Functional Description and Specifications

Version: 3.3

September 16, 2020

MTDoE

Interface for Communication and Synchronization of an MTDoE System

Option ‘M’ for IE and PM Modules

Supplement to “Functional Description and Specifications of RUB Ethernet Modules”

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A1 Revision History

No.	Date	Subject
0.n		Preliminary documents, changes without notice.
1.0	March 25, 2010	First released document.
2.0	September 25, 2012	Completely revised.
3.0	January 23, 2013	Revised.
3.1	February 22, 2013	This option is available for PM modules as well.
3.2	August 26, 2019	Changed address of Plura Europe GmbH.
3.3	September 16, 2020	Clarified that option M requires option N.

A2 Copyright

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A3 General Remarks

This manual is a supplement to the manual

"Functional Description and Specifications of RUB Ethernet Modules".

It describes a special feature for module **IE** or **PM**, realized by an optional firmware.

1 Overview

Plura has developed a system called the Multiple Time Display (MTD) system. An MTD system consists of a central generator unit, control units, digital displays and/or studio clocks. The central MTD generator (RUB GT) is the time & date reference and manages stop timers.

The **MTDoE** system utilizes the Ethernet to transport the MTD data as well as to communicate between control units and central generator. The central generator transmits MTD data to the Ethernet module (**RUB IE** or **RUB PM** with **option M**) via the internal *TC_link* interface of the RUBIDIUM system, the Ethernet module then opens the gates to the network.

The MTD devices have to be synchronized to a common time base; this will be done utilizing the NTP method. The Ethernet module operates as the NTP server; NTP clients (even units which are not part of the MTDoE system) can choose this Ethernet module as their time & date reference. Thus, the option M requires option N to be installed, too.

Please refer to the following documents as well:

Concerning the Ethernet module:	„Functional Description and Specifications of RUB Ethernet Modules “.
Concerning MTDoE:	“MTD System“ manual.
Concerning NTP:	“NTP Server“ manual.

2 MTD

2.1 Set-Up of the Central MTD Unit

RUB GT module is the central generator of the MTD system.

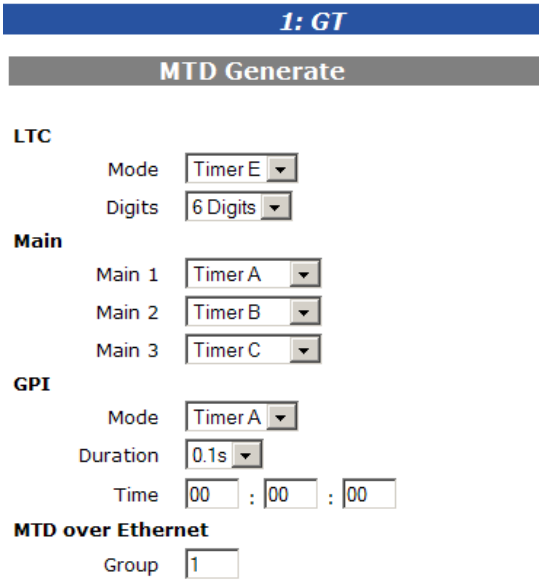
Details of configuration → *Functional Description and Specifications Module GT*.

Option "M" requires NTP Server functionality (option "N") to be installed, too.
Please refer to the operating manual *Functional Description and Specifications NTP Server* for examples of Rubidium systems with NTP functionality.

The **Group Number** has to be set at RUB GT:

Set-up "MTD Generate".

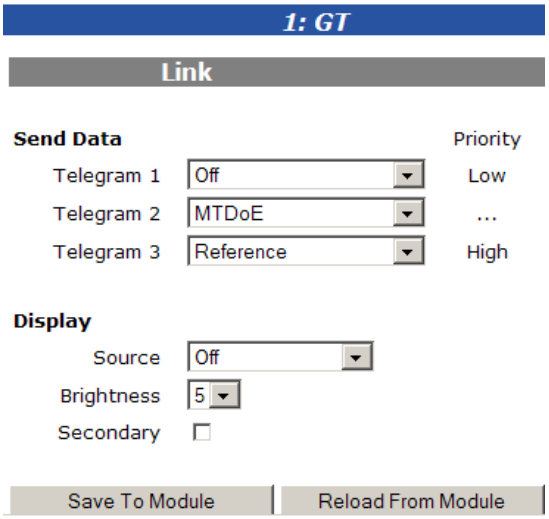
Example:
MTD over Ethernet "Group = 1".



