

$(H_2O)^\infty$ 

AFS™-3 and AFS-3D

Analyzer Feed Systems

PRODUCES 3 LITERS PER HOUR OF CONSISTENTLY PURE, NCCLS* TYPE I WATER FROM TAP WATER FOR DIRECT FEED TO CLINICAL ANALYZERS. THE AFS-3D SYSTEM HAS A DEGASSER OPTION.

Designed specifically for the clinical lab, the AFS-3 and AFS-3D systems are members of a family of analyzer feed water purification systems. The systems produce NCCLS Type I water from tap water for direct-feed to clinical analyzers. The AFS-3D system includes a degasser option for removing dissolved gases from the final product water. The purified water is suitable for constant temperature water baths, cuvette washing, reagent reconstitution, on-board serum dilution, and any other procedure which requires reagent water.

The AFS-3 Systems Are Compact Enough to Fit the Layout of Any Lab

System components are housed in a compact unit that can be mounted on a bench, wall, or floor stand.

AFS-3 Systems Meet Rigorous International Standards

The AFS Systems are designed to CE, UL* and the Canadian National Standard for electrical safety and have Class One Medical Device status (under FDA citation 21CFR 862.2050). The water produced by the AFS Systems meets NCCLS Type I and Type II reagent water specifications. The AFS manufacturing plant complies with cGMP* practices and is ISO® 9002 certified.

* NCCLS (National Committee for Clinical Laboratory Standards), cGMP (current Good Manufacturing Practices), UL (Underwriters Labs)

MILLIPORE

www.millipore.com/H2O



AFS-3 Systems Use Multiple Technologies to Produce NCCLS Type I Water

The Progard™ Pretreatment Pack uses activated carbon and particulate prefiltration to remove contaminants from tap water and extend the life of the reverse osmosis (RO) membrane. The Progard pack also has a proprietary anti-scalant which prevents the RO membrane from scaling and virtually eliminates the need for a softener as pretreatment. The thin-film composite (TFC) RO membrane removes nearly all ionic contaminants, organic contaminants in excess of 100 molecular weight, and colloidal silica from water. The AFS Cartridge uses 100% nuclear-grade, single-use ion exchange resin to remove the remaining traces of inorganic contaminants. The 0.05 µm final filter removes bacteria from product water.

Easy Maintenance

The Progard Pretreatment Pack and AFS Cartridge consumables snap in and out easily without tools. The RO cartridge is decontaminated with a cleaning tablet. The cleaning cycle start-up is a simple, push-button operation which takes only seconds to initiate.

System Features

AFS systems produce purified water on demand. Automatic, periodic flushes of the RO membrane minimize biofilm accumulation.

Enhanced Electronics

AFS systems are controlled by a microprocessor which allows for easy monitoring of system operation and water quality. Meeting NCCLS specifications, product water quality is monitored via an inline temperature-compensated resistivity measurement. The user accesses system performance information from a menu-driven display. The cleaning cycles, as well as system display parameters and quality warning set-points, are initiated from the user interface menus. The AFS systems will warn the user if any system performance parameter falls outside of the acceptable range.

Measurement of RO feed and permeate conductivity allows for determination of the percent ionic rejection of the RO membrane. This is a critical measurement because a

drop in ionic rejection will decrease the life of the AFS Cartridge and increase operating costs. In most cases, simply initiating a cleaning cycle will restore RO membrane performance. By constantly monitoring RO membrane performance, the AFS systems help to minimize operating costs.

