Technical Note

FX-IN Legal for Trade Models - SA1095 Production

As of Jan, 2020 A&D was granted an amendment A3 to existing NTEP certification CC#08-045. This amendment was an update from 08-045A3 that covered the scope of production line SA717 and has now migrated to 08-045A4 and covers the scope of production line SA1095.

The reason for the amendment was in response to NTEP e=d requirement of class I & II scale devices in a "direct sales application" to be in accordance to Handbook 44 issued by National Weight and Measurement Conference (NWMC). Specifically, the **HB44 scales code paragraph S*.1.2.2.2. Class I and II Scales Used in Direct Sales.*** – *When accuracy Class I and II scales are used in direct sale applications the value of the displayed division "d" shall be equal to the value of the verification scale interval "e." [Nonretroactive as of January 1, 2020; to become retroactive as of January 1, 2023]*

NWMC re-issued a statement to manufacturers and distributors in which they cannot sell a Class I or Class II balance where e≠d for a "direct sales application" (where both buyer and seller are present and the monetary value of the product is based directly on weight i.e. gold and cannabis) after January 1, 2020. Existing balances will need to be replaced by January 1, 2023. Not all cannabis weighing applications are deemed direct sales applications, it is dependent on the individual state's weight and measures regulations. HB44 & Publication 14 is national guide for state weight and measurement to use for setting regulation & enforcement policy for their individual states per industry.

Therefore A&D submitted SA1095 samples for evaluation to amend and comply with e=d requirements for Class II scales and cover both direct and indirect applications. As of March 2020, A&D started to delivery legal for trade compliant SA1095 production models units into the US market and discontinued SA717.

Scope of SA1095 updates:

1) Allow end user the flexibility to select and label class II scales to be e=d for direct sales applications or e=10d for indirect sales applications before sealing while remaining compliant with **HB44 scales code paragraph S*.1.2.2.2.***
2) At the same time, the data output accuracy and format of what is displayed on the balance was evaluated. To be fully compliant with data output requirements (regardless of transmission technology) FX-iN changed from A&D format to a DP format in accordance to **Pub 14 Section 12** Values Defined and **Pub 14 Section 13** Representation of Weighments must be followed legal for trade requirements for both e=d or e=10d settings. Data Output must be accurate representation which includes:
    a. Data output is represented identical to the display based on e=d OR e=10d selected settings.
    b. NTEP testing standard also require there be no leading or trailing numeric zeros as character placeholders or spaces between header and plus/minus sign
    c. All the appropriate/approved symbols and abbreviations for unit of measures and Gross, Net, lb, ozt is reflected accurately from display to data output
    d. Stable results indicated and output to prevent any fraudulent data and monetary transactions in direct sales application.

Therefore, it was necessary to change to a Fixed DP format in new production line SA1095 and make sure it was sealable in both legal for trade mode NTEP e=d and e=10d.

Any software settings or connectivity configurations must be updated to accommodate the legal for trade certified data output DP formats when installing SA1095 FX-iN models.

*See Page 2 for Comparison Table & Page 3 for DP format technical information

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Quick Comparison Chart of SA717 to SA1095

