NATIONAL TYPE EVALUATION PROGRAM

Certificate of Conformance

for Weighing and Measuring Devices

For:
Non-Computing Scale
Jewelers, Prescription, Grain, Counting, Digital Electronic
Models: EPxxxxyyN, VPxxxxyyN, Exxxx2 and Vxxxx2
n_{max}: (see page 2)
e_{min}: (see page 2)
Capacity: 62 g to 8 100 g
Platform: (see page 2)
Accuracy Class: I / II

***Submitted By: Contact Info. Updated: December 2010**
Ohaus Corporation
7 Campus Drive, Suite 310
Parsippany, NJ 07054
Tel: 973-377-9000 x 7032
Fax: 973-944-7177
Contact: Robert Hansen
Email: bob.hansen@ohaus.com
Web site: www.ohaus.com

Standard Features and Options

* Where: x field = 2 to 4 alphanumeric characters and y field = 0 to 2 alpha characters

Standard Features:

- Automatic Zero Setting Mechanism (AZSM)
- Initial Zero Setting Mechanism (IZSM)
- Semi-automatic Zero
- "The Counting Feature is Not Legal for Trade" Is Labeled on the Front of the Scale
- The "Counting Feature for Prescription Filling Only" Is Available Only on the Explorer Pro and Voyager Pro Models (see Test Conditions section)
- Cross-hatching of the Display is Used to Identify "d" When It Is Not Equal To "e" (d<e)
- Explorer (Exxxx2) Employs Liquid Crystal Display (LCD)
- Voyager Vxxxx2, Voyager Pro (VPxxxxyyN), and Explorer Pro (EPxxxxyyN) employ dot matrix LCD with a multi-graphic display for non-metrological features such as storing and displaying statistical data and good laboratory practices

Options:

- Automatic Calibration (internal calibration mass) (See Operation on page 5)
- RS232 Interface Capability
- Print Capability

Weight Units: (Explorer, Explorer Pro, Voyager and Voyager Pro)

- Carat, Grain, Gram, Kilogram, Milligram, Pennyweight, Pound, Ounce and Troy Ounce
- Other Units Are Available In "Not Legal For Trade Mode"

Temperature Range: 10 ºC to 30 ºC (50 ºF to 86 ºF)

This device was evaluated under the National Type Evaluation Program and was found to comply with the applicable technical requirements of "NIST 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. *Editorial changes, not affecting the type or metrological content, corrected this certificate.

Tim Tyson
Chairman, NCWM, Inc.

