

Phased Array Probes

----- with Elements Made of Composites



Guangdong Goworld Co., Ltd.

Ultrasonic Instrument Branch

1. Capacity Status and PA Probe Development Level

Guangdong Goworld Co., Ltd. Ultrasonic Instrument Branch is the first company to engage in the research and manufacture of ultrasonic instruments and transducers in China. Its technology, production capacity as well as sales volume are in the lead of this industry. Up till now, more than 80 models of the "Shantou brand" ultrasonic instruments have been put on sale with the volume of 100,000 sets. Meanwhile, 4 series, more than 300 models of "Shantou brand" ultrasonic transducers have been put to manufacture with a total output up to approximately 550,000 pieces.



**High-power
Microscope**

Nowadays single-element probe is failing to meet the demands in some scopes with on-going progress of productive capability and frequent renewals of technology. And just for this moment, the "phased array" probes emerge. In the last few years our company becomes more into these types

of products and group a bunch of hands who are experts for this technology. All of them have a great knowledge about the phase array and great experience in the production work and related management job. Their teamwork and creativity keep the us ahead of our peer companies in phased array technology. Currently we are extraordinarily dept at different types of phased array probes, such as linear array, area array, camber array, wheel-like, immersion, self-focused, and those for other special purposes. Customization orders are also accepted.

Batching Room



Sculpture Room



Assembling Room

2. Phased Array Probes

I. Linear Array Series

Linear Array Series are widely used nowadays. The wedges are changeable. Those not listed below can be customized. The purpled lines on the list are those we have made or of which models with similar process and period we have made.

Lead time: 1 month for less than 10 pcs, 2 months for more than 10pcs, 3 months for unpurpled or unlisted models.

MO	FREQ. (MHz)	E-NOs	GAP (mm)	A. APTR (mm)	E-LTH (mm)	Des/Purpose/Obj
5L10-0.6×5	5.0	10	0.6	6	5	S-Size, for spcl Obj
7.5L8-0.5×5	7.5	8	0.5	4	5	S-Size, for spcl Obj
10L16-0.3×5	10	16	0.3	4.8	5	S-Size, for spcl Obj
2L8-1.0×9	2.0	8	1.0	8	9	Conventional
4L16-0.5×10	4.0	16	0.5	8	10	Conventional
5L16-0.6×10	5.0	16	0.6	9.6	10	Conventional
7.5L16-0.5×10	7.5	16	0.5	8	10	Conventional
10L32-0.31×10	10	32	0.31	10	10	S-Size, for spcl Obj
2.25L16-1.0×10	2.25	16	1.0	16	10	Conventional
2.5L16-1.0×10	2.5	16	1.0	16	10	Conventional
2.5L32-0.5×10	2.5	32	0.5	16	10	Conventional
4L16-1.0×10	4.0	16	1.0	16	10	Conventional (SS. CTS-2108PA)
5L16-1.0×10	5.0	16	1.0	16	10	Conventional
5L32-0.5×10	5.0	32	0.5	16	10	Conventional
7.5L32-0.5×10	7.5	32	0.5	16	10	Conventional
10L16-1.0×10	10	16	1.0	16	10	Conventional
10L32-0.5×10	10	32	0.5	16	10	Conventional
2.5L32-1.0×10	2.5	32	1.0	32	10	Macro-CRY, Thick Obj
3.5L32-1.0×10	3.5	32	1.0	32	10	Macro-CRY, Thick Obj
5L32-1.0×10	5.0	32	1.0	32	10	Conventional, Thick Obj
5L64-0.6×10	5.0	64	0.6	38.4	10	CMPOS, Wide Scan
7.5L32-1.0×10	7.5	32	1.0	32	10	Conventional
10L32-1.0×10	10	32	1.0	32	10	Conventional
10L64-0.5×10	10	64	0.5	32	10	CMPOS, Wide Scan
2.25L64-0.75×10	2.25	64	0.75	48	10	CMPOS, Wide Scan
3.5L64-1.0×10	3.5	64	1.0	64	10	CMPOS, Wide Scan
3.5L128-0.5×10	3.5	128	0.5	64	10	CMPOS, Wide Scan
5L64-1.0×10	5.0	64	1.0	64	10	CMPOS, Wide Scan
7.5L64-1.0×10	7.5	64	1.0	64	10	CMPOS, Wide Scan
10L128-0.5×10	10	128	0.5	64	10	CMPOS, Wide Scan

