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PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Brackish Water Reverse Osmosis Training System | HydraNexis HNX-05

Category: Water Treatment Technology · **Order Code:** HNX-05 · **Country of Origin:** India

Product Overview

The Brackish Water Reverse Osmosis Training System HydraNexis HNX-05 treats brackish water up to 10,000 ppm TDS with approximately 500 L/day product capacity. Features dual 500 L storage tanks, pretreatment with 5 micron sediment and GAC filters, antiscalant dosing, high-rejection TFC spiral-wound RO membrane, separate permeate/concentrate flow measurement, digital TDS/conductivity and pH analysis, automatic tank-level control, and CIP provisions. Mobile frame with quick-connect hydraulics supports modular training configurations for membrane separation and desalination studies.

View this product online: https://scienticoindia.com/product/brackish-water-reverse-osmosis-training-system-hydranexis-hnx-05/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Brackish Water Reverse Osmosis Training System HydraNexis HNX-05 — Technical Specifications

Specification	Details
Application	Brackish water reverse osmosis treatment and training
Feed Water Compatibility	Up to 10,000 ppm TDS
Nominal Product Capacity	Approximately 500 L/day
System Type	Compact mobile skid-type laboratory scale
Raw Water Tank	Approximately 500 L polyethylene with level monitoring
Product Water Tank	Approximately 500 L food-grade polyethylene
Transfer Pump	Dedicated raw water feed pump with level control
Sediment Filter	5 micron PP cartridge for suspended solids removal
Activated Carbon Filter	Granular activated carbon (GAC) for organic contaminant removal
Antiscalant Dosing	Integrated chemical dosing system for scaling prevention
RO Membrane Type	High-rejection thin-film composite (TFC) spiral-wound
Membrane Active Area	Approximately 1.2 m²
High-Pressure Pump	Piston pump with pulsation damper

Specification	Details
Maximum Pump Flow	Approximately 585 L/hour
Maximum System Pressure	Approximately 140 bar
Maximum Operating Pressure	40 bar
Post-Treatment Filter	Carbon block polishing filter
Permeate Flow Measurement	Separate flow meter, 0.5 to 7 L/min range
Concentrate Flow Measurement	Separate flow meter, 0.5 to 7 L/min range
Pressure Gauges	Analog at filtration stages and RO membrane
Water Quality Measurement	Digital TDS/conductivity analyzer and pH meter
Control Panel	IP65-rated with automatic tank-level management
Safety Features	High/low-pressure protection, emergency stop, dry-run protection
Hydraulic Connections	Quick-connect type for modular operation
Frame Construction	Heavy-duty corrosion-protected structural frame
Mobility	Swivel castors with locking brakes
CIP Provisions	Dedicated ports for external membrane-cleaning tank
Sampling Points	Three points for pretreatment, RO membrane and post-treatment
Concentrate Control	Precision needle valve for reject-flow adjustment

Technical Data

Water Storage and Feed System

- Raw water tank: Approximately 500 L polyethylene with low-level monitoring
- Product water tank: Approximately 500 L food-grade polyethylene
- Transfer pump: Dedicated pump with automatic level-based control
- Tank connections: Ventilation and drainage provisions

Pretreatment Assembly

- Sediment filter: 5 micron polypropylene cartridge for suspended solids
- Granular activated carbon filter: Organic contaminant removal
- Antiscalant dosing: Integrated chemical dosing system
- Pressure monitoring: Across pretreatment stages
- Sampling point: After pretreatment for quality analysis

Reverse Osmosis System

- Membrane: High-rejection TFC spiral-wound, 1.2 m² active area
- Pump: High-pressure piston pump, approximately 585 L/h maximum flow
- Pump rating: Up to 140 bar system pressure
- Operating pressure: Adjustable to maximum 40 bar
- Pump construction: Corrosion-resistant with vibration isolation
- Feed: Pretreated brackish water to 10,000 ppm TDS
- Product: Permeate from membrane separation
- Reject: Concentrate stream for analysis and discharge

Post-Treatment and Sampling

- Carbon block filter: Final polishing of permeate
- Sampling points: Three locations (pretreatment, RO, post-treatment)
- Sampling valves: Manual isolation and collection capability

Flow and Pressure Measurement

- Permeate flow meter: 0.5 to 7 L/min range
- Concentrate flow meter: 0.5 to 7 L/min range
- Pressure gauges: Analog at pretreatment stages and RO membrane
- High-pressure monitoring: Hydraulic circuit protection

