

# **Operating manual**

## **for**

# **Firmware Download Tool**



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## IS1 Remote I/O – CPM Firmware Download

### 1. Firmware Download for I.S.1 system

The firmware download allows the user to load new software on the CPM for the I.S.1 system. This is used to get new functionality and features or to load a new bus system (Profibus DP-V0 / DP-V1, Modbus RTU)

It is not possible to load new firmware in the I/O modules.

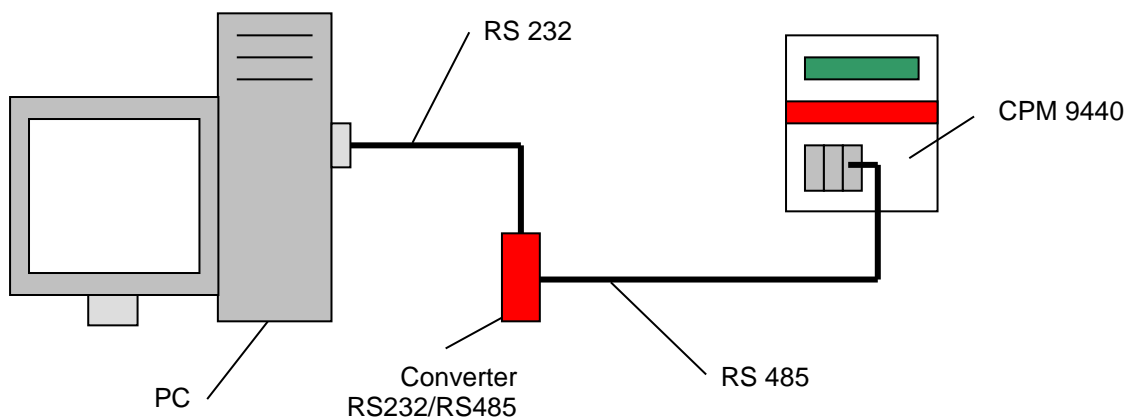
### 2. Hardware

Connect the service bus to the CPM and a PC as shown in the following picture. If you have the service bus already running, you can start a download immediately.

With an additional COM port extension card for the PC, more than the two build-in COM ports can be used for a download. It is possible to start a download from each available COM port at one time.

It is not possible to load firmware into two or more CPM connected on the same service bus at the same time.

While loading one CPM all other CPM are still working with the Modbus or Profibus.



### 3. Software

#### Compatibility

The software runs on a Microsoft Windows based PC. The following versions are tested:

Windows 7 ( 32/64bit ), Windows 8 ( 32/64bit ), Windows 8.1 ( 32/64bit ), Windows 10 ( 32/64bit ).

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### Power up sequence

Connect the 24V power supply to the CPM and wait until the power up sequence is done. During the power up sequence, the CPM checks its memory and performs certain test routines. This will take about 15 seconds.

After that time, the CPM is ready for a download.

For a better understanding, the following pictures show all the different states shown on the LCD display during the power up. This sequence will be shown in case of no error.

See chapter *Error Handling* for more information.

```
+++ Start Up +++
> Prog : check
```

After connecting the CPM to the power supply the CPM starts to check the program memory

```
+++ CPM Test +++
> Slot : prim 0
```

Displaying the slot of the CPM on the BusRail

Possible values:

prim 0 : primary / slot 0 red 1 : redundant / slot 1

prim 2 : primary / slot 2 red 3 : redundant / slot 3

```
+++ CPM Test +++
> Supply: check
```

Test of the internal power supply

```
+++ CPM Test +++
> Supply: OK
```

Power supply test successful

```
+++ CPM Test +++
PProfibus V01-19
```

Actual used bus system and firmware version. The shown text can vary in your system, as the actual firmware version is shown.

```
FBAdr FB I/O
vvv xx yyyy zzz
```

Ready for I.S.1 mode

After the last picture appears on the display, the CPM is ready to start working.

```
vvv : FB Address
--- : no valid address
0 : address 0
127 : address 127
```

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It is possible to use any address between 0 and 127. For more information about setting the CPM address, see the I.S.1 manual.