Randy Jennings
Chairman, National Type Evaluation Program Committee

Issued: December 20, 2010

1135 M Street, Suite 110 / Lincoln, Nebraska 68508

Ohaus Corporation

Non-Computing Scale / EPxxxxyyN, VPxxxxyyN, Exxxx2 and Vxxxx2

Models and Device Specifications: E = Explorer and V = Voyager

Models	Platform Size	Capacity	e	d[1]	n_{max}	Class
V10642 with Internal Calibration	9 cm Diameter	62 g	1 mg	0.1 mg	62 000	I
EP64CN with Internal Calibration	9 cm Diameter	62 g	1 mg	0.1 mg	62 000	I
VP64CN with Internal Calibration	9 cm Diameter	62 g	1 mg	0.1 mg	62 000	I
V11142 with Internal Calibration	9 cm Diameter	110 g	1 mg	0.1 mg	110 000	I
EP114CN with Internal Calibration	9 cm Diameter	110 g	1 mg	0.1 mg	110 000	I
VP114CN with Internal Calibration	9 cm Diameter	110 g	1 mg	0.1 mg	110 000	I
V12142 with Internal Calibration	9 cm Diameter	210 g	1 mg	0.1 mg	210 000	I
EP214CN with Internal Calibration	9 cm Diameter	210 g	1 mg	0.1 mg	210 000	I
VP214CN with Internal Calibration	9 cm Diameter	210 g	1 mg	0.1 mg	210 000	I
V1RR82 with Internal Calibration	9 cm Diameter	100/210 g	1 mg	0.1/1 mg	210 000	I
EP214DCN with Internal Calibration	9 cm Diameter	100/210 g	1 mg	0.1/1 mg	210 000	I
VP214DCN with Internal Calibration	9 cm Diameter	100/210 g	1 mg	0.1/1 mg	210 000	I
V16132 with Internal Calibration	12 cm Diameter	610 g	10 mg	1 mg	61 000	I
EP613CN with Internal Calibration	12 cm Diameter	610 g	10 mg	1 mg	61 000	I
VP613CN with Internal Calibration	12 cm Diameter	610 g	10 mg	1 mg	61 000	I
E12132 with Internal Calibration	12 cm Diameter	210 g	10 mg	1 mg	21 000	II
E02132	12 cm Diameter	210 g	10 mg	1 mg	21 000	II
V12132 with Internal Calibration	12 cm Diameter	210 g	10 mg	1 mg	21 000	II
V02132	12 cm Diameter	210 g	10 mg	1 mg	21 000	II
EP213CN with Internal Calibration	12 cm Diameter	210 g	10 mg	1 mg	21 000	II
EP213N	12 cm Diameter	210 g	10 mg	1 mg	21 000	II
VP213CN with Internal Calibration	12 cm Diameter	210 g	10 mg	1 mg	21 000	II
E14132 with Internal Calibration	12 cm Diameter	410 g	10 mg	1 mg	41 000	II
E04132	12 cm Diameter	410 g	10 mg	1 mg	41 000	II
V14132 with Internal Calibration	12 cm Diameter	410 g	10 mg	1 mg	41 000	II
V04132	12 cm Diameter	410 g	10 mg	1 mg	41 000	II
EP413CN with Internal Calibration	12 cm Diameter	410 g	10 mg	1 mg	41 000	II
EP413N	12 cm Diameter	410 g	10 mg	1 mg	41 000	II
VP413CN with Internal Calibration	12 cm Diameter	410 g	10 mg	1 mg	41 000	II
E1RV72 with Internal Calibration	12 cm Diameter	0 g to 100 g x 10 mg 100 g to 410 g x 10 mg		1 mg 10 mg	41 000	II
E0RV72	12 cm Diameter	0 g to 100 g x 10 mg 100 g to 410 g x 10 mg		1 mg 10 mg	41 000	II
V1RV72 with Internal Calibration	12 cm Diameter	0 g to 100 g x 10 mg 100 g to 410 g x 10 mg		1 mg 10 mg	41 000	II
V0RV72	12 cm Diameter	0 g to 100 g x 10 mg 100 g to 410 g x 10 mg		1 mg 10 mg	41 000	II
EP413DCN with Internal Calibration	12 cm Diameter	0 g to 100 g x 10 mg 100 g to 410 g x 10 mg		1 mg 10 mg	41 000	II
EP413DN	12 cm Diameter	0 g to 100 g x 10 mg 100 g to 410 g x 10 mg		1 mg 10 mg	41 000	II
VP413DCN with Internal Calibration	12 cm Diameter	0 g to 100 g x 10 mg 100 g to 410 g x 10 mg		1 mg 10 mg	41 000	II

[1] The display uses cross-hatching to identify when "d" is not equal to "e."

