

Digitizer Studio

User Guide

Author(s): Teledyne SP Devices Document ID: 20-2382 Classification: Public Revision: 1.1

Print date: 2021-10-21



Contents

1.	Setup	p	5
	1.1. F	File	5
	1.1.1	Open:	5
	1.1.2	Save:	5
	1.1.3	Save As	6
-	1.2 E	Edit	7
	1.2.1	Сору	7
	1.2.2	Paste	8
	1.3 \	Viewing	10
	1.3.1	Table	10
	1.3.2	2 Details	
	1.3.2	2 Diagram	17
-	1.4 0	Custom Filter	17
	1.4.1	Channel	
	1.4.2	2 Trigger	
	1.4.3	B Horizontal	
	1.4.4	Clock	19
-	1.5 0	Configuration	20
	1.5.1.	L. Set to Default	20
	1.5.2.	2. Detect Hardware	20
	1.5.3.	8. Reset Devices	20
2.	Math	n	20
	2.1	Add	21
	2.2	Remove	21
	2.3	Remove All	21
3.	Meas	sure	21
	3.1.	Add	22
	2.4	Add Standard	22
	3.2.	Remove	22
	3.3.	Remove All	22
	3.4.	Measure Tab	22
4.	Wave	eform	23
4	4.1. F	File	23
	4.1.1.	L. Open	23

TELEDYNE SP DEVICES Everywhere**you**look[™]

4.1.2.	Save	24
4.1.3.	Save As:	24
4.1.4.	File Types	24
4.2. Aut	o Save	24
4.2.1.	Auto Save	24
4.2.2.	Data Overwrite	24
4.2.3.	Reset Counter	24
5. Graph		24
5.1. Gra	ph	25
5.1.1.	Add	25
5.1.2.	Remove	25
5.2. Viev	Ν	26
5.2.1.	Add	26
5.2.2.	Remove	27
5.2.3.	Enable View	28
5.2.4.	Disable View	28
5.2.5.	Record Index	28
5.2.6.	Color	29
5.3. Curs	sors	30
5.3.1.	Show Cursors	30
5.3.2.	Reset Cursors	30
5.4. Mar	kers	31
5.4.1.	Show Global Markers	31
5.4.2.	Local Marker	31
5.5. Zoo	m	32
5.5.1.	Horizontal Zoom In	32
5.5.2.	Horizontal Zoom Out	32
5.5.3.	Horizontal Position	33
5.5.4.	Reset Zoom	33
5.5.5.	Vertical Zoom in	33
5.5.6.	Vertical Zoom Out	34
5.5.7.	Vertical Position	34
5.5.8.	Drag Rectangle	35
6. Utility		36
6.1. Win	dow	36
6.1.1.	Tabbed	36

TELEDYNE SP DEVICES Everywhereyoulook

	6.1.2.	Cascade
	6.1.3.	Tile Horizontally
	6.1.4.	Tile Vertically
6	.2. L	Jtility
6	.2.1.	Preference
6	.2.2.	About
7.	Acquis	sition
	7.1.	Single
	7.2.	Run
	7.3.	Auto
	7.4.	Stop
8.	Conte	xt Menu of Hierarchy
	8.1.	Acquisition Context Menu
	8.2.	Digitizer Context Menu
	8.3.	Channel Context Menu
9.	Custo	m Firmware
	9.1	ATD Firmware
	9.2	DDC Firmware



1. Setup

Setup tab in the Digitizer Studio has the functionalities below:

1.1. File

1.1.1 Open:

Open functionality is used to open a Json (*.json) configuration.

✤ DigitizerStudio				- 🗆 X
Setup Math Measure	Waveform Graph Utility			
Open Save Save As Copy	Paste] Trigger] Clock Table	Details Diagram	Stop Run Auto Single
File	dit Column F	ïlter	Viewing Configuration	Acquisition
Show Digitizers Show Ch	🛪 Open Json File			×
 DigitizerStudio Acquisition 	\leftarrow \rightarrow \checkmark \uparrow \blacksquare \Rightarrow This	PC > Desktop >	✓ ♂ Search Deskto	p p Min
✓ ☑ ☑ Digitizer1: ADQ8 > ☑ ☑ C1	Organize 🔻 New folder			■ ▼ □ ?
 C2 C3 C4 C5 C6 C7 C8 C7 C8 C7 C0 C8 C1 Digitizer2: ADQ8 Digitizer3: ADQ8 Digitizer4: ADQ1 C1 C2 C2 C2 	 ▲ Quick access ■ Desktop ▲ Downloads ▲ Documents ▲ Documents ▲ Alerts ▲ Dover ▲ LOGGING ➡ Teledyne SP - Dig ● OneDrive ■ This PC 	Alerts icons	Dover Kat documents	Teledyne SP - Digitizer studio
Trigger Clock > 🖉 🕐 Digitizer5: ADQ1 > 🖉 O Digitizer6: ADQ1	File nam		Json (*.json) Open	198 pixel 226 pixel 198 pixel 213 pixel 213 pixel 239 pixel
 Math Math 	452 Information 09/02/20	20 17:05:00 Property	GUI.Hierarchy.Width	234 pixel
Figure 1: Setup				
	<			>
K >	All ConfigMgr Math	Property SetupMana	ager	
Figure 1. Open				

1.1.2 Save:

The Save functionality is used to save the current configuration. The default location to store the current configuration is: C:\SP Devices\DigitizerStudio\Setup



1.1.3 Save As

The Save As functionality is to save the current configuration from the current source location to the destination location.



Figure 2: Save As



1.2 Edit

1.2.1 Copy

The Copy functionality is used to select and copy a configuration of selected cells in table. Copy works for the Table mode and Details mode of viewing.

Setur Math Measure Waveform Graph Utility Open Save As Oppression Channel Trigger Image: Biologic open Edit Column Filter Universion Set To Default Details Diagram File Edit Column Filter Viewing Configuration Acquisition * DigitizerStudio System Vertical Ocoffset Impedance DigitaGain * Acquisition Digitizer ID Channel Id Name Scale DCOffset Impedance DigitaGain * Maxisition 0 G2 C1 2 C4 5 Vpp 0 mV 50 ohm 1.200 0 > @ 0 C2 3 C3 C5 5 Vpp 3 mV 50 ohm 1.200 0 > @ 0 C3 3 C3 C5 5 Vpp 3 mV 50 ohm 1.200 0 > @ 0 C4 5 C6 C6 5 Vpp 2 mV 50 ohm 1.200 0 > @ 0 C8 G C7 6 C6 5 Vpp 2 mV 50 ohm 1.200 0
Image: Same Same Same Same Same Same Same Same
File Edit Column Filter Viewing Configuration Acquisition Show OlgitzerS Show Ch Setup Measure Graph 1 DigitzerStudio System Vertical Impedance DigitalGain DigitzerStudio DigitzerID Channel Id Name Scale DCOffset Impedance DigitalGain 0
Show Digitizers Show Ch Setup Measure Graph 1 Acquisition Digitizer ID Channel Id Name Scale DCOffset Impedance DigitalGain Oligitizer ID Channel Id Name Scale DCOffset Impedance DigitalGain Oligitizer ID Channel Id Name Scale DCOffset Impedance DigitalGain Oligitizer ID Clannel Id Name Scale DCOffset Impedance DigitalGain Oligitizer ID C2 SVpp 3mV 50 ohm 1200 0 OC C3 OC C4 SVpp 2mV 50 ohm 1200 0 OC C7 S <
> DigitizerStudio System ∨ Vertical Vertical Impedance DigitalGain O Digitizer1: ADQ8 1 Digitizer1 C1 Svp O mV S0 ohm Digitizer3 O O mV S0 ohm 200 m 0 O So So So O Digitizer1 C1 SVpp mW So ohm 200 m O O So ohm 200 m O O So ohm 200 m O So ohm 1200 O O C5 So C6 C6 C6 So ohm 1200 O Y C C6 7 C7 SVpp 2mV <
▲ Acquisition Digitizer ID Channel Id Name Scale DCOffset Impedance DigitalGain > > C1 1 Digitizer1 C1 5 Vpp 0 mV 50 ohm 200 m 0 > C1 2 C2 5 Vpp 3 mV 50 ohm 1200 0 > C1 2 C2 5 Vpp 3 mV 50 ohm 1200 0 > C1 2 C2 5 Vpp 3 mV 50 ohm 1200 0 > C1 C4 5 Vpp 3 mV 50 ohm 1200 0 > C1 C5 C5 5 Vpp 2 mV 50 ohm 1200 0 > C1 C6 C6 5 Vpp 2 mV 50 ohm 1200 0 > C1 C7 7 C7 5 Vpp 2 mV 50 ohm 1200 0 > C1 C3 5 Vpp <t< td=""></t<>
✓ O Digitizer1: ADO8 ✓ Organizer10 Organizer11 Organizer11 Organizer11 Organizer11 Organizer11 Organizer11 Organizer11 Organizer11 Organizer11 Or
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $
> 0 C3 5 Vpp 3 C3 5 Vpp 3 C3 5 Vpp 3 C3 5 Vpp 2 NV 5 0
A C4 5 Vpp 2 mV 50 ohm 1200 0 A C5 C5 5 Vpp 2 mV 1 Mohm 1200 0 A C6 C6 5 Vpp 2 mV 50 ohm 1200 0 A C6 C7 C7 C7 5 Vpp 2 mV 50 ohm 1200 0 A C7 C7 C7 5 Vpp 2 mV 50 ohm 1200 0 A C8 C8 5 Vpp 2 mV 50 ohm 1200 0 A C8 C8 5 Vpp 2 mV 50 ohm 1200 0 A C1 C2 5 Vpp 3 mV 50 ohm 1200 0 A C2 5 Vpp 3 mV 50 ohm 1200 0 A O Digitizer2: ADO8 12 C4 5 Vpp 3 mV 50 ohm 1200 0 A O Digitizer3: ADO8 13 C5 5 Vpp 2 mV 50 ohm 1200 0 A
5 C5 5 Vpp 2 mV 1 Mohm 1 200 0 5 C6 C6 5 Vpp 2 mV 50 ohm 1 200 0 5 C C6 C6 5 Vpp 2 mV 50 ohm 1 200 0 5 C C7 7 C7 5 Vpp 2 mV 50 ohm 1 200 0 5 C C8 6 C8 5 Vpp 2 mV 50 ohm 1 200 0 7 C C7 8 C8 5 Vpp 2 mV 50 ohm 1 200 - 9 Digitizer2 C1 5 Vpp 0 mV 50 ohm 1 200 0 Clock 11 C3 5 Vpp 3 mV 50 ohm 1 200 0 0 Digitizer2: ADQ8 12 C4 5 Vpp 2 mV 50 ohm 1 200 0 0 Digitizer3: ADQ8 13 C5 5 Vpp 2 mV 50 ohm 1 200 0 0 Digitizer4: ADQ1 14 C6 5 Vpp 2 mV 50 ohm 1 200 <td< td=""></td<>
> C6 5 Vpp 2 mV 50 ohm 1200 0 > C7 C7 5 Vpp 2 mV 50 ohm 1200 0 > C C7 S Vpp 2 mV 50 ohm 1200 0 > C C8 S Vpp 2 mV 50 ohm 1200 1 Horizontal Trigger C1 S Vpp 0 mV 50 ohm 200 m 0 Clock 11 C2 S Vpp 3 mV 50 ohm 1200 0 > Digitizer2: ADQ8 12 C4 S Vpp 3 mV 50 ohm 1200 0 > D Digitizer3: ADQ8 13 C5 S Vpp 2 mV 50 ohm 1200 0 > D Digitizer4: ADQ1 14 C6 S Vpp 2 mV 50 ohm 1200 0 > C1 15 C7 S Vpp 2 mV 50 ohm 1200 0 > D Digitizer3: ADQ8 13 C5 S Vpp 2 mV 50 ohm 1200 0
\checkmark \bigcirc $<$ $\bigcirc < \bigcirc < \bigcirc < < < < < < <$
Image: Second secon
Horizontal Trigger Clock 9 Digitizer2 C1 5 Vpp > 0 mV 50 ohm 200 m 0 0 Clock 11 C2 5 Vpp > 3 mV 50 ohm 1.200 0 0 V Digitizer2: ADQ8 12 C4 5 Vpp > 3 mV 50 ohm 1.200 0 0 V Digitizer3: ADQ8 12 C4 5 Vpp > 2 mV 50 ohm 1.200 0 0 V Digitizer3: ADQ8 13 C5 5 Vpp > 2 mV 50 ohm 1.200 0 0 V Digitizer4: ADQ1 14 C6 5 Vpp > 2 mV 50 ohm 1.200 0 0 V Digitizer4: ADQ1 14 C6 5 Vpp > 2 mV 50 ohm 1.200 0 0 V Digitizer3 C1 C8 5 Vpp 2 mV 50 ohm 1.200 0 0 M C2 16 C8 5 Vpp 2 mV 50 ohm 1.2
Trigger Clock 10 C2 5 Vpp 3 mV 50 ohm 1.200 0 V Digitizer2: ADQ8 11 C3 5 Vpp 3 mV 50 ohm 1.200 0 V Digitizer2: ADQ8 12 C4 5 Vpp 2 mV 50 ohm 1.200 0 V Digitizer3: ADQ8 13 C5 5 Vpp 2 mV 50 ohm 1.200 0 V Digitizer3: ADQ8 13 C5 5 Vpp 2 mV 50 ohm 1.200 0 V Digitizer4: ADQ1 14 C6 5 Vpp 2 mV 50 ohm 1.200 0 V Digitizer4: ADQ1 14 C6 5 Vpp 2 mV 50 ohm 1.200 0 V C1 15 C7 5 Vpp 2 mV 50 ohm 1.200 0 M C2 16 C8 5 Vpp 2 mV 50 ohm 1.200 -1 Horizontal 17 Digitizer3 C1 5 Vpp 2 mV 50 ohm 1.200 0
Clock 11 C3 5 Vpp 3 mV 50 0nm 1.200 0 > O Digitizer2: ADQ8 12 C4 5 Vpp 2 mV 50 0nm 1.200 0 > O Digitizer3: ADQ8 13 C5 5 Vpp 2 mV 50 0nm 1.200 0 > O Digitizer3: ADQ8 13 C5 5 Vpp 2 mV 50 0nm 1.200 0 > O Digitizer4: ADQ1 14 C6 5 Vpp 2 mV 50 0nm 1.200 0 > O C1 15 C7 5 Vpp 2 mV 50 0nm 1.200 0 > O C2 16 C8 5 Vpp 2 mV 50 0nm 1.200 -1 Horizontal 17 Digitizer3 C1 5 Vpp 2 mV 50 0nm 1.200 0
> O Digitzer2: ADG8 12 C4 5 Vpp 2 mV 50 ohm 1.200 0 > O Digitzer3: ADG8 13 C5 5 Vpp 2 mV 50 ohm 1.200 0 > O Digitzer4: ADG1 14 C6 5 Vpp 2 mV 50 ohm 1.200 0 > O C1 15 C7 5 Vpp 2 mV 50 ohm 1.200 0 > O C2 16 C8 5 Vpp 2 mV 50 ohm 1.200 -1 Horizontal 17 Digitizer3 C1 5 Vpp 2 mV 50 ohm 1.200 0
Image: Solution of the second seco
Image: Strain of the strain
> (a) C1 13 C7 13 C7 14 17 10 17 Digitizer3 C1 5 Vpp 2 mV 50 ohm 1.200 -1 Horizontal 17 Digitizer3 C1 5 Vpp 2 mV 50 ohm 1.200 -1
Horizontal 17 Digitizer3 C1 5 Vpp 2 mV 50 ohm 1.200 0
Trigger 18 C2 5 Vpp × 2 mV C 50 phm × 1200 C 0
Clock 19 C3 5 Vpp ~ 2 mV 50 ohm ~ 1.200 0
> ☑ O Digitizer5: ADQ1 20 C4 5 Vpp ∨ 2 mV C 50 ohm ∨ 1.200 C 0
> 🗹 🔘 Digitizer6: ADQ1
Digitizer7: ADQ1
Math Line Type Date Time Source Title
Measure 401 Information 09/02/2020 17.59.39 Property GUI.Hierarchy.width 194 pixel Measure 492 Information 09/02/2020 17:59:20 Property GUI.Hierarchy.width 194 pixel
Memory 462 Information 09/02/2020 17:39:39 Property GOLWIGH 932 pixel V
All ConfigMgr Math Property SetupManager