xx : primary or redundant CPM  
       : primary CPM, no further characters are shown  
       +1 : redundant CPM, Profibus addresses will be increased by one

yyyy : FB state  
       off : no activity on the field bus  
       baud : activity on field bus, no data exchange

without redundancy  
       OK : Field bus OK, only one CPM configured

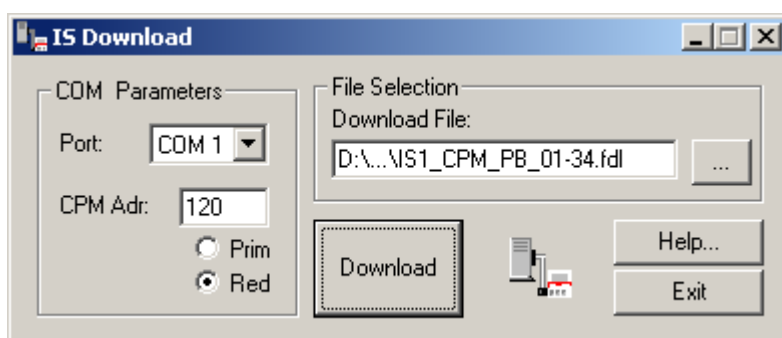
with redundancy  
       OK-A : Field bus OK, CPM active  
       OK-I : Field bus OK, CPM inactive  
       vvv : module state  
           --- : no information about modules available  
           OK : all module OK  
           err : error. At least one module or channel have an error.

### 4. Firmware download

After finishing the power up sequence, the CPM is ready for a download.

#### Setting program parameter

Start the firmware download PC program.  
 The following picture will appear on the PC screen.



You have to set the following parameters.

**Port** select the port where the RS232 is connected to the PC. All available ports will be shown, except for the ports already used by other programs.

**CPM Address** type the address of the CPM. The address is shown on the LCD display of the CPM after the power up sequence.

**Prim / Red** select if the CPM is located on a primary slot (slot 0 / slot 2) or a redundant slot (slot 1 / slot 3). For the download program even a non redundant CPM on slot 1 or slot 3 is a redundant CPM

**Firmware File** Click *Browse* to open a dialog box where you can select a firmware download file.

All the parameters are stored after starting a download with the button *Download*.

## IS1 Remote I/O – CPM Firmware Download

For the download you need a file with the extension ".fdl". These files are delivered by R. STAHL.

### 5. Display on the CPM

After the firmware download is started, the CPM restarts itself.

```
+++ Start Up +++
> Prog : check
```

This text is displayed for a short time, as a program check is not performed.

```
++ FDL Start ++
> Com : wait
```

After setting itself into the download mode the CPM waits for the first data from the PC.

```
++ FDL Status ++
> CPR : erase
```

Erasing the first flash device

```
++ FDL Status ++
> CPR : prog
```

Programming the flash.

```
++ FDL Status ++
> IOP : erase
```

Erasing the first flash device

```
++ FDL Status ++
> IOP : prog
```

Programming the flash.

```
++ FDL Status ++
> Prog : check
```

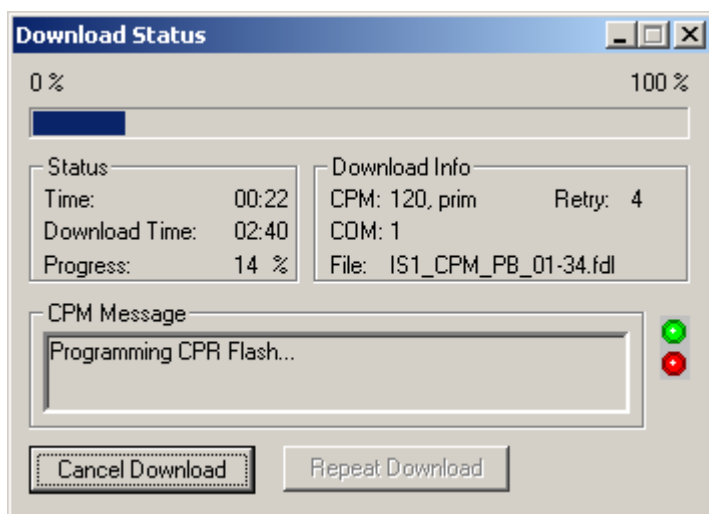
After programming, the CPM checks the flash for a correct program.

After the program check is completed, the CPM continues with the known checking routines. The display will show all the states as shown in the power up sequence.

