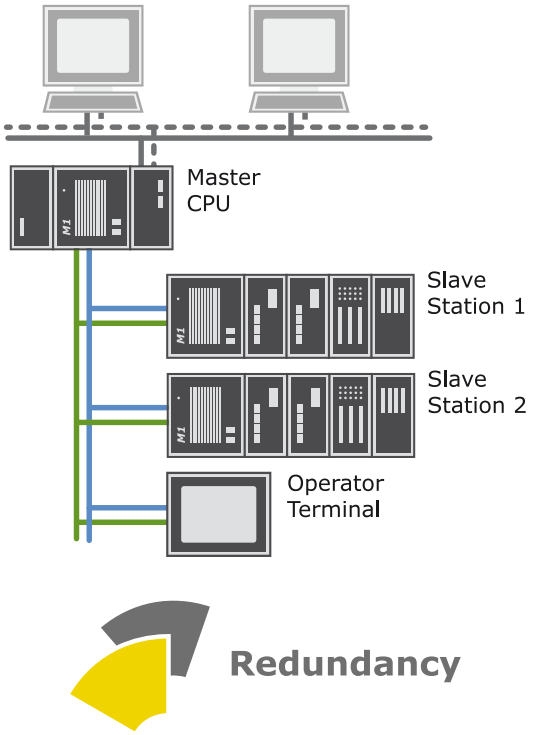



| Part type designation | Part number |
|---|---|
| M-NW-REDU RT | 00019828-63 |

## Network Redundancy

Cable break and failure or misconfiguration of network equipment are frequent causes of failure in the daily automation routine. Searching for errors in the process often proves to be expensive and difficult. This means that even little carelessness carries the risk of longer production interruptions and economically relevant outages.

The introduction of double-guided real-time networking makes separate cable routes possible. In conjunction with the simultaneous transmission of all data packets on both network lines, single failures on the transmission line no longer have the effect of disrupting communication and therefore automation.

The product Network Redundancy fulfills these qualities precisely by means of a combination of media and communication redundancies.

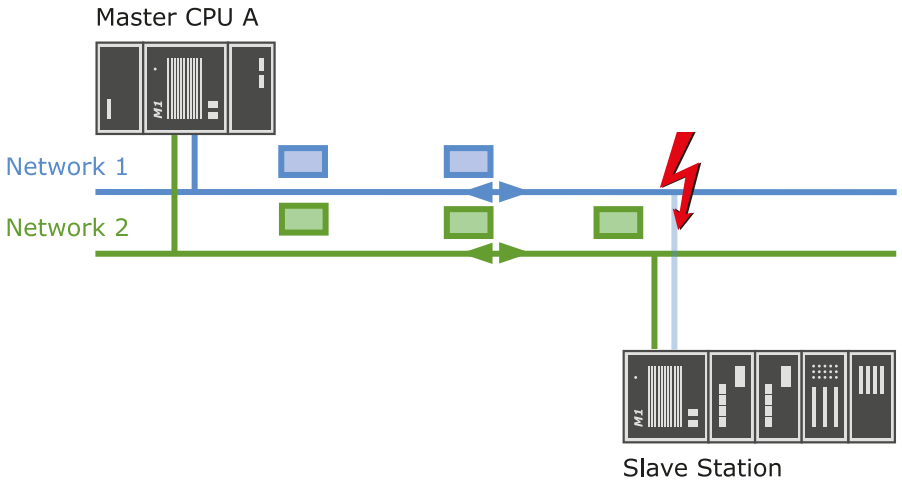
Even in the case of an error, no data packets to the receiving stations (MainDevice or SubDevice) are lost in the process (see *Figure*). Integrated self-monitoring and diagnostics interfaces draw attention to transmission errors and make finding their location easier.

The Network Redundancy is optimized for real-time capability compatibility, ruggedness and performance. Conformity with Ethernet standard IEEE 802.3 guarantees the cost-effective networking of more than one hundred redundancy stations [1)].

