MNS *i*S Motor Control Center
Interface Manual Redundancy
System Release V5.4/0

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This document relates to the MNS *i*S System Release 5.4/0.

Table of content

General

Target Group

This document describes communication and control interfaces used in MNS *i*S. The manual is primarily intended for those requiring information on accessing information and data provided from MNS *i*S. Furthermore the document provides information for integration of MNS *i*S as fieldbus component into PLC or higher level Process Control Systems to control system and application engineers.

It is assumed that the reader of this manual is familiar with basic terms of fieldbus and control communication (e.g. basic knowledge about PROFIBUS, Modbus etc.).

Use of Warning, Caution, Information and Tip icon

This publication includes **Warning**, **Caution**, and **Information** icons where appropriate to point out safety related or other important information. It also includes **Tip** icons to point out useful hints to the reader. The corresponding symbols should be interpreted as follows:

The electrical warning icon indicates the presence of a hazard that could result in *electrical shock.*

The warning icon indicates the presence of a hazard that could result in *personal injury.*

The caution icon indicates important information or warnings related to the concept discussed in the text. It might indicate the presence of a hazard that could result in *corruption of software or damage to equipment/property.*

The information icon alerts the reader to pertinent facts and conditions.

The tip icon indicates advice on, for example, how to design your project or how to use a certain function

Although **Warning** notices are related to personal injury, and **Caution** notices are associated with equipment or property damage, it should be understood that the operation of damaged equipment could, under certain operational conditions, result in impaired process performance leading to personal injury or death. It is, therefore, imperative that you comply fully with all **Warning** and **Caution** notices.

Terminology

List of the terms, acronyms, abbreviations and definitions that the document uses.

Abbreviation	Term	Description
	Aspect Object	ABB technology. An Aspect Object is a computer representation of a real object such as a pump, a valve, an order or a virtual object such as a service or an object type. An Aspect Object is described by its aspects and is organized in structures.
	Alarm	Alarm is defined as status transition from any state to abnormal state. Status transition to abnormal state can be data crossing over the pre-defined alarm limit.
	Bus Local	A Control Access term describing that the M*Control* accepts its commands from a device on the switchgear control network, e.g. the Web Interface, M*View*.
COTS	Commercial off the shelf	Commercial off the shelf product, term to describe products available on the market, ready to use
DCS	Distributed Control System	See also PCS
DTM	Device Type Manager	Software module used to manage devices via fieldbus (e.g. PROFIBUS) using frame application environment (e.g. PactWare, ABB Fieldbus Builder etc.)
Eth.	Ethernet	Ethernet is a local area network (LAN) technology. The Ethernet standard specifies the physical medium, access control rules and the message frames.
	Event	An event is a status transition from one state to another. It can be defined as alarm, if the state is defined as abnormal or as warning as a pre-alarm state.
FD	Field Device	Term for devices connected to the fieldbus (e.g. motor control units or circuit breaker protection)
GSD file	Geräte Stamm Datei (German abbreviation)	A hardware description file for a PROFIBUS-DP or PROFIBUS-DP/V1 slave type

Abbreviation	Term	Description
GPS	Global Positioning System	System to detect local position, universal time and time zone, GPS technology provides accurate time to a system
	Hardware Local	A Control Access term describing that the M*Control* accepts its commands from the Hardwired inputs, when the respective Local control input is set to true.
HMI	Human Machine Interface	Generic expression
LVS	Low voltage switchgear	A factory built assembly built to conform with IEC 60439-1
MCC	Motor Control Centre	Common term for switchgear used for motor control and protection.
MNS		Modular Low Voltage Switchgear family from ABB
MNS *i*S		The integrated intelligent switchgear solution from ABB
	M*Start* M*Feed* M*Control* M*Link* M*View* M*Navigate*	MNS *i*S components integrated in the switchgear, see the MNS *i*S System Guide for technical details
	MODBUS	Fieldbus communication protocol
	MODBUS RTU	Fieldbus communication protocol
	Motor Starter	Consists of motor controller and electrical components to control and protect a motor, part of Motor Control Center
NLS	Native Language Support	Providing the ability to change the language of software tools in order to support native languages (English is basis, others are optional)
OPC		OLE for Process Control, an industrial standard for exchange of information between components and process control application
PCS	Process Control System	High level process control system
PLC	Programmable Local Controller	Low level control unit

Abbreviation	Term	Description
	PROFIBUS-DP	Fieldbus communication protocol with cyclic data transfer (V0).
	PROFIBUS-DP/V1	Fieldbus communication protocol, extension of PROFIBUS- DP allowing acyclic data transfer and multi master (V1).
	PROFIBUS-DP/V2	Fieldbus communication protocol, extension of PROFIBUS- DP allowing time stamp and communication between master and slave (V2).
RCU	Remote Control Unit	Local control unit with pushbutton and indicator to operate a device (e.g. motor) from field level.
RS232		Standard No. 232 for PC communication, established by EIA (Electronics Industries Association, USA)
RS485		Communication interface standard from EIA (Electronics Industries Association, USA), operating on voltages between 0V and +5V. RS-485 is more noise resistant than RS-232C, handles data transmission over longer distances, and can drive more receivers.
RTC	Real Time Clock	Integrated clock function in devices used to generate time and date information if a remote clock system is not present
	Software Local	A Control Access term describing that the M*Control* accepts its commands from the hardwired inputs as a result of either the PCS or M*View* passing the Control Access Authority to Soft-Local. Note: Does not require the hardwired local input to be set to true.
SNTP	Simple Network Time Protocol	a protocol used for time synchronization in Control Network through Ethernet
	Switchgear Bus Network	Term used to describe the internal switchgear communication network, between M*Link* and M*Control*.
TCP/IP	Transmission Control Protocol / Internet Protocol	TCP/IP is a high-level connection oriented, reliable, full duplex communication protocol developed for integration of the heterogenous systems.
	Trip	A consequence of an alarm activated or an external trip command from another device to stop the motor or trip the circuit breaker.

Abbreviation	Term	Description
UTC	Coordinated Universal Time	Coordinated Universal Time is the international time standard. It is the current term for what was commonly referred to as Greenwich Meridian Time (GMT). Zero (0) hours UTC is midnight in Greenwich England, which lies on the zero longitudinal meridian. Universal time is based on a 24 hour clock.
	Warning	A warning is defined as status transition from any state to pre-alarm state to inform in advance before an alarm level is reached.

Related Documentation

MNS *i*S

1TGC910127 M0201 MNS *i*S Interface Manual M*Link*, Release 5.4

1TGC910137M0201 MNS *i*S Interface Manual Web Interface, Release 5.4

1TGC910157 M0201 MNS *i*S Interface Manual Profibus, Release 5.4

1TGC910167 M0201 MNS *i*S Interface Manual Modbus, Release 5.4

1TGC910187 M0201 MNS iS MControl Interface Manual Profibus Direct, Release 5.4

1TGC910001 B0204 MNS *i*S System Guide

1TGC910609 M0201 MNS *iS* Quick Guide Installation and System Setup, Release 5.4

1TGC910069 M0201 M*Navigate* Help file V5.4

1TGC910018 M0202 MNS *i*S ATEX – Enhancements for Safety

PROFIBUS

[1] Profibus Specification Slave Redundancy TC4-04-0001

Related System Version

The content of this document is related to MNS *i*S System Release 5.4/0.

The described functions are designed but may not be fully implemented in all details. Please refer to the current system guides and release notes regarding possible restrictions.