Ohaus Corporation

Non-Computing Scale / EPxxxxyyN, VPxxxxyyN, Exxxx2 and Vxxxx2

Models and Device Specifications Continued: E = Explorer and V = Voyager

Models	Platform Size	Capacity	e	d[1]	n_{max}	Class
E15132 with Internal Calibration	12 cm Diameter	510 g	10 mg	1 mg	51 000	II
E05132	12 cm Diameter	510 g	10 mg	1 mg	51 000	II
V15132 with Internal Calibration	12 cm Diameter	510 g	10 mg	1 mg	51 000	II
V05132	12 cm Diameter	510 g	10 mg	1 mg	51 000	II
EP513CN with Internal Calibration	12 cm Diameter	510 g	10 mg	1 mg	51 000	II
EP513N	12 cm Diameter	510 g	10 mg	1 mg	51 000	II
VP513CN with Internal Calibration	12 cm Diameter	510 g	10 mg	1 mg	51 000	II
E16122 with Internal Calibration	17.2 cm x 17.2 cm	610 g	100 mg	10 mg	6 100	II
E06122	17.2 cm x 17.2 cm	610 g	100 mg	10 mg	6 100	II
V16122 with Internal Calibration	17.2 cm x 17.2 cm	610 g	100 mg	10 mg	6 100	II
V06122	17.2 cm x 17.2 cm	610 g	100 mg	10 mg	6 100	II
EP612CN with Internal Calibration	17.2 cm x 17.2 cm	610 g	100 mg	10 mg	6 100	II
EP612N	17.2 cm x 17.2 cm	610 g	100 mg	10 mg	6 100	II
VP612CN with Internal Calibration	17.2 cm x 17.2 cm	610 g	100 mg	10 mg	6 100	II
E1B122 with Internal Calibration	17.2 cm x 17.2 cm	2 100 g	100 mg	10 mg	21 000	II
E0B122	17.2 cm x 17.2 cm	2 100 g	100 mg	10 mg	21 000	II
V1B122 with Internal Calibration	17.2 cm x 17.2 cm	2 100 g	100 mg	10 mg	21 000	II
V0B122	17.2 cm x 17.2 cm	2 100 g	100 mg	10 mg	21 000	II
EP2102CN with Internal Calibration	17.2 cm x 17.2 cm	2 100 g	100 mg	10 mg	21 000	II
EP2102N	17.2 cm x 17.2 cm	2 100 g	100 mg	10 mg	21 000	II
VP2102CN with Internal Calibration	17.2 cm x 17.2 cm	2 100 g	100 mg	10 mg	21 000	II
E1RW62 with Internal Calibration	17.2 cm x 17.2 cm	0 g to 1000 g x 100 mg 1000 g to 4100 g x 100 mg		10 mg 100 mg	41 000	II
E0RW62	17.2 cm x 17.2 cm	0 g to 1000 g x 100 mg 1000 g to 4100 g x 100 mg		10 mg 100 mg	41 000	II
V1RW62 with Internal Calibration	17.2 cm x 17.2 cm	0 g to 1000 g x 100 mg 1000 g to 4100 g x 100 mg		10 mg 100 mg	41 000	II
EP4102DCN	17.2 cm x 17.2 cm	0 g to 1000 g x 100 mg 1000 g to 4100 g x 100 mg		10 mg 100 mg	41 000	II
EP4102DN with Internal Calibration	17.2 cm x 17.2 cm	0 g to 1000 g x 100 mg 1000 g to 4100 g x 100 mg		10 mg 100 mg	41 000	II
VP4102DCN	17.2 cm x 17.2 cm	0 g to 1000 g x 100 mg 1000 g to 4100 g x 100 mg		10 mg 100 mg	41 000	II
E1D122 with Internal Calibration	17.2 cm x 17.2 cm	4 100 g	100 mg	10 mg	41 000	II
E0D122	17.2 cm x 17.2 cm	4 100 g	100 mg	10 mg	41 000	II
V1D122 with Internal Calibration	17.2 cm x 17.2 cm	4 100 g	100 mg	10 mg	41 000	II
V0D122	17.2 cm x 17.2 cm	4 100 g	100 mg	10 mg	41 000	II
EP4102CN with Internal Calibration	17.2 cm x 17.2 cm	4 100 g	100 mg	10 mg	41 000	II
EP4102N	17.2 cm x 17.2 cm	4 100 g	100 mg	10 mg	41 000	II
VP4102CN with Internal Calibration	17.2 cm x 17.2 cm	4 100 g	100 mg	10 mg	41 000	II
E1D112 with Internal Calibration	17.2 cm x 17.2 cm	4 100 g	100 mg	100 mg	41 000	II
E0D112	20.3 cm x 20.3 cm	4 100 g	100 mg	100 mg	41 000	II
V1D112 with Internal Calibration	17.2 cm x 17.2 cm	4 100 g	100 mg	100 mg	41 000	II
V0D112	20.3 cm x 20.3 cm	4 100 g	100 mg	100 mg	41 000	II
EP4101CN with Internal Calibration	17.2 cm x 17.2 cm	4 100 g	100 mg	100 mg	41 000	II
EP4101N	20.3 cm x 10.3 cm	4 100 g	100 mg	100 mg	41 000	II
VP4101CN with Internal Calibration	17.2 cm x 17.2 cm	4 100 g	100 mg	100 mg	41 000	II

