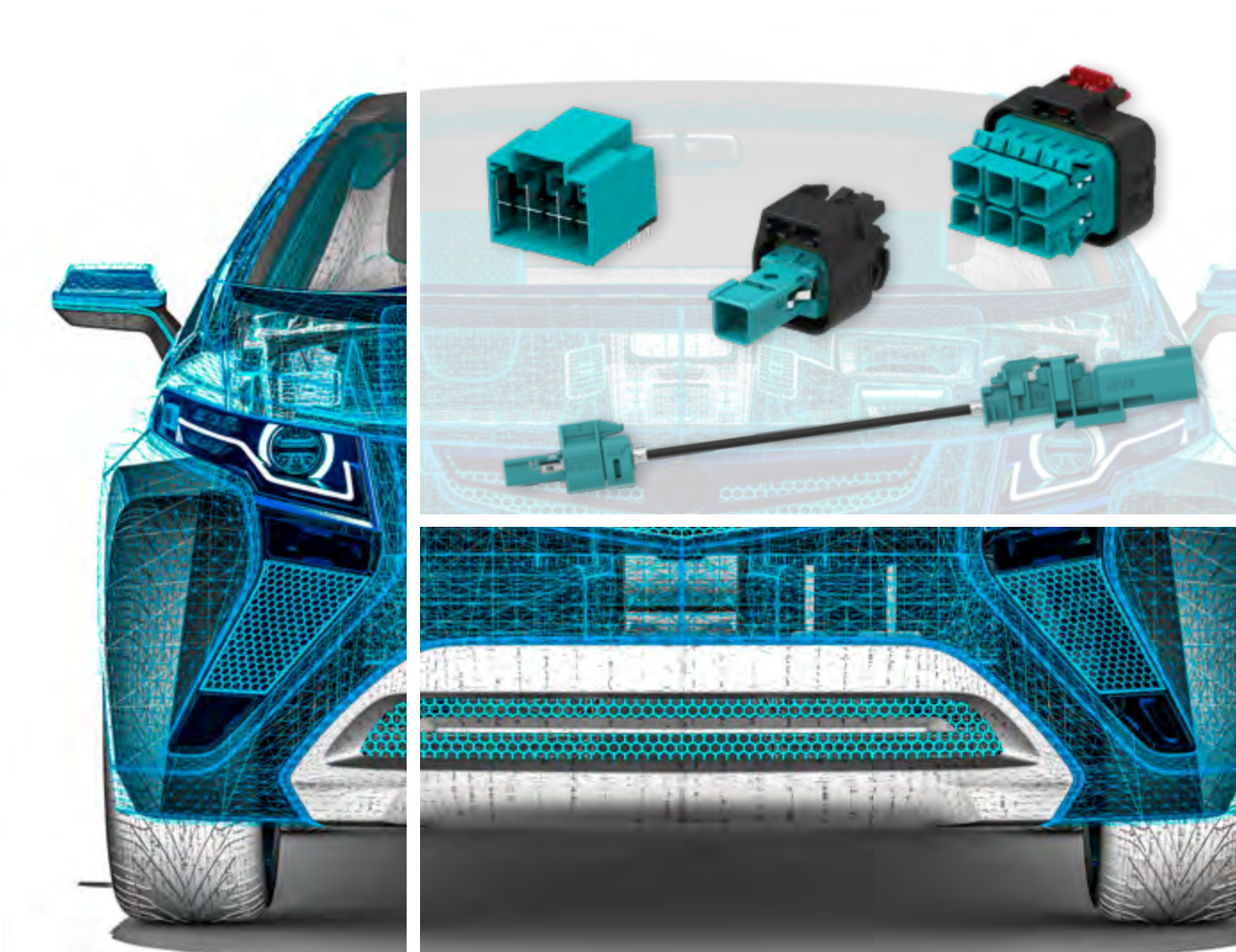


# MATenet Modular and Scalable Connectors

Miniaturized Automotive Ethernet Connector System



## MATenet Modular and Scalable Connectors

### Miniaturized Automotive Ethernet Connector System

A growth in Advanced Driver Assistance Systems and infotainment technologies within vehicles is leading to an increased requirement for complex high-speed data networking architectures based on the IEEE Automotive Ethernet standard. This complexity is driving the need for economical cabling solutions for physical link technologies that can be seamlessly integrated into existing engine control unit (ECU) interfaces.

