




	<b>General Requirements for weighing scales with digital indicator used for trade along with recommendation of OIML R76-1</b>  <b>Annex B-R76 – General Requirements</b>	Date of Issue : 2016.10.24	Doc No: PA-GR-01	
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	Item/Module	Requirement	Mark the compliance	For office use only																											
1	Markings	<p>1) Following markings shall be mentioned on the indicator and platform;</p> <p>[Model, Manufacturer Name and Address, Agent Name and address, Operating conditions (Voltage, temperature, humidity, etc.), Warm-up time (if applicable)],</p> <p>[e,d,T, Max, Min, OIML Accuracy class, Serial No, MUSSD Pattern Approval Number(Shall be marked on the indicator and platform after approval has been granted in the specified location)]</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Pattern Approval Number</td> <td colspan="3">PA07616-09-23-03-0234</td> </tr> <tr> <td rowspan="4">Authorized Agent/Dealer: ABC weighing Systems Pvt Ltd, No.34, Pitipana Homagama. Tel: 0112456xxx Fax: 01134xxxx</td> <td>Class</td> <td colspan="2" style="text-align: center;">(III)</td> </tr> <tr> <td>S/N</td> <td colspan="2">KU34567</td> </tr> <tr> <td>Model</td> <td colspan="2">SD234</td> </tr> <tr> <td>Max, Min</td> <td colspan="2">15kg/30kg, 100g</td> </tr> <tr> <td rowspan="3">Manufacturer: Shnagai xxxxx weighing factory Ltd. ROC 12343 China</td> <td>e=d=</td> <td colspan="2">5g/10g</td> </tr> <tr> <td>Power</td> <td colspan="2">230V/50Hz</td> </tr> <tr> <td>Operation Conditions</td> <td colspan="2">10 °C-40°C, &lt;80%RH</td> </tr> </table> <p>Example formats:  (III)  Max 15kg/30kg  Min 100g  e=d=5g/10g  T= -12kg  PA07616-09-23-03-0234  Or  (III) Max 15kg/30kg Min 100g e=d=5g/10g T= -12kg  PA07616-09-23-03-0234</p>	Pattern Approval Number	PA07616-09-23-03-0234			Authorized Agent/Dealer: ABC weighing Systems Pvt Ltd, No.34, Pitipana Homagama. Tel: 0112456xxx Fax: 01134xxxx	Class	(III)		S/N	KU34567		Model	SD234		Max, Min	15kg/30kg, 100g		Manufacturer: Shnagai xxxxx weighing factory Ltd. ROC 12343 China	e=d=	5g/10g		Power	230V/50Hz		Operation Conditions	10 °C-40°C, <80%RH			
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2	Display/ Energy saving features	<p>1) Digit height of the measured value shall be more than or equal 10mm.</p> <p>2) Zero indicator, Tare indicator, stable indicator, Measuring Units, Low battery indicator shall be available.</p> <p>3) Display shall be visible in day light conditions (6500K, 20000 lx)</p> <p>4) If energy saving features are available at least complete one digit zero shall be indicated when load receptor is at zero load in energy saving state.</p> <p>5) Automatic power off can be enable if the scale is not used for weighing for more than or equal to 60 seconds. After the power off from automatic power off and wakeup from power</p>																													

