

# Hydrogen Generation Set

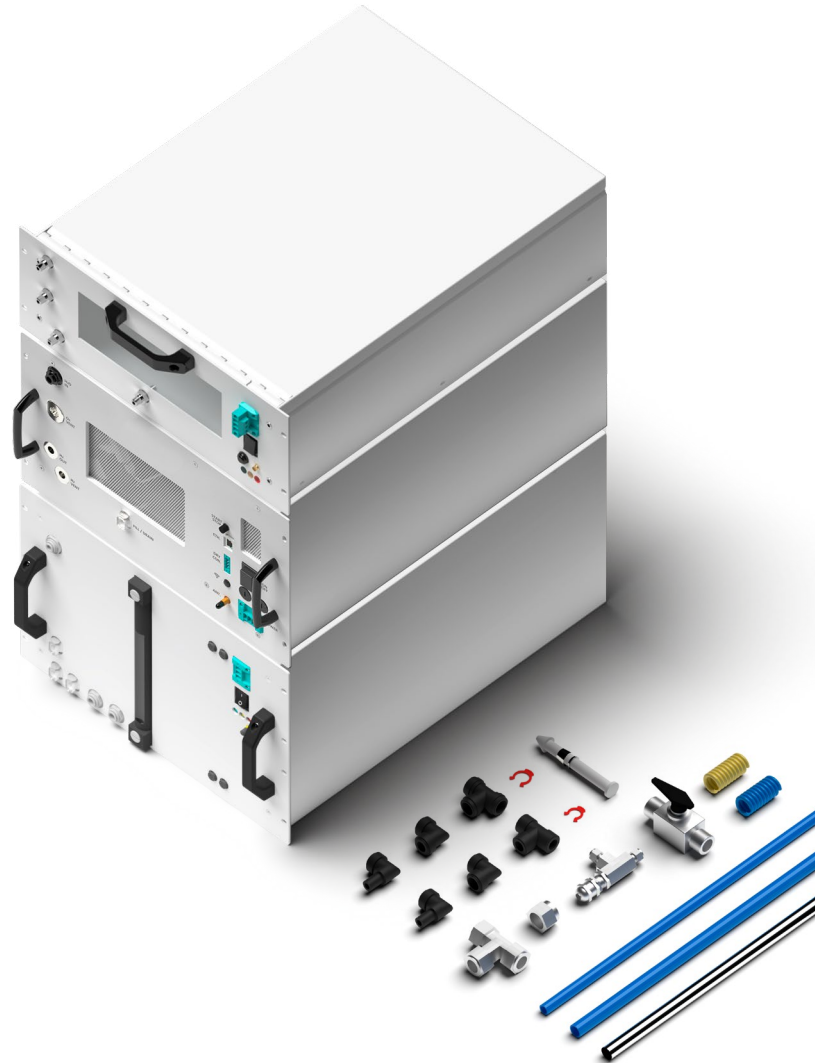


AEM Electrolyser EL 4.0

Dryer DRY 2.1

Water Tank WT 2.1

Assembly Kit Fittings/Pipings



Enapter's Hydrogen Generation Set is an all-in-one system to produce on-site high purity hydrogen. Its modular design allows set up in minutes the fully operational system. Its standardized 19" rack and stackable solution, grants the option to expand as required and achieve the required hydrogen flowrate. An advanced control and management software allows the user to operate the whole set and adapt its configuration to his needs.

