

System 2X Flash ETR

Application Note

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System 2X Flash ETR Option

Flash Electronic Tally Record

When a weight result is used by a 'non-approved' external system (for example a PC and printer) for trade purposes, it is a requirement that an indelible record be maintained on the type approved equipment for subsequent checks.

This is sometimes achieved using a Printer on the approved weight indicator. However, System 2X has a 'Flash' Memory option that gives a 'solid-state' alternative that allows a huge log of transmitted weights and associated reference numbers to be maintained and recalled many months afterwards.

The flash option must be factory installed. When fitted a Flash Menu provides a parameter ENABLE that may have a value 0, 1, 2 or 3. The two-letter command for this parameter is **FE**.

Access level one is required to enable setting 1, 2 or 3

Access level two is required to disable with setting 0

In Weighbridge Mode (BRIDGE, WB=1) only Flash ENABLE FE=3 is permitted

In standard mode setting 1, 2 or 3 can be used

In each case transactions are subject to standard interlocks for stability, weight change etc. as configured for system print conditions.

- If FE = 0** Flash Operations are disabled.
- If FE = 1** The Flash Store Command (**FS**) will store the weight and transmit the transaction data packet or return an error response.
PRINT or Command **PR** uses the ENQ/ACK Serial Protocol described later.
- If FE = 2** PRINT or Command **PR** will both activate Printing and Store/transmit (without using the ENQ/ACK Protocol. The flash store reference can be incorporated into the print format. (The PDATA function in the SERIAL menu can also be used to send additional data to the PC)
The Flash Store Command (**FS**) will Store the weight and transmit flash data packet as above, without printing.
- If FE = 3** PRINT or Command **PR** will activate normal printing functions.
The Flash Store Command (**FS**) will Store the weight and transmit flash data packet as above, without printing.
Interlock between transactions applies to transaction of either type.

The flash data packet is always as that described within the ENQ/ACK protocol described below.

It is a pre-requisite for data transactions that a computer (or similar) is connected to the serial port and is in active communication when the PRINT command (or condition) is given. Transactions are not stored or buffered other than with the flash memory for purposes of examination using flash reference numbers.

System 2X uses COM2: as the Serial Communication Port to which a remote Computer should be connected and running suitable software.

Serial Protocol for Flash Operation

USING FS COMMAND

Computer	System 2X	Comment
FS <CR>		Command Issued
	or ERROR RESPONSE DATA PACKET	If NOT ready to store, see ERROR RESPONSES See DATA PACKET

USING PR COMMAND or PRINT button

Computer	System 2X	Comment
PR <CR>		Command Issued (Or use PRINT Button on 2X)
	or ERROR RESPONSE <ENQ>	If NOT ready to store, see ERROR RESPONSES Response if ready to store. Display shows FLASH
<ACK>		If computer fails to respond in 3 seconds then a NAK (15h) will be sent, all displays will show CCCCCCC and the function will be abandoned. If the computer responds with any character other than ACK (06h) then 2X will retry another ENQ. Maximum of 2 retries then sends a NAK shows CCCCCCC and aborts.
	DATA PACKET	The data is stored and the Ref No. increments and the DATA PACKET is sent: -
<ACK>		Response from computer confirming receipt, within 3 seconds otherwise as above.
	OK<EOL>	2X sets printed flag and ONLY NOW should the PC use the Weight & Reference No.

Some applications might combine the use of FE = 2 and the SERIAL PDATA function to add an additional data packet consisting of the printed data arranged as comma-separated variables.

DATA PACKET

<STX>nnnnnnn wwwwww0<ETX><CrLf>

STX =02h

7 digits ASCII Reference Number

Space =20h

7 digits ASCII Weight

- NO leading zero blanking
- NO embedded decimal point
- Appended zero (30h)
e.g. 286.5kg sent as [0028650]

ETX =03h

ERROR RESPONSES

	(Display)	
?B	F o o L o	Below Minimum Weight
?P	U n L o A d	Insufficient weight change since previous store operation
?H	F o o H I	Above maximum weight
?G	n E 9	Negative weight
?T	o U t _ t o L	Out of tolerance
?W		Flashcard busy
?M	Flash MSD D.P.	In motion (Weight unstable)
??		Command not accepted (may be for various reasons)

In most cases the computer application might immediately abandon with appropriate message.

However, when using the **PR** dialogue, following ?M and ?W the system may yet still send the ENQ if the conditions are satisfied within the 'Motion Time Out' period. The default period is 1 second and is adjustable using **config** Menu and the **tout** parameter. The computer should wait for this period to get the expected **ENQ**. There will be no further response if motion condition persists at the end of this period.

Setting Motion Time Out **tout** = 00 will prohibit any stored function. If in motion when the **PR** command is received, the first error response?? will be sent and the computer can then try again.

The System 2X Menu Structure has **Enable** (access level 2), **Recall** and **Dump** all included under the **FLASH Menu** option.

If **EnAbLE** is selected, then moving to **rECALL** will require the entry of the relevant Serial Number, or issuing the 2 letter Command (**FR**) with the appropriate number, will result in the display/transmission of the stored weight.

If **dUΞP** is selected, or the Command (**FD**) is issued, both with the entry of the starting Serial Number then data, from that entry onwards will be transmitted by default to the printer port (COM1). If the command was a keyboard entry it may be terminated, before the actual end of data, by pressing [**Esc**]. If it was a serial command then issuing a character seven (**07h**) BEL, Ctrl G to the instrument that will then abort the data string.

The option to abort is necessary as the data stored may be excessive and it could take many minutes to complete a dump.