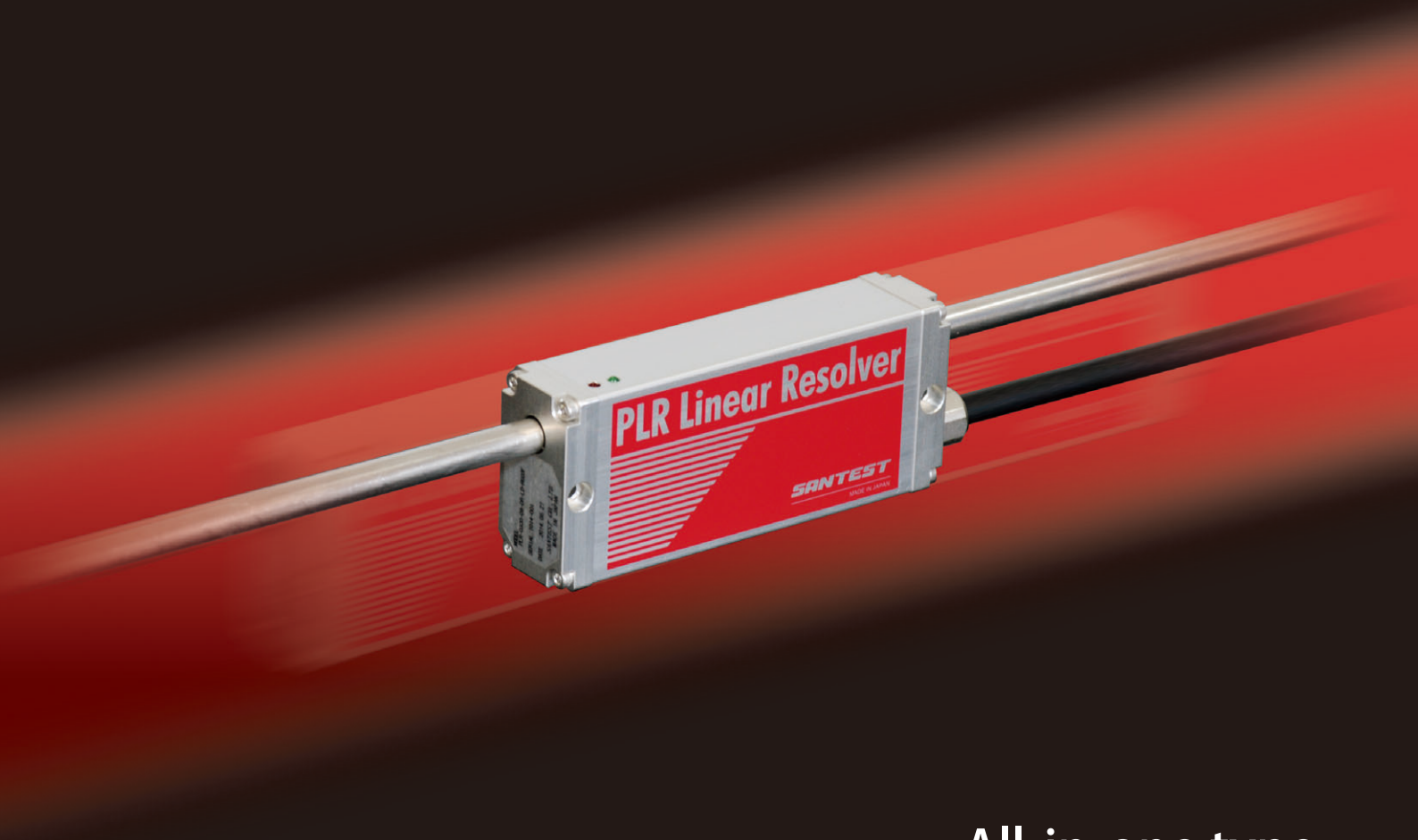
It makes Technological Sense

PLR Linear Resolver



All-in-one type

High accuracy linear resolver

STC SANTEST

PLR Linear Resolver

PLR Linear Resolver

Principle

Fig.1 and Fig.2 show the fundamental principle of operation. Rod consists of high magnetic permeability parts and low magnetic permeability parts which are alternately put in the steel pipe. Coil unit consists of three pairs of primary coil and secondary coil which are rolled up concentrically, and which are arranged at one third of one rod pitch length interval. Three sinusoidal excitation signals whose differences of phase are 120 degrees each other are put on above mentioned three primary coils as the input signals, and inductive signals appropriate to the inputs are induced on each corresponding three secondary