Document Revision History

Introduction

Redundancy

Redundancy in communication systems and fieldbus technology allows data communication between a PLC or PCS master to slave devices on two independent communication links. This may be required if a higher availability of the communication link is required. The M*Link* device in MNS *i*S is a slave device on the fieldbus (PROFIBUS or MODBUS), to which the following types of redundancy are applicable:

Line Redundancy

In this case, the cable connection between a fieldbus master and slave devices is doubled. Two independent cables are used and routed through the plant on different cable ways. This redundancy requires third party hardware. No additional components and configuration is required in MNS *i*S.

Slave Redundancy

In slave redundancy, two slave devices are used on separate cable connections to the fieldbus master. MNS *i*S allows redundancy incorporated in a fieldbus system as Slave Redundancy by using two M*Link* modules.

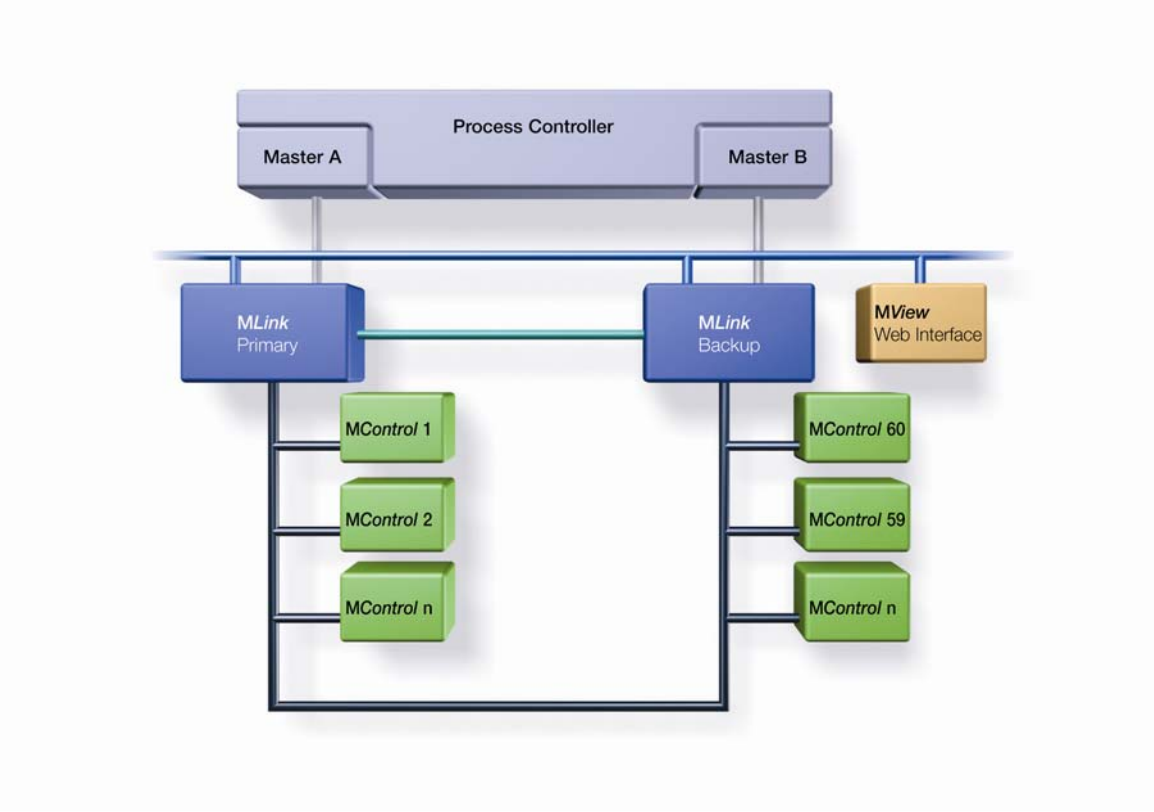


Fig. 1 MNS *i*S Redundancy

Redundant OPC Servers are not supported.

MNS iS Hardware Requirements

The redundancy is available for M*Link* Types:

Profibus DP and DP-V1:	1TGE102019R1001	
Modbus RS232 and TCP:	1TGE102019R2300	
Modbus RS422 and TCP:	1TGE102019R4200	
Modbus RS485 and TCP:	1TGE102019R4800	
Redundant Link cable	1TGE120109R0002	2m
Redundant Link cable	1TGE120109R0003	3m
Redundant Link cable	1TGE120109R0005	5m
Redundant Link cable	1TGE120109R0010	10m
Ferrite Core	1TGB000197P0001	Required for redundant link cables.

MNS iS Software Requirements

Redundancy requires MNS *iS* Release 2.0 or higher.

Basics

Redundancy Requirements

The primary M*Link* polls the M*Controls* via Switchgear Bus and is responsible for writing the switching commands, as well as reading the information fed back from the M*Controls* via the M*Link*. The Backup M*Link* reads the information only, and is inhibited from writing switching commands.

A redundant system does not tolerate single failure. Following theoretical failure situations are covered by a redundant MNS *i*S system.

On an active communication link:

1. Failure in a PLC fieldbus master or
   failure in a fieldbus cable connection between one master and slave
2. Failure in a M*Link or* failure at the switchgear bus connection to a single M*Link.*

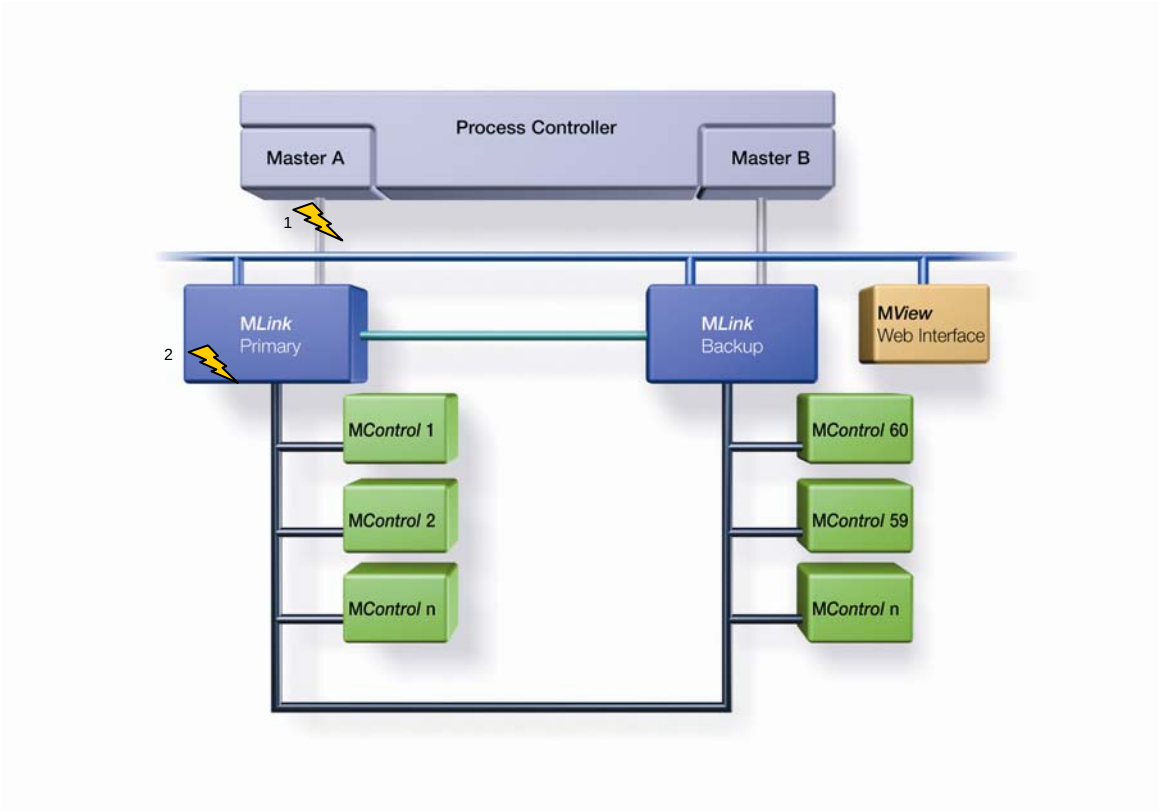


Fig. 2 Theoretical failure situations in a redundant MNS *i*S system

If a failure is detected, from one of the 3 cases detailed above an integrated system mechanism in MNS *i*S ensures a bumpless changeover from the 'Primary' M*Link* to the 'Backup' M*Link*. All process data, alarms and events and the system status information is then available from the 'Backup' M*Link*.