2.25L128-0.75×10	2.25	128	0.75	96	10	CMPOS, Wide Scan
5L128-0.75×10	5.0	128	0.75	96	10	CMPOS, Wide Scan
3.5L128-1.0×10	3.5	128	1.0	128	10	CMPOS, Wide Scan
2L16-1.8×20	2.0	16	1.8	28.8	20	Macro-CRY, Thick Obj
2.25L16-2.0×20	2.25	16	2.0	32	20	Macro-CRY, Thick Obj
2.25L32-0.75×24	2.25	32	0.75	24	24	Conventional, Thick Obj
3.5L16-1.6×16	3.5	16	1.6	25.6	16	Conventional
1.5L16-2.8×26	1.5	16	2.8	44.8	26	Macro-CRY, Thick Obj

II. Camber Array Series

Camber array series are mainly used for lamination flaws in the pipe. They can also be used for guided-waves detection if coupled with optimized wedges. There's great demand for this type of PA probes in such industries like power supply, petro chemistry, and so on. Customization order for this type of probes be taken. **Lead time: 2 months**

MO	FREQ. (E-NOs	GAP (mm)	E-LTH (mm)	R (mm)	ANGL. RNG (°	Des/PUP0/Obj
3.5C16-1.0×5-R10.2	3.5	16	1.0	5	10.2	90	for Pipes
5C16-1.0×5-R10.2	5	16	1.0	5	10.2	90	for Pipes
3.5C32-1.0×10-R25	3.5	32	1.0	6	25	90	for Pipes
5C32-1.0×10-R25	5	32	1.0	6	25	90	for Pipes
3.5C64-1.0×10-R50	3.5	64	1.0	6	50	121	for Pipes
5C64-1.0×10-R50	5	64	1.0	6	50	121	for Pipes

III. Integrated Probe Series (Probe & Wedge as One)

Integrated probes are structured just like conventional angle probes, usable on hand, saving efforts for installing the wedge. This type is superior for particular kinds of objects and more demanded in some special industries, with customizable models. **Lead time: 1.5 months.**

MO	FREQ. (E-NOs	GAP (mm)	A. APTR (mm)	E-LTH (mm)	ANGLE	Des/PUP/Obj
2L8-1.0×9-A58	2	8	1.0	8	9	58° SW	Conventional
4L16-0.5×9-A58	4	16	0.5	8	9	58° SW	Conventional
2.25L16-0.75×12-A45	2.25	16	0.75	12	12	45° SW	Conventional
2.25L16-0.75×12-A45L	2.25	16	0.75	12	12	45° LW	Conventional
5L16-0.6×10-A45	5	16	0.6	9.6	10	45° SW	Conventional
5L16-0.6×10-A45L	5	16	0.6	9.6	10	45° LW	Conventional

IV. Area Array Series

Area Array Series currently are made to serve the operation of our self-made PA equipment of 32 hardware channels. This type is mainly used for 3D scanning on special structures.

MO	FREQ.	E-NOs	GAP (mm)	A. APTR X (mm)	A. APTR Y (mm)	Des/PUP0/Obj
5M4X4-1.0X1.0	5MHz	16	1.0	4	4	3D SCAN
5M8X4-1.0X1.0	5 MHz	32	1.0	8	4	3D SCAN
10M4X4-1.0X1.0	10 MHz	16	1.0	4	4	3D SCAN

10M8X4-1.0X1.0	10 MHz	32	1.0	8	4	3D SCAN
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V. Roller Style Series

Roller style is more valuable in wide C scan for its conveniency and efficiency. Customizable.

Lead time: 3 months

MO	FREQ.	E-N0s	GAP (mm)	A. APTR (mm)	E-LTH (mm)	Des/PUP0/Obj
5L64-G1	5 MHz	64	1.0	64	10	Wide C Scan

