



TOTALFLOW

Technical Bulletin 114

Scale Analog Inputs Without Performing Calibration

Totalflow Technical Bulletin

Version 1.0, Revision AA (15 January 2004)

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Analog Inputs (AIs) in the XFC, XRC, and TFIO Modules can be scaled using a standard 3 or 5 point calibration or using the scale function in operations. This bulletin outlines the differences of the two methods and how to perform the scale function in operations.

Advantages of using the Scale function in Operations.

1. There is no need to perform a calibration. Tubing, manifolding, and testing equipment, such as pressure gauges or current calibrators are not needed.

Disadvantages of Using the Scale Function in Operations.

1. The signal is not in hold mode when the AI is calibrated or checked. If a signal is used for controls for instance, the control would need to be defeated during these procedures.
2. The loop errors are not calibrated out, as is the case with a 3 or 5 point calibration.

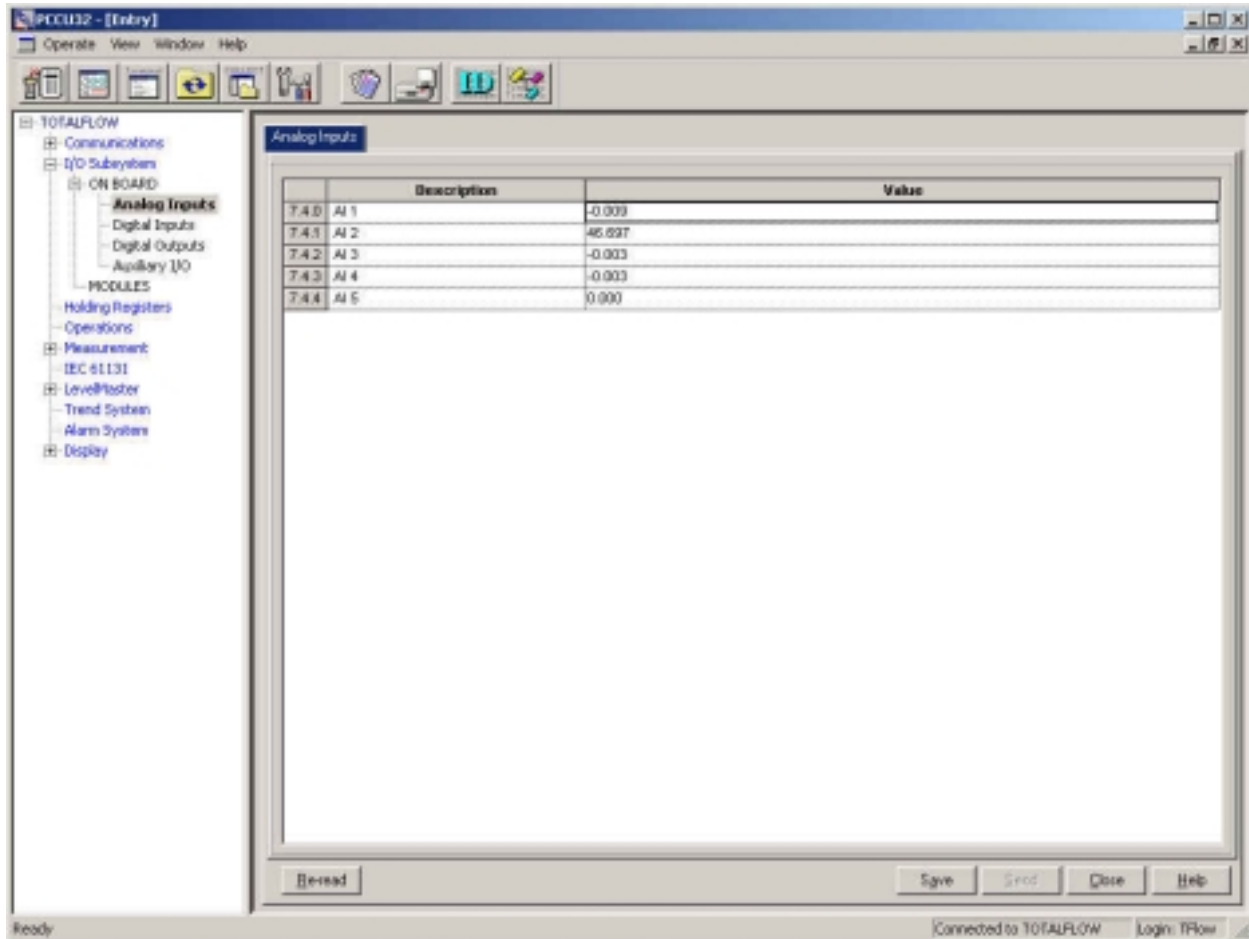
Flashes with the new Scale function available. All require operations ini file of 2100844-005 or later.

