QL40 Stackable Logging Tools

Imaging Tools

QL40.ABI
Acoustic Televiewer

- Sensor: Ultrasonic Transducer
- Temperature - Pressure: 0-70°C (32-158°F), 200 bar (2900 psi)
- Borehole diameter: 0.05 ~ 0.50 m (2" ~ 20") depending on borehole conditions
- Diameter - Length: 40 mm (1.5") ~ 1.6 m (55")
- Weight: 6.7 kg (14 lbs)
- Measurements/Features:
  - 360° oriented acoustic image (amplitude & travel time)
  - Borehole azimuth and dip
  - Tool internal temperature
  - Relative bearing
  - Magnetic field
  - Gravity

QL40.OBI
Optical Televiewer

- Sensor: CCD Camera
- Temperature - Pressure: 0-50°C (32-122°F), 200 bar (2900 psi)
- Caliper: 0.05-0.53 m (2"-21") depending on borehole conditions
- Diameter - Length: 40 mm (1.5") ~ 1.2 m (47")
- Weight: 4.9 kg (11 lbs)
- Measurements/Features:
  - 360° RGB oriented optical image
  - Borehole azimuth and dip
  - Tool internal temperature
  - Relative bearing
  - Magnetic field
  - Gravity

Sonic Tool

QL40.FWS
Full Waveform Sonic

- Sensor: Ceramic piezoelectric with inside band frequency
- Temperature - Pressure: 0-70°C (32-158°F), 200 bar (2900 psi)
- Caliper: 0.05-0.53 m (2"-21") depending on borehole conditions
- Diameter - Length: 90 mm (3.5")
- Weight: 18 kg (39.7 lbs)
- Measurements/Features:
  - 1Tx4Rx standard
  - Other configuration on request
  - Real time display and processing of full waveforms
  - Cement bond logging (CBL)
  - Porosity evaluation. Permeability
  - Variation of rock strength
  - Calculation of rock mechanical properties
  - Identification and hydraulic characterization of fractures
**Mechanical Tool**

**QL40.CAL**

- 3 Arm Caliper
- **Temperature - Pressure**
  - 0-70°C (32-158°F)
  - 200 bar (2900 psi)
- **Diameter - Length**
  - 40 mm (1.6") - 1.87 m (73")
- **Weight**
  - 8.7 kg
- **Measurements/Features**
  - Calibrated measurement of borehole diameter in inches, centimeters or millimeters
  - Easy exchangeable short and long caliper arms and wear tips

**Magnetic Tool**

**QL40.MGS**

- **Magnetic Susceptibility**
- **Sensor**
  - Bartington – 1.35 kHz Focused Dual Coil system
- **Temperature - Pressure**
  - 0-70°C (32-158°F)
  - 200 bar (2900 psi)
- **Diameter - Length**
  - 43 mm (1.7") - 1.4 m (56")
- **Weight**
  - 6.1 kg (13 lbs)
- **Measurements/Features**
  - Magnetic susceptibility in CGS unit

**Deviation Tool**

**QL40.DEV**

- **Borehole Deviation**
- **Sensor**
  - AP6544-3 axis magnetometer and accelerometer
- **Temperature - Pressure**
  - 0-70°C (32-158°F)
  - 200 bar (2900 psi)
- **Diameter - Length**
  - 40 mm (1.6") - 0.7 m (28")
- **Weight**
  - 5.3 kg (12 lbs)
- **Measurements/Features**
  - Angular values of azimuth, tilt and relative bearing
  - Calibrated values of each accelerometer and magnetometer components
**QL40.Elog**

- **Normal Resistivity** (8”, 16”, 32” and 64” - SP-SPR)
- **Temperature - Pressure**
  - 0-70°C (32-158°F)
  - 200 bar (2900 psi)
- **Diameter - Length**
  - 43 mm (1.7”)
  - 1.9 m (75”)
- **Weight**
  - 9 kg (19.8 lbs)
- **Measurements/Features**
  - 8”, 16”, 32” and 64”
  - Normal Resistivity in [Ohm-m]
  - GP in [mV]
  - SPR in [Ohm]

**Bridles**
- QL40 IS 1
- QL40 IS 2
- QL40 IS 4

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**QL40.IP**

- **Induced Polarization and Normal Resistivity** (8”, 16”, 32” and 64”)
- **Temperature - Pressure**
  - 0-70°C (32-158°F)
  - 200 bar (2900 psi)
- **Diameter - Length**
  - 43 mm (1.7”)
  - 1.9 m (35”)
- **Weight**
  - 9 kg (19.8 lbs)
- **Measurements/Features**
  - Chargeability Ma in [mV] on 16” and 64” electrodes
  - 2 spacing full wave data
  - 8”, 16”, 32” and 64” Normal Resistivity in [Ohm-m]
  - GP in [mV]
  - SPR in [Ohm]

**Bridles**
- QL40 IS 1
- QL40 IS 2
- QL40 IS 4

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**QL40.DLL3**

- **Dual Laterolog**
- **Temperature - Pressure**
  - 0-70°C (32-158°F)
  - 200 bar (2900 psi)
- **Diameter - Length**
  - 43 mm (1.7”)
  - 2.83 m (111.4”)
- **Weight**
  - 15 kg (33 lbs)
- **Measurements/Features**
  - Time Multiplex dual spacing focused resistivity LL3-B & LL3-D in [Ohm-m]
  - Potential value on measuring and guard electrodes in [V]
  - Current value on measuring and guard electrodes in [mA]

