



# NEWSLETTER

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Dr. Tom Catherall, Editor

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## “Märklin Digital” Central Station

Have you noticed the branding change from “Märklin Systems” to “Märklin Digital” with the new Central Station? Not only does the case have the new name, but all the literature also reflects the change away from the “Systems” reference.

Some of the material in this newsletter is also provided in the new 60213 Central Station brochure available from Märklin. The brochure is available on the web site: [www.marklin.com](http://www.marklin.com), from most dealers and at many train shows. We have decided to also share parts of it in this issue of the newsletter because many subscribers may not have access to it. Plus, we can explain many of the new features in further detail.

### Architecture

The next page shows the system architecture (Figure 1) for the “Digital” Central Station. The first thing to notice on the diagram is the full accessibility to all the old “Digital” and “Systems” components. The K83, K84 decoders, S88 Track Detection Module, 6017 Boosters and 60652 “Systems” Mobile Station continue to be used directly with the Central Station as they did on earlier Digital programs.

The new 60173 booster is now available and it plugs directly into the back of the Central Station as shown in Figure 2. The connecting cable (60123) between Central Stations should be available by the time you receive this newsletter. Another item which is part of the new Central Station but not shown on the architecture diagram is the package of blank Loco Cards (60135) which should now be available for purchase. There is one blank card provided with the Central Station along with a couple of cards programmed for specific locos as examples of what will be provided in the future. The programmed cards can be overwritten with other loco information, but the printing on the card remains and cannot be changed, but it can be covered with a sticky label.

Another item coming soon and not shown on the diagram is a new “Digital” Mobile Station. This unit will replace the 60652 “Systems” Mobile Station which has been distributed for the past two years.

Notice on the architecture diagram that Mobile Stations can be plugged into the network two different ways. Two can be connected directly in the front of the Station. The second way to connect them is with the short adapter cable (610479) that plugs into the 60125 Terminal box which is already available and was used on the earlier 60212 Central Station. There is also a 60126 extension cable available for these Terminals.

Only two items have yet to be delivered to complete the architecture :

1. 60121 - the “Connect 60212” box which allows the 60212 Central Station to connect to the new 60213 Central Station.
2. 60128 - the “Connect 6021” box which plugs into the first generation Märklin Digital system and allows all the early digital control units to work through the new 60213 Central Station.

