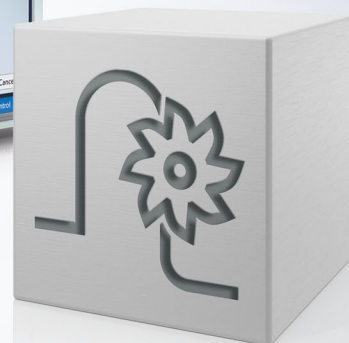
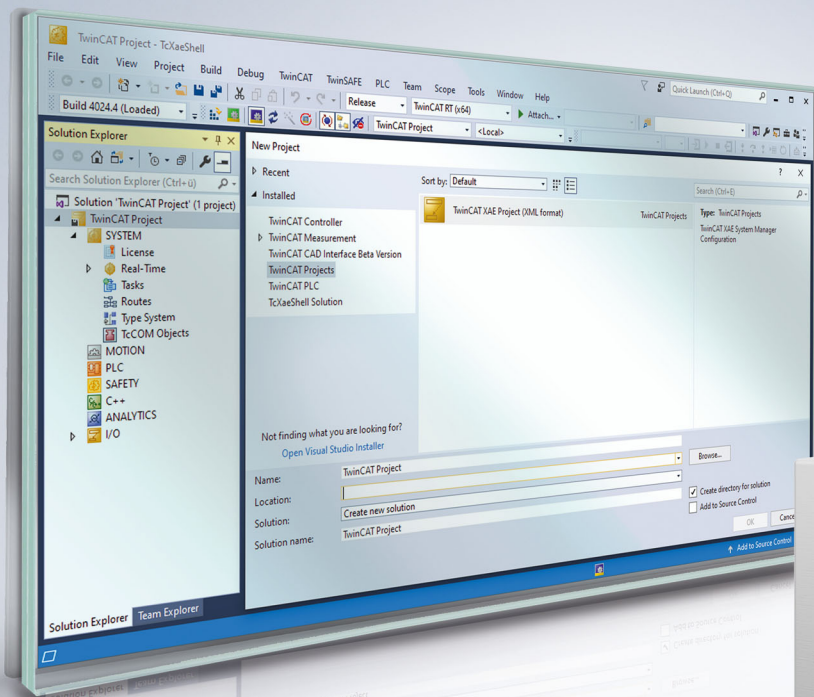


Functional description | EN

TF5200 | TwinCAT 3 CNC

File caching



Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with the applicable national standards.

It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components.

It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.

We reserve the right to revise and change the documentation at any time and without prior announcement.

No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

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EP1590927, EP1789857, EP1456722, EP2137893, DE102015105702

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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

1. 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.

NOTICE

Restriction or error

This icon describes restrictions or warns of errors.

Tips and other notes



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

General example

Example that clarifies the text.

NC programming example

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

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.