Figures 2-6 show representations only of both the Switchgear Bus and Fieldbus connections to M*Link*. For more details on the Switchgear Bus please refer to the section later in this manual. For more details on Modbus and Profibus please refer to the User Manuals

Fault detection and change over

If the fieldbus communication between Primary M*Link* and Process Controller fails and fieldbus connection between the Backup M*Link* and Process Controller is healthy, then the Primary M*Link* and the Backup M*Link* execute a 'Bumpless' changeover.

The primary M*Link* polls the M*Controls* via Switchgear Bus and is responsible for writing the switching commands, as well as reading the information fed back from the M*Controls* via the M*Link*. The Backup M*Link* reads the information only, and is inhibited from writing switching commands.

If we take fig 2 as an example, and the communication is lost between the 'Master A' controller and the 'M*Link* Primary', (case 1), and the communication between the 'Master B' controller and the 'M*Link* Backup' is healthy. Then the system will initialize the changeover, resulting in;

Process Controller 'Master B' now having read / write access.

What was the 'M*Link* Backup' now becomes the active M*Link*, responsible for sending Control commands.

Fault indication that there is a redundancy problem, is then given by the serial link, to the 'Master B' controller, it is also displayed via the Web Interface, and LED indication is given by the Backup M*Link*.

The same handling also applies for cases 2 and 3 previously detailed.

The fieldbus data values sent from the Backup M*Link* are frozen at the time of the change over. This is to ensure that the fieldbus communication is available at any time for another change over.

When the communication is then restored between 'Master A' and the Primary M*Link*, the redundancy fault indication will then be cleared. The system is then again running in the redundant mode, with the 'Master B' Process Controller having read / write access, and 'Master A' having read access only.

It is possible to initiate a changeover of the Master Controllers, providing all communication links are healthy, for more details please refer to the Modbus and Profibus User Manuals.

Redundancy Configuration

There are three options available to connect PLC or PCS to both M*Link*

- One PLC / PCS connected to both M*Link*, as described in [1]
- One PLC / PCS with at least redundant (two) master interfaces
- Redundant (two) PLC / PCS (redundancy handled in PLC or PCS only)

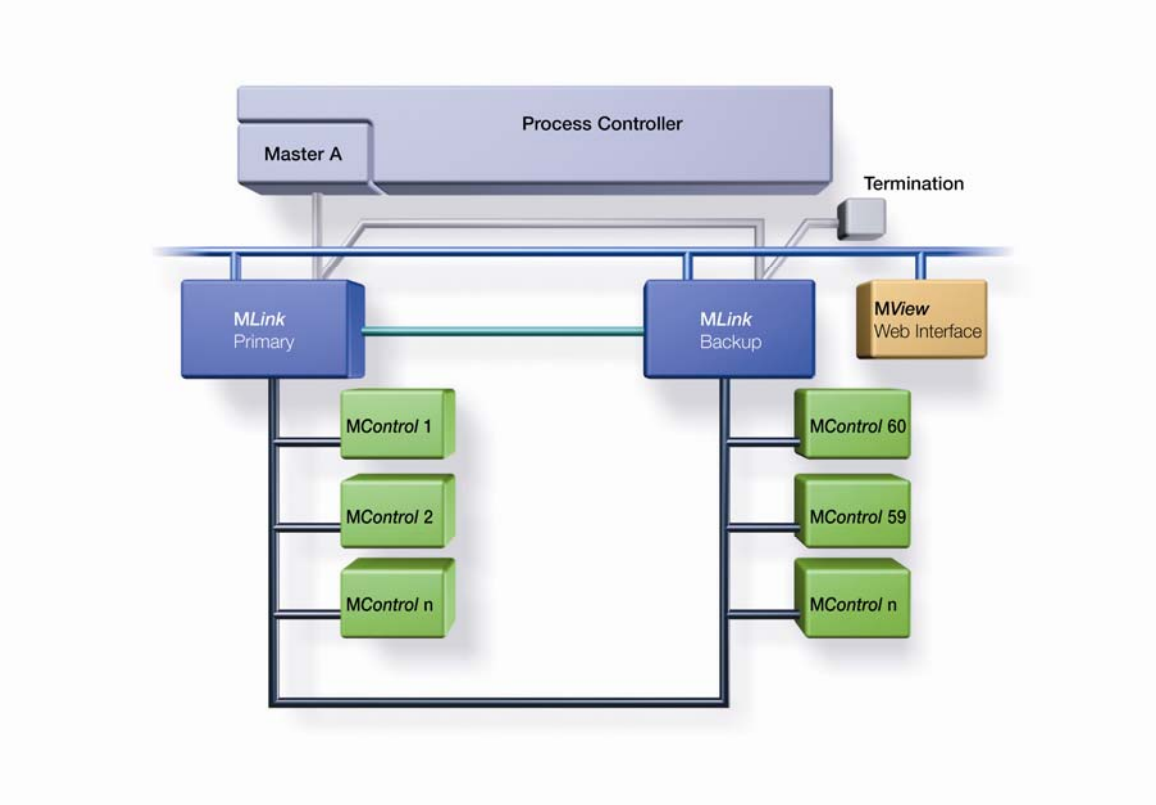


Fig. 3 One PCS is connected to both M*Links* (Modbus RTU or Profibus DP)

This redundancy is described in [1]. The PLC / PCS master device is capable of communication to two slave devices with different fieldbus addresses.