Product Water Quality Meets NCCLS Type I Specifications

Resistivity: $\geq 10 \text{ M}\Omega\text{-cm}^*$

Bacteria: $\leq 10 \text{ cfu/mL}^{**}$

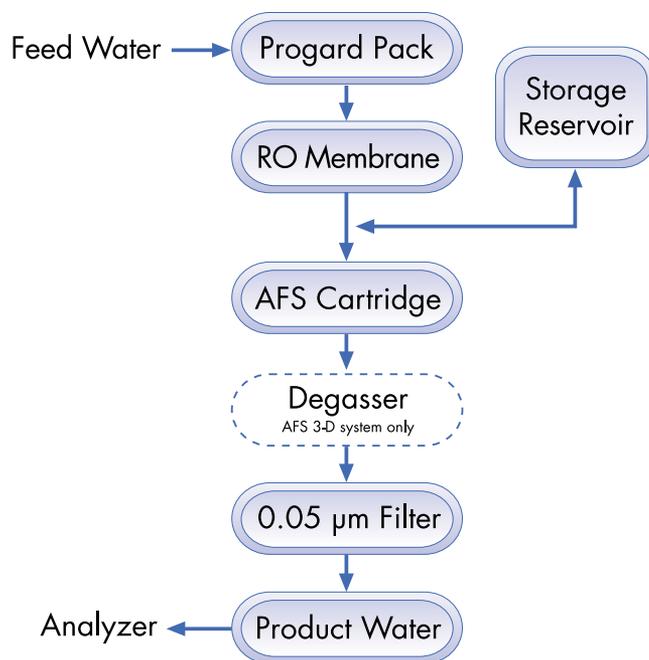
Silica: $\leq 0.05 \text{ mg/L}$

Particulate contaminants:
0.22 µm filtration

Organic contaminants:
Reverse osmosis and activated carbon treatment

AFS-3D additional dissolved gas spec:

Controllable down to 3ppm dissolved O₂ dependent on incoming water temperature



* Measured using a flow-through resistivity cell compensated to 25 °C

** Using total count agar or R2A media incubated at 35 °C for 48 hrs

Specifications

AFS-3 and AFS-3D System Specifications

Hourly production rate:	3 L/hr Typ.
Peak dispense rate (to atmosphere):	0.6 L max.
Tank dispense capacity:	10 L max.
Product pressure:	13-16 psi (1 bar +/- 10%)
Typical RO ionic rejection rate*:	96%
Typical RO organic rejection rate:	99% (> 100 daltons)
Typical RO particulate rejection rate:	99%
Typical RO microbiological rejection rate:	99%
System recovery:	10-15%
Noise level:	42 db A (at 1 meter)

Incoming Feed Water Requirements

Quality:	Potable mains (tap) water
Inlet pressure into AFS system:	15-90 psi (1-6 bar)
Temperature:	2-35 °C
Minimum feed flow rate:	2.0 L/min.
Total chlorine into Progard 2 pack:	< 3 ppm
Dissolved gas content:	≤ Saturated
Maximum fouling index SDI (into Progard 2 pack):	< 12**

Utility Requirements

Power (depending on system):	120 V, 60 Hz, 100 V, 50/60 Hz-70 VA-2A S.B. fuse; 230 V, 50/60 Hz-70 VA-1A S.B. fuse
Outlet:	Grounded (GF) protection recommended
Distance:	1 m (3.3') from system max.
Drain distance:	Max of 3.6 m (12') of drain tubing and elevation limit 1 m (3') above system max.
Drain capacity:	2 L/min.
Supply connections:	1/4" or 1/2" NPT preferred
Product Line Length:	3.6 m (12') max.; 6' length recommended

AFS Systems Physical Characteristics

Height:	455 mm (18")
Width:	255 mm (10")
Depth (without reservoir):	355 mm (14")
Depth (with reservoir):	500 mm (19.5")
Dry weight:	12.5 kg (27.5 lbs) plus 1 kg (tank)
Weight in use (filled with water):	15.5 kg (34 lbs) plus 13 kg (28 lbs) (tank)

* Depends on maintenance of the RO membrane. These specifications are based on 15 °C water and 50 psi feed pressure to the AFS system.

** If SDI index is > 12 a 12" Rogard™ Cartridge is recommended upstream.

Ordering Information

Description	Voltage	Catalogue No.
AFS-3 Water System	120 V 60 Hz	ZAFS 600 30
	230 V 50 Hz	ZAFS 500 30
	100 V 50/60 Hz	ZAFS 700 30
AFS-3D Water System	120 V 60 Hz	ZAFS 600 3D
	230 V 50 Hz	ZAFS 500 3D
	100 V 50/60 Hz	ZAFS 700 3D

Description	Qty/Pk	Catalogue No.
Consumables		
Progard 2 Pretreatment Pack	1	PROG 000 02
AFS Cartridge	1	CP1A LLR ES
Millipak® 100 Bacteria Filter and Vent	1	MPGL 107 W1
Simfilter™ Hollow Fiber Bacteria Filter and Vent Filter	1	HFBC TFA FS
Progard 2 Pretreatment Pack, Millipak 100 and Vent Filter	1	CPAF S3P RM
Progard 2 Pretreatment Pack, Simfilter Bacteria Filter, and Vent Filter	1	CPAF S3P RB
Sanitization Chlorine Tablets	45	ZWCL 01F 50
Accessories		
Floor Stand (floor drain installation only)	1	ZAF3 STA ND
Wall Mounting Bracket	1	SYST FIX 01
Millipak Mounting Kit	1	MPKM NTK IT