Production Type	FX-iN SA717/SA718	FX-iN SA1095	Comment/ Compliance
Certificate of Conformance	08-045A3	08-045A4	Amended to meet Scales Code paragraph S.1.2.2.1
Hardware	ON:OFF Key Tare/Zero Key	ON:OFF/ Zero Key Zero and Tare Keys now separated	Pub 14 8 G-S.7 See supplemental manual for details
Front Label	Front label display e=10d specification to NTEP standards	Front label must be changed in accordance to the selected mode e=d or e=10d. e=10d is the default to meet the broad range of application in the US market. Unless it is considered a direct sales application e=d is not required.	User responsible for selecting the right mode to fit their application type to meet individual state regulatory requirements
Firmware	4.100	4.315	
Firmware displayed divisions	e=10d only	Selectable NTEP modes e=d (last bracketed digit off) OR e=10d (last bracketed digit on)	Amended to meet Scales Code paragraph S.1.2.2.1S.1.2.2.1
Date Output Format	A&D Format – Open (can be changed to other formats)	DP Format – Fixed (e=d and e=10d) **13.4.** A printer must record the same value and number of decimal places as indicated in the display. **18.3.** Display of a symbol which cannot be interpreted as a quantity value, (e.g., -, ---, EEEE, E S-1) is acceptable, however, the display of complements are not acceptable, and flashing zeros or a minus sign preceding a zero or zeros cannot be used.	Pub14 11. Indicating & Recording Element Code References: G-S.2., G-S.5.1., G-S.5.2.2. and S.1.2. Pub14 12. Values Defined Code References: G-S.5.2.4., G-S.5.3.1., G-S.5.6. and G-S.5.6.1. Pub14 13. Recorded Representations Code References: G-S.5.6., G-S.5.1. and G-S.5.2.5.
Data Output Mode	Key mode Default – Open (can be changed Except 4, Key mode B =immediately) Accepts the PRINT key regardless of the display condition.	Key mode/Fixed Accepts the PRINT key only when the display is stable	Pub14 11. Indicating & Recording Element Code References: G-S.2., G-S.5.1., G-S.5.2.2. and S.1.2. Pub14 12. Values Defined Code References: G-S.5.2.4., G-S.5.3.1., G-S.5.6. and G-S.5.6.1. Pub14 13. Recorded Representations Code References: G-S.5.6., G-S.5.1. and G-S.5.2.5.
Header	A&D Format ST=Stable US= Unstable OL=Positive Overload E OL=Negative Underload E- *Space between header and Plus/Minus *See FX-iN standard manual to reference other formats	DP Format S =Stable ? =Unstable G =Gross N =Net OL=Positive Overload E OL=Negative Underload E- *No space or leading zero's between header & Plus/Minus	Pub 15. Recorded Representations of Gross, Tare, and Net Weight 31.1.3. DES-55 **15.4.** The recorded values shall agree with the indicated values. Acceptable Abbreviations/Symbols HB44 & Pub14 Appendix C
Conditions	MID FIXED	MID – OPEN to CHANGE (FAST, MID, SLOW)	
Symbols	LB, OZT	lb,ozt, G, N	Acceptable Abbreviations/Symbols HB44 & Pub14 Appendix C

A&D FORMAT (SA717e=10d) OPEN (Changeable) FORMATS

This format consists of fifteen characters excluding the terminator. A header of two characters indicates the balance condition. The polarity sign is placed before the data with the leading zeros. If the data is zero, the plus sign is used. The unit, consisting of three characters, follows the data.

Displayed on FX-iN SA717 Device

Stable Result ***Unstable Result***

Net O 1.27[3] g	Net 1.27[3] g

A&D

S	T	,	+	0	0	0	0	1	.	2	7	-	-	g	CR	LF
U	S	,	+	0	0	0	0	1	.	2	7	-	-	g	CR	LF

Place Holders

- = empty character (no numerical value is outputted) Space, ASCII 20h

0 = zero is outputted as placeholder

Header

ST = Stable (stability indicated by circle icon in display)

US = Unstable (instability indicated by missing circle icon in display)

QT = Stable Counting Mode

OL = Overload

Polarity& Data

+ = positive of zero point. If the data is zero, the plus sign is used

- = negative of zero point

1.27 = weighment/measurement

Unit of measure

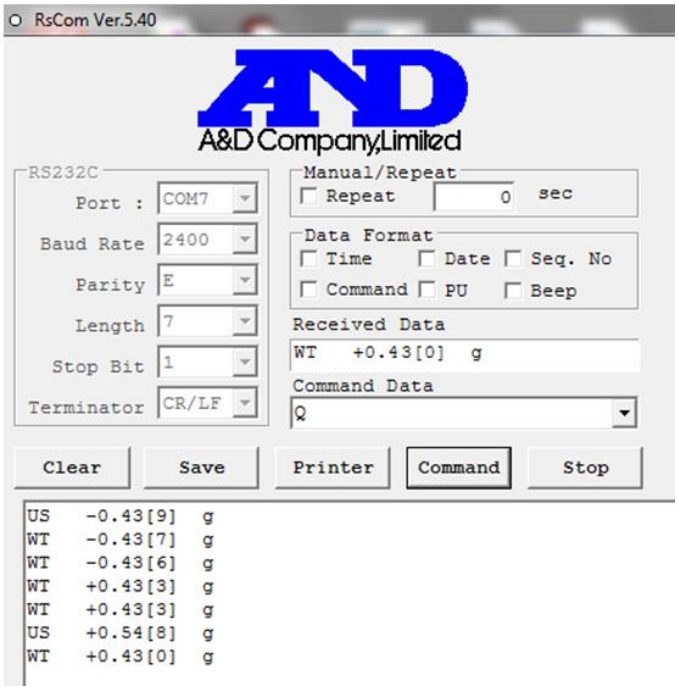
g = gram (UOM) *see manual for other UOM abbreviations

