# QED™ GEOTECH™ GEM

## PROFESSIONAL LANDFILL GAS MANAGEMENT WITH INTELLIGENT MODULAR DESIGN

Geotech GEM instruments are designed to stay in the field and on the job longer. Featuring QED's unique intelligent modular architecture, GEM users can replace or add gas modules in the field. A high-definition touch screen display makes user interface easier, reducing fatigue and potential errors.

## FEATURES

- Pre-calibrated Modular design
- 1-3 gases configured
- Records static, differential and system pressures
- Calculates gas flow and heat value
- Hydrogen compensated CO measurement
- Field replaceable battery pack
- Utilises GAMSoft software
- Zone 1 hazardous area certification
- 3-year warranty

## BENEFITS

- No requirement for back-to-base service to replace modules
- Modules have individual calibration certificates
- Configuration and functional flexibility
- Accurate balancing of gas field with maximised LFG output from site
- Real time gas field adjustments
- Effective borehole management
- Up to 10 hours of field operation between battery charges
- Compliance and monitoring data and over the air firmware updates
- Module Care Packs available for easy maintenance

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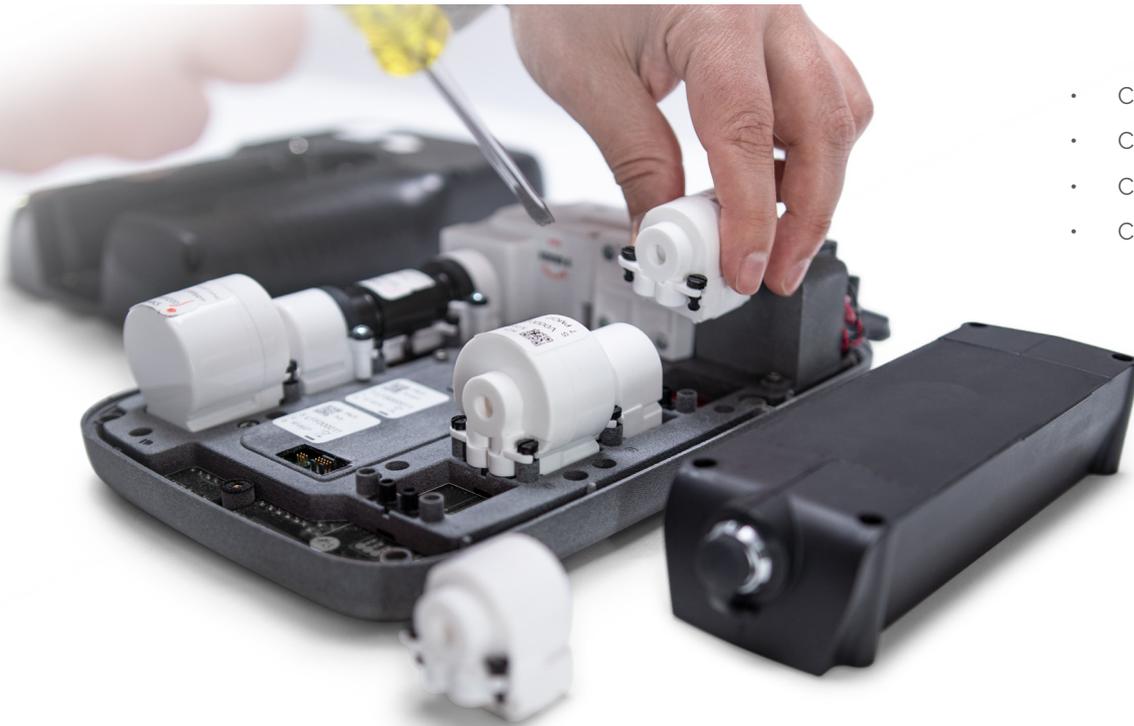
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# GEM

WIFI, Bluetooth and GPS

High Definition IPS
Touchscreen

Hot Swappable Battery Pack

Four Gas Connection
Ports
with Serviceable Filters

Fast Navigation
buttons

Large, Positive Click
Hard Keys

## TECHNICAL SPECIFICATIONS

| POWER SUPPLY | |
|---|---|
| Battery Type | Rechargeable nickel metal hydride battery pack (user replaceable in Zone 1 hazardous areas) |
| Battery Life | Typical use 8-10 hours from full charge |
| Battery Charger | Battery charger powered from mains supply (100-240V), Battery packs can be charged separately from the instrument |
| Charge Time | Approximately 3 hours from complete discharge to full charge |

