Physikalisch-Technische Bundesanstalt

Annex to EC type-approval certificate

dated 26.11.1999, Approval No.: D99-09-030

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Regulations

The following regulations apply to measuring equipment of the approved type:

- The general provisions of the Regulations for Gauging Weights and Measures (EO-AV) of 12th August 1988 (BGBl. I p.1657) as amended by the Second Amending Regulations for Weights and Measures dated 21st June 1994 (BGBl. I p.1293)
- Appendix 9 to the Regulations for Gauging Weights and Measures dated 12th August 1988 as amended by the Second Amending Regulations for Weights and Measures dated 21st June 1994

corresponding to the Recommendation of the Council of the European Union:

- 90/384/EEC dated 20th June 1990 on non-self-adjusting balances as amended by the recommendation 93/68/EEC dated 22nd July 1993

1 NAME AND TYPE OF MEASURING EQUIUPMENT

Non-self-adjusting electromechanical balances of the 320 XT and 320 XB series. The description of the type of balance can be, for example: XT620M.

2 DESCRIPTION OF TYPE

2.1 Mechanical construction

Balance with built-in display and membrane keyboard. Design of the balance as desk-top balance also with class IP 65 protection. The principle of construction can be seen from Fig. 1.

2.2 Electrical function

Weighing cell with electromagnetic force compensation. Control of the coil current, analog-digital conversion of the measurement signals. Processing in microprocessor system. Display and output of the results of weighing.
Power supply using an external mains component (12 V d.c. uncontrolled) or a 12 V battery. An internal power supply with storage battery charged from external mains supply, is optional.

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2.3 Functions and facilities (reference to EN 45501 in parentheses)

- Zero-on-start device, range: ≤ 20% of maximum (T.2.7.2.4)
- Semi-automatic combined zeroing and tare-balance device (subtractive) (4.5.9)
  Net illuminates, if load tared outside the zeroing range (4%)
- Zero tracking device (≤ 4% of max). (T 2 7 3)
- Display of values which are not weighing results. The labelling takes place through the associated sign (pcs for number of pieces, % for percentage values), or through the symbol "o" before a numerical value (for example sum, debit weight, reference weight, or the like). (4 4.4)
- All segments of the main display equipment turn on and off for a few seconds after switching on to detect errors. (5 3 1)
- Testing devices can be incorporated to detect significant errors (5.2.)
  The error message is provided on the display by "Error XX" (X=Error code) or in clear-text, Sundry operating modes can be selected by means of MODE key, or REF key: Numbers of pieces, percentage weighings, surface area conversion, +/- weighing, statistics, density determination, animal weighing (dynamic weighing), user-definable conversion programs, storage of test series, units switch (g, mg, kg, ct), i.a.

2.3.1 Additional keyboard Smartbox type (additional to 2.3)

- Semi-automatic second tare-balance device ("NET" illuminates).
- Tare-input device ("NET" illuminates).
- Storages for tare-values, articles, etc...
- Triggering non-calibratable functions, such as piece counting, percentage weighings, plus-minus weighing, finished pack control, measuring, statistics, printout of all possible values etc...

2.4 Characteristic adjustment device

An adjustment weight may be incorporated in the balances. The following functional procedures are possible:

- Operated by keystroke (tare key held down), adjustment takes place automatically.
- Automatic triggering (time and/or temperature-dependent) and automatic adjustment.

Scales of class (II) without built-in parameter adjustment device cannot be further adjusted once calibrated.

3 TECHNICAL DATA

3.1 Balances of the 320 XT and 320 XB series

Precision-class:	(I)
Tare-balance range	≤ 100% from maximum
Temperature range:	+15°C / +25°C
Precision-class:	(II)
Tare-balance range:	≤ 100% from maximum
Temperature range:	+10°C / +30°C

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The weighing range with minimum load, calibration values and the number of the calibration values n_e in accordance with No. 2 and 3 of the appendix 1 to Recommendation 90/384/EEC may be selected within the limits shown in Table 1 to Table 3:

Table 1, precision-class (1)

Type	Range	Max	e =	d =	n_e
...A or ...M or ...A-...M	g/kg	50...220g	1...2mg	0.1...2mg	220000
	carat	250...1100ct	5...20mct	1...20mct	220000
	g/kg	50...920g	1...10mg	0.1...10mg	220000
	carat	250...4600ct	5... 50mct	1...50mct	220000

Table 2, precision-class (II), for balances with built-in characteristic adjustment, automatic release (time and/or temperature-dependent) and automatic adjustment.

