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Maanvi IonExprezz™

Automatic Demineraliser Plant

Short-cycle regeneration for reliable demineralised water with lower chemical use, neutral effluent and compact skid-mounted automation.



IonExprezz USP
Pharma / API PW

IonExprezz Prime
Boiler & industry

Neutral Effluent
pH 6-8

Short Cycle
30-45 min

Applications

Pharma / API Purified Water • High-pressure boilers • Solar • Semiconductor • Surface finishing • Laboratories

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One platform. Two focused variants.

IonExprezz uses short-cycle ion exchange and PLC automation. USP is compliance-led for pharma/API; Prime is industrial duty-led for boiler and process water.

IonExprezz USP

Pharma / API Purified Water

- ✓ SAC + SBA + CatPol as standard
- ✓ ≤1.3 µS/cm conductivity target
- ✓ GAMP 5 / 21 CFR Part 11-ready package
- ✓ Validation-ready DQ / IQ / OQ support

IonExprezz Prime

Boiler / Industrial DM

- ✓ SAC + SBA with optional CatPol
- ✓ <10 µS/cm industrial DM water
- ✓ Silica-sensitive boiler duty options
- ✓ Modular range for process industries

Why short-cycle automatic DM?

Frequent renewal

regenerates before deep exhaustion to stabilise quality

Lower footprint

compact resin beds reduce skid and tankage

Neutral drain

acid and alkali waste streams are blended to reduce pH shock

Automation

PLC/HMI sequencing reduces operator dependency

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Technology overview: Short-cycle ion exchange

IonExprezz combines proven SAC and SBA ion exchange with automated short-cycle regeneration, optional polishing and neutral common drain.

Raw water – Pretreated feed
– **SAC** – Cation removal
– **SBA** – Anion + silica
– **CatPol** – Optional polish
– **DM/PW outlet** – Quality to tank

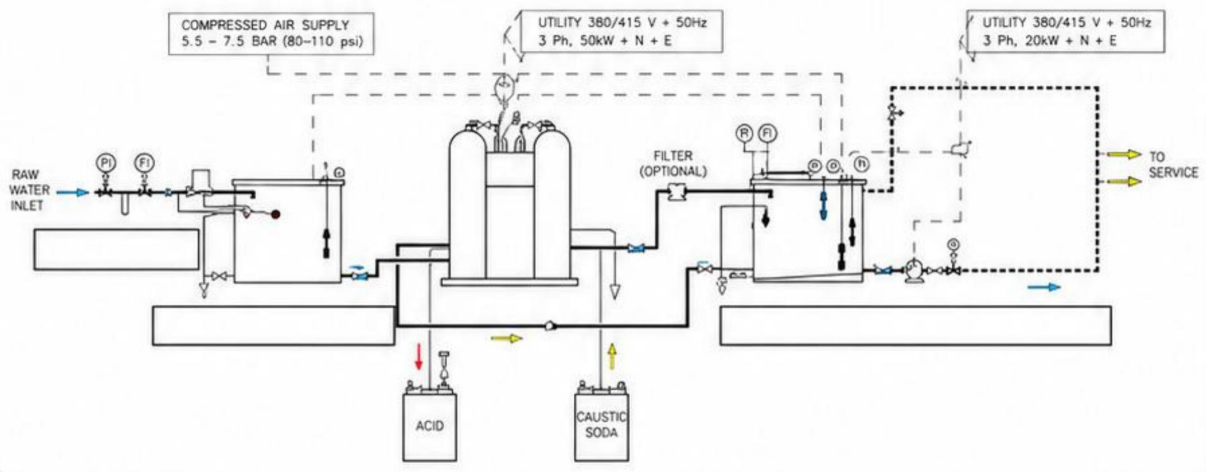
Regeneration logic

Service	volume / conductivity logic
Backwash / compaction	flow controlled
Acid + caustic dosing	metered + interlocked
Rinse	conductivity termination
Return to service	auto sequencing

Control & monitoring

- ✓ PLC/HMI automatic sequencing
- ✓ Conductivity, pH and flow monitoring
- ✓ Acid/alkali interlocks
- ✓ Low chemical and no-flow alarms
- ✓ SCADA/BMS connectivity options

Overall integration view



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IonExprezz USP: Pharma / API Purified Water

Compliance-ready automatic demineraliser for purified-water generation where stable conductivity, traceability and hygienic operation matter.