Other new functions added are select, lag, lead, queue, ramp, pulse, limit, and PID operations.

FLASH DESCRIPTION	XFC-2100204	XRC-2101210
Standard	2101050-002 or later	2101052-001 or later
Standard W/IEC	2101051-002 or later	2101053-002 or later
Old Standard W/Liquid Orifice	2100826-018 or later	2100825-013 or later
Selectable Units	2100873-002 or later	2100874-001 or later
Vcone	2100880-003 or later	2100964-003 or later
Instromet	2100955-004 or later	
Enron Modbus	2101034-002 or later	2101033-001 or later
Enron, Cross Tex	2101264-001 or later	
Pump Control W/Vcone	2101005-003 or later	2101004-003 or later
Maximum Alarms (32K)	2101203-002 or later	
Totalsonic	2100992-001 or later	

Determine App/Array/Reg to Associate Scale Function

1. For on AIs, go to Entry / I/O Subsystem / Onboard / Analog Inputs
2. For I/O Module go to Entry / I/O Subsystem / Modules / Analog Inputs
3. Record App/Array/Reg address to enter on Operations, Scale tab screen.



The screenshot shows the PCC1132 software interface. The title bar reads "PCC1132 - [Entry]". The menu bar includes "Operate", "View", "Window", and "Help". The toolbar contains various icons for file operations and system functions. The left-hand tree view shows the following structure:

- TOTALFLOW
 - Communications
 - I/O Subsystem
 - ON BOARD
 - Analog Inputs**
 - Digital Inputs
 - Digital Outputs
 - Aspirary I/O
 - MODULES
 - Holding Registers
 - Operations
 - Measurement
 - IEC 61131
 - LevelMaster
 - Trend System
 - Alarm System
 - Display

