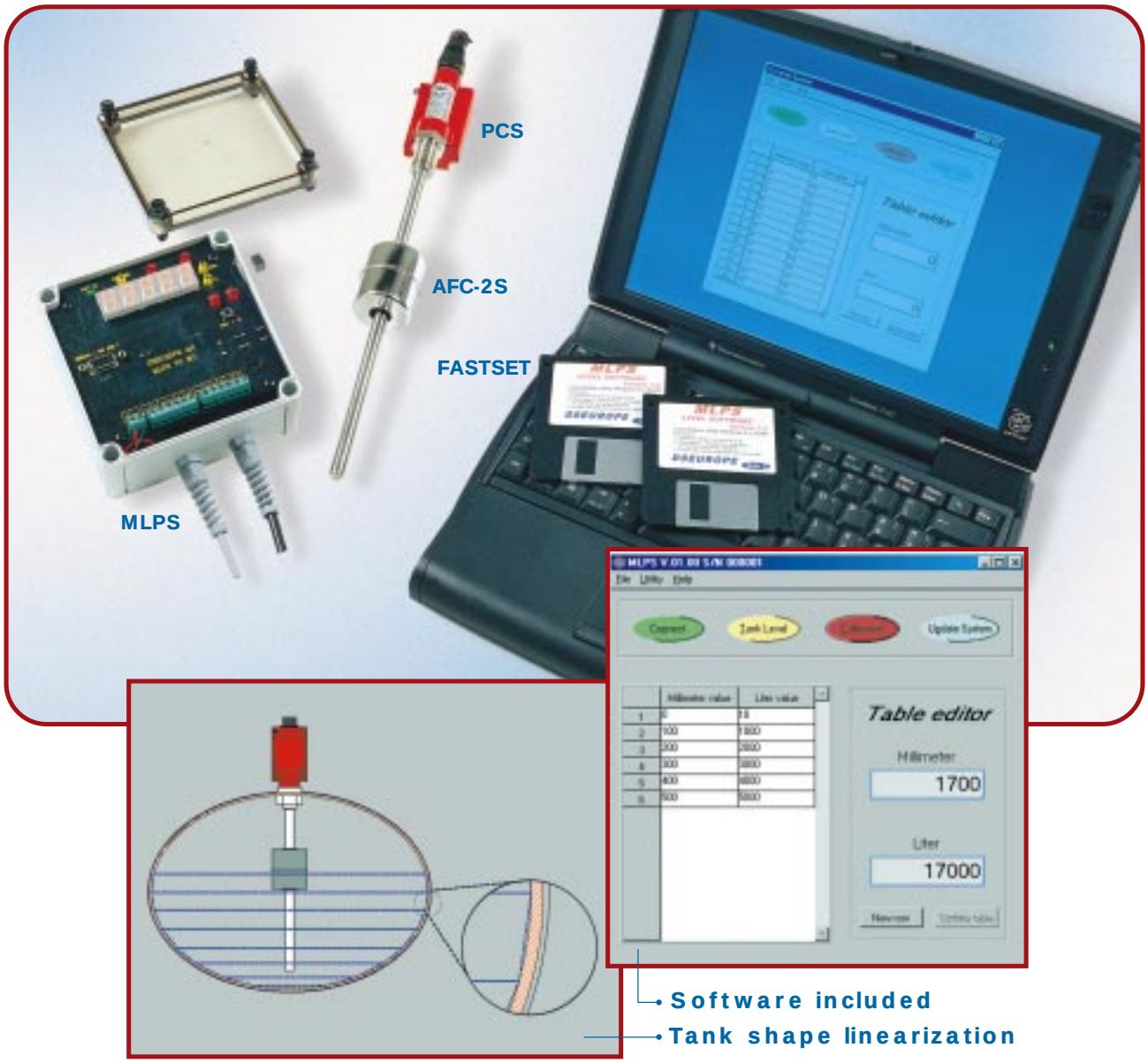
I.P.

