

Application Note

AN-VTC-11

## ***Using the scaling factor to change the display value***

Author: Ning Xu, Invertek Drives Ltd

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- **General:**

For those applications where the motor drives a load via a gearbox, the user may wish to display the output speed of the gearbox. This can be done by setting the gearbox ratio into one of the parameters of the drive.

For user PID applications, for example a pressure control system, the user may wish to display a value that directly represents the pressure being controlled. This can also be done using the scaling parameter described in this application note.

- **Parameters:**

### **P2-22 Scaling source select**

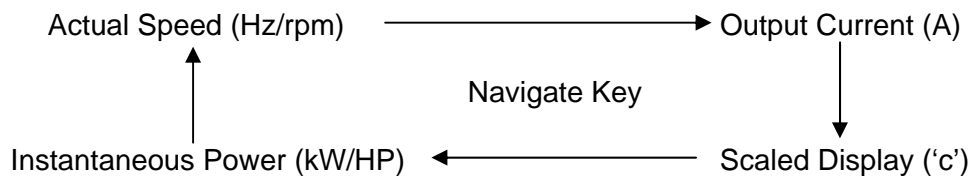
P2-22 = 0: 2<sup>nd</sup> Analog input value will be scaled and displayed

P2-22 = 1: Motor speed value will be scaled and displayed

### **P2-21 Scaling factor set up**

If this parameter is zero (0.000), the display-scaling function is disabled. If this parameter is > 0, the scaling source selected by parameter P2-22 will be scaled by this factor.

The scaled display value can be viewed as one of the main real-time values (motor speed, motor current, power) whenever the drive is running. The <navigate> key is used to scroll through these values as usual. A lower case character 'c' will be displayed on the left-hand side of the window to distinguish the scaled value from the other real-time values:



If P2-22 = 0, the 2<sup>nd</sup> analog input, (used for the feedback transducer in PID control systems) is scaled and displayed.

The displayed value is given by 100.0 \* Scaling Factor, where 100.0 represents 100.0% of the 2<sup>nd</sup> analog input value.

- **Example:**

If the transducer operates over a range of 4..20mA, representing a pressure range from 0 to 5 bar.

Then user can set the scaling factor to 0.05. The display will then show a range of 0.0 to 5.0 – directly representing the controlled pressure.

- **Example:**

If P2-22 = 1, the actual motor speed is scaled and displayed.

The displayed value is given by Motor Speed \* Scaling Factor

If the motor is driving a load via a gearbox with a ratio of 2.5 :1, setting the scaling factor to  $1/2.5 = 0.4$  will setup the scaled display to show an output speed 40% of the motor speed

If the motor speed range is 0..50Hz, the gearbox output speed and scaled display will show a corresponding range of 0..20Hz.

If the speed is in RPM (P1-10 > 0), then the displayed speed is scaled from the motor speed in RPM.

Eg Motor Speed range = 0..3000 rpm. Scaling factor (P2-21 = 0.2). Resulting Scaled display range = 0...600 rpm

Special note: if motor speed is displayed in Hz, a larger scaling factor may cause the scaled display result over the display range, so an unexpected result may display on the drive.

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