

# Inductive Coupler

Provides reliable electrical connectivity across junctions in multistage completions

## APPLICATIONS

- Intelligent completions and permanent monitoring at the formation face in
  - multistage completions, deepwater or land
  - multilateral wells
  - extended-reach wells with a single or multiple laterals
  - wells equipped with an ESP
- Permanent monitoring of
  - B annulus
  - cement integrity
  - gravel pack

## BENEFITS

- Optimizes production and recovery by facilitating formation-face monitoring and surface-actuated flow control
- Saves time and costs and reduces risk by minimizing interventions
- Delays water breakthrough and prolongs the useful life of the well by enabling in-lateral management of multiple zones
- Maximizes reservoir contact by removing limits on the length of the lateral
- Saves time and expense by eliminating the need to retrieve the lower completion when replacing an ESP or other component in the upper completion
- Enhances safety by enabling B-annulus and cement monitoring without compromising casing integrity
- Enables wells to reach target areas that were previously unattainable

## FEATURES

- Wireless, high-efficiency data and power transmission
- Compatible with standard completion equipment
- Robust construction with no elastomers
- Integrates with standard casing and tubing strings with no additional drilling or well construction activities
- No rotation necessary for landing

The Schlumberger inductive coupler transmits power and high-rate data between the upper and lower completion or between lateral branches and the main wellbore. Installed as part of the casing or tubing string, the metal-enclosed coupler has no elastomeric parts and does not reduce the casing or tubing strength.

A single electric line connects the coupler to downhole monitoring and control equipment and to the surface, simplifying installation, minimizing friction while running in hole, and requiring only a single wellhead penetration.

### Facilitates formation-face monitoring and control

Complex completions installed in two parts consist of a lower completion across the production or injection zone and an upper completion containing the production packer and tubing. Connecting electrical cables between the two parts was not previously possible in multitrip completions and therefore traditionally, sensors have not been deployed across the formation face.

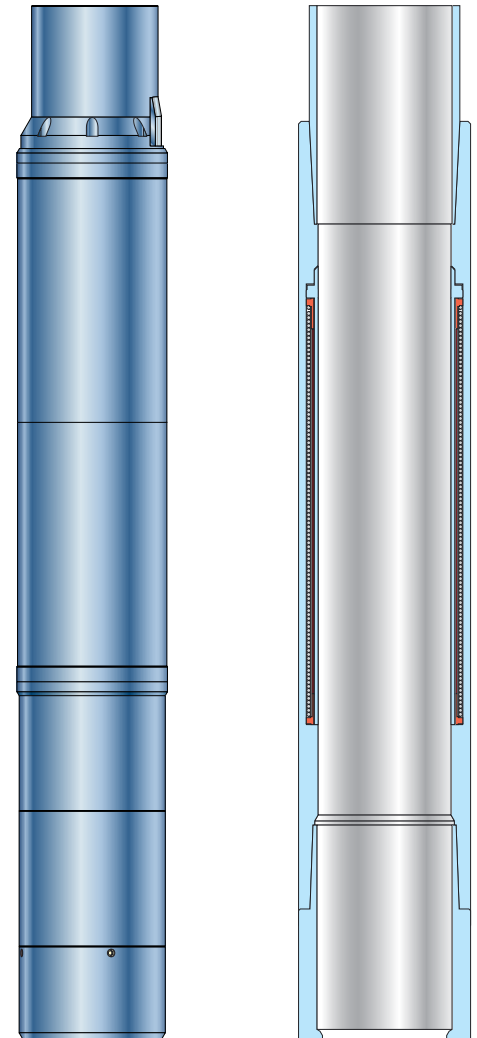
By establishing electrical connectivity between the upper and lower completion, the inductive coupler successfully addresses the challenge of acquiring reservoir data in real time without having to perform zonal production logging interventions. High tolerance for debris and vibration makes the system particularly suitable for deepwater multistage completions, where intervention costs and risks are high.

### Enables zonal management even in multilaterals

When the coupler is used as part of the Manara\* production and reservoir management system, it enables in-lateral monitoring and control of individual zones in real time—for the first time, even in multilateral wells.

### Eliminates limitations on lateral length

In extended-reach single laterals—where it may be necessary to push, pull, and rotate the completion to overcome friction and reach target depth—the inductive coupler enables the lower



Male (left) and female (right) sections of the coupler.

completion to be run on rotating drillpipe. The reduced friction eliminates the risk of control line damage and tubing buckling, removing the limitations on wellbore length that confront single-trip completions.

Once the lower completion is in place, the upper completion can be installed. Field-proven landing tool techniques ensure precise alignment of the two sections of the coupler without rotation or orientation. Data and power can then be transmitted across the junction.

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## Simplifies remedial operations in upper completion

Later in the life of the well, remedial operations in the upper completion are greatly simplified. Replacement of an ESP or a safety valve, for example, can be accomplished without having to retrieve the lower completion and its array of sensors and valves because the coupler can be safely disconnected and reconnected multiple times.

Direct formation-face monitoring and control for production or injection management, evaluation of cement integrity or gravel-pack deployment, as well as B-annulus monitoring are some of the many applications enabled by the inductive coupler, all with just a single wellhead penetration.

### Inductive Coupler Specifications

Max. working pressure, bar [psi]	2,069 [30,000]			
Max. working temperature, degC [degF]	150 [300]			
<b>Female</b>				
OD, in	8.484 <sup>†</sup>	8.484 <sup>†</sup>	8.484 <sup>†</sup>	6.00
ID, in	6.17 <sup>‡</sup>	6.17 <sup>‡</sup>	6.00 <sup>§</sup>	4.00
Burst/Collapse rating, psi	7,240/5,410	7,240/5,410	10,000/10,000	10,000/10,000
<b>Male</b>				
OD, in	6.13	6.13	5.95	3.95
ID, in	3.95	4.40	4.25	2.65
Connectivity	Via ¼-in twisted-pair control line, encapsulated, and with bumper bars when installed behind casing and in open hole			
Control line connectors	Intellitite* R downhole dual-seal dry-mate connector			

<sup>†</sup>Max. running OD with clamps

<sup>‡</sup>Suitable for 7-in, 26-lbm/ft casing

<sup>§</sup>Suitable for 7-in, 35-lbm/ft casing

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