3. Wedges

I. Linear Array Series

MO.	Casing Mo.	Stl. Rfr-Angl	Recommended Scan Rng.	Pointed Angle
SC5-N0L	C5	0° LW	-30° — 30°	0°
SC5-N45L	C5	45° LW	30° — 60°	16°
SC5-N60L	C5	60° LW	45° — 70°	20°
SC5-N70L	C5	70° LW	50° — 80°	22°
SC5-N45S	C5	45° SW	30° — 60°	31°
SC5-N55S	C5	55° SW	30° — 70°	36°
SC5-N60S	C5	60° SW	45° — 70°	39°
SC5-N70S	C5	70° SW	50° — 80°	43°
SC7-N0L	C7	0° LW	-30° — 30°	0°
SC7-N45L	C7	45° LW	30° — 60°	16°
SC7-N60L	C7	60° LW	45° — 70°	20°
SC7-N70L	C7	70° LW	50° — 80°	22°
SC7-N45S	C7	45° SW	30° — 60°	31°
SC7-N55S	C10	55° SW	30° — 70°	36°
SC7-N60S	C10	60° SW	45° — 70°	39°
SC7-N70S	C10	70° SW	50° — 80°	43°
SC10-N0L	C10	0° LW	-30° — 30°	0°
SC10-N45L	C10	45° LW	30° — 60°	16°
SC10-N60L	C10	60° LW	45° — 70°	20°
SC10-N70L	C10	70° LW	50° — 80°	22°
SC10-N45S	C10	45° SW	30° — 60°	31°
SC10-N55S	C10	55° SW	30° — 70°	36°
SC10-N60S	C10	60° SW	45° — 70°	39°
SC10-N70S	C10	70° SW	50° — 80°	43°
SC11-N0L	C11	0° LW	-30° — 30°	0°
SC11-N45L	C11	45° LW	30° — 60°	16°
SC11-N60L	C11	60° LW	45° — 70°	20°

SC11-N70L	C11	70° LW	50° — 80°	22°
SC11-N45S	C11	45° SW	30° — 60°	31°
SC11-N55S	C11	55° SW	30° — 70°	36°
SC11-N60S	C11	60° SW	45° — 70°	39°
SC11-N70S	C11	70° SW	50° — 80°	43°
SC12-N0L	C12	0° LW	-30° — 30°	0°
SC12-N45L	C12	0° LW	-30° — 30°	0°
SC12-N60L	C12	0° LW	-30° — 30°	0°
SC12-N70L	C12	0° LW	-30° — 30°	0°
SC12-N45S	C12	45° LW	30° — 60°	16°
SC12-N55S	C12	60° LW	45° — 70°	20°
SC12-N60S	C12	70° LW	50° — 80°	22°
SC12-N70S	C12	45° SW	30° — 60°	31°
SC13-N0L	C13	55° SW	30° — 70°	36°
SC13-N45L	C13	60° SW	45° — 70°	39°
SC13-N60L	C13	70° SW	50° — 80°	43°
SC13-N70L	C13	0° LW	-30° — 30°	0°
SC13-N45S	C13	45° LW	30° — 60°	16°
SC13-N55S	C13	60° LW	45° — 70°	20°
SC13-N60S	C13	70° LW	50° — 80°	22°
SC13-N70S	C13	45° SW	30° — 60°	31°

II. Area Array Series

M0.	Casing M0.	Stl. Rfr-Angl	Recommended Scan Rng.	Pointed Angle
SC1-N0L	C1	0° LW	-30° — 30°	0°
SC2-N0L	C2	0° LW	-30° — 30°	0°

4. Sample Showcase

I. 4L16-1.0×10



Model: 4L16-1.0×10

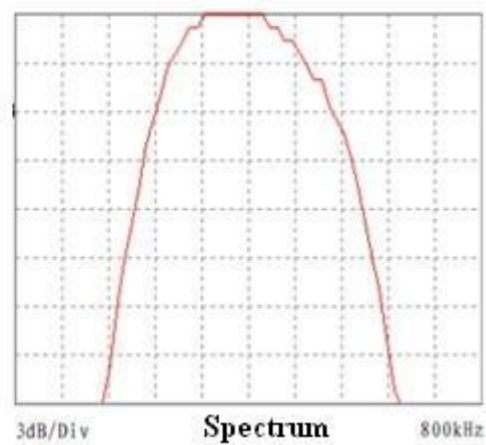
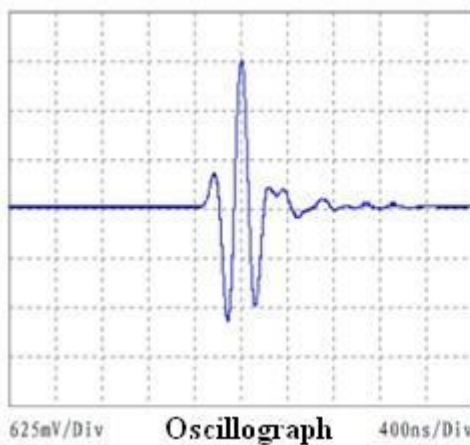
Frequency: 4MHz