# Systemarchitektur.

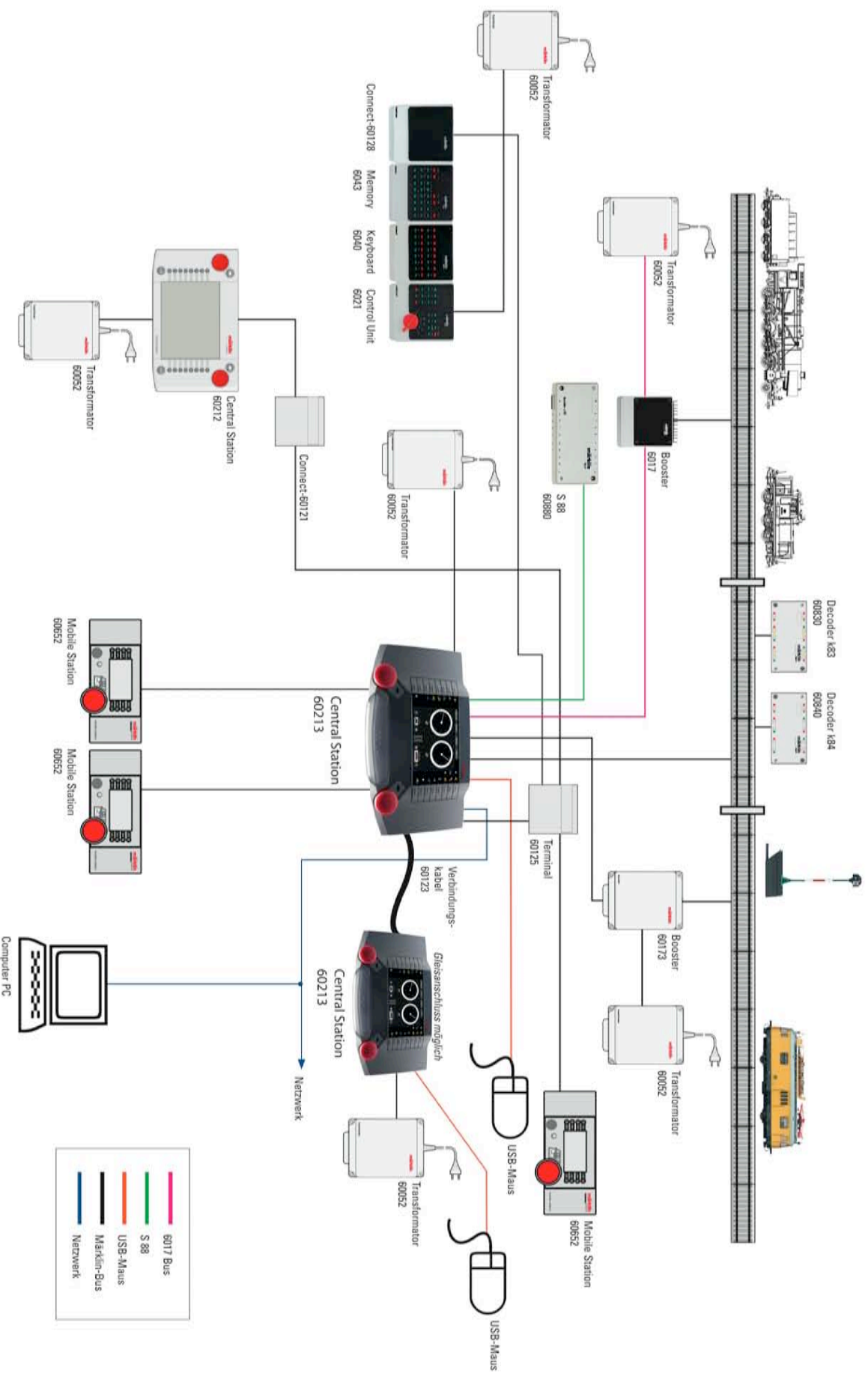


Figure 1

Notice in the diagram the presence of 5 communication (bus) systems attached to the Central Station. No other digital controller on the market can compare to this. These bus connections include:

1. Märklin Bus - which allows the Central Station to communicate with all the other digital controllers from Märklin either directly or through the Terminal boxes.

2. S88 Bus - this connects the Central Station to the 6088 component (also called the S88 Track Detection Module). The S88 has 16 ports which connect to track detectors to allow feedback from passing trains to trigger routes in the Memory screen of the Central Station. S88 modules are daisy chained one to another. The memory screen allows for 64 of these to be connected together, each with 16 ports for feedback giving you a total of 1024 connections to the track.

3. 6017 Bus - this is the booster bus for the old 6017 Digital Booster from Märklin. Multiple Boosters can be plugged into each other in a daisy chain connection. Each Booster plugs into its own transformer and to an isolated section of track (isolated on both center and outside rails).

4. USB Bus - There is one USB port on the back of the Central Station but a USB Hub can be plugged into that to allow multiple USB components to be attached. I use a hub which then connects to a mouse, keyboard and USB memory stick all at the same time.

5. Computer network - When software is available on computers this will be more useful. At the present time there is a program which will allow older programs designed for the 6051 Interface to be used with the Central Station. It is not necessary to have a 6051 because the programs are run on one computer, send through the serial connection to another computer, which translates the code to that used by the Central Station and sends it out the Ethernet port. More information on this free software is given later.

The code to create software for the Central Station is available at [HTTP://WWW. Maerklin.de](http://www.maerklin.de), Note that programs communicate with UDP instead of TCP/IP.