Figure 3: Copy



1.2.2 Paste

The Paste functionality is used to paste copied text in a table. It pastes data from the current cell of table. However, Copy will not be able to copy Read-only properties. For example: User can select all rows of Digitizer1, copy it and then go to Digitizer2 and press paste. The updated cells after paste will be highlighted.

🕶 DigitizerStudio — 🗆 🗙								
Setup Math Measure V	Naveform Graph	Utility						
Open Save Save As Copy	Paste	el 🗹 Trigger ntal 🗹 Clock	Table	Details Diagram	Set To Defau Detect Hardwa	It are Stop R	A Auto	Single
File	dit	Column Filter		Viewing	Configuration	n 🦯	Acquisition	
Show Digitizers Show Ch	Setup Measure	Graph 1						
✓ DigitizerStudio	System				Vertical			^
 Acquisition 	Digitizor ID	Channal Id			DCOffeet		DigitalC	ain
🗸 🔽 🔵 Digitizer1: ADQ8	1 Digitizer1		INAITIe	Sudie E Ven		EQ obm		
> 🗹 🖾 C1	2			5 Vpp ×	3 mV	50 ohm ×	1 200	× 0
> 🗌 🛛 C2	3	02		5 Vpp ×	3 mV	50 ohm V	1.200	
> [] 🖸 C3	4	C4		5 Vpp ×	2 mV 0	50 ohm 🗸 🗸	1.200	Č O
	5	C5		5 Vpp 🗸 🗸	2 mV 🗘	1 Mohm 🛛 👻	1.200	<u> </u>
	6	C6		5 Vpp 🛛 🗸	2 mV 🗘	50 ohm 🛛 🗸	1.200	0
	7	C7		5 Vpp 🛛 🗸	2 mV 🗘	50 ohm 🔷 👻	1.200	0
	8	C8		5 Vpp 🛛 🗸	2 mV 🗘	50 ohm 🛛 🗸 🗸	1.200	0 -
Horizontal	9 Digitizer2	C1		2.5 Vpp 🗸 🗸	0 mV 🗘	50 ohm	200 m	0
Trigger	10	C2		2.5 Vpp 🗸	3 mV 🗘	50 ohm	1.200	<u> </u>
Clock	11	C3		2.5 Vpp ∽	3 mV 🗘	50 ohm	1.200	<u> </u>
> 🗹 🔵 Digitizer2: ADQ8	12	C4		2.5 Vpp ~	2 mV	50 ohm	1.200	× 0
> 🗹 🔵 Digitizer3: ADQ8	13	C5		2.5 Vpp V	2 mV	50 ohm	1.200	
V O Digitizer4: ADQ1	14	C0		2.5 Vpp *	2 mV	50 ohm	1.200	×
> 🖸 C1	16	C8		2.5 Vpp	2 mV	50 ohm	1.200	×.
> 🖸 C2	17 Digitizer3	C1		5 Vpp ~	2 mV	50 ohm ~	1.200	č
Trigger	18	C2		5 Vpp 🗸	2 mV Č	50 ohm 🗸	1.200	ČŌ
Clock	19	C3		5 Vpp 🗸	2 mV 🗘	50 ohm 🗸 🗸	1.200	Ô 0
> 🗹 🔵 Digitizer5: ADQ1	20	C4		5 Vpp 🗸 🗸	2 mV 🗘	50 ohm 🛛 🗸	1.200	00
> I O Digitizer6: ADQ1	<				^			^ · ·
> 🗹 🔵 Digitizer7: ADQ1	Lino Type	Data Ti	ma Course		Title			_
> Math	2514 Information	09/02/2020 20:5	6:06 Property	Acquisition Di	aitizer2 C8 Bottom		-1	248 V
Measure	2515 Information	09/02/2020 20:5	6:06 Property	Acquisition.Di	gitizer2.C8.Top		1.	252 V 🗸
memory	<							>
<>	All ConfigMgr	Math Proper	ty SetupManag	ger AcqMgr	DataMgr			

Figure 4: Copy from Digitizer1



TigitizerStudio	T DigitizerStudio – 🗆 🗙								
Setup Math Measure N	Waveform Graph	Utility							
Open Save Save As Copy	Paste	el 🗹 Trigger ntal 🗹 Clock	Table	Details Diagram	Set To Default Detect Hardwar	re Stop R	tun Auto	Single	
File Edit Column Filter Viewing Configuration Acquisition									
Show Digitizers Show Ch	Setup Measure	Graph 1							
✓ DigitizerStudio	System				Vertical			^	
Acquisition	Digitizer ID	Channel Id		Scale	DCOffset	Impedance	Digital	ain	
🗸 🗹 🔵 Digitizer1: ADQ8	1 Digitizer1	C1	Name	5 Vnn X		50 ohm	200 m	^ 0	
> 🗹 🖾 C1	2	C2		5 Vpp	3 mV	50 ohm ×	1 200	×ŏ	
> [] 🖸 C2	3	C3		5 Vpp V	3 mV Č š	50 ohm 🗸	1.200	č	
	4	C4		5 Vpp 🗸	2 mV 💍 5	50 ohm 🗸 🗸	1.200	Č o	
	5	C5		5 Vpp 🗸 🗸	2 mV 🗘 1	1 Mohm 🗸 🗸	1.200	Û ()	
	6	C6		5 Vpp 🗸 🗸	2 mV 🗘 5	50 ohm 🛛 🗸	1.200	0	
	7	C7		5 Vpp 🗸 🗸	2 mV 🗘 5	50 ohm 🗸 🗸	1.200	<u></u>	
	8	C8		5 Vpp 🗸 🗸	2 mV 🗘 🤅	50 ohm 🗸 🗸	1.200	Û -1	
Horizontal	9 Digitizer2	C1		5 Vpp 🛛 🗸	0 mV 🗘 🕄	50 ohm	200 m	0	
Trigger	10	C2		5 Vpp 🛛 🗸	3 mV 🗘 🕄	50 ohm	1.200	0	
Clock	11	C3		5 Vpp 🗸 🗸	3 mV 🗘 5	50 ohm	1.200	0	
> 🗹 🔵 Digitizer2: ADQ8	12	C4		5 Vpp ~	2 mV 🔅 8	50 ohm	1.200		
> 🗹 🔵 Digitizer3: ADQ8	13	C5		5 Vpp ~	2 mV 🔅 8	50 ohm	1.200	0	
🗸 🗹 🔵 Digitizer4: ADQ1	14	C6		5 Vpp ~	2 mV 0	50 ohm	1.200		
> 🖸 C1	15	C/		5 Vpp ~	2 mV 2 8	50 ohm	1.200	\sim 0	
> 🖸 C2	10 47 Disitizes2	C8		5 Vpp V	2 mV 2 8	50 onm	1.200		
Horizontal	17 Digiuzer3	01		5 Vpp V		50 ohm 🗸	1.200	× °	
Trigger	18	02		5 Vpp V	2 mV	50 ohm	1.200	×	
	20	C3		5 Vpp V	2 mV	50 ohm 🗸	1.200	×	
	20			5 Vpp •	* .		1.200		
	<							>	
Math	Line Type							^	
Measure	2546 Information	10/02/2020 00:5	2:45 Property	Acquisition.Di	gitizer2.C8.Bottom		-	2.498 V	
Memory	2547 Information	10/02/2020 00:5	2:45 Property	Acquisition.Di	gitizer2.C8.Top		2	.502 V 🗸	
	<						_	>	
< >	All ConfigMgr	Math Propert	ty SetupMana	ger AcqMgr	DataMgr				

Figure 5: Paste from Digitizer1 to Digitizer2



1.3 Viewing

1.3.1 Table

All properties of all digitizers are shown in this mode. Table mode of viewing is used for Acquisition and their children. It shows properties of selected node and their children from left pane.

