ARMORSTART AND ARMORSTART ST CONNECTIVITY

QUICK REFERENCE GUIDE COLLECTION:

- ArmorConnect® 3-Phase Power
- EtherNet/IP™ Network
- Auxiliary Network
- ArmorStart® ST Motor Control and I/O
- ArmorStart® Safety Connections

Single page documents providing comprehensive information on the cable assemblies for ArmorStart and ArmorStart ST distributed motor controllers. Complete with diagrams and references to find more information.
3-Phase Power Tee Reducing Drop
280-RT35
Assembly: 35 mm-Trunk, 22 mm-Drop, 4-pin

3-Phase Power Receptacle
280-M35F-M1
Female Receptacle: Black PVC and black anodized aluminum.
Assembly: 35 mm, 10 AWG, 4-pin

3-Phase Power Drop Cable
280-PWRM22A-M1
Cable: Black PVC, male to female patchcord
Assembly: 22 mm, 16 AWG, 4-pin
Cable Diameter: 0.43 in. +/- 0.12 in. (10.9 mm +/- 0.5 mm)

3-Phase Power Trunk Cable
280-PWRM35A-M1
Cable: Black PVC, male to female patchcord
Assembly: 35 mm, 10 AWG, 4-pin
Cable Diameter: 0.755 in. +/- 0.12 in. (19.68 mm +/- 0.5 mm)

Pin 1: L1 - Black
Pin 2: Ground (green/yellow)
Pin 3: L3 - Red
Pin 4: L2 - White

Pin 1: L1 - Black
Pin 2: L2 - White
Pin 3: L3 - Red
Pin 4: L2 - Ground (green/yellow)
**3 Phase Power ArmorStart ST**

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power cable - straight female to straight male</td>
<td>280-PWRM35A-M</td>
</tr>
<tr>
<td>Power cable - straight male and wires</td>
<td>280-PWRM35G-M</td>
</tr>
<tr>
<td>Power tee - 3-phase, 4-pole</td>
<td>280-T35</td>
</tr>
</tbody>
</table>

### 3-Phase Power Receptacle Options

- **280-M35**
  - M*: Lengths (m): 1, 3
  - Example: M1=1 m
  - Female: F
  - Male: M
  - M22: 22 mm, 16 AWG, 600V, 10 A
  - M24: 22 mm, 14 AWG, 600V, 15 A
  - M35: 35 mm, 10 AWG, 600V, 32 A

### 3-Phase Power Drop Cable Options

- **280-PWR M35 A**: M*
  - Lengths: See table of available lengths
  - A: Straight Female; Straight Male
  - B: Right Angle Female; Straight Male
  - C: Straight Female; Right Angle Male
  - D: Right Female; Right Male
  - M22: 22 mm, 16 AWG, 600V, 10 A
  - M24: 22 mm, 14 AWG, 600V, 15 A

### 3-Phase Power Trunk Cable Options

- **280-PWR M35 A**: M*
  - Lengths: See table of available lengths
  - A: Straight Female; Straight Male
  - B: Right Angle Female; Straight Male
  - C: Straight Female; Right Angle Male
  - D: Right Female; Right Male
  - M35: 35 mm, 10 AWG, 600V, 32 A

### 3-Phase Power Tees & Reducer Options

- **280-RT35**: M35 3-Phase Power Tee Reducing Drop M22
  - Trunk: 35 mm, 4-pin, 32 A
  - Drop: 22 mm, 4-pin, 13 A
- **280-RA35**: M35 3-Phase Reducing Adapter
  - 35 mm to 22 mm, 4-pin, 15 A
- **280-T35**: M35 3-Phase Power Tee (Not shown in Diagram)
  - Trunk: 35 mm, 4-pin, 32 A
  - Drop: 35 mm, 4-pin, 32 A

---

**Select length**

*Available Lengths*

<table>
<thead>
<tr>
<th>Feet</th>
<th>1.6</th>
<th>3</th>
<th>5</th>
<th>7</th>
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<th>10</th>
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<th>39</th>
<th>46</th>
<th>49</th>
<th>66</th>
<th>82</th>
<th>98</th>
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<td>2</td>
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<td>4</td>
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<td>6</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