**Supports up to 1 Gbps  
(with potential for 4 Gbps  
with alternative technologies)**

interfaces.

MATenet connector system is TE Connectivity's (TE) modular and scalable connector system, developed for the latest generation of vehicle architectures. Based on TE's proven NanoMQS terminals, MATenet connector system offers true automotive robustness and is compatible with both unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP) variants. MATenet connector system meets data transmission requirements according to 100BASE-T1 and 1000BASE-T1.

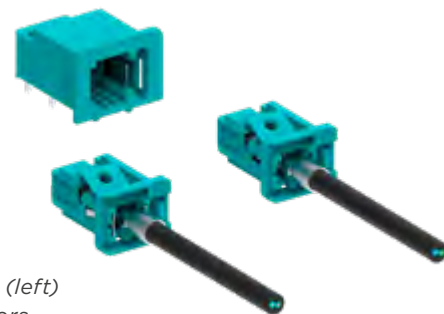
In addition, MATenet connector system uses higher modulation data transmission technologies, enabling it to support data rates up to 4 Gbps.

### FEATURES/ADVANTAGES

- Automotive grade robustness: Based on proven NanoMQS terminals system.
- Higher data-rate: Supports up to 1 Gbps (potential for 4 Gbps with alternative technologies).
- More flexibility: Available in Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP).
- Modular and scalable solution: Integrates into existing automotive connectivity interfaces.
- Cost efficient: Design and process aligned for Automotive Ethernet.

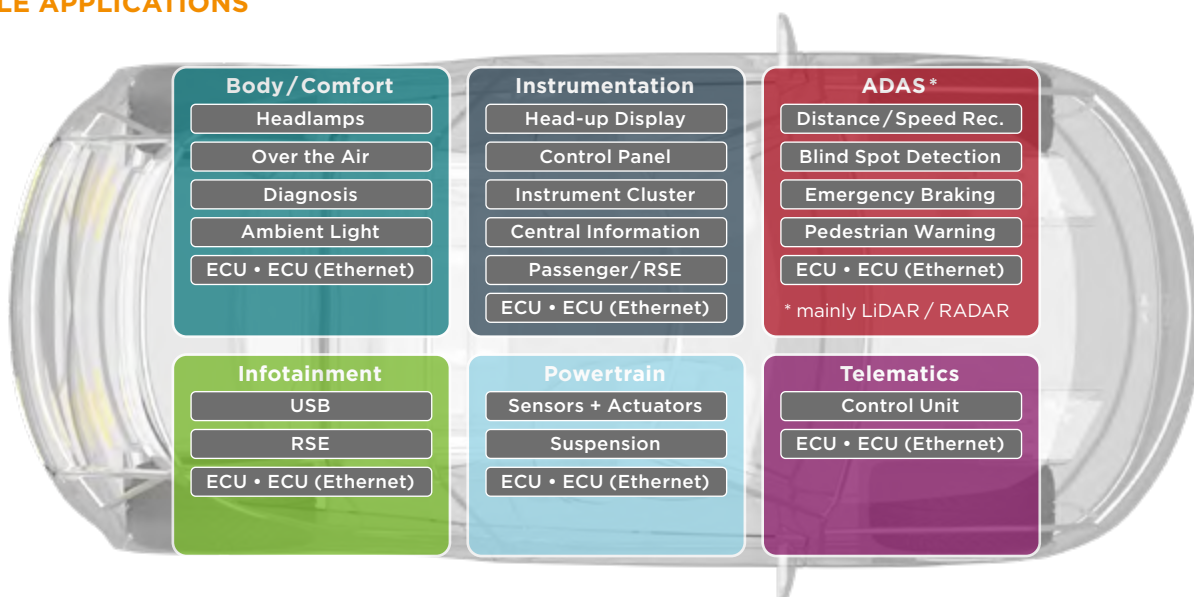
### MARKET COMPATIBILITY

- IEEE conformance: 100BASE-T1 (100Mbps - IEEE802.3bw) and 1000BASE-T1 (1 Gbps - IEEE802.3bp PoDL / Class 3-48 Volt)
- A2B
- HDBaseT



Single port MATenet PCB header (above), compatible for both STP (left) and UTP (right) connectors.

