PROGRAM DESCRIPTION G4

Program: G4MI_1.5.120.1

Special program for Weight / Volume display

This description is valid for:

G4 Weighing Instrument with application program **1.5.120.1**

See also the following descriptions

G4 Weighing Instrument, Technical Manual PM/DT/HE ver. 1.5.0.0
(www.vishaypg.com/doc?35152)
G4 Weighing Instrument, Op. instructions, Quick inst. PM/DT/HE ver.1.5.0.0
(www.vishaypg.com/doc?35186)
G4 Weighing Instrument, Scale batching ver. 1.5.0.0

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

Special Program options:

To activate the functionality described below the following program options has to be activated.
Program Option 01:   Volume
Program Option 02:   Scale Batching

Rem. 'Flow rate' option and 'Preset tare' functions cannot be used in this program

Function

This special program has functions for displaying weight or volume both on the internal display and on external displays as well as in a communicating PC program .
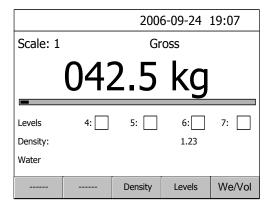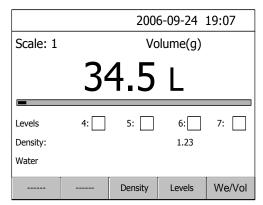
General

Each scale has a parameter for 'Density' and it is possible to display weight or volume (which is weight / density) . It is possible to change the display mode (weight or volume) for each separate scale with a button on the front panel or via a digital input (for each scale) or via communication. It is possible to change the display mode in the normal weighing displays and also in the scale batching displays (when batching is running). The volume is always displayed in litre (L).

In this program, it is also possible to connect up to eight external addressable displays on each serial port COM1 and COM2. The display type 'London6' (six character display) is treated in a special way so that the characters sent to the display is five digits + a 'G' or 'L' for weight kG or volume L.

Operation

In the normal weight display two new buttons has been added. Button 'We/Vol' changes the display between weight or volume.

2006-09-24 19:07	2006-09-24 19:07
Scale: 1 Gross	Scale: 1 Volume(g)
042.5 kg	**34.5 L**
Levels 4:☐ 5:☐ 6:☐ 7:☐	Levels 4:☐ 5:☐ 6:☐ 7:☐
Density: 1.23	Density: 1.23
Water	Water
------ ------ Density Levels We/Vol	------ ------ Density Levels We/Vol

The volume is always displayed in litre (L) and is always following the displayed weight, Net or Gross. The status word Volume is followed by (g) for gross and (n) for net.

The other new button 'Density' opens a window where the density value for the actual scale can be entered or edited.
Density values for all scales can be entered if in the Main menu (info-button) the menu 'Density' is opened.

When in batching menus it is also possible to change between weigth and volume display with button F4 if this button is not used for any batching function.

Batching	2006-09-24 19:07
1:Baking powder	Net
	002.1 kg
Status:	Batching Coarse
Batch no:	1 (3)
Activity:	2:Water
Setpoint:	44.4 kg
B.Data	We/Vol Back

Batching	2006-09-24 19:07
1:Baking powder	Volume(n)
	02.1 L
Status:	Batching Coarse
Batch no:	1 (3)
Activity:	2:Water
Setpoint:	44.4 kg
B.Data	We/Vol Back

The 'weight' display field can be changed between weight or volume, but the setpoints is always entered and displayed as a weight value.

Communication

In this program the standard 'Flow rate' functions has been removed and replaced by weight/volume functions.

Therefore all registers that in the standard manual is described as holding the 'flow rate' values for the separate scales are in this program holding the volume values, and all bits in the 'status' registers referring to 'flow rate' are in this program used for the volume, with the same functionality.
All commands in the 'Command register' referring to 'flow rate display' are in this program used for 'volume display' (for respective scale).

Volume value registers

Data type: Integer	Data type: float (2 reg./value)	Explanation	R/W
40042 (3 reg)	44046	Scale 1: Volume	R
40056 (3 reg)	44058	Scale 2: Volume	R
40070 (3 reg)	44070	Scale 3: Volume	R
40084 (3 reg)	44082	Scale 4: Volume	R
40098 (3 reg)	44094	Scale 5: Volume	R

Data type: Integer	Data type: float (2 reg./value)	Explanation	R/W
40112 (3 reg)	44106	Scale 6: Volume	R
40126 (3 reg)	44118	Scale 7: Volume	R
40140 (3 reg)	44130	Scale 8: Volume	R

Scale X: Status

Status for a scale.

