



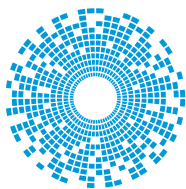
**THE DATASHEET OF**  
**5810132011**



# ModICE®



## Industrial and Commercial Transportation



**cinch**  
CONNECTIVITY SOLUTIONS  
a bel group

[belfuse.com/cinch](http://belfuse.com/cinch)



## About Bel

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Bel is a publicly traded company that has been operated by the same family for over 65 years. Our history of organic growth and acquisitions have broadened our product portfolio. This has established Bel as a world leader with a diverse offering of power, protection and interconnect products. We design and manufacture these products which are primarily used in the networking, telecommunications, computing, military, aerospace, transportation and broadcasting industries. Bel's portfolio of products also finds application in the automotive, medical and consumer electronics markets.

## About ModICE®

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ModICE® is a complete line of connector enclosures that offer sealed packaging solutions for rugged electronic control modules. The Cinch 1.5mm SHS system is the base interconnect technology. SHS is a complete line of sealed rugged I/O connectors. This product family is designed to perform on electronic control modules that function in extreme environmental conditions commonly found on commercial and off-road vehicles and industrial equipment.

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### SHS

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### ModICE® and SHS

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## The ModICE® Advantage



### Product Highlights

- 4 distinct enclosure sizes (ME, SE, LE and mini-ME)
- Multiple header configurations (18, 30, 48 and 60 I/O)
- Simple module assembly with snap-in header/PCB

### Available Options

- ME header with integrated RF Ports (SMA, RP-SMA)
- Headers with integrated ferrite filtering
- Blank headers for specific customer applications
- Enclosures with integrated heat sink (SE and LE)
- Vented enclosures (breather vent)

### Environmental

|                              |   |
|------------------------------|---|
| Operating Temperature        | -40°F to +185°F (-40°C to +85°C)                                |
| Sealing                      | IP67, IP69K   |
| Temperature Life             | 1000 hours @ 85°C   |
| Salt Spray                   | 96 hours  |
| Temperature Humidity Cycling | 320 hours (40 – 8 hours cycle) -40°F to +185°F (-40°C to +85°C) |
| Fluid Resistance             | Resists to most fluids used in industrial applications          |

### Electrical

|                       |  |
|-----------------------|--|
| Current               | 10 Amp @ 185°F (+85°C)                               |
| Insulation Resistance | >1000mΩ  |
| Current Cycling       | 500 hours @ 10 Amp, 500 cycles 45 min ON, 15 min OFF |

### Mechanical

|                    |   |
|--------------------|---|
| Contact Resistance | <10mΩ   |
| Vibration          | 10 to 2000 to 10Hz with 15 g-forces* peak level |
| Shock              | 50 g-forces*, 20 pulses                         |

\*A g-force of 1 g equal to the conventional value of gravitational acceleration on Earth, g, of about 9.8 m/s<sup>2</sup>.

# Enclosures

## mini-ME



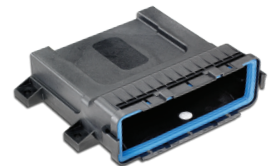
|                   | Enclosure     | With Breather |
|-------------------|---------------|---------------|
| Without heat sink | 581 01 30 090 | 581 01 30 095 |

## ME



|                   | Enclosure     | With Breather |
|-------------------|---------------|---------------|
| Without heat sink | 581 01 30 065 | 581 01 30 075 |

## SE



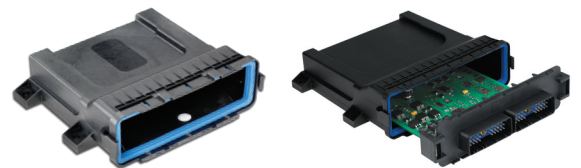
|                     | Enclosure     | With Breather |
|---------------------|---------------|---------------|
| Without heat sink   | 581 01 30 043 | 581 01 30 059 |
| With one heat sink  | 581 01 30 042 | 581 01 30 058 |
| With two heat sinks | 581 01 30 041 | 581 01 30 057 |

## LE



|                     | Enclosure     | With Breather |
|---------------------|---------------|---------------|
| Without heat sink   | 581 01 60 033 | 581 01 60 039 |
| With one heat sink  | 581 01 60 032 | 581 01 60 038 |
| With two heat sinks | 581 01 60 031 | 581 01 60 037 |

