G4 PROGRAM DESCRIPTION

Program: **G4MI_1.8.122.0**

Program for Aircraft Shoring Force Measurement

This description is valid for:
G4 Multi Channel Weighing Instrument with application program **1.8.122.0**

See also the following descriptions
G4 Multi Channel Weighing Instrument Program version 1.8.0.0
Technical Manual PM/DT/HE (www.vishaypg.com/doc?35209)
G4 Multi Channel Weighing Instrument Program version 1.7.0.0
Operating instructions, Quick installation PM/DT/HE (www.vishaypg.com/doc?35178)

If these descriptions in any case are contradictory, this description is valid.

Special Program options:
To get the functionality described below the following program option has to be activated.

13: Aircraft Shoring Option: Option for Aircraft Shoring Force measurement.

Function

This special program adds a new user interface where multiple channels (distributed in multiple G4 instruments) can have unique channel numbers and names (position identifiers). In one G4 up to eight channels with no. , name, and force value can be displayed in one window.

The program can be used in G4 weighing instrument with graphical display (PM/HE/DT). The standard options 'Flow rate' and 'Batching' are not available in this program.

General

This project shall use a totality of five G4, each with four WFIN2 modules (which gives eight weighing channels / G4 instrument). The G4 display interface shall indicate a force measured at pre-specified points along an Aircraft Body. Each G4 can display the force measured at 8 pre-assigned measuring points.

The G4 instrument will start up with a display similar to the following.

The identification process uses two parameters (Load Cell Number, Load cell Position) to define the indicated force reading.

The value of the LC No is defined by a set-up parameter in G4 (see 'Parameter Set-up / General / Scale No. Offset') which defines the value of the first load cell number in the instrument (scale 1 of 8 in the instrument). The rest of the load cell numbers in the instrument will have contiguous numbers following the first. If a load cell channel (scale) is not configured the load cell no and force value will show dashes (----).

To configure load cell numbers from 1 – 40 in five G4 instruments with each 8 load cell channels, this parameter should be set to the following values in the different G4 instruments, 1, 9, 17, 25, 33.

The value of the LC Position is defined by a set-up parameter for each load cell channel (see 'Parameter Set-up / Calibration / Scale X / Scale Name' where X is 1 thru 8). The parameter can contain any character string of up to 32 characters and can be entered / edited from the front panel of G4 (using a soft alfa numeric keyboard on the G4 display), or via a usb keyboard (recommended) connected to the usb port on the G4.

The Force Unit Header ('Force lbf' in the picture above) is controlled by the set-up parameter 'Measurement unit' for the first load cell channel in the instrument (Scale 1 'Measurement Unit').

The Instrument header text ('AIRCRAFT SHORING FORCE' in the picture above) is taken from the set-up parameter 'Instrument Name' (see 'Parameter Set-up / General / Instrument Name').

Operation

The display of the G4 is modified to show in one window up to eight load cell measurements. If the force value for a load cell is not stable (see chapter 5 about 'Motion' in standard manual), the force value is shown with red digits.

Zero Operation

The Zero command is activated by touching the membrane key marked "Zero" (located at the lower left hand corner of the G4 front panel). A dialog box will then appear with a prompt that says "Enter Load Cell Number: ".

The Operator may then enter the number of the Load Cell that needs a zero offset correction. The number must be one of the numbers displayed on the operator screen. A Load cell number different from the displayed numbers (other than a 99) will be considered an illegal entry.

If the Load Cell number is valid, then the indicated output will be corrected for zero offset.

If the Operator enters a Load cell number equal to 99, then <u>all</u> the Load cells as identified by the Load Cell Numbers displayed on the G4 screen will be corrected for zero offset.

Pushing of the "Enter" membrane key will begin the processing of the Zero Operation. When the operator pushes the membrane key "Enter", first, a series of validation tests will be performed.

    a. If the Load Cell Number selected is not a valid number (valid values are 99, or one of the displayed Load Cell Numbers) an error message will show "Load Cell Number not valid" for a period of three seconds. Normal processing resumes.

    b. A check will now be performed to make certain that the indicated force reading of the selected Load Cell number is in stable equilibrium. If not, an error message will show, indicating "Unstable. Zero not performed" for a period of three seconds. Normal processing resumes.

    c. If the Zero command Load Cell Number entry equals 99 (Offset Correction applied to all Load Cells), then the presence of an unstable force indication belonging to any of the Load Cell Numbers being displayed, will make the zero operation invalid, and a message will show "Unstable. Zero not performed" for a period of three seconds. Normal processing resumes.

If the tests are validated as per the criteria stated above, the Zero calculations will be performed and the offsets saved in non volatile flash memory. The display will show "Zero Operation Successful" for a period of three seconds, and then normal processing will continue.

The Load Cell Numbers on which the Zero operation was performed will indicate zero output.

Parameters

The menu system is reached with the 'Info' button on the G4 front panel (or key F11 on a connected usb keyboard). This will open the menu system. Select menu **'Parameter Set-up'** to enter the menus for set-up parameters.

Note that the login system has been activated by default, so that first time trying to enter / change a parameter a pop-up message window will ask for a login code. The standard code for G4 to enter here (if not changed) is '1937'

Added or changed parameters.

Menu 'General'
In this menu, the 'Language' parameter has been removed (this program only uses the English language), and one parameter has been added.

Scale No. Offset (new parameter)

Range:	**Defines** the value that will be used as load cell number
1 - 999	for the first channel in the instrument (Scale 1).
	Following channels will use contigous numbers after this
<1>	value (Scale 2 – 8)

Following parameters in this menu has new default values:

Instrument Name	New default value:	AIRCRAFT SHORING FORCE
Date Format	-"-	MM/DD/YYYY
Gross/Net Key	-"-	Off
Tare Key	-"-	Off
Print Key	-"-	Off
Operator Lock	-"-	On
Set-up Lock	-"-	On

Menu 'Hardware Config'
Default values for Modules in slot 1 – 4 has been changed to WFIN2 with scale numbers 1 -8.

Menu 'Calibration'
Following parameters (for all 8 scales) in this menu has new default values:

Measurement Unit	New default value:	lbf
Resolution	-"-	1

Menu 'Program options'
This menu shows all available program options for this special program. In this program the options for flow measurement '01: Flow rate' and '02: Scale Batching' are removed and the option for aircraft shoring '13: Aircraft Shoring Option' has been added.

Program options must be activated with an option code to be functional. The option code can be purchased from your instrument supplier.

13: Aircraft Shoring Option

< – >	The option code necessary to activate the 'Aircraft Shoring User interface'. The code always consists of 10 digits and is related to the CPU module serial number and the application program number. To temporarily use the option, enter the string 'Demo' (irrespective of upper/lower case). This will allow to use the option for 14 days e.g. for try out. Enter a '–' to turn off the program option. The program option can be used for several short periods but after a total use of 14 days it will be permanently turned off until a valid code is entered.

Error detection

Normal error detection in G4 is active, and if a load cell or load cell channel module fails, the force value field in the display will show 'Error!' instead of a force value.

G4 Standard displays

From the Aircraft Shoring user interface (see window above) it is possible to reach the standard weight displays of G4 by simultaneously pressing the two buttons 'Alt' + F2 (first 'Alt' and then while 'Alt' is depressed pressing F2).
The standard displays are extended with a soft key '8ch.Disp' (above F2) which will reload the Aircraft Shoring user interface window.