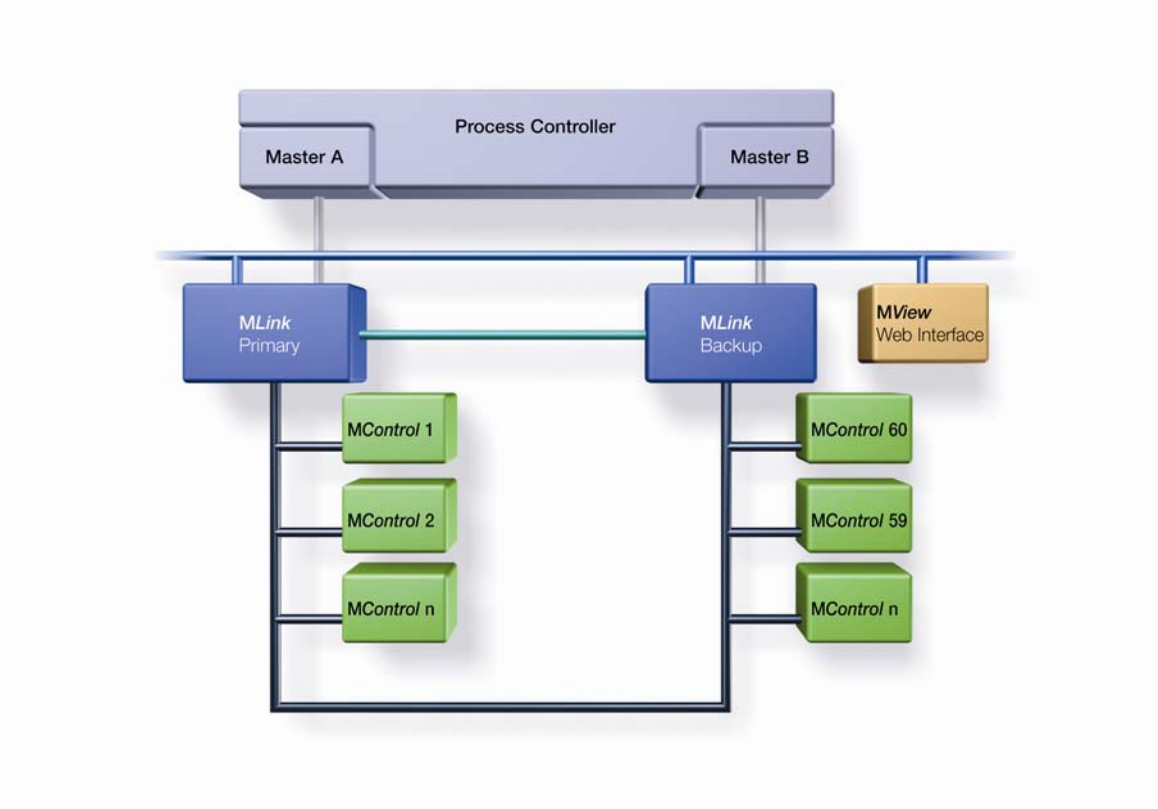


Fig. 4 Two DCS - each is connected to one M*Link*

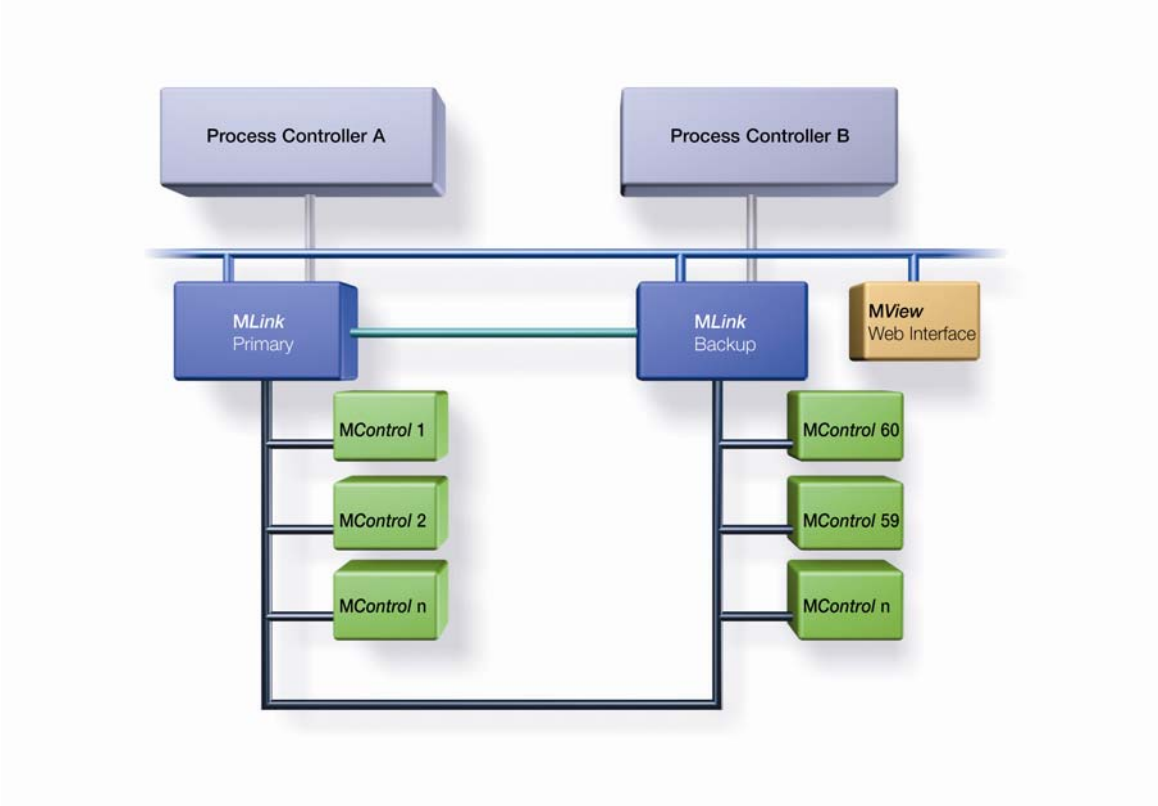


Fig. 5 Two Process Controllers - each is connected to one M*Link*

Primary and Backup MLink

Redundancy is provided by using two M*Links* connected as shown below in figure 6. These are configured as Primary and Backup in the M*Navigate* parameterisation software, please refer to the section 'Redundancy Setup' for more information. The Primary and Backup M*Links* are connected together within the switchgear by a data synchronisation link, and also by the Switchgear Bus.

The primary M*Link* polls the M*Controls* via Switchgear Bus and is responsible for writing the switching commands, as well as reading the information fed back from the M*Controls* via the M*Link*. The Backup M*Link* reads the information only, and is inhibited from writing switching commands.

The M*Links* synchronize information about:

- Status of PLC or PCS connection
- M*Link*
- Configuration settings for redundancy in M*Link*.