RUB GT should send data via *TC_link* to the Ethernet module:

Enable telegrams **Reference** and **MTDoE**.

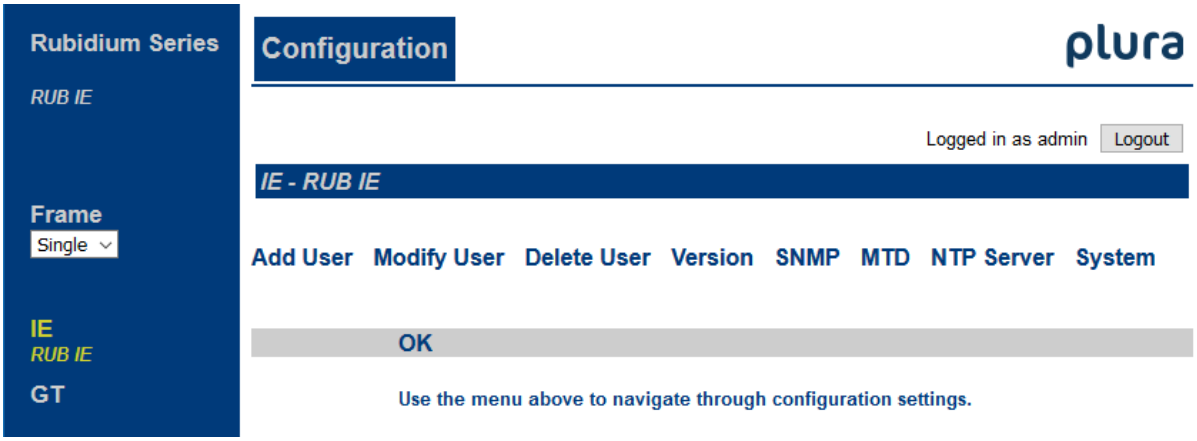
Optionally another telegram can be selected as **Gen**, if any AT/DT/HT/XT or AV/DV/HV/XV module is part of the system. These modules can visibly insert a time, a date, or a stop timer. Using this telegram, such a module can receive data from GT without external cable connection. Software version 2.12.33 or higher enables these modules to decode the "MTDoE" telegram, so in this case it may not be necessary to send a "Gen" telegram.