🖚 DigitizerStudio							- 0	×
Setup Math Measure	Waveform Graph	Utility						
Open Save Save As Copy	Paste	ntal 🗹 Trigger	Table	etails Diagram	Detect Hardwa	are Stop	Run Auto	Single
File	Edit	Column Filter		Viewing	Configuratio	n	Acquisition	
Show Digitizers Show Ch	Setup Measure	Graph 1						
✓ DigitizerStudio	System				Vertical			^
 Acquisition 	Digitizer ID	Channel Id		Scale		Impedance	DigitalGa	in
V O Digitizer1: ADQ8	1 Digitizer1		Name	5 Vnn V	0 mV	50 ohm	200 m	<u> </u>
> 🗹 🖾 C1		C2		5 Vpp	3 mV	50 ohm >	1 200	×ő
> 🗌 🐼 C2	3	C3		5 Vpp ×	3 mV	50 ohm ~	1,200	čů
> 🗌 🖸 C3	4	C4		5 Vpp ~	2 mV	50 ohm V	1.200	Č o
> 🗌 🖸 C4	5	C5		5 Vpp ~	2 mV	1 Mohm ~	1.200	Č o
> 🗹 🖸 C5	6	C6		5 Vpp ~	2 mV Č	50 ohm V	1.200	Č o
	7	C7		5 Vpp ~	2 mV 🗘	50 ohm V	1.200	Ô O
	8	C8		5 Vpp ~	2 mV 🗘	50 ohm V	1.200	Ô -1
	9 Digitizer2	C1		5 Vpp 🗸 🗸	0 mV 🗘	50 ohm	200 m	0
Trigger	10	C2		5 Vpp 🗸 🗸	3 mV 🗘	50 ohm	1.200	0
Clock	11	C3		5 Vpp 🗸 🗸	3 mV 🗘	50 ohm	1.200	0
> 🗹 🔵 Digitizer2: ADQ8	12	C4		5 Vpp 🗸 🗸	2 mV 🗘	50 ohm	1.200	0
> V O Digitizer3: ADQ8	13	C5		5 Vpp 🗸 🗸	2 mV 🗘	50 ohm	1.200	0
V V O Digitizer4: ADQ1	14	C6		5 Vpp 🗸 🗸	2 mV 🗘	50 ohm	1.200	0
> 🖸 C1	15	C7		5 Vpp 🗸 🗸	2 mV 🗘	50 ohm	1.200	0
> 🔯 C2	16	C8		5 Vpp ∨	2 mV 🗘	50 ohm	1.200	Q -1
Horizontal	17 Digitizer3	C1		5 Vpp ~	2 mV 🗘	50 ohm V	1.200	0
Trigger	18	C2		5 Vpp ~	2 mV 🗘	50 ohm ~	1.200	0
Clock	19	C3		5 Vpp ~	2 mV 🗘	50 ohm V	1.200	<u> </u>
> 🗹 🔵 Digitizer5: ADQ1	20	C4		5 Vpp ~	2 mV 🗘	50 ohm V	1.200	0
> Digitizer6: ADQ1	21	C5		5 Vpp ~	2 mV	50 ohm ~	1.200	0
> V O Digitizer7: ADQ1	22	C6		5 Vpp ~	2 mV 🗘	50 ohm ~	1.200	0
> Math	23	C7		5 Vpp ~	2 mV	50 ohm ~	1.200	0
Measure	24	C8		5 Vpp 🗸	2 mV	50 ohm ~	1.200	× 0
wernory	25 Digitizer4	01		500 mVpp	2 mV	50 ohm	200 m	× 0 v
		1.27		500 mVnn	V mV	50 0hm	- 1 200	0.1

Figure 6: Viewing - Table

Different ways to enter/modify value(s) in Table mode:

Select a cell and click the Up – Down arrow to modify the values. Up arrow will increment value as per grain where Down arrow will decrement arrow as per grain of the property.



🖚 DigitizerStudio									-	. 0	Х
Setup Math Measure V	Vaveform Graph	Utility									
Open Save Save As Copy	Paste	☑ Trigger al ☑ Clock	Table Details Diagra	Set To Default Detect Hardwar	e				Stop Run	Auto	Single
File E	dit C	olumn Filter	Viewing	Configuration					Acq	uisition	
Show Digitizers Show CI ^	Setup Measure	Graph 1									
✓ DigitizerStudio	System			Vertical							^
Acquisition	Digitizer ID	Channel Id		DOUISE			DigitalOffset		SamplingRate		sitionTi
V Digitizer1: ADQ	1 Digitizer1	C1	5 Vpp	-4 mV	1 Mohm 🗸	1 000	0 Codes	MultiRecord ~	1 GS/s	2 000 us	
	2	C2	5 Vpp	v 2mV	1 Mohm 🗸	1.000	0 Codes				
	3	C3	5 Vpp	√ -3 mV Û	1 Mohm 🗸	1.000	0 Codes				
	4	C4	5 Vpp	✓ -3 mV ⁰	1 Mohm 🗸	1.000	0 Codes				
	5	C5	5 Vpp	✓ -3 mV ⁽)	1 Mohm 🗸	1.000 🗘	0 Codes 🗘				
	6	C6	5 Vpp	∨ -3 mV 🗘	1 Mohm 🗸 🗸	1.000 🗘	0 Codes 🗘				
> 🖸 🚳 C7	7	C7	5 Vpp	∽ -3 mV 🗘	1 Mohm 🗸 🗸	1.000 🗘	0 Codes 🗘				
> 🖸 🖾 C8	8	C8	5 Vpp	✓ -4 mV [^]	1 Mohm 🗸 🗸	1.000 🗘	0 Codes 🗘				
Horizontal	9 Digitizer2	C1	5 Vpp	∨ -3 mV 🗘	50 ohm	1.000 🗘	0 Codes 🗘	MultiRecord ~	1 GS/s	10 ns	
> Trigger	10	C2	5 Vpp	∽ -3 mV 🗘	50 ohm	1.000 🗘	0 Codes 🗘				
Clock	11	C3	5 Vpp	∽ -3 mV 🗘	50 ohm	1.000 🗘	0 Codes 🗘				
Y 🔽 🔵 Digitizer2: ADQ	12	C4	5 Vpp	∨ -3 mV 🗘	50 ohm	1.000 🗘	0 Codes 🗘				
> 🗹 🚳 C1	13	C5	5 Vpp	∽ -3 mV 🗘	50 ohm	1.000 🗘	0 Codes 🗘				
> 🗹 🚳 C2	44	06	5 Vnn	2 ml/	50 ohm	1 000	0 Codoc ^				· · ·
> 🗹 🖾 C3										_	-
> 🗹 🖾 C4	Line	Туре	42/02/0000	Date	Time	Dered	Source	C. U. Linearcher	Title		^
> 🗹 🐼 C5	2702	Information	13/03/2020		17:50:49	Propert	y	GUI Hierarchy.W	idth		
> 🗹 🖾 C6	2703	Information	13/03/2020		17:50:55	Propert	y v	CUL Hierarchy.W	idth		
> 🗹 🖾 C7	2704	Information	13/03/2020		17:50:04	Propert	y v	CUI Hierarchy.W	idth		
> 🗹 🚳 C8	2705	Information	12/02/2020		17:59:04	Propert	y v	CUI Hierarchy.W	idth		
Horizontal	2700	Information	13/03/2020		17:59:07	Propert	y V	GUI Hierarchy.W	idth		
Clock	2709	Information	13/03/2020		17:59:50	Propert	y V	GUI Hierarchy.W	idth		
	2700	Information	13/03/2020		18:00:03	Propert	y V	GUI Hierarchy.W	idth		
	<	mornation	15/35/2020		10.00.00	Tropen	1	COLL HEIGHT	run i		>
<	All ConfigMgr	Math Property	SetupManager								

Figure 7: Viewing – Update value using spinbox

For a particular cell, click on the combo box and select a value from the dropdown list.