Bits set to 1 in this register have the following meaning:

Bit no	Function	Comment
0	Net weight > INT size	The net weight in 'scaled integer' format does not fit in one register. (See description of data representation.)
1	Gross weight > INT size	The gross weight in 'scaled integer' format does not fit in one register. (See description of data representation.)
2	Volume > INT size	The volume in 'scaled integer' format does not fit in one register. (See description of data representation.)
3	Good zero (disp. weight)	
4	Good zero Gross	
5	Good zero Net	
6	Net Mode	'1' = Net mode '0' = Gross mode
7	Motion	Unstable weight
8		
9		
10		
11	Volume display	Volume is shown in the display.
12	Net weight > 6 digits	The net weight value is out of precision and should normally not be used.
13	Gross weight > 6 digits	The gross weight value is out of precision and should normally not be used.
14		
15		

Note: If this register (bits) is read as float value, see description of Data representation.

Command register

Data type: Integer	Data type: float (2 reg./value)	Explanation	R/W
42000 (1 reg)	46000	Command register	R/W *

Commands 15, 25, 35, 45, 55, 65, 75, and 85 are used for selecting the volume for respective scale, to be shown on the display.

Digital Inputs and Outputs

Digital inputs can be configured to be a 'Volume/Weight' toggle input or a 'Set Volume display' input.

Outputs can be configured to be a 'Volume displayed' output.

Density values

In the same way all standard 'Preset tare' values has been removed and replaced by 'Density' values.
Therefore all registers that in the standard manual is described as holding the 'Preset tare' values for the separate scales are in this program holding the density values.

Density value registers

Data type: Integer	Data type: float (2 reg./value)	Explanation	R/W
42010 (3 reg)	46010	Scale 1: Density	R/W
42013 (3 reg)	46012	Scale 2: Density	R/W
42016 (3 reg)	46014	Scale 3: Density	R/W
42019 (3 reg)	46016	Scale 4: Density	R/W
42022 (3 reg)	46018	Scale 5: Density	R/W
42025 (3 reg)	46020	Scale 6: Density	R/W
42028 (3 reg)	46022	Scale 7: Density	R/W
42031 (3 reg)	46024	Scale 8: Density	R/W

External Display

The program has functionality for connecting a number of different external displays (see below), but in order to, on the external display , be able to see wether volume or weight is displayed, the display type 'LONDON6' has to be selected.

Using this display, volume is shown as a 5 digit number + the letter 'L' and weight is shown as a 5 digit number + the letter 'G'.

Switching between volume and weight on the G4 will also switch the value on the external display.

As the volume value always follows the displayed weight (net or gross), it is important that also the external display parameter 'Display mode' is set to 'Displayed weight'.

Menu 'Serial Com.'

New an modified parameters and menus for External displays.

COM1 (or COM2):Mode

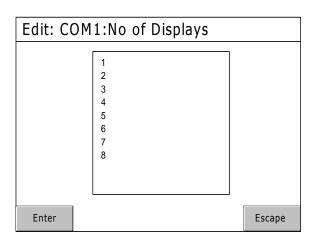|	
Not in use	Defines use of serial port Com 1.
Modbus Slave	***Not in use:*** *The port is not used.*
Printer	***Modbus Slave:*** *The port is used for control unit communication.*
Extern display	***Printer:*** *The port is used for a printer.*
<Not in use>	***Extern display:*** *The port is used for an external display.*

New choice '**Extern display'** for COM1 (COM2) Mode in MENU 'Serial Com.'

```
Edit: COM1:Mode

        Not in Use
        Modbus Slave
        Printer
        Extern display




    Enter                    Escape
```

COM1(or COM2):Number of displays

1	Defines the number of external displays connected on the
2	communication port number 1.
3	Note: If more then one external display selected a
4	RS232/RS485 converter is needed.
5	
6	This parameter is only shown if 'External display' is selected in
7	'COM1(or COM2):Mode'.
8	
<1>	

```
Edit: COM1:No of Displays

        1
        2
        3
        4
        5
        6
        7
        8


    Enter                    Escape
```

COM1(or COM2):(display number) Type of Display

VISHAY
LONDON 4
LONDON 5
LONDON 6
LONDON 7
NEWPORT 6
< VISHAY >

Adapts the display (1 – 8) to the serial output.

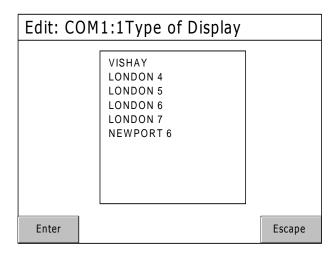Note: that it is possible to have different types of displays on the same communication port, except display type VISHAY that is not addressable.