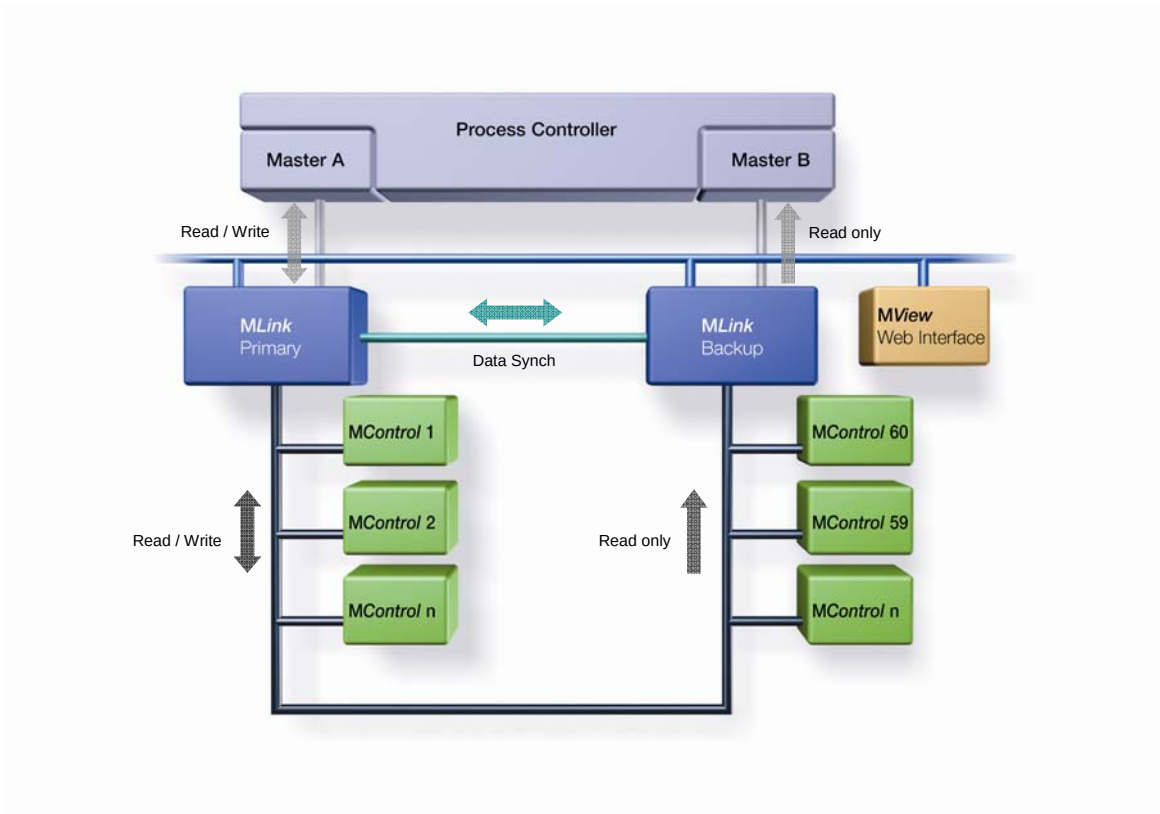


Fig. 6 M*Link* Primary and Backup data and information flow

Interfaces

MLink connectors

M*Links* that are used in redundant configuration, differ from those in non redundant configurations, where an additional connector (Serial 1) is utilized.

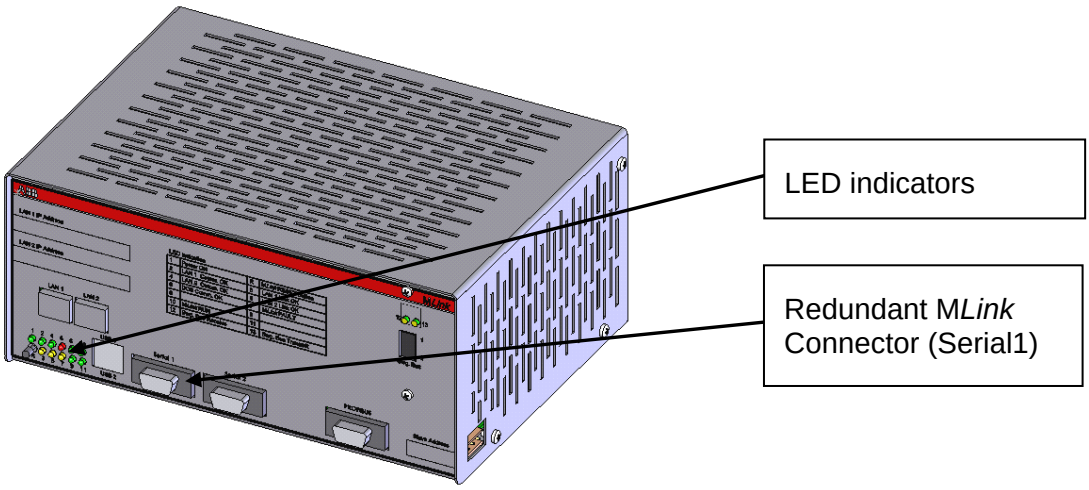


Fig. 7 M*Link* front view with redundancy link connector

The LED indication on the front side of M*Link* has been extended with following functions to indicate the redundancy status:

LED Number	Description
7	Redundancy Error
8	M*Link* running as Primary

Table 1 LEDs for Redundancy Indication (Only valid if LED 10 is on)

Redundancy MLink connection

Both M*Links* must be connected together to enable data synchronization via a RS232 Null Modem cable from serial port 1 to serial port 1 to ensure correct operation. ABB part numbers for these cables and the associated ferrite core are given in the section 'MNS *iS* Hardware Requirements'

Fig. 8 Serial 1 to serial 1 Redundant link connections with ferrite core.

The length of this cable should not exceed 10 meters

Switchgear Bus connection

In a dual redundant configuration both M*Links* are connected to the Switchgear Bus for communication to M*Control* devices. The maximum numbers of M*Controls* connected to both M*Links* is 60, the maximum allowable number of panels is 7, and the maximum switchgear bus cable length is 30m, not including backplanes.

The Switchgear Bus must be terminated at both ends of the line, with the active bus termination resistors. This differs from non redundant systems where only one terminating resistor is required.

Approved redundant topologies.

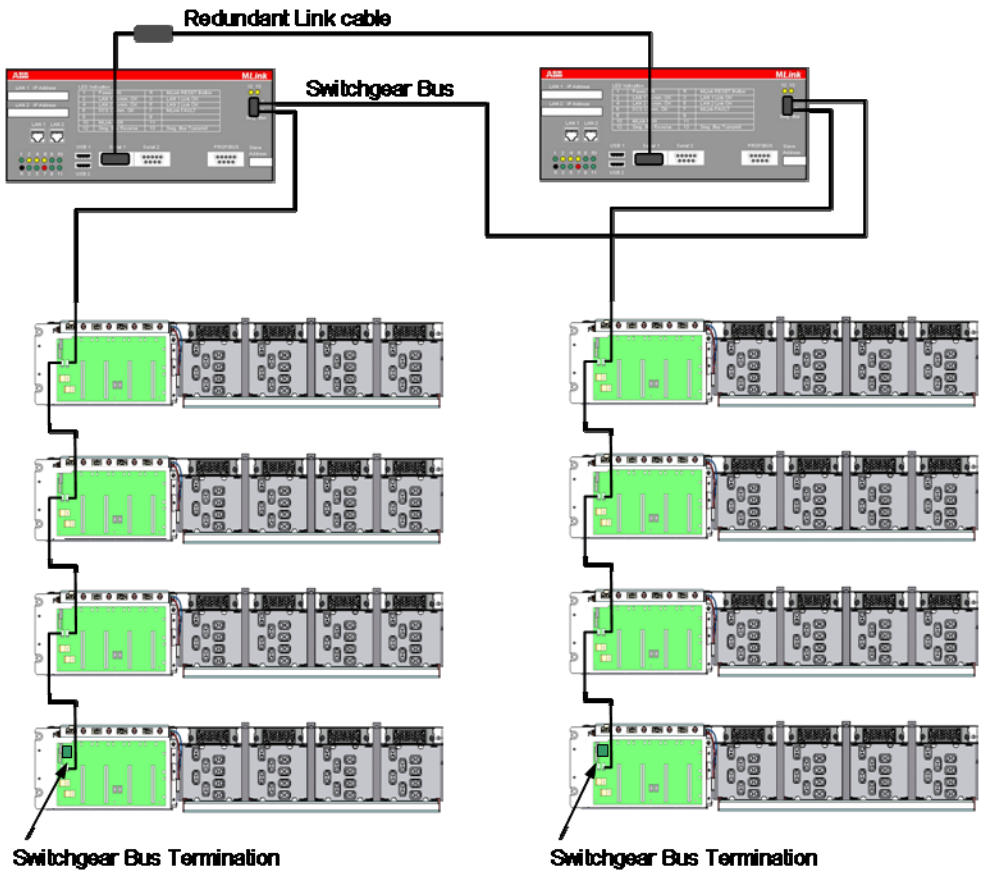
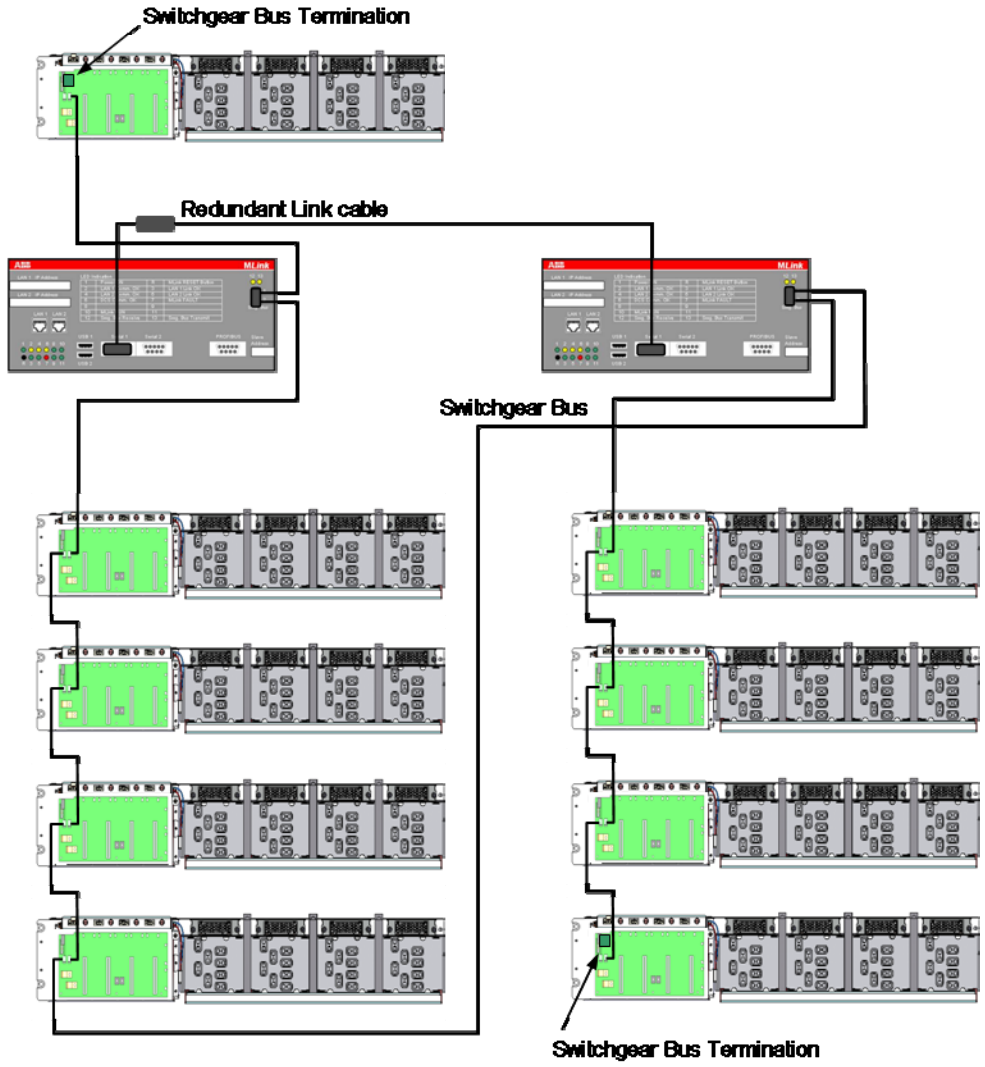


