigned as COM1. The simultaneous USB connection is only used for 5V power. The CEE LINE default baud rate is 9600 but is not fixed and may be changed inside the echo sounder, however there is no reason to change the baud rate away from 9600.

>	A 🕴	? — ×
Device:		85%
NMEA DBT		
Port	Baud rate:	
COM 1 🔻	9600 🔻	
Data bits:	Stop bits:	
8	1	
Parity:	Flow control:	Kaart
		M <u>e</u> nu
		Favorieten
		Schakel
Esc		Enter

After the echo sounder is configured, the data collection method may be set up. Performing hydrographic surveys calls for a Continuous Topo measurement method usually based on a defined time interval (use the shortest possible). As the CEE LINE outputs data at 10Hz, there will be a depth measurement available every 0.1s.

📎 Continuo	us toj	ро	->>		?		×
Method:						3 9	0%
Fixed time	-) 6	i4%
Antenna height (Un	correct	ted):			49		8
2.000m					T	1	
Measured to:							
Bottom of anter	nna m	ount 💌			1	Ζ.	.000
Depth:		Time interv	al:			Mac	5
0.256m		0m2s				— . /en	
Start point name:		Code:				i <u>e</u> ri	
1044		?				VOL	les
					S <u>w</u>	itch	ı to
RTM	C:Float	t H:0.37m V	:0.66m				
ESC			Options	;	Start		t

The antenna height is the distance from the GNSS antenna to the bottom of the transducer. The static draft (distance from the water surface to the transducer face) should be measured and noted.

Note that the most recent depth value will be displayed if the connection is established but the resultant elevation WILL NOT be displayed. The depth and elevation may be exported from the data file at the end of the survey. It is recommended to use the style sheet which exports CSV data with depth and elevation in separate columns, for better data review and quality control.

Testing should always occur with the transducer in the water and a valid depth being output to ensure proper connectivity.

OPTION 2 – Using Geometius BathySurvey

The Geometius BathySurvey app is available for download from the Trimble dealer network and is designed to improve the user interface for hydrographic data collection when using an echo sounder such as the CEE LINE within the Trimble Access software suite. The benefits include:

- Full access to CEE LINE configuration options and settings from the TSC3
- View of real time sounding data on a scrolling depth chart
- Barcheck wizard for speed of sound calibration
- Echo sounder speed of sound and maximum depth entry during the survey

In Trimble Access – Survey Styles – Echo sounder, the following option should be selected. It is critical to ensure this is correct. <u>No echo sounder related settings must be input within Access</u>.

Echo sounder		→ 0	?	_	×
Туре:					
None	•				

The device selection in BathySurvey is as follows:

BathySurvey - Job: BathyTest	
Job	Barcheck
Online	Map Menu Favorites Switch to
Exit Device	Enter
Device:	Controller port:
Baud rate: 9600 V	Data bits: 8
Stop bits: 1	Parity: None
Flow control: None	

The mode and TVG settings should be as follows. Log20 should NOT be used, as this results in excessive gain application. The AUTO bottom tracking will be the best selection in almost all cases. Only extremely shallow soundings with a hard, reflective bottom may improve on the "shallow" setting.

Sec Cer	E-LINE				-> O	? _ ×
Version Ceeline N	lew HF Only 1.2.7					-#
Mode H	-					
O Aut	0		◎ Shallov	v		
Time Va	riable Gain HF					
						<u>M</u> ap
Off			🔘 Log 10			Menu
					1/3	F <u>a</u> vorites
	20				•	S <u>w</u> itch to
Esc	Defeathe					Enter
	Defaults					

The maximum depth is a critical setting. If the depth soundings are deeper than the max depth, all data will be cut off and will not be recoverable. This setting can be changed during the survey using the BathySurvey app if it becomes clear that the depth is greater than expected.

!! Always ensure the maximum depth setting is greater than the anticipated survey depth **!!**

If the GNSS antenna offset to the transducer is entered, do not add draft. If the GNSS antenna offset is measured to the static waterline, add draft measured from the water surface to the lower face of the transducer. The blanking distance can be set at the minimum for most shallow water surveying. Ping rate should be 10Hz for highest precision.

CEE-LINE		-> 0	? – ×
Max Depth (m):	Draft (m):		-€
30	0.50	•	
Pings Per Second:	Index (m):		
10	0.00		1
Frequency HF (kHz):	Blanking HF (m):		
200	0.35		
Frequency LF (kHz): 0	Blanking LF (m): 0.00		
Sound Velocity (m/s):			
			<u>M</u> ap
			M <u>e</u> nu
		9/3	F <u>a</u> vorites
		3/3 ▲	Switch to
			_
Esc Defaults			Enter

After the configuration is complete, the online screen may be used to view the sounding detail.

🖗 Onl	ine			-) ()	? – X
				2.5	-4 100%
				5.0	15
				7.5	71
				10.0	7 ?
-				12.5	
				15.0	
				17.5	Mag
_				20.0	Мери
				22.5	Favorites
				25.0	Switch to
-		Depth high:	11.04 m, low: 0.00 m, v: 0	0.00 m/s	-
ESC	Record	Scale	Gain/ TX		Enter

Pressing "record" starts a continuous topo measurement.

Method: Fixed time	s topo		-3	2 7 - ×
Antenna height (Un 2.358m	corrected):			× 14
Measured to: Bottom of qui	ck release 🔻	Time interval: 0m1s	Þ	2.000
Start point name: 50	F	Code: 1	Þ	
				Мар
				Menu
				Favorites
				Switch to
	Depth high: 11.	04 m, low: 0.00 m, v: 0.00	m/s	×
Esc	eBubble	Options		Enter

The style sheet that must be used for data export from the BathySurvey data file is provided with the App. Do not use a standard Access Style Sheet.



For more information contact Synergy Positioning Systems or visit the Synergy Positioning Systems wobsite structure visit the Synergy Positioning Systems website at www.synergypositioning.co.nz All branches: Phone 0800 867 266 Email: info@synergypositioning.co.nz