Type	Range	Max	e =	d=	n_e
...A or ...M or...A-...M	g/kg	50...620g	10...100mg	1...100mg	62000
	carat	250...3100ct	50...500mct	10...500mct	62000
...M or ...C or...M-...C	g/kg	500...6200g	0.01...0.5g	0.001...0.5g	62000
	carat	2500...31000ct	0.05...0.5ct	0.01...0.5ct	62000
...C or ...D or...C-...D	g/kg	0.5...6.2kg	0.1...0.5g	0.01...0.5g	62000
	carat	2500...31000ct	0.5...2ct	0.1...2ct	62000

Table 3, Precision class (II), for balances without built-in characteristic value adjustment

Type	Range	Max	e =	d=	n_e
...A or ...M or...A-...M	g/kg	50...320g	10...100mg	1...100mg	32000
	carat	250...1600ct	50...500mct	10...500mct	32000
...M or ...C or...M-...C	g/kg	500...3200g	0.01...0.5g	0.001...0.5g	32000
	carat	2500...16000ct	0.05...0.5ct	0.01...0.5ct	32000
...C or ...D or...C-...D	g/kg	0.5...3.2kg	0.1...0.5g	0.01...0.5g	32000
	carat	2500...16000ct	0.5...2ct	0.1...2ct	32000

The calibration value e is constant over the entire weighing range.

On balances with d < e

- the additional distinguishable display-position (d) is marked by shading
  In the printout, this position is also marked, for example with parentheses.
- the last position may be temporarily turned off to facilitate reading while a load is being changed,
- the division value d may alter depending on the load,
- the additional distinguishable display-position may be blanked out when a certain net load is exceeded.

3.2 Documentation

The records deposited in the PTB apply to the implementation of the balances.

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4 INTERFACES AND PERIPHERALS

4.1 Interfaces

A socket with one or more of the following interfaces may be installed:
- Serial data interface RS-232
- Serial data interface (bus system for Precisa equipment).

All interfaces referred to are non-interacting in the sense of DIN EN 45501, No. 5.3.6.1. and must not be fused.

4.2 Facilities which may be connected

For applications requiring calibration:
- An output module type 350-8509, for connecting an extra keyboard or feet-switches for taring etc., or for controlling valves etc.
- Extra keyboard, type 'Smartbox '350-8511-xxx (see No. 2.3.1).
- Additional interface RS 232, type 350-8506
- Additional interface RS 422, type 350-8507
- Additional interface RS 485, type 350-8512
- Additional interface IEC 625, type 350-8529
- Additional interface IEEE 488, type 350-8530
- Additional interface 20 mA current loop, type 350-8526
- Analog output type 350-8508, only for applications not requiring calibration,
- Signal lamp type 350-8510
- Digital display, independent or mounted with column on balance. Types 350-8504, 350-8505, 350-8516.
- Printer, types CBM 720 or iDP562, manufacturer: Citizen.
- Additional facilities, for which Precisa Instruments AG has been approved within the framework of an EC type approval certificate or for which the suitability for connection to balances with an EC type approval certificate has been proven by way of a test certificate (or a test report or certificate). The test certificate must be issued by a named position in the sense of Recommendation 90/384/EEC.
- Simple peripherals intended only for the receipt of data without test certificate (or test report or certificate) and without designation in an EC type approval certificate, if the prerequisites in accordance with WELMEC-Document 2 (1996), section 3.2, is fulfilled

Any peripherals may be connected for applications not requiring calibration.

