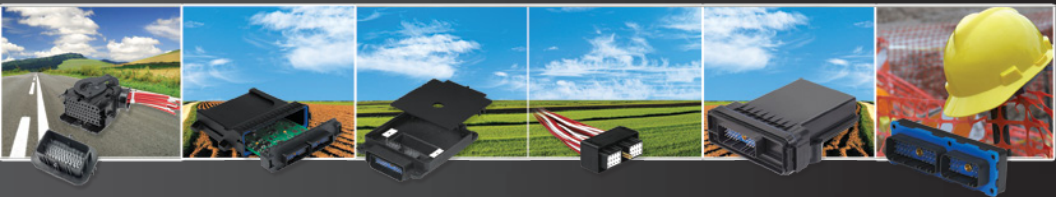
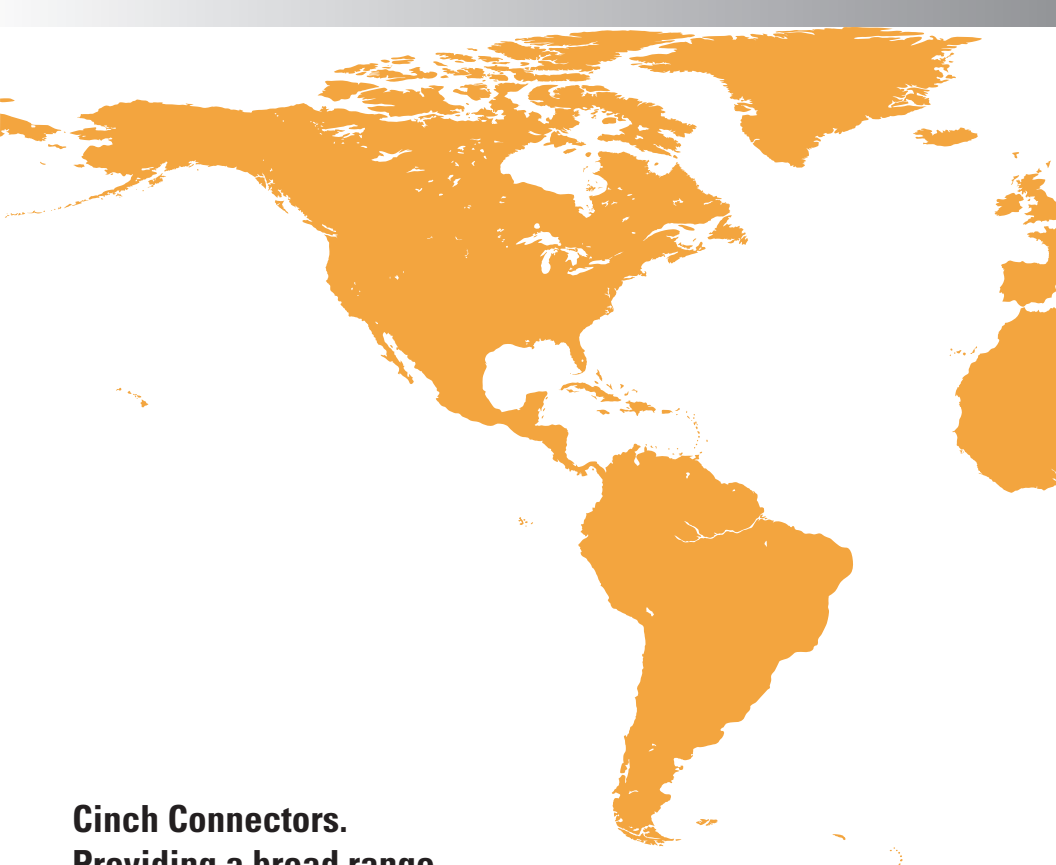