VISHAY: Serial output adapted for display type, VTRD 10-S-2-E, for more details see separate table.
LONDON 4*: Serial output adapted for display type, london with 4 digits,* for more details see separate table.
LONDON 5*: Serial output adapted for display type, london with 5 digits,* for more details see separate table.
LONDON 6*: Serial output adapted for display type, london with 6 digits,* for more details see separate table.
LONDON 7*: Serial output adapted for display type, london with 7 digits,* for more details see separate table.
NEWPORT 6*: Serial output adapted for display type, newport 6155AS with 6 digits,* for more details see separate table.

This parameter is only shown if 'External display' is selected in 'COM1:Mode'.

```
Edit: COM1:1Type of Display

        VISHAY
        LONDON 4
        LONDON 5
        LONDON 6
        LONDON 7
        NEWPORT 6




  Enter                        Escape
```

COM1 (or COM2):(display number) Address

Range: 0 to 8   Defines the external display address.
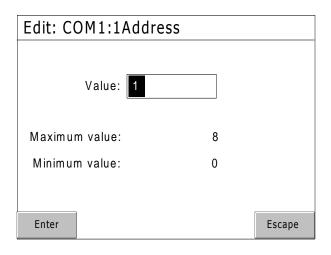
< display number >   for more details see separate tables for each display type. If value zero is selected, then the address function will be disabled.
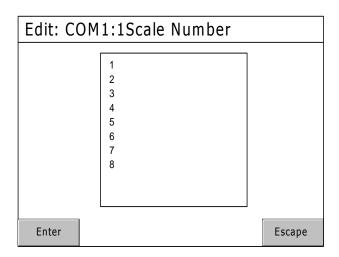
Note. This parameter will not be displayed if display type VISHAY is selected.

```
Edit: COM1:1Address

              Value:  1

    Maximum value:        8
    Minimum value:        0

    Enter                      Escape
```

COM1 (or COM2):(display number) Scale

1	Defines which scale that will be connected to the display.
2	
3	*1: The display is connected to scale number 1.*
4	*2: The display is connected to scale number 2.*
5	
6	….
7	*8: The display is connected to scale number 8.*
8	
<1>	This parameter is only shown if 'External display' is selected in 'COM1 (COM2):Mode'.

```
Edit: COM1:1Scale Number

          1
          2
          3
          4
          5
          6
          7
          8

    Enter                      Escape
```

9

COM1 (or COM2):(display number) Display Mode

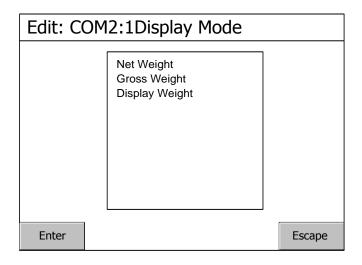|	
Net Weight	Defines the value to represent on the external display.
Gross Weight	**Net Weight:** *The display represents net weight.*
Disp. Weight	**Gross Weight:** *The display represents gross weight.*
Flow Rate	**Disp. Weight:** *The display represents gross or net weight.*
< Disp. Weight >	**Flow Rate:** *The display represents flow rate.*
	This parameter is only shown if 'External display' is selected in 'COM1(COM2):Mode'.

```
┌─────────────────────────────────────────────┐
│ Edit: COM2:1Display Mode                     │
├─────────────────────────────────────────────┤
│        ┌──────────────────────────┐          │
│        │ Net Weight               │          │
│        │ Gross Weight             │          │
│        │ Display Weight           │          │
│        │                          │          │
│        │                          │          │
│        │                          │          │
│        │                          │          │
│        └──────────────────────────┘          │
│ ┌────────────┐          ┌────────────┐       │
│ │   Enter    │          │   Escape   │       │
│ └────────────┘          └────────────┘       │
└─────────────────────────────────────────────┘
```

External display formats

Type 'VISHAY' with 6 digits

The external display format for display type 'VISHAY' normally shows the current weight/flow, but under the following conditions only 'dashes' (------) are displayed:

- the number of digits in the transmitted weight/flow value is outside the display range.

- the instrument is not in normal state or there is a weight error.

Definition of weight/flow value to external display type 'VISHAY' with 6 digits:

Character No.	Value alphanumeric.	Value Hex	Function
1	1, 2	31, 32	Weight status: 1 = Weight/flow value includes a decimal point. 2 = Weight/flow value is negative and includes NO decimal point.
2 to 8	0 – 9, . , -	30 – 39,2E,2D	*/ Weight/flow value: 7 characters with the weight value incl. polarity and decimal point. Polarity occupies a position in the display, while the decimal point do not occupy any position. This means that positive numbers can be displayed with 6 digits (with or without decimal point), while negative numbers can be displayed with 5 digits. (The first digit may be a minus sign).
Last		0D	End character (CR).

Note: */ Leading zeros will be added to fill up to the selected number of digits.
The decimal point does not occupy any digit position.