### EXAMPLE APPLICATIONS



## MATenet Modular and Scalable Connectors

### Miniaturized Automotive Ethernet Connector System

#### TECHNICAL DATA

| Mechanical Load   |  | Limit Value                          |
|---|--|--------------------------------------|
| Mating Cycles   |  | min. 20                              |
| Mating Force  | 1-port Connector<br>Sealed and Multi-port Connector (max. 6-port)<br>Connector for STP >4-port | max. 20 N<br>max. 75 N<br>max. 100 N |
| Unmating Force  | Unmating Force<br>1-port Connector<br>Multi-port Connector (max. 6-port)                       | min. 5 N<br>max. 20 N<br>max. 50 N   |
| Retention Force<br>Connector Lock                       | 1 Locking Latch (1/2-port)<br>2 Locking Latches (3/6-port)                                     | min. 80 N<br>min. 100 N              |
| Actuation Force   | Actuation Force of housing latch/lock<br>(per locking latch)                                   | min. 3 N<br>min. 15 N                |
| Actuation Forces for<br>Secondary Lock<br>(per Bracket) | Open<br>Close  | < 50 N<br>< 50 N                     |
| Keying Efficiency                                       | 1/2-port Connector<br>3/6-port Connector   | min. 80 N<br>min. 130 N              |
| Polarizing Efficiency                                   | 1/2-port Connector<br>3/6-port Connector   | min. 80 N<br>min. 130 N              |
| Cable Holding Force                                     |  | min. 120 N                           |
| Contact Overlapping                                     | Signal Contact<br>Ground Contact (STP)   | > 1.0 mm<br>> 0.45 mm                |
| Contact Retention Force                                 | 1. Locking<br>2. Locking   | F Prim. > 25 N<br>F Sek. > 50 N      |

Application Specification: 108-94568

**MATenet Modular and Scalable Connectors**  
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**MATenet CONNECTOR SYSTEM HEADERS**

|   | Description                     | Degree | Sealed / Unsealed | Part Number | Coding        |
|---|---------------------------------|--------|-------------------|-------------|---------------|
|    | 1-Port                          | 90°    | Unsealed          | 2304372     | A, B, C       |
|    | 1-Port,<br>Top Latch            | 90°    | Unsealed          | 2349217     | A, B          |
|    | 1-Port                          | 180°   | Unsealed          | 2308956     | A, B, C       |
|    | 2-Port                          | 180°   | Unsealed          | 2415492     | A, B, C       |
|    | 1-Port                          | 90°    | Sealed            | 1802162     | A, B, C       |
|    | 1-Port                          | 90°    | Sealed            | 2415723     | A, B, C       |
|   | 1-Port,<br>Low Profile          | 90°    | Unsealed          | 2320201     | A             |
|  | 2-Port                          | 90°    | Unsealed          | 2305987     | A, B, C       |
|  | 3-Port                          | 90°    | Unsealed          | 2333982     | A, B, C, J, Z |
|  | 2x2-Port                        | 90°    | Unsealed          | 2391079     | A, B          |
|  | 2x2-Port                        | 180°   | Unsealed          | 2415727     | A, B, C       |
|  | 5-Port                          | 90°    | Unsealed          | 2305390     | A, B, C       |
|  | 5-Port                          | 180°   | Unsealed          | 2315530     | A             |
|  | 2x3-Port                        | 180°   | Unsealed          | 2330116     | A, B, C, J, Z |
|  | 2x3-Port                        | 90°    | Unsealed          | 2339800     | A, B, C, J, Z |
|  | 2x3-Port                        | 90°    | Sealed            | 2351577     | A, B, C       |
|  | Hybrid Connector,<br>2 Cavities | 180°   | Sealed            | 2376765     | A             |
|  | Hybrid connector<br>1 Cavity    | 180°   | Sealed            | 2387351     | A             |