# Transportation

by





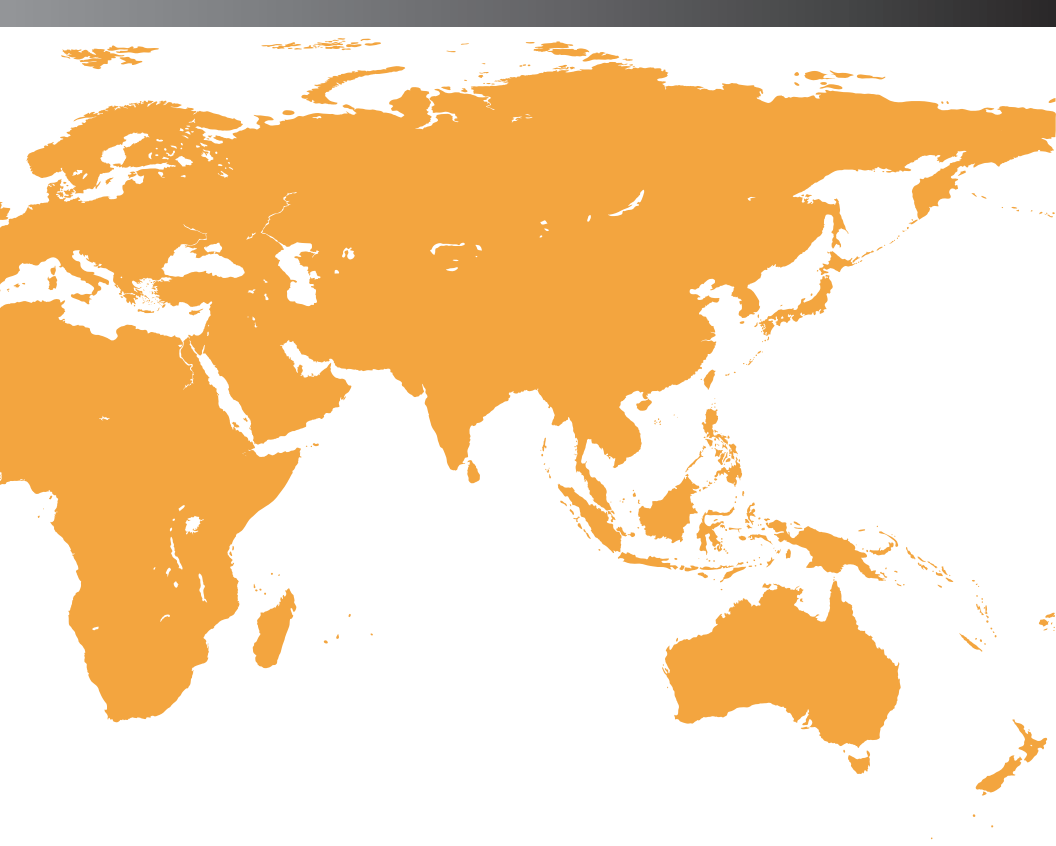
**Cinch Connectors.  
Providing a broad range  
of interconnect solutions the world over.**

In operation since 1917, Cinch Connectors, a Bel Fuse Company, is a multi-national manufacturer of a broad range of interconnect products. Cinch offers various technologies and expertise which enable us to address our customer's specific requirements.

Cinch supplies reliable, high quality custom and standard products for use in a variety of industries including: Transportation, Military/Aerospace, and High End Computer as well as other commercial markets.

Cinch's transportation group offers rugged interconnects that function in extreme environmental conditions commonly found on On/Off Highway, Agriculture and Industrial vehicles and equipment.

We strive to exceed our customer's expectations, and to continually provide innovative solutions to the rapidly changing needs of the markets and customers we serve.



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# ModICE™ Modular Connector Enclosures

ModICE™ is a complete line of connector enclosures that offers sealed packaging solutions for rugged electronic control modules. The Cinch 1.5mm SHS system is the base interconnect technology.

The ModICE™ Advantage:

- 3 distinct enclosure sizes (ME, SE, LE)
- Multiple header configurations (18, 30, 48 and 60 I/O)
- Blank headers available for specific customer applications
- Available Options:
  - Integrated ferrite filtering
  - Integrated heat sink
  - Vented enclosures
- Simple module assembly with snap-in header/PCB



**LE Enclosure**  
(PCB not provided by Cinch)



**ME Enclosure**



**SE Enclosure with Vent**



## Product Specification

**Operating Temperature:** -40°C to +85°C

**Current:** 10 Amp @ 85°C

**Contact Resistance:** < 10mΩ

**Insulation Resistance:** > 1000 MΩ

**Sealing:** IP67, IP69K

**Temperature Life:** 1000 Hrs @ 85°C

**Current Cycling:** 500Hrs @ 10 Amp

500 cycles 45 min ON – 15 min OFF

**Vibration:** 10 to 2000 to 10 Hz with 15 g's peak level

**Shock:** 50 g's – 20 pulses

**Salt Spray:** 96 Hrs

**Temperature Humidity Cycling:** 320 Hrs

40 – 8 Hrs cycles -40°C to +85°C

**Fluid Resistance:** Resists to most fluids used in industrial applications



# ModICE™ Enclosures



## 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

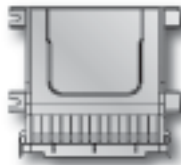
	Spring Plates
One Heat Sink	581 00 00 021
Two Heat Sinks	581 00 00 020 and 581 00 00 021

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

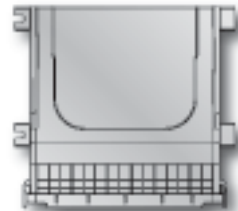
ME



SE



LE



SE/LE Enclosure



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

# ModICE™ 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



# ModICE™ Tooling

ModICE Tooling	
Tool to assemble ModICE™ SE & LE	599 11 11 650
Tool to open ModICE™ SE	599 11 11 611
Tool to open ModICE™ LE	599 11 11 612
Tool to open ModICE™ ME	599 11 11 440

