Electropure EDI
High Technology Water

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Operating Feed Water Specifications:

The following are minimum requirements to operate within Electropure's warranty. Optimum performance from Electropure's EDI modules will result if values that are more stringent are set as design goals.

❖ Source:	RO water, 4-30 µS/cm conductivity. Optimum resistivity with 4-10 µS/cm.
❖ pH:	5.0 to 9.5 (pH 7.0 to 8.0 for optimum EDI resistivity performance, but only if hardness is minimized below nominal). Note low pH feedwater typically indicates the presence of CO_2 which will decrease quality.
❖ Temperature:	5°C to 35°C. Optimum quality at 25°C.
❖ Inlet Pressure:	4 bar (60 psi) – maximum Module pressure drop depends on flow and temperature.
❖ Outlet Pressure:	Concentrate and Electrolyte outlet pressures to be lower than the Product outlet pressure.
❖ Hardness (as $CaCO_3$):	Maximum 1.0 ppm. Recommend 0.1 ppm.
❖ Organics:	Maximum 0.5 ppm TOC. Recommend Not Detectable.
❖ Oxidizers:	Maximum 0.05 ppm (Cl_2). Recommend Not Detectable. Maximum 0.02 ppm (O_3). Recommend Not Detectable.
❖ Metals:	Maximum 0.01 ppm Fe, Mn, transition metals.
❖ Silica:	Maximum 0.5 ppm. RO effluent typically 50-150 ppb.
❖ Total CO_2:	Recommended less than 5 ppm. Above 10 ppm, product water quality depends highly on CO_2 level and pH.

EDI Product Guide: "XL by Electropure™"

The "XL by Electropure™" EDI series of modules is designed to be an economic component in an OEM's pure water systems.

The modules are designed with the following advantages over other EDI modules:

- Enable a simple EDI system to be built.
- One-stage RO as feed.
- No concentrate recirculation needed.
- Easier to array modules side-by-side on a skid.
- Lightweight and compact.
- Plumbing attachments out one face.
- Waterproof electrical attachment on the opposite face.
- Stack and bolts hidden internally.
- Membrane is a proprietary membrane made by Electropure.
- The internal design is the same as the EPM series, and has been improved over many years.

Electropure XL EDI modules come in a range of flow sizes from 50 lph to 2.3 m^3/h (0.5 gpm to 10 gpm). Each module has a recommended product flow range. Modules can be arrayed in parallel to produce a system of almost unlimited size (largest system to date is 150 m^3/hr (600 gpm). Our high-quality modules deliver 10-18.2 MΩ.cm water depending on feed and operating conditions. The table below shows the flow ranges for the "XL by Electropure" series of modules.

