National Conference on Weights and Measures
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National Type Evaluation Program
Certificate of Conformance
for Weighing and Measuring Devices

For:
Wholesale Meter Register/Controller
Digital Electronic
Model: AccuLoad III Series
Marketing Name: AccuLoad III
Capacity: 999 999 gallons
Indicated Maximum: 8 whole unit digits

Submitted by:
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Standard Features and Options

- Control of one to eighteen load arms in one enclosure. One or two graphic displays.
- May be configured for straight product delivery, sequential blending or ratio blending
- Automatic temperature compensation is selective
- Automatic pressure compensation is selective (this feature not evaluated by NTEP)
- Automatic density correction is selective (this feature not evaluated by NTEP)
- Automatic flow control
- Up to four meter factors per product for each meter controlled by the device
- Programmable low flow start and four-step decreasing flow rate to stop the flow at the end of a delivery
- Count down register for the preset quantity
- Dynamic display mode showing meter parameters and values
- Continuous monitoring of critical functions: record error codes
- Programmable alarm conditions
- Capability to interface with printer to generate configuration and transaction reports
- Capability to interface with card reader for driver authorization identification
- Five levels of programmable security levels
- Category III audit trail (See Sealing Page 2)
- Date and time are retained during power down
- The following terms are used on the AccuLoad III to define the various volume displays:

  IV Indicated Volume
  GV Gross Volume
  GSV Gross Standard Volume
  GST Gross volume at Standard Temperature
  P Preset

- Mass is programmable for pounds, lb or kilograms, kg. See test conditions for information.

This device was evaluated under the National Type Evaluation Program (NTEP) and was found to comply with the applicable technical requirements of Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

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FMC Smith Meter, Inc.
Wholesale Meter Register/Controller
Model: AccuLoad III Series

Application: The AccuLoad III is intended for use as the indicating element and controller for stationary loading rack meters. It is capable of handling up to twenty-four meters and eighteen load arms. It is designed to control valves and can be configured for various minimum quantity increments. All applications must be configured for quantity divisions in increments of one gallon or less. No mathematical correction is permitted to account for growth or shrinkage due to blending of product.

Identification: The identification information appears on a metal plate, which is either riveted or attached with adhesive to the side of the indicator when facing the displays. The software version number is available as a display function in the AccuLoad's diagnostics menu. Access to this display is gained by selecting the "Diagnostics" menu from the "Main" menu, then select "Software Version" menu.

Sealing: The AccuLoad III utilizes a Category III audit trail and may be installed in different configurations depending upon the needs of the user. The audit trail can be viewed when the controller is in the ready mode as follows:

1. When in the ready mode, pressing the "ENTER" key will display the main menu.

2. When the main menu is displayed, choose the "Diagnostic" menu by using the arrow keys on the keypad. The "Diagnostic" menu that is available through the Dynamic Display or the main menu consists of the following options:

Active Alarms, Alarm History, Non-Reset Volumes, Event Log, Transaction Log, Audit Trail, Digital Inputs, Digital Outputs, Analog Inputs, Pulse Inputs, CIVACON Overfill Monitor, Boolean Algebraic, Factory Diagnostics, and Software Version.

The view only "Diagnostic" menu provides the audit trail selection, where audit trail data is available for viewing.

3. With the arrow in front of "Audit Trail", pressing "ENTER" will display the last audit trail entry that occurred in the AccuLoad. The audit trail provides the date, time, event count, and description of what event occurred. Pressing the "UP" and "DOWN" arrows on the keypad will allow the operator to step through the audit trail.

4. When finished with the audit trail displays, pressing the "CLEAR" key will return the display to the Diagnostic" menu.

The AccuLoad III Manuals MN06118, MN06122 and MN06129 include an Appendix, which fully describes the audit trail. The AccuLoad III can be programmed so that a seal must be broken in order to effect metrological changes. The AccuLoad III may also be set-up so that no seal is required and a password must be entered through the keyboard in order to access metrological parameters. If access is available through serial communication, metrological changes can be effected through that serial communications link and the customer must make on site provisions for a personal computer link to the AccuLoad III for the purpose of printing the audit trail. This controller must have printed information available onsite.