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**MATenet Modular and Scalable Connectors**  
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**MATenet CONNECTOR SYSTEM HOUSINGS**










|   | Description                          | Degree | Sealed / Unsealed | Part Number | Coding        |
|---|--------------------------------------|--------|-------------------|-------------|---------------|
|    | 1-Port Inline Coupler, UTP           | 180°   | Sealed            | 2354957     | A             |
|    | 1-Port Inline Coupler, STP           | 180°   | Sealed            | 2403850     | A             |
|    | 1-Port Inline Coupler                | 180°   | Unsealed          | 2302461     | A, B, C, Z    |
|    | 1-Port Inline Coupler with clip slot | 180°   | Unsealed          | 2394145     | A,B           |
|    | 2-Port Inline Coupler with clip slot | 180°   | Unsealed          | 2390608     | A,B           |
|    | 1-Port Frame (UTP)                   | 180°   | Unsealed          | 2302454     | A, B, C, J, Z |
|  | 1-Port Frame (STP)                   | 180°   | Unsealed          | 2302510     | A, B, C, J, Z |
|  | 1-Port Frame (UTP), Top Latch        | 180°   | Unsealed          | 2349433     | A,B           |
|  | 1-Port Frame (STP), Top Latch        | 180°   | Unsealed          | 2349531     | A,B           |
|  | 1-Port Frame (UTP)                   | 180°   | Sealed            | 1802105     | A, B, C, J, Z |
|  | 1-Port Frame (STP)                   | 180°   | Sealed            | 1802113     | A, B, C, J, Z |
|  | 2-Port Frame (UTP)                   | 180°   | Unsealed          | 2305974     | A, B, C, J, Z |
|  | 2-Port Frame (STP)                   | 180°   | Unsealed          | 2307961     | A, B, C, J, Z |
|  | 3-Port Frame (UTP)                   | 180°   | Unsealed          | 2324309     | A, B, C, J, Z |
|  | 3-Port Frame (STP)                   | 180°   | Unsealed          | 2324319     | A, B, C, J, Z |
|  | 2x2-Port Frame (UTP)                 | 180°   | Unsealed          | 2370473     | A, B, C, J, Z |
|  | 2x2-Port Frame (STP)                 | 180°   | Unsealed          | 2394102     | A, B, C, J, Z |

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**MATenet Modular and Scalable Connectors**  
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**MATenet CONNECTOR SYSTEM HOUSINGS** (continued)

|   | Description                                   | Degree | Sealed / Unsealed | Part Number | Coding        |
|---|---|--------|-------------------|-------------|---------------|
|    | 5-Port Frame (UTP)                            | 180°   | Unsealed          | 2302455     | A, B, C, J, Z |
|    | 5-Port Frame (STP)                            | 180°   | Unsealed          | 2302515     | A, B, C, J, Z |
|    | 6-Port Frame (UTP)                            | 180°   | Unsealed          | 2302456     | A, B, C, J, Z |
|    | 2x3-Port Frame (UTP)                          | 180°   | Unsealed          | 2334013     | A, B, C, J, Z |
|    | 2x3-Port Frame (STP)                          | 180°   | Unsealed          | 2333538     | A, B, C, J, Z |
|    | 2x3-Port Frame (STP)                          | 180°   | Sealed            | 2351636     | -             |
|   | Hybrid Connector 1 Cavity Housing             | 180°   | Sealed            | 2387380     | A             |
|  | Hybrid Connector 1 Cavity Housing, Side Latch | 180°   | Sealed            | 2397144     | A             |
|  | Hybrid Connector 1 Cavity Housing, Side Latch | 90°    | Sealed            | 2413280     | A             |

