

# SIEMENS

## SIMATIC Ident

### RFID systems

## Input parameters for the RF300 system for programming via communications modules

### Product Information

This product information supplements the manuals listed below for the use of the new RF300 functions:

- Function manual "Ident Profile and Ident Blocks", edition 10/2018
- Function manual "FB 45 for MOBY U, MOBY D, RF200, RF300", edition 07/2012
- Operating instructions "Communications Module RF182C", edition 10/2010
- Operating instructions "Communications module RF160 with FC 44", edition 05/2010
- "SIMATIC RF120C" operating instructions; edition 10/2018

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#### Note

##### Configuration of the RF120C in STEP 7 (TIA Portal)

With communication module RF120C, note the configuration can be performed in the TIA Portal with the technology object "SIMATIC Ident" or via the parameters in the "Properties" tab ("Ident device / system > Parameters via FB / optical readers") of the communication module.

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When using the S7-1200 and S7-1500 controllers, we recommend that you perform the configuration via STEP 7 (TIA Portal) using the "SIMATIC Ident" technology object. You can perform the configuration quickly and easily using the technology object. The parameters described in this product information are contained in the TIA Portal as of STEP 7 V16.

#### Readers of the 1st generation

The readers with article number "6GT2801-xABxx" can have parameters assigned for use with RF300 or ISO 15693 compatible transponders.

#### Readers of the 2nd generation

The readers with article number "6GT2801-xBAxx" are also capable of communicating with ISO 14443 transponders (e.g. MOBY E). Over and above this, the "General Mode" can also be set in the parameters. With the aid of this mode, you can process all transponder types without selecting a specific air interface protocol (RF300, ISO 15693, ISO 14443). If you only work with one or two transponder types, you have the option of configuring only the air interface protocols.

If you program mixed operation (selection of several transponder type as, for example, with "General Mode") remember that the various transponder types have a different memory size. If the memory capacity of the transponder is not adequate for the data volume to be stored, an error message is generated.

With the readers of the 2nd generation the command "Tag status" with the parameter "ATTRIBUTE = 0x83" (FB 45: Mode 03) can be used for all transponder types (RF300, ISO 15693, ISO 14443). In addition to this, with communications modules with a suitable parameter assignment you can operate the readers via the MOBY I protocol. The MOBY I protocol is recognized by the reader automatically.

#### Meaning of the address assignment

With the "INIT" command, the address information has the following meaning:

- Address = 0 or address = memory size of the transponder  
Means that the entire address range is initialized.
- Address <> 0  
Means that the initialization is up to the specified address.
- Address > memory size of the transponder  
Has the effect that the command is not executed and an error message is generated.

## Input parameters for RF300

The input parameters needed for parameter assignment via the function blocks of the Ident profile, the Ident blocks and FB 45 via the communications modules are listed in the following table. These parameters are transferred from the communications module to the reader with the "RESET" command with the aid of the application blocks "RESET\_RF300", "RESET\_UNIV" or via "Ident\_Profile/Advanced\_Cmd" (or "init\_run" with FB 45).

Table 1 Input parameters for RF300 (all values are hexadecimal)