## System Upgrades

At the time of the printing of this Newsletter, two upgrades have been provided to consumers to correct problems found in the Central Station. These upgrades are found at the German Web site [HTTP://WWW. Maerklin.de](http://www.maerklin.de) in the link to the Central Station. There are two programs that need to be downloaded to a USB memory stick on your personal computer. They are:

CS2UPDATE.MD5

CS2UPDATE.TGZ

After downloading and unzipping the files, the USB stick is inserted in the back of the Central Station and "Update Program" is selected from the "Setup" screen. Remember to wait until the program is finished downloading (which may take 15 minutes or more) before restarting the Central Station. The current upgrade is 1.0.5 and this will appear in the "Version" selection from the "Setup" screen.

## Central Station Connections

Figure 2 shows the connections on the back of the Central Station. Many of them are the communication ports mentioned earlier. Four connections not shown on the back include the sockets in the front for the two Mobile Stations. These sockets are directly under the red control knobs. Menus for setting up the Mobile Stations and for adding and deleting locos are found in the Central Station's "Setup" menu under the link titled "MS". The other two connections are found under the Central Station. One is for the s88 Bus (closer to the edge) and the other ia for the 6015/6017



boosters (closer to the middle).

The Central Station's connections reading from bottom to top are:

**Power input** - a cable is provided with the Station for this socket. The cable is composed of two black wires, one with a white strip. The white one connects into the transformer where the yellow wire would normally go. On the 60VA transformers, this is the connection on the right when looking at the rear of the transformer.

**Track connection** - This is the only connection to your layout. It is the same socket as used on the first Central Station, but DON'T use the cable you used with the earlier Station if you had one. The wires are reversed between the two. On the 60212 Station the red wire was to the right of the unit. On the 60213 Station, the red wire is to the left of the unit. The Central Station comes with a cable and plug for this connection. The cable is composed of two red wires, one with a light brown strip on the outside to distinguish it from the other red wire.

Many people have had problems getting turnouts working on the new Central Station, and it is usually because they have these two wires reversed or they are using the cable from the earlier Central Station.

**Programming track** - This is marked "Prog". The strip of track for programming locos can be part of the layout, but it must be isolated on all connections from the rest of the track being fed from the normal track connection. This means the center rail and the ground rails need insulators. Pay attention to the "B" and "O" markers on the socket. It is the same as the track connection socket and both are reversed from the 60212 Central Station. "B" is the red center rail and "O" is the ground.

**AUX** - The connection marked "AUX" is not implemented at the present time.

**Booster** - This connection marked "60173" is for the new Booster which is now available from your dealer. It does not work with the earlier 60212 Central Station.

**USB** - The "USB" port can take a single plug for a keyboard, mouse or USB memory stick. I have chosen to use a USB hub and plug all of them in at the same time. The USB stick is only one of two memory backup systems. The computers inside the Central Station also have internal memory. You choose which you want in the Setup menu under the link titled "View". The USB memory stick is used to update the internal operating system of the Central Station. It is also used to store the current operations you have configured which can include layouts, accessories and loco data. In the near future, loco icons, identified as .PNG files, will also be able to be uploaded from the USB port into the list found in the blue loco editing screen accessed by the picture of the wrench above the active loco's picture in the "Control" screen.

**Selectrix** - The "Sx" port is for the earlier Trix digital system called "Selectrix". That port is not operational at the present time, but will be when Trix has a dedicated Central Station for its Digital program which will include DCC also. Märklin does not have plans at the present time to make a Central Station for all digital protocols.

**Network** - The next two ports are for the Märklin digital bus which

includes the 60126 cables and 60125 Terminal boxes. Additional Mobile Stations and 6015/6017 boosters can connect to those boxes. The future release of the adapters for the 60212 Central Station (60121) and first generation Märklin Digital system (60128) will also plug into the Terminal boxes.

**Ethernet** - The next socket marked with a “network” icon is for the Ethernet cable which connects to a computer.

**Audio** - The last connection is marked with a speaker and is not active at the present time. In the future it will be for an auxiliary speaker or headphones.

## DIP Switch Settings

Figure 3 show the screen used to set up accessories such as turnouts, signals, K83 and K84 decoders. When you select the type of decoder you will use, the DIP switch settings for that accessory, whether it be an 8 position or 10 position DIP switch will appear to assist you in getting the address correct on the accessory.