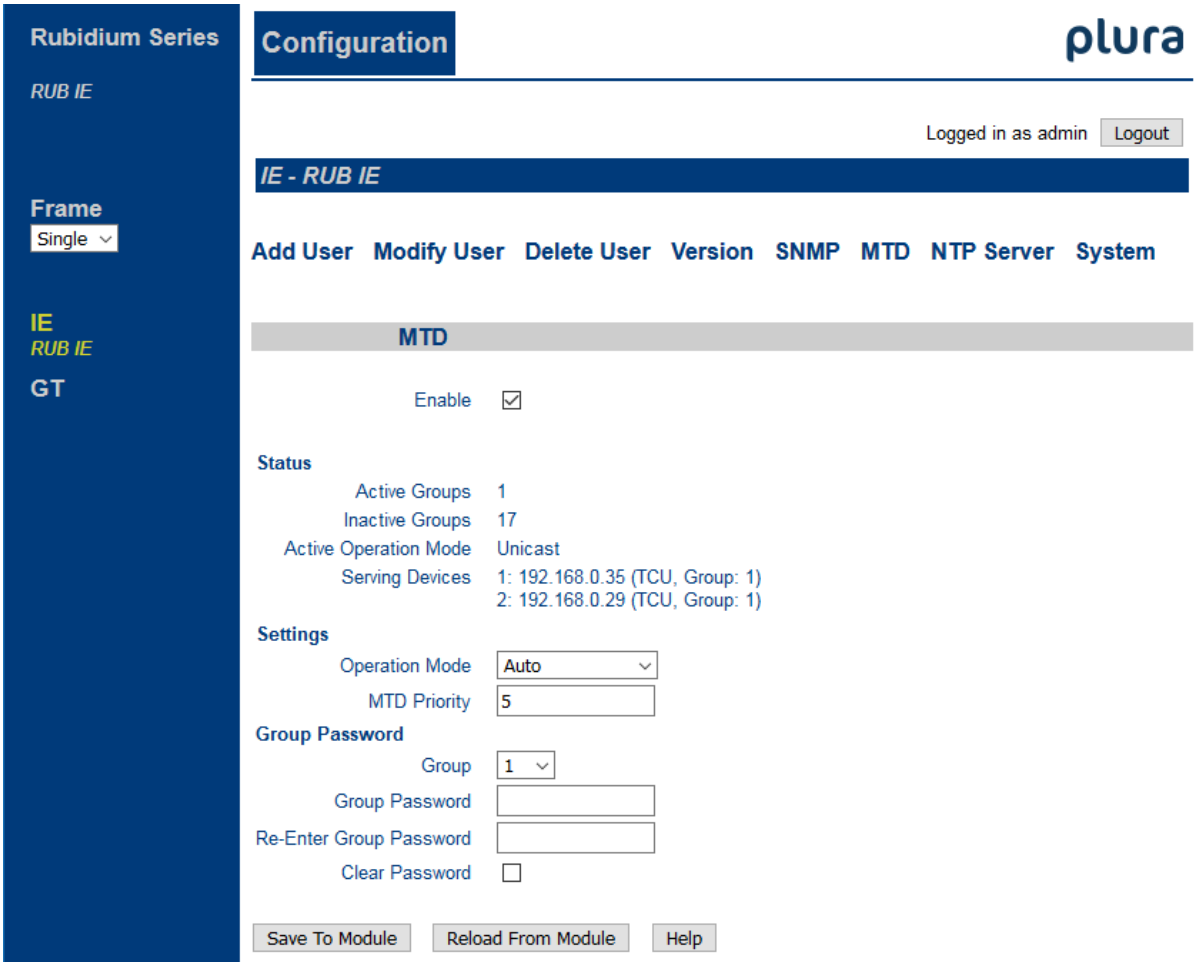
2.2 Open the MTDoE Configuration

Open the **Configuration** page with your browser.

Click on the **IE** or **PM** button to open the function menu of the Ethernet module.

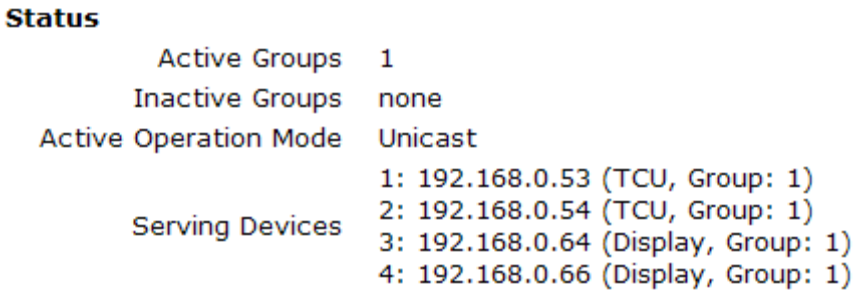


The "MTD" menu indicates status information and enables a basic set-up.



2.3 MTDoE Status

Shows some status information and enables to set up the network communication method.

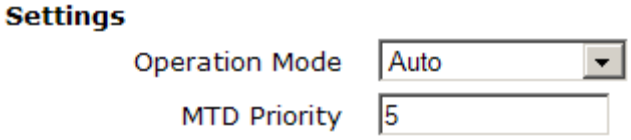


Active Groups Shows all active MTD groups. A group becomes "active" for this Ethernet module if this module receives data for this group from an MTD central generator and this module is responsible for the Ethernet communication of this group.

Inactive Groups Shows all inactive MTD groups. A group becomes "inactive" for this Ethernet module if this module receives data for this group from an MTD central generator, but another Ethernet module is responsible for the Ethernet communication of this group.

Active Operating Mode Indicates the selected or used transmission method.

Serving Devices Indicates all devices which are communicating with this Ethernet module.