✤ DigitizerStudio												-	٥	×
Setup Math Measure V	Vaveform Graph	Utility												
	💾 🗹 Channel	🗹 Trigger			Set To Default								•	
	Horizonta			ш <u>А</u>	Detect Hardwar	e							A	
Open Save Save As Copy	Paste		Table	Details Diagram		-					Stop	Run	Auto	Single
File E	dit C	olumn Filter	1	Viewing	Configuration							Acqu	sition	
Show Digitizers Show Cl ^	Setup Measure	Graph 1												
✓ DigitizerStudio	System			\frown										^
 Acquisition Acquisition 	Digitizer ID	Channel Id	Name	Scale	DCOffset				DigitalOffset			Rate		itionTi
✓ U Digitizer1: ADQ	1 Digitizer1	C1		5 Vpp	- mV û	1 Mohm 🗸	1.000	<u>^</u>	0 Codes	MultiRecord ~	1 GS/s	<u>^</u>	2.000 us	
	2	C2		5 Vpp	I-3 mV Č	1 Mohm V	1.000	č	0 Codes			Ŷ		
	3	C3		2.5 Vpp	, mv Č	1 Mohm 🗸	1.000	č	0 Codes					
	4	C4		1 Vpp	-3 mV 🗘	1 Mohm 🗸	1.000	Ô	0 Codes					
	5	C5		250 mVpp	-3 mV 🗘	1 Mohm 🗸	1.000	Ŷ	0 Codes 🗘					
	6	C6		5 Vpp 🗸 🗸	-3 mV 🗘	1 Mohm 🗸 🗸	1.000	Ŷ	0 Codes 🗘					
> 🖾 🚳 C7	7	C7		5 Vpp 🗸 🗸	-3 mV 🗘	1 Mohm 🗸 🗸	1.000	Ŷ	0 Codes 🗘					
	8	C8		5 Vpp 🗸 🗸	-4 mV 🗘	1 Mohm 🗸 🗸	1.000	Ŷ	0 Codes 🗘 🗘					
Horizontal	9 Digitizer2	C1		5 Vpp 🗸 🗸	-3 mV 🗘	50 ohm	1.000	Ŷ	0 Codes 🗘 🗘	MultiRecord ~	1 GS/s	Ŷ	10 ns	
> Trigger	10	C2		5 Vpp 🗸 🗸	-3 mV 🗘	50 ohm	1.000	Ŷ	0 Codes 🗘 🗘					
Clock	11	C3		5 Vpp 🗸 🗸	-3 mV 🗘	50 ohm	1.000	<u></u>	0 Codes 🗘					
🗸 🗹 🔵 Digitizer2: ADQ	12	C4		5 Vpp 🗸 🗸	-3 mV 🗘	50 ohm	1.000	<u></u>	0 Codes 🗘 🗘					
> 🗹 🖾 C1	13	C5		5 Vpp 🗸 🗸	-3 mV 🗘	50 ohm	1.000	<u></u>	0 Codes 🗘 🗘					
> 🗹 🚳 C2	14	C6		E Von	2 m\/ ^	50 ohm	1 000	^	0 Codos					, [×]
> 🗹 🖾 C3	-		_					_			_	_	_	
> 🗹 🚳 C4	Line	Туре	40	Da	te	Time	9		Source	0	Title	9		^
> 🗹 🐼 C5	2702	Information	13/	03/2020		17:58:49		Property		GUI.Hierarchy.w				
> 🗹 🚳 C6	2703	Information	13/	03/2020		17:58:53		Property		GUI.Hierarchy.w				
> 🗹 🐼 C7	2704	Information	13/	03/2020		17:58:58		Property		GUI.Hierarchy.W	idth			
> 🗹 🐼 C8	2705	Information	13/	03/2020		17.59.04		Property		GUI.Hierarchy.w	idun idun			
Horizontal	2700	Information	13/	03/2020		17:59.07		Property		GUI.Hierarchy.W	idth			
Clock	2709	Information	13/	03/2020		17:59:42		Property		CLII Hierarchy.W	idth			
	2700	Information	13/	03/2020		10:00:02		Property		CLII Hierarchy.W	idth			
> 🖂 💿 C1	<	morriation	15/	0.012.02.0		10.00.03		ropelly		GOLT HET AT CHIY.W	rout			>
	All ConfigMgr	Math Property	SetupMana	iger										

Figure8: Viewing – Update value using combobox

User can write values in below different ways in cell:

• 2e-6



- 2u
- 0.000002

All the above format of values are acceptable. There is no need to write unit. Application automatically takes the nearest valid value.

Multiple Cells Edit:

Select the cells for Digitizer1 for channels C1 to C8. Click on the up or down arrow. The values for all the selected cells get changed.



Figure 9: Multiple cell edit

Click on the name of the property in horizontal header. Change the value of the first cell and it will update all the cells of that column.



Tree selection and table content:

In the Table viewing, all the properties of selected node from the left tree and it's children's properties are visible in table.

If Acquisition is selected on the left pane, the Digitizers (Digitizer1, Digitizer2) and their children properties are displayed in the right pane.

✤ DigitizerStudio							- 0	×
Setup Math Measure Waveform Graph	Utility							i i
Open Save Save as Copy Paste	Details Diagram] Channel 🗹 Trigger] Horizontal 🗹 Clock	Set to default Detect hardware Re	S eset devices			Stop Run Auto	N Single
File Edit	Viewing	Column filter	Configuration				Acquisition	
Show digitizers Show channels	Setup Measure	e Graph 1 Graph 2 📕						
✓ Digitizer€tudio	System							^
Acquisition	Distingue							Dist
Digitizer1: ADQ7DC SPD-1001	Digitizer ID	Channel Id Name	Scale DC offset	Impedance	Enable calibration	Digital gain	Digital gain volt	Digi
> 🗹 🚳 INA	1 Digitizer1	INA	1 Vpp 0 mV	50 ohm		000	1.000 V	0 Cod
INX	2	INB	1 Vpp 0 mV	50 onm		.000	1.000 V	0 Cod
> 🗹 🚳 INB	3 Digitizer2	INX	1 Vpp 0 mV	× 50 onm		000	1.000 V	0 Cod
Horizontal	4 Digitizer3		5 Vpp V U HV	× 50 ohm		000	5.000 V	0 000
Clock	6	02	5 Vpp V 0 mV	50 ohm	I. □ 1	000	5.000 V	0 Cod
Digitizer2: AD07DC SPD-1002	7	C3	EVen v 0mV	50 ohm	I. □ 1	000	5.000 V	0 Cod
Digitizer2: ADO8 SPD-1001	0	C4	EVen v 0mV	50 ohm	I. □ 1	000	5.000 V	0 Cod
Digitizers: ADQ8 SPD-1001		C6	5 Vpp + 0 mV	50 ohm	I. ☑ 1	000	5.000 V	0 Cod
Digitizers: ADQ13DC SED 1005	10	C7	5 Vpp × 0 mV	50 ohm	 ☑ 1	000	5.000 V	0 Cod
Digitizers: ADQ12DC SED 1007	11	C8	5 Vpp × 0 mV	50 ohm	 ☑ 1	000	5 000 V	0 Cod
Digitizero: ADQ12DC SPD-1007	12 Digitizer4	C1	5 Vpp × 0 mV	50 ohm	 ☑ 1	000	5 000 V	0 Cod
Digitizer() ADQ14AC SFD-1007	13	C2	5 Vpp × 0 mV	○ 50 ohm ✓	☑ 1	000	5 000 V	0 Cod
Digitizer8: ADQ14DC SPD-1007	14	C3	5 Vpp ~ 0 mV		M 1.	000	5.000 V	0 Cod
Digitizeria: ADQ14DC 3FD-1008	15	C4	5 Vpp ~ 0 mV	Č 50 ohm 🗸	I.	000	5.000 V	0 Cod
Math	16	C5	5 Vpp ~ 0 mV	Č 50 ohm 🗸	✓ 1.	000	5.000 V	0 Cod
> F1	17	C6	5 Vpp ~ 0 mV		☑ 1.	000	5.000 V	0 Cod
> F2	18	C7	5 Vpp ~ 0 mV	🗘 50 ohm 🗸 🗸	☑ 1.	.000 (5.000 V	0 Cod
> Measure	19	C8	5 Vpp ~ 0 mV	🗘 50 ohm 🗸 🗸	☑ 1.	.000 (5.000 V	0 Cod
Memory	20 Digitizer5	A	500 mVpp 0 mV	🗘 50 ohm	☑ 1.	.000 (500.0 mV	0 Cod
	21	В	500 mVpp 0 mV	🗘 50 ohm	☑ 1.	.000 🕻	500.0 mV	0 Cod
	22 Digitizer6	A	500 mVpp 0 mV	🗘 50 ohm	☑ 1.	.000 🕻	500.0 mV	0 Cod
	23	В	500 mVpp 0 mV	🗘 50 ohm	☑ 1.	.000	500.0 mV	0 Cod
	24	С	500 mVpp 0 mV	🗘 50 ohm	☑ 1.	.000	500.0 mV	0 Cod
	25	n	500 mVnn 0 mV	50 ohm	1	000 ⁽	500.0 mV	Y ho: 0
<	> <							>

Figure 10: Table content when Acquisition node is selected

If Digitizer is selected on the left tree panel, their children's properties (Trigger, Horizontal, channel, clock) properties are displayed in table.

TigitizerStudio			– 🗆 X
Setup Math Measure Waveform Graph L	Utility		
Open Save Save as Copy Paste	talls Diagram	Set to default Detect hardware Reset devices	Stop Run Auto Single
File Edit Viev	wing Column filter	Configuration	Acquisition
Show digitizers Show channels ^ Se	etup 🛛 Measure Graph 1 🛛 Graph 2 🗵		
✓ DigitizerStudio			
Digitizer1: ADQ7DC SPD-1001			
	Digitizer1 INA	1 Vpp 0 mV 🗘 50 ohm	☑ 1.000 ♀ 1.000 V
🖾 INX 🛛 2	INB	1 Vpp 0 mV 🗘 50 ohm	✓ 1.000
> 🖂 🖾 INB			
Horizontal			
Trigger			
Digitizer2: ADQ7 D0 01 D-1002			
Digitizer4: ADO8 SPD-1001			
Digitizer5: AD012DC SPD-1006			
Digitizer6: ADQ12DC SPD-1007			
Digitizer7: ADQ14AC SPD-1007			
Digitizer8: ADQ14DC SPD-1007			
Digitizer9: ADQ14DC SPD-1008			
Digitizer10: ADQ1 SPD-1009			
			,

Figure 11: Table content when Digitizer node is selected

If the user selects a channel on the left panel, the contents of the right panel are as indicated below.



TigitizerStudio					– 🗆 X
Setup Math Measure Waveform Graph	Utility			_	
Open Save Save as Copy Paste	Details Diagram	✓ Trigger al ✓ Clock Set to	Jefault Detect hardware Reset devices		Stop Run Auto Single
File Edit	Viewing C	olumn filter	Configuration		Acquisition
Show digitizers Show channels ^ > DigitizerStudio	Setup Measure Graph 1 System	Graph 2 🛛			^
V Digitizer1: ADQ7DC SPD-1001	Digitizer ID Channe				Digital gain Digital gain vol
NA INA	1 Digitizer1 INA	1 Vp;	0 mV 🗘 50 ohm	1.00	00 🗘 1.000 V
 INX ✓ INB Horizontal Trigger Clock ✓ Oligitizer2: AD07DC SPD-1002 ✓ Oligitizer3: AD08 SPD-1001 ✓ Oligitizer3: AD08 SPD-1003 ✓ Oligitizer5: AD012DC SPD-1006 ✓ Oligitizer5: AD012DC SPD-1007 ✓ Oligitizer6: AD014DC SPD-1007 ✓ Oligitizer6: AD014DC SPD-1007 ✓ Oligitizer9: AD014DC SPD-1008 ✓ Oligitizer9: AD014DC SPD-1008 ✓ Oligitizer9: AD014DC SPD-1008 ✓ Oligitizer10: AD01 SPD-1009 ✓ Oligitizer10: AD01 SPD-1009 	-500	nV nv 0 ns	.000 µs		v >

Figure 13: Table content when channel node is selected

If Horizontal is selected in the left panel, the Horizontal contents are displayed in the right panel.



Figure 14: Table content when Horizontal node is selected

If Trigger is selected in the left panel, the Trigger contents are displayed in the right panel.



