



# DOCUMENTATION ISG-kernel

## **Functional description Loading NC programs in local memory (file caching)**

Short Description:  
FCT-C23

# Preface

## Legal information

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This documentation was produced with utmost care. The products and scope of functions described are under continuous development. We reserve the right to revise and amend the documentation at any time and without prior notice.

No claims may be made for products which have already been delivered if such claims are based on the specifications, figures and descriptions contained in this documentation.

## Personnel qualifications

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This description is solely intended for skilled technicians who were trained in control, automation and drive systems and who are familiar with the applicable standards, the relevant documentation and the machining application.

It is absolutely vital to refer to this documentation, the instructions below and the explanations to carry out installation and commissioning work. Skilled technicians are under the obligation to use the documentation duly published for every installation and commissioning operation.

Skilled technicians must ensure that the application or use of the products described fulfil all safety requirements including all applicable laws, regulations, provisions and standards.

## Further information

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Links below (DE)

<https://www.isg-stuttgart.de/produkte/softwareprodukte/isg-kernel/dokumente-und-downloads>

or (EN)

<https://www.isg-stuttgart.de/en/products/softwareproducts/isg-kernel/documents-and-downloads>

contains further information on messages generated in the NC kernel, online help, PLC libraries, tools, etc. in addition to the current documentation.

## Disclaimer

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It is forbidden to make any changes to the software configuration which are not contained in the options described in this documentation.

## Trade marks and patents

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# General and safety instructions

## Icons used and their meanings

This documentation uses the following icons next to the safety instruction and the associated text. Please read the (safety) instructions carefully and comply with them at all times.

## Icons in explanatory text

➤ Indicates an action.

⇒ Indicates an action statement.



### **⚠ DANGER**

#### **Acute danger to life!**

If you fail to comply with the safety instruction next to this icon, there is immediate danger to human life and health.



### **⚠ CAUTION**

#### **Personal injury and damage to machines!**

If you fail to comply with the safety instruction next to this icon, it may result in personal injury or damage to machines.



### **Attention**

#### **Restriction or error**

This icon describes restrictions or warns of errors.



### **Notice**

#### **Tips and other notes**

This icon indicates information to assist in general understanding or to provide additional information.



### **Example**

#### **General example**

Example that clarifies the text.



### **Programing Example**

#### **NC programming example**

Programming example (complete NC program or program sequence) of the described function or NC command.



### **Release Note**

#### **Specific version information**

Optional or restricted function. The availability of this function depends on the configuration and the scope of the version.

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# 1 Overview

## Task

An NC subroutine that is used frequently can be loaded to a local memory (cache) so that file access operations by the CNC are independent of file system access times. As a result, time-consuming file system accessing operations can be avoided. This improves the NC program execution time and thus data throughput.



### Release Note

This parameter is available starting at CNC Build V2.11.2800 and higher.

## Accelerating file access times

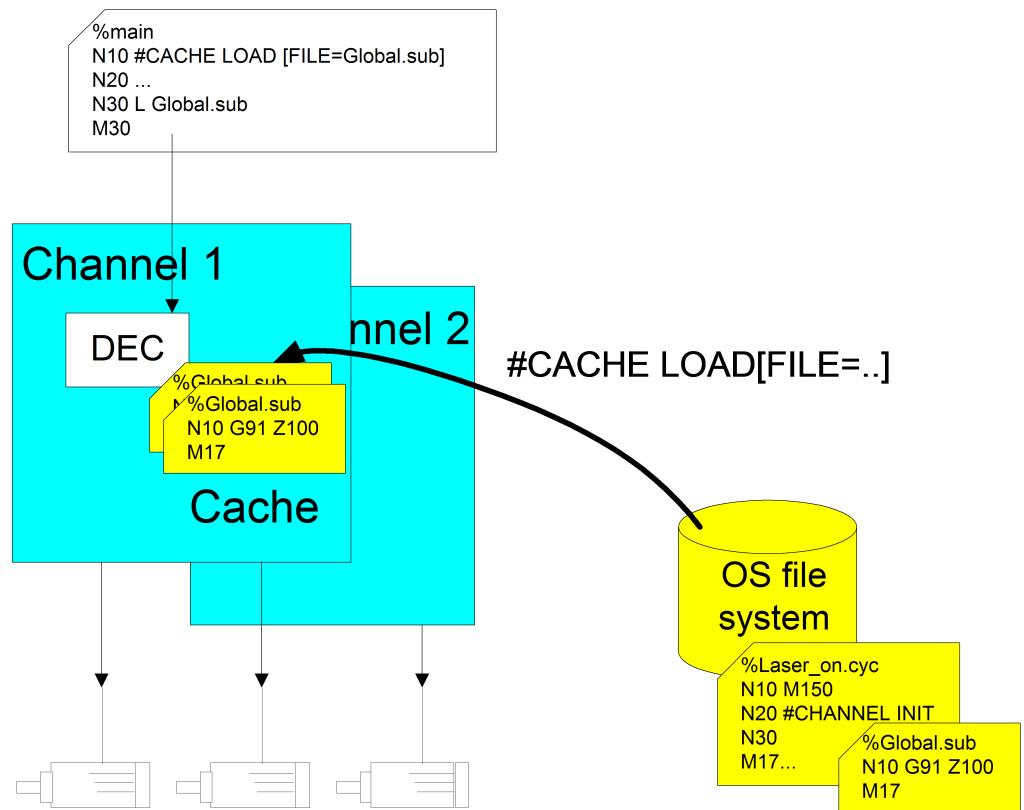


Fig. 1: Enabling file caching

### Mandatory note on references to other documents

For the sake of clarity, links to other documents and parameters are abbreviated, e.g. [PROG] for the Programming Manual or P-AXIS-00001 for an axis parameter.