Operating Mode *Unicast* and *Broadcast* describe the way of sending messages in computer networking. *Unicast* transmission sends a data packet to a single destination host; *Broadcast* delivers information to a group of destinations simultaneously. Please select:

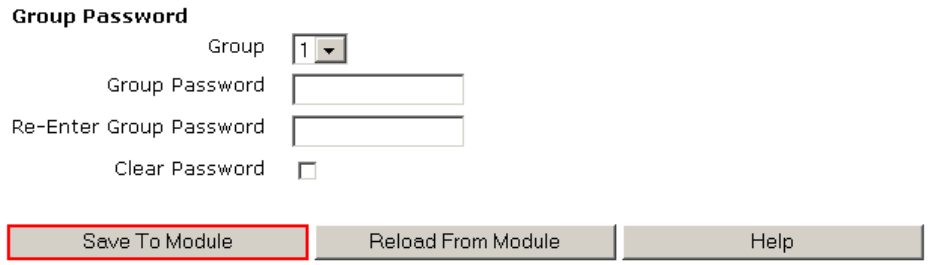
- Auto (= default)
- Broadcast local
- Unicast only
- Broadcast only

MTD Priority You can assign a priority to the Ethernet module. A higher value means higher priority. In a redundant system with two Ethernet modules in the same network that module with higher priority will be active.

After any change press the "Save To Module" button to store the entry.

2.4 Group Password

Any MTD group can receive a password. If a password has been set for a group, the **UD SC Config.exe** program has access to the devices of this group only if the password has been entered correctly.



After any change press the "Save To Module" button to store the entry.

3 Several MTDoE RUB Ethernet Modules in the same Network

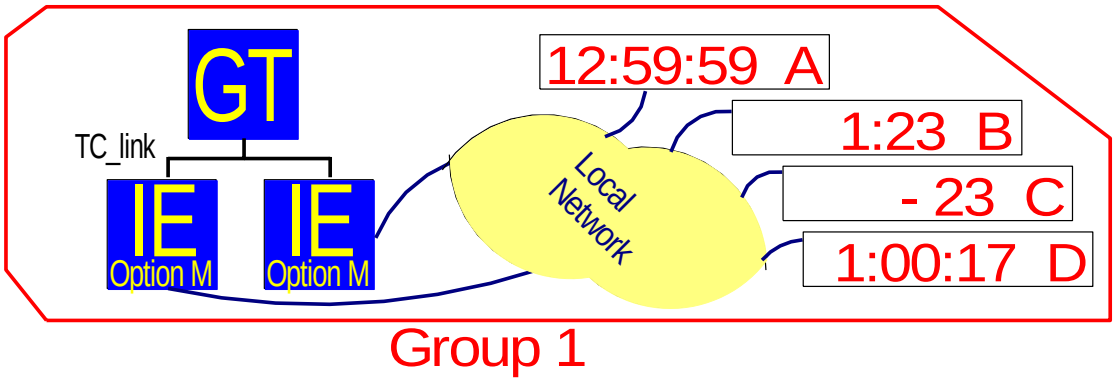
3.1 Redundant System for one MTDoE Group

Two Ethernet modules with option "M" can be installed to work in parallel. Both modules serve the same MTDoE group; there is only one MTD central unit active in use. Both Ethernet modules receive the same data via *TC_link*.

If both Ethernet modules are located in the same network, one module will be active; the other module will take over in case of a failure of the active module.

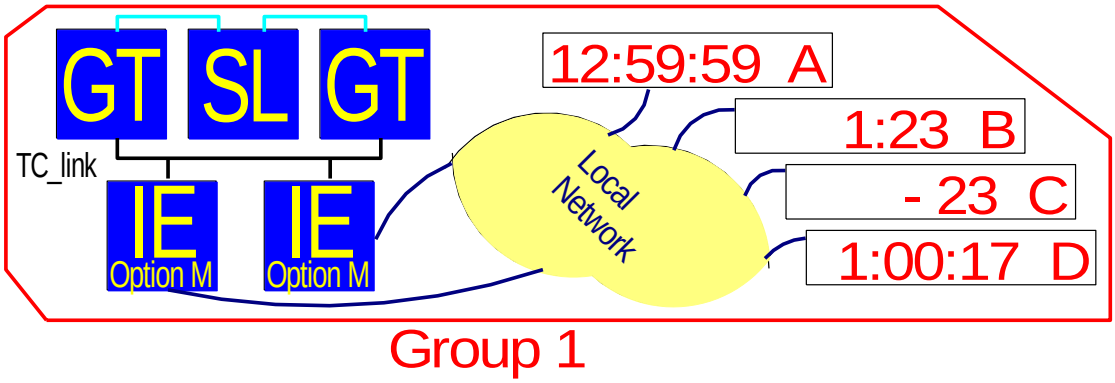
If the Ethernet modules are assigned to different networks, both modules will be active. Redundancy still is given because each MTDoE device knows the IP addresses of both Ethernet modules by manual set-up.