coils. As the value of induced signals depend on the magnetic permeability of the part of rod, they are changed according to the shift of relative position between rod and coil unit. Therefore output signal (Y) is obtained as is shown in equation below by adding above three induced signals based on the addition theorem of trigonometric function.

$$Y=A\cdot SIN(\theta-2\pi\cdot X/P)$$

(A：Constant, θ：Phase of excitation signal, X：Displacement, P：One rod pitch length)

The phase of output signal (Y) changes from 0 to 2pi compared with the one of excitation signal when the displacement (X) changes from 0 to P as is shown in Fig.2, then X is calculated by counting the phase shift (T).

Fig.1

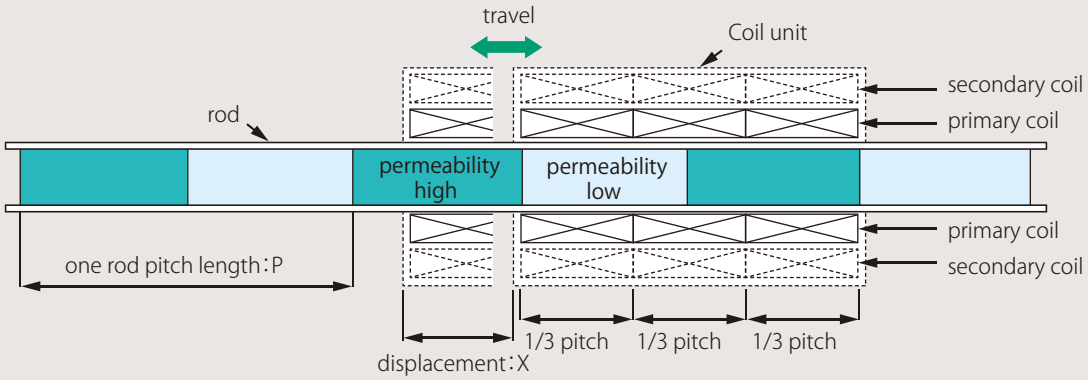
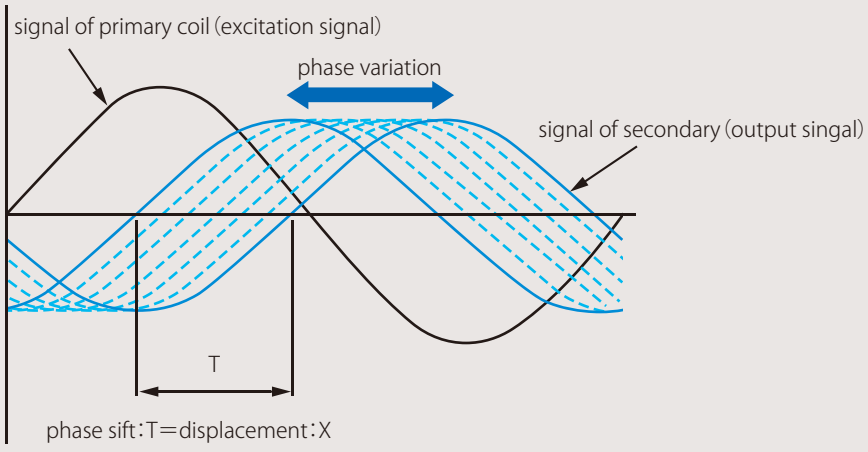
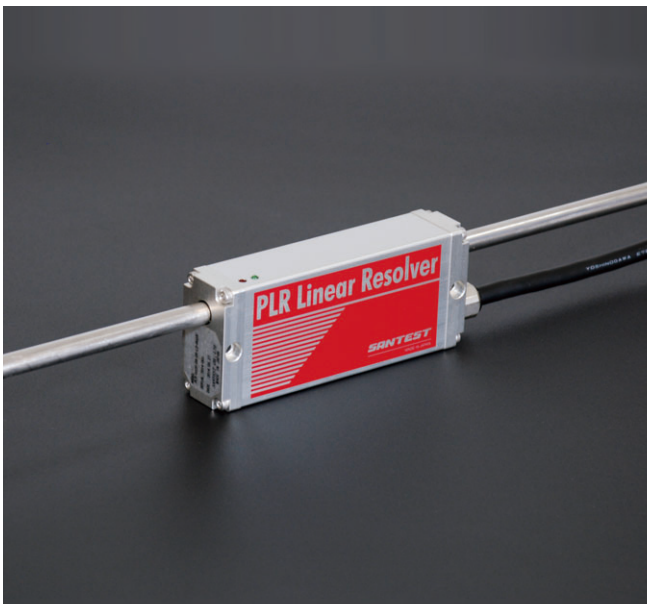