## SE & LE Spring Plate for Heat Sink Option\*



|                     | Spring Plates                   |
|---------------------|---------------------------------|
| With one heat sink  | 581 00 00 021                   |
| With two heat sinks | 581 00 00 020 and 581 00 00 021 |

\* The heat sink option is only available on the SE and LE enclosure

## Headers

### ME



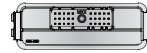
ME Header



Blank



18 I/O



30 I/O



48 I/O

### SE



SE Header



Blank



18 I/O



30 I/O



48 I/O

### LE



LE Header



Blank



30 I/O



48 I/O



60 I/O

### ME-MX



ME-MX Header



12 I/O



20 I/O



24 I/O



32 I/O



40 I/O

### ME-RF



ME-RF Header



18 I/O



30 I/O

## Headers

### ME

| I/O    | With Ferrite  | Without Ferrite |
|--------|---------------|-----------------|
| 18 I/O | 581 01 18 039 | 581 01 18 038   |
| 30 I/O | 581 01 30 072 | 581 01 30 064   |
| 48 I/O | 581 01 48 010 | 581 01 48 009   |
| Blank  |               | 581 00 00 055   |

### SE

| I/O    | With Ferrite  | Without Ferrite |
|--------|---------------|-----------------|
| 18 I/O | 581 01 18 033 | 581 01 18 032   |
| 30 I/O | 581 01 30 046 | 581 01 30 044   |
| 48 I/O | 581 01 48 007 | 581 01 48 005   |
| Blank  |               | 581 00 00 027   |

### LE

| I/O    | With Ferrite  | Without Ferrite |
|--------|---------------|-----------------|
| 30 I/O | 581 01 30 051 | 581 01 30 045   |
| 48 I/O | 581 01 48 008 | 581 01 48 006   |
| 60 I/O | 581 01 60 006 | 581 01 60 005   |
| Blank  |               | 581 00 00 028   |

### ME-RF Headers

| I/O | Left RF | Right RF | With Ferrite | Without Ferrite |
|-----|---------|----------|--------------|-----------------|
| 18  | N/A     | SMA      | 5810618004   | 5810618003      |
| 18  | RP-SMA  | N/A      | 5810618006   | 5810618005      |
| 30  | N/A     | SMA      | 5810630004   | 5810630003      |
| 30  | RP-SMA  | N/A      | 5810630006   | 5810630005      |
| 18  | RP-SMA  | SMA      | 5810618002   | 5810618001      |
| 18  | RP-SMA  | RP-SMA   | 5810618008   | 5810618007      |
| 18  | SMA     | SMA      | 5810618010   | 5810618009      |
| 30  | RP-SMA  | SMA      | 5810630002   | 5810630001      |
| 30  | RP-SMA  | RP-SMA   | 5810630008   | 5810630007      |
| 30  | SMA     | SMA      | 5810630010   | 5810630009      |

See page 3 for ME enclosure part numbers

### ME-MX\*

| I/O | Polarity  | Part Number   |
|-----|-----------|---------------|
| 12  | 12A       | 581 01 12 011 |
| 20  | 20A       | 581 01 20 011 |
| 24  | 12A + 12B | 581 01 24 011 |
| 32  | 20A + 12B | 581 01 32 011 |
| 40  | 20A + 20B | 581 01 40 011 |

\*With and without Ferrite not available with the ME-MX product line



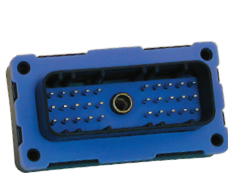
## Tooling

### ModICE® Tooling Needed for Assembly/Opening

|                                     |               |
|-------------------------------------|---------------|
| Tool to assemble ModICE® SE         | 599 11 11 687 |
| Tool to assemble ModICE® LE         | 599 11 11 688 |
| Tool to assemble ModICE® ME & ME-MX | 599 11 11 652 |
| Tool to open ModICE® SE             | 599 11 11 611 |
| Tool to open ModICE® LE             | 599 11 11 612 |
| Tool to open ModICE® ME & ME-MX     | 599 11 11 440 |

See [www.belfuse.com/cinch](http://www.belfuse.com/cinch) for ModICE® assembly instructions

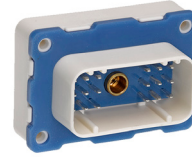
## Headers



SHS Header 30 I/O



SHS Header 48 I/O



SHS Header 18 I/O

SHS is a complete line of sealed rugged I/O connectors. This product family is designed to perform on electronic control modules that function in extreme environmental conditions commonly found on commercial and off-road vehicles and industrial equipment.

