

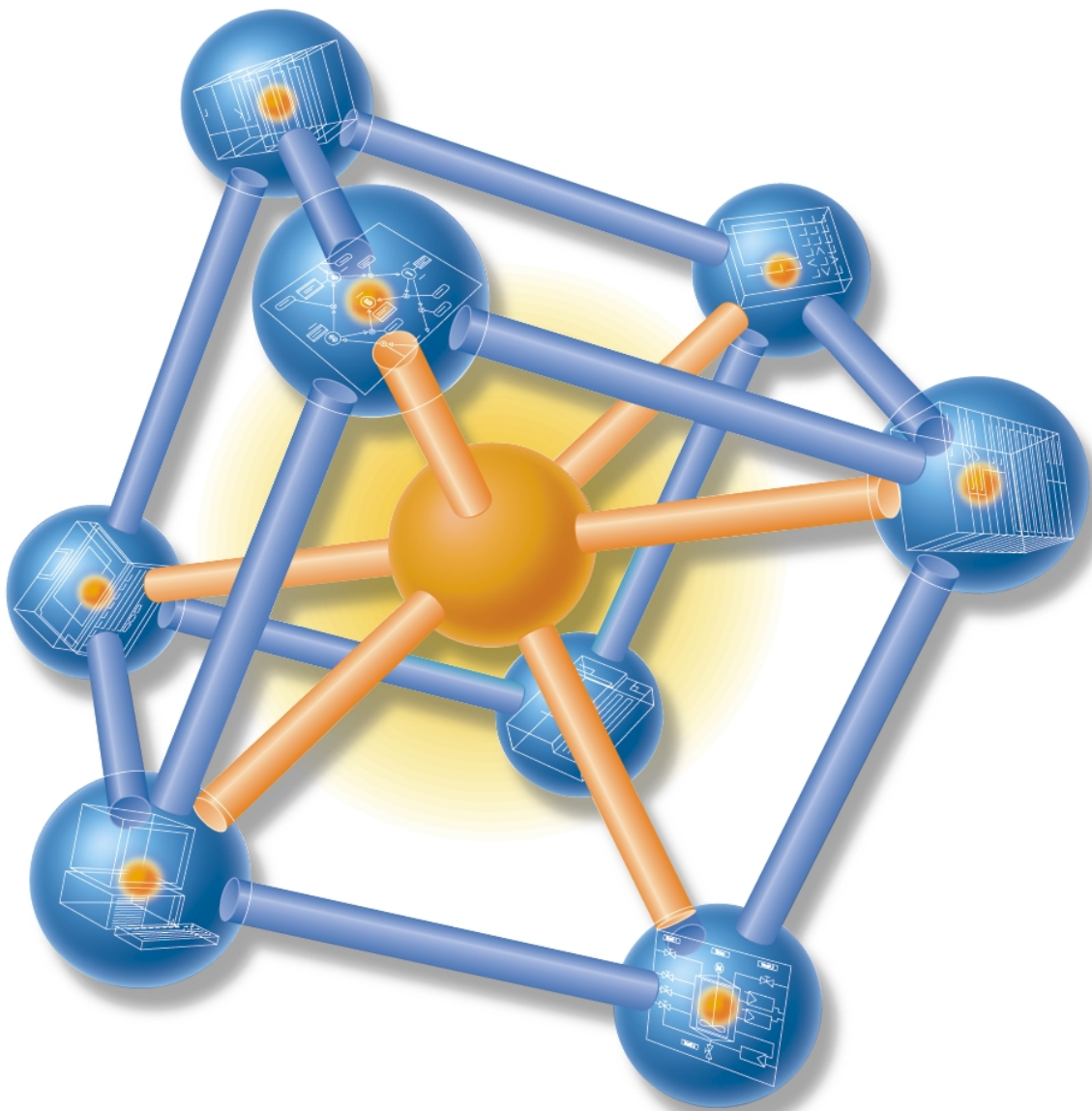
SIEMENS

SIMATIC FM 352

Getting Started

Edition 09/99

First Steps in Commissioning



Based on a concrete example, this primer guides you through five steps in which you install and start up a functioning application with which you can create several distance cams on a rotary axis and then try out and test the basic hardware and software functions of your FM 352. The references to the manual will also help you to get a general overview of the information it contains.

