SAMSUNG



S-Fusion™ for Liver

V series Quick Guide



Produced by Clinical Training Center / SAMSUNG MEDISON CO.,LTD

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The components of S-Fusion™

Field Generator (Transmitter)	Generates an electromagnetic field to find the location of sensor.	
Probe Sensors (2EA)	Detects the strength and orientation of the generated electro-magnetic field, and relays the information to the tracking unit.	
Tracking Bracket	Allows mounting of probe sensors onto the probe.	
Tracking Unit	Calculates the position and orientation of the probe and the biopsy needle based on the data from the sensors. It also displays this information on the monitor.	
External Marker	 Compensates the movement of the patient by placing it on the patient and through a function that finds the patient's position. In case of 'Matching Auto' method, this function allows you to complete the initial registration automatically by attaching external markers to the patient's body before starting S-Fusion. Also, in case of 'External marker' method, it can automatically register them, when there are CT data containing markers. 	

1. Patient Registration





1	Select a Probe	Select a [Probe] for scanning Liver
2	Select a Preset	Select a [Abdomen] preset in Abdomen menu.

3	Patient	Input the patient information.
4	Register	After entering the patient information, select the [Register] button to start an exam.

Tips

In the case of using a worklist server, you can directly access worklist page and search for the patient information. **V** series

S-Fusion[™] for Liver

2. Query & Retrieve the datasets

Patient	Patient ID	Last Name	Exam Date		
P-111				2023-11-30 🔤 ~ 202	
Patient		Accession Number			
Worklist					
(1)		Modality			
Q/R		MR CT V	lammo 🗹 US 🗹 DR	PET	Search
Auto ID Creation	Hide Coloried (A/Charge Hele 7)				
+ New Patient	Hide Selected (U(Choose Up to 5)				
2	Series Salacind 10				
Server Urive	Series Selected to				
Import Retrieval Manager					
Exit					
n 🗅 🌒 🔅 📠 🖬 🗤		Set Retrieval Mariager	- ^{se}		

1 Q/R	Click the [Q/R] menu.
2 Source	Choose between Server/Drive. To use Drive source, Put USB in with Fusion data (MR/CT/US/DR/PET).



	Import	Press [Import] to bring in the data.
3	inport	Select desired data and press [Import].

2. Query & Retrieve the datasets

Patient	Patient ID	Last Name	Exam Date		
Patient		Arression Number		2023-11-30 2	023-11-30
Worklist		Modalžtv			
Q/R		MR CT Ma	mmo 🗹 US 🗹 DR	PET	Search
Auto ID Creation	Hide Selected : 0 (Choose Up to 3)				
T New Patient					
Senar a Drive	Series salactad:0				
F\ T	Modality Exam Date				
Import					
Exit					
and a					
- 🕤 🌒 🕾 📑 📬 🛛 CAP		Set Retrievel Manuaer			

tigned List for S-Fi	usion (1/6) Data Managi								
231206-3									Star /
****3201	anonymous	CI	2014-07-18	LIVER POST	1	2023-12-06 02:30 PM	66	× .	
									-
49494376	IM CHAE DONG	MR	2017-05-17	sSUB 2MIN	14	2023-04-06 11:12 AM	67		
49494376				mDIXON 20MIN					
				mDIXON 20MIN 9SEC					
49494376				mDIXON 20MIN FA30					
49494376									
	DICOM Compare	Assian for S-F	usion						

4	Retrieval Manager	Press [Retrieval Manager] to assign the fusion data. Then, 'Data Manager' window will display on the screen.
5	Select Data	Check the box of the datasets which you desire for registration with US Image.
6	Assign	Choose [Assign for S-fusion] button for selected series to be temporally assigned to the current ID.
0	Close	Click the [Close] button on Retrieval Manager. You will be ready to start S-Fusion. Assigned list for S-fusion will pop up.