🖚 DigitizerStudio				– 🗆 X
Setup Math Measure Waveform	Graph Utility	~	-	
Open Save Save as Copy Paste	Table Details Diagram	 ✓ Channel ✓ Trigger ✓ Horizontal ✓ Clock 	Set to default Detect hardware Reset	devices Stop Run Auto Single
File Edit	Viewing	Column filter	Configuration	Acquisition
Show digitizers Show channels	Setup Measure	Graph 1 🛛 Graph 2 🖾		
V DigitizerStudio	System			
✓ ✓ O Digitizer1: ADQ7DC SPD-10(Digitizer ID	Input Blocking mode	Out enable TRIG out enable TR	RIG out source Out pulse len TRIG out inve
> 🗹 🚳 INA	1 Digitizer1 So	oftware Y Disable Y	Bloc	cking 🗸 10 ns 🗘 🗌
 MA Main INB Hatizontal Trigger Ctock Digitizer2: AD07DC SPD-10(Digitizer3: AD08 SPD-1001 Digitizer6: AD012DC SPD-103 Digitizer6: AD012DC SPD-1(Digitizer6: AD012DC SPD-1(Digitizer6: AD012DC SPD-1(Digitizer7: AD014DC SPD-1(Digitizer8: AD014DC SPD-1(Digitizer9: AD014DC SPD-1(<			,

Figure 15: Table content when Trigger node is selected

If Clock is selected in the left panel, the Clock contents are displayed in the right panel.

Setup Math Measure Waveform Graph Utility Image: Setup
Image: Copy Paste Im
File Edit Viewing Column filter Configuration Acquisition
Show digitizers Show channels ^ Setup Measure Graph 1 Graph 2 🗵
✓ DigitizerStudio System Clock
Victoria Construction Digitizer 1: ADQ7DC SPD-10(Digitizer ID Source Reference Input Clock out Impedance Ext ref freq Sampling frequency
Image: Second
Horizontal
Trioner
> O Digitizer2: ADQ7DC SPD-10(
> 🖸 🖸 Digitizer3: ADQ8 SPD-1001
> I Digitizer4: ADQ8 SPD-1003
O Digitizero: ADQ1220 Si P K
> 🖸 O Digitizer8: ADQ14DC SPD-1(
Image: Digitizer9: ADQ14DC SPD-1(
Digitizer10: ADQ1 SPD-1009

Figure 16: Table content when Clock node is selected



1.3.2 Details

On selecting a node from the left tree and Details from the top menu, the properties of that node are displayed in details view. Details mode of viewing is for any bag shown in the left hierarchy. Please note: cells in gray are non-editable.

🛪 DigitizerStudio							_		×
Setup Math Measure Waveform	Graph Utility								
Open Save Save as Copy Paste T	able Details Diagram	Channel Ti	igger lock	Set to default Detect hardware	Reset devices	Stop	Run A	A	Single
File Edit	Viewing	Column filter		Configuration			Acquisitio	n	
Show digitizers Show channels	Setup Measure	Graph 1 Graph 2 🗵							
✓ DigitizerStudio	Name	Value		Range		Туре	Default Va	lue	^
 Acquisition Acquisition Digitizer1: ADQ7DC SPD-10(1 Acquisition mode	MultiRecord ~	MultiRecor	d,Triggered Streaming,Continuo	us Streaming	Enum	MultiRecord	>	
> 🗹 🚳 INA	2 Sampling rate	5 GS/s	[1000 50	00000000] Step 1000		Int64	5 GS/s	>	1000
INX	Acquisition time Acquisition time	1.0000 µs	[3.2e-09 [16 1000	0.2] Step 2e-10 0000001 Step 16		Double Int64	200.0 hs	>	3.2e-0
	5 Num records	1	[1 10000	00] Step 1		Int	1	>	1
Trigger	6 Delay	0 ns 🗘	[-1e-06 0	.858993] Step 3.2e-09		Double	0 ns	>	-1e-06
Clock Clock Digitizer2: ADQ7DC SPD-10(Digitizer3: ADQ8 SPD-1001 Digitizer3: ADQ8 SPD-1003 Digitizer5: ADQ12DC SPD-1(Digitizer5: ADQ12DC SPD-1(Digitizer6: ADQ14DC SPD-1(Digitizer6: ADQ14DC SPD-1(Digitizer9: ADQ14DC SPD-1(Digitizer9: ADQ14DC SPD-1(Digitizer9: ADQ14DC SPD-1(Digitizer10: ADQ1 SPD-1009 Math F1 F1 F2		0 ns	\mathcal{A}	1.000 µs					v

Figure 17: Viewing - Details

Description of the fields:

Name: Name of the property

Value: Value of the property

Range: Valid range of the property

Type: Type of the property

Default Value: default value of the property. On click of the right button of Default Value cell will set the value to default.

Min: Minimum value of the property. Not valid for Enum, String and Boolean property. On click of the right button of Min cell will set the value to minimum value.

Max: Maximum value of the property. Not valid for Enum, String and Boolean property. On click of the right button of Max cell will set the value to maximum value.

Grain: Grain of the property. Not applicable to string and enum property.

Unit: unit of the property. Not applicable to string and enum property.



1.3.2 Diagram

Diagram view is applicable only for Trigger, clock and channels. User can change the value of property from Diagram mode. To modify the value dropbox, checkbox, textbox or button are available based on the property type. Properties are visible or hidden based on the other property values.



Figure 18: Viewing - Diagram

1.4 Custom Filter

A configuration can be filtered by Channel, Trigger, Horizontal or Clock. Custom filter can be applied only to the Table mode of Viewing. Customer filter is enabled only when Acquisition or Digitizer is selected from the left hierarchy.



1.4.1 Channel

If Channel is selected, all properties of vertical will be displayed.

TigitizerStudio								_	
Setup Math Measure Waveform	m Graph Utility	y							
Open Save Save as Copy Paste	Table Details	Diagram	Channel C Horizontal	Trigger Clock S	et to default Dete	ect hardware Rese	C t devices	Stop Run	Auto Single
File Edit	Viewing)	Column f	iter	Co	onfiguration		Acqu	iisition
Show digitizers Show char ^ S	etup Measure	Graph 1 Gra	aph 2 🗵						
DigitizerStudio Acquisition	System								^
V Digitizer1: ADQ7D									Digital gain v
> 🗹 🐼 INA 🔰 1	Digitizer1 IN	A		1 Vpp	0 mV 🗘	50 ohm	\checkmark	1.000 🗘	1.000 V
🐼 INX 🛛 2	IN	NB		1 Vpp	0 mV 🗘	50 ohm	\checkmark	1.000 🗘	1.000 V
> 🗹 🐼 INB 🛛 3	Digitizer2 IN	XIX		1 Vpp	0 mV 🗘	50 ohm	\checkmark	1.000 🗘	1.000 V
Horizontal 4	Digitizer3 C	1		5 Vpp 🗸 🗸	0 mV 🗘	50 ohm	\checkmark	1.000 🗘	5.000 V
Trigger 5	C	2		5 Vpp 🗸 🗸	0 mV 🗘	50 ohm	\checkmark	1.000 🗘	5.000 V
Clock 6	C	3		5 Vpp 🗸 🗸	0 mV 🗘	50 ohm	\checkmark	1.000 🗘	5.000 V
> 🗹 🔵 Digitizer2: ADQ7D 7	C	:4		5 Vpp 🗸 🗸	0 mV 🗘	50 ohm	\checkmark	1.000 🗘	5.000 V
V 🗹 🔵 Digitizer3: ADQ8 S 🛛 8	C	5		5 Vpp 🗸 🗸	0 mV 🗘	50 ohm	\checkmark	1.000 🗘	5.000 V
> 🗹 🖾 C1 9	C	6		5 Vpp 🗸 🗸	0 mV 🗘	50 ohm	\checkmark	1.000 🗘	5.000 V
> 🗹 🖸 C2 10	C	7		5 Vpp 🗸 🗸	0 mV 🗘	50 ohm	\checkmark	1.000 🗘	5.000 V
> 🗹 🖸 C3 🛛 11	C	8		5 Vpp 🗸 🗸	0 mV 🗘	50 ohm	\checkmark	1.000 🗘	5.000 V
> 🗹 🐼 C4 🛛 12	Digitizer4 C	1		5 Vpp ∨	0 mV 🗘	50 ohm 🗸 🗸	\checkmark	1.000 🗘	5.000 V
> 🗹 🐼 C5 13	C	2		5 Vpp ∨	0 mV 🗘	50 ohm 🗸 🗸	\checkmark	1.000 🗘	5.000 V
> 🗹 🖾 C6 🛛 14	C	3		5 Vpp 🗸 🗸	0 mV 🗘	50 ohm 🗸 🗸	\checkmark	1.000 🗘	5.000 V
> 🗹 🐼 C7 🖕 15	C	:4		5 Vpp 🗸 🗸	0 mV 🗘	50 ohm 🗸 🗸	\checkmark	1.000 🗘	5.000 V 🗸
<									>

Figure 19: Channel Filter

1.4.2 Trigger

If Trigger is selected, all properties of Trigger will be displayed.

🛪 DigitizerStudio										- 🗆 X
Setup Math Measure Waveform	m Graph Ut	ility								
Open Save Save as Copy Paste	Table Detai	Is Diagram	Channel	Trigger	Set to de	efault Detect ha	ardware Reset de	vices	Stop Run	Auto Single
File Edit	Viewi	ng 🛛	C	olumn filter		Config	uration		Acc	luisition
Show digitizers Show char ^ S	etup Measure	Graph 1	Graph 2 🗵							
✓ DigitizerStudio	System									
 Acquisition Image: Comparison of the second se										
> 🛛 🔘 INA 🔢 1	Digitizer1	Software	~							
🖾 INX 2	Digitizer2	Internal	~							
> 🗹 🖾 INB 🛛 🗳	Digitizer3	BackPlane	MLVDS	~						
Horizontal 4	Digitizer4	TRIG	V None	~			500 mV 🗘			High 🗸
Trigger 5	Digitizer5	SYNC	~							
Clock	Digitizer6	Channel	✓ Edge	~	A	×		0 mV 🔇) 10 mV 🕄	
> 🗹 🔾 Digitizer2: ADQ7D 7	Digitizer7	Software	~							
V 🔽 🔵 Digitizer3: ADQ8 5	Digitizer8	Software	~							
> 🗹 🖾 C1 9	Digitizer9	Software	~							
> 🗹 🖾 C2 🔤	Digitizer10	Software	~							
> 🗹 🖾 C3										
> 🗹 🖾 C4										
> 🗹 🖾 C5										
> 🗹 🖾 C6										
> 🗹 🖾 C7 🗸 🗸										
< > <										>



1.4.3 Horizontal

If Horizontal is selected, all properties under Horizontal will be displayed.