See [www.cinch.com](http://www.cinch.com) for ModICE™ Assembly Instructions

# ModICE™ Header/ SHS Harness Connector Matrix

ModICE™ Header	Size	I/O	SHS Harness Connector Mate 1	SHS Harness Connector Mate 2
581 01 18 032	SE	18	581 01 18 023	N/A
581 01 18 033	SE	18	581 01 18 023	N/A
581 01 18 038	ME	18	581 01 18 023	N/A
581 01 18 039	ME	18	581 01 18 023	N/A
581 01 30 044	SE	30	581 01 30 029	N/A
581 01 30 045	LE	30	581 01 30 029	N/A
581 01 30 046	SE	30	581 01 30 029	N/A
581 01 30 051	LE	30	581 01 30 029	N/A
581 01 30 064	ME	30	581 01 30 029	N/A
581 01 30 072	ME	30	581 01 30 029	N/A
581 01 48 005	SE	48	581 01 18 023	581 01 30 029
581 01 48 006	LE	48	581 01 18 023	581 01 30 029
581 01 48 007	SE	48	581 01 18 023	581 01 30 029
581 01 48 008	LE	48	581 01 18 023	581 01 30 029
581 01 48 009	ME	48	581 01 18 023	581 01 30 029
581 01 48 010	ME	48	581 01 18 023	581 01 30 029
581 01 60 005	LE	60	581 01 30 028	581 01 30 029
581 01 60 006	LE	60	581 01 30 028	581 01 30 029

See page 15 for SHS Harness Connectors



# ModICE™ with Breather (SE, LE and ME)

## Benefits

The breather provides an option for applications exposed to thermal or altitude cycling. The membrane vent is designed to equalize the pressure differential between the enclosure and the ambient environment while maintaining the enclosure sealing characteristics.



# ModICE™ Blank Face (SE, LE and ME)

## Benefits

The blank header plates offer more design flexibility for applications where custom connector interfaces are required. Customer modified applications may include special interconnect, power, coax, USB or Ethernet interfaces.





# SHS Headers

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 equipment.

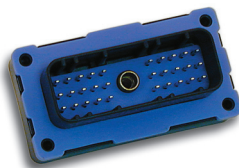
The SHS Header Advantage:

- 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

SHS Header 48 I/O



SHS Header 30 I/O



## Product Specification

**Operating Temperature:** -40°C to +125°C

**Current:** 10 Amp @ 85°C

**Contact Resistance:** < 10mΩ

**Insulation Resistance:** > 1000 MΩ

**Sealing:** IP67, IP69K

**Temperature Life:** 1000 Hrs @ 125°C

**Current Cycling:** 500Hrs @ 10 Amp

500 cycles 45 min ON – 15 min OFF

**Vibration:** 10 to 2000 to 10 Hz with 15 g's peak level

**Shock:** 50 g's – 20 pulses

**Salt Spray:** 96 Hrs

**Temperature Humidity Cycling:** 320 Hrs

40 – 8 Hrs cycles -40°C to +125°C

**Fluid Resistance:** Resists to most fluids used in industrial applications

# SHS Headers



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



18 I/O



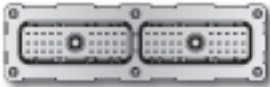
30 I/O



48 I/O



60 I/O



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

# SHS Headers/SHS Harness Connector 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 page 15 for SHS Harness Connectors



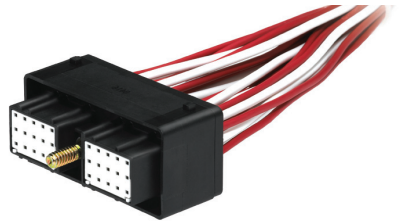


# SHS Harness Connector

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

The SHS Connector Advantage:

- 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



## Product Specification

**Operating Temperature:** -40°C to +125°C

**Current:** 10 Amp @ 85°C

**Contact Resistance:** < 10mΩ

**Insulation Resistance:** > 1000 MΩ

**Sealing:** IP67, IP69K

**Temperature Life:** 1000 Hrs @ 125°C

**Current Cycling:** 500Hrs @ 10 Amp

500 cycles 45 min ON – 15 min OFF

**Vibration:** 10 to 2000 to 10 Hz with 15 g's peak level

**Shock:** 50 g's – 20 pulses

**Salt Spray:** 96 Hrs

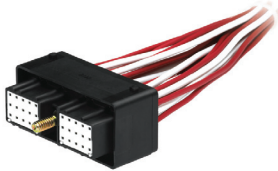
**Temperature Humidity Cycling:** 320 Hrs

40 – 8 Hrs cycles -40°C to +125°C

**Fluid Resistance:** Resists to most fluids used in industrial applications



# SHS Harness Connector



## Harness Connectors

Position	Connector	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

Connector 18 pos.



