FILL-X5
System Controller

- Programmable logic System Controller for filling applications with fluids (according to IEC 61131).
- Approval as a EC type Weighing Controller for non automatic scales class III, 5000 e
- Options
  - Ethernet
  - Field bus-cards: Profibus DP, DeviceNet, Interbus-S
  - Serial Interfaces
  - Analogue inputs and outputs
  - Digital inputs and outputs
- Easy integration into automation structures
- Lance control with 3 selectable filling position modes

FILL-X5 is a System Controller for manual and automatic filling of drums and containers with fluids. Operator interface, the control of the filling process and additional control functions are combined in a single compact unit.

The device is designed for the handling of all current container and drums. It contains a powerful and reliable controller and a very easy to understand and comfortable operator interface.

Benefits
- Integrated direct control of valves and feeders
- Convenient material database
- Lance control in 3 positions
- Material balancing and reporting

Various options for interfaces allow an optimal integration of Fill-X5 into all modern automation environments.
Communication via:
- Serial RS232|485
- Ethernet
- Interbus S
- DeviceNET
- Profibus DP

The design and the multifunctional stainless steel housing with a high class of protection (IP65) allows the use as desktop, wall or panel mounted device. The large and full in contrast seven digit weight display (with the associated unit and the status symbols) guarantees good readability even under difficult conditions.

In addition to that 2 lines for text with 20 characters each are provided. Under those lines are function keys, which guide the operator through the application.

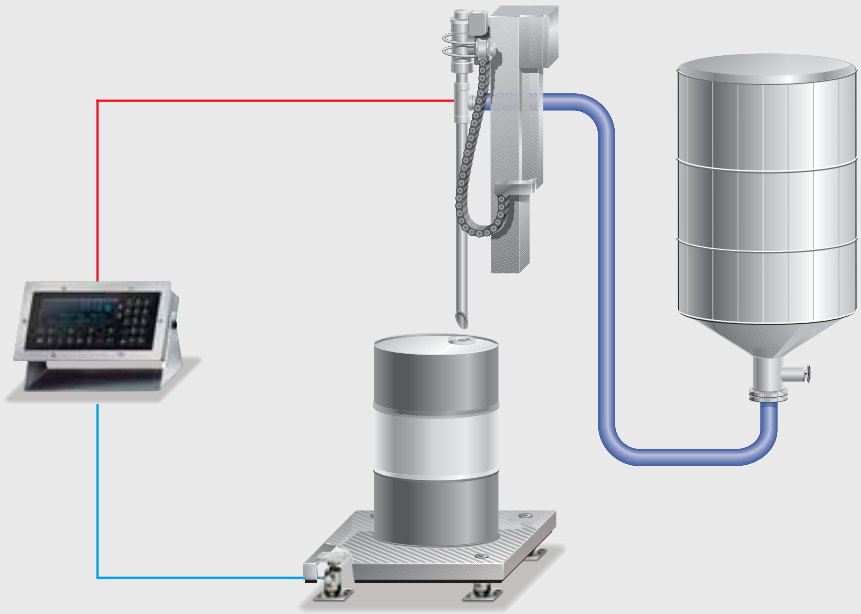
Via the alphanumeric keypad numbers and text can be entered or edited. The standard controller has an interface for an external PC keyboard which allows the entry of data in a comfortable way.

Material Parameter

```
Material table
 New   ▪ Edit  ▪Delete
```

2002.11.31 13:47:32

Name of material	Azucar - 200
Number of material	2345678901
Pre set point	20.0 kg
Overshoot	15.0 kg
Tolerance +	2.5 kg
Tolerance -	2.5 kg
Minimum flow	1 kg
Calming time	3 s
Restart mode	3
Filling mode	top position
Start level tracking	1.5 kg



Operation
Fill-X5 is designed to allow the filling of drums with fluids on a scale. First, the material, the material name and number are recorded in the material database. The parameters are defined according to the proberties of the material and the chosen container. Those parameters are stored in an internal database. As a result the data are available at all times.

In addition to the filling parameter, such as – pre set point, overshoot, tolerance, min. flow, calming time and restart mode – the material parameters also include the parameters for lance control, such as the filling mode. These are the positioning of the lance and the weight for starting level tracking, at which the lance is removed to it's starting point.

In order to start the process the operator can select the material by entering the material name or number. With the help of a supervisory PLC the process can be started by remote control (communica-tion via field bus, digital input or serial line).

The process is started after entry of the desired filling weight.

Fill-X5 checks before every start that the container is in the correct position.

According to the adjustment the lance is moved to the correct position and the filling starts. After the filling a signal indicates that the process is finished.

The integrated PLC allows the control of the complete plant or is ideal for the realization of the procedures as a subsidiary electronic.

Lance control
The filling is realized by a motor controlled lance, which can be immersed into the fluid in the container. The lance provides three different positions to fill the material into the container

1) „Top": The lance fills the container from it`s top position.
2) „Normal": The lance loweres to a predefined position (for example under the bunghole of the drum).
3) „under fluid level": In case of foaming material the lance stays under the fluid level. The lance is moved to the bottom of the drum and it is slowly lifted during the filling.

Examples

```
Fill Controller
Start ▪Setup ▪ATest
```

```
↓Fillmode              ↑
↕Top position          ↕
```

E|A configuration

Function of the inputs
lance is up, lance is at the height of the bunghole, lance is down, start|restart, stop,

Function of the outputs
lance fast upwards, lance slowly upwards, lance fast downwards, AD converter error|tolerance alarm|no material flow, lance touch-down, Grobstromsignal, Feinstromsignal, Produktion aktiv

X5-PowerTools e. g. DisplayIt

Format 2:

```
2002-11-30-11:06:59 #27  Gross:  A  <0687.5 kg>
```

Format 1:

Report of production	
Date	2002.11.31
Time	14:22:58
Name of product	Oel501
Number of product	12998
Nominal value	50.0 kg
Actual value	50.0 kg
Number of sequence	123
Error status	------

Label
(designed with the help of LayoutIt and NiceLabel Express)

I|O configuration
The configuration of the inputs and outputs is predefined.

