

**AK-10 Pressure Measurement Mode
utilizing the
Heise™ DXD Series Precision Pressure Transducer**

General

Beginning with firmware version 1.21, the AK-10 mA Loop Calibrator will interface to the Heise™ DXD Series Precision Pressure Transducer to allow the AK-10 to measure and display pressure, while simultaneously providing 24V power and loop current measurement and display, to a pressure transmitter under test.

Heise™ DXD Digital Pressure Transducer

The DXD makes an excellent reference transducer for field pressure calibration. The characteristics that are significant for this application include:

- Accuracy – 0.02% of FS Total Error Band. This includes temperature, linearity, hysteresis and non-repeatability. Of particular importance in field calibration work, is the temperature specification. Field calibrations are often done under extreme environmental conditions, and instruments with excellent “laboratory” specs, but terrible temperature characteristics, are worthless.
- Digital Interface – preserves accuracy when used with various instruments. Many field pressure calibrators use reference pressure modules with an analog interface. This means that the error of the base unit calibrator adds to the error of the pressure module.
- Rugged all stainless steel construction – will stand up to the less-than-ideal conditions found in the field.

The DXD can easily calibrate 0.10% field pressure instruments, and can be used on the latest 0.05% instruments with a better than 2:1 ratio (less than ideal, but acceptable under some conditions). All this comes at a very reasonable cost when compared to other reference pressure transducers.

A data sheet for the Heise™ DXD Series Precision Pressure Transducer can be downloaded from this link:

[http://www.netducer.com/documents/Heise Bul HTR-4 \(DXD\).pdf](http://www.netducer.com/documents/Heise%20Bul%20HTR-4%20(DXD).pdf)

AK-10 Interface

To connect the AK-10 to the DXD requires that the AK-10 be equipped with the AK-06 RS-232 Interface Converter and that the DXD have the Heise™ RS232 Serial Port Converter (838X003-01) and a power supply (831X015-01).

In addition to the above, you will need to have standard DB convertors to attach the DXD DB25F to the AK-06 DB9F and to perform the null modem function. All this sounds cumbersome, and it is. Applied Resources will soon be releasing a convertor that will handle all the interface and power requirements in a single small package. Until then, you have to resort to a string of adapters.

Configuring the DXD

The AK-10 only operates at 9600 baud, so the DXD must be configured for 9600 baud using the DXDsetup program that is supplied by Heise. Some versions of the DXD support advanced Error Modes. The AK-10 only supports Legacy Error Mode at this time. This option is also set using the DXDsetup program.

Operation

With the DXD capable firmware installed, an additional item is added under the SYS Menu.

```
DXD Mode :  
Off On Auto
```

With DXD Mode set to Off, the AK-10 will operate as normal.

With DXD Mode set to On or Auto, The AK-10 will attempt to communicate with the DXD and display the pressure reading as the auxiliary measurement.

```
PSIG loop mA  
+000.015 4.000
```

If DXD Mode is set to On, the AK-10 will continuously attempt to communicate with the DXD, even if the DXD is disconnected. If the communication is unsuccessful, the display will show:

```
PSIG loop mA  
NoReply 4.000
```

If the DXD Mode is set to Auto, the AK-10 will attempt to communicate with the DXD each time a Measure or Source mode is selected, but if the DXD does not respond, or if the DXD stops responding at any time, the AK-10 will return to displaying the default auxiliary measurement.

```
volts loop mA  
24.16 4.000
```

The AK-10 can be left in DXD Auto mode for normal operation, with no detriment to normal operations when a DXD is not connected. You can use On mode if you are doing dedicated pressure calibrations and will be plugging in different range DXD transducers.

DXD mode can be used with any AK-10 mode except Loop Check.

Summary

The DXD capable firmware for the AK-10 can be downloaded at no charge from the calibrator.com web site (www.calibrator.com). By combining the RS-232 interface capability of the AK-10 and the DXD, along with some adapters from your local computer store, you can begin making accurate and affordable pressure calibrations. A special adapter and carrying case will be available soon.