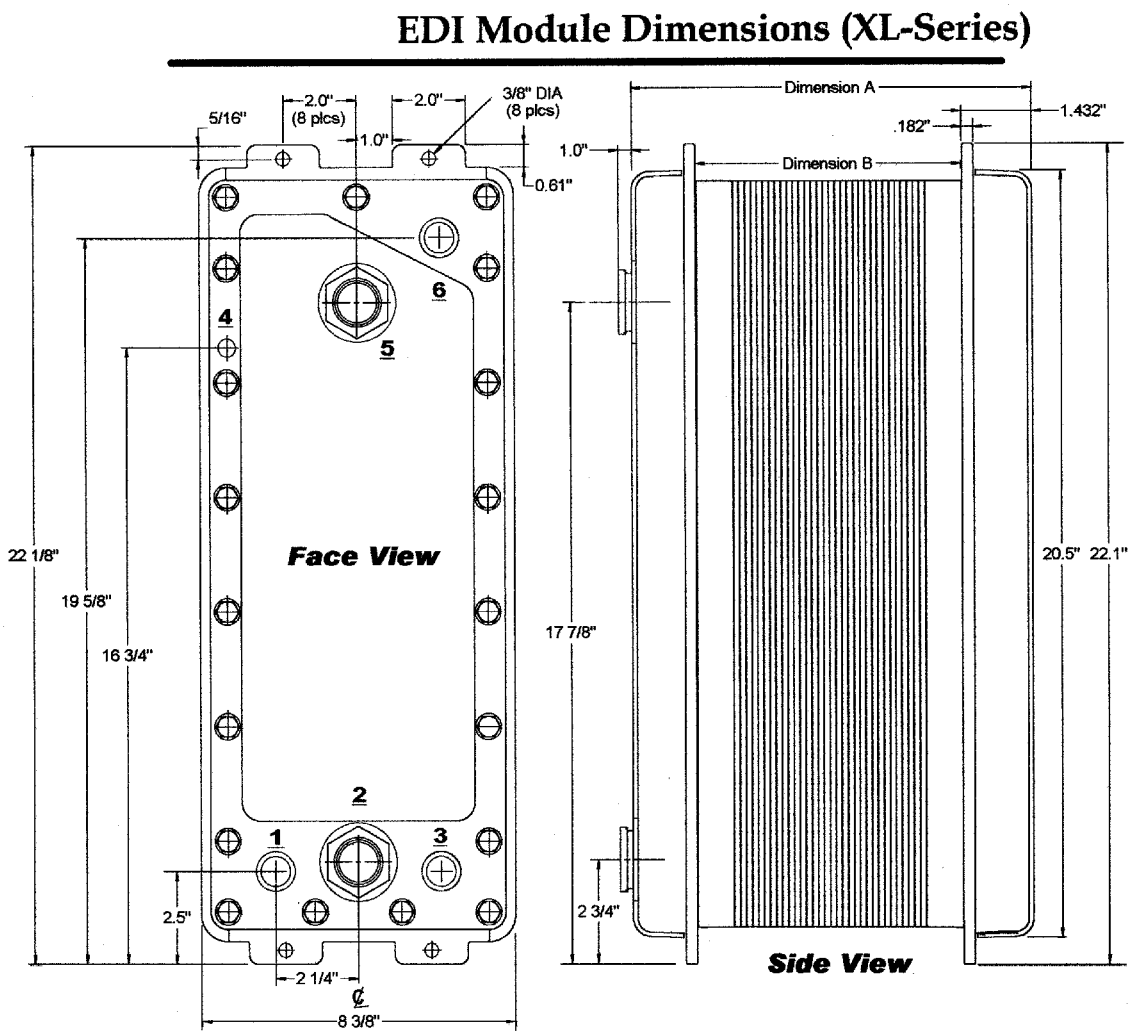
Product	Flow Range, gpm	Flow Range, m^3/h	Operating Voltage, VDC	Dimensions* Width 8 3/8" Height 22"	W 21 cm H 56 cm
XL-100	¼ to ¾	50 to 150 l/h	30-60	Depth: 6"	D 15 cm
XL-200	½ to 1½	100 to 300 l/h	60-120	7"	18 cm
XL-300	1½ to 4	300 to 900 l/h	100-160	9"	23 cm
XL-400	3 to 7	.7 to 1.5	150-200	11"	28 cm
XL-500	6 to 10	1.3 to 2.3	250-300	14"	36 cm

* see dimensional drawing for exact dimensions in inches and cm

Module Restack

The XL series is designed to be a disposable unit. It is more environmentally sound and economic to replace a module than to ship it roundtrip to the facility for a "restack."

Figure 4: Module Drawing & Dimensions



Flow Connections (Pipe and Tubing Size)
1. Concentrate Inlet 3/8" Tube (Push In Fitting) 2. Dilute Feed Inlet 1" FIP 3. Electrolyte Inlet 3/8" Tube (Push In Fitting)
Outlet
4. Electrolyte Outlet 1/4" Tubing 5. Dilute Product Outlet 1" FIP 6. Concentrate Outlet 3/8" Tube (Push In Fitting)

Model	(A)	(B)
XL - 500	13.9"	10.2"
XL - 400	11.6"	7.8"
XL - 300	10.3"	6.5"
XL - 200	8.4"	4.6"
XL - 100	7.4"	3.6"