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		off state by pressing a switch or disturbing the weighing pan by hand shall follow initial zero setting procedure before setting in to the weighing mode.		
3	General construction for physical sealing for legal control	<p>1) Shall have a method to physically seal the indicator housing to restrict to access to the internal circuitry, load cell and other critical components affects to measurements. This includes the battery compartment if the access to the internal circuitry is possible through the battery compartment it shall be a sealing position. Space should be available for verification marks on seals and permanent position prepared for inspector identification, year and month in a clearly visible position.</p> <p>2) Platform sizes and other dimensions shall be complying with department requirements. (Annex B-R76-1) (Applicable for weighing scales with weighing platforms) Annex B-R76-2 (Applicable for weighbridges)</p>		
4	Leveling indicator and mechanism	<p>1) Shall have a leveling mechanism to adjust the level of the platform within 3-degrees inclination and have a leveling indicator in an easily viewable location. This shall be sensitive to at least 3-degrees inclination. (applicable for weighing scales with weighing platforms)</p> <p>2) Weighing device shall not show more than 1e deviation when inclined less than or equal 3-degrees. (applicable for weighing scales with weighing platforms)</p> <p>3) Hanging scales shall have a mechanism to self-aligning the weight that is to be measured to remove leveling or inclination errors. See OIML R76 for specific conditions</p>		
5	Low battery alarm/Low voltage alarm/Operating Voltage ranges	<p>1) Weighing scale may be indicating the low battery level/low voltage level that is not disturbed the correct function of the weighing scale. This shall be indicated at least 5 minutes before the critical low battery level.</p> <p>2) Weighing scale shall not be possible to use for weighing in critical low battery level/critical low voltage level that disturb the operation of correct functioning and shall be shown an indication or error message in such situation and shall not show any value on the display that mislead the customer.</p> <p>3) When the weighing scale operate in AC mains power it shall be operated in the AC voltage range from (-15%) to +10% of the nominal mains voltage (230V) as specified in the OIML R76.</p> <p>4) External or plug-in power supply device (AC or DC), including rechargeable battery power supply if (re)charge of batteries during the operation of the instrument is possible: lower limit = minimum operating voltage , upper limit = <math>1.20 U_{nom}</math> OR <math>1.20 U_{max}</math></p>		

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		<p>5) Non-rechargeable battery power supply (DC), including rechargeable battery power supply if (re)charge of batteries during the operation of the instrument is not possible: lower limit = minimum operating voltage, upper limit = <math>U_{nom}</math> or <math>U_{max}</math></p> <p>6) 12 V or 24 V road vehicle battery power supply: lower limit = minimum operating voltage, upper limit = 16 V (12 V battery) or 32 V (24 V battery)</p>		
6	Load measurements after zeroing negative values	1) Display shall show correct values when the standard weights have been placed on the load platform after zeroing negative values.		
7	Price computing ADD function (If included)	1) Price addition shall not be possible without unloading and reloading the weighing scale.		
8	Display of maximum capacity	1) Placing a weight Greater than $Max+9e$ shall generate an over load error indication on the display to protect the weighing scale from over loading. This may include audible alarm alone with the error indicator.		
9	Tare function	<p>1) Preset tare by weighing or manual entering is not permitted for weighing scales used for direct sale. Sequential process of placing container on the weighing pan, tare, putting the items in to the container and weighing is permitted.</p> <p>Only one time tare for a weighing is permitted. Cancelling the tare shall only be possible after unloading all weights including the container from the platform.</p> <p>2) For truck scales, any kind of tare function is not permitted. Instead of the tare function 1<sup>st</sup> weighing and 2<sup>nd</sup> weighing method is used to calculate the net weight by subtraction of 1<sup>st</sup> from 2<sup>nd</sup> weight or vice versa.</p> <p>3) For weighing scales used for prepackaging manual or set by weighing tare may be included. These type of scales shall indicate the use of the weighing scale at clearly visible location as “Use Only for Prepackaging”. If this type of scale is a part of a system, there shall be a reliable method to determine and setting the tare weight automatically or manually.</p>		

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10	Changing Calibration and legally controlled trade parameters	<p>1) Access to calibration or other legally controlled functions from the front panel buttons or from interface (IR, USB, RS232 etc..) Shall not be permitted without breaking any legally sealable jumper, switch or other physical method of sealing the enclosure or circuitry.</p>		
11	Data entering, weighing and Printing (If included)	<p>1) Printable only stable readings when the stable indicator is on.</p> <p>2) For trade purposes, ticket number, serial no of weighing scale, Firmware Identification, Software Identification, weighing result, Operator, date, time, shall be indicate on the print.</p> <p>3) For weighbridge/ Truck scales, additionally first weighing and second weighing with time and date, operator identification, shall be print on the ticket.</p> <p>4) Only one original label shall be printable for one complete weighing with any type of weighing scale if printing function is available (for weigh bridges First weighing and Second Weighing results). Additional copies of weighing result shall be indicated as “DUPLICATE COPY” clearly.</p> <p>5) For weigh bridge/ Truck scale indicators, entering data and weighing (First weight or Second weight) for new truck shall not be possible without unloading and the previous weighted truck from platform and loaded the platform with new truck.</p> <p>6) Before loaded platform with new truck, truck scale shall be indicated zero or if not, software shall indicate to set semi-automatic zero the scale. Then allowed to continue with data entering and weighing of new truck only after the loading the platform with new truck and weighing result shall record only when the weighing is stable.</p> <p>7) If the truck scale does not indicate zero before loading the platform with new truck, it shall not allow to data entering or weighing for new truck and shall show an error indication.</p> <p>8) If the first weighing is needed to take and previous incomplete record of first weighing is remaining in the system due to unavoidable reason, the software shall have a function as to complete this record with “CANCELLED” in second weighing row with date, time and operator identification and shall store in the database with above details and enable to data entering and taking the first weight without unloading the truck from the weigh bridge.</p>		