TigitizerStudio												-		×
Setup Math Measure Wa	veforn	n Graph U	tility											
Open Save Save as Copy F	Paste	Table Deta	ils Diagram	Cha Hor	annel 🗌 Trig rizontal 🗌 Clo	ger ck Set to	 defa 	ault Detect hardwa	are Reset devices	3	Stop	Run	Auto) Single
File Edi	t	View	ing		Column filter			Configuratio	n			Acqu	sition	
Show digitizers Show char 4	Se	etup Measure	Graph 1 Gra	aph	2 📕									
✓ DigitizerStudio		System				Horiz	zonta	al						
 Acquisition Q Digitizer1: ADQ7D 														
> 🗹 🚳 INA	1	Digitizer1	MultiRecord	×	5 GS/s 🗘	1.0000 µs	Ŷ	5.008 kS 🗘	1 0	0 ns	0			
🖾 INX	2	Digitizer2	MultiRecord	\sim	10 GS/s 🗘	201.6 ns	Ŷ	2.016 kS 🗘	1 0	0 ns	÷			
> 🖂 🚳 INB	3	Digitizer3	MultiRecord	\sim	1 GS/s 🗘	1.000 µs	Ŷ	1 kS 🗘	1 🗘	0 ns	0			
Horizontal	4	Digitizer4	MultiRecord	\sim	1 GS/s	1.000 µs	Ŷ	1 kS 🗘	1 0	0 ns	0			
Trigger	5	Digitizer5	MultiRecord	\sim	1 GS/s	1.000 µs	Ŷ	1 kS 🗘	1 0	0 ns	0			
Clock	6	Digitizer6	MultiRecord	\sim	1 GS/s	1.000 µs	Ŷ	1 kS 🗘	1 0	0 ns	0			
> 🗹 🔾 Digitizer2: ADQ7D	- 7	Digitizer7	MultiRecord	\sim	1 GS/s	1.000 µs	Ŷ	1 kS 🗘	1 0	0 ns	0			
V 🗹 🔿 Digitizer3: ADQ8 S	8	Digitizer8	MultiRecord	\sim	500 MS/s 🗘	2.000 µs	¢	1 kS 🗘	1 0	0 ns	0			
> 🗹 🐼 C1	9	Digitizer9	MultiRecord	\sim	500 MS/s 🗘	2.000 µs	Ŷ	1 kS 🗘	1 0	0 ns	Ŷ			
> 🗹 🐼 C2	10	Digitizer10	MultiRecord	~	1 GS/s 🗘	1.000 µs	Ŷ	1 kS 🗘	1 0	0 ns	÷			
> 🗹 🖾 C3														
> 🗹 🖾 C4														
> 🗹 🐼 C5														
> 🗹 🖾 C6														
> 🗹 🖸 C7	1													
< >				_			_							

Figure 21: Horizontal Filter

1.4.4 Clock

If Clock is selected, all properties under Clock will be displayed.

✤ DigitizerStudio								-		<
Setup Math Measure Waveform	Graph Ut	ility								
Open Save Save as Copy Paste	Table Deta	ils Diagram	Channel] Trigger] Clock	Set to default Dete	ect hardware Rese	C et devices	Stop Run	Auto Sing	jle
File Edit	View	ing	Column fi	ilter	Co	onfiguration		Acqui	isition	
Show digitizers Show char ^ Se	tup Measure	Graph 1 G	Graph 2 📧							
✓ DigitizerStudio										
 Acquisition 					Clock out			Sampling frequency		
> 🖸 🔘 INA 1	Digitizer1	Internal V	Jitter V	CLK ~	· 🗌	200 ohm 🗸 🗸	10 MHz V	5 GHz		
🐼 INX 2	Digitizer2	Internal ~	Internal V			50 ohm \sim	10 MHz	10 GHz		
> 🗹 🚳 INB 🛛 3	Digitizer3	Internal ~	Internal V			50 ohm \sim	10 MHz	1 GHz		
Horizontal 4	Digitizer4	Internal ~	Internal V			50 ohm \sim	10 MHz	1 GHz		
Trigger 5	Digitizer5	Internal ~	Internal V			50 ohm 🗸 🗸	10 MHz	1 GHz		
Clock 6	Digitizer6	Internal ~	Internal ~			50 ohm 🗸 🗸	10 MHz	1 GHz		
> 🗹 🔵 Digitizer2: ADQ7D 🛛 7	Digitizer7	Internal ~	Internal V			50 ohm \sim	10 MHz	1 GHz		
V 🗹 🔵 Digitizer3: ADQ8 S 🛛 8	Digitizer8	Internal ~	Internal V			50 ohm 🗸 🗸	10 MHz	500 MHz		
> 🗹 🚳 C1 9	Digitizer9	Internal ~	Internal V			50 ohm \sim	10 MHz	500 MHz		
> 🗹 🖸 C2 10	Digitizer10	Internal ~	Internal V			50 ohm 🗸 🗸	10 MHz	1 GHz		
> 🗹 🚳 C3										
> 🗹 🚳 C4										
> 🗹 🚳 C5										
> 🗹 🚳 C6										
> 🗹 🚳 C7 🗸										
< >										

Figure 22: Clock Filter



1.5 Configuration

1.5.1. Set to Default

On click of this button, all properties of the application are set to the default value. It will make the setup same as it was started for the first time.

1.5.2. Detect Hardware

This detects a hardware connected to the host and adds or removes it from the tree. For instance, based on the current status of the system, it will add or remove hardware from the system.

1.5.3. Reset Devices

On click of this button, all connected devices will reset.

2. Math

Math tab in the Digitizer Studio has the functionalities below:



Figure 23: Math



2.1 Add

There are three Math operations supported – FFT, Average and Record Selector. The Add function is used to add any of the operations on the selected source. Math node (F1, F2, etc) is added to left tree. By default, FFT is added with the first channel of the first digitizer as source. User can choose the Math node(F1) from left tree and from the detail mode can change the source and operator.

2.2 Remove

The Remove function is used to remove any of the operations FFT, Average or Record Selector that have been applied to the selected source. The selected node from the left tree will be removed when Remove button is clicked. If the Math node (F1, F2) is not selected from the left tree, the button will not affect anything.

2.3 Remove All

The Remove All function is used to remove all the Math nodes (FFT, Average and Record Selector) added in the system.

3. Measure

Measure tab in the Digitizer Studio has the functionalities below.

🛪 DigitizerStudio						-	- C) ×	ĸ
Setup Math Measur	re Waveform G	raph Utility							
Add Add standard R	Remove Remove all				Stop	Run	Auto	Sing	gle
Measu	ure					Acq	uisition		
Show digitizers	Setup Measure	Graph 1 Graph 2 🗷 Gra	aph 3 🔟 🛛 Graph 6						
Clock				Default Value				Unit	
> 🗹 🔾 Digiti	1 Add	Add							
	2 Remove	Remove							
	3 Remove all	Remove all							
> 🗹 🔵 Digiti	4 Standard source	Acquisition.Digitizer1.INA							
✓ Math	5 Standard tone	Single	 Single,Two,Other 	Single >					
	6 Add all standard	Add all standard							
> P1									
> P2									
> P3									
> P4									
> P5									
> P6									
> P7									
> P8									
> P9									
Memory									
					_	_	_	_	_

Figure 24: Measure

The below three standard tone analysis are supported by the Teledyne Digitizer simulator:



Analysis Type	Description
Single-tone	It supports analysis of codes, DC Power, range, fundamental tone, SFDR, SNDR, THD and SNR.
Two-tone	It supports analysis of codes, DC Power, range, fundamental tone1 and 2, SFDR and SNDR
Other	It supports analysis of codes, DC Power, range and Power Max.

3.1. Add

This functionality is used to add the measured analyses. By default it adds Codes Measure with the first channel of the first digitizer as source. User can change the measure by changing operator from detail list.

2.4 Add Standard

This functionality adds the measures that are supported by the Teledyne Digitizer simulator. These measures are based on the standard tone selection as indicated in the *Table1* above.

3.2. Remove

This functionality removes a selected measure from Hierarchy Tree view and measure table. On click of the button it removes measure node which is selected either from left tree or from measure table.

3.3. Remove All

This functionality removes all the measures from Hierarchy Tree view and measure table.

3.4. Measure Tab

🖚 DigitizerStudio				-		\times
Setup Math Measure Waveform Graph Utility	,					
				•	A	M
Add Add standard Remove Remove all			Stop	Run	Auto	Single
Measure				Acquis	sition	
Show digitizers ^ Setup Measure Graph 1	Graph 2 🗵	Graph 3 🗵 🛛 Graph 6 💌				
Clock Name Source						
Digiti 1 P1 Acquisition.Digitizer1.INA	Codes	Codes are between(0 -> 1007) Length = 1	1008			
Digiti 2 P2 Acquisition.Digitizer1.INA	Codes	Codes are between(0 -> 1007) Length = 1	1008			
> 🗹 🔾 Digiti 🛛 3 P3 Math.F1	DC Power	 DC Power is -36.1406.2f dbFS. 				
> Digiti 4 P4 Acquisition.Digitizer1.INA	🖸 Range	 Range (history): (0 -> 1007) 				
✓ Math 5 P5 Math.F1	Fund tone	 Fund. tone: -69.5762 dBFS at frequency 1 	46.484 MH	z		
> F1 6 P6 Math.F1	SFDR	 SFDR 5.98376 dBc limiter at frequency 29 	2.969 MH	:		
V Measure 7 P7 Math.F1	SNDR	SNDR 0.29 dB, ENOB -0.24b, ENOB(nor	m) 6.76b			
8 P8 Math.F1	🖸 THD	 THD -1.20 dB (up to HD7) 				
P3 9 P9 Math.F1	SNR	SNR 7.95 dB, ENOB (SNR) 1.03b				
> P4 > P5 > P6 > P7 > P7 > P8 > P9 Memory ¥						
				_	_	>

Figure 25: Measure Tab

The Measure tab lists out all the measures available. The table has below columns:

1 Name:

This displays name of the measure. For instance, in above image *Name* of the measures ae P1, P2, P3.



2 Source:

Source displays the source of the measure. User can select the source of a measure by clicking on the right button in a cell.

3 Operator:

Operator displays the operator of measure. User can change the operator of the measure.

4 Value:

Value displays the value of measure.

5 Status:

Status displays the status of a measure in case the values are not calculated.

4. Waveform

Waveform tab in the Digitizer Studio has the functionalities below:



Figure 26: Waveform

4.1.File

4.1.1. Open

Open functionality is used to open any ASCII, Binary, HDF5 or TRC waveform file with or without a header. When file is opened, one memory node creates and appears in left tree view under Memory node. Plot of the memory automatically added in the focused graph. If the focused tab is not Graph, it is added in Graph 1.



4.1.2. Save

Save is used to save all the digitizers waveform data into file. The file type can be chosen from available types described in 1.1.4. The user gets the option to include header or not. The waveform data will save in ASCII with header included by default.

4.1.3. Save As:

Save As is used to save waveform data at desired destination location.

4.1.4. File Types

The File Types that can be used to save the digitizer waveform are:

- i. ASCII
- ii. Binary
- iii. HDF5
- iv. TRC

One can include the data with Header or without Header by checking or unchecking the Header checkbox.

4.2. Auto Save

4.2.1. Auto Save

If Auto Save has been checked during Acquisition, files for all digitizers gets saved at C:\SP Devices\DigitizerStudio\Waveform.

4.2.2. Data Overwrite

If Data Overwrite is selected, the same autosaved file gets overwritten. If the Data Overwrite option is not selected, a new file with an incremental index number will be generated every time.

4.2.3. Reset Counter

The Reset Counter option is used to reset the counter of the file name.

C:*SP Devices**DigitizerStudio**Waveform**yyyy_mm_dd_hh_mm_ss**Digitizer#* when the Data Overwrite is not enabled. It resets the index of Auto Save.

5. Graph

Graph tab in the Digitizer Studio simulator has the functionalities below:



5.1. Graph

5.1.1. Add

To add a graph, click on the Add button. It adds one more tab – Graph2 to the existing tab Graph1.



Figure 27: View multiple graph

5.1.2. Remove

To remove a graph, click on the close button on the right corner of that tab.



Figure 28: Remove Graph



5.2. View

5.2.1. Add

There are below ways to add channel in Graph for viewing. The pre-requisite to view the graph is acquisition should be done to capture the data.

- Drag and drop channel from the left tree to the middle of the graph tab.
- Right click on channel from left tree and select option View in Graph. If there is only one graph tab
 – "Graph 1" exist, it adds channel to Graph-1. If there are multiple Graph tabs are available, it will
 open dialog for user to choose the Graph as shown in below pictures.

