Linear Variable Differential Transformer CLV*DT*). > Modified ression of plunger type Sensors > arranged with two sets of Coils, one as the

primary and the other set as Secondary having treso cols conn*ec*ted diff*erentially* for pro*viding*

the alp

***L*on*d***

***Try. ,***

**O**

n*a*

ma

**Do*ma***

» The coupling between primary and secondaries Varies with the core punger moving linearly. » An supply va and frequency f

is impressed across the primar🥲🔸⚪️®️®️y coil and depending on the positions of the core Wrrrto primary and two secondar es

aró is obtained from the secondaries.

The induction in one secondary cool, according to the law is

an

olp

roltage

to

>

-nod *Vos*

=-.M dip =

-

. dk ny no of turns in the coil of secondary

& magnetic flux m s Mutual Inductance blw primary & Secondary

ip → *p*rima*ry* current

***mc***

Scheme

of

ass

LVDT

equivalent model

Ve

S*I*

loro .

*Ron*m*agneti*c

Xxx

Rod.

T

DA

XXX) DXxx) Ixcat, sleve.

XXXXXX

7.

Sleeve.

{Xxx / T

Core

For

the two coils differentially connected,

Vos Vos- Vose = *(M, - M*2) di*r* - © m, &mo being functions of x,

Both

M, - Ma = Meal. over a certain

If the function range, Mica) = kx

is linear so that

a = Vo

*k (*de)

22

Loss components are to be considered for *Obtaining op vo per crit displac*emen*t of t*he core, The When arranged in a bridge in a *differen*t*i*al *mann*er*, loss component*s be Com*pensated by approp*riate cirui*t componeals*.

The equivalent ciruit of LVDT is

,

Ron Ivo

*le*r*e*

Ls/2

*I*sl2

Solv*ing* for the magnitude ratio per unit displacement T ila, angle by which the opp voltage ro, Tags the ip roltage vi at f= o and & the meter load is Rm, we get .

1 = kwkm*/{ C* R*s+* Rom > Rp3

*V [*-c0RC Tema + p?s]*} 400* l Ep+7)*]. 0 =* 900 tan" wrap *+* ac)

l-wo? *l*em*a + Co*r*s)* Em = Mima

VIRS thom) Rp

Where

Ls

ap = 4

Rs +Rm

vottae

The

phase

rectified

Secondary

op

voltage

to

with

x

is

shown in

AVO.

.

.

**-*am***

xm

for a giren ve, are ind*icated by* is inherent r all

linear range limits &

*t* <m: This limitation

differential systems.