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		9) If an interim ticket is printed for the first weighing blank spaces shall not allowed for second weighing details and net value. It shall indicate “FIRST WEIGHING RESULTS” on the printed interim ticket.		
12	Main circuit board	1) Circuit diagram with component identification shall be available to check the main board of the sample.  2) Permanently marked identification shall be available on the circuit board.		
13	Other circuit boards (If included)	1) Circuit diagram with component identification shall be available to check the other circuit boards of the sample.  2) Permanently marked identification shall be available in the circuit boards.		
14	Load cell/Load measuring transducer	1) Permanent markings shall be required to identify the Manufacturer, Maximum capacity, accuracy class.  2) Document mentioning the technical specifications from the manufacturer shall be submitted to check the compliance of load cell in the sample device.		
15	Other functions (if included)	1) Technical details on other functions shall be submitted if other functions are available with the weighing scale (Counting, POS system connectivity, etc..)		
16	Interfaces (If included)	1) Information on communication interfaces (RS232, USB, LAN, Wi-Fi, Bluetooth etc...) with available complete command set and protocol of communication interface shall be provided.		
17	External devices (If included)	1) Information on external displays, Values, Alarms, etc.. Shall be provided.		
18	Short power disturbances	1) Weighing scale shall not be sensitive to short power disturbances as specified in OIML R76.		
19	Initial Zero	1) Setting range positive and negative shall be 2% to 4% of Maximum capacity (Including 2% and 4%). If initial weight is more than the set value shall show a zero error message and it shall not clear or show weight when the load is decreased or unloaded from the platform. This shall only be clear after switch off and switch on again without any weight or with a weight less than the maximum initial zero set value.		
20	Semi-automatic zero	1) Setting range positive and Negative shall be 2% to 4% of Maximum capacity (Including 2% and 4%), more than the set value indicator shall not be zero with zero key. This shall not be operated when the tare device/function is in operation.		

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21	Eccentric loading	<p>1) During the test, deviation shall be less than or equal to maximum permissible error <math>e</math> when load is placed as specified in OIML R76. In general, load corresponding to 1/3 of the sum of the maximum capacity and the corresponding maximum additive tare effect shall be applied, See OIML R76 for specific situations.</p> <p>2) On an instrument with a load receptor having <math>n</math> points of support, with <math>n &gt; 4</math>, the fraction <math>1/(n - 1)</math> of the sum of the maximum capacity and the maximum additive tare effect shall be applied to each point of support.</p> <p>3) On an instrument with a load receptor subject to minimal off-centre loading (e.g. tank, hopper, etc.) a test load corresponding to 1/10 of the sum of the maximum capacity and the maximum additive tare effect shall be applied to each point of support.</p> <p>4) On an instrument used for weighing rolling loads (e.g. vehicle scale, rail suspension instrument) a test load corresponding to the usual rolling load, the heaviest and the most concentrated one which may be weighed, but not exceeding 0.8 times the sum of the maximum capacity and the maximum additive tare effect, shall be applied at different points on the load receptor.</p>		
22	Repeatability	1) Deviation shall be less than maximum permissible error when repeat 10 times with weight specified in OIML R76		
23	Linearity	1) Shall be within maximum permissible error when Increase weights up to maximum and decrease down to zero		
24	Creep	1) Shall be within maximum permissible errors during the test		
25	Zero return	1) Zero return test shall be passed as specified in the OIML R76		

Please refer OIML R76-1 document for other specific requirements