Fig. 9 Redundant M*Links* sample topology example 1



Note: Redundant Bus topology requires a two Bus termination resistors, one a each end of the bus.

Fig. 10 Redundant M*Links* sample topology example 2

The two M*Links* can be installed at any point on the Switchgear Bus network between the control condaptors fitted with the Switchgear Bus termination.

Observe the different order codes for redundant and non-redundant M*Link*.

Ethernet network connections

The Ethernet network used in MNS *i*S (Switchgear Control Network) connects all M*Link* to M*View* and M*Navigate* and the OPC Server. It is connected to LAN 2 port on the M*Link*. In a redundant configuration the pair of Primary and Backup M*Link*s must be connected to the same network (via managed switches) in order that the redundancy handling for the M*View* functions correctly.

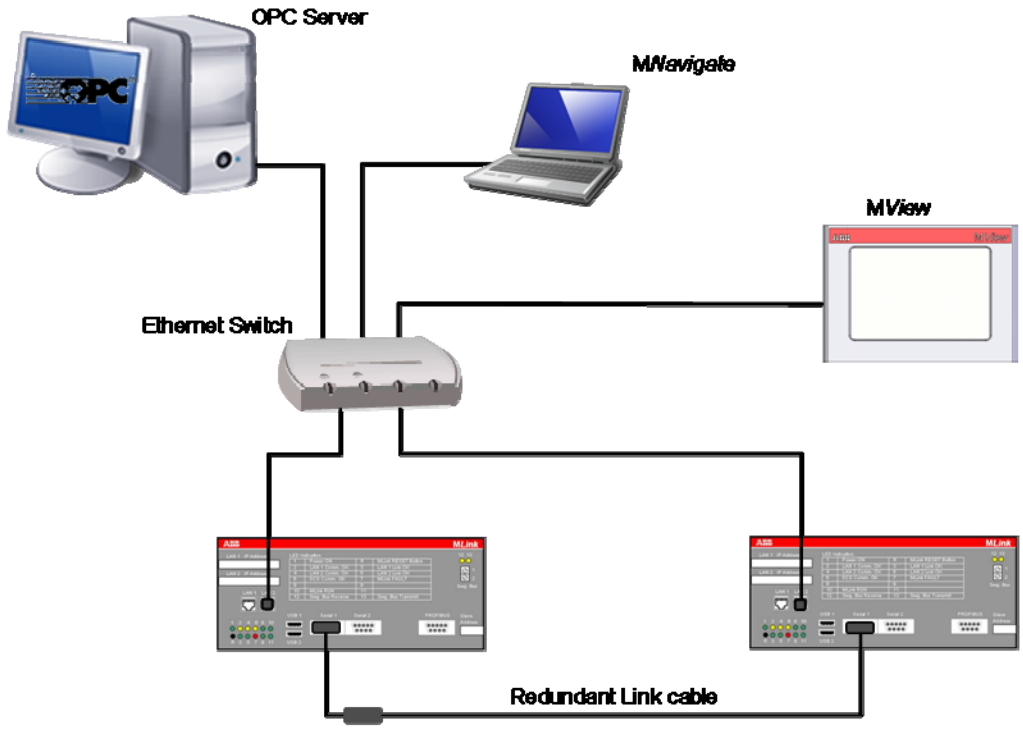


Fig. 11 Switchgear Control Network

Switchgear Control Network Restrictions

In order to achieve maximum performance from the interfaces on the Ethernet Switchgear Control Network it is not recommended to exceed the following

2 x Web Interfaces (M*View*)

1 x M*Navigate* client

1 x OPC DA Server

1 x OPC AE Server

Redundancy Setup

MNS *iS* dual redundancy requires following hardware setup and configuration parameters.

Hardware Setup

1. Connect both M*Links* by redundancy link (RS232 Null Modem cable).
2. Connect Switchgear Bus to both M*Links*, Control Condaptors and terminate Switchgear Bus at both ends of the line.
3. Connect M*View* and M*Navigate* via Ethernet using network switches.
4. Connect PLC or PCS as required in the project.

Parameter Setup

Configuration of parameters is handled via M*Navigate*. These parameters must then be downloaded to both the Primary and Backup M*Links* for the settings to take effect. The majority of these parameters for the M*Link* are identical; address settings could differ depending on project requirements.

1. Set the Ethernet IP address of LAN1 and LAN2 for Primary and Backup M*Link*.

Fig. 12 IP address of Primary and Backup

It is essential that the IP address setting for LAN 2 (IPAddressEth0) of Primary and Backup M*Links* is different. The same subnet mask is used because both Ethernet ports are connected to the same Ethernet network for M*View* and M*Navigate* communication.