3. Activate S-Fusion™



S-FusionSelect the [S-Fusion] button on the
touch screen to start S-Fusion for Liver.

S-Fusion	SAMSUNG 20231204-1	2023-12-04 10:45:12 AM	
Registration Index	Abdomen / CA1-75 / 16.0cm / 24Hz 🞄 2	TIS 0.2 / TIB 0.2 / MI 1.4	
	[2D] suggino		
	Gen Gn 56 DR 96	ō -	Preview Image
	FA 5		
	P 7070		
Calibration			^
Marker			
		-	
Fylt			
			\sim
			0 Image(s)
💷 End Exam 🛛 10 30			
Store img. 📾 40	J. Set	Set	
- 🖓 🌒 🕾 📑 🏹 🖓	Tracking unit successfully connected. Select Series	Ms/65s #348/1574	🗆 ★ 🛪 🏗 🗓

2 Che sen	eck the sor	The green bar indicates the signal strength is at a proper status.
3 Cor trac	nnect the Sking unit	If the tracking unit is connected properly, 'Tracking unit successfully connected' message will be displayed.

S-Fusion[™] for Liver 4. Select a Series

4



With [Select a series] button, RetrievedSeries Listseries will be displayed on the touch
screen menu.



5	Select data	Selected data will be displayed on the monitor screen. If you want to change to another datasets, you can switch to a different series on the list.
6	Horizontal/ Vertical	Use the [Change] button on the control panel to activate [Horizontal] or [Vertical] direction to find the desire location from the retrieved datasets using trackball.

5-1. Registration - Positioning Auto

L Patient			2D S-Fusion	×	LA2-14A Abdomen Abdomen
Ţ Probe	Select Series		Layout < Dual > Biopsy Guide		LA2-14A (Abdomen) THY
E Report	[CT] /CE/FC01 (4)		< Off >		EA2-11AR Urology Prostate
D a SonoView	Reg.Index	Acquire US Volume		• • •	
-∑ End Exam	2 Registration	Matching Auto		• •	
C Utility				Init TGC ::	
Reg. Mode	Positioning Auto Window Level	45 Plane	Axial		

1	Registration Mode	Select the [Positioning Auto] from the registration mode on the touch screen. 'Positioning Auto' helps to offer quick and efficient examination with one-step initial registration between CT/MR and US.
2	Registration	Tap the [Registration] button to start a registration.

5-1. Registration - Positioning Auto





OrientationLock

Position the transducer in the sagittal direction and following this guideline 'Put the probe on the solar plexus and push the [Set] button on the control panel.

Following the message on the bottom of Check the the monitor screen 'Registration has Registration started'. You can check registration accuracy on the monitor screen.

Tips

To increase the accuracy after registration is completed, you may proceed to [Calibration] to register images more in detail.

5-2. Registration - Matching Auto

Patient Probe Series Lis	2D S-Fusio	n X LA2-14A Udomen Varker Type → 2D → Marker Marker A2-14A Udomen 10 Marker A2-14A Udomen 10 A2-14A Valomen A2-14A	•	Attaching External Marker	By attaching external markers to the patient's body before starting an exam.
E Correct Probe Report SonoView Correct Probe Correct Pr	Angle Recall US Volume Undo Calibration X Acquire US Volume Point Calibration Matching Auto Plane Calibration W Level 10 W Width 300	Add Marker Hide Margin Overlay	2	Matching Auto	Tap the [Matching Auto] button to start a registration. This function allows you to complete the initial registration automatically by attaching external markers to the patient's body. Then you can remove the external marker.
20231206-2		2023-12-06			
SAMSUNG 202312001 2nd Timester / CA1-75/14.0c (20) Re Re Re Re P 47 DR 110 FA 4 P 9 9056		02:20:37 PM TIS 0.1/TIB 0.1/MI 10 TOTILIVER POST	3	Check the Registration	Following the message on the bottom of the monitor screen 'Registration has started'. You can check registration accuracy on the monitor screen.
		- 1			
			T	To increase the completed, you	accuracy after registration is may proceed to [Calibration] to
	Pointer Set	tet 52:/59: #1470/1052	ſ	egister images	