Connector 30 pos.



## Terminals

Wire Size	Terminal
20GXL, 18TXL	425 00 00 872
18GXL, 16TXL, 16GXL	425 00 00 873



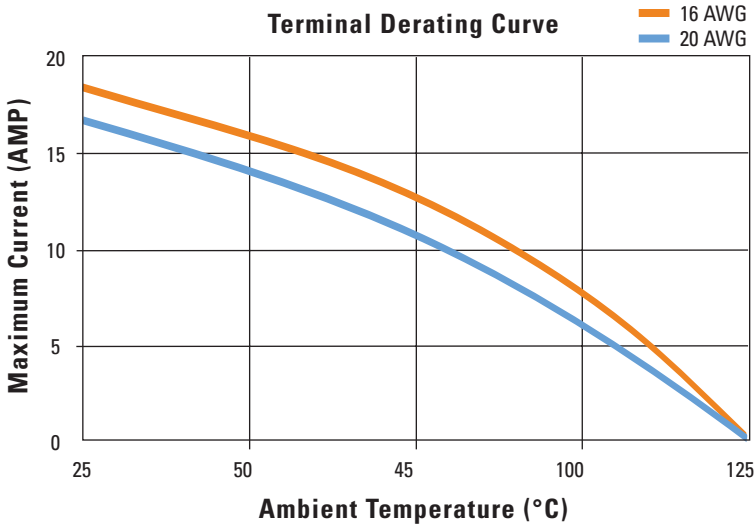
## Seal Plug

	Seal Plug
For connector 18 & 30 pos.	581 00 00 011





# SHS Harness Connector



## SHS Application Tooling

SHS Harness Connector Repair Tooling		
599 11 11 628	Secondary Lock removal Tool (Tweezer)	For connector 18 & 30 pos.
581 01 18 920	Terminal Removal Tool	For connector 18 & 30 pos.

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



# Custom Transportation Products

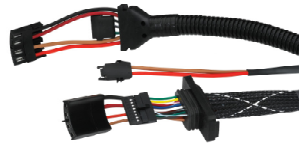
## Connectors and Cable Assemblies

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 and Agriculture markets.

Please contact Cinch for your special connector and harness requirements.



**Connector Enclosure  
for Engine Controller**



**Cable Assemblies for 4WD  
Transmission Actuators**



**High Pin-Count Connector for  
Electronic Controller**



**Diesel Pressure Sensor Cap  
CIN::APSE Compression Technology**



# Cinch Products

## Compression Interconnects

AMC



- Reliable one-piece contact design, long-term robust performance
- Compression design delivers superior electrical performance
- Compliant with PICMG AMC.0 Rev. 1 & 2

CIN::APSE



- High-speed electrical performance
- Multi-point contact design
- Custom configurations to fit your solution

iQ



- High-speed electrical performance
- Excellent handling durability
- Low mated height and short signal path

## Cables

Fuel Quantity  
Indicating  
Systems



- ISO9001, AS9100, BQMS D6-82479 Approved
- Certificate of Compliance
- Airworthiness Approval Tag (FAA Form 8130-3)

High Speed



- Pairshield technology, custom cable design, industry's lowest cross-talk
- Variety of cables includes: CX4, 12X, QSFP+, CX4 to QSFP+ (hybrid)
- Available in DDR and QDR speeds

Transportation  
Cables



- Custom connectors and sealing solutions
- Automotive and on/off highway applications

# Cinch Products

## Connectors

### Dura-Con



- Exceeds Mil-DTL-83513 requirements, available in standard shell sizes, configurations and as part of Cinch harness assemblies
- Can customize to meet any application requirement
- Hermetics available that meet  $1 \times 10^{-8}$  at half the cost and time of traditional solutions

### Omega



- Meets all requirements of MIL-C-26500.
- Qualified to "9" Boeing BACC45/BACC63 specifications
- Satisfies general purpose requirements and unique challenges for shielding, environmental sealing, fluid resistance, vibration

### SHS



- Rugged sealed I/O connector for electronic control units
- Integrated Ferrite filter available
- Multiple sizes available

### Commercial



- Standard Products include:
  - D Subs
  - Jones
  - Telco
  - Barrier

## Enclosures

### ModICE™



- Rugged sealed connector enclosure for electronic control units (ECU)
- 3 enclosure sizes and various headers with 18, 30, 48 or 60 I/O
- IP67 and IP69K

## Cinch Custom Capabilities

Cinch specializes in providing specialty interconnect and system solutions to the Computer, Electronics, Military/Aerospace and Transportation Industries. We provide custom solutions with our creative, hands on engineering and end to end approach.



# Contact Cinch

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

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Fax: 44.1.909.478321