2. Set the slave address for PROFIBUS, ModbusRTU or ModbusTCP.

Fig. 13 Configure field bus address of Primary and Backup

Initial Values

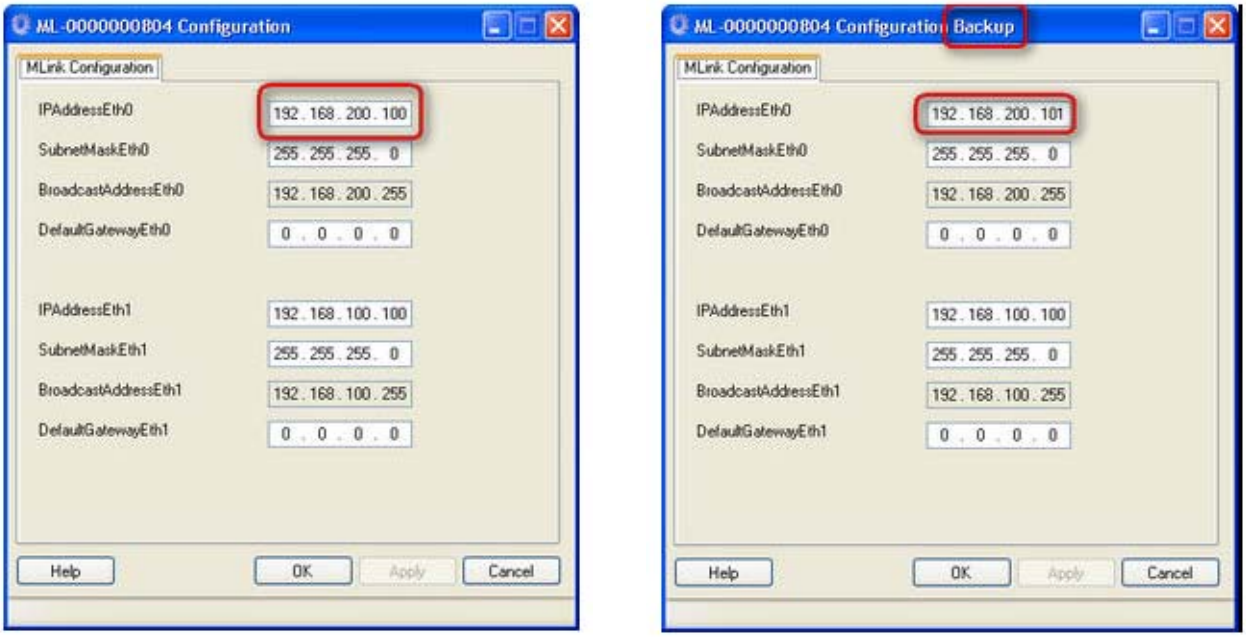


Fig. 14 M*Link* Configuration Initial Values

Variable Name	Default Parameter	Remarks
IP Address Eth1 (LAN 1)	192.168.100.100	Primary
IP Address Eth1 (LAN 1)	192.168.100.100	Backup
IP Address Eth0 (LAN 2)	192.168.200.100	Primary
IP Address Eth0 (LAN 2)	192.168.200.101	Backup
MODBUS RTU / TCP Slave address	1	Primary and Backup
PROFIBUS Slave address	3	Primary and Backup

Table 2 Initial values (fieldbus addresses are applicable for the selected protocol only)

The settings must be adjusted to the project requirements and may be different from above initial values.

Both M*Links* require a correct IP address setting. If IP address LAN 1 (IPAddressEth1) is used for Modbus TCP, then this LAN address must also be different from that of the settings for LAN 2 (IPAddressEth0).

Redundancy Functions

Handled faults

Both M*Link* supervise at all times the redundancy conditions, detecting faults and problems according following table.

Event	Action
PLC or PCS connection interrupted for more than 1 second to Primary M*Link* Note : For Profibus the additional time of Profibus watchdog is set by the DCS	Redundancy change over if backup M*Link* has a active PLC or PCS connection
Power loss or internal error of Primary M*Link*	Redundancy change over, Redundancy error indicated
Power loss of backup M*Link*	No change over, Redundancy error indicated
Redundancy link cable broken	Redundancy error indicated
Problems in redundancy setup	No change over possible, Redundancy error indicated
Switchgear Bus at Primary M*Link* disconnected (e.g. plug removed)	Redundancy change over

Table 3 Handled faults

A change over from Primary to Backup M*Link* will only be performed if there is no redundancy error.

Failsafe

The M*Controls* can be configured to switch into a safe state (failsafe parameter) if both PLC / PCS connections are disturbed longer than the parameterized PLC Time Out. See the respective MNS *i*S Interface Manuals Modbus and Profibus as well as the M*Navigate* help files for further failsafe details.

PLC / PCS Data Communication

Both Primary and Backup M*Links* are communicating to the PLC or DCS. The Primary M*Link* sends and receives data from PLC while the Backup M*Link* sends only data to the PLC. The PLC must interpret the data registers to detect which is the Primary and which is the Backup M*Link*.

MODBUS RTU and TCP

Default data mapping uses following registers:
Register Number: 12001 – If register is set M*Link* is Primary
Register Number: 12002 – If register is set M*Link* has redundancy error

PROFIBUS DP and DP-V1

Default data image uses the following bytes/bits:
Byte number 243, Bit 0: If bit is set M*Link* is Primary
Byte number 243, Bit 1: If bit is set M*Link* has Redundancy Error

See the respective MNS *i*S Interface Manuals Modbus and Profibus manuals for further details.

If user data mapping is used, it is a basic requirement that this data is provided.

PLC / PCS Handling of Redundant Configurations

The PLC or PCS must interpret the M*Link* redundancy status registers to determine which M*Link* is the Primary M*Link*, and in the event of a changeover being initiated by the M*Links* the PLC or DCS should react accordingly.

PLC / PCS Command for MLink change over

The PLC application can also force the Primary M*Link* in a redundant system to change over to the Backup M*Link*.

MODBUS RTU and TCP

Default data mapping uses the register 44001 for change over commands from PLC:
A value 0x0001 must be sent to that register to force the PLC MODBUS master to change over to the slave in order to communicate with the new Primary M*Link*.

PROFIBUS DP and DP-V1

Default data image uses following bytes/bits to change over:
Byte 124, Bit 0 – Setting to 1 initiates a redundancy change over

If user data mapping is used, it is a basic requirement that this data is provided.

MView / Web Interface

In a dual redundant configuration the M*View* is connected via the same Ethernet network to both Primary and Backup M*Link.* (See Figure 10 Switchgear Control Network)

If a change over takes place, the M*View* is automatically redirected to the Primary M*Link* without user interaction. While redirecting, the M*View* shows the following window: Prior to the re-direction the background in M*View* changes to yellow, this indicates that current Web Interface is connected to the Backup M*Link*. One it has redirected to the Primary the background returns to it's usual colour as below.

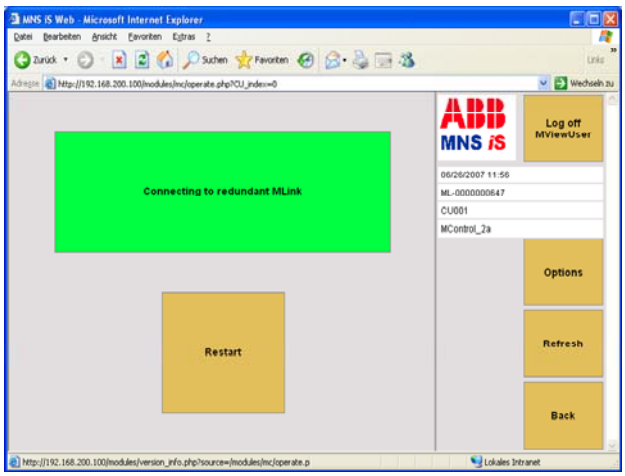


Fig. 15 M*View* redirecting to new primary M*Link*

It is not recommended to use more than two M*Views* or web interfaces per redundant pair of M*Links*, as this may affect the performance on the Switchgear control network.