[1] The display uses cross-hatching to identify when "d" is not equal to "e."

Ohaus Corporation

Non-Computing Scale / EPxxxxyyN, VPxxxxyyN, Exxxx2 and Vxxxx2

Models and Device Specifications Continued: E = Explorer and V = Voyager

Models	Platform Size	Capacity	e	d[1]	n_{max}	Class
E0E12	17.2 cm x 17.2 cm	5 100 g	1.0 g	1.0 g	11 000	II
EP5100N	17.2 cm x 17.2 cm	11 lb	0.001 lb	0.001 lb	11 000	II
E1F122 with Internal Calibration	17.2 cm x 17.2 cm	6 100 g	100 mg	10 mg	61 000	II
E0F122	17.2 cm x 17.2 cm	6 100 g	100 mg	10 mg	61 000	II
V1F122 with Internal Calibration	17.2 cm x 17.2 cm	6 100 g	100 mg	10 mg	61 000	II
V0F122	17.2 cm x 17.2 cm	6 100 g	100 mg	10 mg	61 000	II
EP6102CN with Internal Calibration	17.2 cm x 17.2 cm	6 100 g	100 mg	10 mg	61 000	II
EP6102N	17.2 cm x 17.2 cm	6 100 g	100 mg	10 mg	61 000	II
VP6102CN with Internal Calibration	17.2 cm x 17.2 cm	6 100 g	100 mg	10 mg	61 000	II
E1F112 with Internal Calibration	17.2 cm x 17.2 cm	6 100 g	100 mg	100 mg	61 000	II
E0F112	20.3 cm x 20.3 cm	6 100 g	100 mg	100 mg	61 000	II
V1F112 with Internal Calibration	17.2 cm x 17.2 cm	6 100 g	100 mg	100 mg	61 000	II
V0F112	20.3 cm x 20.3 cm	6 100 g	100 mg	100 mg	61 000	II
EP6101CN with Internal Calibration	17.2 cm x 17.2 cm	6 100 g	100 mg	100 mg	61 000	II
EP6101N	20.3 cm x 10.3 cm	6 100 g	100 mg	100 mg	61 000	II
VP6101CN with Internal Calibration	17.2 cm x 17.2 cm	6 100 g	100 mg	100 mg	61 000	II
E1H122 with Internal Calibration	17.2 cm x 17.2 cm	8 100 g	100 mg	10 mg	81 000	II
E0H122	17.2 cm x 17.2 cm	8 100 g	100 mg	10 mg	81 000	II
V1H122 with Internal Calibration	17.2 cm x 17.2 cm	8 100 g	100 mg	10 mg	81 000	II
V0H122	17.2 cm x 17.2 cm	8 100 g	100 mg	10 mg	81 000	II
EP8102CN with Internal Calibration	17.2 cm x 17.2 cm	8 100 g	100 mg	10 mg	81 000	II
EP8102N	17.2 cm x 17.2 cm	8 100 g	100 mg	10 mg	81 000	II
VP8102CN with Internal Calibration	17.2 cm x 17.2 cm	8 100 g	100 mg	10 mg	81 000	II
E1H112	17.2 cm x 17.2 cm	8 100 g	100 mg	100 mg	81 000	II
E0H112	20.3 cm x 20.3 cm	8 100 g	100 mg	100 mg	81 000	II
V1H112	17.2 cm x 17.2 cm	8 100 g	100 mg	100 mg	81 000	II
V0H112	20.3 cm x 20.3 cm	8 100 g	100 mg	100 mg	81 000	II
EP8101CN	17.2 cm x 17.2 cm	8 100 g	100 mg	100 mg	81 000	II
EP8101N	20.3 cm x 10.3 cm	8 100 g	100 mg	100 mg	81 000	II
VP8101CN	17.2 cm x 17.2 cm	8 100 g	100 mg	100 mg	81 000	II
EGD112*	20.3 cm x 20.3 cm	4 100 g	100 mg	N/A	41 000	II
ECD112*	20.3 cm x 20.3 cm	4 100 g	100 mg	N/A	41 000	II