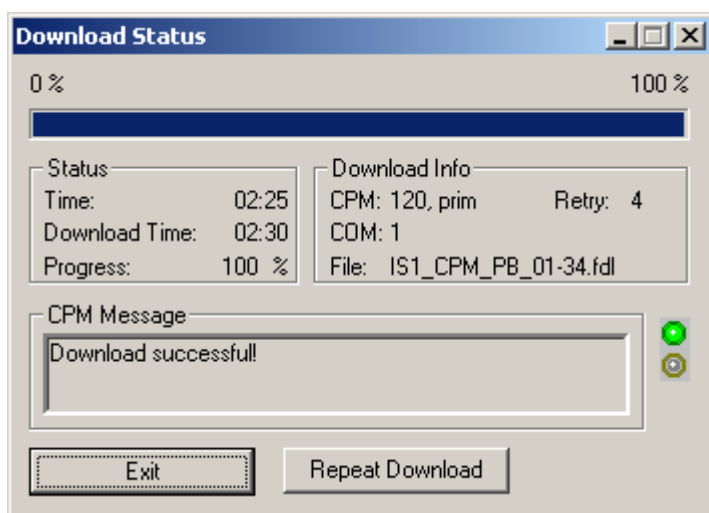
## IS1 Remote I/O – CPM Firmware Download

### 6. Display on the PC screen

On the PC screen, a dialog box shows a progress bar. If the progress bar reaches 100% the download is finished. The download time depends on the used file. It will take between 2.00 and 3.00 minutes



After the download is successful, a message is displayed.



## IS1 Remote I/O – CPM Firmware Download

### 7. Error handling

In case of download problems, the best way to find the problem is to put the CPM beneath the PC and start the download again. That way it is possible to look for the different messages displayed on the LCD display and the PC screen simultaneously.

### 8. Power Up

If one of the following pictures appears on the display during the power up sequence, the CPM will wait in one of that states and interrupt the power up sequence.

```
++ FDL needed ++
> CPR : error
```

No program loaded or wrong program data in memory.

solution: Start the download.

```
++ FDL Start ++
> Com : wait
```

As at least one of the flash devices was already deleted, by a previous (unfinished or unsuccessful) download.

solution: Start the download.

While the CPM is waiting in one of the above states, it is possible to check the address and the slot of the CPM by pressing one of the tact switches on the CPM.

```
+++ CPM Info +++
> FBAdr: 5 /prim
```

CPM information

values:

FBAdr: 0...127 :	actual address of the CPM
FBAdr: --- :	no vaild address
prim :	slot primary (0 or 2)
red :	slot redundant (1 or 3)

The download can be started in both states. With the tact switches of the CPM it is possible to switch between these two states.

It is not possible to change the FB address in that state. This information is used to get the slot and address of one CPM in case of a download error, so that the download can be started again.

If the CPM has no valid address, it is possible to start a download by a broadcast. In that case, only one CPM is allowed on the service bus. Contact R. STAHL for more information.

```
+++ CPM Test +++
> Supply: fail
```

There is an error while checking the power supply, the CPM remains in that state until the power supply is OK.

solution: Replace CPM



## IS1 Remote I/O – CPM Firmware Download

### 9. Setting download parameter

Description	Solution
After starting the download program, the COM port for the service bus is not available.	Check if another program (e.g. IS Wizard) is running on the service bus. Close the download program and the other program and start the download program again
There is no FB Address shown on the display of the CPM.	Set the CPM address. See the I.S.1 manual for the CPM for more information about setting the FB address.
The parameters are not stored in the download program	After changing the parameters. Did you start the download (saving the parameters) or exit the program (no parameter saving)?

### 10. Download

Description	Solution
PC program shows message: <i>Down load error! Init FDL. Transmission timeout CPM not responding</i>	CPM does not answer Check CPM address in download program Check primary or redundant slot Check service bus Check power supply of CPM Start download again

```
## FDL Error ##
> Prog : fail
```

Error while programming the flash. CPM will not start.

solution: use other FDL file or restart download  
Replace CPM

```
## FDL Error ##
> CPR : erase
```

Could not erase the first flash device

solution: try download again  
Replace CPM

```
## FDL Error ##
> IOP : erase
```

Could not erase the second flash device

solution: try download again  
Replace CPM

```
## FDL Error ##
> Global: ----
```

undefined error

solution: try download again  
Replace CPM

```
## FDL Error ##
> Com : fail
```

Transmission error. Download aborted by user or problems with service bus.

solution: Check service bus settings and restart download again

IS1 Remote I/O – CPM Firmware Download

## 1. Flowchart of Power Up Sequence and Download

