

## FEATURES AND SPECIFICATIONS



## Brad® Foundation Fieldbus Cordsets and Receptacles

**Molex releases the Brad Mini-Change and Micro-Change molded connection systems for fast, error-free Foundation Fieldbus installations**

Foundation Fieldbus is a communication protocol used to interconnect field-level instrumentation and control devices to a PLC (Programmable Logic Controller) or DCS (Distributed Control System) controller in a process automation control system. Foundation Fieldbus is employed in the control systems of oil & gas production, refineries, petrochemical plants, chemical manufacturing and pharmaceutical manufacturing.

At the physical-layer level, Foundation Fieldbus allows multiple devices to communicate digitally over the same wire. The Foundation Fieldbus physical layer, i.e., cable/transmission signal requirements, is specified in the ISA SP50.02 and IEC 1158-2 standard for fieldbuses. The cable specifications are listed in the Cable Standard FF-844, which is issued by the

Fieldbus Foundation, the organization that controls and maintains this open standard. Brad Foundation Fieldbus products from Molex are fully compliant to these specifications.

Brad Foundation Fieldbus products from Molex are based on the proven Mini-Change and Micro-Change circular, circular connector families. These sealed, watertight connectors offer the ruggedness required in the most demanding industrial applications. The pre-wired, keyed connectors provide a modular wiring system that is not prone to field wiring termination errors.

For additional product information visit: [www.molex.com/link/fieldbus.html](http://www.molex.com/link/fieldbus.html).

- 130041 Mini-Change® FF Cordsets**
- 130042 Micro-Change® FF Cordsets**
- 130040 Micro-Change & Mini-Change FF Receptacles**
- 130045 Micro-Change & Mini-Change Tees**
- 130044 Micro-Change & Mini-Change Field Attachables**

### Features and Benefits

- Mini-Change and Micro-Change are proven, rugged connector designs
- IP67-rated connectors provide a dust-tight and water-tight connection
- Quick-connect, modular wiring system with keyed, pre-wired molded connectors provide fast installation that eliminates field wiring errors
- Foundation Fieldbus 'Type A' compliant shielded cables allows users to take full advantage of the maximum run lengths possible per the protocol while minimizing the potential for communication errors
- Stainless steel or nickel plated cordset coupling nuts and receptacle shells ensure corrosion resistance in demanding environments



## SPECIFICATIONS

### Mini-Change

#### Electrical

Voltage (max.): 300V AC/DC

Amperage (max.): 10A

Initial Contact Resistance: < 5mΩ avg. @ 3σ

Resistance after Durability Testing: < 5mΩ avg. @ 3σ

#### Mechanical

Molded Body: PVC

Insert: PVC

Contact: Patented, Quad-Beam Design. Brass with Gold Plate. Stainless Steel Outer Sleeve

Coupling Nut / Receptacle Shell: 316 Stainless Steel or Nickel Plated Brass

Axial Pull Strength: 100 lbs

Side Load Strength: 20 lbs

#### Environmental

Environmental Seal: IP67

Cable Temperature: -40° to +105°C (-40° to +221°F)

### Micro-Change

#### Electrical

Voltage (max.): 250V AC / DC

Amperage (max.): 4A

Initial Contact Resistance: < 5mΩ avg. @ 3σ

Resistance after Durability Tests: < 5mΩ avg. @ 3σ

#### Mechanical

Molded Body: PVC

Insert: Nylon

Contact: Brass with Gold Plate.

O-ring: Viton

Coupling Nut / Receptacle Shell: 316 Stainless Steel or Nickel Plated Brass

Axial Pull Strength: 50 lbs.

Side Load Strength: 20 lbs.