LIQUID LEVEL MEASURING SYSTEM
SMARTANK
with TANK SHAPE LINEARIZATION



- TANK SHAPE LINEARIZATION WITH UP TO 1000 POINTS INTERPOLATION
- SOFTWARE FOR CALIBRATION AND LINEARIZATION
- FOR FOOD APPLICATIONS COMPATIBLE WITH STAINLESS STEEL AISI 316L
- LITER OR “mm” READINGS
- HIGH ENVIRONMENT PROTECTION
- HIGH RESOLUTION
- TWO LEVELS WITH RELAYS
- USER’S FRIENDLY
- WAVE FILTERING
- CONVENIENT

SYSTEM GENERAL DESCRIPTION

The SMARTANK system is composed by a PCS transducer, an AFC-2S float, a MLPS electronics and a FASTSET software.

The PCS transducer has Its measuring probe, together with the AFC-2S float, into the liquid and sends a digital signal corresponding to the liquid level to the MLPS electronics.

The MLPS electronics can be fixed, with four screws, up to a maximum of 400m away from the PCS transducer and shows the level (“mm”) or volume value (“liter”) on display.

The FASTSET software is provided on a $3^{1/2}$” disk and is to be installed into a user’s computer (not included) that by means of RS232 digital signal calibrates the PCS transducer fixed on the tank and programs the linearization table into the MLPS electronics, during system set up.

APPLICATIONS AND ADVANTAGES

Applications: food liquid level measures, milk and dairy machines, bottling machines, chemical plants, river and water basins measures, tank trucks, oil level in hydraulic circuits, oenology machines, tank stations, agriculture machines ect.

The SMARTANK system is able to measure the real liquid level not considering foam or steam, unlike ultrasound and capacitive systems and has a much better resolution than reed relays and radar systems.

MEASURING RANGES AND PROBE LENGHTS

Measuring range (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850
L = Probe lenght	163	213	263	313	363	413	463	513	563	613	663	713	763	813	863	913

Measuring range (mm)	900	950	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2250	2500	3000
L = Probe lenght	963	1013	1063	1163	1263	1363	1463	1563	1663	1763	1863	1963	2063	2313	2563	3063

TRANSDUCER MOD. PCS

Mod. PCS: magnetostrictive liquid level transducer.
The PCS transducer is to be installed on the top of the tank frame with Its measuring probe in the liquid.

Working principle: the transducer electronics feeds into the waveguide, contained inside the probe, current pulses. When every current pulse reaches the magnetic field of the float, a mechanical pulse (travelling backward) is generated. The float position is calculated by measuring the elapsed time between both pulses.

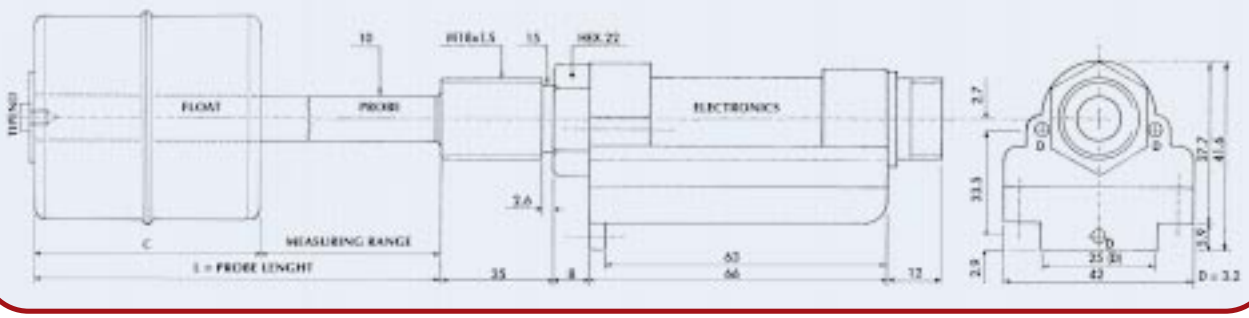
Resolution: 0,2mm. The high resolution allows the user to:
- Dose fluids.
- Measure even big volume variations due to small level variations on big liquid surfaces.

Chemical compatibility:
- Wet parts: the probe is made with 316L TIG welded stainless steel, allowing to measure compatible food liquids.
- Electronics: the red frame is made with aluminium alloy.

IP65 environment protection: the high protection allows it to be used in protected outdoor and dirty environments.