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Figure 5: Mounting Options

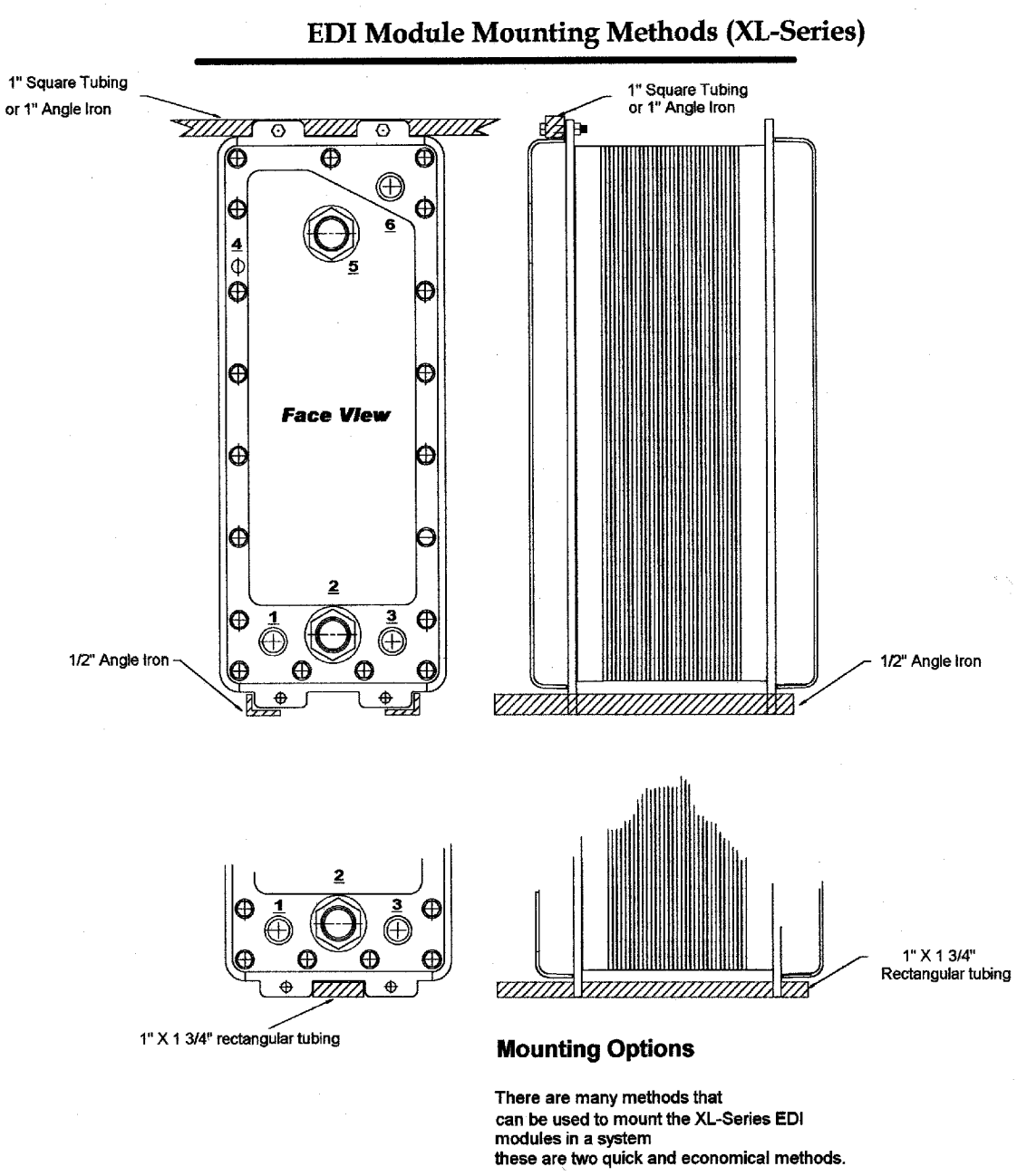
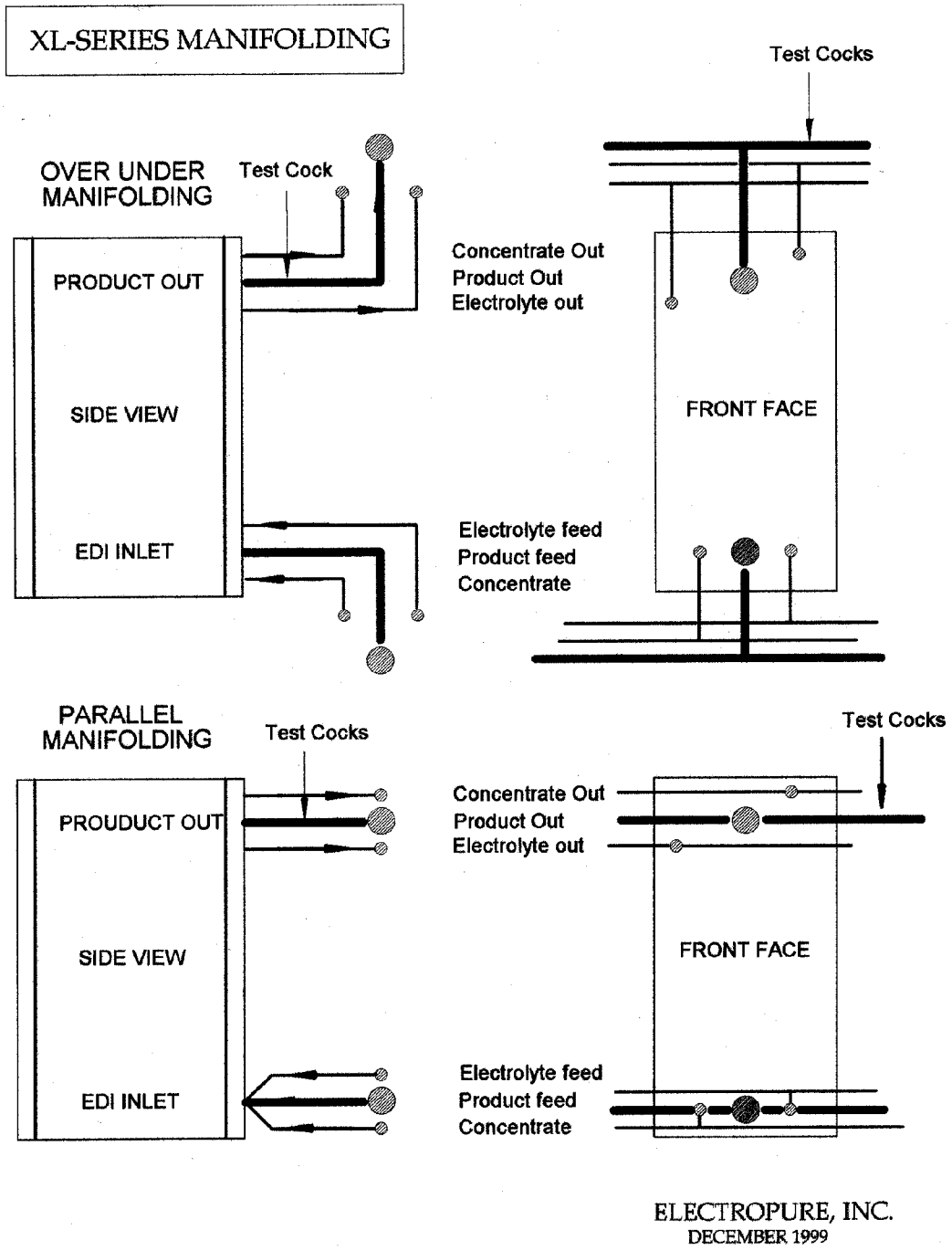