These DIP settings are not something you need to set on the screen, but are only provided for your information. Some users try to manipulate them and cannot understand why they don't remain when they close and then re-open the accessory set-up menu. They often think this is responsible for their accessories not working, when in fact it is a matter of reversing the red and brown wires.



Figure 3

## Running Older Software on the Central Station

Earlier it was mentioned that software designed for the Digital Interface (6050/6051) of the first generation Märklin Digital System could be run on the new Central Station. Here are the details of the free program which will allow you to do that.

The program is available at the following URL: <http://sourceforge.net/projects/steg>

Here is the content of the “Read Me” file in that program:

Serial-to-Ethernet Gateway is a protocol adapter to convert the serial commands for the Märklin 6051 Interface to UDP commands for the Märklin 60213 Central Station 2 (CS2). This allows the usage of model railroad control software on the CS2 which was designed to connect to the 6050/6051 Interface.

### COPYRIGHT

Copyright (C) 2008 Stefan Dillmann <http://sourceforge.net/projects/steg>

Serial-to-Ethernet Gateway is released under the GNU General Public License. See file license.txt for detail.

Märklin is a registered trademark of Gebr. Märklin & Cie. GmbH, Göppingen, Germany.

### SYSTEM REQUIREMENTS AND INSTALLATION

Serial-to-Ethernet Gateway runs on Windows 2000/XP/Vista. To install, double-click on the setup icon and follow the instructions.

## **CONNECTION**

You need 2 computers: A control computer running your railroad software and a gateway computer running Serial-to-Ethernet Gateway. Connect the control computer to the gateway computer using a serial nullmodem cable. Then connect the gateway computer to the CS2 via Ethernet.

## **SETTINGS ON THE CS2**

Some settings must be done on the CS2 to work together with the gateway computer. Go to the tab "setup" and enter configuration mode by selecting the wrench symbol in the lower left corner. Select the register "IP". "CS-IP Address" is the IP address of the CS2. This address must be entered in the configuration of the gateway computer (see next chapter). "Start Gateway" must be activated. "Destination Address" must be the broadcast address of your subnet (this should be done automatically). E.g. if the CS2 IP Address is 192.168.0.53, the destination address must be 192.168.0.255. Accept these settings by selecting the green OK button.

## **SETTINGS ON THE GATEWAY**

Start Serial-to-Ethernet Gateway and look at the menu "Settings". Here the COM port must be selected which is connected to the control computer. In the dialog "CS2 IP address..." the address of the CS2 must be entered (see in previous chapter how to get the address). If a firewall is running on the gateway computer, the blocking of UDP ports 15730 and 15731 must be deactivated.

## **SETTINGS IN YOUR RAILROAD CONTROL SOFTWARE**

Your railroad control software must send out Märklin 6050/6051 commands. Select 6050/6051 mode if your software can control more than one system. Select the serial port which is connected to the gateway computer. The serial parameters must be:

Baudrate: 2400

Wordsize: 8 Bit

Startbit: 1

Stopbits: 2

Parity: None

Handshake: None

## **RUNNING THE PROGRAM**

Select the menu entry "Connection -> Start Connection". If no error occurs, the gateway is online and receives commands from the serial line. Now you can start your railroad control software. The gateway converts all recognized serial commands to the corresponding CS2 commands and sends them out to the ethernet port. All traffic on the serial and ethernet port is also logged in the main window. This can be deactivated in the "Logging" menu.

To stop the connection, select "Connection -> Stop Connection".

## **MFx ADDRESS CONFIGURATION**

The serial protocol allows loco addresses from 1 to 80. Only locos with Motorola (MM) decoders have addresses in this range. To control MFX locos, the MFX addresses can be translated to MM addresses. Because the CS2 sets the MFX addresses automatically and doesn't show them to the user, the addresses must be received from CS2 with a little trick.

To do this, start the connection (Menu "Connection -> Start Connection"). Then open the MFX address configuration dialog with the menu entry "Settings -> MFX address configuration...".

Now go to the CS2 and select the MFX loco you want to use. Then switch direction or press a function key. The gateway will receive this command, extract the MFX loco ID and show it in the text box.