Water Quality Instrumentation

- TDS/conductivity analyzer: Digital display for all streams
- pH measurement: Digital pH analyzer
- Monitoring locations: Feed, permeate, concentrate/retentate
- Display: Centralized control panel with digital readouts

Control and Safety System

- Automatic tank-level management and operation
- High-pressure protection with automatic shutdown
- Low-pressure protection with automatic shutdown
- Dry-run protection for pump operation
- Emergency stop facility
- Electrical circuit-breaker protection
- IP65-rated control panel enclosure
- Low-level protection for raw-water tank

Key Features

Key Features

- Brackish water treatment capability: Processes feed water up to 10,000 ppm TDS suitable for Brackish Water Reverse Osmosis Training System applications
- Modular compact design: Enables reconfiguration of treatment stages for varied Brackish Water Reverse Osmosis Training System experiments
- Mobile skid frame: Heavy-duty corrosion-protected structure with locking castors for convenient Brackish Water Reverse Osmosis Training System laboratory placement
- Quick-connect hydraulics: Allows rapid component connection and disconnection for modular Brackish Water Reverse Osmosis Training System training exercises
- Dual storage tanks: 500 L each for raw water and product water in Brackish Water Reverse Osmosis Training System operation
- Pretreatment system: 5 micron sediment filter and GAC filter protect RO membrane in Brackish Water Reverse Osmosis Training System
- Antiscalant dosing: Integrated chemical system prevents scale formation on Brackish Water Reverse Osmosis Training System RO membrane
- High-rejection TFC membrane: Spiral-wound, 1.2 m² area provides superior salt rejection in Brackish Water Reverse Osmosis Training System
- Adjustable operating pressure: Up to 40 bar enables investigation of pressure effects on Brackish Water Reverse Osmosis Training System performance
- Separate flow measurement: Permeate and concentrate flow meters enable recovery ratio calculation in Brackish Water Reverse Osmosis Training System
- Digital water quality monitoring: TDS/conductivity and pH analyzers track treatment effectiveness in Brackish Water Reverse Osmosis Training System
- Automatic tank-level control: Maintains system operation based on tank levels in Brackish Water Reverse Osmosis Training System
- Emergency stop facility: Provides safe system shutdown during Brackish Water Reverse Osmosis Training System operation
- CIP provisions: Dedicated ports connect external cleaning tank for membrane maintenance in Brackish Water Reverse Osmosis Training System
- Three sampling points: Capture water quality at pretreatment, RO and post-treatment stages in Brackish Water Reverse Osmosis Training System

- Concentrate needle valve: Enables manual reject-flow adjustment for Brackish Water Reverse Osmosis Training System optimization
- Vibration isolation: Pump mounts minimize laboratory noise during Brackish Water Reverse Osmosis Training System operation

Experiments and Training Applications

- Principles of reverse osmosis and membrane separation
- Brackish water desalination techniques
- RO membrane salt rejection performance
- Permeate production measurement and analysis
- Concentrate/reject stream management
- Recovery ratio calculation and optimization
- Effect of operating pressure on RO performance
- Effect of feed-water quality on membrane performance
- Pretreatment effectiveness and optimization
- Antiscalant dosing requirements and effects
- TDS and conductivity reduction through treatment stages
- pH monitoring across treatment process
- RO membrane performance evaluation
- Post-treatment polishing filter effectiveness
- Effect of reject-flow adjustment on system performance
- Membrane cleaning and CIP procedures
- Membrane maintenance and preservation
- Water-quality analysis and comparison at different stages
- Recovery ratio and permeate production relationships

Construction and Design

The Brackish Water Reverse Osmosis Training System HydraNexis HNX-05 is constructed on a heavy-duty, corrosion-protected structural frame with mobile swivel castors and locking brakes. Two approximately 500 L polyethylene storage tanks are mounted securely on the frame, with raw-water tank positioned for feed-pump inlet and product-water tank positioned for treated-water collection. A raw-water transfer pump with automatic level control draws water from the raw-water tank into the pretreatment system. The pretreatment section comprises a 5 micron polypropylene sediment cartridge filter followed by a granular activated carbon filter, with an integrated antiscalant chemical dosing system positioned upstream of the RO membrane. Pressure gauges are positioned across pretreatment stages for monitoring. A dedicated sampling point with valve is located after pretreatment. The high-pressure RO pump is mounted on industrial rubber vibration-isolation mounts to minimize laboratory noise transmission. The RO membrane housing is positioned for convenient access and visual inspection. Separate digital flow meters measure permeate and concentrate flows, with the concentrate outlet equipped with a precision needle control valve for reject-flow adjustment. Analog pressure gauges display membrane inlet and outlet pressures. A carbon block polishing filter provides final post-treatment with a sampling point for permeate quality verification. The centralized IP65-rated control panel displays digital TDS/conductivity, pH, pressure and flow readings. Automatic tank-level control, high- and low-pressure protection, emergency stop and electrical protection are integrated into the control panel. Quick-connect hydraulic fittings throughout enable rapid component connection and disconnection. Dedicated CIP ports allow connection of an external membrane-cleaning tank. All high-pressure hydraulic sections are protected with safety shielding. The modular arrangement facilitates convenient access to all components for inspection, maintenance and cleaning exercises during practical Brackish Water Reverse Osmosis Training System training.