Electrical connection: 2m standard cable with gland (up to max. 400m optional); connector.

OVERALL DIMENSIONS OF MOD. PCS



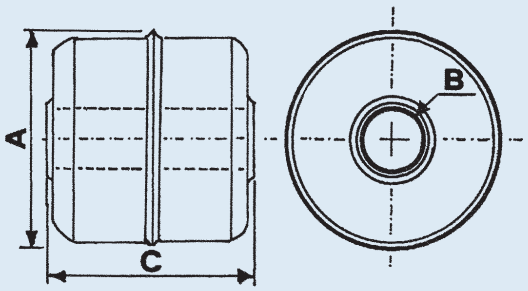
FLOAT AND ACCESSORY

Mod. AFC-2S (fig. 1): magnetic float.
The float moves coaxially along the PCS transducer probe.
Liquids with 0,7 specific gravity give a buoyancy that allows It to stay half above the liquid surface.
The AFC-2S is made by using 316Ti stainless steel, allowing measures with compatible food liquids.

TIPEND Accessory (fig. 2): It avoids the falling down of the AFC-2S float from the measuring probe and it is fixed with an M3 screw.

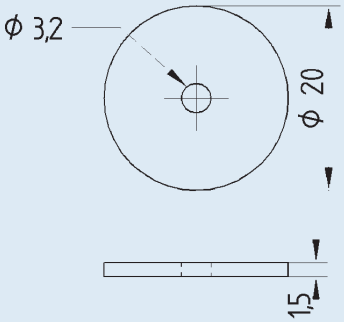
OVERALL DIMENSIONS OF FLOAT AND ACCESSORY

Fig. 1



A = 44,5 (42) **B = 15** **C = 52 (50)**

Fig. 2



MOD. MLPS: ELECTRONICS WITH DISPLAY

The MLPS electronics receives a digital signal from the PCS transducer and is calibrated and programmed by the external computer through RS232 digital interface. The MLPS electronics is powered with 220Vac (±10%) 50Hz or 24Vdc and powers the PCS transducer.

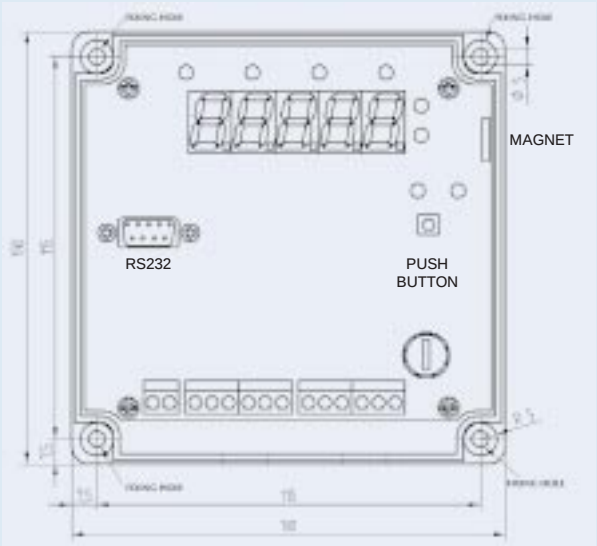
Display: MLPS has a 5 digits red LED display that allows to show the float position along the probe (max. 9999mm) and Its corresponding liquid volume (max. 99999 liters).

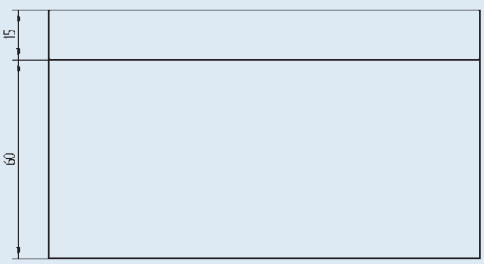
Warning messages and LEDs: the MLPS electronics is easy to install, use and service. There are display messages and LEDs that warn the user about the SMARTANK system status.

Switching from "mm" to "liter" readings: by means of built-in push button, terminal board contact (easy to remote by means of an external not included push button) and with an included external magnet that, when placed beside the MLPS lid, switches an internal reed relay.