Operation: The AccuLoad III provides for up to four meter factors per product, which may be entered for each meter controlled by the device. The AccuLoad III utilizes a minus sign to indicate an overrun condition when preset amounts have been exceeded. It provides a flexible ticket format, allowing the user to configure their own ticket format. Each ticket must contain the following minimum information:

1. Quantity with the appropriate unit of measure (Gallon, Gal or G for gallons; Liter or L for liter; lower case "l" is acceptable provided it does not appear to be a number 1);

2. For systems providing temperature-compensated values, the ticket must also include the gross and GST (net) quantities identified as such, the product temperature, and the API gravity, the specific gravity, the density, or the coefficient of expansion for the product. The ticket must also indicate that the volume delivered has been adjusted to the volume at 15˚C or at 60˚F

3. The Weights and Measures official must evaluate the ticket format of each installation individually to determine compliance with readability, legibility, and other requirements of Handbook 44.

FMC Smith Meter, Inc.
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Model: AccuLoad III Series

Model Designation:

ALIII-w-XP-yyyy-Axxxxx-z (for example ALIII-S-XP-ALS1-A10000-A)

ALIII - AccuLoad III
w - Housing
S - Single Position Enclosure Size
Q - Quad Position Enclosure Size - [only deals with physical size of housing.]
XP - Explosion-proof housing, CENELEC, CUL, and UL approved for Division I Hazardous Areas
UG1 - Upgrade Kit converts AccuLoad I electronics to AccuLoad III electronics, available with ALS or ALX1 firmware only
UG2 - Upgrade Kit converts AccuLoad II electronics to AccuLoad III electronics, available with ALX1 or ALX2 firmware only
yyyy - Firmware version where:
ALS - is single arm straight product
ALS1, ALQ1 & ALX1 - is single arm (straight product, sequential and ratio blending)
ALD1, ALQ2 & ALX2 - is dual arm (straight product, sequential and ratio blending)
ALQ3 & ALX3 - is three load arms (straight product, sequential and ratio blending)
ALQ4 & ALX4 - is four load arms (straight product, sequential and ratio blending)
ALX5 - is five load arms (straight product, sequential and ratio blending)
ALX6 – is six load arms (straight product, sequential blending)

Axxxxx - Analog module options where:
Digit 1 indicates the number of RTD (Resistance Temperature Device) modules installed
Digit 2 indicates the number of 4-20 mA inputs installed
Digit 3 indicates the number of 4-20 mA output modules installed
Digit 4 indicates the number of 1-5 VDC input modules installed
Digit 5 indicates the number of 1-5 VDC output modules installed
z - Hardware options, blank indicates no hardware options where:
A - AICB option for additive controls
C - CIVACON ground/overfill option

ALIII – ttt – uuuu – v – w – x –Ayyyyy – zz

ALIII - AccuLoad III
ttt - Hardware Model Designation
MMI – Man machine Interface (Requires FCM Module) UL/CUL Approved for Division 2 Hazardous Areas
N4 – Stand alone (Three Arm operation) UL/CUL Approved for Division 2 Hazardous Areas
RMMMI – Rack mounted Man machine interface (Requires FCM Module or Rack Mount FCM) Indoor Non-Classified Location only
uuuu - Firmware version where:
ALXM – MMI operation
ALX1 – 1 Arm operation
ALX2 – 2Arm operation
ALX3 – 3 Arm operation
v - Stop Button
0 – None
1 – 120/230 Volt
w - Indicator Lights
0 – None
1 – 120 Volts
x - Hardware options
0 – None
A – AICB Board

FMC Smith Meter, Inc.
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Model Designation (cont'd)

Ayyyyy - Analog Modules (only for N4 Hardware Model)
Digit 1 – Number of RTD's
Digit 2 – Number of 4 – 20mA Inputs
Digit 3 - Number of 4 – 20mA Outputs
Digit 4 – Number of 1- 5 Vdc Inputs
Digit 5 – Number of 1-5 Vde outputs

zz - Number of Fuse Holders (only for N4 Hardware Model)
0 -10

Model Designation: ALIII-FCM-SAxx-y-z

ALIII – AccuLoad III

FCM – Flow Control Module, contains all field I/O circuitry (Required for use with ALIII-MMI)
[Type 4 Enclosure for Division 2 Hazardous Areas]

RMFCM – Rack Mount Flow Control Module contains all field I/O circuitry (required for use with ALIII-RMMMI or ALIII-MMI) Indoor Non-Classified Location Only

Saxx - Number of loading arms. The load arms are designated with even numbers only 2 – 18, Example SA10 = ten load arms

y Number of Board Sets (1 - 4)

z Number of Fuse Holders (0 – 50) (blank indicates no hardware options)

Test Conditions: This Certificate supersedes Certificate of Conformance (CC) Number 99-141A3 and is issued without additional testing to include Models ALIII-RMMMI and ALIII-RMFCM for rack mounted configurations and Upgrade Kits ALIII-**UG1**and ALIII-UG2 for the AccuLoad III. Also based on the test data from (CC) 02-095A1 Mass Units are allowed when the AccuLoad III and an Apollo Series Coriolis Mass Flow Sensor A300 or A400 is used in conjunction with the AFT 100 series transmitter. The additional models consist of the following: ALIII-RMMMI – Rack Mounted Man Machine Interface, which is identical in function to the approved ALIII-MMI. The ALIII-RMFCM – Rack Mount Flow Control Module, which is identical in function to the ALIII-FCM.