If the Backup M*Link* fails, a change over to the other MLink is not possible in case of an redundancy failure and the M*View* shows a red square on the text window:

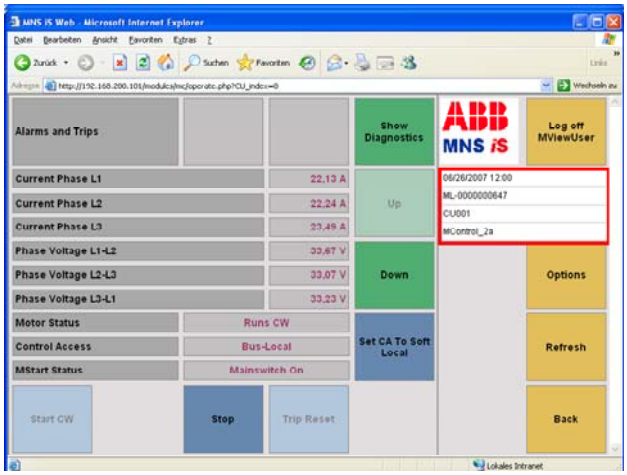


Fig. 16 Redundancy error shown in M*View* by a red square

For more details refer to the MNS *i*S Web Interface Manual.

Troubleshooting and Maintenance

M*View* or M*Navigate* can not communicate with both M*Links*:

- Check Ethernet cabling, IP address settings and network switch functionality

Redundancy Difference Report

M*Navigate* has the functionality to generate a report listing differences between primary and backup M*Links* any difference between the two can result LED 7 indication. These differences should be rectified before proceeding with other trouble shooting.

M*View redundancy Status*

It is possible to further review the redundancy status, this can be found utilizing M*View*. Please refer to the MNS *i*S Web Interface Manual for how to find the following information.

Fig. 17 Redundancy status displayed by M*View*

LED - Status Information

The M*Link* redundancy is monitored by the status LED 8 and 7 on the front of the M*Link.* For more detailed information on LED status please refer to the MNS *i*S Interface Manual M*Link*.

If LEDs 7 and 11 are on:

Please check the redundancy report in M*Navigate* and that:

- Both M*Links* are powered on and running.
- Null Modem cable connection - redundancy link between both M*Links.*
- Switchgear Bus connector and cable attached in a proper way to both M*Links.*

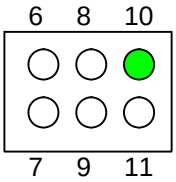
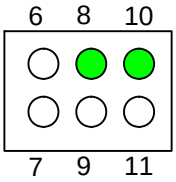
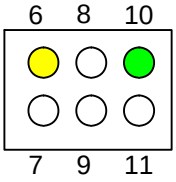
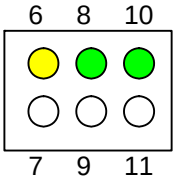
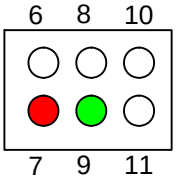
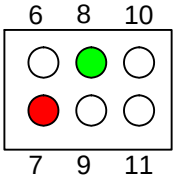
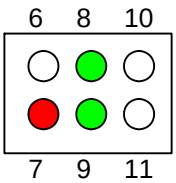
Following a re-boot it could take up to 5 minutes depending on numbers of M*Control* and size of user data mapping table until the M*Link* PLC application is running and LED 7 is off.

In case LED 8 is flashing on both M*Links*:

- The M*Link*s are continuously monitoring the M*Control* connection. If no M*Control* is connected to the M*Link*, a change over between both M*Link* is executed every 2 seconds, because neither M*Link* receives responses from a single M*Control*.
- Also occurs if only one M*Control* is connected and an application download is currently in progress (when booting after download, the connection to M*Link* is reset).
- Also occurs if multiple M*Control* are connected and a multiple download is currently in progress.

(cont)

LED indication

LED indication	Description	Additional information / Actions
	M*Link* is running Ok.	
	M*Link* is running Ok.	LED 8 M*Link* is Primary in Dual Redundant configuration.
	M*Link* is running Ok.	LED 6 DCS communication active
	M*Link* is running Ok.	LED 6 DCS communication active LED 8 M*Link* is Primary in Dual Redundant configuration.
	M*Link* missing application files	**Possible cause could be a interrupted or disturbed communication between M*Navigate* and M*Link* while downloading.** Please use M*Navigate* to download the M*Link* configuration again.
	Error in M*Link* XML Configuration file	**Possible cause could be a interrupted or disturbed communication between M*Navigate* and M*Link* while downloading.** Please use M*Navigate* to download the M*Link* configuration again.
	Error in M*Link* XML Parameter file	**Possible cause could be a interrupted or disturbed communication between M*Navigate* and M*Link* while downloading.** Please use M*Navigate* to download the M*Link* parameter again.

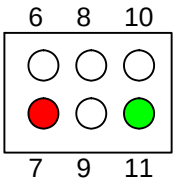
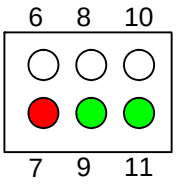
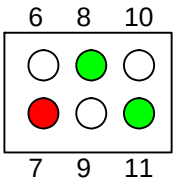
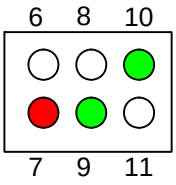
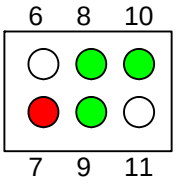
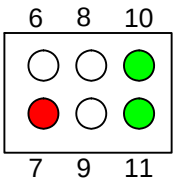
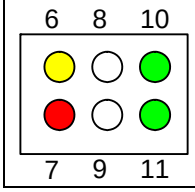
	Internal M*Link* error	M*Link* is not able to create internal database. Please reboot the M*Link*. If that doesn't resolve the problem use M*Navigate* to download the M*Link* configuration again.
	Xml file missing	During startup M*Link* is checking if all required xml files are available. In case of a missing file that error is indicated. Please use M*Navigate* to download the M*Link* configuration again.
	Network configuration error	M*Link* is not able to configure the IP settings as mentioned in configuration file e.g. due to wrong setting of Default Gateway parameter for that Ethernet Interface. Please use M*Navigate* to check the settings and download the M*Link* configuration again. If a download is not possible please use a flash card reader (ref. to MNavigate Help or MNavigate Manual).
	General DCS fault (only available if configured)	Please check if M*Link* hardware (the identity number) matches to the project specification (e.g. Profibus M*Link* <-> Profibus project). Furthermore the DataMapping should be checked. Please use M*Navigate* to download the M*Link* configuration or download Mapping file again (ref. to MNavigate Help or MNavigate Manual).
	General DCS fault (only available if configured)	See above LED 8 M*Link* is Primary in Dual Redundant configuration.
	General redundancy fault (only available if configured)	Please use M*Navigate* to check the redundancy status (Redundancy Report) . If a mismatch was found please download the regarding file. For details please refer to MNavigate Help or MNavigate Manual.
	General redundancy fault (only available if configured)	See above LED 6 DCS communication active

Table 4 LED error indication

Contact us

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