Fig.2





Specification

Accuracy	Linearity	(20+0.1xL) μm (L:stroke(mm))
	Resolution	1 μm
	Repeatability	±2 μm
	Temp.drift	10ppmFS/℃
Output	Positon	A, B pulse(multiplied by 4) line driver、pulse frequency：320kHz
	Alarm	NPN Open collector (DC24V, ≦10mA)
Power Supply		DC24V (±10%), 150mA
Sampling frequency		5kHz
Environment	Operating Temp.	0～60℃
	Storage Temp.	-40～80℃
	Vibration	6G
	Shock	50G (2msec)
	Protection	IP67

Model PLR is a displacement sensor detecting the change of inductance caused by the deference of magnetic permeability. It is the Linear Resolver measuring the shift of relative position between rod which has the cyclic repetition of the change of magnetic permeabilty and amplifier unit which contains the coil unit.

- By adopting innovative new rod, high accuracy and wide operation range are achieved. And 1 μm of resolution is realized throughout rod length.
- Phase A and Phase B quadrature signals (90 degree phase deference / multiplied by 4) are output as the position data.

Model

PLR－□□□□－09－D8－LD－RG□□F
①　②　③　④　⑤

① Effective stroke [mm]
□□□□：Max.1500mm

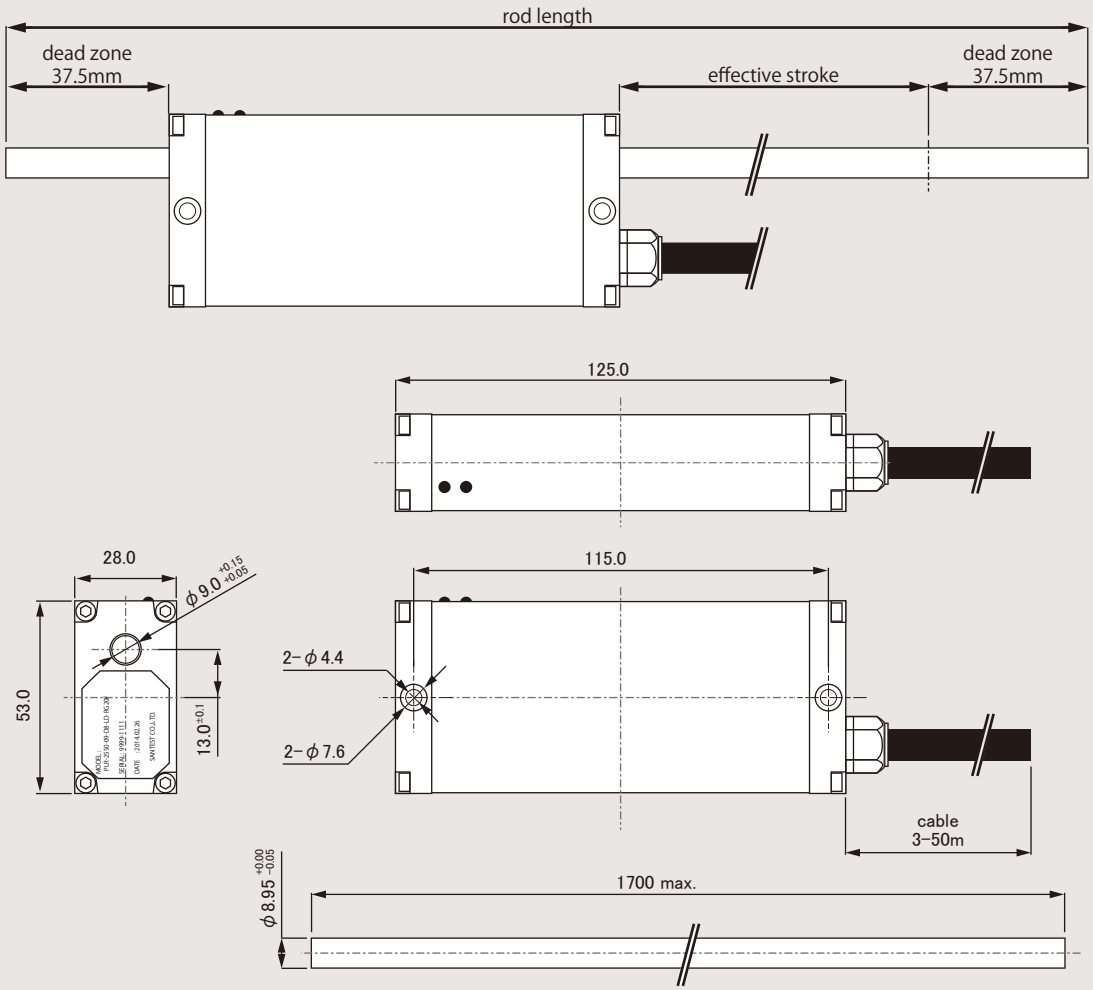
② Rod
09：8.95mm（standard）

③ Resolution
D8：1 μm（standard）

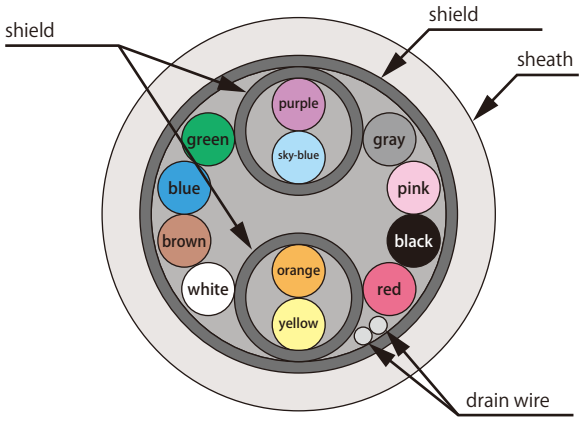
④ Output
LD：A, B pluse (line driver)

⑤ Cable
RG　：pigtail (robot cable)
□□：3m (standard)～50m
F　：cable end : free

Dimensions



Connection



cable structure

Cable color	Function
brown	Power supply DC24V
blue	Power supply 0V
red	External output common (DC24V)
black	External output common (0V)
pink	Alarm reset input
white	Direction switch
gray	Alarm output
green	N.C.
orange	A pluse (+) output
yellow	A pluse (−) output
purple	B pluse (+) output
sky-blue	B pluse (−) output

12 core cable (8 core + twist pair wire 2 pairs))

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