For technical reasons, these links only function in the Online Help (HTML5, CHM) but not in pdf files since pdfs do not support cross-linking.

## 1.1 Description, characteristics

### Loading / clearing

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Loading/clearing the local memory is initiated via an NC command for each NC channel.

### Subroutines / cycles

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Both global subroutines and global cycles can be loaded to the cache. The NC program name is not dependent on uppercase/lowercase notation (case-insensitive).

### Search paths

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The files are searched for according to the program paths set in the start-up list or channel list.

### RESET

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All previously loaded channel files are cleared from the local memory when the CNC channel is reset.

### Maximum number of files and file size

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The number (P-STUP-00051) of files to be stored locally and the maximum size (P-STUP-00052) of a file can be defined for each channel before the controller is started up.

## 2 Programming (#CACHE)

### Cross-program loading/clearing of NC programs

File loading can be initiated using appropriate NC commands. The actions carried out take effect across all programs.

Files can be loaded to the local memory (cache), updated or cleared again using appropriate NC commands.

**#CACHE LOAD [ FILE<name>]**

(non-modal)

FILE<name>

Name of the file that is to be loaded into the cache. An abort takes place with an error message if the cache is currently full or if the file is not found. The cache contents are updated (refreshed) if an attempt is made to load a file that is already in the cache.

**#CACHE CLEAR [ FILE<name>]**

(non-modal)

FILE<name>

Name of the file to be cleared from the cache. No warning/error message is generated if the file is currently not in the cache.

**#CACHE CLEAR ALL**

(non-modal)



### Programming Example

#### CACHE examples

```

N1200 #CACHE CLEAR[FILE=Laser_on.cyc]
N1210 #CACHE CLEAR ALL
N1220 #CACHE LOAD[FILE=Laser_on.cyc]
N1230 #CACHE CLEAR[FILE=Laser_on.cyc]
N1240 #CACHE LOAD[FILE=Macro.cyc]
N1250 #CACHE LOAD[FILE=Laser_off.cyc]
N1260 #CACHE LOAD[FILE=Laser_off.cyc] ; refresh cache
N1270 #CACHE LOAD[FILE=Global.sub]
N3021 L CYCLE [NAME=Laser_on.cyc @P1=0 @P2=0]
N3021 G1 X47.0000
N3022 L Global.sub
  
```

## 3 Parameter

### 3.1 Overview

ID	Parameter	Description
P-STUP-00050	..decoder.function	Defines functionality for decoding
P-STUP-00051	..decoder.max_cache_number	Maximum number of possible cache files
P-STUP-00052	..decoder.max_cache_size	Maximum size of a cache file

### 3.2 Description

<b>P-STUP-00050</b>	<b>Definition of decoder functions</b>
Description	The parameter defines specific functionalities for decoding. This disables specific functions for testing or for performance reasons.
Parameter	configuration.channel[i].decoder.function
Data type	STRING
Data range	FCT_USE_CACHED_FILES: Enabling file caching FCT_VOL_COMP_COMPUTATION: Calculations for machine calibration -: No functionalities defined.
Dimension	----
Default value	
Remarks	Parameterisation example: Caching of maximal 4 files of maximum 4096 bytes each. <i>configuration.channel[0].decoder.function FCT_USE_CACHED_FILES</i> <i>configuration.channel[0].decoder.max_cache_number 4</i> <i>configuration.channel[0].decoder.max_cache_size 4096</i>



<b>P-STUP-00051</b>	<b>Maximum number of possible cache files</b>
Description	This parameter permits the user-specific definition of the maximum number of files available in the NC program cache.
Parameter	<code>configuration.channel[i].decoder.max_cache_number</code>
Data type	UNS32
Data range	0 ... MAX(UNS32)
Dimension	----
Default value	0
Remarks	<p>Parameterisation example:            Caching of maximal 4 files of maximum 4096 bytes each.</p> <pre>configuration.channel[0].decoder.function FCT_USE_CACHED_FILES configuration.channel[0].decoder.max_cache_number 4 configuration.channel[0].decoder.max_cache_size 4096</pre>

<b>P-STUP-00052</b>	<b>Maximum size of a cache file</b>
Description	This parameter permits the user-specific definition of the maximum size of an NC program cache.
Parameter	<code>configuration.channel[i].decoder.max_cache_size</code>
Data type	UNS32
Data range	0 ... MAX(UNS32)
Dimension	----
Default value	0
Remarks	<p>Parameterisation example:            Caching of maximal 4 files of maximum 4096 bytes each.</p> <pre>configuration.channel[0].decoder.function FCT_USE_CACHED_FILES configuration.channel[0].decoder.max_cache_number 4 configuration.channel[0].decoder.max_cache_size 4096</pre>

# Keyword index

## P

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## 4 Appendix

### 4.1 Suggestions, corrections and the latest documentation

Did you find any errors? Do you have any suggestions or constructive criticism? Then please contact us at [documentation@isg-stuttgart.de](mailto:documentation@isg-stuttgart.de). The latest documentation is posted in our Online Help (DE/EN):



QR code link: <https://www.isg-stuttgart.de/documentation-kernel/>

The link above forwards you to:

<https://www.isg-stuttgart.de/fileadmin/kernel/kernel-html/index.html>



#### Notice

##### Change options for favourite links in your browser;

Technical changes to the website layout concerning folder paths or a change in the HTML framework and therefore the link structure cannot be excluded.

We recommend you to save the above "QR code link" as your primary favourite link.

##### PDFs for download:

PDFs DE:

<https://www.isg-stuttgart.de/produkte/softwareprodukte/isg-kernel/dokumente-und-downloads>

PDFs EN:

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