To Place an Order or Receive Technical Assistance

In the U.S. and Canada, call
1-800-MILLIPORE (1-800-645-5476).
In the U.S., Canada and Puerto Rico, fax orders
toll-free to 1-800-MILLIFX (1-800-645-5439)
Internet: www.millipore.com/H2O
Tech Service: www.millipore.com/techservice

AUSTRALIA Tel. 1 800 222 111 or (02) 9888 8999 Fax (02) 9878 0788	ITALY Vimodrone (Milano): Tel. (02) 25.07.81 Fax (02) 26.50.324 Roma: Tel. (06) 52.03.600 Fax (06) 52.95.735
AUSTRIA Tel. (01) 877-8926 Fax (01) 877-1654	JAPAN Tel. (03) 5442-9711 Fax (03) 5442-9736 Life Sciences 9737 BioPharm. 9734 Lab Water
BALTIC COUNTRIES Tel. +358 9 804 5110 Fax +358 9 256 5660	KOREA Tel. (822) 551-0990 Fax (822) 551-0228
BELGIUM AND LUXEMBOURG Tel. +32 2 726 88 40 Fax +32 2 726 98 84	MALAYSIA Tel. 603-757 1322 Fax 603-757 1711
BRAZIL Tel. (011) 5548-7011 Fax (011) 5548-7923	MEXICO Tel. (525) 576-9688 Fax (525) 576-8706
CANADA Tel. 1-800-645-5476 Fax 1-800-645-5439	THE NETHERLANDS Tel. 076-5022000 Fax 076-5022436
CHINA, PEOPLE'S REPUBLIC OF Beijing: Tel. (8610) 8519 1250 (8610) 6518 1058 Fax (8610) 8519 1255 Guangzhou: Tel. (8620) 8755 4049 Fax (8620) 8752 0172 Hong Kong: Tel. (852) 2803 9111 Fax (852) 2513 0313 Shanghai: Tel. (8621) 5306 9100 Fax (8621) 5306 0838	NORWAY Tel. 22 67 82 53 Fax 22 66 04 60
CZECH REPUBLIC Tel. 02-2051 3841 Fax 02-2051 4298	POLAND Tel. 22-669 12 25 22-663 70 31 Fax 22-663 70 33
DENMARK Tel. 70 10 00 23 Fax 70 10 13 14	PUERTO RICO Tel. (787) 273-8495 Fax (787) 747-6553
EASTERN EUROPE, C.I.S., AFRICA, MIDDLE EAST AND GULF Life Sciences Division: Tel. +33 3 88 38 9536 Fax +33 3 88 38 9539 BioPharmaceutical Division: Tel. +43 1 877-8926 Fax +43 1 877-1654 Laboratory Water Division: Tel. +33 1 30 12 7000 Fax +33 1 30 12 7180	SINGAPORE Tel. (65) 842 1822 Fax (65) 842 4988
FINLAND Tel. (09) 804 5110 Fax (09) 256 5660	SPAIN AND PORTUGAL Tel. +34 917 283 960 Fax +34 917 292 909
FRANCE Tel. 01 30 12 7000 Fax 01 30 12 7180	SWEDEN Tel. 08-628 6960 Fax 08-628 6457
GERMANY Tel. (06196) 494-0 Fax (06196) 43901	SWITZERLAND Volketswil: Tel. (01) 908-30-60 Fax (01) 908-30-80 Lausanne: Tel. (021) 641 2550 Fax (021) 641 2551
HUNGARY Tel. 1-205 9784 Fax 1-205 9792	TAIWAN Taipei: Tel. (886-2) 700-1742 Fax (886-2) 755-3267 Hsin Chu City: Tel. (886-3) 571-0178 Fax (886-3) 572-9520
INDIA Tel. (91) 80-839 46 57 Fax (91) 80-839 63 45	U.K. Tel. 01923 816375 Fax 01923 818297
IRELAND Life Sciences and Laboratory Water Divisions: Tel. +44 1923 816375 Fax +44 1923 818297 BioPharmaceutical Division: Tel. (021) 883 666 Fax (021) 883 048	U.S.A. Tel. (781) 533-6000 Fax (781) 533-8886
	IN ALL OTHER COUNTRIES Millipore Intertech (U.S.A.) Tel. +1 (781) 533-8622 Fax +1 (781) 533-8630

MILLIPORE

Lit. No. DS1200EN00
Millipore and Millipak are registered trademarks of Millipore Corporation.
(H2O)[®], AFS and Progard are trademarks of Millipore Corporation.
ISO is a registered trademark of The International Organization for Standardization.
2/02 01-299 Printed in U.S.A.
© Copyright 2002, Millipore Corporation, Bedford, MA, U.S.A. All rights reserved.