Option card
4 slots for option cards are available.
Slot 1-3 are for digital and serial interface cards. The FILL-X5 slot 1 is already equipped with a digital 8 inputs and 6 outputs card.
Slot 4 is for Ethernet and fieldbus card.

High flexibility
The FILL-X5 provides high flexibility.

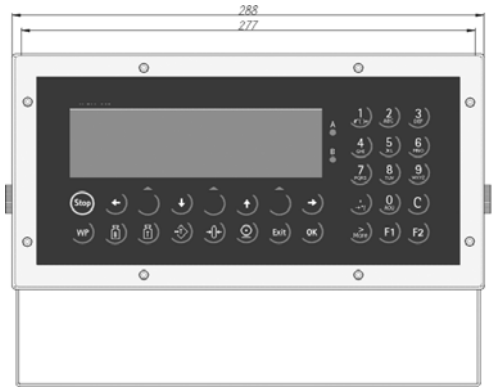
1. Free programmability
In case the customer asked for some adaptations of the FILL-X5 to the own process the free programming possibility does fulfill every requirement. The customer can modify the program himself or it can also be done by Sartorius

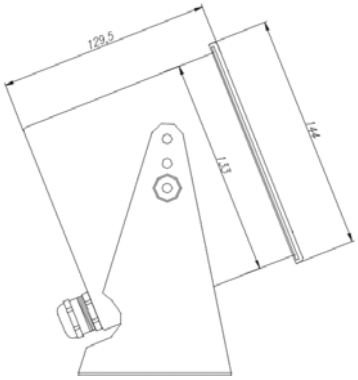
2. X5-PowerTools
X5-PowerTools are a collection of powerful PC programs. They are of great help in getting the most out of the X5 System Controller: FlashIt, DisplayIt, TranslateIt, LayoutIt, RecoverIt and AccessIt.

3. Housing 19"
The FILL-X5 is also available in a 19" housing (FILL-X6).

Print out
Two different print outs are already included in the application as shown above) as predefined reports. The print outs can be adjusted to the needed requirements. There are two different possibilities:

1. With the help of the programming tool PR 1750NT the predefined formats can be adjusted.
2. With the help of the program NiceLabelExpress (NLE) the printouts can be designed freely on a PC. The format can be saved on the PC and afterwards filled with the variables for the printout.





Order information

Type	Description	Order numbers					
PR 5610/50	FILL-X5 230 V	9405 156 10501					
PR 5610/51	FILL-X5 24 $V_{AC/DC}$	9405 156 10511					
PR 5610/52	FILL-X5 ATEX 2/22+ FM Cl 1/ Div 2 (230 V)	9405 156 10521					
PR 5610/522	FILL-X5 ATEX 2/22+ FM Cl 1/ Div 2 (115 V)	9405 156 10522					
PR 5610/53	FILL-X5 ATEX 2/22+ FM Cl 1/ Div 2 (24 V)	9405 156 10531					
Options							
PR 1713/05	RAM Memory Extension 1 MB	9405 317 13051					
PR 1799/99	W&M Approval Labels (1 set)	9405 317 99991 add. SW required					
PR 8901/81	Internal Alibi Memory (Licence)	9405 389 01811					
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 (RS232|485)	9405 317 13041		o	o	o	
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					
PR 1713/13	DIOS-Master (add. Software required)	9405 317 13131					o
PR 1713/15	Digital 4 In-|4 Output, Opto|Relais Output: 31 V, 1 A	9405 317 13151					
PR 1713/17	Digital 6 In-|8 Output, Opto|Opto Output: 31 V, 25 mA	9405 317 13171		x			
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
*** The temperatur range for operation can be extended if the number of installed option cards is limited. (Temperature specification on request.)

Specifications subject to change
without notice.
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Version 04.2010

Power supply
115/230 V_{AC} 50-60 Hz or 24 $V_{AC/DC}$
Max. 14,5 W/19 VA

Housing
Stainless steel DIN 1.43 01 (B.S. 304)
Ingress Protection: IP65 eq. to (NEMA: 4X)

Display
7-Digit plus status symbols
text: 2 lines, 20 characters

Interface
Bi-directional serial interfaces RS232;
user selectable protocols: Keyboard connector, Remote Display, Printer, XON, Jbus, XBPI, ModBus, Dust 3964R

Linearity
<0.007 %

Resolution
Max. 330,000 div. (internal) ≙ 0.11 µV/d
Usable stepwidth 0.4 µV/d

Accuracy
5000e class III acc. to EN 45 501;
OIML R 76 min. verification interval 1.0 µV/e;

Load cell input
6- or 4-wire
Load cell supply: 12 V
Impedance: min. 75 Ω

Measuring principle
Ratiometric integrating A|D converter
Conversion time: 50 ms
Update rate: 50 ms to 2 s
Digital filter: 0.1 to 5 Hz

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

Temperature influence
Live zero Tk_o: <0.1 µV/K RTI
Span TK_{spn}: <0.006 %/10 K

Environmental conditions

Temperatur range***
Operation: -10 °C to +40 °C
Storage: -40 °C to +70 °C

Conformity:
NAMUR, CE
ATEX Zone 2/22
FM Class 1|Div2

Weight
net: 3.5 kg
gross: 5 kg

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