### Product Highlights

- Robust panel-mount PCB connector
- 4 header sizes (18, 30, 48 and 60 I/O)
- Integrated ferrite filtering available
- 1.5mm connector technology
- Multiple colors and keying configurations available

### Environmental

|                              |   |
|------------------------------|---|
| Operating Temperature        | -40°F to +185°F (-40°C to +85°C)                                |
| Sealing                      | IP67, IP69K   |
| Temperature Life             | 1000 hours @ 257°F (+125°C)                                     |
| Salt Spray                   | 96 hours  |
| Temperature Humidity Cycling | 320 hours (40 – 8 hours cycle) -40°F to +185°F (-40°C to +85°C) |
| Fluid Resistance             | Resists to most fluids used in industrial applications          |

### Electrical

|                       |  |
|-----------------------|--|
| Current               | 10 Amp @ 185°F (+85°C)                               |
| Insulation Resistance | >1000mΩ  |
| Current Cycling       | 500 hours @ 10 Amp, 500 cycles 45 min ON, 15 min OFF |

### Mechanical

|                    |   |
|--------------------|---|
| Contact Resistance | <10mΩ   |
| Vibration          | 10 to 2000 to 10Hz with 15 g-forces* peak level |
| Shock              | 50 g-forces*, 20 cycles                         |

\*A g-force of 1 g equal to the conventional value of gravitational acceleration on Earth, g, of about 9.8 m/s<sup>2</sup>.

## Connectors

### Connectors

| I/O | With Ferrite  | Without Ferrite | Color   |
|-----|---------------|-----------------|---------|
| 18  | 581 01 18 001 | 581 01 18 011   | Black   |
| 18  | 581 01 18 002 | 581 01 18 012   | Natural |
| 30  | 581 01 30 001 | 581 01 30 011   | Grey    |
| 30  | 581 01 30 002 | 581 01 30 013   | Black   |
| 48  | 581 01 48 001 | 581 01 48 011   | Black   |
| 48  | 581 01 48 002 | 581 01 48 012   | Natural |
| 48  | 581 01 48 003 | 581 01 48 013   | Grey    |
| 60  | 581 01 60 001 | 581 01 60 011   | Black   |
| 60  | 581 01 60 002 | 581 01 60 012   | Natural |

### RoHS Compliant Connectors

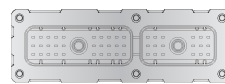
| I/O | With Ferrite  | Without Ferrite | Color   |
|-----|---------------|-----------------|---------|
| 18  | 781 01 18 001 | 781 01 18 011   | Black   |
| 18  | 781 01 18 002 | 781 01 18 012   | Natural |
| 30  | 781 01 30 001 | 781 01 30 011   | Grey    |
| 30  | 781 01 30 002 | 781 01 30 013   | Black   |
| 48  | 781 01 48 001 | 781 01 48 011   | Black   |
| 48  | 781 01 48 002 | 781 01 48 012   | Natural |
| 48  | 781 01 48 003 | 781 01 48 013   | Grey    |
| 60  | 781 01 60 001 | 781 01 60 011   | Black   |
| 60  | 781 01 60 002 | 781 01 60 012   | Natural |



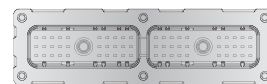
18 I/O



30 I/O



48 I/O



60 I/O

For dimensions, visit [belfuse.com/cinch](http://belfuse.com/cinch)

## Harness Connectors



SHS Harness Connectors 30 I/O



SHS Harness Connectors 30 I/O

The SHS Harness Connector is the mate to ModICE® and SHS Headers.

