



sartorius

BULK-X5 System Controller



- Complete weighing and control electronics for circuit scales
- W&M approval 5000 e Class III
- High accuracy at maximum material throughput
- Internal material/ silo and customer table
- Built-in Alibi Memory
- Full automatic control of valves and interlocking of auxiliary hoppers
- Clear user dialogue for safe operation
- Links to supervisory system and enterprise resource planning system serial or via Ethernet TCP/IP with DDE/OPC

The BULK-X5 is a weighing and control electronic for circuit scales with automatic supervision and control of material flow in auxiliary hoppers.

Application

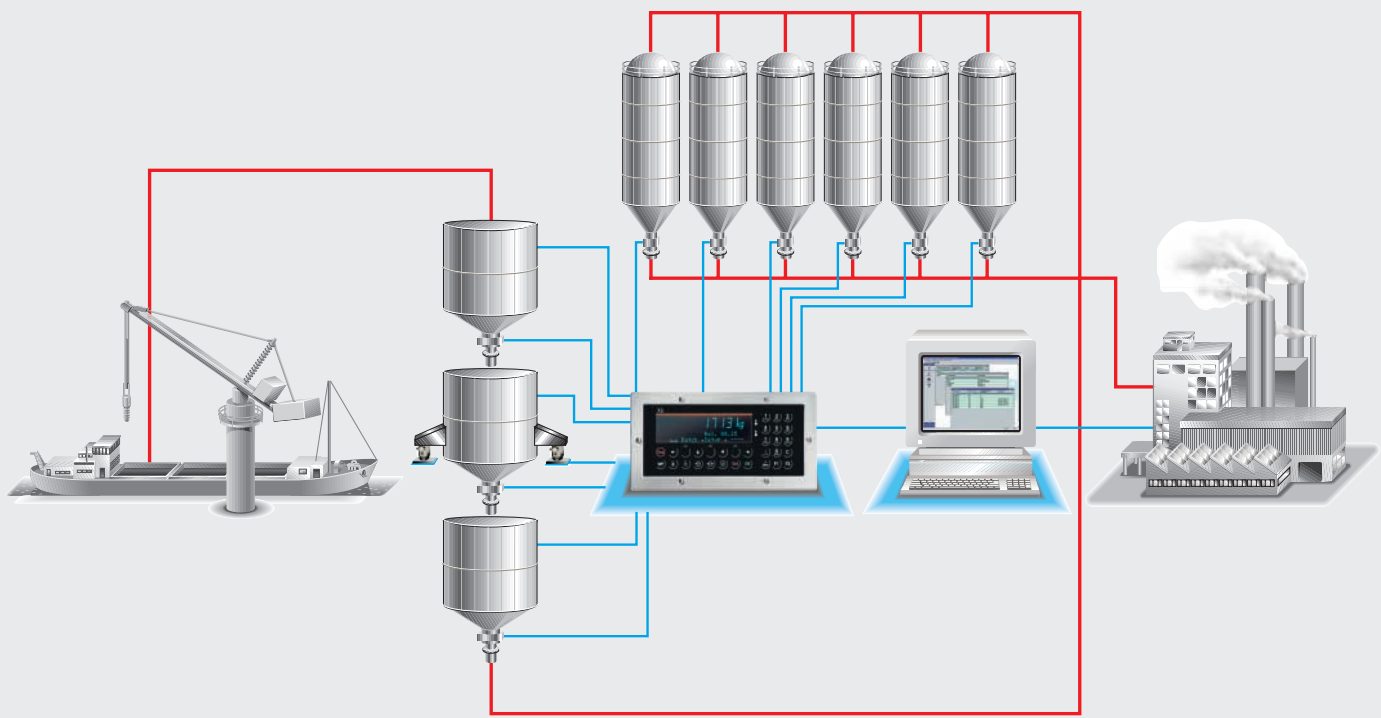
Circuit scales are ideal for all processes where large quantities of raw material have to be measured within a short time. Typical applications are loading and unloading of ships, trains and trucks of agricultural commodities such as grain, flour and olives, as well as building materials and fodder. Circuit scales allow the measurement of large quantities of raw material with a relatively small scale. This is achieved by summing up the results of single weighings using charging and discharging hoppers.

In Control

The BULK-X5 combines the precision of a sophisticated electronic scale with the power of a high-performance PLC. It is pre-programmed for typical circuit scale applications and can be set-up by simple configuration. The pre-programmed user interface using the integrated line text display and softkeys makes the instrument safe and easy to use. A PC Tool allows modification/translation of all user prompts for maximum convenience. Due to the optimized control of the auxiliary hoppers by the BULK-X5, the buffering allows a continuous material flow and saves time by all loading and unloading procedures. BULK-X5 guarantees high accuracy even at high material throughput. In addition it provides various features, for example a link to an enterprise resource planning system and all advantages of an X5 series controller.

