

# H-Series Fuel Cell Stacks

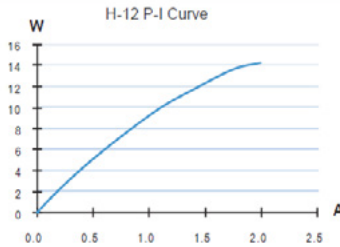
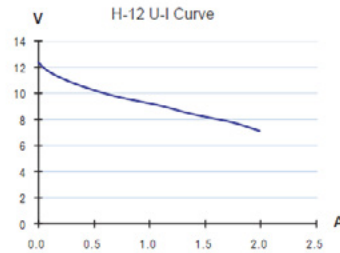
## H-12 12W

FCS-B12



Semi-integrated 12W fuel cell system

- Integrated fan and casing
  - 12W stack with blower
- INCLUDES**



|                                    |                              |
|------------------------------------|------------------------------|
| Type of fuel cell                  | PEM                          |
| Number of cells                    | 13                           |
| Rated power                        | 12W                          |
| Rated performance                  | 7.8V at 1.5A                 |
| Purging valve voltage              | 6V                           |
| Blower voltage                     | 5V                           |
| Reactants                          | Hydrogen and Air             |
| Ambient temperature                | 5-30°C (41-86°F)             |
| Max stack temperature              | 55°C (131°F)                 |
| Hydrogen pressure                  | 0.45-0.55Bar                 |
| Humidification                     | Self-humidified              |
| Cooling                            | Air (integrated cooling fan) |
| Stack weight (with fan and casing) | 275g (±30g)                  |
| Stack size                         | 75x47x70mm                   |
| Flow rate at max output            | 0.18L/min                    |
| Hydrogen purity                    | ≥99.995% dry H2              |
| Start up time                      | ≤30s (ambient temperature)   |
| Efficiency of system               | 40% at full power            |

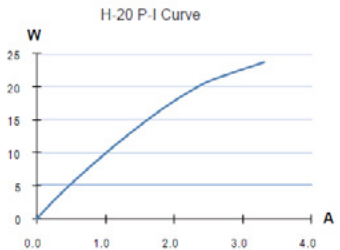
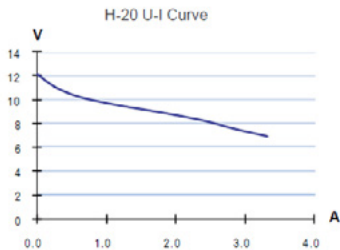
## H-20 20W

FCS-B20



Semi-integrated 20W fuel cell system

- Miniature electronic valve
  - Control electronics
  - Integrated fan and casing
  - Low voltage protection
  - 20W stack with blower
- INCLUDES**



|                                    |                              |
|------------------------------------|------------------------------|
| Type of fuel cell                  | PEM                          |
| Number of cells                    | 13                           |
| Rated power                        | 20W                          |
| Rated performance                  | 7.8V at 2.6A                 |
| Purging valve voltage              | 6V                           |
| Blower voltage                     | 5V                           |
| Reactants                          | Hydrogen and Air             |
| Ambient temperature                | 5-30°C (41-86°F)             |
| Max stack temperature              | 55°C (131°F)                 |
| Hydrogen pressure                  | 0.45-0.55Bar                 |
| Humidification                     | Self-humidified              |
| Cooling                            | Air (integrated cooling fan) |
| Stack weight (with fan and casing) | 275g (±30g)                  |
| Controller weight                  | 90g (±10g)                   |
| Stack size                         | 75x47x70mm                   |
| Flow rate at max output            | 0.28L/min                    |
| Hydrogen purity                    | ≥99.995% dry H2              |
| Start up time                      | ≤30s (ambient temperature)   |
| Efficiency of system               | 40% at full power            |

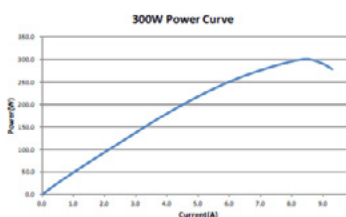
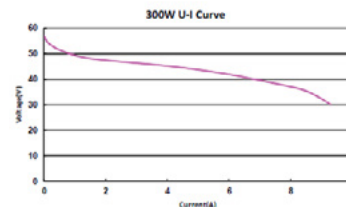
## H-30 30W

FCS-B30



Semi-integrated 30W fuel cell system

- Miniature electronic valve
  - Control electronics
  - Integrated fan and casing
  - Low voltage protection
  - 30W stack with blower
- INCLUDES**



|                                    |                              |
|------------------------------------|------------------------------|
| Type of fuel cell                  | PEM                          |
| Number of cells                    | 14                           |
| Rated power                        | 30W                          |
| Rated performance                  | 8.4V at 3.6A                 |
| Purging valve voltage              | 6V                           |
| Blower voltage                     | 5V                           |
| Reactants                          | Hydrogen and Air             |
| Ambient temperature                | 5-30°C (41-86°F)             |
| Max stack temperature              | 55°C (131°F)                 |
| Hydrogen pressure                  | 0.45-0.55Bar                 |
| Humidification                     | Self-humidified              |
| Cooling                            | Air (integrated cooling fan) |
| Stack weight (with fan and casing) | 280g (±30g)                  |
| Controller weight                  | 90g (±10g)                   |
| Stack size                         | 80x47x75mm                   |
| Flow rate at max output            | 0.42L/min                    |
| Hydrogen purity                    | ≥99.995% dry H2              |
| Start up time                      | ≤30s (ambient temperature)   |
| Efficiency of system               | 40% at full power            |