### Product Highlights

- 2 connector sizes (18, 30 way)
- 1.5mm terminal technology
- Push-to-seat terminals
- Integrated wire grommet seals with protective back-plate
- Terminal position assurance
- Robust jack-post mating to the header

### Environmental

|                              |   |
|------------------------------|---|
| Operating Temperature        | -40°F to +185°F (-40°C to +85°C)                                |
| Sealing                      | IP67, IP69K   |
| Temperature Life             | 1000 hours @ 257°F (+125°C)                                     |
| Salt Spray                   | 96 hours  |
| Temperature Humidity Cycling | 320 hours (40 – 8 hours cycle) -40°F to +185°F (-40°C to +85°C) |
| Fluid Resistance             | Resists to most fluids used in industrial applications          |

### Electrical

|                       |  |
|-----------------------|--|
| Current               | 10 Amp @ 185°F (+85°C)                               |
| Insulation Resistance | >1000mΩ  |
| Current Cycling       | 500 hours @ 10 Amp, 500 cycles 45 min ON, 15 min OFF |

### Mechanical

|                    |  |
|--------------------|--|
| Contact Resistance | <10mΩ  |
| Vibration          | 10 to 2000 to 10Hz with 15 g-forces** peak level |
| Shock              | 50 g-forces**, 20 cycles                         |

\*RoHS compliant

\*\*A g-force of 1 g equal to the conventional value of gravitational acceleration on Earth, g, of about 9.8 m/s<sup>2</sup>.

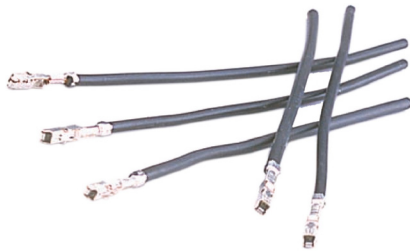
## Harness Connectors



### Harness Connectors

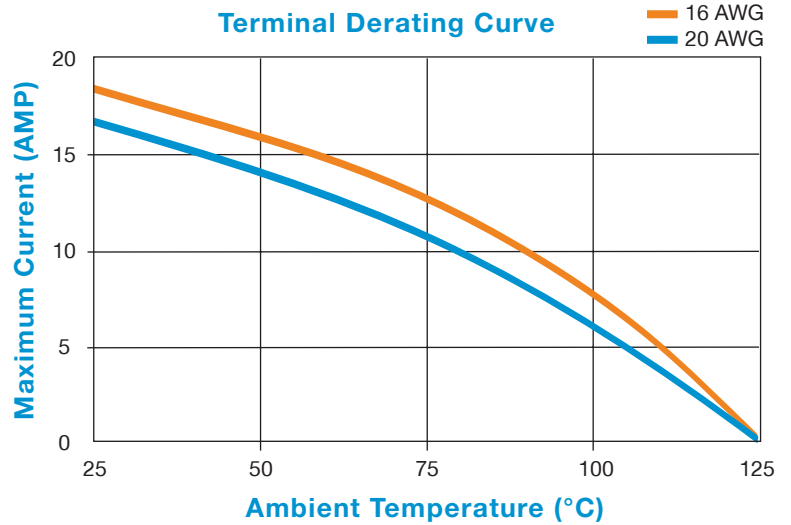
| I/O | Part Number   | Color   |
|-----|---------------|---------|
| 18  | 581 01 18 023 | Black   |
| 18  | 581 01 18 024 | Natural |
| 30  | 581 01 30 027 | Grey    |
| 30  | 581 01 30 028 | Black   |
| 30  | 581 01 30 029 | Black   |
| 30  | 581 01 30 030 | Natural |
| 30  | 581 01 30 031 | Natural |

See pages 12 for ModICE® Header/SHS Harness Connector, Tooling and Mating Matrix



### Terminals

| Wire Size           | Part Number   |
|---------------------|---------------|
| 20GXL, 18TXL        | 425 00 00 872 |
| 18GXL, 16TXL, 16GXL | 425 00 00 873 |



### Seal Plug



|                           | Part Number   |
|---------------------------|---------------|
| For connector 18 & 30 I/O | 581 00 00 011 |

## Tooling

### SHS Harness Connector Repair Tooling

|               |                                       |                                 |
|---------------|---------------------------------------|---------------------------------|
| 599 11 11 628 | Secondary lock removal tool (tweezer) | For connector 18 & 30 positions |
| 599 01 18 920 | Terminal removal tool                 | For connector 18 & 30 positions |