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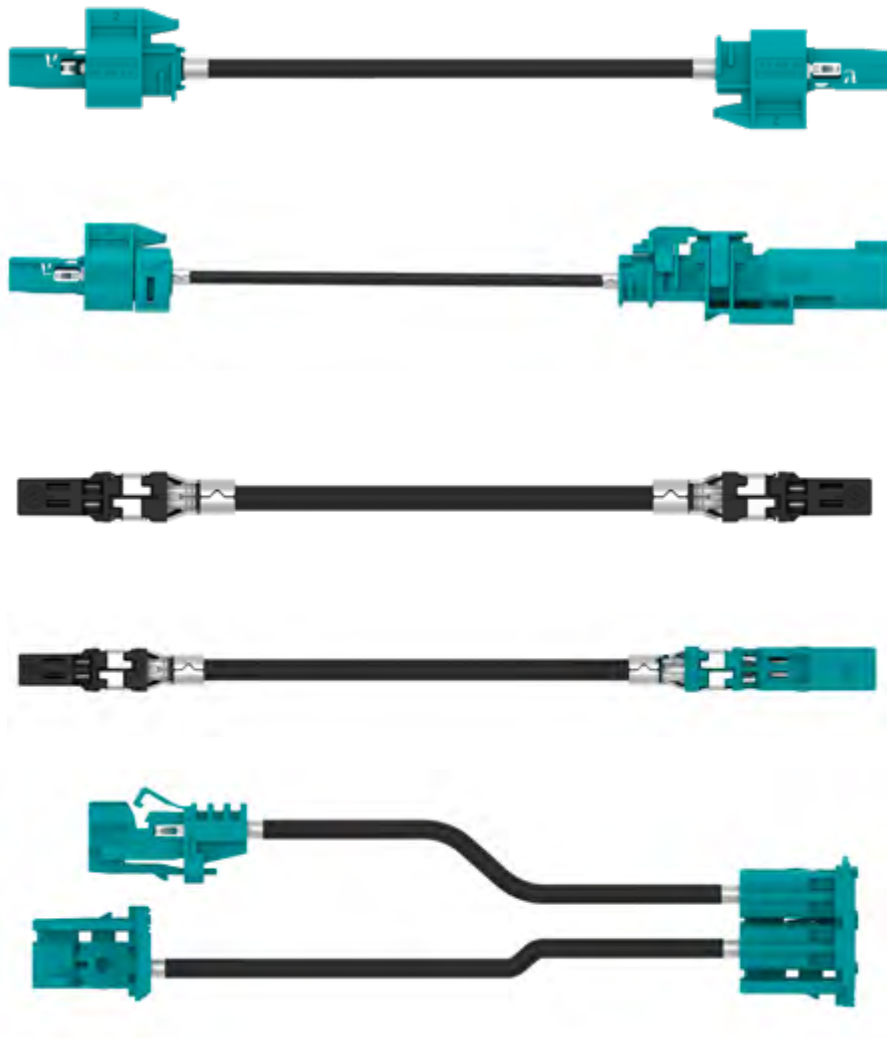
**MATenet Modular and Scalable Connectors**  
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**MATenet CONNECTOR SYSTEM TERMINALS**

|   | Type               | Description                 | Degree | Sealed / Unsealed | Part Number |
|---|--------------------|-----------------------------|--------|-------------------|-------------|
|    | Kit for STP Plug   | 2 pos Insert Module, Female | 180°   | Unsealed          | 2302450     |
|    |                    | Fixation Element (STP)      | 180°   | Unsealed          | 2302452     |
|    |                    | NanoMQS Female Contact      | 180°   | Unsealed          | 1703930     |
|    |                    | Shield Barrel               | 180°   | Unsealed          | 2141360     |
|    | Kit for UTP Plug   | 2 pos Insert Module, Female | 180°   | Unsealed          | 2302450     |
|    |                    | Fixation Element (UTP)      | 180°   | Unsealed          | 2302452     |
|   |                    | NanoMQS Female Contact      | 180°   | Unsealed          | 1703930     |
|  | Kit for STP Inline | NanoMQS Male Insert         | 180°   | Unsealed          | 2302451     |
|  |                    | Fixation Element (STP)      | 180°   | Unsealed          | 2302452     |
|  |                    | NanoMQS Male Contact        | 180°   | Unsealed          | 2236905     |
|  |                    | Shield Barrel               | 180°   | Unsealed          | 2141360     |
|  | Kit for UTP Inline | NanoMQS Male Insert         | 180°   | Unsealed          | 2302451     |
|  |                    | Fixation Element (UTP)      | 180°   | Unsealed          | 2302452     |
|  |                    | NanoMQS Male Contact        | 180°   | Unsealed          | 2236905     |