🛪 DigitizerStudio					-	
Setup Math Measure Waveform Graph	Utility					
Add Show Markers Horizontal Horizontal Zoom In Zoom Out	orizontal Position	eset Vertical Zoom In	Vertical Positi Vertical Zoom Out	ion •	Stop Run	Auto Single
Graph Cursors	Zo	om			Acquis	sition
Show Digitizers Show Cha A Setup Measu	ire Graph 1 Grap	h2 🔟				
✓ DigitizerStudio ✓ Acquisition ✓ O Digitizer1: ADQ8 ✓ O Digitizer1: ADQ8 ✓ O Digitizer1: ADQ8 ✓ O C1 ✓ O C2 ✓ View In Graph	2 mV –					
 ▷ I I I I I I I I I I I I I I I I I I I	2 mV –					
> 🗹 ඟ C8 Horizontal Trigger Clock	1 mV -					
 ✓ Ø Digitizer2: ADQ8 > Ø Ø C1 > Ø Ø C2 > Ø Ø C3 	0 mV -					
> \ @ @ C4 > \ @ @ C5 > \ @ @ C6 > \ @ @ C7 > \ @ @ C8	0 mV –					
Horizontal	109.56 ns	109.58 ns	109.6 ns	109.62 ns	109.64 ns	109.66 ns
Trigger	Data Tima	Sourco		Titlo		
Clock 6339 Information	24/02/2020 00:29:3	B Property	GUI.Hierarchy.Width	The		198 pixe
 ✓ O Digitizers. ADd8 ✓ O C1 	24/02/2020 00:29:4	1 Property	GUI.Hierarchy.Width			214 pixe ∨

Figure 29: Add view when only one graph



★ DigitizerStudio		- 🗆 ×
Setup Math Measure Wavefo	rm Graph Utility	
Show Cursors	Horizontal Position 💮 🔽 Vertical Position	
Add Show Markers Horizontal	Horizontal O Beset Vertical O Stor	Run Auto Single
Zoom In	Zoom Out Zoom I Zoom In Zoom Out	Acquisition
Graph Cursons	20011	Acquisition
Show Digitizers Show Char S	Setup Measure Graph 1 Graph 2 🔯	
Acquisition	Channel Viewed	
V Digitizer1: ADQ8		
> 🗹 🖾 C1		
> 🗹 🖸 C2	The Grand Selection X	
> 🗹 🚳 C5	Select graph to add channel	
> 🗹 🖾 C6	Graph 1	
> 🗹 💿 C7	Graph 1 Graph 2	
Horizontal		
Trigger		
Clock		
V Digitizer2: ADQ8		
> 🗹 🚳 C3		
> 🗹 🖾 C4		
> 🗹 ඟ C5		
		IĮ
Horizontal		
Trigger	ine Type Date Time Source Title	^
V I Digitizer3: ADO8 64	44 Information 24/02/2020 00:51:40 Property GUI.Top	58 pixel
> 🗹 🚳 C1 64	15 Information 24/02/2020 00:51:40 Property GUI.WindowState	Window ~

Figure 30: Graph Selection

5.2.2.Remove

To remove a view, right click on the view/channel and click on View off.



Figure 31: Remove View



5.2.3. Enable View

Views can be enabled to show the plot in graph using the checkbox before the view path in the graph list.



Figure 32: Enable and Disable View

5.2.4. Disable View

Views can be disabled to hide the plot in graph using the checkbox before the view path in the graph list. In above image the first channel is disabled so it's plot is not visible in Graph.

5.2.5. Record Index

When number of record for the channel is more than 1, Record index column appears in the Views. User can change the record index and plot will change according to record index.



🛪 DigitizerStudio			– 🗆 X
Setup Math Measure Waveform Graph Utility			
Open Save Save as Copy Paste Table Details Diagram	Channel Trigger Horizontal 🗸 Clock	Set to default Detect hardware Reset devices	Stop Run Auto Single
File Edit Viewing	Column filter	Configuration	Acquisition
Show digitizers Show chann Setup Measure Graph 1	250 mV —		
 ✓ Digitizerstudio ✓ Acquisition ✓ Oigitizer1: ADQ12D ✓ Ø B Horizontal Trigger Clock ✓ Math > F1 > F2 > Measure Memory 	230 MV 187 mV 125 mV 62 mV 0 mV -62 mV -125 mV -187 mV -250 mV		
v	0 ns 100 ns	200 ns 300 ns 400 ns 500 ns 600 ns	700 ns 800 ns 900 ns 1 us

Figure 33: Channel Record Index

5.2.6. Color

Multiple views in graph list are shown in graph are identified by their color. Color of view can be changed on clicking on the color picker right next to the view name in graph list.



Figure 34: Color



5.3. Cursors

5.3.1. Show Cursors

When Show Cursors is checked, it will display vertical and horizontal cursors on plotted channel as shown in below image. The values on the X and Y axes and cursor information are displayed below the plot. The cursors can be moved to see the values of point on plot and the different cursor values are changed accordingly in bottom panel.



Figure 35: Show Cursor

5.3.2. Reset Cursors

On click of this button, cursor position will reset default position i.e. 1/4th and 3/4th of graph.



5.4. Markers

5.4.1. Show Global Markers

Markers are for FFT only. When FFT plot is plotted in Graph, user can enable markers to see harmonics marker, SFDR and Fundamental Tone values calculated on FFT. When enabled, markers for all FFT are shown in graph.



Figure 36: Show Markers

5.4.2. Local Marker

User can also enable/disable marker for individual FFT from Setup table. When show markers in graph is enabled and marker is disabled for a particular FFT from Setup table, then markers for all FFT are visible in graph except for that particular FFT.

TigitizerStudio					- 0	×	<
Setup Math Measure Wave	eform Graph Ut	ility					
Add Show cursors Cursor Add Show markers Reset Cursor Graph Cursors	Horizontal Horizont zoom in zoom of	Horizontal position al	Reset zoom in zoom out	Stop	Run Auto) Sing	le
Show digitizers Show c ^ S	Setup Measure	Graph 1					
Triagor							
Clock	Window	Rectangular ~	Blackman,BlackmanHarris,Hamming,Hanning,FlatTop,Rect	Enum	Rectangular	>	
	Actual size	512	$262144, 131072, 65536, 32768, 16384, 8192, 4096, 2048, 1024, \ldots$	Enum	1024	>	
	Max size	1024 ~	$262144, 131072, 65536, 32768, 16384, 8192, 4096, 2048, 1024, \ldots$	Enum	1024	>	
	Nyquist zone	Nyquist Zone1 ~	Nyquist Zone1,Nyquist Zone2	Enum	Nyquist Zone1	>	
	Vertical start	-130 🗘	[-200 10] Step 1	Int	-130	> -2	200
> 🖸 🚳 C4	Vertical stop	5 \$	[-170 10] Step 1	Int	5	> -1	170
> 🖸 🚳 C5 7	Unit	dBFS Y	dBFS,dBV/RtHz	Enum	dBFS	>	
	Harmonics marker	7 0	[2 28] Step 1	Int	7	> 2	1
	SFDR width	1.0 %	[1 100] Step 0.1	Double	1.0 %	> 1	
	0 SNDR width	500 m%	[0.5 100] Step 0.1	Double	500 m%	> 0	.5
Horizontal	Enable marker		False, True	Boolean	False	>	
Trigger Clock Math FFT FFT Measure Memory Y					Activate	Wi	inc
< > <					Go to Setti	ngs t	[()

Figure 37: Enable local Marker settings



5.5. Zoom

5.5.1. Horizontal Zoom In

On pressing Horizontal Zoom In, it will zoom in the horizontal scale and hence the plot will be zoomed-in horizontally.



Figure 38: Horizontal Zoom In

5.5.2. Horizontal Zoom Out

On pressing Horizontal Zoom Out, it will zoom out the horizontal scale and hence the plot will be zoomedout horizontally.



Figure 39: Horizontal Zoom Out

32



5.5.3. Horizontal Position

On shifting the slider on the Horizontal Position, it shifts the graph on the X axis.



Figure 40: Horizontal Position

5.5.4. Reset Zoom

Reset Zoom resets the graph scale to the original scale.

5.5.5. Vertical Zoom in

On pressing Vertical Zoom In, it will zoom in the vertical scale and hence the plot will be zoomed-in vertically.



Figure 41: Vertical Zoom-In



5.5.6. Vertical Zoom Out

On pressing Vertical Zoom Out, it will zoom out the vertical scale and hence the plot will be zoomed-out vertically.



Figure 42: Vertical Zoom-out

5.5.7. Vertical Position

On shifting the slider on the Vertical Position, it shifts the graph on the Y axis.



Figure 43: Vertical Position



5.5.8. Drag Rectangle

User can draw a rectangle on plotted graph by left click and dragging the mouse. The plot under the rectangle will be zoomed in and dots for each point will be displayed if the points are less under the rectangle.



6. Utility

Utility tab in the Digitizer Studio has the functionalities below:

6.1. Window

6.1.1. Tabbed

If the Tabbed option is checked, all the windows will be shown in single window with different tabs as shown in below image. If the Tabbed option is checked, Cascade, Tile Horizontally and Tile Vertically are disabled.

Setup Math Measure Waveform Graph Utility Image: Tabbed <) Single
Tabbed Cascade Tile horizontally Tile vertically Preferences About Help) Single
Window Utility Acquisition	
Show digitizers Show channels ^ Setup Measure Graph 1 Graph 2 🖂	
DigitizerStudio Name Value Range Type Default Value Min Max Grain	
A cquisition(Simulator) Software platform DigitizerStudio String DigitizerStudio	
2 Software revision 1.0.0 String 1.0.0 >	
3 Setup revision 1.0 String 1.0 →	
Horizontal 4 API revision 52407 String	
Trigger 5 Build number 1 String 1 >	
Clock > Digitizer1: ADQ7DC SPD-1 > O Digitizer2: ADQ7DC SPD-1 > O Digitizer3: ADQ8 SPD-100 > O Digitizer4: ADQ8 SPD-100 > O Digitizer4: ADQ12DC SPD- > O Digitizer6: ADQ12DC SPD- > O Digitizer6: ADQ12DC SPD- > O Digitizer6: ADQ12DC SPD-	>
► O Diditizer AbolitAc GPD Line Type Date Time Title Message	
Digitizer10: ADO14DC SPT 1 Information 27/04/2020 21:53:41 Opening Setup File C/SP Devices/DigitizerStudio/Setup/	
Math 2 Information 27/04/2020 21:53:42 Opening Setup File C:/SP Devices/DigitizerStudio/Setup/	
Measure	
All SetupManager ConfigMgr Property	

Figure 44 : Utility - Tabbed

If the Tabbed option is not checked, setup, measure, Graph1 will be shown in different windows.

6.1.2. Cascade

The Cascade utility is used to view the cascaded arrangement of windows in the Digitizer Studio. The 3 windows Setup, Measure and Graph 1 have been cascaded below.