Additional models, ALIII-**UG1**- Upgrade Kit, converts existing AccuLoad I electronics into AccuLoad III electronics, available with ALS or ALX1 firmware only, and the ALIII-**UG2**-Upgrade Kit, converts existing AccuLoad II electronics to AccuLoad III electronics, available with ALX1 or ALX2 firmware only.

Both of the upgrade kits utilize the same software that was evaluated under the previous editions of CC 99-141, there are no metrological changes. Converted AccuLoad's will either be marked with a durable label displaying the Model and (CC) number or the Model and (CC) number will be hand stamped onto the existing Name Plate. The differences of operation of the keypads are covered in the relevant manuals for the upgrade kits.

FMC Smith Meter, Inc.
Wholesale Meter Register/Controller
Model: AccuLoad III Series

Certificate of Conformance Number 99-141A3: This Certificate superseded Certificate of Conformance (CC) Number 99-141A2 and is issued to include additional modeling for type 4 Enclosure for Division 2 Hazardous locations and firmware designators ALXM that expands the loading arm control to include up to eighteen positions. A model ALIII–MMI–ALXM was interfaced with a model ALIII–FCM–SAxx which was interfaced with a product flow simulator, metric and U.S. customary units were used in the evaluation. The differences between the ALIII-S-XP, ALIII-Q-XP and the ALIII split architecture are mainly packaging. ALIII-S-XP- Small explosion proof housing (Class 1 Division 1 hazardous locations) maximum of two-load arm operation, single display. ALIII-Q-XP – Large explosion proof housing (Class 1, Division 1 hazardous locations) maximum of six load arm operations, duel display, and expanded I/O capability with the addition of the BSE board. ALIII split architecture – (Class 1, Division 2 Hazardous locations), the system can consists of up to three NEMA 4 enclosures, the small enclosure one or two, (ALIII-MMI) contains the dual displays, keypad, optional lights and emergency stop switch. Large enclosure (ALIII-FCM), which can contain up to four board sets, I/O for 18 load arms or 24 meters maximum. Note: There is an option for one small enclosure (ALIII-N4), which can handle three-load arms maximum without the use of the large enclosure (ALIII-FCM). The emphasis of the evaluation was on the operation, display information, programmability, recorded information, metering parameters. The previous test conditions are listed below for reference.

Certificate of Conformance Number 99-141A2: This Certificate superseded Certificate of Conformance (CC) Number 99-141A1 and is issued to include the addition of firmware designators ALX1 through ALX6, which expands the loading arm control to include up to six positions. The model ALIII-Q-XP-ALX6- xxxxx-z was submitted for evaluation using a product flow simulator. The emphasis of the evaluation was on the clarity of the display information with the six loading arms operating simultaneously and means to verify the "software version". The previous test conditions are listed below for reference.

Certificate of Conformance Number 99-141A1: This Certificate superseded Certificate of Conformance (CC) Number 99-141 and is issued to include an input/out additive control, to expand the loading arm control to include up to four positions, a display option of two screens, and to add wording inadvertently omitted under the Model Designation of CC Number 99-141 that describes ALS as a single arm straight product. The device was also modified to require that the "meter factor" and "K factor" parameters be programmed at the two highest levels of security in order for the operator to set a product delivery. This change provides for an additional level of security beyond that required in a Category 3 device. For the purposes of the evaluation, an AccuLoad III was interfaced with a product flow simulator. The emphasis of the evaluation was on the operation, display information, programmability, recorded information, metering parameters, and Category 3 audit trail features.

Certificate of Conformance Number 99-141: The AccuLoad III was evaluated at the manufacturer's facility using a product flow simulator. The emphasis of the evaluation was on the design, operation, and display of information, programmability, recorded information, metering parameters, and Category 3 audit trail.

The results of the evaluation indicate the device complies with the applicable requirements of NIST Handbook 44.

Type Evaluation Criteria Used: NIST Handbook 44, 2003 Edition

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