**Field Replaceable Receptacles**

- **Male**: 280-FAM22M 14 AWG, 600 V, 15 A
- 280-FAM35M 10 AWG, 600 V, 32 A
- **Female**: 280-FAM22F 14 AWG, 600 V, 15 A
- 280-FAM35F 10 AWG, 600 V, 32 A

**Additional Accessories**

- **Sealing Caps**: B89A-QM (Cable Spool (Not supplied by Rockwell))
- 1485A-C1

**Bill of Materials**

<table>
<thead>
<tr>
<th>Qty</th>
<th>Catalog #</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>280-M35F-M1</td>
<td>3-Phase Power Receptacle</td>
</tr>
<tr>
<td>1</td>
<td>280-PWRM32A-M1</td>
<td>3-Phase Power Drop Cable</td>
</tr>
<tr>
<td>6</td>
<td>280-PWRM35A-M1</td>
<td>3-Phase Power Trunk Cable</td>
</tr>
<tr>
<td>1</td>
<td>280-RT35</td>
<td>3-Phase Power Tee Reducing Drop</td>
</tr>
<tr>
<td>2</td>
<td>280-T35</td>
<td>3-Phase Power Tee</td>
</tr>
</tbody>
</table>

**Environmental Ratings**

- Type 4/12 IP67 Pending

**Short Circuit Current Ratings (SCCR)**

- **ArmorConnect**: 65 kA maximum when protected by specified circuit breaker or by a CC, J or T class fuse.
- **ArmorStart**: 65 kA maximum when protected by specified circuit breaker or by a CC, J or T class fuse.
- **ArmorStart ST**: Still in testing for 65 kA when protected by specified circuit breaker or by a CC, J or T class fuse.

*See specifications for more details at www.ab.com.*
Ethernet M12 Patchcord
1585D-M4TBDM-2
Cable Style: TPC, high flex, unshielded, twisted pair
Assembly: 24 AWG, 4 pin
Cable Diameter: 0.23 in (5.84 mm)

Power & Distribution Panel

Ethernet M12 Patchcord
1585D-M4TBDM-2
Cable Style: TPC, high flex, unshielded, twisted pair
Assembly: 24 AWG, 4 pin
Cable Diameter: 0.23 in (5.84 mm)

ArmorStart
284E-FVD4P0Z-10-RRW-3-SB

ArmorStart ST
284E-FVD4P0Z-10-RRG-SBG-DB1-EMI

ArmorStart ST
281E-F12S-10C-RRG

ArmorStart ST
284E-FVD4PO5-10-RRG-SBG-DB1-EMI

ArmorBlock Guard I/O
1732ES-IB12XOBV2
1732ES-IB8XOV4 (pending release)

RJ45 – M12 D-Code Receptacle
1585D-D4TBJM-2
Cable Style: TPE, high flex, unshielded, twisted pair
Assembly: 24 AWG, 4 Conductor
Cable Diameter: 0.23 in (5.84 mm)

EtherNet/IP Network

FEMALE
M12 PINOUT
1 White-Orange
2 White-Green
3 Orange
4 Green

MALE
RIJ45 8-PIN PINOUT
1 White/Orange
2 Orange
3 White/Green
4 Blue
5 White/Blue
6 Green
7 White/Brown
8 Brown
**1. Ethernet M12 Patchcord Options**

**1585D-M4TBD**

- **Lengths:** See Key Below
  - Second End Connector: M-Male Straight
  - E-Male Right Angle
  - F-Female Straight (only with straight male first connector)
- **Jacket Material:**
  - T-Teal: 24 AWG
- **First End Connector:**
  - M-Male Straight
  - E-Male Right Angle

*Lengths available in 0.3, 0.6, 1, 2, 5, 10, 15 and additional increments of 5m up to 75m.