Parameter	Description												
Ident profile: param (byte 6 of the configuration data) FB 45: RESET_long RF182C: param (bits 0 ... 3)	The "init_run" (RESET) command transfers all INPUT parameters to the reader. This bit must be set to "True" when RF300 is used. Note on FB 45: If RF300 readers of the 2nd generation are to be used in MOBY I mode, the value "False" must be set here. Note on Ident_Profile: For byte 6 there are two valid values. <ul style="list-style-type: none"> <li>For the fast reset (MOBY I mode) the value "0x05"</li> <li>For the long reset the value "0x0A".</li> </ul>												
Ident profile: scanning_time (byte 9 of the configuration data) FB 45: scanning_time RF182C: standby	To be assigned the value "0x00".												
Ident profile: param (byte 10, only bit 4 of the configuration data) FB 45: ECC_mode RF182C: param (bit 4)	This parameter switches ECC mode on. In ECC mode, the reader can detect bit errors on the transponder with a high degree of probability. If possible, corrected data is returned during read access (the data on the transponder remains unchanged). When write access occurs, the affected data on the transponder is corrected - if possible. ECC mode can only be used for transponders that have been completely initialized with the ECC bit set and are thus ECC formatted. The transponder is divided into blocks of 16 bytes for this, whereby 14 bytes are reserved for user data and 2 bytes for ECC information (CRC). This leads to a reduction of the usable memory volume by approx. 1/8th. If a bit error is detected and corrected, the parameter "ANZ_ECC = True" or "STATUS = 0xF0FE0002" is set. If the errors cannot be corrected, error "0x0B" or "0xE2FE0100" is generated. Note: Note that only the transponders of type RF300 and ISO 14443 (e.g. MOBY E) are supported in this mode.												
	<table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>0x00</td> <td>ECC mode is switched on.</td> </tr> <tr> <td>0x01</td> <td>ECC mode is switched off.</td> </tr> </tbody> </table>	Value	Meaning	0x00	ECC mode is switched on.	0x01	ECC mode is switched off.						
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Ident blocks: TAG_CONTROL Ident profile: param (byte 10, bits 5 ... 7 of the configuration data) FB 45: MDS_control RF182C: param (bits 5 ... 7)	<table border="1"> <thead> <tr> <th>Value</th> <th>Transponder control</th> <th>Type of the communications module</th> </tr> </thead> <tbody> <tr> <td>0x00</td> <td>Operation without presence check <sup>1)</sup></td> <td>all</td> </tr> <tr> <td>0x01</td> <td>Operation with presence check Antenna is permanently switched on</td> <td>all</td> </tr> <tr> <td>0x04</td> <td>Operation without presence check Antenna is switched off. The antenna is only switched on when one of the following commands is sent. Read, Write, Init, Tag-Status</td> <td>all</td> </tr> </tbody> </table>	Value	Transponder control	Type of the communications module	0x00	Operation without presence check <sup>1)</sup>	all	0x01	Operation with presence check Antenna is permanently switched on	all	0x04	Operation without presence check Antenna is switched off. The antenna is only switched on when one of the following commands is sent. Read, Write, Init, Tag-Status	all
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Parameter	Description																
	<p><sup>1)</sup> Note on LED behavior with MOBY I migration:            In "None present" mode, the LED of the reader stays blue until initial access (Read/Write/Init) to the transponder takes place. The LED flashes green as long as no other access is made or command is executed. As soon as a command is sent, the LED lights up green or orange, depending on whether or not a transponder is within the antenna range.</p>																
Ident profile: param (byte 10, bits 0 ... 3 of the configuration data) FB 45, FB 55: MOBY_mode RF182C: param (bits 0 ... 3)	The following values are generally permissible for RF300:																
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Note: If the readers of the 2nd generation are to be operated in MOBY I mode, the value "0x01" must be set.																	
Ident profile: option_1 (byte 11 of the configu- ration data) FB 45: option_1 RF182C: 00 (Option_1)	The following values are permitted:																
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Ident blocks: RF_POWER Ident profile: distance_limiting (byte 12 of the configu- ration data) FB 45: distance_limiting RF182C: dili	Note: This parameter is intended for trained users. Siemens recommends that untrained users use the default value.																
	Readers of the 1st generation: With this parameter you can change the transmit power (output power) of the RF380R reader of the 1st generation (6GT2801-3AB10). When doing this, remember that the change to the transmit power will affect the detection in the limit range (upper/lower operating distance), as well as the minimum distance that is to be maintained between adjacent RF380Rs.																
	Settings outside the specified range have the effect that the default value (1.25 W) will be set. In this case for reasons of compatibility there is no error message.																
	Readers of the 2nd generation: This setting is not necessary with the RF380R readers of the 2nd generation (6GT2801-3BAx0) because the power limits are optimized automatically depending on the reader-transponder distance. For reasons of compatibility this setting can nevertheless be made. Note that the values "0x02", "0x03" and "0x04" bring about a reduction of the power of approximately 50%.																
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Ident profile: Number of transponders (bytes 13 and 14 of the configuration data) FB 45, FB 55: multitag RF182C: multitag	To be assigned the value "0x01".																																				