[1] The display uses cross-hatching to identify when "d" is not equal to "e."

* Built-in capability to perform bushel weight calculations.

Ohaus Corporation

Non-Computing Scale / EPxxxxyyN, VPxxxxyyN, Exxxx2 and Vxxxx2

Application: General purpose weighing, prescription weighing, weighing of grain, and weighing of semi-precious gems and precious metals. The "Counting Feature for Prescription Filling Only" is available only on the Explorer Pro and Voyager Pro models Grain Inspection Packers and Stockyards Administration (GIPSA formerly FGIS) has three categories of electronic laboratory scales used as grain test scales for official weighing: Precision, Moisture and General. The models listed below *may* be suitable for the official weighing of grain in GIPSA applications (see Pages 2, 3 and 4 for specific model parameters.)

Precision or Moisture	Moisture or General
EGD112 (Built-in capability to perform bushel weight calculation)	EP4101CN
EP213CN	EP4101N
EP213N	VP4101CN
VP213CN	E1D112
E12132	E0D112
E02132	V1D112
V12132	V0D112
V02132	EP5100N
EP413CN	E0E122
EP413N	EP6101CN
VP413CN	EP6101N
E14132	VP6101CN
E04132	E1F112
V14132	E0F112
V04132	V1F112
EP413DCN	V0F112
EP413DN	EP8101CN
VP413DCN	EP8101N
E1RV72	VP8101CN
E0RV72	E1H112
V1RV72	E0H112
V0RV72	V1H112
EP513CN	V0H112
EP513N	
VP513CN	
E15132	
E05132	
V15132	
V05132	

Identification: The identification badge is located on the left side of the scale

Sealing: The scale may be sealed with a wire security seal through a tab on a metal plate and a drilled head bolt. This prevents undetected access to the calibration switch inside. The sealing plate and bolt are located under the scale platter. On scales with the 12 cm platter, a metal plate secured by a screw must be removed to access the sealing plate and bolt underneath. The calibration switch must be in the off position before sealing the device. To verify the position of the calibration switch, Explorer models will display the word ALocked@ when attempting to calibrate the device. On Voyager models, the messages ALFT ON@ (Legal for Trade) and ACal Safe@ are displayed during power up. On Explorer Pro and Voyager Pro models, during power up while displaying "Loading Parameters", the message “LFT ON” (Legal for Trade) is displayed

Operation: The automatic calibration feature uses an internal mass in the balance for calibration and is done automatically when selected.

Ohaus Corporation

Non-Computing Scale / EPxxxxyyN, VPxxxxyyN, Exxxx2 and Vxxxx2

Test Conditions: This certificate supersedes Certificate of Conformance Number 98-053A5 and is issued to include a prescription counting feature on the Explorer Pro EPxxxxyyN and the Voyager Pro VPxxxxyyN models. Additionally, Model EO613CN was removed from the table. Models E02132, E06122, EP6101N and a "Class" column were added to the "Specific Models and Device Specification" table. The Model EP613CN (610 gram capacity) scale, with software version Rev. 1.40 showing at start-up, was submitted for evaluation. The emphasis of the evaluation was on the counting feature only. All of the counting features were checked and passed. Previous test conditions are repeated below for reference.

