FS-*i* Series Check Weighing Scales

This manual describes the additional functions and corrections to the instruction manual WM+PD4001332 and 1WMPD4001368. Please note that the new functions are available for the latest version of the FS-*i* series only.

1. AUTO-TARE FUNCTION

The auto-tare function will be used with comparator function enabled. If the weight value is within the OK range and stable for seconds of time, then the scale will automatically tare the weight and show zero. The Function "*F22*" designates the timing to tare automatically.

❑ To use the auto-tare function, set the function settings below.

F08- 1: Compare all weighing data (the other setting may be used depending on the application).
F21- 1: Auto-tare function enabled.
F22-0~9: Select the timing to tare automatically to avoid the wrong tare operation.

❑ Take-away check weighing "*F24- 1*"

To use the scale with take-away check weighing (negative comparison), set the Function "*F24- 1*" together with the auto-tare function enabled "*F21- 1*". The scale operates as "take-away the stuff" → "OK and stable" → "auto-tare" → "take-away the stuff" → ·······.
In this mode, the comparator results are shown as below.

F07- 1: -(|Target|+HI limit)   -(|Target|-LO limit)
F07-0: -|Upper limit| -|Lower limit|

Negative value   Net 0   Weight display

HI   OK   LO
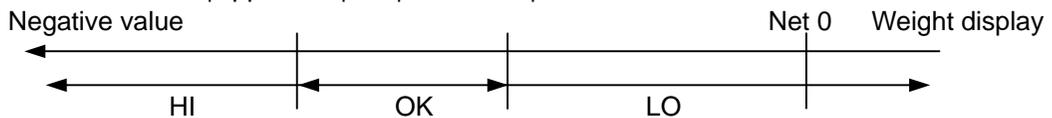
❑ When the Function "*F23- 1* Tares the initial (container) weight." is set:

To start the auto-tare function application, usually the weight of container (filled with stuff) must be tared using the ⌴TATE⌴ key. When the Function "*F23- 1*" is set, the scale will tare the initial (container weight) weight automatically.
Remove all load on the weighing pan to return to zero point, the tare weight will be automatically cleared. If the scale could not return to zero point because of the zero shift, press the ⌴ZERO⌴ key to clear the tare weight.

❑ If the scale is equipped with the optional RS-232C interface, the OK weighing data only can be sent out automatically. Set the Function setting "*F06- 7* Auto-print mode +/- data & OK".

11-2. Function list

The following function settings are added to the latest FS-*i* series.

Item	Function number	Description	
Serial interface Data output mode	*F06- 0*	Stream mode	Optional RS-232C/422/485. Command can be used in all modes.
	F06- 1	Command mode only	
◆	*F06- 2*	Print key mode	
	F06- 3	Auto-print mode + data	
	F06- 4	Auto-print mode ± data	

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Item	Function number	Description	
Serial interface Data output mode	F06- 5	Multi-connection with Print key mode (RS-422/485)	The UFC format is applicable to F06-2 to 4.
	F06- 6	Auto-print mode + data & OK	
	F06- 7	Auto-print mode +/- data & OK	
Zero tracking	F13- 0	Zero tracking OFF	Legal for trade models cannot set F13-2 and 3.
	◆ F13- 1	Zero tracking ON, 0.5d/sec	
	F13- 2	Zero tracking ON, 1.0d/sec	
	F13- 3	Zero tracking ON, 2.0d/sec	
Auto-tare function	◆ F21- 0	Auto-tare function disabled.	
	F21- 1	Auto-tare function enabled.	
Auto-tare timing	F22- 0	Immediately after OK and stable	Timing to tare automatically after the comp. OK and weight stable. To be used with F21-1.
	F22- 1	0.5 sec. after OK and stable	
	◆ F22- 2	1.0 sec. after OK and stable	
	F22- 3	1.5 sec. after OK and stable	
	F22- 4	2.0 sec. after OK and stable	
	F22- 5	2.5 sec. after OK and stable	
	F22- 6	3.0 sec. after OK and stable	
	F22- 7	4.0 sec. after OK and stable	
	F22- 8	5.0 sec. after OK and stable	
	F22- 9	6.0 sec. after OK and stable	
Auto-tare for the initial weight	◆ F23- 0	Function disabled	Automatic operation.
	F23- 1	Tares the initial (container) weight.	
Normal/Negative comparison	◆ F24- 0	Normal comparison	
	F24- 1	Negative comparison for take-away	

◆ Factory setting

2-2. OP-03 Specifications

The followings are the corrections and the additional information for the optional interface.

Circuit diagram
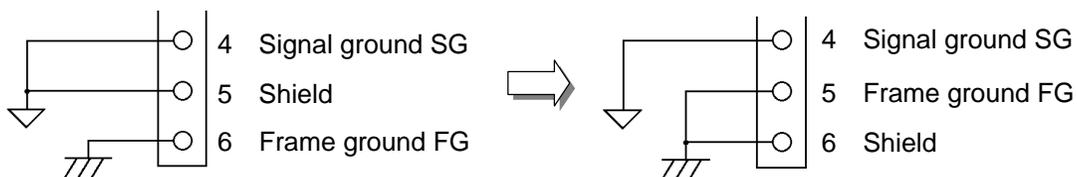
The frame ground and the shield are connected internally and there is no difference between them to use.

