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HT2 connected to SINUMERIK ONE

HT2 on SINUMERIK ONE

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1 Preface

Additional PLC blocks are required to operate the HT2 with a SINUMERIK ONE. These instructions describe how to handle the blocks of the application example provided.

Fig. 1-1



2 Handling

2.1 Operating concept

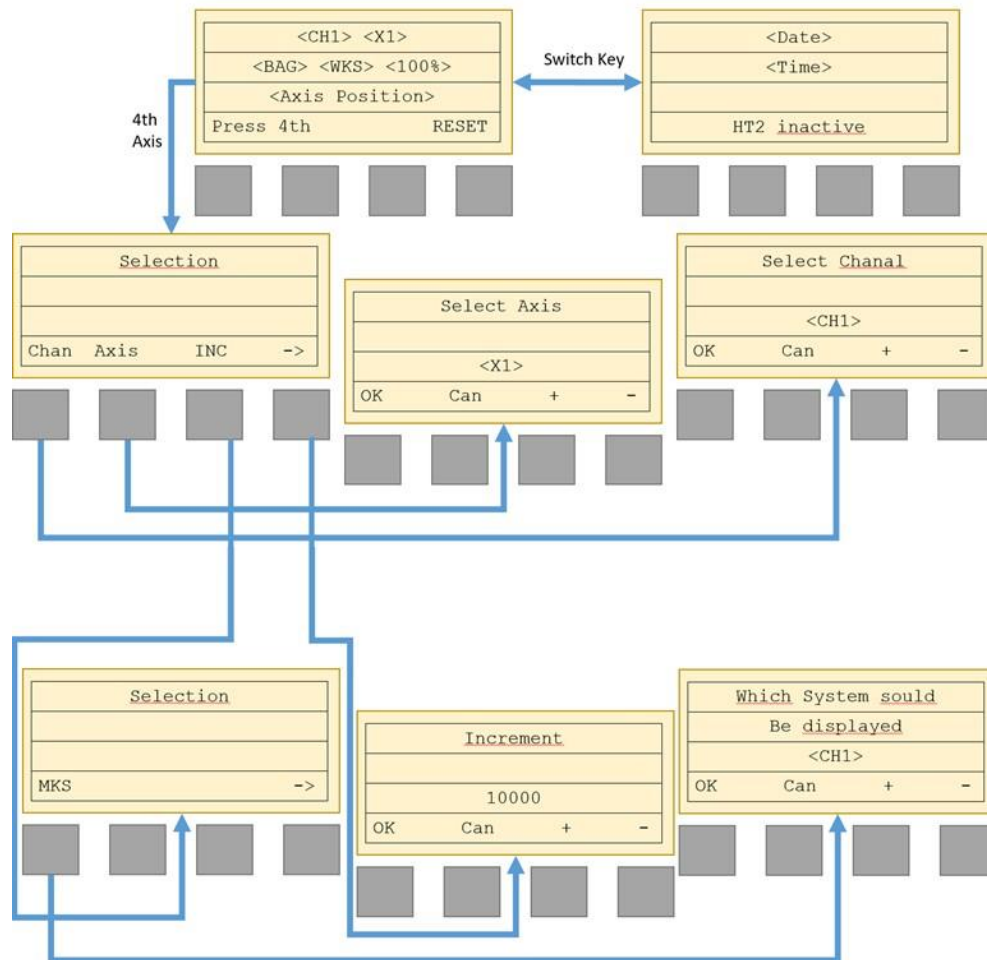
Fig. 2-1

T1	T2	T3	T4
JOG	AUTO	Wheel	X
FEED	FEED	+	Y
Spindle	Spindle	Rapid	Z
NC Stop	NC Start	-	4th

The HT2 has 20 keys. Of these, 15 keys are implemented with their depicted functions. The keys shown in blue represent special functions. Keys T1 – T4 are freely assignable keys that can be assigned their own specific functions. The "4th" key is used to open/close the menu. Currently, key T4 has the RESET function. If the menu is opened, keys T1 – T4 are not transferred to the outside (they are always false).