## KEY FEATURES

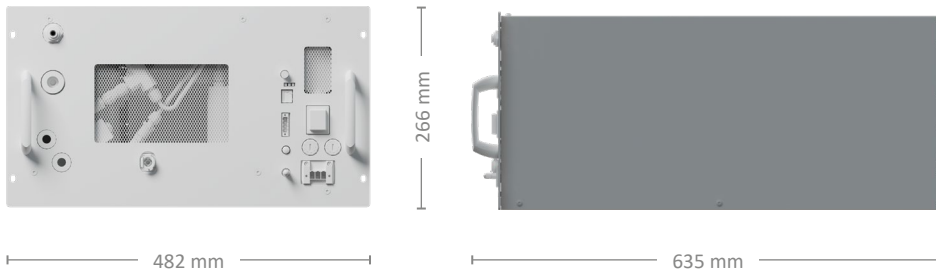
- ≡ Generation of 500NL/h of hydrogen
- ≡ High efficiency
- ≡ High hydrogen purity (99,999%)
- ≡ Up to 35 bar hydrogen output pressure
- ≡ Automated & remote operation with Enapter's Energy Management System

- ≡ Low maintenance requirements
- ≡ Connection kit for five Electrolysers, one Dryer and one Water Tank Module

Note: this kit may not include all items for complete integration in your project, as this may differ case by case

# Specifications

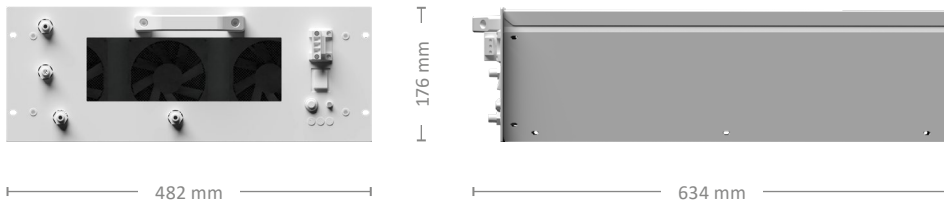
Enapter  
AEM Electrolyser EL 4.0



<b>Production rate</b>	500 NL/h, 1.0785 kg/24h
<b>Hydrogen output purity</b>	35 bar: 99.9% (1000 – 1500 ppm H <sub>2</sub> O) 8 bar: > 7000 – 9000 ppm H <sub>2</sub> O
<b>Output pressure</b>	Up to 35 barg
<b>Nominal power consumption per Nm<sup>3</sup> of H<sub>2</sub> produced</b>	4.8 kWh/Nm <sup>3</sup> , beginning of life
<b>Operative power consumption</b>	2.4 kW, beginning of life
<b>Peak power consumption</b>	3 kW
<b>Max heat dissipation</b>	1 kW
<b>Power supply</b>	200 – 240 V(AC), 50/60 Hz
<b>Maximum water input conductivity</b>	20 µS/cm at 25 °C
<b>Water consumption</b>	~ 400 mL/h
<b>Water input pressure range</b>	1 – 4 barg
<b>Ambient operative temperature range</b>	5 °C – 45 °C
<b>Ambient operative humidity range</b>	Up to 95% Rh, non-condensing
<b>IP rating</b>	IP 20
<b>Dimensions</b>	W: 482 mm × D: 635 mm × H: 266 mm
<b>Weight</b>	38 kg
<b>Space inside cabinet</b>	6 U
<b>Control and monitoring</b>	Fully automatic with Enapter's EMS via 2.4 GHz Wi-Fi and Bluetooth, Modbus TCP over Ethernet
<b>Conformity</b>	CE mark according to the machine directive 2006/42/CE2 UKCA mark according to Supply Machinery (Safety) Regulations 20083