#### Environmental

Environmental Seal: IP67

Cable Temperature: -40° to +105°C (-40° to +221°F)

## APPLICATIONS



## Brad® Foundation Fieldbus Cordsets and Receptacles

*Foundation Fieldbus is commonly found in the following Process Automation implementations:*

- Oil & Gas Production and Transportation Facilities
- Oil Refineries
- Petrochemical Complexes
- Chemical Production Plants
- Waste-Water Processing Plants
- Pharmaceutical Manufacturing
- Food & Beverage Processing

**130041** Mini-Change® FF Cordsets

**130042** Micro-Change® FF Cordsets

**130040** Micro-Change & Mini-Change FF Receptacles

**130045** Micro-Change & Mini-Change Tees

**130044** Micro-Change & Mini-Change Field Attachables

## ORDERING INFORMATION

### Mini-Change Cordsets with SS316 Coupling Nuts

|                       |             | SAP Material # | Engineering Part # ** | Description                                          | Sample Plant No. |
|-----------------------|-------------|----------------|-----------------------|------------------------------------------------------|------------------|
| Single Ended Cordsets | Fem-Str     | 1300410016     | 104000D09M0208        | MC 4P FP STR SS316 CNUT #18-2 FF Cable – 2M          | 3313             |
|                       |             | 1300410017     | 104000D09M0508        | MC 4P FP STR SS316 CNUT #18-2 FF Cable – 5M          | N/A              |
|                       |             | 1300410018     | 104000D09M1008        | MC 4P FP STR SS316 CNUT #18-2 FF Cable – 10M         |                  |
|                       | Fem-90D     | 1300410019     | 104001D09M0208        | MC 4P FP 90 SS316 CNUT #18-2 FF Cable – 2M           | N/A              |
|                       |             | 1300410020     | 104001D09M0508        | MC 4P FP 90 SS316 CNUT #18-2 FF Cable – 5M           |                  |
|                       |             | 1300410021     | 104001D09M1008        | MC 4P FP 90 SS316 CNUT #18-2 FF Cable – 10M          |                  |
| Double Ended Cordsets | Female-Male | 1300410028     | 114030D09M0068        | MC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 0.6M | 3313             |
|                       | Str-Str     | 1300410029     | 114030D09M0108        | MC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 1M   | N/A              |
|                       |             | 1300410030     | 114030D09M0208        | MC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 2M   |                  |
|                       |             | 1300410031     | 114030D09M0308        | MC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 3M   |                  |
|                       |             | 1300410032     | 114030D09M0408        | MC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 4M   |                  |
|                       |             | 1300410033     | 114030D09M0508        | MC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 5M   |                  |

### \*\*Available Cable Options

D07 18/3 Orange FF Shielded Cbl, w/gnd, w/drain, PVC  
D08 18/3 Blue FF Shielded Cbl, w/gnd, w/drain, PVC

D09 18/2 Orange FF Shielded Cbl, w/o gnd, w/drain, PVC  
D10 18/2 Blue FF Shielded Cbl, w/o gnd, w/drain, PVC

### Mini-Change Receptacles and Accessories with Stainless Steel Hardware

|                    |            | SAP Material # | Engineering Part # | Description                                            | Sample Plant No. |
|--------------------|------------|----------------|--------------------|--------------------------------------------------------|------------------|
| Receptacles        | Female     | 1300400013     | 1R4000A42M0058     | MC 4P F/FR #18 1/2NPT SSS316 – 0.5M                    | 3313             |
|                    | Male       | 1300400014     | 1R4006A42M0058     | MC 4P MR #18 1/2NPT SS316 – 0.5M                       | 3313             |
|                    |            | 1300400015     | 1R4M36A42M0058     | MC 4P MR #18 M20X1.5 SS316 – 0.5M                      | N/A              |
| Terminator         | Male       | 1300460004     | 104006FF8          | Mini-Change, Male FF terminator w/ SS316 CNUT          | 3313             |
| Tee                |            | 1300450002     | T140140-001FF8     | TEE – MC In, MC Out, MC Drop w/ SS316 CNUT             | 3313             |
| Closure Caps       | For Female | 1302011110     | 65-00855S          | MC Closure Cap for Female Connector – SS w/ bead chain | 3313             |
|                    | For Male   | 1302011113     | 65-00865S          | MC Closure Cap for Male Connector – SS w/ bead chain   | 3313             |
| Field Attachable   | Female     | 1300440001     | 1A4000-34FF8       | MC 4P F-ATTACH STR PG 13.55 FF w SS316 CNUT            | 3313             |
|                    | Male       | 1300440002     | 1A4006-34FF8       | MC 4P M-ATTACH STR PG 13.55 FF w SS316 CNUT            | 3313             |
| Bulkhead Pass-Thru | Fem-Male   | 1300131001     | 1R40301            | MC 4P M/MFE BULKHEAD FEED – THRU - SS                  | N/A              |



