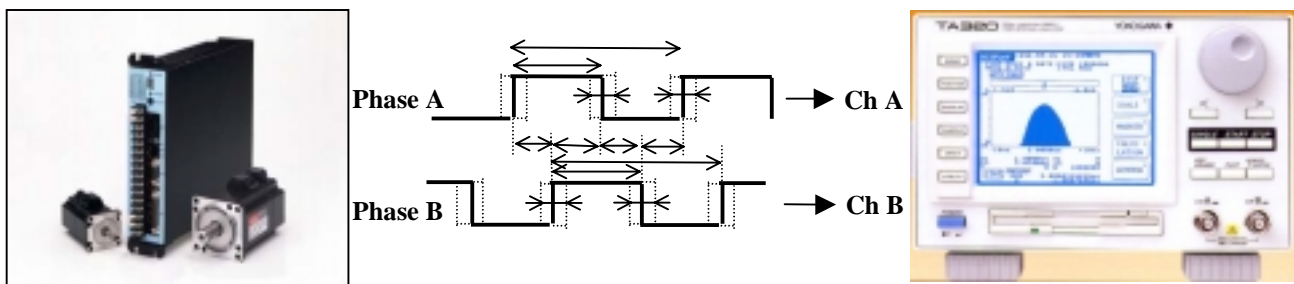


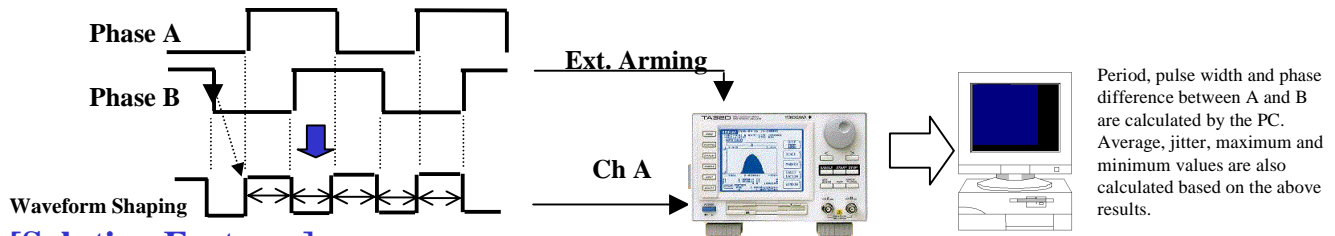
Motor Rotation Jitter Analysis with a Time Interval Analyzer

[Application]

High speed and highly stable motors are required for magnetic disk or LBP polygon mirror devices. To measure fluctuations in the rotational speed of the motor, an encoder is provided and measurements of period, phase difference, pulse width jitter, max., min. and average of the signal output from the encoder are made (see figure below). Usually, all these items can be measured by changing measuring functions of the Time Interval Analyzer. On a manufacturing line, it is necessary to shorten the measuring time. To do this, shape the waveform as shown below and measure pulse width only. This data can be transferred to a PC and converted to interval or pulse width using calculations.



Method to shorten the measuring time



[Solution Features]

The Yokogawa Model TA320 provides the following solution for this application :

1. Various measuring items

The TA320 can continuously measure the period, pulse width and time interval of the signal with a maximum time resolution of 100 ps.

2. 32K sample memory

A maximum of 32000 sample data can be stored in the internal memory. This means the TA320 can work with an encoder of 32000 pulses/rotation. When the waveform is shaped and pulse width is measured to shorten the measuring time, it can measure 8000 periods of encoder signal.

3. External trigger

The TA320 has a function to start measuring by using an External Arming function. In the above figure, when Phase B falling is set as the trigger, measurement will always start from Phase A rising edge.

* Signal shaping circuit and analysis software are to be provided by customers.