Application Specification: 108-94568

**MATenet CONNECTOR SYSTEM CABLE ASSEMBLY (UTP/STP)**



**Possible Configurations:**

- 1 port Frame - 1 port Frame
- 1 port Frame - 1 port Inline Coupler
- Female Insert - Female Insert
- Female Insert - Male Insert
- 1 port Frame - 2 port Frame

**Available Cable Types:**

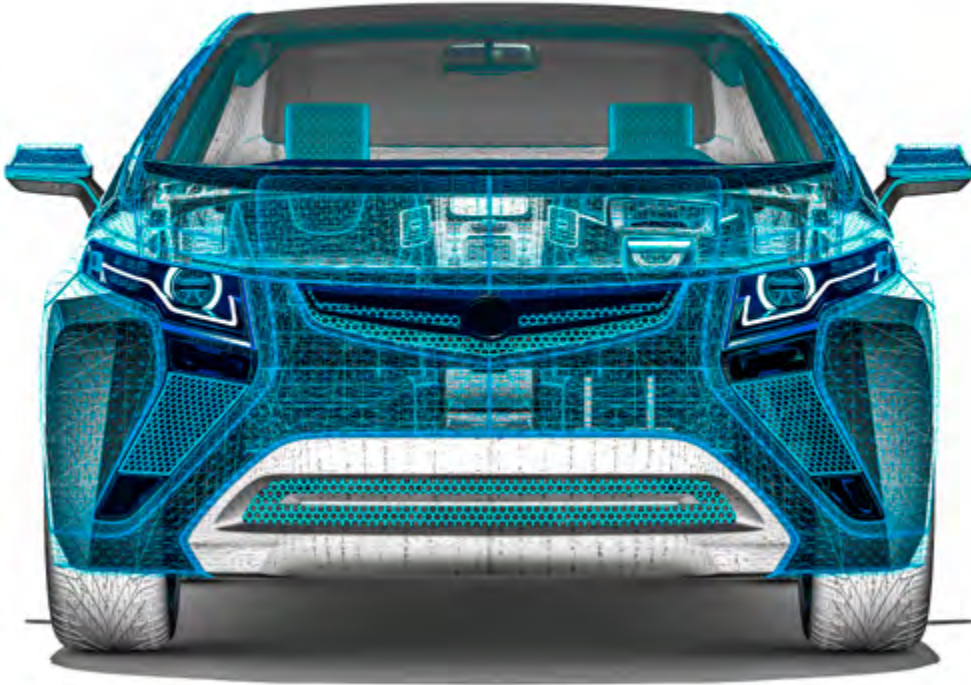
UTP 100 Mbps / UTP 1Gbps,  
and STP 1Gbps



**MATenet CONNECTOR SYSTEM APPLICATION TOOLING**

| Component   | Part Numbers        |                       |
|-------------|---------------------|-----------------------|
|             | Housing             | Applicator            |
| x-2302452-1 | 2302450<br>(female) | 2382219-2             |
| x-2302452-1 | 2302451<br>(male)   | 2382220-2             |
| x-2302452-2 | 2302450<br>(female) | 2382221-2             |
| x-2302452-2 | 2302451<br>(male)   | 2382222-2             |
| x-2302452-3 | 2302450<br>(female) | 2381607-2             |
| x-2302452-3 | 2302451<br>(male)   | 2381609-2             |
| 1-1703930-x | 2302450<br>(female) | 2151332-2             |
| 0-2236905-x | 2302451<br>(male)   | 2266620-2             |
| 2-1703930-x | 2302450<br>(female) | 2151523 or<br>2151524 |
| 1-2236905-x | 2302451<br>(male)   | 2266621-2             |
| 0-2141360-1 |                     | 2836365-2             |





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