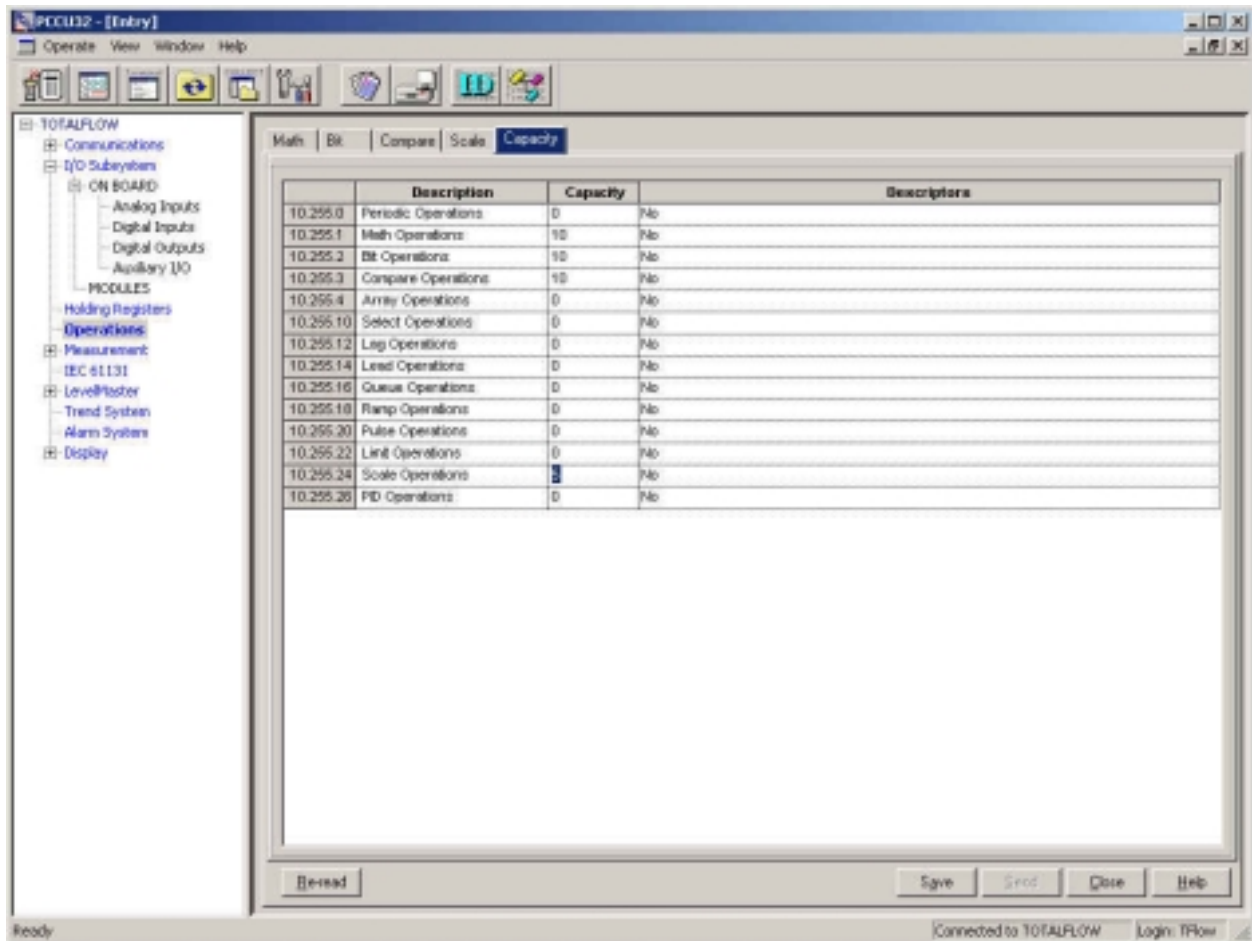
The main window displays the "Analog Inputs" configuration screen. It features a table with the following data:

	Description	Value
7.4.0	AI 1	-0.003
7.4.1	AI 2	46.697
7.4.2	AI 3	-0.003
7.4.3	AI 4	-0.003
7.4.4	AI 5	0.000

At the bottom of the window, there are buttons for "Read", "Save", "Send", "Close", and "Help". The status bar at the bottom left shows "Ready" and the bottom right shows "Connected to TOTALFLOW" and "Login: TFlow".

Add One or More Scale Functions in Operations

1. In PCCU Entry, click Operations, then the Capacity Tab.
2. In Scale Operations (10.255.24) in the second from bottom line, insert number of scale operations to be used in the Capacity column.



3. IF SCALE OPERATIONS IS NOT SHOWN IN CAPACITY, EITHER THE FLASH IN THE DEVICE DOES NOT SUPPORT THE NEW OPERATIONS OR THE OPERATIONS INI IS NOT 2100844-005 OR LATER.



Determine “In Low” and “In High” Values for Scale Operation

The In Low and In High values represent in input values to be scaled. When scaling an analog input, those raw values seen in the entry screen from the first image are PERCENT OF SCALE, since either volts or milliamps may be utilized. The voltage range is 0 to 10.7 volts. A common device used for AIs is a 1 to 5 volt pressure transducer. To figure the low and high inputs:

- Divide low value by full scale (10.7 volts) and multiply by 100 to arrive at percentage or $1.00 / 10.7 * 100 = 9.346\%$
- Divide high value by full scale (10.7 volts) and multiply by 100 to arrive at percentage or $5.00 / 10.7 * 100 = 46.729\%$

ANY 1 to 5 volt device used for the AIs can use these example numbers. If another output is used, say 1 to 10, use the formulas above to arrive at the low and high input percentages.