**Assembly:** 24 AWG, 300 V

**Ratings:** IP67

---

**2. RJ45 to M12 D-Code Receptacle**

**1585D-D4TBDM-**

- **4-Pin M12 D-Code Front Mount Receptacle to RJ45 Patchcord.**

*Lengths available in 0.3, 0.6, 1, 2, 5, 10, 15 and additional increments of 5m up to 75m.

**Ratings:** IP67

**1585A-D06IN:** M12 Female to RJ45 Cat 5e Female Field Attachable.

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**3. Additional Lengths**

If additional lengths are desired use a cable spool and RJ45 Crimp connector

**RJ45 CRIMP CONNECTOR WITH BOO:**

**1585J-M8CC-C**

- **Voltage:** 150 V, 1.5 A

**Cable Spool**

**RJ45 Crimp**

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**4. Additional Options**

Additional Options such as jacket material, conductors, and shielding are available.

See the On-Machine Connectivity Products Catalog or contact your local Allen-Bradley distributor.

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**5. Bill of Materials**

<table>
<thead>
<tr>
<th>Qty</th>
<th>Catalog #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1585D-M4TBDM-2</td>
<td>Ethernet M12 Patchcord</td>
</tr>
<tr>
<td>2</td>
<td>1585D-D4TBDM-2</td>
<td>RJ45 to M12 D-Code Receptacle</td>
</tr>
</tbody>
</table>

*Bill of materials pictured in diagram, only to be used as an example.

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**Rockwell Automation**

**EtherNet/IP Network**
**Auxiliary Power Trunk Cable**
889N-F4AFNM-2
Cable: Yellow PVC, male to female patchcord
Assembly: 22 mm, 16 AWG, 4-pin
Diameter: 0.42 in (11 mm)

**Auxiliary Power Receptacle**
888N-D4AF1-1F
Female Receptacle: Aluminum with clear sealant
Assembly: 22 mm, 16 AWG, 4-in

**Control Power Drop Cable**
889N-F65GFNM-1
Cable: Grey PVC, male to female patchcord
Assembly: 22 mm, 18 AWG, 4-pin
Diameter: 0.29 in (7.4 mm)

**Armstrong Start T-Port**
898N-543ES-NKF
Assembly: Drop
Trunk 22 mm, 4-pin

**Auxiliary ArmorStart T-Port**
898N-543ES-NKF
Assembly: 22 mm, 6-pin/5 used

**Armstrong Start ST**
284E-FVD4P0Z-10-RRW-3-SB
284E-FVD4P0Z-10-RRG-SBG-DB1-EMI
284E-FVD4P0S-10-RRG-SBG-DB1-EMI

**ArmorBlock® Guard I/O™**
1732ES-IB12XOBV2
1732ES-IB8XOBV4 (pending release)

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**Control Power Drop Cable**
889N-F65GFNM-1
Cable: Grey PVC, male to female patchcord
Assembly: 22 mm, 18 AWG, 4-pin
Diameter: 0.29 in (7.4 mm)

**Female Receptacle:**
- Aluminum with clear sealant

**Assembly:**
- 22 mm, 16 AWG, 4-in

**Male Receptacle:**
- 1 Black
- 3 Red
- 2 White
- 4 Green

**Table:**

<table>
<thead>
<tr>
<th>Color Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>1 Red</td>
<td>4 Blank/Not Used</td>
</tr>
<tr>
<td>2 Black</td>
<td>5 Blue</td>
</tr>
<tr>
<td>3 Green</td>
<td>6 White</td>
</tr>
</tbody>
</table>

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**Armstrong Start T-Port**
898N-543ES-NKF
Assembly: 22 mm, 6-pin/5 used

**Trunk**
22 mm, 4-pin

---

**ArmorStart ST**
284E-FVD4P0Z-10-RRW-3-SB
284E-FVD4P0Z-10-RRG-SBG-DB1-EMI
284E-FVD4P0S-10-RRG-SBG-DB1-EMI

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**Armstrong Start ST**
281E-F12S-10C-RRG

