



TELEDYNE TITAN™ HM GENERATOR SERIES

Hydrogen/Oxygen Gas Systems

HM-50 HM-100 HM-200



Hydrogen/Oxygen On-Site Gas Delivery System with Capacities to 200 SLM Hydrogen and 100 SLM Oxygen

BENEFITS

Ultrapure Pressurized Gas
Simplified Installation
High Quality Standards
Proven Reliability
Safe, Automatic Operation
On Demand Gas Delivery

Teledyne's TITAN HM ultrapure hydrogen generation systems have proven to be the most reliable systems available worldwide. Our systems have been designed for ease of installation and safe, reliable, unattended operation. Gas is generated at a usable pressure and can be compressed to virtually any pressure at the exit of the generator. Teledyne, known for its engineering excellence, can package the industry best system to meet your hydrogen needs.

Ultrapure Gas

Pressurized, on-demand, ultrapure (99.9998%) hydrogen delivery with no additional purification required

Pressurized ultrapure oxygen (99.999%), free of hydrocarbons and other atmospheric contaminants with auxiliary purifier

Ease of Installation for Classified Areas

All process controls and gas handling provisions in one cabinet, requiring much less floor space than comparable low pressure systems

Cabinet suitable for installation and operation in Class I, Division 2, Group B classified area per ANSI/NFPA 70, Article 500

Separate power supply enclosure with integrated rectifier for isolated installation in a typical electrical room

Furnished fully assembled, skid-mounted and pre-tested for ease of shipping and handling and to reduce installation time

High Quality/Proven Reliability

Designed, manufactured and assembled in accordance with Teledyne Energy Systems' ISO 9001:2000 certified procedures, ASME design and material controls, and NFPA codes and standards for electrical installations ensuring delivery of a safe and reliable system

Safe, Automatic, Unattended Operation

Fully automatic operations, including continuous monitoring of all critical parameters for safe, unattended operation

Maintains only a small amount of on-board gases during operation



*Shown with optional panels



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Better Energy Solutions. What Listening Generates.

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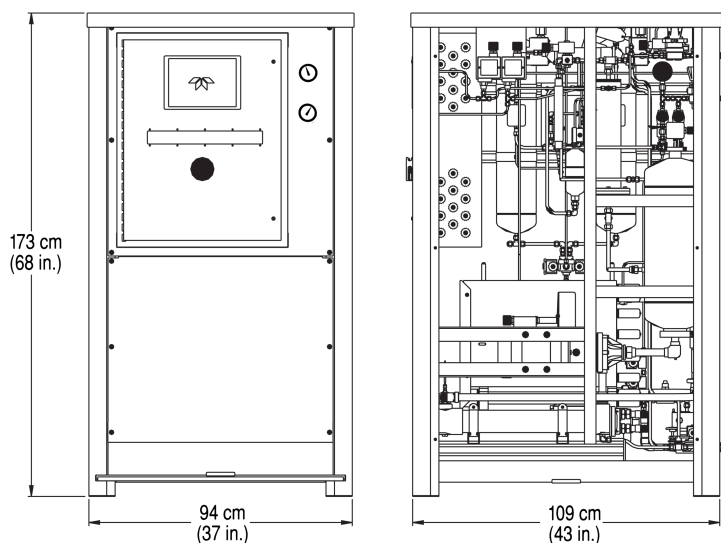
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Front View

Side View



TYPICAL APPLICATIONS

Power Generator Cooling
Semiconductor Fabrication
Electronics Fabrication
Argon Purification
Metals Processing
Fuel Cell Testing

Note: The power supply is a separate enclosure which can be isolated from the generator. The power supply footprint can vary, but is approximately 101.6 cm (40 in) x 91.4 cm (36 in) .

| MODEL SPECIFICATION | | MODEL (HM-) | | |
|---------------------------------|--------------------------|--|-----|------|
| | | 50 | 100 | 200 |
| Hydrogen Gas Production | | | | |
| Max.Flow Rate | SLM | 50 | 100 | 200 |
| | nm ³ /hr | 2.8 | 5.6 | 11.2 |
| | scfh | 106 | 212 | 424 |
| Oxygen Gas Production | | | | |
| Max.Flow Rate | SLM | 25 | 50 | 100 |
| | nm ³ /hr | 1.4 | 2.8 | 5.6 |
| | scfh | 53 | 106 | 212 |
| Feed Water Consumption | | | | |
| | l/hr | 3 | 6 | 11 |
| | g/hr | 0.8 | 1.6 | 2.9 |
| System Efficiency | | | | |
| Nominal | kWhr/nm ³ H2 | 6.3 | | |
| Power Supply | | | | |
| | Voltage | Factory Configured, 380-480 VAC, 3 Phase | | |
| | Frequency | 50 or 60 Hz | | |
| Purge Gas | | N ₂ or other inert gas | | |
| Pressure | kg/cm ² gauge | 3.5 to 25 | | |
| | psig | 50 to 350 | | |
| Average Consumption at start-up | liters | 200 | | |
| | scf | 7 | | |

| SPECIFICATIONS | |
|--|-------------------------------|
| H₂ Purity | 99.9998%* |
| O₂ Purity (with optional purifier) | 99.999% |
| H₂ Delivery Pressure | |
| Kg/cm ² gauge | 7.0 |
| psig | 100 |
| O₂ Delivery Pressure | |
| Kg/cm ² gauge | 5.0 |
| psig | 70 |
| Cooling H₂O | |
| Max.Inlet Temp. | °C 40 |
| | °F 104 |
| Max.Flow | lpm 40 |
| | gpm 11 |
| Max System Press. | Kg/cm ² g 7 |
| | psig 100 |
| Pressure Drop | Kg/cm ² 0.4 |
| | psi 5 |
| Feed Water Specification | ASTM D1193-99, Type IV |
| Min.Resistivity (MegOhm-cm) | 0.2 |
| Min. Supply Pressure | psig 3.5 |
| | kg/cm ² gauge 0.25 |

*Subject to ambient and cooling water temperatures.

All specifications based on applicable standards

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Standard Conditions: 20°C and 1 atm abs (68°F and 14.7 psia)
Normal Conditions: 0°C and 1 atm
System can be installed indoors or outdoors in a protected environment between 0°C and 40°C.



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