### SHS Harness Connector Crimp Tooling

|               |                 |                            |
|---------------|-----------------|----------------------------|
| 599 11 11 615 | Hand crimp tool | For terminal 425 00 00 872 |
| 599 11 11 616 | Hand crimp tool | For terminal 425 00 00 873 |
| 599 11 11 621 | Applicator      | For terminal 425 00 00 872 |
| 599 11 11 622 | Applicator      | For terminal 425 00 00 873 |
| 599 11 11 623 | Punch/anvil kit | For terminal 425 00 00 872 |
| 599 11 11 624 | Punch/anvil kit | For terminal 425 00 00 873 |

*Crimp specification and connector assembly information is available at [belfuse.com/cinch](http://belfuse.com/cinch)*

## Matrixes

### ModICE® Header/SHS Harness Connector Matrix

| ModICE® Header | Size       | I/O | Connector Mate 1 | Connector Mate 2 |
|----------------|------------|-----|------------------|------------------|
| 581 01 18 xxx  | ME, SE     | 18  | 581 01 18 023    | N/A              |
| 581 01 30 xxx  | ME, SE     | 30  | 581 01 30 029    | N/A              |
| 581 01 48 xxx  | ME, SE, LE | 48  | 581 01 18 023    | 581 01 30 029    |
| 581 01 60 xxx  | LE         | 60  | 581 01 30 028    | 581 01 30 029    |
| 581 06 18 xxx  | ME-RF      | 18  | 581 01 18 023    | SMA              |
| 581 06 30 xxx  | ME-RF      | 30  | 581 01 30 029    | SMA              |

See pages 9-10 for SHS Harness Connectors

### ModICE®/SHS Tooling and Mating Matrix

| SHS Header    | I/O | SHS Harness Connector Mate 1 | SHS Harness Connector Mate 2 |
|---------------|-----|------------------------------|------------------------------|
| 581 01 18 001 | 18  | 581 01 18 023                | N/A                          |
| 581 01 18 002 | 18  | 581 01 18 024                | N/A                          |
| 581 01 18 011 | 18  | 581 01 18 023                | N/A                          |
| 581 01 18 012 | 18  | 581 01 18 024                | N/A                          |
| 581 01 30 001 | 30  | 581 01 30 027                | N/A                          |
| 581 01 30 002 | 30  | 581 01 30 028                | N/A                          |
| 581 01 30 011 | 30  | 581 01 30 027                | N/A                          |
| 581 01 30 013 | 30  | 581 01 30 028                | N/A                          |
| 581 01 48 001 | 48  | 581 01 18 023                | 581 01 30 029                |
| 581 01 48 002 | 48  | 581 01 18 024                | 581 01 30 030                |
| 581 01 48 003 | 48  | 581 01 18 023                | 581 01 30 027                |
| 581 01 48 011 | 48  | 581 01 18 023                | 581 01 30 029                |
| 581 01 48 012 | 48  | 581 01 18 024                | 581 01 30 030                |
| 581 01 48 013 | 48  | 581 01 18 023                | 581 01 30 027                |
| 581 01 60 001 | 60  | 581 01 30 028                | 581 01 30 029                |
| 581 01 60 002 | 60  | 581 01 30 030                | 581 01 30 031                |
| 581 01 60 011 | 60  | 581 01 30 028                | 581 01 30 029                |
| 581 01 60 012 | 60  | 581 01 30 030                | 581 01 30 031                |

See pages 9-10 for SHS Harness Connectors

## Connectors and Cable Assemblies

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Connector Enclosure for  
Engine Controller