Element Number: 16

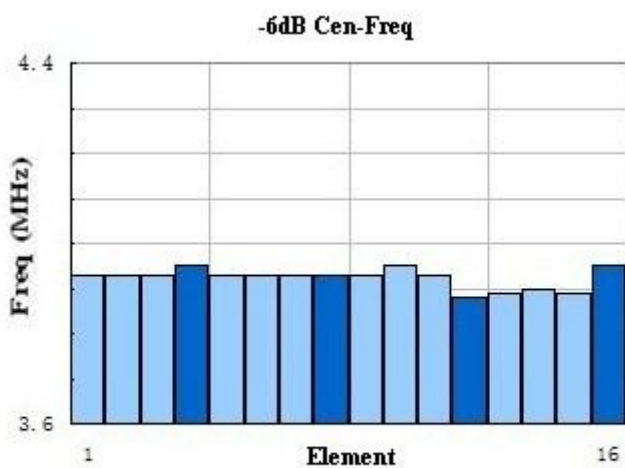
Gap between Neighbor Elements: 1.0

Casing Model: C10

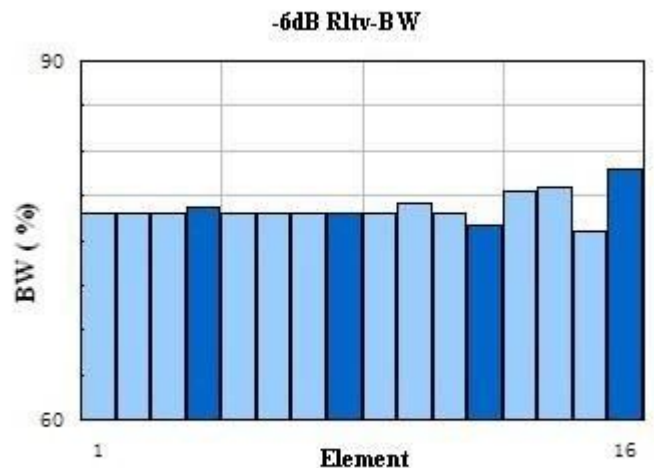
8th Element Test Sheet (Sample)



E-Nos	-6dB Cen-Freq (MHz)	-6dB Rltv-BW (%)	-20dB P-Width (ns)	Rltv-Echo Sens (dB)
8	3.93	77.29	526	-29.56



Cen-freq Consistency of the Elements



BW Consistency of the Elements

II、2.5L16-1.0×10



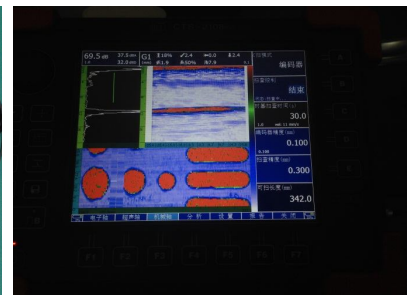
Model: 2.5L16-1.0×10
Frequency: 2.5MHz
Element Number: 16
Gap between Neighbor Elements: 1.0
Casing Model: C10
Purpose: General

III、2.5L32-1.0×10



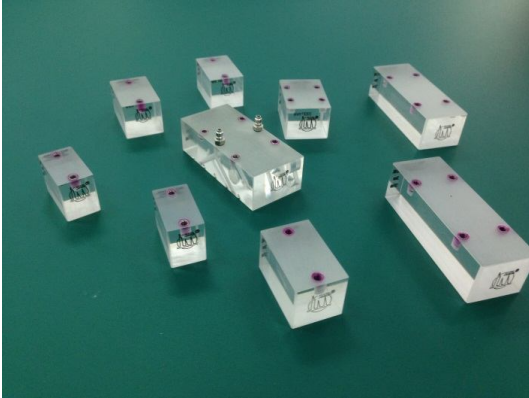
Model: 2.5L32-1.0×10
Frequency: 2.5MHz
Element Number: 32
Gap between Neighbor Elements: 1.0
Casing Model: C11
Purpose: for Macro-crystalline or Thick Object

IV、Roller Style



Frequency: 5MHz
Element Number: 64
Gap between Neighbor Elements: 0.8
Casing: Roller Spl.
Purpose: for Composites and Wide Scan

V、 Wedge



PA Probe Wedge of Different Spec. or Angl.