Select an address in the list which should be used for the MFX loco and click “Register ID”. For example, you have registered the MFX ID 16385 to address 11. By selecting the address 11 in your railroad software, you can control the MFX loco #16385 now. If you also have MM locos with address 11, they will not react anymore. To delete a MFX loco from list, select the line and click “Delete”. Now MM locos with this address can be controlled again.

## Changing CVs

Figure 4 shows the Control screen. When you click on the wrench above the icon of the active locomotive, an edit screen like in Figure 5 will appear. On the blue edit screen there is a button for setting CVs if the loco has an MFX decoder installed. When that is selected the Central Station will read the decoder and report back. Mine gave the following information:

Block ROOT being read (nothing is reported)  
 Block MOTOR being read  
 Block LEGACY being read  
 Block MISC. being read

The “motor block” contains this readout which should not be changed with Märklin decoders installed in Märklin locomotives, but may need to be adjusted when Märklin decoders are installed into other manufacturers’ locos.

Name	CV	Value
Inf	56	255
Ref	53	67
K	54	100
I	55	100

Inf means “Influence of load control”.

Ref means “Reference voltage”.

K refers to a parameter that determines how strongly load control will affect the driving performance.

I refers to the motor’s type and its reaction to RPM changes.



Figure 4

Additional information on the motor parameters can be found at the following website:

[www.esu.eu/index.php?id=293&L=2](http://www.esu.eu/index.php?id=293&L=2)

Select the download of the loksound mfx decoder.

The “Legacy block” contains this readout which refers to running in analog mode and the loco’s address:  
 Speed AC

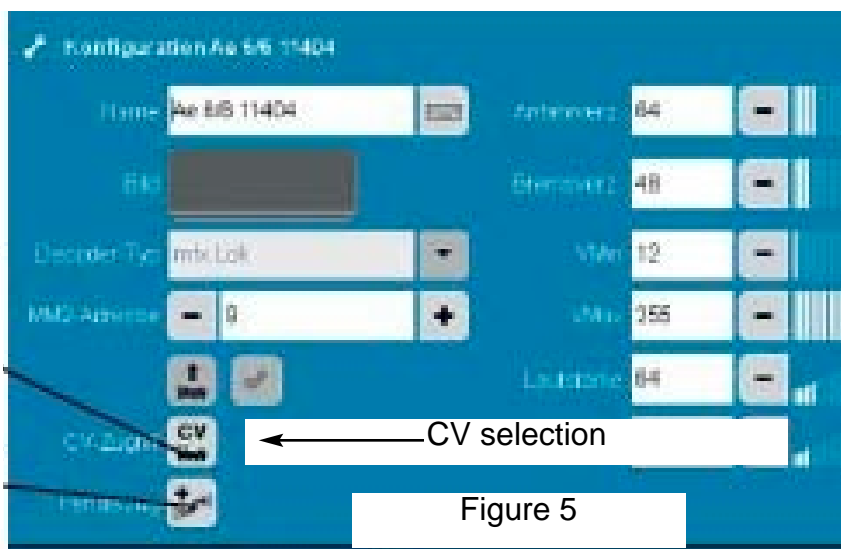


Figure 5

<u>Name</u>	<u>CV</u>	<u>Value</u>
Start	78	200
VMax	79	190

Speed DC

<u>Name</u>	<u>CV</u>	<u>Value</u>
Start	76	0
VMax	77	0

address

<u>Name</u>	<u>CV</u>	<u>Value</u>	
P	1	12	(primary address)
S	75	15	(second address)
T	-	-	
Q	-	-	

The "Misc. block" contains this readout

<u>Name</u>	<u>CV</u>	<u>Value</u>
Persistence	73	3

The term "Persistence" means continuing with the speed after a power interrupt. There are two values that are possible. A 3 means continue with the speed and functions, a 7 means continue with speed and functions at the predetermined acceleration rate.

New Berlin, WI 53151-0559  
 16988 West Victor Road  
 P.O. Box 510559

DIGITAL  
 märklin