IP65 environment protection: the MLPS electronics has a plastic frame with sealing that allows it to be used in protected outdoor and dirty environments.

Alarm levels: MLPS electronics has 2 levels with relay output (30W, 240Vac).





SOFTWARE FASTSET

The included 3$^{1/2}$ disk with FASTSET software is to be installed into the user's computer that is connected to the MLPS electronics by means of RS232 digital port.
System requires Windows® 95 or better.
The FASTSET software allows to calibrate the PCS transducer in the tank and also to download the linearization table into the MLPS electronics during system set up.

Installation: It is easy and guided. The FASTSET software automatically scans the computer ports with all available baud rates in order to find the used one to connect to the MLPS electronics.

Calibration of PCS transducer (Fig. A): The FASTSET software stores the position of the AFC-2S float along the probe matching It with the "mm" value.

Linearization table (Fig. B): The tank could have an irregular shape thence there would not be a direct proportionality between the liquid level ("mm") and the matching volume ("liter").
The user should have to calculate a linearizing table for the tank matching "mm" with "liter" values.
MLPS electronics can store up to 1000 points thence allowing a very accurate interpolation of the tank shape.
FASTSET software allows to:

- Create a new table (even by means of direct measurements from PCS transducer).
- Download on MLPS electronics a table previously made by the user by means of spread sheet and saved on computer hard disk.
- Modification of a preexisting table on MLPS electronics.

Level visualization (Fig. C): It is possible to visualize the effective position of the float along the measuring probe.

Wave filtering: It is possible to set a "mm" tolerance value (max. 100mm) where It is possible to have the display to show dots ("-----") instead of a volume value ("liters ").
In this way It is possible to avoid fluctuating measures because of waves due to liquid loading and unloading or to an active mixer.

Alarm levels: It is possible to set up to 2 levels on 100% of PCS transducer measuring range with their matching hysteresis. Hysteresis is a delay that avoids unwanted relay switching due to small signal fluctuation because of float wavering.

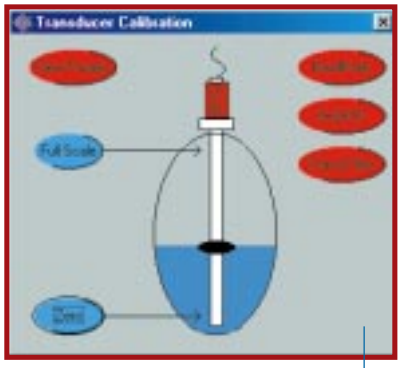


Fig. A

Fig. B

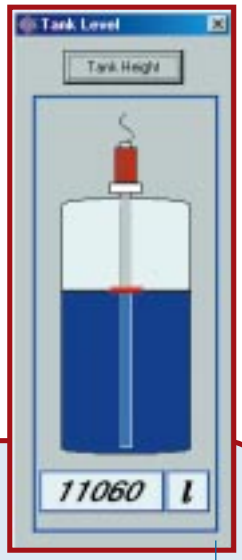


Fig. C

GENERAL TECHNICAL FEATURES

Power Supply: 220Vac (±10%) 50Hz. (fuse 250V, T100mA); 24Vdc (100mA).
Resolution: 0,2mm.
Non linearity: ≤ ±0,025%FS (on "mm" measures).
Transducer thermal drift: ≤ ±0,05%FS/°C.
Working temperature: probe of series PCS transducer: -40°C÷+110°C;
electronics of series PCS transducer: -40°÷+85°C; Rh≤95%.
series MLPS electronics: 0÷+70°C (option -40°÷+85°C). Rh≤95%.
Enviroment protection: IP65. ***Maximum pressure on wet parts:*** 20bar. ***CE marked.***

HOW TO ORDER

SMARTANK — □□□□ — □ — □□□ — □ — □
Measuring range (mm)
C = cable; P = connector
Total PCS cable (m)
T = tipend; N = no.
Power Supply: A = 24Vdc; B = 220Vac

Es: SMARTANK -1000-C-020-N-B
Smartank with 1000 mm measuring range;
PCS cable: 20m;
No Tipend.
Power Supply: 220Vac

Specifications and prices may change without notice.

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