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**ArmorBlock® Guard I/O™**
1732ES-IB12XOBV2
1732ES-IB8XOBV4 (pending release)
NOTE: For the ArmorStart ST, the control aux power is 4-pin as listed

**ArmorStart ST Control (AUX) Power**

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat. No.</th>
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<tbody>
<tr>
<td>Patchcord - mini straight male to straight female</td>
<td>889N-F4AFNM-1</td>
</tr>
<tr>
<td>Control power tee - 24V DC, 4-pole</td>
<td>898N-43PB-N4KF</td>
</tr>
<tr>
<td>Panel Power Receptacle</td>
<td>888N-D4AF1-1F</td>
</tr>
</tbody>
</table>

**Auxiliary Network**

**Auxiliary Device T-Port**

- **888N-43PB-N4KT**: Drop 22mm, 4-pin
  Trunk 22mm, 4-pin

**Auxiliary Power Drop Cable Options**

- **Catalog Number**: 889N-F4AFNM-0*
- **Assembly**: 22 mm, 18 AWG, 300 V, 10 A, 4-Pin Straight mini male to straight mini female.
- **Cable Rating**: UL AWM style 2861 VW-1 105C 300V, CSA AWM A/B/1/II 80C 300V, FT1, UV oil and water resistant
- **Lengths**: Replace 2 with 5 or 10 for additional standard lengths in meters.

**Auxiliary Power Receptacle Options**

- **888N-D4AF1-1F**: Lengths (m): 1F = 0.3 m; 3F = 0.9 m
- **M**: Male
- **D**: Female

**Control Power Trunk/Drop Cable Options**

- **889N-F64GFNM-1**: Lengths: See available lengths table
- **M**: Straight Male
- **E**: Right Angle Male
- **F**: Straight Female
- **R**: Right Angle Female

- **Assembly**: 22 mm, 16 AWG, 600 V, 10 A, 6-pin/5 used
  All Patchcords are male to female.

**Auxiliary ArmorStart T-Port**

- **888N-543ES-NKF**: Drop 22mm, 6-pin/5-used
  Trunk 22mm, 4-pin

**Auxiliary Power Trunk Cable Options**

- **Catalog Number**: 889N-F4AFNM-0*
- **Assembly**: 22 mm, 16 AWG, 600 V, 10 A, 4-Pin, Straight mini male to straight mini female
- **Cable Rating**: UL STO0W VW-1 105C 300V, CSA ST 105C 600V FT2, UV oil and water resistant
- **Lengths**: Replace symbol with 2, 5 or 10 for standard lengths in meters.

**Available Lengths**

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<thead>
<tr>
<th>Feet</th>
<th>Meters</th>
<th>Code</th>
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<tbody>
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**Bill Of Materials**

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<th>Catalog#</th>
<th>Description</th>
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<tr>
<td>1</td>
<td>888N-D4AF1-1F</td>
<td>Auxiliary Power Receptacle</td>
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<td>8</td>
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<td>Auxiliary Power Trunk Cable</td>
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<tr>
<td>1</td>
<td>898N-543ES-NKF</td>
<td>Auxiliary ArmorStart T-Port</td>
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<tr>
<td>4</td>
<td>889N-F4AFNM-1</td>
<td>Control Power Drop Cable</td>
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<tr>
<td>3</td>
<td>889N-43PB-N4KT</td>
<td>Auxiliary Device T-Port</td>
</tr>
</tbody>
</table>

*Bill of materials pictured in diagram, only to be used as an example.

**Environmental Ratings**

All components have the following Environmental Ratings:

- IP67, NEMA 6p, 1200 psi washdown
**ArmorStart ST Motor Cable Cordset Options**

284-PWRM29A-M*
Shielded patch cable assembly with straight male / female receptacle with leads, 29 mm shell, 4 Pin, 12 AWG Conductors

280-PWRM29A-M*
Non-shielded patch cable assembly with straight male / female receptacle, 29 mm shell, 4 Pin, 12 AWG Conductors

*Replace symbol with 0.5, 1, 1.5, 2, 3, 4, 6, 8, 10, 12 or 14 for standard lengths in meters.