2.2 Menu

Fig. 2-2



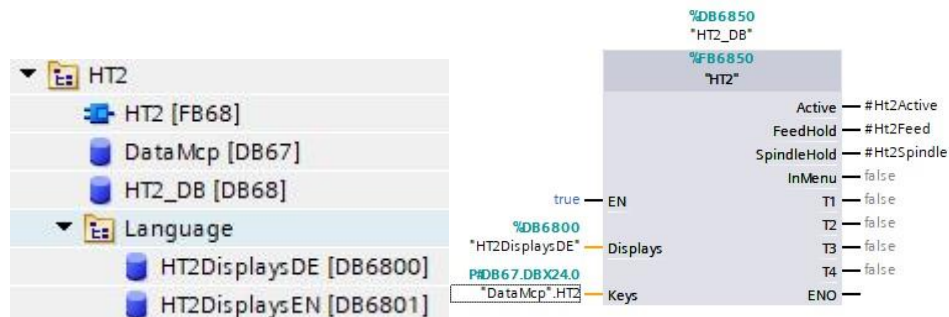
The diagram above shows the individual lines of HT2, as well as keys T1 – T4 in gray. To be able to traverse more than 3 axes, all axes parameterized in the machine data can be iterated in the axis selection screen. In so doing, it should be noted that the channel is also switched if the newly selected axis cannot be found in the previous channel. The same applies when switching the channel. Keys X, Y, Z of the HT2 always refer to the first 3 axes of the machine data, independent of the channel. The increments can be selected at the INC menu. Also here, it is possible to iterate through all options. Further, on the second menu page, in menu item MCS, it is possible to switch between the MCS and WCS coordinate representation.

You can incorporate your own submenus in the structure.

2.3 PLC block

The project comprises an HT2 folder, in which the program blocks as well as a folder with the data types are located. The blocks listed below are required for the PLC.

Fig. 2-3



Block DataMcp is only listed here as example. The I/O addresses are linked in this via the OB100. Blocks HT2DisplaysDE and HT2DisplaysEN are listed here as example for switching over between several languages.

2.4 Block call

Block HT2 must be cyclically called (in the OB1 cycle). If LBP_MCPCtrlMilling (FC19) is not deactivated when using the HT2, then the HT2 block should be called after calling FC19 in the OB 1. To a large extent, both blocks are then compatible with one another.

2.4.1 Connecting the inputs and outputs

Input

- **EN:** must not be connected.

Input / Output

- **Displays:** The display texts are saved in the data type to be transferred here. These can also be dynamically switched over, as can be seen in the diagram above, for example. The UDT HT2DisplaysDE is expected here.
- **Keys:** Are the keys on the HT2. Here, the same storage location must be specified as also in the FC1(OB100) – connection of the OB100 can be found in the lower diagram. The UDT HT2DisplaysDE is expected here.

Output

- **InMenu:** specifies whether the user is actually in the menu.
- **T1-4:** are the freely-assignable keys These can still be used. However, these are also used to navigate through the HT2 menu. As a consequence, all outputs here are false as soon as InMenu is active.
- **SpindleHold / FeedHold:** should be treated the same as the same outputs of the FC19

The blocks are programmed completely symbolically. This means that the block numbers can be changed as required.

3 Commissioning/adaptations

3.1 Libraries

The TIA Portal and the SINUMERIK toolbox are required to commission SINUMERIK ONE. Which also means when using the HT2. This block was developed with the TIA Portal v16. The LBP_ConfigBP block, used in Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**, is from the SINUMERIK toolbox.

3.2 Adapting the machine data

The following data must be changed in the machine data. These changes are not specific for the HT2, but for connecting a handwheel; these can deviate for more complex hardware configurations.

- MD11350 = 6
- MD11351 = 1
- MD11352 = 5

3.3 Adaptations at the LBP_ConfigBP

Further, **LBP_ConfigBP** must be adapted in OB100.

Fig. 3-1

14	MCP2NotSend	:=FALSE
15	MCPBusType	:=B#16#55
16	HTIf	:=5
17	HTIn	:= "DataMcp".HT2.I
18	HTOut	:= "DataMcp".HT2.Q
19	HTAdr	:=240
20	HTStop	:= "DataMcp".HT2.HtStop
21	HTNotSend	:= "DataMcp".HT2.HtNotSend
22	NCCyclTimeout	:=S5T#200MS
23	NCRunupTimeout	:=S5T#50S

More precisely, signals HTIn, HTOut, HTAdr, HTStop, HTNotSend must be processed. In the example, these signals are written to DB DataMcp, which can be freely adapted. However, it is recommended that the signals are written to a DB, which includes data type typeHT2. This simplifies transferring the data when calling OB1.

The address of the HT2 (HTAdr) is set on the hardware side in the CONNECTIVITY BOX.

Appendix

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4.1 Links and references

Table 4-1

No.	Topic
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Link to the entry page of the application example https://support.industry.siemens.com/cs/ww/en/view/109783834
\3\	Link to the HT2 page of the Mall https://mall.industry.siemens.com/mall/de/de/Catalog/Product/6FC5303-0AA00-2AA0

4.2 Change documentation

Table 4-2

Version	Date	Change
V1.0	11/2020	First Edition