Example:



Even if there are two MTD central units for redundancy (two RUB GT modules + RUB SL as changeover unit), there will be one MTDoE group only. Both RUB GT modules have to receive the same set-up. Both RUB GT modules have to be connected to the RUB SL module. All modules have to be connected to the same *TC_link* interface.

Example:



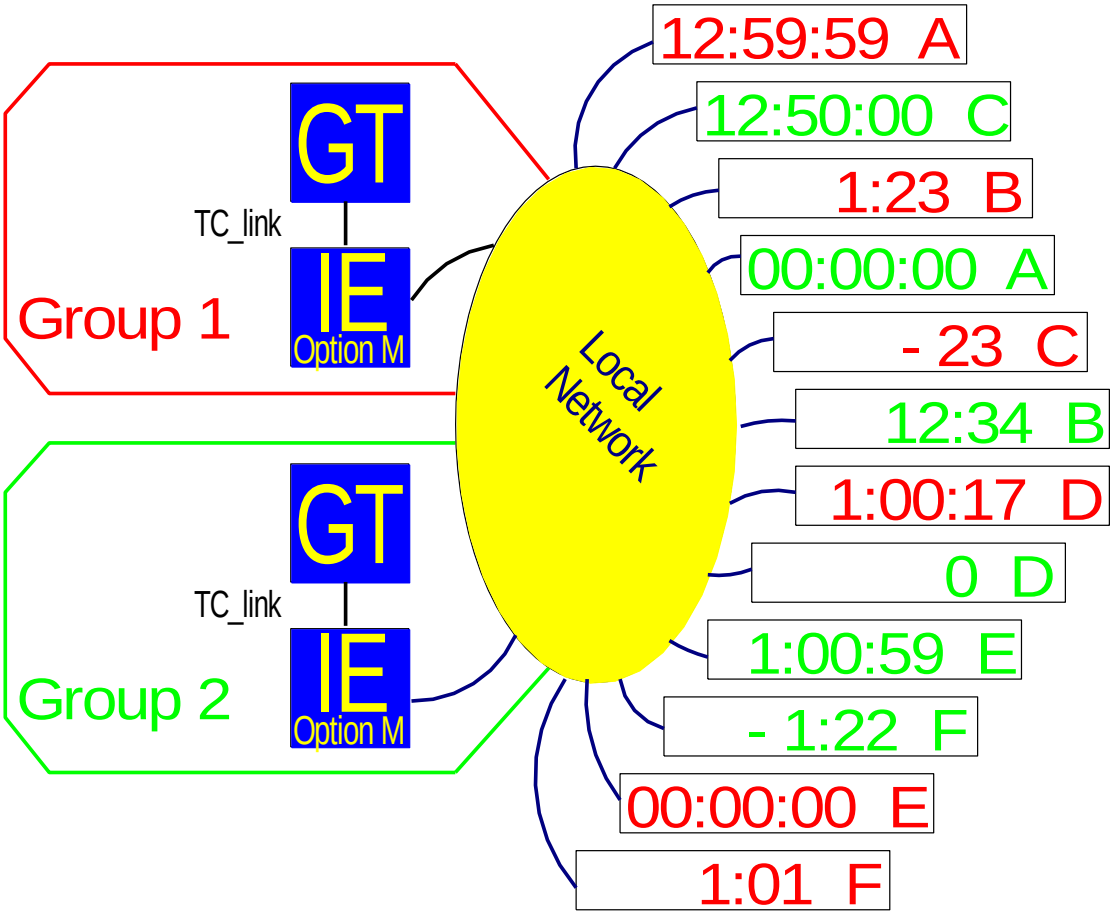
The NTP Server at each Ethernet module will be available always, regardless whether an Ethernet module is active or inactive regarding MTDoE operation. This applies to both installations shown in the examples above. Therefore, NTP Clients can access the one or the other NTP Server.

3.2 Two or more MTDoE Groups

Six independent timers are available in one group. If there is need for more than six timers, a second system can be integrated in the same network; this constitutes a different MTD group. Every MTDoE device (display, studio clock, control unit) must be assigned to a group, so it has access only to data of this group.

It is recommended to separate each MTD central unit and corresponding Ethernet module from further MTD central units and corresponding Ethernet modules. Do not connect systems to the same *TC_link* interface!

Example:



Each Ethernet module offers NTP Server functionality. Therefore, NTP Clients can access the one or the other NTP Server.

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