5 CONDITIONS FOR APPROVAL

5.1 Limitation

The EC Type approval certificate is only valid for non-independent balances. For automatic operation with or without additional add-on facilities, the national rules current for the site of installation must be observed.

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5.2 Requirements

- The meaning of the symbol "o" (see No. 2.3) must be explained in the instruction manual.
- On balances where e = d the zero tracking device must be in operation.
- Balances of the precision class (1) or (II) with d ≤ 10 mg must have a suitable windbreak.
- Balances of the precision class (1) must, if required, be adjusted prior to weighing and, if necessary, the display values also corrected (density of the material being weighed, atmospheric density, etc.). Notes relating to this must be inserted in the instruction manual.

5.3 Identification plate and other markings

- Temperature range: 15°C / 25°C for class (I)
- Temperature range: 10°C / 30°C for class (II)
- Information on max., min., e and d with any carat range present also to be indicated on identification plate.

6 ADDITIONAL INFORMATION FOR EC CALIBRATION

- Necessary records; EC type approval certificate, instruction manual.
- The balances may be calibrated at the manufacturer's works or at another site. The requirements of No. 5, Appendix II of Recommendation 90/384/EEC must be observed. If the EC calibration is carried out entirely at the manufacturer's for another installation site, then for each weighing, the site or the region for which the calibration is applicable must be given, e.g. in the instruction manual.
- The addition-keyboard "Smartbox" must not be tested, since the marked display values are not required to be calibrated.
- Balances with a built-in characteristic adjustment device may be calibrated at the manufacturer's or at another site. The gravitational constant for the installation site does not have to be taken into account.

7 STAMP LOCATIONS AND CALIBRATION MARKINGS

Fig. 1 shows the positions at which the safety stamps must be applied. With balances of precision-class (I) the adjustment switch must not be secured.

8 EC-CONFORMITY MARKINGS AND IDENTIFICATION PLATE

The position for the EC conformity mark and the EC calibration mark is on the identification plate. The identification plate and the EC calibration mark are to be installed in accordance with Fig. 1.

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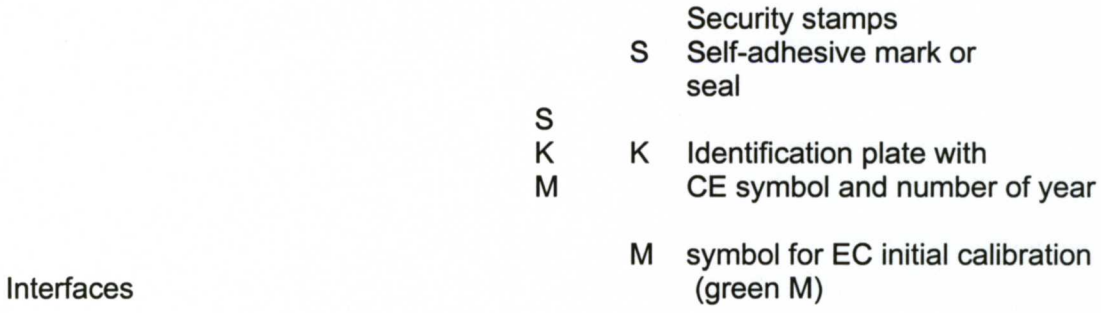
Fig. 1



- An output module type 350-8509, for the connection of an extra keyboard or feet-switch for effecting taring, etc., and/or for controlling valves, etc.
- Additional interface RS 232, type 350-8506,
- Additional interface RS 422, type 350-8507
- Additional interface RS 485, type 350-8512,
- Additional interface IEC 625, type 350-8529,
- Additional interface IEEE 488, type 350-8530,
- Additional interface 20 mA current loop, type 350-8526,

Signal lamp type 350-8510

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Digital display separately located or mounted on column on balance
Types 350-8504, 350-8505, 350-8516

Membrane keyboard Series 320XT

Extra keyboard, Type "Smartbox"
350-8511-xxx (see No. 2.3.1).

Membrane keyboard Series 320XB