| GAS RANGES | | | | | | |
|---|---|---|---|---|---|---|
| Gases measured | Gas | Sensor | Range | Typical Accuracy* | Resolution | T90 |
| | $CH_4$ | NDIR | 0- 100% | ± 0.5% (0-70%) Volume | 0.1% | ≤ 10 seconds |
| | | | | ± 1.5% (70-100%) Volume | | |
| | $CH_4$ & $CO_2$ | Dual NDIR | 0- 100% | ± 0.5% (0-70%) Volume | | |
| | | | | ± 1.5% (70-100%) Volume | | |
| | | | 0- 100% | ± 0.5% (0-60%) Volume | | |
| | | | | ± 1.5% (60-100%) Volume | | |
| | $O_2$ | Electrochemical Cell | 0- 21% | ± 0.3% Volume | 0.1% | ≤ 20 seconds |
| | $H_2S$ | | 0- 50 ppm | ± 1.5% range | 0.1 ppm | ≤ 30 seconds |
| | $H_2S$ | | 0- 200 ppm | ± 2.0% range | 1 ppm | |
| | $H_2S$ | | 0- 500 ppm | ± 2.0% range | 1 ppm | |
| | $H_2S$ | | 0- 1,000 ppm | ± 2.0% range | 1 ppm | |
| | $H_2S$ | | 0- 5,000 ppm | ± 2.0% range | 1 ppm | |
| | $H_2S$ | | 0- 10,000 ppm | ± 5.0% range | 2 ppm | |
| | $H_2S$ | | 0- 40,000 ppm | ± 5.0% range | 5 ppm | |
| | CO | | 0- 500 ppm | ± 2.0% range | 1 ppm | |
| | CO | | 0- 1,000 ppm | ± 2.0% range | 1 ppm | |
| | CO | | 0- 2,000 ppm | ± 2.0% range | 1 ppm | |
| | $CO(H_2)$** | | 0- 2,000 ppm | ± 1.0% range | 1 ppm | |
| | $H_2$ | | 0- 1,000 ppm | ± 2.5% range | 1 ppm | ≤ 90 seconds |
| | $NH_3$ | | 0- 1,000 ppm | ± 10.0% range | 1 ppm | |
| *Typical Accuracy | All accuracies quoted are after calibration plus accuracy of calibration gas used | | | | | |
| **Hydrogen compensated carbon monoxide | Hydrogen cross gas effect on carbon monoxide approximately 1% Do not use where hydrogen is in excess of 10,000ppm | | | | | |

Data Sheet Reference : DS077 Issue 01

| PUMP | |
|---|---|
| Flow | 700 ml/min typically |
| Flow Fail Point | -100 to-375 mbar vacuum- user settable |
| Maximum Vacuum Restart | -375 mbar approximately with flow rate of approx 200 ml/min |

| FACILITIES | |
|---|---|
| Temperature measurement / accuracy * | -10°C to +100°C (14°F to 165°F) with optional probe / ±0.5°C (1°F) |
| Flow (anemometer) accuracy * | 0.7 to 40 m/s / ±1.0% full scale plus ±3.0% reading |
| Communications | WIFI or Bluetooth to GAMSoft and Affinity |
| Relative pressure measurement / accuracy | ±500 mbar / ±4 mbar to ±15 mbar max (should be zeroed before reading) |
| Barometric pressure measurement / accuracy | 500 to 1500 mbar / ±5 mbar accuracy |
| Memory | 2,000 IDs, 4000 readings |

| ENVIRONMENT CONDITIONS | |
|---|---|
| Ambient Range | 700 to 1200 mbar /-10º C to +45º C (15° F to 120°F) |
| Relative Humidity | 0-95% non-condensing |
| IP rating | IP65 |

| PHYSICAL | | |
|---|---|---|
| Case material | High impact ABS composite with rubber over-moulding | 260 x 170 x 65mm / 1.9 kg |
| Display | HD 5" touchscreen LCD | |
| Gas sample filters | Internal user changeable 2.0µm PTFE moisture and dust filter | |

| AFFINITY WIRELESS COMMUNICATOR* | |
|---|---|
| Case Material | High impact ABS composite (124 x 74 x 30mm) |
| Ambient Range | -10°C to +50°C |
| Relative Humidity | 0- 95% non-condensing |
| IP Rating | IP65 |
| Commmunications | Bluetooth to i-Q Series |
| Compatible with | Temperature probe, Anemometer |
| Battery Type | Only use 2 x AA Type Energizer L91 batteries |
| Battery Life | Approx. 10 days, based on 8-hours per day |
| UKEX / ATEX / IECEx | Ex ib IIA T1 Gb (Ta =-10°C to +50°C) |
| North America | CLASS 1, ZONE 1, AEx ib IIA T1 (Ta =-10°C to +50°C) |

| CERTIFICATION RATING | |
|---|---|
| UKEX/ATEX / IECEx | Ex ib IIA T1 Gb (Ta =-10°C to +45°C) |
| SGS | CLASS 1, ZONE 1, AEx ib IIA T1 (Ta=-10°C to +45°C) (USA)<br>CLASS 1, ZONE 1, Ex ib IIA T1 (Ta=-10°C to +45°C) (Canada) |

Intelligent, factory calibrated and user replaceable modules for the measurement of gas or pressure



- Completely configurable
- Completely scalable
- Completely user-upgradeable
- Completely user-maintainable

## GEM instruments with modular architecture give users complete control of instrument

- Gas cells are designed to be serviced by the customer, and fully supported with factory inventory
- Pre-calibrated replacement modules come from QED ready to be installed
- Replacement gas cells arrive with a certificate of calibration, maintaining compliance in between yearly inspection and service
- The GEM can be converted to any other configuration (up to three gases) in the field
- Affinity wireless communications module allows for Bluetooth connection between the GEM and temperature probe or anemometer
- Long battery life and field swappable battery capability means less interruption for recharging with optional spare battery pack



## GAMSoft™ Control and Compliance Software

GAMSoft is a single software package which manages data collection and reporting

- Proprietary gas extraction management software
- Report generation for compliance
- Upload existing field data to new software to speed up adoption
- Interfaces with GEM via WIFI or Bluetooth for fast and secure data updates
- Secure data stream uploads to customer database and allows enterprise specific security protocols to be applied as required by users
- Over the air firmware updates support keeping the new GEM in the field where it belongs
- Manages instrument configuration

**QED Environmental Systems Inc.**    Data Sheet Reference : DS077 Issue 01    **QED Environmental Systems Ltd.**