Data format

❑ Example of data

Out of range "kg" (+) | O | L | , | + | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | _ | k | g | C$_R$ | L$_F$ |

Out of range "kg" (+) | O | L | , | + | 9 | 9 | 9 | 9 | . | 9 | 9 | 9 | _ | k | g | C$_R$ | L$_F$ |

The position of decimal point is different according to the model and/or the Function "F02".

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Example for the weighing unit "lb-oz" (added)

Weighing data "lb-oz" (+) | S | T | , | + | 0 | 0 | 1 | L | 0 | 1 | . | 6 | _ | o | z | C$_R$ | L$_F$

Out of range "lb-oz" (+) | O | L | , | + | 9 | 9 | 9 | L | 9 | 9 | . | 9 | _ | o | z | C$_R$ | L$_F$

Data output mode (F06)

The commands can be used in all data output mode (F06-1 is command mode only).
As the new modes, the F06-5, F06-6 and F06-7 are added to the Function "F06".

❑ Auto-print Mode + data and OK (F06-6)
Data is sent if the weight display is stable at +5d (d = weighing display division) and above, and the comparator result OK in addition. The next transmission cannot occur until after the weight display falls below +5d.

❑ Auto-print Mode +/- data and OK (F06-7)
Data is sent if the weight display is stable at ±5d (d = weighing display division) and above/below, and the comparator result OK in addition. The next transmission cannot occur until after the weight display falls between –5d and +5d.

❑ Multi-connection with Print key mode (RS-422/485) (F06-5)
This is one of applications when a PC and more than one FS-*i* (RS-422/485 installed) connected. Refer to "Multi-connection with Print key mode" in detail.

2-3. Command Mode

Examples of **c**ommand and reply ("_" shows "Space" (20H).)

There are corrections to the instruction manual 1WMPD4001368.

❑ Set a HI limit value or upper limit weight. (No reply for F20-1.)
When F07-0 or F07-1 is set, the command should have <u>"+" and 6 digit number without decimal point</u>.

⇩

When F07-0 or F07-1 is set, the command should have <u>"+/-" ("+" only for F07-1) and 6 digit number without decimal point</u>.

❑ Set a LO limit value or lower limit weight. (No reply for F20-1.)
When F07-0 or F07-1 is set, the command should have <u>"+" and 6 digit number without decimal point</u>.

⇩

When F07-0 or F07-1 is set, the command should have <u>"+/-" ("+" only for F07-1) and 6 digit number without decimal point</u>.

When F07-2 is set, the command should have "+" and 5 digit number without decimal point.

Command | H | I | , | + | 0 | 0 | 1 | 0 | 0 | C$_R$ | L$_F$ Assume 2 decimal place number.

Reply | H | I | , | + | 0 | 0 | 1 | 0 | 0 | C$_R$ | L$_F$ 1.00% will be set as LO limit %.

⇩

Command | L | O | , | + | 0 | 0 | 1 | 0 | 0 | C$_R$ | L$_F$ Assume 2 decimal place number.

Reply | L | O | , | + | 0 | 0 | 1 | 0 | 0 | C$_R$ | L$_F$ 1.00% will be set as LO limit %.

❑ Store the comparator limits into the specified memory number. (No reply for $F20-1$.)

Command	M	L	,	0	1	,	+	0	0	1	2	0	0	,	+	0	0	0	9	0	0,	C_R	L_F
Reply	H	I	,	0	1	,	+	0	0	1	2	0	0	,	+	0	0	0	9	0	0,	C_R	L_F

⇩

Command	M	L	,	0	1	,	+	0	0	1	2	0	0	,	+	0	0	0	9	0	0,	C_R	L_F
Reply	M	L	,	0	1	,	+	0	0	1	2	0	0	,	+	0	0	0	9	0	0,	C_R	L_F

3-2. OP-04 Specifications

The followings are the corrections and the additional information for the optional interface.

Circuit diagram
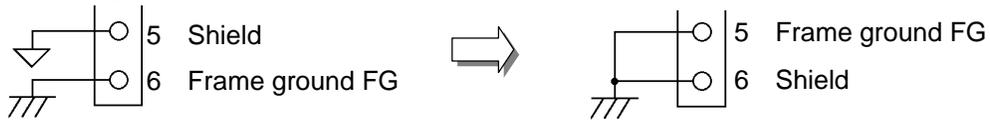
The frame ground and the shield are connected internally and there is no difference between them to use.

Multi-connection with Print key mode (new function)

This is one of applications when a PC and more than one FS-*i* are connected. The scale will prepare the weighing data by pressing the PRINT key first and will send out the prepared data after receiving a command from the PC.

1. Set the Function "$F06-5$" for all of the scales.
2. Weigh something and wait for the stable annunciator to turn on (the scale having $F18-\#\#$).
3. Press the PRINT key, the scale will temporarily store the weight data and turn the PRINT annunciator on.

❑ The scale does not accept the PRINT key while the PRINT annunciator on.

4. Send the "@##S" command to the scales from the PC.
5. The scale ($F18-\#\#$) will respond the command to send the weight data memorized and turn the PRINT annunciator off.

The address ## = 23 ($F18-23$).

❑ Request a weight data.

Command	@	2	3	S	C_R	L_F

Reply	@	2	3	S	T	,	+	0	0	1	2	.	3	4	5	_	k	g	C_R	L_F

Reply	@	2	3	I	C_R	L_F

The scale does not have a stored data to send.

❑ While the PRINT annunciator is on, the scale will send back "@##I" to the commands other than "@##S" command.