

# LabVIEW – MeCom Implementation

## Table of Contents

1	<b>Supported Devices .....</b>	<b>1</b>
2	<b>Basic Communication Settings.....</b>	<b>1</b>
2.1	Installation and Principle of FTDI USB Driver .....	1
2.2	Remote Control Documentation .....	2
2.3	Simultaneous supervision by LDD / TEC Service Software .....	2
3	<b>Sample Communication over COM Port .....</b>	<b>2</b>
4	<b>LabVIEW Implementation .....</b>	<b>3</b>
5	<b>Checksum (CRC16-CCITT) Calculation .....</b>	<b>3</b>
6	<b>Meerstetter MeComAPI .....</b>	<b>4</b>

## 1 Supported Devices

The present document is meant to provide some starting ideas for controlling the following Meerstetter devices using NI LabVIEW:

- LDD-Family Laser Diode Drivers (LDD-1121, LDD-1125, etc.)
- TEC-Family TEC Controllers (TEC-1089, TEC-1090, TEC-1122, etc.)
- LDD / TEC-Family Rack Enclosure LTR-1200

## 2 Basic Communication Settings

### 2.1 Installation and Principle of FTDI USB Driver

Installing the Meerstetter device's driver package as described in the user manual will have added a 'Virtual COM port' on the PC.

LabVIEW will be able to communicate with the given device in two ways:

- LabVIEW  $\leftrightarrow$  Virtual COM Port  $\leftrightarrow$  USB  $\leftrightarrow$  Device using MeCom commands
- LabVIEW  $\leftrightarrow$  FTDI USB chip drivers  $\leftrightarrow$  USB  $\leftrightarrow$  Device using MeCom commands

Communication over RS485 is possible, too. However, only USB communication over the virtual COM port is exemplified in this document.

## 2.2 Remote Control Documentation

Please refer to the chapter "*Remote Control / Bus Control by Communication Protocol 'MeCom'*" in the user manual of your TEC- or LDD-Family device.

The MeCom Protocol is described in the following documents:

General, all devices:

<http://www.meerstetter.ch/category/19-mecom-communication-protocol-specifications>

LDD-Family-specific:

<http://www.meerstetter.ch/category/18-ldd-family-communication-protocols>

TEC-Family-specific:

<http://www.meerstetter.ch/category/17-tec-family-communication-protocols>

## 2.3 Simultaneous supervision by LDD / TEC Service Software

LDD and TEC Service Softwares can be connected over RS485(2), as well. It is possible – and may be useful in a prototyping phase – to be connected 'twice' to a same device simultaneously. (Using different applications over different buses.)

In particular, one can use

*LabVIEW / Virtual COM Port / Device (MeCom)*

at the same time as

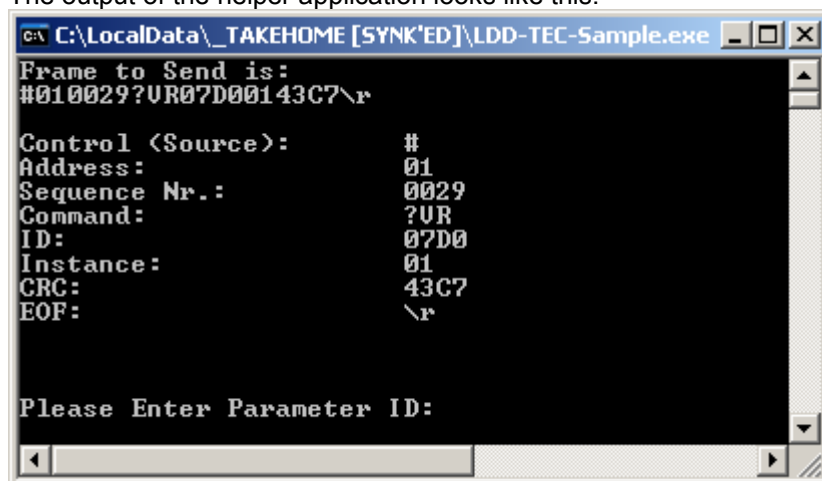
*Service Software / RS485(2) / Device*

## 3 Sample Communication over COM Port

Before communicating via LabVIEW, we suggest to try out communication through the COM port using a terminal application. Sample strings according to the MeCom protocol can be generated using the helper application LDD-TEC-Sample.exe.