Type 'LONDON' with 4 to 7 digits

The external display format for display type 'LONDON' normally shows the current weight/flow, but under the following conditions **NO** values will be sent to the display(s).

- the number of digits in the transmitted weight/flow value is outside the display range.

- the instrument is not in normal state or there is a weight error.

NOTE. Appropriate time out value should be set to the external display(s).

Definition of weight/flow value to external display 'LONDON' with 4, 5, 7 digits:

Character No.	Value alphanumeric.	Value Hex	Function
1		03	End of text character (ETX).
2		02	Start character (STX).
3 – 4	91 - 98	31 - 38	Optional address (2 characters) Remark: Selected address 1 results in adr. 91. Selected address 2 results in adr. 92. … Selected address 8 results in adr. 98.
5 to 8 – 12	0 – 9, . , -	30 – 39,2E,2D	*/ Weight/flow value: 4, 5 or 7 digits and a possible decimal point. (The first digit may be a minus sign).
		0D	End character (CR).
Last		03	End of text character (ETX).

Note: */ Leading zeros will be added to fill up to the selected number of digits. The decimal point does not occupy any digit position.

Type 'NEWPORT '6155AS'with 6 digits

The external display format for display type 'NEWPORT 6155AS' normally shows the current weight/flow, but under the following conditions only 'dashes' (------) are displayed:

- the number of digits in the transmitted weight/flow value is outside the display range.

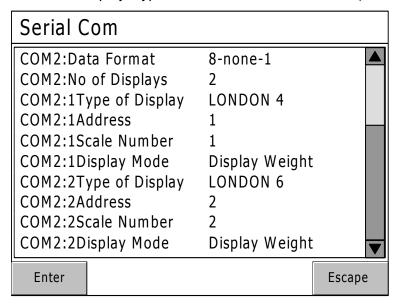- the instrument is not in normal state or there is a weight error.

Definition of weight/flow value to external display type '6155AS' with 6 digits:

Character No.	Value alphanumeric.	Value Hex	Function
1		02	Start character (STX).
2	1 - 8	31 - 38	Optional address (1 character)
3	H, M, blank	48, 4D, 20	H = gross weight is transmitted. M = net weight is transmitted. blank = flow, or no valid weight is transmitted.
4 to 9 or 10	0 – 9, . , -	30 – 39,2E,2D	*/ Weight/flow value: 6 digits and a possible decimal point. (The first digit may be a minus sign).
Last		03	End of text character (ETX).

Note: */ Leading zeros will be added to fill up to the selected number of digits.
The decimal point does not occupy any digit position.

Configuration example menu 'Serial Com'
Two serial displays type London connected to COM2 (RS485)

```
┌─────────────────────────────────────────────┐
│ Serial Com                                    │
├─────────────────────────────────────────────┤
│ COM2:Data Format      8-none-1           ▲   │
│ COM2:No of Displays   2                      │
│ COM2:1Type of Display LONDON 4               │
│ COM2:1Address         1                      │
│ COM2:1Scale Number    1                      │
│ COM2:1Display Mode    Display Weight         │
│ COM2:2Type of Display LONDON 6               │
│ COM2:2Address         2                      │
│ COM2:2Scale Number    2                      │
│ COM2:2Display Mode    Display Weight     ▼   │
├─────────────────────────────────────────────┤
│  Enter                        Escape         │
└─────────────────────────────────────────────┘
```

Number of External Displays = 2

Display no 1:
- Type of Display = LONDON 4 digit
- Address = 1
- Connected to scale number 1
- Display Mode = Display Weight

Display no 2:
- Type of Display = LONDON 6 digit
- Address = 2
- Connected to scale number 2
- Display Mode = Display Weight

Important settings for London and Newport displays

Display LONDON Easy Reader Model ER2S

Function	Setting
Time-out	t.o.3
EJECT data	EJ.00
DISPLAY	DSP.4
Termination character	C.r.0d
Address	91 to 98

Display London S17xx

Function	Setting
Configuration	CFg 2
Idle time	IdL 10
Address	91 to 98

Display LONDON FUSION-S 6 digit version, and INTUTIVE-S Mk.2

Function	Setting
Displayed data length	D.LEN.06 (if no decimal else 07)
Decimal point position	0
End Character setting	E.CHR.03
Start Character setting	S.CHR.02
Termination Character	T.CHR.00
Timeout setting	TO.03
Address	91 to 98

Display Newport 6155AS

Function	Setting
Mode	1
Address	1 to 8

Vishay Nobel AB

Box 423, SE-691 27 Karlskoga, Sweden

Phone +46 586 63000 · Fax +46 586 63099

pw.eur@vishaypg.com

www.weighingsolutions.com