Cable Assemblies for 4WD  
Transmission Actuators



High Pin-Count Connector for  
Electronic Controller



RF Enclosure  
Telematics



Diesel Pressure Sensor Cap  
CIN::APSE® Compression Technology

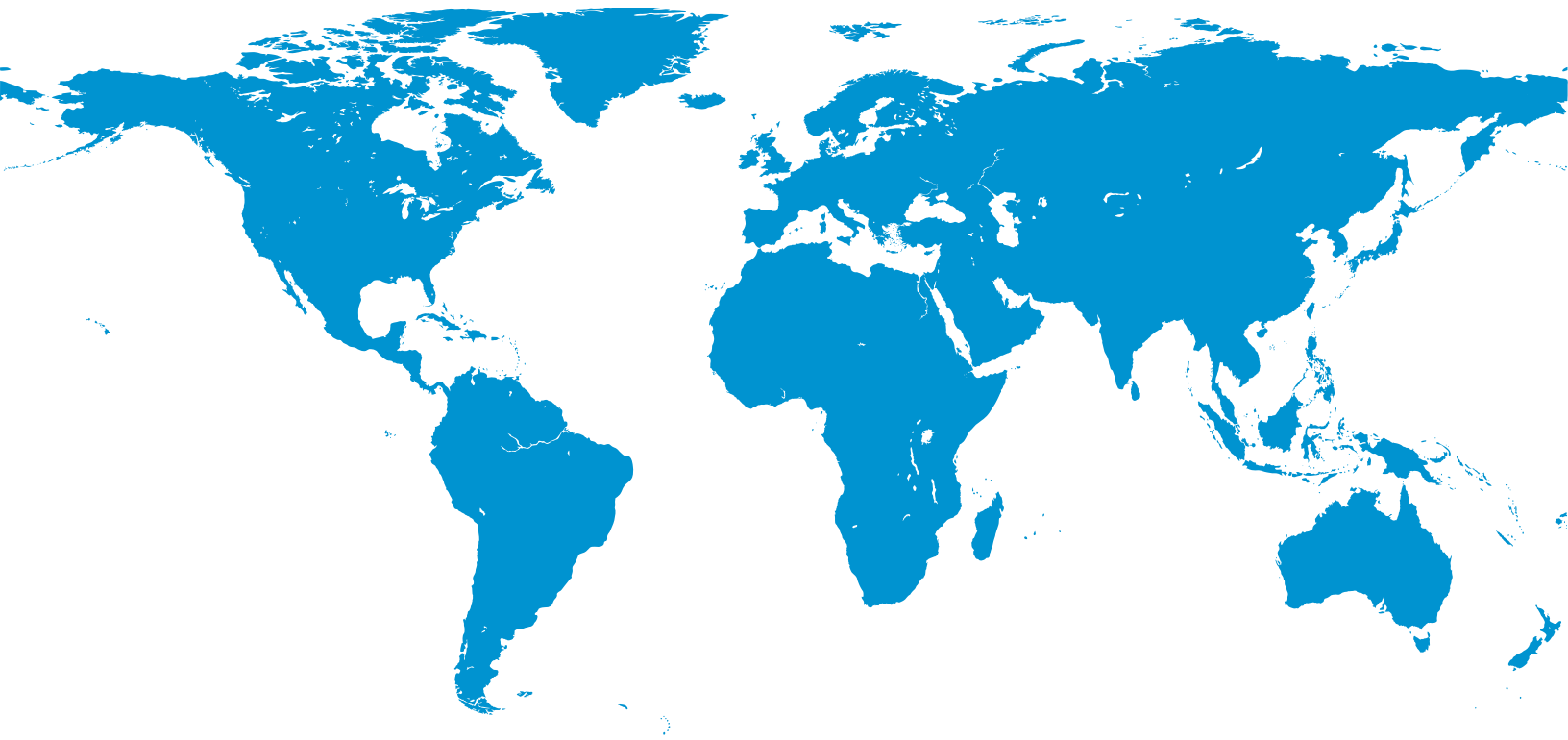
Over the years, Cinch has developed capabilities to support its customers most demanding applications. Our custom range of products include connectors and cable assemblies used in the Commercial Aircraft, Military/Aerospace, Supercomputing, On/Off Highway, Agriculture, and Industrial markets.

Please contact Cinch at **+1 507.833.8822** or **[inquiry@us.cinch.com](mailto:inquiry@us.cinch.com)** for your special connector and connectivity requirements.

## About Cinch Connectivity Solutions

In operation since 1917, Cinch supplies high quality, high performance connectors and cables globally to the Aerospace, Military/Defense, Commercial Transportation, Oil & Gas, High End Computer, and other markets. We provide custom solutions with our creative, hands on engineering and end to end approach.

Our diverse product offerings include: connectors, enclosures and cable assemblies utilizing multiple contact technologies including copper and fiber optics. Our product engineering and development activities employ cutting edge technologies for design and modeling, and our various technologies and expertise enable us to deliver custom solutions and products for our strategic partnerships.



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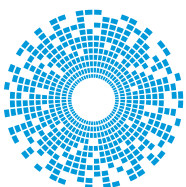
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