Certificate of Conformance Number 98-053A5: This certificate superseded Certificate of Conformance Number 98-053A4 and was issued to add Model VPxxxxyyN "Voyager Pro". The Voyager Pro is a Voyager with updated software. The Voyager Pro Model VP214CN was submitted for this evaluation. A review of markings, display characters, verification of the key functions, and a test that there were no other metrological changes made was conducted.

Certificate of Conformance Number 98-053A4: This certificate superseded Certificate of Conformance Number 98-053A3 and was issued to add Model EPxxxxyyN "Explorer Pro" with dot matrix graphic LCD display module. The Explorer Pro is an Explorer model with the Voyager dot matrix display hardware and updated display software. The Explorer Pro Model EP214CN was submitted for this evaluation. A review of markings, display characters, verification of the key functions, and a test that there were no other metrological changes made was conducted.

Certificate of Conformance Number 98-053A3: This certificate superseded Certificate of Conformance Number 98-053A2 and was issued to add Models V10642, V11142, V12142, V1RR82 and V16132 with capacities from 62 g to 610 g. The Models V122142, 210 g capacity with 1 mg e and 0.1 mg d, and the Model V16132, 610 g capacity with 10 mg e and 1 mg d, were submitted for evaluation. The emphasis of the evaluation was on the device design, operation, environmental factors and marking requirements. Several increasing/decreasing load and shift tests were conducted. The scales were tested over a temperature range of 10 °C to 30 °C (50 °F to 86 °F). A load of approximately 1/2 capacity was applied to the scales over 100 000 times. The scales were tested periodically over this time. Tests were also conducted using 100 VAC and 130 VAC power supplies.

Certificate of Conformance Number 98-053A2: This certificate superseded Certificate of Conformance Number 98-053A1 and was issued without additional testing to include 610 g capacity to the Models E06122, E16122, V06122 and V16122. These models are identical in design and construction to the 2100 g, 4100 g and 5100 g models previously listed on the certificate. The 610 g models are produced from the same 5 kg generic scale assembly used to produce the 2100 g through 5100 g models. All models produced from the 5 kg generic scale assembly have a value of e = 0.1 g.

Certificate of Conformance Number 98-053A1: This certificate superseded Certificate of Conformance Number 98-053 and was issued to include the Models EGD112 and ECD112 with grain weighing calculation features. The Models EGD112 and ECD112 (4100 gram capacity) balances were submitted for evaluation. The emphasis of the evaluation was on device design, operation, print format, and the ability to calculate and display percentage values when weighing grain. No additional testing was performed since the scales are identical to the previously evaluated Explorer and Voyager balances. Additionally, the previously evaluated devices were evaluated to determine the models suitable for weighing grain in GIPSA Precision, Moisture, or General classifications.

Certificate of Conformance Number 98-053: The emphasis of the evaluation was on device design, operation, marking, print format, and compliance with influence factor requirements. The Models E1H112 (8100 g capacity) and V14132 (410 g capacity) balances were submitted for evaluation and tested over a temperature range of 10 °C to 30 °C (50 °F to 86 °F). The devices were also tested for accuracy over a voltage range of 100 VAC to 130 VAC. A load of approximately 1/2 capacity was applied to each scale over 100 000 times. The scales were tested periodically during this time.

Evaluated By: G Castro (CA) 4813-98 and 4813(a)-99; T. Lucas (OH), W. West (OH) 98-053A2, 98-053A3; T. Lucas (OH) 98-053A4 and 98-053A5; W. Rickey (CA) 98-053A6

Type Evaluation Criteria Used: NIST, Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices, 2005. NCWM, Publication 14: Measuring Devices, 2005.

Conclusion: The results of the evaluation and information provided by the manufacturer indicate the device complies with applicable requirements.

Ohaus Corporation

Non-Computing Scale / EPxxxxyyN, VPxxxxyyN, Exxxx2 and Vxxxx2

Information Reviewed By: G. Newrock (NIST) and R. Suiter (NIST 98-053A2; S. Patoray (NCWM), L. Bernetich (NCWM) 98-053A3, 98-053A4, 98-053A5, 98-053A6