[1)] *Limit value subject to CPU type, memory available, application size, number of exchangeable variables, network bandwidth available as well as network and CPU load via non-redundant applications*

**Features**

- Switching time ≤ 1 PLC cycle
- Real-time network fully Ethernet compatible (IEEE 802.3q)
- Monitoring and diagnostics of errors via SolutionCenter
- Application programming interfaces, libraries and system variables for data transmission and communication monitoring in IEC 61131-3
- Prioritized redundancy data transmission makes parallel communication via IP-based protocols possible
- Bandwidth limit integrated
- Connection of all terminals via TCP/IP




*In case of an error, no data packets to the receiving stations are lost*

## Network Redundancy

| Rationale/Type | |
|---|---|
| High availability system type | Communication and media redundancy (1oo2 voting integrated) |
| CPU redundancy | No |
| Network Redundancy | Yes |
| Switchover | 0 ms |
| Continuous dual-channel ability | Yes |
| Communication redundancy | Yes |
| Processing units (recommendation) | MainDevice: M200 standard CPUs from the families MPC, MC, MH or better<br>SubDevice: M200 standard CPUs from the families MX, MPC, MC, MH or better |
| I/O periphery | Via MX CPU all from M200 standard module portfolio |
| Use of special hardware | No (straight software solution and standard Ethernet) |
| **Topology/Networking** | |
| Protocol basis | Ethernet IEEE 802.3q, Ethertype 0x892D |
| Communication protocol | bluecom with redundancy enhancement (100 % IEEE 802.3q compatible) |
| Media redundancy | Yes (continuous 2-channel, galvanically isolated Ethernet networks) |
| Switches | Industrial standard managed switch (unmanaged switch with appropriate configuration) |
| Topologies | Star, bus, ring, mesh |
| Ring redundancy | Possible through parallel use of MRP, STP and RSTP |
| Dimension | In compliance with IEEE 802.3 - ≥ 2000 m per network section with fiber optic connection |
| CPUs spatially separable | Yes (see dimension) |
| Time synchronization | Integrated in network protocol |
| Number of I/O stations | More than 100 |
| Smart SubDevices | Yes, I/O stations can execute local application programs for:<br>emergency operation or<br>load separation or<br>local logging |
| Parallel data traffic | Yes, possible (Ethernet-based protocols and services, e.g. HTTP, FTP, video stream, Modbus, OPC, MMS) |

| | |
|---|---|
| **Interfaces** | |
| I/O periphery | M200 standard module portfolio |
| Redundancy network | bluecom network variables |
| Fieldbuses | Gateway function for CAN, PROFIBUS DP, PROFINET, Modbus, EtherCAT via application program possible |
| SCADA / supervisory control & PDA | Standard protocols:<br>IEC 61850, IEC 61400-25, IEC 60870-5-104, OPC DA, Modbus TCP/UDP<br>Application program development:<br>Communication library M1Com and M1Com.NET |
| IT protocols | See M200 software (FTP, HTTP, SNTP, SMTP etc. and security versions) |
| **Configuration/Programming** | |
| Configuration | SolutionCenter (support via wizards) |
| Remote configuration | Yes (Ethernet LAN, Internet) |
| Network configuration | SolutionCenter (support via wizards) |
| Programming | M-PLC: IEC 61131-3 (IL, LD, FBD, ST, SFC) |
| Editor | CoDeSys |
| **Diagnostics/Monitoring** | |
| Redundancy status | Yes |
| Error state | Yes |
| Diagnostic user interface (API) | Yes, integrated |
| Statistic user interface (API) | Yes, integrated |
| Network monitor | SolutionCenter |
| Network analysis | Yes (by Wireshark plugin, Wireshark data are generated automatically on the controller) |
| **Performance data** | |
| Master cycle time | 1 ms to 1000 ms [1)] |
| I/O cycle time | Minimum 200 µs for non-redundant application programs<br>1 ms to 1000 ms for redundant application programs [1)] |
| I/O quantity structure | More than 100 stations [1)]<br>Number of channels unrestricted ( [1)], [2)]) – typically 400 to 600 channels per station (1/3 analog, 2/3 digital) |

[1)] *Limit value subject to CPU type, memory available, application size, number of exchangeable variables, network bandwidth available as well as network and CPU load via non-redundant applications*

[2)] *No program-technical restriction*

| | |
|---|---|
| **Installation** | |
| Installation medium | CD ROM or network |
| Installation tool | SolutionCenter |
| Upgrading existing systems | Possible via software / new CF card required |
| License protection | Data CF of the master CPUs is integrated dongle |
| **System requirements** | |
| Automation devices | M200 CPUs of the MX200 family or better (minimum 2 Ethernet interfaces onboard) |
| Network | 2x Ethernet 100 MBit/s or Gbit/s, managed switch |
| Software | MSys / MxCCore / M-BASE V3.80 or higher |

## Order data

| Part type designation | Part number | Description |
|---|---|---|
| M-NW-REDU RT | 00019828-63 | License to operate a network redundancy communication master on one controller CPU. Allows any number of I/O stations (SubDevices) to connect redundantly over the network. |