Terminator

CR = Carriage Return, ASCII 0Dh

LF = Line Feed, ASCII 0Ah

*Only when SA717 is changed to DP format would a bracket three appear [3] and a header of WT = Stable Stable (in other formats option like DP formats) see standard manual for more details.



Why A&D format does not comply to current Legal for trade standards

1) The leading zero – not accepted
2) Space between header and plus/minus – not accepted
3) Net or Gross weight are not outputted - not acceptable or accurate

All deemed non-compliant by National Test Evaluation Program and does not follow HB44 or PUB 14 requirements.

New DP FORMAT (SA1095 e=d or e=10) FIXED TO ENSURE LEGAL FOR TRADE COMPLIANCE
Displayed FX-iN SA1095 Device

Stable Result e=10d	*Stable Result e=d*	*Unstable Result e=d*
Indirect Sales Application	*Direct Sales Application*	*Direct Sales Application*
Net O 1.27[3] g	Gross O 1.27 g	Gross - 0.43 g

DP e=10d stable

S	N	_	_	_	_	+	1	.	2	7	[3]	-	g	CR	LF

DP e=d stable

S	G	_	_	_	_	+	1	.	2	7	-	-	g	CR	LF

DP e=d unstable*

?	G	_	_	_	_	-	0	.	4	3	-	-	g	CR	LF

Place Holders

- = empty character (no numerical value is outputted) Space, ASCII 20h
0 = zero is outputted as placeholder

Header

S = Stable (stability indicated by circle icon in display)
? = Unstable (instability indicated by missing circle icon in display) cannot be outputted
O = Overload
G = Gross
N = Net

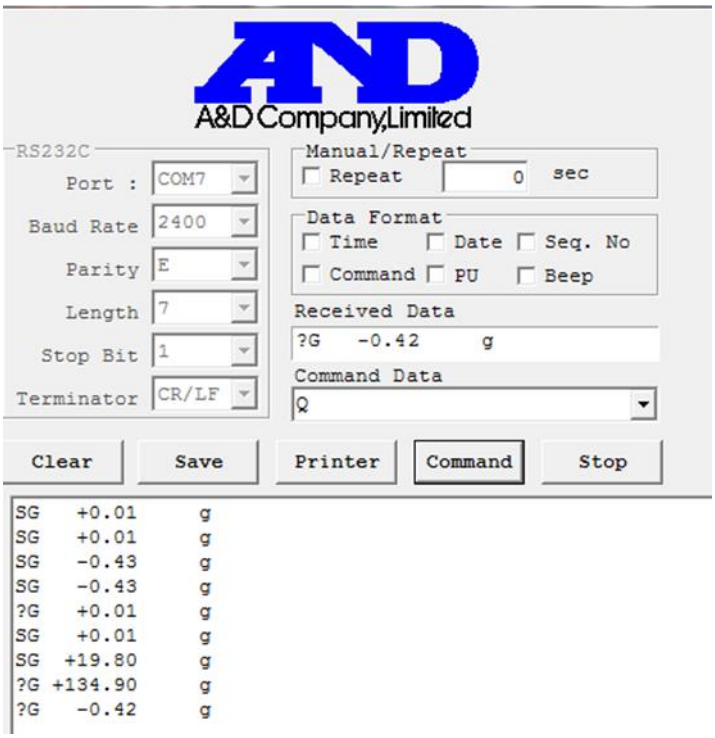
Polarity& Data

+ = positive of zero point. If the data is zero, the plus sign is used
- = negative of zero point
1.27[3] = weighment/measurement (bracketed value outputted in e=10d, no bracketed value e=d)

Unit of measure

g = gram (UOM) *see manual for other UOM abbreviations

Terminator

CR = Carriage Return, ASCII 0Dh
LF = Line Feed, ASCII 0Ah

OUTPUT FOR DP FORMAT ON A SA1095 UNIT