Ident profile: field_on_control (byte 15 of the configu- ration data) FB 45: field_ON_control (fcon) RF182C: fcon	To be assigned the value "0x00".																																				
Ident blocks: TAG_TYPE Ident profile: field_on_time (byte 16 of the configu- ration data) FB 45: field_ON_time RF182C: ftim	<p>Selection of the transponder types used.</p> <p>With the value "01"/"31" (ISO 15693 general) the readers of the 2nd generation always use the ISO commands with which the highest performance can be achieved for the particular transponder. With readers of the 1st generation the value "01" activates the general ISO mode with rudimentary ISO commands. With this setting, the performance is generally limited, but the operation is basically guaranteed with each ISO-compatible transponder.</p> <p>All ISO 15693 transponders (MDS D) specified in the system manual "SIMATIC RF300" support these ISO commands.</p> <p>The following values can be set:</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> <th>Valid for...</th> </tr> </thead> <tbody> <tr> <td>0x00</td> <td>RF300 (RF3xxT)</td> <td>1st and 2nd generation</td> </tr> <tr> <td>0x01</td> <td>ISO 15693 general Activation of the general ISO mode with rudimentary ISO commands. With this setting, operation is basically guaranteed with every ISO-compatible transponder.</td> <td>1st and 2nd generation</td> </tr> <tr> <td>0x03</td> <td>ISO 15693 (Infineon, MDS D3xx)</td> <td>1st and 2nd generation</td> </tr> <tr> <td>0x04</td> <td>ISO 15693 (Fujitsu - 4 kB, MDS D4xx)</td> <td>1st and 2nd generation</td> </tr> <tr> <td>0x05</td> <td>ISO 15693 (NXP, MDS D1xx)</td> <td>1st and 2nd generation</td> </tr> <tr> <td>0x06</td> <td>ISO 15693 (TI, MDS D2xx)</td> <td>1st and 2nd generation</td> </tr> <tr> <td>0x07</td> <td>ISO 15693 (STM, MDS D261)</td> <td>1st and 2nd generation</td> </tr> <tr> <td>0x08</td> <td>ISO 15693 (Fujitsu - 8 kB, MDS D5xx)</td> <td>2nd generation</td> </tr> <tr> <td>0x10</td> <td>RF300 (RF3xxT)</td> <td>2nd generation</td> </tr> <tr> <td>0x20</td> <td>ISO 14443 (MOBY E, E6xx)</td> <td>2nd generation</td> </tr> <tr> <td>0x31</td> <td>General Mode Activation of the "General Mode" for processing the transponder types RF300, ISO 15693 and ISO 14443. With this setting, operation is basically guaranteed with every compatible transponder.</td> <td>2nd generation</td> </tr> </tbody> </table>	Value	Meaning	Valid for...	0x00	RF300 (RF3xxT)	1st and 2nd generation	0x01	ISO 15693 general Activation of the general ISO mode with rudimentary ISO commands. With this setting, operation is basically guaranteed with every ISO-compatible transponder.	1st and 2nd generation	0x03	ISO 15693 (Infineon, MDS D3xx)	1st and 2nd generation	0x04	ISO 15693 (Fujitsu - 4 kB, MDS D4xx)	1st and 2nd generation	0x05	ISO 15693 (NXP, MDS D1xx)	1st and 2nd generation	0x06	ISO 15693 (TI, MDS D2xx)	1st and 2nd generation	0x07	ISO 15693 (STM, MDS D261)	1st and 2nd generation	0x08	ISO 15693 (Fujitsu - 8 kB, MDS D5xx)	2nd generation	0x10	RF300 (RF3xxT)	2nd generation	0x20	ISO 14443 (MOBY E, E6xx)	2nd generation	0x31	General Mode Activation of the "General Mode" for processing the transponder types RF300, ISO 15693 and ISO 14443. With this setting, operation is basically guaranteed with every compatible transponder.	2nd generation
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Parameter	Description
	<p>Note that individual settings or transponder families can be combined (e.g. ISO 15693 general + RF300). In this case, the relevant hex values need to be combined (ISO 15693 general [0x01] + RF300 [0x10] = 0x11).</p> <p><b>Notes</b></p> <ol style="list-style-type: none"> <li>ISO 15693: The following special functions are not supported: <ul style="list-style-type: none"> <li>AFI (Application Family Identifier)</li> <li>DSFID (Data Storage Format Identifier)</li> <li>Chip-specific additional functions such as EAS, Kill commands, etc.</li> </ul> </li> <li>ISO 15693: With "TAG_TYPE(ftim) = 01", the readers of the 1st generation support the ISO commands "Inventory", "ReadSingleBlock", "WriteSingleBlock", "LockBlock," "GetSystemInformation" and also "Select" and "ResetToReady" for multitag.</li> <li>If a previously unknown transponder cannot be identified based on the parameters above, an error message is generated (error_MOBY "0x0D").</li> <li>Invalid parameters are rejected with the error message (error_MOBY "0x15").</li> </ol>

### Product-specific information

#### Note

##### Use of the functions and commands with RF182C

The functions and commands are identical to those in the operating instructions "Communications Module RF182C" (edition 10/2010, section 6.1 "Command overview" and section A "Command and acknowledgment frames").

The following commands of the communications module RF182C are supported by RF300:

- RESET
- GetReaderStatus (mode 01, 06)
- GetTagStatus (mode 01, 02, 03) in RF300 mode
- GetTagStatus (mode 03) in ISO mode
- writeTagData
- readTagData
- initializeTag
- setAnt

#### Note

##### Use of the functions and commands with RF160C

The functions and commands are identical to those in the operating instructions "Communications Module RF160C with FC 44" (edition 05/2010, section 5 "Parameter assignment").

The parameter names as used in the operating instructions correspond to those of FB 45 (see table above) You will find the updated parameter values in the table above. The parameter names and parameter values are also valid for FC 44.

#### Note

##### Further information in the "SIMATIC RF300" system manual

You will find more information on parameter values relating to status queries in the section 10.2 "Diagnostics functions - STEP 7". In the section 7 to 9 you will find information on addressing transponders and the hardware parameters of the communications modules that is relevant for the commands "Init", "Write" and "Read".

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