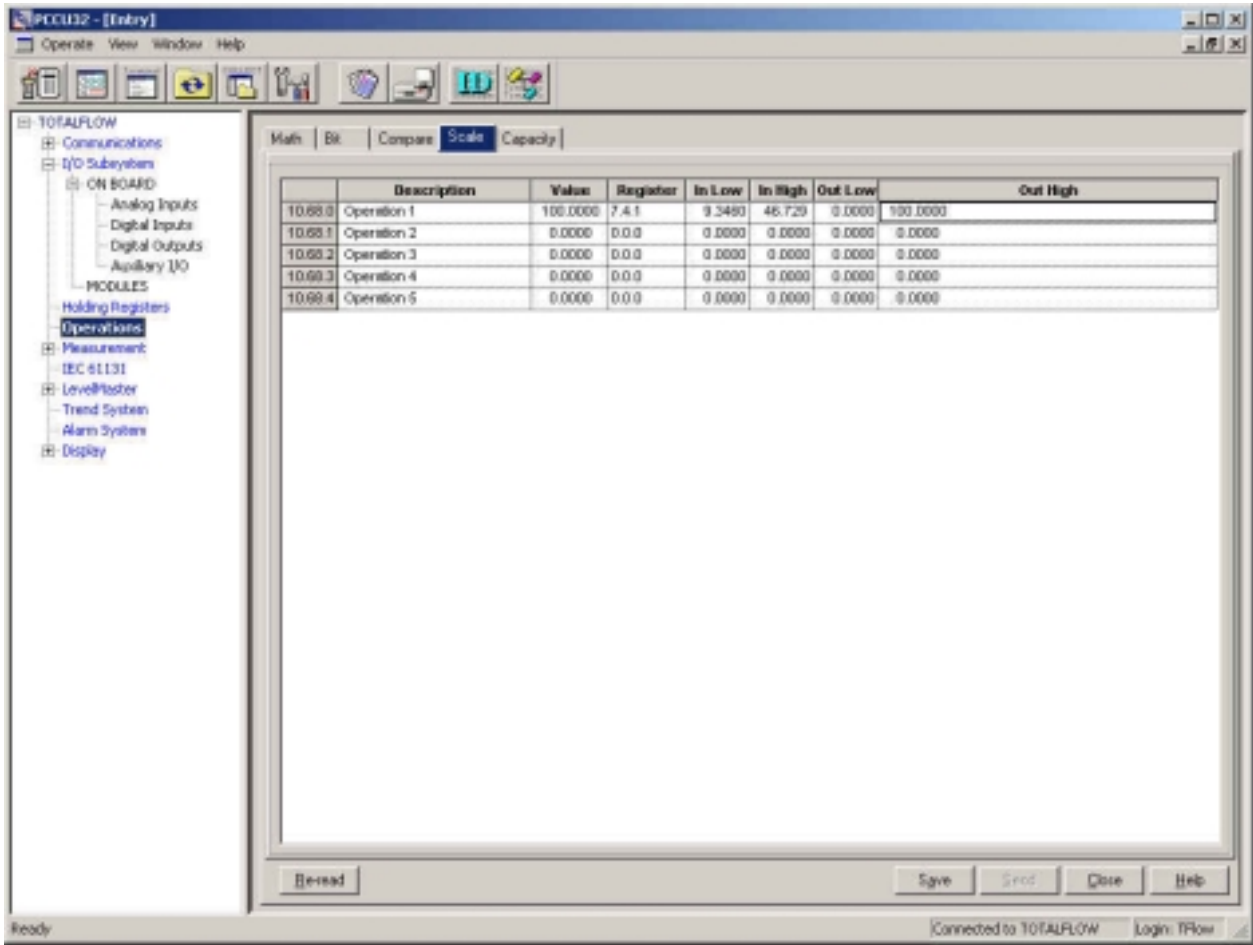
Determine Out Low and Out High Values for Scale Operation

The range of the device being used will be entered. Examples:

- 0-100 PSIA transducer, enter 0 for Out Low and 100 for Out High.
- -40 to 220° F temperature RTD, enter -40 for Out Low and 220 for Out High.

Enter the 4 Values in the Scale Operation Screen in the “In Low”, “In High”, “Out Low”, and “Out High” columns.

Enter the AI App/Array/Reg addresses recorded on page 3 in the Scale Operation Screen in the “Register” column.



To use scaled values for local display, print from poll with custom template, or trend, use the App/Array/Reg to the left of the operation. For example, scale operation 1 is 10.68.0. The number is a floating register and can be sized to whatever decimal is appropriate.

If you have questions please contact our Customer Service Department at 800-442-3097 option 1,1 and reference ABB Technical Bulletin # 114.