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

Accelerating file access times

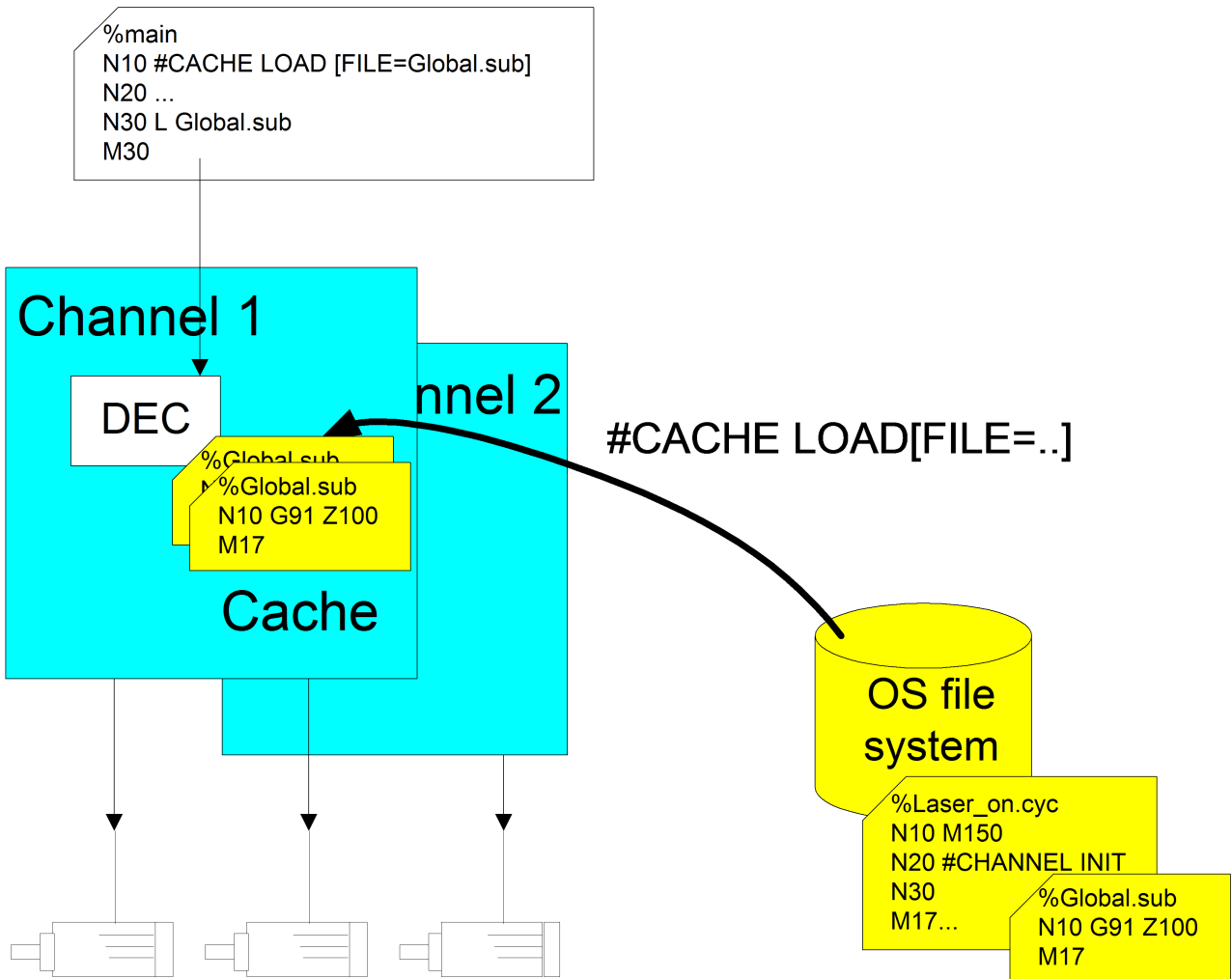


Fig. 1: Enabling file caching

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

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

Subroutines / cycles

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

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

RESET

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

Maximum number of files and file size

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

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

P-STUP-00050	Definition of decoder functions
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> * Note: The default value of variables is a blank string.

P-STUP-00051	Maximum number of possible cache files
Description	This parameter permits the user-specific definition of the maximum number of files available in the NC program cache.
Parameter	configuration.channel[i].decoder.max_cache_number
Data type	UNS32
Data range	0 <= P-STUP-00051 <= MAX(UNS32)
Dimension	----
Default value	0
Remarks	If the File Caching function is active with <i>FCT_USE_CACHED_FILES</i> , the default value is 4. Parameterisation example: Caching of maximal 6 files of maximum 6000 bytes each. <i>configuration.channel[0].decoder.function FCT_USE_CACHED_FILES</i> <i>configuration.channel[0].decoder.max_cache_number 6</i> <i>configuration.channel[0].decoder.max_cache_size 6000</i>

P-STUP-00052	Maximum size of a cache file
--------------	------------------------------

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	$0 \leq \text{P-STUP-00052} \leq \text{MAX(UNS32)}$
Dimension	----
Default value	0
Remarks	<p>If the File Caching function is active with <i>FCT_USE_CACHED_FILES</i>, the default value is 4096.</p> <p>Parameterisation example: Caching of maximal 6 files of maximum 6000 bytes each. <i>configuration.channel[0].decoder.function FCT_USE_CACHED_FILES</i> <i>configuration.channel[0].decoder.max_cache_number 6</i> <i>configuration.channel[0].decoder.max_cache_size 6000</i></p>

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