Depending on your degree of experience, working through the sample will take between one and two hours.

Requirements

The following requirements must be met:

- You have an S7-300 station consisting of a power supply and a CPU.
- You have installed STEP 7 (\geq V5.0) correctly on your programming device.
- You have created a project for the S7-300 station.
- The programming device is connected to the CPU.
- You have an FM 352 module, the configuration package for the FM 352, and the necessary accessories such as the bus connector, front connector, and wiring.

Install the Configuration Package on the PG

The configuration package contains a parameter assignment tool for the FM 352, the required functions (FCs) and data structures (UDTs), and a sample program.

Insert the CD in your CD drive.

Start the software installation dialog in Windows by double-clicking the “Add/Remove Programs” icon in the “Control Panel”.

Click the [Install...](#) button, select the Setup.exe file in the FMx52\Disk1 folder on the CD and follow the instructions displayed by the installation program.

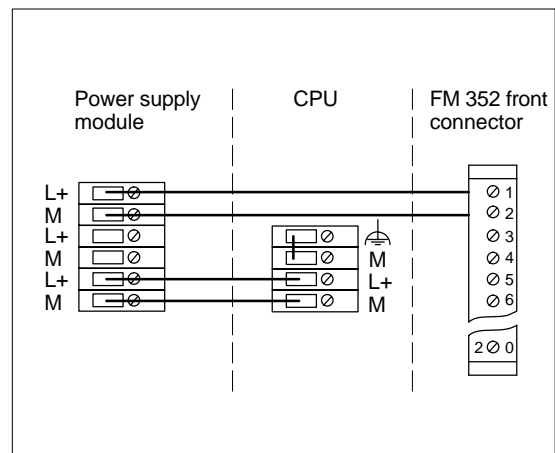
Install and Wire up the FM 352

Turn off the power supply and change the mode selector on the CPU to STOP.

Plug the bus interconnector supplied with the FM 352 onto the bus connector of the CPU. Hook the top of the FM 352 onto the rail, swing it down and secure it with screws (for more detailed information, refer to Chapter 3 of the manual).

Wire up the front connector as shown in the picture on the right (the full pinout of the front connector is described in Chapter 4 of the manual).

Plug in the front connector on the FM 352 and push it in securely.



Test: Turn on the power on the power supply module.

The red LED SF on the FM 352 is lit briefly and then goes off if the internal module test is OK.

Set the Parameters for the FM 352

Open your project in the SIMATIC Manager.

Open the hardware object. The HW Config window is opened and displays the configuration table.

Select the FM 352 with the correct order number (MLFB) from the hardware catalog and drag it to the slot you want to use (in the sample: slot 4).

If you double-click on this FM 352, you open the “Cam Controller – [FM 352 CAM (slot) (Setting Parameters) — project name\station name]” window of the parameter assignment user interface.

Select the following settings in the parameter assignment dialogs (leave all other settings unchanged):

- System of units: degrees (4 decimal places)
- Axis Rotary axis
 - End of the rotary axis: 360.0000 degrees
 - Simulation speed: 360.0000 degrees/min
- Encoders Monitoring Deactivate wire break and missing pulses
- Cam:

No.	Valid	Track	Type	Start [deg]	End [deg]	Time [ms]	Lead time [ms]	Activation direction	Hardware interrupt
0	✓	0	Dist	0.0000	90.0000		0.0	Both	None
1	✓	0	Dist	180.0000	270.0000		0.0	Both	None
2	✓	1	Dist	0.0000	90.0000		2000.0	Both	None
3	✓	1	Dist	180.0000	270.0000		2000.0	Both	None
4	✓	2	Dist	130.0000	330.0000		0.0	Both	None
5	✓	3	Dist	130.0000	330.0000		2000.0	Both	None

Save the settings in the parameter assignment user interface with [File → Save](#) and close the user interface with [File → Exit](#).

Save your configuration in your project with [Station → Save and Compile](#).

Transfer the configuration with the CPU in the STOP mode using [PLC → Download...](#)

The data are then transferred directly to the CPU and the FM 352. From now on, as long as the configuration on the CPU remains battery backed, the data will always be transferred from the CPU to the FM 352 whenever the CPU changes from STOP to RUN.

Testing the FM 352

Start the parameter assignment user interface again by double-clicking the FM 352 in HW Config.