# Specifications

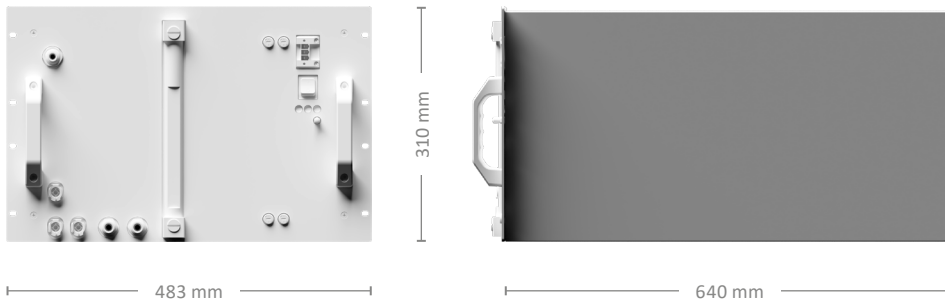
Enapter  
**Dryer DRY 2.1**



<b>Hydrogen output purity</b>	> 99.999% in molar fraction
<b>Output pressure</b>	Up to 35 barg/8 barg
<b>Hydrogen flow rate</b>	35 bar version: 2,500 NL/h 8 bar version: 1,000 NL/h
<b>Input pressure</b>	35 bar version: 35 barg 8 bar version: 8 barg
<b>Min. input purity</b>	35 bar version: >99.8% 8 bar version: >99.0%
<b>Average dewpoint and impurities</b>	< -70 °C, compliant with ISO14687 (H <sub>2</sub> O < 5 ppm, O <sub>2</sub> < 5 ppm)
<b>Operative power consumption</b>	200 W
<b>Stand-by power consumption</b>	10 W
<b>Power supply</b>	AC 200 – 240 V, 50/60 Hz
<b>Ambient operative temperature range</b>	5 – 45 °C
<b>Ambient operative humidity range</b>	Up to 95% Rh, non-condensing
<b>IP rating</b>	IP 20
<b>Weight</b>	23 kg
<b>Dimensions</b>	W: 482 × D: 634 × H: 176 mm
<b>Space inside cabinet</b>	4 U
<b>Maintenance</b>	Maintenance-free
<b>Control and monitoring</b>	Fully automatic with Enapter's EMS







# Specifications







Enapter  
Water Tank WT 2.1









<b>Capacity</b>	38.5 L
<b>Output pressure</b>	Up to 2.75 barg
<b>Maximum power consumption</b>	35 W
<b>Stand-by power consumption</b>	3 W
<b>Standard power supply</b>	AC 110 – 240 V, 50/60 Hz
<b>Ambient operative temperature range</b>	5 °C – 45 °C
<b>Ambient operative humidity range</b>	20 – 95% Rh
<b>IP Rating</b>	IP 20
<b>Control and monitoring</b>	Fully automatic with Enapter's EMS
<b>Water input conductivity requirement</b>	< 20 $\mu\text{S}/\text{cm}$ (at 25°C)
<b>Water input pressure requirement</b>	0 – 6 barg
<b>Max outlet water flow rate</b>	3.8 L/min
<b>Water inlet flow requirement</b>	> 0.28 L/min
<b>Module weight</b> (without water)	23 kg
<b>Module weight</b> (with water)	62 kg
<b>Dimensions</b>	W: 482 mm × D: 643 mm × H: 310 mm
<b>Space inside cabinet</b>	7 U
<b>Maintenance</b>	If in use, the water tank is maintenance-free. After any period without use exceeding 1 month, the tank must be drained and washed before continuing usage.
<b>Recommended number of AEM electrolyzers to be supplied</b>	Up to 11

# Specifications

Item	Quantity	Description
<b>Push-Fit 10 mm Tee</b> 	4	Black acetal copolymer with food grade nitrile O-Rings. Max pressure: 7 bar at 65°C  <b>Supplier:</b> John Guest <b>Supplier code:</b> PM0210E
<b>Push-Fit 10 mm Equal Elbow</b> 	1	Black acetal copolymer with food grade nitrile O-Rings. Max pressure: 7 bar at 65°C  <b>Supplier:</b> John Guest <b>Supplier code:</b> PM0310E
<b>Push-Fit 8 mm Tee</b> 	4	Black acetal copolymer with food grade nitrile O-Rings. Max pressure: 10 bar at 65°C  <b>Supplier:</b> John Guest <b>Supplier code:</b> PM0208E
<b>Push-Fit 8 mm Equal Elbow</b> 	2	Black acetal copolymer with food grade nitrile O-Rings. Max pressure: 10 bar at 65°C  <b>Supplier:</b> John Guest <b>Supplier code:</b> PM0308E
<b>Push-Fit 10 mm Stem Elbow</b> 	5	Black acetal copolymer with food grade nitrile O-Rings. Max pressure: 7 bar at 65°C  <b>Supplier:</b> John Guest <b>Supplier code:</b> PM221010E
<b>Push-Fit 8 mm Stem Elbow</b> 	9	Black acetal copolymer with food grade nitrile O-Rings. Max pressure: 10 bar at 65°C  <b>Supplier:</b> John Guest <b>Supplier code:</b> PM220808E