5-3. Registration - Manual(plane)

£ Patient			2D	S-Fusion				×	
Î Probe	Select Series		< 	Layout Dual >					
E Report	[CT] LIVER POST (2)			Off >			•		EA2-11AR Urology Prostate
⊡ a SonoView	Correct Probe Angle Reg.Index	Acquire US Volume	Undo Point				•		
→ End Exam	3 Registration	Matching Auto	Plane						
						Init.		TGC :	
Reg. Mode	Manual (Plane)	10 Plane	Ax						
Position	Supine Window Width								



1	Registration Mode	Select the [Manual(plane)] from the registration mode on the touch screen.
2	Position	In case of the Manual Registration, it is available to select patient position 'Supine' or 'Prone'.
3	Registration	Tap the [Registration] button to start a registration.

Δ	Match plane	Match US image to CT/MR/PT image and
•		press [set] button.

★Tips

If you want a registration for renal, select prone position and the system will automatically recognized the position of patient as prone.

5-3. Registration - Manual(plane)





5	Vertical	Use the change button on the control panel to activate the [Vertical]. It will be available to find the desired slice from the retrieved datasets using the trackball.
6	Horizontal	Use the change button on the control panel to activate the [Horizontal]. It will be available to find the desired location from the retrieved datasets using the trackball.
7	Registration	Use the change button on the control panel to activate the [Registration]. Match the reference plane to the real time ultrasound image. Set the point lock on the same location which is the anatomical landmark.
8	Check the registration	Following the message on the bottom of the monitor screen 'Registration has started'. You can check the accuracy of images on the monitor screen.

Tips

To increase the accuracy after registration is completed, you may proceed to [Calibration] to register images more in detail.

5-3. Registration - Manual(point)





1	Registration Mode	Select the [Manual(point] from the registration mode on the touch screen.
2	Position	In case of the Manual Registration, it is available to select patient position 'Supine' or 'Prone'.
3	Registration	Tap the [Registration] button to start a registration.

		Match the same anatomical marker on
4	Match point	the same plane on US image and other
		modality.

★Tips

To increase the accuracy after registration is completed, you may proceed to [Calibration] to register images more in detail.

5-4. Registration - Respiration Auto

Orientation

Lock

3



1	Registration Mode	Select the [Respiration Auto] from the registration mode on the touch screen. This mode is only available with CT data.
2	Registration	Tap the [Registration] button to start a registration.



Position the transducer in the 'Sagittal'
direction and following this guideline 'Put
the probe on the solar plexus and push
the [Set] button' on the control panel.

5-4. Registration - Respiration Auto



 Check the intercostal view 	To find the best intercostal view, pivot the probe and use the respiratory state similar to that of the CT operation [Inhalation].
 Start a volume acquisition 	Press the [Set] button and pivot the transducer to acquire a 3D volume data of the Liver.



6	Acquire volume data	Acquire freehand 3D data by tilting the probe, data must include the diaphragm.
7	Finish the volume acquisition	Press the [Set] button to finish volume image acquisition.

5-4. Registration - Respiration Auto



8 Check the intercostal view	To find the best intercostal view, pivot the probe and use the respiratory state similar to that of the US operation [Exhalation].
9 Start avolumeacquisition	Press the [Set] button and pivot the transducer to acquire a 3D volume data of the Liver.



10	Acquire volume data	Acquire freehand 3D data by tilting the probe. data must include the diaphragm.
1	Finish the volume acquisition	Press the [Set] button to finish the volume image acquisition.

5-4. Registration - Respiration Auto



12	Check the
	registration

Following the message on the bottom of the monitor screen 'Registration has started'. You can check the accuracy of images on the monitor screen.