With [Test → Commission](#), open the commissioning dialog “Cam Controller – [FM 352 CAM (...)] (Commission) — *project name|station name*”.

In “Enable track signals”, select the track signals 0 to 3 and enable them by clicking the [Apply](#) button.

In “Other test functions”, select the setting “Set reference point”, enter 0.000 degrees as the reference point, and click the [Apply](#) button. This synchronizes the axis; the “Synchronized” box in the commissioning dialog is displayed in green.

In “Other test functions”, select the Function switch and then “Simulation on” option and click the [Apply](#) button.

Click the [On](#) button below “Enable test”.

Click the [On](#) button below “Cam controller”. As a reaction to this, the “Cam processing active” box and the track signals 0 and 1 are displayed in green, since in this example, the cam start was set to 0 for tracks 0 and 1.

Click the [Dir_P](#) button below “Simulation direction”.

The encoder signals are now simulated. You can monitor the actual value and the track signals (green = at least one cam active; gray = no cam active). You can also follow the track signals at the LEDs of outputs Q0 to Q3 of the FM 352.

Linking into your User Program

Open the FMx52LIB library in the SIMATIC Manager with [File → Open... → Libraries](#).

Copy FC 0, FC 1 and UDT 1 from the Blocks folder of the FMx52LIB library to the “Blocks” folder of your project.

Select the menu command [Insert → S7 Block → Data Block](#) and insert DB 1 in the “Blocks” folder of your project and then select the menu command [Insert → S7 Block → Organization Block](#) and insert OB100.

Open DB 1 and create it with the assigned user-defined data type UDT 1. This creates the channel DB.

Save DB 1 with [File → Save](#) and close the DB editor with [File → Exit](#).

Now enter the module address in DB 1 as follows: Select [File → Properties...](#) in the parameter assignment user interface of the FM 352. Click the [Mod Addr...](#) button, select DB 1 and confirm with [OK](#).

Now open OB 1 and OB 100 in your project. Call FC1 in OB1 and FC0 in OB100 and supply the FCs with parameters (see manual, Section 6.2 or 6.3):

OB1:	OB100:
CALL FC1	CALL FC0
DB_NO := 1	DB_NO := 1
RET_VAL := FW0	

Save both OB1 and OB100 with [File → Save](#).

Select the blocks FC0, FC1, DB1, OB1 and OB100 in your project.

Download the your program to the CPU with [PLC → Download](#).

Test: Using the “Monitor and Modify Variables” function, you can now, for example, monitor the cam data, the cam tracks, and the actual value:

Create a symbol with the “CAM” for DB1.

Select the “Blocks” folder in your project. Using the menu command [Insert → S7 Block → Variable Table](#), insert the variable table VAT 1 and confirm with [OK](#).

Open the variable table VAT1 and make the following entries in the “Symbol”, “Monitor Format” and “Modify Value” columns:

Address	Symbol	Monitor Format	Monitor Value	Modify Value	Meaning
DB1.DBW 16	CAM.TRACK_EN	HEX		FFFF	Enable track signals
DB1.DBD 98	CAM.REFPT	DEC		0	Reference point coordinate
DB1.DBX 36.3	CAM.REFPT_EN	BIN		1	Set reference point
DB1.DBX 15.4	CAM.CAM_EN	BIN		1	Cam controller on
DB1.DBX 34.1	CAM.SIM_ON	BIN		1	Simulation on
DB1.DBX 15.3	CAM.DIR_P	BIN		1	Simulation direction positive
DB1.DBD 26	CAM.ACT_POS	DEC			Current actual value
DB1.DBD 30	CAM.TRACK_OUT	BIN			Track signals

Save the variable table VAT1 with [Table → Save](#).

Go online with [PLC → Connect To → Configured CPU](#).

Switch to monitoring with [Variable → Monitor](#).

Change the CPU to RUN-P.

With [Variable → Activate Modify Values](#) , you make the modify values valid.

In the “Monitor Value” column, you can now observe the current actual value (ACT_POS) and the track signals (TRACK_OUT).

Diagnosics

Errors can occur due to incorrect operator input, incorrect wiring, or conflicting parameter settings. How to deal with such errors and messages is described in Chapter 11 of the manual.

Example

The project **zEn19_01_FMx52_Prog** contains further samples that can you can use for further practice or that you can adapt for your own particular application.