Item	Quantity	Description
<b>Lock Clip 5/16" – 8 mm</b>  	30	Secures the collet in its position to prevent an accidental disconnection of the tube.  <b>Supplier:</b> John Guest <b>Supplier code:</b> PMC1808R
<b>Lock Clip 3/8" – 10 mm</b>  	30	Secures the collet in its position to prevent an accidental disconnection of the tube.  <b>Supplier:</b> John Guest <b>Supplier code:</b> PIC1812R
<b>Pipe LLDPE 8 mm OD × 6 mm ID</b>  	12 m	Linear Low Density Polyethylene, FDA approved materials and NSF International certified. Max pressure: 6 bar at 65°C  <b>Supplier:</b> John Guest <b>Supplier code:</b> PE-0806-100M-B
<b>Pipe LLDPE 10 mm OD × 7 mm ID</b>  	12 m	Linear Low Density Polyethylene, FDA approved materials and NSF International certified. Max pressure: 8 bar at 65°C  <b>Supplier:</b> John Guest <b>Supplier code:</b> PE-1007-100M-B
<b>SS316L 1/4" OD × 0.035" TH</b>  	4	Austenitic chromium-nickel steel with minimum 2.5% molybdenum and a low carbon content [2.3 metres]  <b>Supplier:</b> SANDVIK <b>Supplier code:</b> 3R60
<b>SS316 Double Ferrule 1/4"</b>  	16	The front ferrule creates a seal against the fitting body and on the tubing outside diameter. The back ferrule radially applies an effective tube grip.  <b>Supplier:</b> Swagelok <b>Supplier code:</b> SS-400-SET

Item	Quantity	Description
<b>SS316 Union tee 1/4"</b> 	9	Stainless Steel 316 two-ferrule design that does not transmit torque to tubing during installation. Max pressure: 454 bar at 20°C  <b>Supplier:</b> Swagelok <b>Supplier code:</b> SS-400-3
<b>SS316 NUT 1/4"</b> 	16	Stainless Steel 316 two-ferrule design that does not transmit torque to tubing during installation. Max pressure: 454 bar at 20°C  <b>Supplier:</b> Swagelok <b>Supplier code:</b> SS-402-1
<b>Proportional relief RA3 valve 1/4"</b> 	1	High pressure 316 Stainless Steel relief valve. Max pressure: 413 bar at 37°C  <b>Supplier:</b> Swagelok <b>Supplier code:</b> SS-4R3A
<b>SS316 Ball Valve 1/4"</b> 	1	316 Stainless Steel 2-Way, Shutoff, Straight Valve. Max pressure: 206 bar at 37°C  <b>Supplier:</b> Swagelok <b>Supplier code:</b> SS-43GS4
<b>Blue Spring Kit</b> 	1	For R3A Series Proportional Relief Valve (3.4 to 24.1 bar)  <b>Supplier:</b> Swagelok <b>Supplier code:</b> 177-R3A-K1-A
<b>Yellow Spring Kit</b> 	1	For R3A Series Proportional Relief Valve (24.1 to 51.7 bar)  <b>Supplier:</b> Swagelok <b>Supplier code:</b> 177-R3A-K1-B