Ratings: IP67, NEMA 4/12, TC-ER

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**DC MICRO V-CABLE (INPUT) OPTIONS**

879D-F4ACDM-*
Straight female (sensor side), 22 AWG, 4 pin, 300 V, 4 A

879D-R4ACDM-*
Right angle female (sensor side), 22 AWG, 4 pin, 300 V, 4 A

*Replace symbol with 0M3, 1, 2, 3, 4, 5, 6, 10, 15 for standard cable lengths in meters.

Ratings: IP67, IP69K, NEMA 6P, 1200 psi washdown

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**ArmorStart ST Motor Control and I/O**

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**DC MICRO PATCHCORD (INPUT/OUTPUT) OPTIONS**

889D-F4ACDM-*
Straight female, straight male, 22 AWG 4 pin, 250 V, 4 A

*Replace symbol with 0M2, 0M3, 0M5, 0M6, 0M7, 1, 1M3, 1M5, 1M6, 2 – 25 in one meter increments and 25-95 in five meter increments for standard lengths in meters.

Ratings: IP67, NEMA 6P, 1200 psi washdown

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**DYNAMIC BRAKE CABLE**

285-DBR22-M3
Straight M22, 3 meter Cordset, IP67/Nema Type 4

* Only available for bulletin 284

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**Quick Disconnect Source Brake Patchcords**

285-BRC22-M*D
Non-shielded patch cable assembly with straight male / straight female receptacle with leads, 22 mm shell, 3 Pin, 16 AWG Conductors

285-BRC22D-M*
Non-shielded patch cable assembly with 90° male / 90° female receptacle with leads, 22 mm shell, 3 Pin, 16 AWG Conductors

*Replace symbol with 1, 3, 6, 8, 10, 12 or 14 for standard lengths in meters.

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**MALE RECEPTACLE**

Note: A male, field installed connector is required for the motor connection when using a patchcord for motor.

285-M24M-M05
Source Brake motor male receptacle 3-pin , 22 mm shell, 14 AWG, 600V, 15A.

284-M29M-M03
Motor Connection shielded straight male receptacle with 4 wires, 29 mm shell, 4 Pin, 12 AWG Conductors
ArmorStart ST Safety Version

ArmornStart Safety Related Parts

Each ArmorStart Safety Distributed motor controller is intended to be combined with the Cat. No. 1732ES-IB8XOBV4 (pending) or 1732ES-IB12XOBV2 safety I/O module to form a subsystem that is part of the overall machine stop function. The motor controllers are connected to the safety I/O module through specified cable assemblies. The combination of one of these controllers, the safety module, and the specified interconnecting cables are referred to as the ArmorStart Safety-Related Parts. The catalog numbers for each of these components is specified below. The combination of these components is shown below. The safety I/O module and PLC program must be configured appropriately to meet TUV CAT4 PLe certification. Refer to the user manual for details.

ArmorBlock Guard I/O Modules

ArmorBlock Guard I/O provides all the advantages of traditional distributed I/O for safety systems, but has an IP67 package that can be mounted directly on your machine. You can use Guard Safety I/O with any safety controller that communicates on EtherNet/IP using CIP Safety for the control and monitoring of safety circuits. Guard I/O detects circuit failures at each I/O point while providing diagnostics directly to the controller.

For assistance and example configuration, see the Safety Accelerator for GuardLogix Systems at www.ab.com

Safety Connections Between 1732ES and ArmorStart Safety
Rockwell Automation Support

Use the following resources to access support information.

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<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Dial Codes</td>
<td>Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.</td>
<td><a href="http://www.rockwellautomation.com/global/support/direct-dial.page">http://www.rockwellautomation.com/global/support/direct-dial.page</a></td>
</tr>
</tbody>
</table>

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Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the How Are We Doing? form at http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002_-en-e.pdf.


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EtherNet/IP is a trademark of ODVA, Inc.

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