Figure 6: Manifolding Options



DC Power Supply Requirements

The power supply should be a regulated DC power supply with enough power to cover typical and extreme operating conditions.

Voltage output should be variable, and the voltage range should include the regeneration conditions. The power supply should have current-limiting capability to protect itself and the EDI module(s). Each module may be separately fused.

Current draw depends on the conductivity of the EDI feed and the water recovery. There should be excess current capability designed in to cover higher currents in case module regeneration is needed, or if RO permeate conductivity increases with system age.

For protection it must have a system interlock to turn the POWER OFF in case of NO WATER FLOW. It may be controllable from a remote source such as a PLC or the system control computer.

The power supply may have internal diagnostics and an alarm relay output.

AC noise (ripple) can be up to 5%. AC low- and high-frequency ripple may affect the readings of local electronic instruments, such as conductivity or resistivity meters.

Power supply should conform to UL, CSA, or CE requirements as local code requires. Local code may require features such as power factor correction (PFC) and EMI shielding. If NEMA rating is required, the NEMA enclosure must have enough heat removal to keep the power supply cool.

Typical power supply efficiency is 85-90%, so AC input power will be about 10-15% higher than the rated power of the supply.

Module(s)	Typical Operating Voltage, DC	Typical Current with 4 ppm RO feed	Maximum Voltage	Maximum Current with 15 ppm RO feed
1 XL-100	30-60 V	3 Amps	80 V	8 Amps
1 XL-200	60-120 V	3 Amps	150 V	8 Amps
1 XL-300	100-160 V	3 Amps	200 V	8 Amps
1 XL-400	150-200 V	3 Amps	300 V	8 Amps
1 XL-500	250-300 V	3 Amps	400 V	8 Amps
3 XL-500	250-300 V	9 Amps	400 V	24 Amps
20 XL-500	250-300 V	60 Amps	400 V	160 Amps

Note: the power supply should be sized for the maximum requirements if possible.