TECHNICAL NOTE TNDA11

Title: Rate Scaling

Product(s): Ditak6, Ditak7, Ditak8, Ditak9, APLR

DITAK6, DITAK7, DITAK8 and APLR

Step 1: Determine Timebase Increment Total (TBIT)

$$\frac{\text{Desired Reading (DR) X Desired Display Point (DDP) X Product Constant*}}{\text{Corresponding Revolutions per Minute (RPM) X Pulses per Rev (PPR)}}$$

DR: Desired reading at a specific RPM. (If displaying RPM then remove DRV and RPM from equation.)
DDP: 0 (whole #) = 1, 0.0 (tenths of unit) = 10, 0.00 (hundreds of unit) = 100 (Ditak 8 does not have DDS)
*Product Constant: DITAK6 & DITAK7 = **15,360**, DITAK8 = 15,361, APLR0 = 15,000
RPM: The corresponding RPM for the DR
PPR: Pulse per one revolution or one unit of measure

Step 2: Enter Timebase Increment Total (TBIT)

Set to the "ON" position the Time Base DIP switches which together adds to the above TBIT.

Step 3: Review The Display Update Time

The display update time in seconds = TBIT x 0.004
To improve the update time:
1. Enable frequency doubling and lower the TBIT and display update value by half.
2. Lower DDS by one position and lower the TBIT and display update value by a factor of 10.

GENERAL RULE
2 pulses per rev = 30 second update
20 pulses per rev = 3 second update
200 pulses per rev = .3 second update

DITAK9

Using Known RPM

Step 1: Calculate Time Base

$$\frac{\text{Desired Reading (DR) X Desired Display Point (DDP)}}{\text{Hertz (HZ)}}$$

Step 2: Round Time Base (RTB) Round the Calculated Time Base to nearest number between 1-7

Step 3: Calculate the Remainder Multiplier (RM)

$$\frac{\text{Desired Reading (DR) X Desired Display Point (DDP)}}{\text{Rounded Time Base (RTB) X Hertz (HZ)}}$$

DR: Desired Reading at the specified RPM
Hertz (HZ): $\frac{\text{RPMs X Pulses per Revolution}}{60}$
DDP: 0 (whole unit) = 1, 0.0 (tenths of unit) = 10, 0.00 (hundreds of unit) = 100

If RM is greater than 1.9999, then remove a decimal location or add more pulses per revolution.

Using Known Pulses per Unit

Step 1: Calculated Time Base

$$\frac{\text{Time Factor (TF) X Desired Display Point (DDP)}}{\text{Pulses Per Unit (PPU)}}$$

Step 2: Round Time Base (RTB) Round the Calculated Time Base to nearest number between 1-7.

Step 3: Remainder Multiplier (RM)

$$\frac{\text{Time Factor (TF) X Desired Display Point (DDP)}}{\text{Rounded Time Base (RTB) X Pulses Per Unit (PPU)}}$$

Time Factor: Second = **1**, Minute = **60**, Hour = **3600**
DDP: 0 (whole unit) = **1,** 0.0 (tenths of unit) = **10,** 0.00 (hundreds of unit) = **100**

RM is greater than 1.9999, then remove a decimal location or add more pulses per revolution.