Verification

The BULK-X5 and the mechanical weighing construction can be approved together. BULK-X5 meets the criteria of an automatic scale (According to national type-approval for verification of automatic weighing instruments by PTB-certificate for Germany). Furthermore a self-test and special features such as calibration stop and single print, are available. The fully integrated Alibi Memory substitutes the inconvenient line printer and provides a display and printing feature (according to EC-type approval D99-09-039).



Design

The robust stainless steel housing with splashguard and dust protection to IP 65 allows use under harsh environmental conditions. It provides a text based dialog with the operator and a convenient user interface is implemented to supervise the complete process. Operation is realised via soft-keys at the front of BULK-X5 or via an external keyboard.

The security function allows password protection for system settings. A Windows based PC-tool, is available for input of data to improve efficiency.

Stand-alone or fully integrated

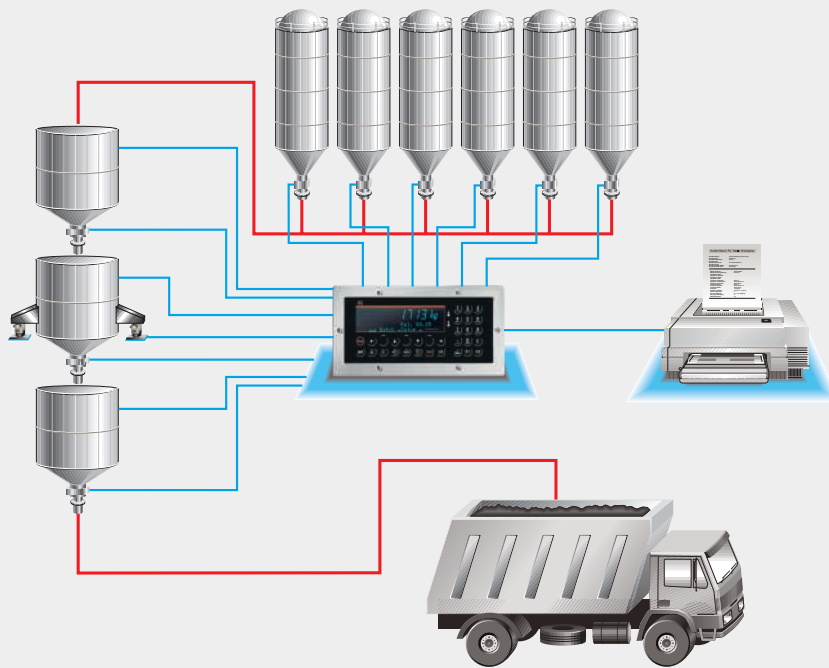
The BULK-X5 can operate as stand-alone controller and can also possible be used as an integrated part of a bigger system. It provides links to supervisory systems and enterprise resource planning systems via serial or Ethernet connection with DDE/OPC-driver. As a result BULK-X5 meets the requirements of a circuit scale on smaller and bigger plants in various industries.

Process Control

The integrated control function controls the batching of coarse and fine feed with overshoot optimisation and tolerance check. In addition the control function supervises the material flow in the auxiliary hoppers. In cases of shortage of material an optional MIN-signal prevents the start of a weighing process. If the material flow is blocked an optional MAX-signal prevents the discharging or inadvertent movement of the valves.

The discharge process of the scale is stopped if there is not enough free space in the vessel. In case of problems with air pockets and fluctuating volume density, an optional external MAX-signal prevents an overflow of the scale.

The silo selection is achieved with the help of 7 outputs. This allows the user to select 7 vessels directly or with the help of a demultiplexer-logic up to 127 vessels (with the help of an internal PLC and I/O extension or the external PLC). A charge can be executed with or without a subsequent full clearing of the material flow path. In addition, the manual operation can be locked with a key-switch.



Material management

For management and booking of the material a raw material/ silo table and customer table are available. For each material the weighed quantities are accumulated by shift, day, week or month. In addition the total sum of the weighed material is generated.

The delivery note with material, quantity data and company, customer and product information can be configured in order to meet the customers' requirements. The direct serial printer connection allows the printing of carbon copies via ASCII-line printer. Furthermore the material and customer tables can be printed.

Further benefits

A remote indication PR1628 can be connected via a serial interface (display function only). With the help of the PC-tool DisplayIT, full remote control is possible by using a personal computer, which is connected to the controller via serial or ethernet (TCP/IP) link. In this way remote control is also possible in a network.

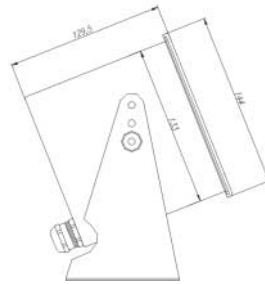
Moreover BULK-X5 supports several languages at operator level which are exchangeable by a software tool. It provides a helpful backup-tool for saving of all relevant data, like tables, calibration data and configuration settings. These tools reduce downtime of production and effectively support maintenance and repair.