Figure 45: Utility - Cascade



6.1.3. Tile Horizontally

The Tile Horizontally utility is used to view the horizontal layout of multiple windows in the Digitizer Studio. The 3 windows Setup, Measure and Graph 1 have been displayed in a horizontal layout below

TigitizerStudio								– 🗆 X
Setup Math Measure Tabbed Cascade Show digitizers Sho	Waveform Gr	vertically	eferen	nces About Utility Measure	Pelp	• *	Sto Graph 1	Run Auto Single
 Acquisition(Simul: Acquisition(Simul: Digitizer1: A A B Horizontal Trigger Clock Math Measure Memory 	Name Software platform Software revision Setup revision API revision Build number	Value DigitizerStudio 1.0.0 52407 1	>	Name 1 P1 2 P2 3 P3 4 P4 5 P5 6 P6 7 P7 8 P8	Acquisition.[Math.F1 Acquisition.[Math.F1 Math.F1 Math.F1 Math.F1 Math.F1	Source Digitizer9.A Digitizer9.A	new: ^	200 mV - 150 mV - 100 mV - 50 mV - -50 mV - -100 mV - -100 mV - -200 mV - -250 m
	Line Type	Date Tir	me		Tit	le		Me
	1 Information 2 Information <	27/04/2020 22:36 27/04/2020 22:36	6:52 6:53	Opening Setup	File	11-14- 11-		C:/SP Devices/DigitizerSl C:/SP Devices/DigitizerSl v
< >	All Property	SetupManager	Confi	igMgr ADQ	AcqMgr	Math Me	asure	

Figure 46: Utility - Tile Horizontally

6.1.4. Tile Vertically

The Tile Vertically utility is used to view the vertical layout of multiple windows in the Digitizer Studio. The 3 windows Setup, Measure and Graph 1 have been displayed in a vertical layout below

TigitizerStudio					-	- 🗆 ×
Setup Math Measure	Waveform	Graph Utility				
Tabbed Cascade Til	e horizontally T	ile vertically	es About He Utility	2 alp	Stop Run	Auto Single
Show digitizers Sho	Setup					
 DigitizerStudio Acquisition(Simul: 	Name Software platfo	Value m DigitizerStudio		Range		Type ^
✓ ✓ O Digitizer1: / > Ø A	Software revisi	on 1.0.0				String 1
> 🚳 B	 Setup revision 	1.0				String 1 v
Horizontal Trigger	Measure					
> Math						S
> Measure	1 P1	Acquisition.Digitizer9.A	Codes	~		Source is not Av
Memory	2 P2	Math.F1	DC Power	V No Data		
	3 P3	Acquisition.Digitizer9.A	Range	~		Source is not Av
		Moth E1	F2 Eurol tono	~		EET rocult bac r
	Graph 1					
	Views			$\land \land \land$	$\wedge \wedge \prime$	$\sim \sim $
	Digitizer1.A	=£il II¥ =	$\sim \sim \sim$	$\sim \sim \sim$	$\checkmark \lor \lor$	$\sim \sim$
		= <u>₹</u> \$8 Hiv =	·	1	i	
		× 0	ns 200 ns	400 ns	600 ns 800)ns 1us

Figure 47: Utility – Tile Vertically



6.2. Utility

6.2.1. Preference

Preference menu opens a new dialogue box.

- Show Property type: In detail setup view, user can hide/show "Type" column using this preference.
- Set fixed scale divisions: Graph can be visible in Fixed division mode using this preference.

🛪 DigitizerStudio		- 🗆 X
Setup Math Measure	re Waveform Graph Utility	
Tabbed Cascade	Tile horizontally Tile vertically Preferences About Help Stor	P Run Auto Single
Show digitizers Sho V DigitizerStudio V Acquisition(Simul: V O Digitizer1: / > O A + O Digitizer1: / > O A + Orizontal Trigger Clock > Math > Measure Memory	Setup The DigitizerStudio X Software plat Details Details Software revis Show property type Image: Constraint of the set of	String C String 1 String 1 Str

Figure 48: Utility – Preference

6.2.2. About

About button will provide information of Digitizer studio application.



Figure 50 : Utility - About



7. Acquisition

🛪 DigitizerStudio							_		×
Setup Math Measure V	Waveform Graph U	Itility							
Add Remove Remove all				-		Stop	Run	Auto	Single
Math							Acquisi	tion	
Show digitizers Show cha	Setup Measure	Graph 1 Graph 2	2 💌						
✓ DigitizerStudio	Name				Default Value				Max
Acquisition	1 Software platform	DigitizerStudio		String	DigitizerStudio				
	2 Software revision	1.0.0		String	1.0.0				
Result	3 Setup revision	1.0		String	1.0				
DBS	4 API revision	52407		String					
🗸 🐼 B	5 Build number	1		String	1				
Result DBS Horizontal Trigger Clock	٢					_			>
Math	Line Type								м ^
Memory	88 mormation 27	104/2020 23.39.55	GOLLEIL			4	227 pixer		
	89 Information 27	/04/2020 23:39:55	GUI.Left			2	228 pixel		
	90 Information 27	/04/2020 23:39:55	GUI.Left			2	230 pixel		
	91 Information 27	/04/2020 23:39:55	GUI.Left			2	231 pixel		- 11
	92 Information 27	/04/2020 23:39:55	GUI.Left			2	232 pixel		~
	<								>
< >	All Property Set	tupManager Confi	igMgr						

Acquisition menu in the Digitizer Studio has the functionalities below:

Figure 51 : Acquisition

7.1. Single

The Single button is used to capture a single batch from the connected and enabled digitizer. If a trigger condition has not occurred and the user presses "Single" again, it will initiate software trigger and capture data.

7.2. Run

The Run button is used to capture continuously until the "Stop" button has been pressed. If channels are plotted in graph, plots will be updated continuously as new data arrives from the digitizer.

7.3. Auto

The Auto button is used to capture continuously until the "Stop" button has been pressed. The difference between Run and Auto is if a trigger condition doesn't occur within 200ms, it will initiate software trigger and capture data.

7.4. Stop

The Stop button is used to stop the operations of the Run button and the Auto button.



8. Context Menu of Hierarchy

8.1. Acquisition Context Menu

The context menu for Acquisition has the functionality *Set to Default*. This option allows the user to set the properties of Acquisition and its children to its default value.



Figure 52: Acquisition Context Menu



8.2. Digitizer Context Menu

The context menu for Digitizer has the functionality *Set to Default*. This option allows the user to set the properties of the Digitizer and its children to its default value.



Figure 53 : Digitizer Context Menu



8.3. Channel Context Menu

The context menu for Channel has following options:

- View in Graph This functionality is used to view the selected channel in a graph.
- Set to Default This functionality is used to set the properties of the selected channel and its children to its default value.
- Save To Memory This functionality is used to save the channel configuration to the memory.

DigitizerStudio	Orrela 1000					- 0	×
Setup Main Measure Waveform	Graph Otility Channel 🗹 Trigger Horizontal 🗹 Clock	Table Details D	Set To Default Detect Hardware			Stop Run Auto	N Single
File Edit	Column Filter	Viewing	Configuration			Acquisition	
Show Digitizers Show Channels	A Setun Measure	Granh 1 Granh 2	Conliguration				
V DigitizerStudio V Acquisition V	Name	Source	Operator	Value	Status		
> 🗹 🚳 C4	Line	Туре	Date	Time	Source	Title	^
> 🗹 🖾 C5 > 🗹 🖾 C6	129 130	Information Information	11/03/2020 11/03/2020	10:34:10 10:34:12	Property Property	GUI.WindowState GUI.Hierarchy.SelectedBag	
> 🗹 🚳 C7	131	Information	11/03/2020	10:37:50	Property	GUI.WindowState	
> 🗹 🖾 C8	132	Information	11/03/2020	11:04:10	Property	GUI.WindowState	
Horizontal	133	Information	11/03/2020	11:04:12	Property	GUI.Hierarchy.SelectedBag	
Trigger	134	Information	11/03/2020	11:07:01	Property	GUI.WindowState	
Clock	135	Information	11/03/2020	11:12:13	Property	GUI.WindowState	
Digitizer3: ADQ8 SPD-1003	136	Information	11/03/2020	11:12:15	Property	GUI.Hierarchy.SelectedBag	×
> 🗹 🚳 C1	All ConfigMgr	Math Property Setup	Manager				`

Figure 54: Channel Context Menu



9. Custom Firmware

9.1 ATD Firmware

Properties related to ATD firmware are added in Digitizer as shown in below image.

🛪 DigitizerStudio										- [2	×
Setup Math Measure Waveform Gra	ph I	Jtility										
Add Remove Remove all									Ste	op Run	Auto	Single
Math										Acquisi	tion	
Show digitizers Show channels	<u>^ (</u>	Setup Mea	sure Graph 1									
✓ DigitizerStudio			Name	\ \	/alue		Range		Туре	Default Va	lue	Mir
 Acquisition(Simulator) Digitizer1: ADOZDC SPD 1001 		Model		ADQ7DC					String	ADQ7DC	>	
	2	Option		-2CH					String	-2CH	>	
> 🗹 🚳 INA	3	Serial numb	er	SPD-1001					String	SPD-1001	>	
	4	Firmware		FWATD					String	FWATD	>	
> 🗹 🚳 INB	5	Firmware re	vision	0000					String	0000	>	
Horizontal	6	Operating m	iode	Multirecord	i ~	Multirecord, Streaming)		Enum	Multirecord	>	
Clock	7	Num chann	el	3		[0 2147483647] Step	p 1		Int	3	(0
Digitizer2: AD07DC SPD-1002	8	Num active	channel	2		[0 2147483647] Step	p 1		Int	2	> (0
Digitizer2: AD07DC SPD 1002	9	Enable			\checkmark	False, True			Boolean	True	>	
	1(Status		0		[0 2147483647] Step	p 1		Int	0	(0
	1	Error							String			
		FWATD Wfa	status						String			
Digitizer6: ADQ12DC SPD-1006		FWATD Wfa	progress percent	0		[0 2147483647] Step	p 1		Int	0	(0
Digitizer7: ADQ12DC SPD-1007		FWATD Wfa	records collected	9		[0 2147483647] Step	p 1		Int	0	(0
Digitizer8: ADQ14AC SPD-1008		FWATD Wfa	stream status	0		[0 2147483647] Step	p 1		Int	0	(0
	<											>
 Digitizer14: ADQ32 3r D-1013 Digitizer14: ADQ7WB SPD-1014 								Message				^
Digitizer15: ADQ8 SPD-1015	93	3	Information	12/10/2021	20:25:48	Property	GUI.Left	2 pixel				
Digitizer16: ADQ8 SPD-1016	9/	4	Information	12/10/2021	20:25:48	Property	GUI.Top	30 pixel				
Digitizer17: ADQ32 SPD-1013			Information	12/10/2021	20:26:40	Bronorty	CLILWindow	Windowod				
> V O Digitizer18: ADQ33 SPD-1013	90		mornation	12/10/2021	20.20.48	Froperty	GOI.WINDOW	windowed				
Math	96	3	Information	12/10/2021	20:25:52	Property	GUI.Hierarchy	319 pixel				
Measure	× I	Orburtt		0	Deserts						_	Ň
< >>	4	SetupMa	anager ADQ	ConligMgr	Property							

Figure 55 : ATD Firmware Digitizer Properties



Figure 56: ATD Firmware Horizontal Property



9.2 DDC Firmware

As shown in below image, DDC class will be added in hierarchy under Digitizer for ADQ7 having DDC firmware.



Figure 57 : DDC Firmware