L Patient				2D	S-Fusi	on					×	LA2-14A Abdomen Abdomen
Ţ Probe	Se	lect Series	3	<	Layout Dual	>	Marker Type 2D					LA2-14A (Abdomen) THY
Report	[CT] LI	IVER POST (2)	Modified CT	<	Off					•		EA2-11AR Urology Prostate
D _o SonoView	Correc	tt Probe Angle Reg.Index	Recall US Volume	Und Poin	o Calibratio It Calibratio	n n	Add Marker					
→ End Exam	< Re	gistration	Matching Auto	Plan	e Calibratio	n	Overlay	i		•		
Ç Utility									Init.	т		
Reg. Mode	Respiration Auto	Window Level										

Ð	Soloct	Press the [Modified CT] button on the
	Modified CT	touch screen to use the Respiration Auto
	Modified CT	Mode.

S-FusionTM for Liver 5-4. Registration - Respiration Auto



14	Modified CT	Respiration compensated image will be displayed on the right side. The [Modified CT] will be
	image	displayed on the top of the image. You can check the matched images on the monitor screen.

6. Calibration_ 1) Point Calibration



 Point Calibration When you select [Point Calibration] button on the touch screen, a [+] marker will be displayed on the image.



		The [+] marker will be displayed on the
2	Mark the	US image, put the marker at the same
	same	anatomical area on both US and CT/MR
	location	sequentially. Then system will be updated
		with new registration information.
3	W.Level	Adjusts the "Brightness" of CT/MR data.
4	W.Width	Adjusts the "Contrast" of CT/MR data.

6. Calibration_ 2) Plane Calibration

1

									LA2-14A Abdomen Abdomen
									LA2-14A (Abdomen) THY
									EA2-11AR Urology
			Unde	o Calibratio	on				Prostate
		US Volume	Poin	t Calibratio	on				
		hing Auto	1) Plan	e Calibratio	on	Overlay			
	Window Level								



When you select [Plane Calibration] Plane button on the touch screen, you will Calibration be able to adjust the plane of CT/MR datasets. Based on US image, you can adjust the CT/MR data. • Up, Down, Right and Left direction using [Horizontal] of the [Change] button on the control panel. Match the Angle of CT/MR image data by using • the [Angle] button on the control panel. same plane • Select the slice of CT/MR image data by using the [Vertical] of the [Change] button on the control panel. After matching the US image, press the [Set] button on the control panel.

6. Calibration_ 3) Overlay



1 Overlay	The real time US Image will be superimposed over the MR Images. Available to turn this function on or off.
2 Overlay Level(%)	When the level is increased, the US image will be more superimposed. If the level is decreased, the CT/MR data will be more superimposed.



		Superimposed image will be displayed
3	Superimposed	based on Overlay level. You can also
	image	registration between US and CT/MR
		images by Plane Calibration.
4	Reg.Index	Selects the saved registration.

7. Marker- Add and hide marker



L Patient						2D	S-Fusio	<u>ו</u>			×	LA2-14A Abdomen Abdomen
Ţ Probe		Sel	lect Series			< Bio	Layout Dual) (2	Marker Ty 2D Marke	ype >		LA2-14A (Abdomen) THY
E Report		[CT] LI	VER POST (2)			<	Off	> <	Hide Al	u >		EA2-11AR Urology Prostate
₽ _Q SonoView		Correc R	t Probe Angle eg.Index	Recall Acquire	US Volume US Volume	Undo	o Calibration t Calibration	ł	Add Marl	ker gin	•—	
→ End Exam		< Re	gistration	Match	ning Auto	Plane	e Calibration	İ	Overla	у	•	
¢ Utility											TGC :	
Reg. Mode	Posit Auto	ioning	Window Level									

Add Marker	Tap the [Add Marker] on the touch
Addition	screen.

2	Hide	Marke
9	111000	- IGHING

Tap the [Hide Marker] on the touch screen to hide all the marker.