Investment into the future

The design of the BULK-X5 provides a very high degree of flexibility. Various technologies like fieldbus connections and ethernet TCP/IP link provide connectivity to all common systems. Also a package of user-friendly Windows based application programs for easy adaptation to individual customer requirements and for a fast software update is available.

Due to these various possibilities for external connections and extensions the BULK-X5 provides a high degree of protection for your investments and for further developments in the future.

Technical Data BULK-X5



Power supply

115/230 V_{AC} 50-60 Hz
Max. 19 W / 25 VA

Housing

stainless steel 1.43 01
Ingress Protection: IP 65 eq. to (NEMA: 4X)

Order information

Type	Description	Order numbers
PR 5610/70	BULK-X5 230 V	9405 156 10701
PR 5610/71	BULK-X5 24 V _{AC/DC}	9405 156 10711
PR 5610/72	BULK-X5 Ex-Zone 2/22 (230 V)	9405 156 10721
PR 5610/73	BULK-X5 Ex-Zone 2/22 (24 V)	9405 156 10731

Options

PR 1713/05	RAM Memory Extension 1MB	9405 317 13051	included
PR 1799/99	W&M Approval Labels (1 set)	9405 317 99991	
PR 8901/81	Internal Alibi Memory (Licence)	9405 389 01811	included
PR 8001/01	X-Family PowerTools	9405 380 01011	
PR 1713/31	Extended EW Commands	9405 317 13311	
PR 1792/20	AccessIt Licence	9405 317 92201	
PR 1713/91	Panel Mounting kit	9405 317 13911	
PR 1792/13	OPC Server Licence	9405 317 92131	

			SLOT	1	2	3	4
PR 1713/04	Serial interface card (RS 232/485)	9405 317 13041		o	o	x	
PR 1713/06	Analogue Output 0/4-20 mA	9405 317 13061	*	o	o	o	
PR 1713/07	1 Analogue Output / 4 Analogue Input	9405 317 13071	*	o	o	o	
PR 1713/08	BCD 24 out, 1 in	9405 317 13081				o	
PR 1713/12	Digital 4 In- / 4 Output, Opto/Opto Output: 31 V, 25 mA	9405 317 13121		o	o	o	
PR 1713/13	DIOS-Master (add. Software required)	9405 317 13131				o	
PR 1713/15	Digital 4 In- / 4 Output, Opto/Relais Output: 24 V, 1 A	9405 317 13151		o	o	o	
PR 1713/17	Digital 6 In- / 8 Output, Opto/Opto Output: 31 V, 25 mA	9405 317 13171		x	x	o	
PR 1721/11	Profibus-DP interface	9405 317 21111					o
PR 1721/12	Interbus-S interface	9405 317 21121					o
PR 1721/14	DeviceNet interface	9405 317 21141					o
PR 1713/14	Ethernet interface, 10 MBaud	9405 317 13141					o

o = optional, x = included in delivery

The documentation will be delivered on a CD, a paper version can be ordered separately.

* max. 1 Analogue Output Card

Specifications subject to change
without notice.

Printed in Germany.

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Version 10.2004

Interfaces

Bi-directional serial interfaces RS 232 and RS 485; user selectable protocols: EW Com, remote string, printer, XON, Jbus, ModBus, Dust 3964R

Linearity

< 0.007 %

Accuracy

5000e class III acc. EN 45 501;
OIML R 76 min. verification interval 1.0 µV/e;
suitable for automatic weighing instruments

Resolution

Max. 330.000 Div. (internal) $\hat{=}$ 0.11 µV/d
Usable stepwidth 0.4 µV/d

Load cell input

6- or 4-wire
Load cell supply: 12 V
Impedance : min. 75 Ohm,
e.g. 8 load cells with 650 Ohm

Measuring principle

Ratiometric integrating A/D converter
Conversion time: 50 ms
Update: 100 ms to 2 s,
adjustable in 100 ms steps

Input signal range

Net range 2.4 mV to 36 mV
Tare range: 0... 33.6 mV
(for 100% maximum capacity)

Temperature influence

Live zero T_K: < 0.1 µV / K RTI
Span T_{K_{spn}}: < 0.006 %/10 K

Environmental condition

Temperature range

Operation: -10° C to +40° C
Storage: -40° C to +70° C

Electrical safety

According to IEC 1010-1

Vibration

According to IEC 68-2-6, Test Fc

Electrostatic discharge

According to IEC 1000-4-2 Level 3

Supply line

According to IEC 1000-4-4 Level 3

Electromagnetic fields

According to IEC 1000-4-3 Level 2

Radio interference

According to EN 55011

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