

Data_Link 2000

APPLICATION NOTE AN020

Averaging Analogues at Battery Outstations

Summary

Nano_Link outstations normally take a snapshot of each analogue input at the time the base-station requests data from it.

However, if the outstation is monitoring a reservoir depth using a level transducer the analogue reading may vary due to surface waves. Although the average reading will be correct each snapshot may be slightly higher or lower than the average depending on the height of waves at the sample time. The discrepancy will be more obvious if using a battery-powered outstation polled at a relatively slow scan rate.

This application note therefore describes a means of averaging the reading over 30 seconds to minimise errors due to waves.

Method of Operation

A *Nano_Link* outstation can be set in various operating modes, depending on the warm-up time of the transducers connected to it. However, in most modes power is applied to the transducer for a finite time, then the output is read. If the outstation is set to time averaging mode it will apply power to the transducers 35 seconds before it next expects to be polled. Five seconds later it will read the level from the transducers. Every second thereafter it will take another reading, until the base-station polls it. It will report to the base-station the average of the readings it has taken. The value read will therefore be the average of 30 readings taken at one second intervals.

It should be apparent that this mode can only be used with transducers that stabilise within 5 seconds.

Installation

The software functionality to average analogues was introduced at V2.27, so can only be implemented if the label on the PIC within the unit shows this version or higher.

To enable analogue averaging the configuration switches S2 poles 6, 7 and 8 should be set to 011 (i.e. 6 OFF, 7 & 8 ON). The outstation will then notify the base-station that it is battery-powered, so the base-station will poll it at whatever rate is set for the Low Power Outstation Scan Rate (typically every 15 minutes).

When the outstation has synchronised with the base-station the LED adjacent to the analogue inputs will light 35 seconds before it expects to be polled to indicate that power is applied to the transducers. There is no visible indication of the fact that the outstation is sampling the analogues during this period, but the LED will extinguish shortly after it outstation has been polled.