**Brad® Foundation Fieldbus  
Cordsets and Receptacles**

**130041 Mini-Change® FF  
Cordsets**

**130042 Micro-Change® FF  
Cordsets**

**130040 Micro-Change &  
Mini-Change FF  
Receptacles**

**130045 Micro-Change &  
Mini-Change Tees**

**130044 Micro-Change &  
Mini-Change Field  
Attachables**



**Micro-Change Cordsets with SS316 Coupling Nuts**

|                       |          | SAP Material # | Engineering Part # ** | Description                                           | Sample Plant No. |
|-----------------------|----------|----------------|-----------------------|-------------------------------------------------------|------------------|
| Single Ended Cordsets | Fem-Str  | 1300420030     | 804000D09M0208        | MIC 4P FP STR SS316 CNUT #18-2 FF Cable – 2M          | 3313             |
|                       |          | 1300420031     | 804000D09M0508        | MIC 4P FP STR SS316 CNUT #18-2 FF Cable – 5M          | N/A              |
|                       |          | 1300420032     | 804000D09M1008        | MIC 4P FP STR SS316 CNUT #18-2 FF Cable – 10M         | N/A              |
| Single Ended Cordsets | Fem-90D  | 1300420033     | 804001D09M0208        | MIC 4P FP 90 SS316 CNUT #18-2 FF Cable – 2M           | N/A              |
|                       |          | 1300420034     | 804001D09M0508        | MIC 4P FP 90 SS316 CNUT #18-2 FF Cable – 5M           | N/A              |
|                       |          | 1300420035     | 804001D09M1008        | MIC 4P FP 90 SS316 CNUT #18-2 FF Cable – 10M          | N/A              |
| Double Ended Cordsets | Fem-Male | 1300420042     | 884030D09M0068        | MIC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 0.6M | 3313             |
|                       | Str-Str  | 1300420043     | 884030D09M0108        | MIC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 1M   | N/A              |
|                       |          | 1300420044     | 884030D09M0208        | MIC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 2M   |                  |
|                       |          | 1300420045     | 884030D09M0308        | MIC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 3M   |                  |
|                       |          | 1300420046     | 884030D09M0408        | MIC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 4M   |                  |
|                       |          | 1300420047     | 884030D09M0508        | MIC 4P M/MFE STR/STR SS316 CNUT #18-2 FF Cable – 5M   |                  |

**\*\*Available Cable Options**

D07 18/3 Orange FF Shielded Cbl, w/gnd, w/drain, PVC  
D08 18/3 Blue FF Shielded Cbl, w/gnd, w/drain, PVC

D09 18/2 Orange FF Shielded Cbl, w/o gnd, w/drain, PVC  
D10 18/2 Blue FF Shielded Cbl, w/o gnd, w/drain, PVC

**Micro-Change Receptacles and Accessories with Stainless Steel Hardware**

|                    |            | SAP Material # | Engineering Part # | Description                                             | Sample Plant No. |
|--------------------|------------|----------------|--------------------|---------------------------------------------------------|------------------|
| Receptacle         | Female     | 1300400006     | WR4000A42M0058     | MIC 4P F/FR #18 1/2NPT – SS316 – 0.5M                   | N/A              |
| Receptacle         | Male       | 1300400007     | WR4006A42M0058     | MIC 4P MR# 18 1/2 NPT – SS316 – 0.5M                    | 3313             |
| Terminator         | Male       | 1300460008     | 804006FF8          | Micro-Change, Male FF terminator w/SS316 CNUT           | 3313             |
| Tee                |            | 1300350097     | MIC5558            | TEE – MIC In, MIC Out, MIC Drop w/ SS316 CNUT           | 3313             |
| Closure Caps       | For Female | 1200770065     | 80014              | M12 Closure Cap for Fem Connector, SS w/SS bead chain   | 3313             |
| Closure Caps       | For Male   | 1200770139     |                    | M12 Closure Cap for Male Connector, SS w/ SS bead chain | 3313             |
| Bulkhead Feed-Thru | Fem-Male   | 1200700408     | 8R4L301            | MIC4P M/MFE BULKHEAD FEED-THRU-SS                       | N/A              |

[www.molex.com/link/fieldbus.html](http://www.molex.com/link/fieldbus.html)

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