**Bridles**
- QL40 IS 1
- QL40 IS 2
- QL40 IS 4
<table>
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| QL40.SFM   | Bi-directional spinner Flowmeter                | **Temperature - Pressure**
0-70°C (32-158°F)
200 bar (2980 psi)
**Diameter - Length**
40 mm (1.6") excluding cage
50 cm (19.7")
**Weight**
3.2 kg (7 lbs)
**Features**
- 60 and 75 mm diameter varied pitch impellers are available
- Spinner speed in CPS |

| QL40. FTC & FTC-b | Fluid Temperature and Conductivity | **Temperature - Pressure**
0-70°C (32-158°F)
200 bar (2980 psi)
**Diameter - Length**
40 mm (1.6") bottom sub
50 mm (2") in line sub
1.31 m (52")
**Weight**
6.4 kg (14 lbs)
**Features**
- Fluid temperature in °C
- Fluid conductivity in µS/cm or mS/cm
- Compensated conductivity at 25°C in µS/cm or mS/cm |

| QL40. OCEAN 303  | Water Quality Probe | **Sensor**
Idronaut ocean seven 303, Pressure, Temp, Conductivity, Oxygen, pH, Redox
**Temperature - Pressure**
0-70°C (32-158°F)
150 bar (2175 psi)
**Diameter - Length**
44 mm (1.7") - 1.4 m (55")
**Weight**
4.9 kg (10.8 lbs)
**Features**
- Pressure : in dbar
- Temperature : in °C
- Conductivity
  - Silt water : in µS/cm
  - Fresh water : in µS/cm
- Oxygen : in ppm.
- pH :
- Redox : in mV |
Nuclear Tools

**QL40.GR**

Total Count
Natural Gamma

- **Sensor**
  - NaI (TI) crystal (1 x 3"

- **Temperature - Pressure**
  - 0-70°C (32-158°F)
  - 200 bar (2900 psi)

- **Diameter - Length**
  - 40 mm (1.6") - 0.9 m (35")

- **Weight**
  - 4.3 kg (9.5 lbs)

- **Measurements/Features**
  - Total gamma counts in CPS and/or API unit

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**QL40.GR-CCL**

Natural Gamma & Casing Collar Locator

- **Sensor**
  - NaI (TI) crystal (1 x 3"
  - CCL: 32 x 280 mm colls & magnets assembly

- **Temperature - Pressure**
  - 0-70°C (32-158°F)
  - 200 bar (2900 psi)

- **Diameter - Length**
  - 40 mm (1.6") - 1.156 m (46")

- **Weight**
  - 5.9 kg (13 lbs)

- **Measurements/Features**
  - Total gamma counts in CPS and/or API unit
  - CCL in mV

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**QL40.SGR**

Natural Spectral Gamma

- **Sensor**
  - NaI (TI) crystal (1 x 4"
  - BGO crystal (1 x 4"

- **Temperature - Pressure**
  - 0-70°C (32-158°F)
  - 200 bar (2900 psi)

- **Diameter - Length**
  - 40 mm (1.6") - 0.93 m (36")

- **Weight**
  - 4.4 kg (9.6 lbs)

- **Measurements/Features**
  - 256 channels spectrum
  - Spectrum stabilized (software)
  - Nuclides concentrations
  - Window gamma counts
  - Total gamma counts in CPS and/or API unit
Nuclear Tool

**QL40.DEN**
- **Formation Density Sonde**
- **Sensor**
  - CSl (TI) crystals
  - SSD (20cm) and LSD (35cm)
- **Temperature - Pressure**
  - 0-70°C (32-158°F)
  - 200 bar (2900 psi)
- **Diameter - Length**
  - 50 mm (2") - 1.9 m (75")
- **Weight**
  - 20 kg (44 lbs)
- **Measurement/Features**
  - SSD : in CPS
  - LSD : in CPS
  - SSD density : in g/cc
  - LSD density : in g/cc
  - Compensated density : in g/cc
  - Caliper : in mm or inch
  - PE option

**QL40.NEU**
- **Neutron - Thermal Neutron**
- **Temperature - Pressure**
  - 0-70°C (32-158°F)
  - 200 bar (2900 psi)
- **Diameter - Length**
  - 40 mm (1.6") - 1.34 m (45")
- **Weight**
  - 5.5 kg (12 lbs)
- **Range**
  - 0 - 100,000 CPS
- **Measurement/Features**
  - Qualitative measurement of formation porosity in open and cased holes.
  - Measures hydrogen content of formation.

**Top & Bottom**

**QL40-MS1**
- **Tool Top**
- **Diameter**
  - 40 mm (1.6")
- **Length**
  - ± 0.86 m (2.3")
- **Weight**
  - ± 0.8 kg (1.8 lbs)

**QL40-GO4**

**QL40-GO1**

**QL40-GO7**

**QL40-BOT**
- **Tool Bottom Plug**
- **Diameter**
  - 40 mm (1.6")
- **Length**
  - 0.19 m (7.5")
- **Weight**
  - 1.0 kg (2.2 lbs)