7. Marker- Marker type







Set the point on either the US image or CT/MR image, then this marker can be used to flag the location of a point of interest.

★Tips

The shape of position marker will be displayed differently depends on the distance to the cross section.

- 2 Set the Marker
 Marker Type
 < 2D >
- Set the point on either the US image or CT/MR image, then this marker can be used to flag the location of a point of interest.

7. Marker-Marker setting



۵	System	General Pre	eset f	Feature	5			
_) Feature	S-Eusion					
	Imaging	reature	S-Pusion					
hitid	Measurement	Reneal Marker				On	Off	
		Repeachanter				011	0	
Ð	Report	Marker Type				2D	Sphere	
-		2D Marker Color			Ye	llow		
т	Annotation				Mari	ker Color	Margin Color	
		Sphere Marker Cold			Val	llow	Orangel	
ี เหล ไ	BodyMarker					llow	Oranger	
,	Bodymarker	Diameter			TU.U			
•	Customizo						60.0(mm)	
độ độ	Customize				2	.5		
B	Devinhevala	Margin			0.0		30.0(mm)	
-	Peripherats							
	Connectivity							
<u> </u>	LONDECTIVITY							

1	Repeat Marker	Press it if you want to mark the marker repeatedly.
2	Change Marker Color	Change Marker color.
3	Change Margin Color	Change Margin Color when marker type is sphere.
4	Margin size	Adjust margin size when marker type is Sphere.
5	Marker	Select the marker you want to delete.
6	Delete Marker	Press it to delete marker.
7	Setup	Go to Setup > Imaging > Features to set initial setup for Marker type, color, diameter, etc.

8. Biopsy On/Off





Biopsy On/Off images.

Tips

1

Number below(1~3) indicates number on the biopsy bracket. You can adjust the angle of biopsy line rotating flexible key.

2 Display the biopsy line Biopsy line will appeared on the monitor screen. If the biopsy guideline displayed on the screen are incorrect, access to the [Utility] and press the [Edit] button to calibrate properly.

S-Fusion[™] for Liver 9. Acquire/Recall US Volume

				LA2-14A Abdomen Abdomen
				LA2-14A (Abdomen) THY
				EA2-11AR Urology Prostate
Correct Probe Angle Rec Reg.Index	all US Volume Undo			
< 1 > Registration Ma	atching Auto Plane			
			Init. TGC <mark>"</mark>	



Acquire US
 Volume

If you tap the [Acquire US Volume], the screen will switch to the Dual mode automatically.

★Tips

This function is useful to check US image before and after procedures such as RFA, Biopsy etc.

2	Acquire volume data	Following this guideline 'Pivot the probe' and acquire US volume to save a Freehand 3D dataset.
3	Finish the volume acquisition	After acquiring dataset, Please press the [Set] button on the control to end the volume acquisition.

9. Acquire/Recall US Volume



4	Recall US	
	Volume	

5

Tap the [Recall US Volume] to load the acquired 3D Volume. The last acquired US volume data will be displayed on the right side of the monitor screen.



Acquired US Volume data US image

The acquired US volume data will be displayed the right side of the monitor screen, it can be useful to compare between previous US image and current US image.

10. Image Parameters



1 2D	Select the [2D] button to change parameters on 2D mode.
← ★Tips	
You can enter 2 S-Shearwave, M	D, C, PD, Elastoscan+(only on Linear), CEUS+, IV-flow, HQ-Vision, mode.

- The features, options may not be commercially available in some countries.
- Sales and shipments are effective only after the approval by the regulatory affairs. Please contact your local sales representative for further details.
- This Quick guide does not include all of the details of instruction, fore more detail, please refer to V series User Manual.
- Do not distribute this document to customers unless relevant regulatory and legal affairs officers approve such distribution.
- This User Quick Guide is based on V series V1.05.
- Disclaimer: Some Images in this content were obtained from other system.

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