Built-in Computer

Reflected waves usually contain unnecessary reflected acoustic signals attributable to transmission reverberation, schools of fish and turbidity. In order to take out only the echo from sea bottom, unnecessary signals must be removed on the basis of the time-sequential continuity of the echo and the difference of waveform intensity etc. Since the built-in computer executes depth data processing, high accuracy processing are implemented.

High Accuracy

1. Noise is erased from received waveforms by removing high frequency components by the use of a low pass filter.
2. Receive waveforms are stored into the memory after A/d conversion and distributed to the thermal heads immediately.
3. After the above processings, the data are processed by the "peak value detection method" which judges the reflected wave of the highest level as the depth.
4. The "shallow water limited" function can be specified for removing the influences of floating substances near the sea surface.
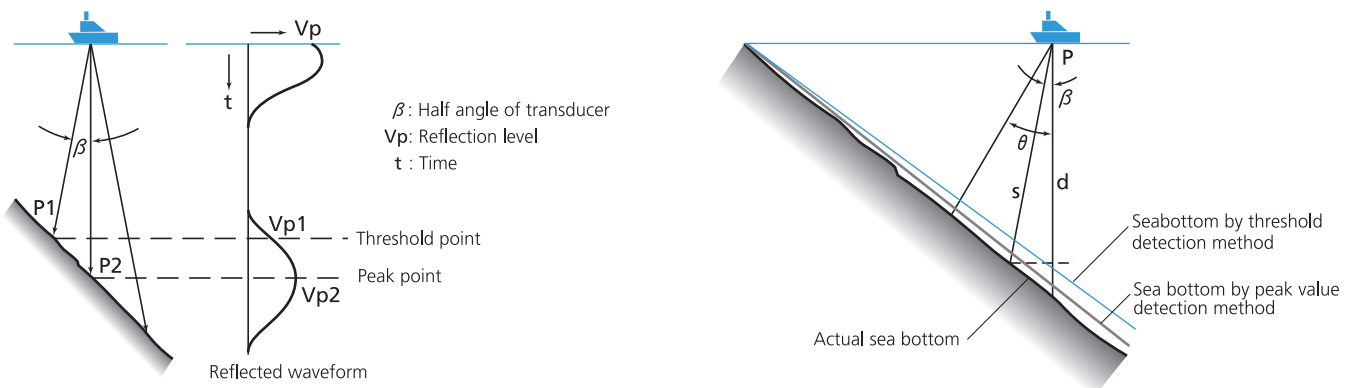
A sound velosity correction

The sound velosity is influenced by the season, location, water temperature, salt concentration and water depth. TDM-9000A will correct it automatically when the sound velosity correction value is input.

Adopted the peak value detection method

*The sharpness of the direction angle was increased.

Under the generally employed threshold detection method, the shallowest point(P1) in the direction angle of the super-sonic waves is taken as the depth value(Vp1). Under the peak value detection method, the peak point (P2) is taken as the depth value(Vp2). Since nearly the center point of the direction angle is measured by this method, the error can be decreased. Therefore, it may be said that the sharpness of the direction angle was increased.
It has been confirmed that the peak value detection method raises the direction angle characteristic by 4~5 times in comparison with the previous method.

β : Half angle of transducer
Vp: Reflection level
t : Time

Threshold point
Peak point

Reflected waveform

Seabottom by threshold detection method
Sea bottom by peak value detection method
Actual sea bottom

Angle of inclination θ =30˚ Direction angle of transducer β =3˚

Actual Depth(d)	The difference (d-s)	
	By threshold detection method	By peak value detection method
10m	0.2m	0.05m
20m	0.4m	0.1m
30m	0.6m	0.15m
40m	0.8m	0.2m
50m	1.0m	0.25m

Standard Configuration

ITEM	DESCRIPTION	QUANTITY
1	Recorder TDM-9000A	1
2	Transducer	1
3	Outboard pipe	1
4	Boardside fixture	1
5	Remote fixing marker	1
6	Power cable	1
7	Canvas cover	1
8	Charger	1
9	Recording paper	5 rolls

Options

ITEM	DESCRIPTION
1	Check bar (reflection plate)
2	Data-collector TDC-9

*The size of the transducer was reduced (ϕ 120×50mm, 4 kgs.)

It may be thought that the dimensions and the weight of the transducer increase as the direction angle becomes sharp.
However, since the peak value detection method assumes that the sharpness increased, accurate depth information can be obtained with a more compact transducer.

Transducer