Scope of Delivery

- 500 L raw water storage tank with level monitoring
- 500 L product water storage tank with ventilation and drainage
- Raw water transfer/feed pump with automatic level control
- 5 micron polypropylene sediment filter cartridge
- Granular activated carbon (GAC) filter assembly
- Integrated antiscalant chemical dosing system
- High-pressure piston pump with pulsation damper
- High-rejection TFC spiral-wound RO membrane (1.2 m² area)
- Carbon block post-treatment polishing filter

- Permeate flow meter (0.5-7 L/min)
- Concentrate flow meter (0.5-7 L/min)
- Analog pressure gauges at relevant stages
- Digital TDS/conductivity analyzer
- Digital pH measurement system
- Automatic tank-level control system
- High- and low-pressure protection switches
- Emergency stop facility
- Electrical circuit-breaker protection
- IP65-rated control panel
- Sampling points with isolation valves (3 locations)
- Concentrate needle control valve
- CIP ports for external membrane-cleaning tank
- High-pressure hydraulic safety shielding
- Heavy-duty mobile frame with corrosion protection
- Swivel castors with locking brakes
- Pump vibration-isolation mounts
- Quick-connect hydraulic fittings
- uPVC/CPVC Schedule 80 piping or industrial pressure-rated hoses
- Operating and instruction manual
- Pressure-rated connectors and tubing

Required for Operation

- Electrical power supply as specified
- Water source for raw-water tank filling
- Antiscalant chemical for dosing system
- Drain access for concentrate discharge
- External membrane-cleaning tank (for CIP exercises)
- Adequate laboratory bench or floor space for frame placement
- Ventilation for humidity and vapor discharge

Optional Accessories

- **Computerized data acquisition system with LabVIEW software**
- Extended pressure and flow measurement instruments
- Additional antiscalant and post-treatment chemicals
- Membrane replacement kit
- Advanced digital monitoring and logging equipment
- UV or additional polishing filters for enhanced permeate quality
- Waste water treatment or concentrate management system

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.
- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q: What is the maximum feed-water TDS that the Brackish Water Reverse Osmosis Training System HydraNexis HNX-05 can treat?
A: The Brackish Water Reverse Osmosis Training System is designed for feed water with TDS up to 10,000 ppm, making it suitable for brackish water and moderately saline water desalination training applications.

Q: How much treated water does the Brackish Water Reverse Osmosis Training System HydraNexis HNX-05 produce daily?
A: The system provides a nominal treated-water production capacity of approximately 500 L/day, which is ideal for laboratory-scale

training and small-scale pilot studies of Brackish Water Reverse Osmosis Training System performance.

Q: What is the purpose of the antiscalant dosing system in the Brackish Water Reverse Osmosis Training System?
A: The integrated antiscalant dosing system prevents scale formation on the RO membrane surface during Brackish Water Reverse Osmosis Training System operation by interfering with mineral salt crystallization, extending membrane life and maintaining RO performance.

Q: Can students investigate the effect of operating pressure on the Brackish Water Reverse Osmosis Training System?
A: Yes, the adjustable operating pressure (up to 40 bar) enables students to study how changing pressure affects permeate flow, salt rejection, recovery ratio and overall Brackish Water Reverse Osmosis Training System performance in brackish water treatment.

Q: How does the CIP provision enable membrane maintenance training in the Brackish Water Reverse Osmosis Training System?
A: Dedicated CIP ports allow connection of an external membrane-cleaning tank, enabling students to practice chemical membrane cleaning procedures, flushing cycles and post-cleaning recovery without removing the membrane from the Brackish Water Reverse Osmosis Training System housing.