USP design basis

Quality target	≤1.3 µS/cm conductivity
Flow range	1-10 m^3/h typical USP package
Architecture	SAC + SBA + CatPol standard
Records	21 CFR Part 11-ready audit trail
Validation	DQ / IQ / OQ / PQ support

Designed for regulated use

- ✓ GAMP 5 PLC-HMI logic
- ✓ USP <645> compliant conductivity sensor
- ✓ Temperature compensation
- ✓ UPVC flow path and diaphragm valves
- ✓ Safety interlocks and alarm history

Applications

Pharma PW generation • API and formulation plants • Biotech fermentation and media preparation • Diagnostics and analytical labs • Sterile manufacturing final rinse support

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IonExprezz Prime: Boiler and industrial DM water

A practical, compact automatic DM system for industries needing dependable low-conductivity water with

Boiler feedwater

Silica-sensitive applications including high-pressure boiler feedwater with polishing options for <20 ppb silica.

Solar / Semi-Con support

DM water for utilities, rinsing support and upstream polishing duties where silica and conductivity are critical.

General industry

Food and beverage, surface finishing, chemical, cosmetics, laboratory and plant utilities.

Life-cycle focus

Lower footprint, automated operation, neutral effluent and reduced operator dependency.

Prime operating targets

Conductivity	<10 µS/cm typical industrial DM
Resistivity	1-10 MΩ·cm range
pH	5.0-7.0 treated water
Silica	<0.02 ppm / application-specific with polishing
Effluent	Bulk pH 6-8, neutral discharge
Regeneration	Short cycle, typically 30-45 minutes

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Automation, safety and integration

IonExprezz is packaged as an automatic skid with HMI visualisation, interlocks, alarms and service/regeneration sequencing.



Process safety

- ✓ Water quality and flow
- ✓ Conductivity-based service
- ✓ Auto / manual maintenance

Chemical safety

- ✓ Acid/alkali dosing interlocks
- ✓ Low chemical level alarms
- ✓ Quick-connect chemical

Equipment safety

- ✓ No-flow and low-air alarms
- ✓ Pump trip and overload
- ✓ Pressure and drain

Data readiness

- ✓ HMI message history
- ✓ SCADA/BMS connectivity
- ✓ Optional printer / audit trail

Site integration inputs

- Raw water analysis and anionic load
- Required flow and daily DM/PW demand
- Target conductivity / silica / TOC where applicable
- Existing storage tank and recirculation philosophy
- Chemical storage and drain / ETP constraints
- Automation protocol and data integrity requirement

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Industrial positioning and differentiation

IonExprezz is positioned in the global short-cycle auto-DM class while tailoring the package for Indian industry and regulated water users.

IonExprezz vs conventional DM plant

Area	Conventional DM	IonExprezz approach
Regeneration	Longer, often sequential	Short-cycle, automatic, lower downtime
Quality risk	Conductivity spikes possible	Frequent renewal stabilises quality
Effluent	Wide pH swing; neutralisation load	Near-neutral bulk effluent
Footprint	Larger resin beds and storage	Compact skid and smaller tankage
Operation	Manual dependency	PLC-HMI with alarms and records
Polishing	Separate polishing often needed	CatPol optional / standard on USP

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Range, selection and next steps

Select IonExprezz USP or Prime based on final water quality, regulatory requirement, flow, silica target and operating philosophy.

Model range - typical Prime family

Model	A+	B+	C+	D+	E+	F+	G+	H+
Max flow m³/h	2.25	3.75	5.25	7.5	12	16	25	35
Conductivity	<10	<10	<10	<10	<10	<10	<10	<10
Output/regen m³	14	21	28	35	63	84	155	192
Effluent/regen m³	0.48	0.82	1.04	1.22	2.10	2.75	5.3	6.8
Power kW	1.5	1.5	2.2	3.0	5.5	5.5	7.5	11.0

For selection, share

- Raw-water analysis
- Flow and daily demand
- PW compliance expectation
- Required output quality
- Boiler pressure / silica limit
- Existing tankage and drain details

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