<http://www.meerstetter.ch/category/28-mecom-ldd-tec-sample-incl-crc-gener>

The output of the helper application looks like this:



```
C:\LocalData\_TAKEHOME [SYNK'ED]\LDD-TEC-Sample.exe
Frame to Send is:
#010029?UR07D00143C7\r

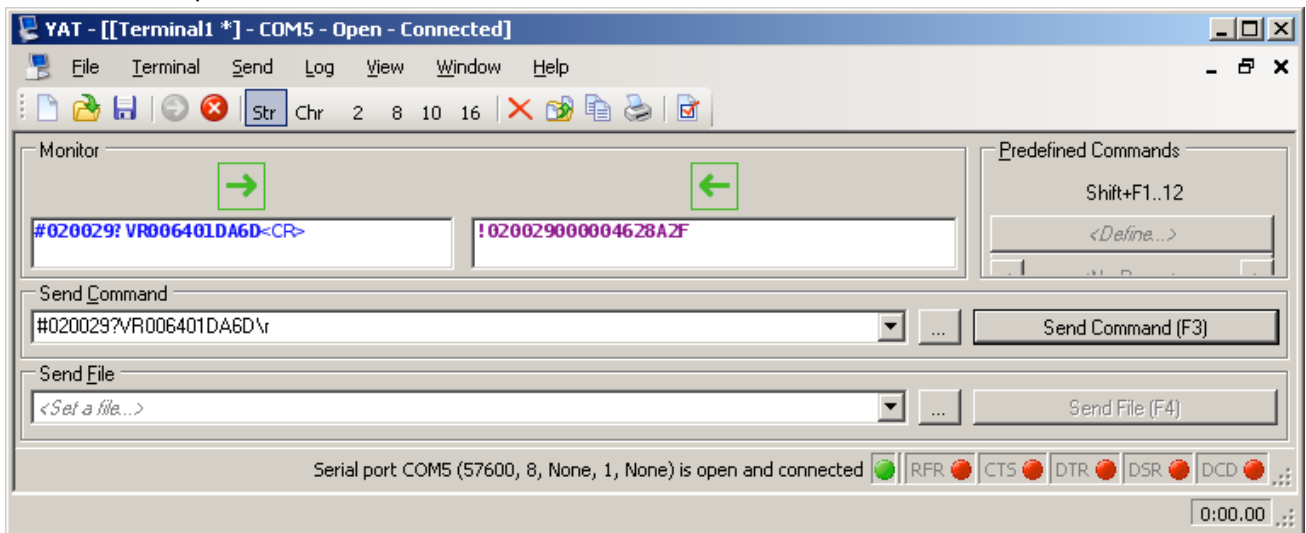
Control (Source):      #
Address:               01
Sequence Nr.:         0029
Command:               ?UR
ID:                    07D0
Instance:              01
CRC:                   43C7
EOF:                   \r

Please Enter Parameter ID:
```

Configure the COM port using the following settings:

- Baud rate: 57600 bps
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: none

Queries and responses should look similar to this:



The # is for sending from the controller (interface 1) to the device. The ! is for answers from the device.

## 4 LabVIEW Implementation

There are no direct LabVIEW drivers for our controllers. Please use the standard NI-VISA VIs (may need to be installed manually from the National Instruments Drivers CD) to communicate with the same virtual COM port tested using the terminal application. (The connection to the terminal app needs to be closed.)

## 5 Checksum (CRC16-CCITT) Calculation

The MeCom protocol requires CRC checksum calculation, for sending and for receiving data frames.

On the National Instruments website, an official CRC VI can be found. crc16-ccitt.vi works from version 7.1:  
<http://www.ni.com/example/26660/en/>

Using the initial value 0000, correct checksums are calculated. (Compare calculations to outputs by the helper application LDD-TEC-Sample.exe.

However, the original VI is not configured to show leading zeroes. These are required for communication with the Meerstetter device. The VI needs to be modified such that the checksum is autocompleted to 4 hex digits.

## 6 Meerstetter MeComAPI

The package consists of a C-Code Library and a sample application. The application exemplifies the control of LDD- and TEC-Family devices over a Serial COM Interface. <http://www.meerstetter.ch/category/38-mecomapi>