

Machine Data Acquisition (MDA) by Control Outputs

- With fixed signal assignment
- With adjustable signal assignment

Single-Spindle Machines

Control INDEX C200-sl
INDEX C200-4D sl
INDEX C200-4D

Note on applicability

Illustrations in this publication may deviate from the product supplied. Errors and omissions due to technical progress expected.

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Fixed signal assignment



Standard function on control:

- INDEX C200-4D
- INDEX C200-4D sl
- INDEX C200-sl up to software version ES.S1.2017.02.00.00

Functional description

The standard package includes 2 control outputs to signal the operating states. However, it is possible to extend the number to up to 4 control outputs (option).

These control outputs are assigned the following signals (A0 to A3 = symbolic):

Output A0	Production active
Output A1	Quantity pulse
Output A2 ¹⁾	Fault
Output A3 ¹⁾	Setup (configurable)

By default, output **A3** is assigned to “**Setup**”. It can optionally be reconfigured to “**Scrap**” or “**NC error**” or “**Program stop**”.



Please note!

The names of the outputs A0 - A3 are symbolic.
The actual hardware addresses are specified in the wiring diagrams.

1) Option

Signal description

Output A0: Production active (standard)

- Spindle/feed rate override 100%, no query
- Spindle/feed rate override at 100% only with key switch to Automatic
- Output only for workpiece change by third-party portal
- Output only for spindle speed and working feed
- Interrupt signal for M392 in follow-up cycle
- Output also in MDI mode

In the following cases, this signal is not output:

- Override=0
- Warm-up control, start-up functions, running without material
- Error, program interruption
- Single block, dry run feed rate
- M0, M01, reset program L409
- Start conditions

Output A1: Quantity pulse (standard)

- Total piece counter M30, M392 is additionally output on this signal (M1=89). M1=89 is still possible (signal duration about 1 sec).

Output A2: Fault (option)

- Output signal at flashing rate

Output A3: Setup (option)

Can be reconfigured to the following output signals:

- Scrap
- NC alarms separate from PLC alarms
- Program is stopped or interrupted

Adjustable control assignment



Standard function on control:

- **C200-sl from software version ES.S1.2017.02.00.00.**

Functional description

The standard package includes 2 control outputs to signal the operating states. However, it is possible to extend the number to up to 8 control outputs (option).

The assignment of the signals to the control outputs is freely selectable, but the following restrictions apply:

- Up to 8 signals per output are possible.
- The signals are selected from a predefined list (see also section "Overview of selectable signals").
- Signals can be negated.
- Signals can be negated and logically linked with each other.
- It is possible to output the selected combination of signals directly, as a pulse, as a flashing cycle or as a signal extension.
- There is the option to write the status of the outputs to the customer specific area in the DB165.



The setting is made in the "Machine parameter" area under "External data collection"

Factory settings of the control outputs

Output **A0** Production active, direct
Output **A1** Piece count pulse, direct

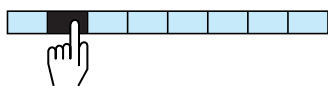


Status of outputs is not written to the customer specific area in DB165.

Machine parameters



Press key MENU SELECT.



Press softkey **Parameter**.



Press softkey **Apply Adjust**.



Press softkey **Machine parameter**.



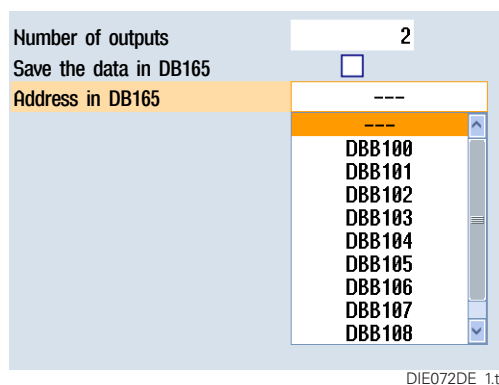
Position cursor on **External data collection** + expand selection.

Basic settings

Basic settings display of “External data acquisition”. These settings are visible but can only be changed by INDEX.



Position cursor on **Basic settings**.



Displays

Number of outputs

The number of existing outputs is displayed here.

Save the data in DB165

If this check box is selected, the current state of the outputs is stored in the custom area (DBB 100-DBB 109) of the DB165.

Address in DB165

The byte in which the current state of the outputs is stored is displayed here. This is only relevant if “Save the data in DB165” is selected.

Output settings

After setting the access level "Customer", the settings for the respective output can be made here.

- Changes take effect immediately.
- Signals can be negated and logically linked with each other.
- Linking is effective from top to bottom. This means that each signal is first inverted (if selected) and then linked with the current logic result depending on the selection of AND or OR.



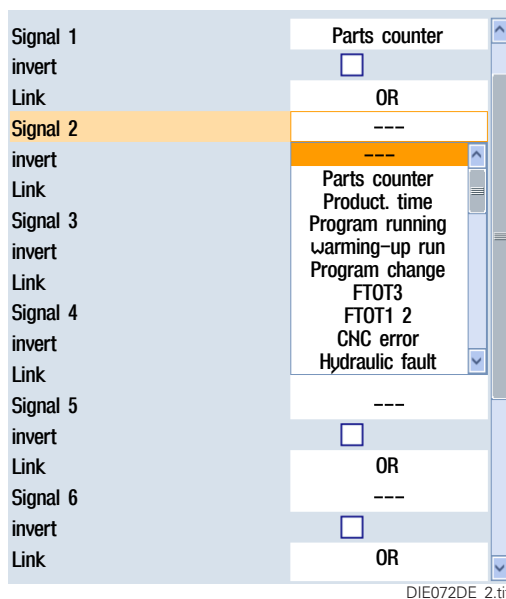
If nothing is selected for a signal, it is skipped and the next signal is taken into account. Thus, a signal can be deselected without the signals below having to be moved.



→ **Parameter** → **Apply Adjust** → **Machine parameter** → **External data collection**



Position cursor on **Output 1** or **2**.



Settings

Signal 1-8

The desired signal is selected here. For more information, see Section: "Overview of signals that can be selected"

invert

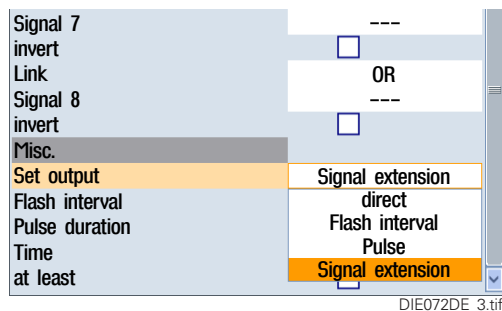
By selecting the check box, the selected signal will be inverted. However, this only applies to the signal itself and not to the current logic result.

Link

Here you can select how the current logic result should be linked with the selected signal. You can choose between AND and OR.

Set output

Here you can select how the output is set. Further setting options become visible in the screen depending on the selection.



The following options are available:

direct	The output corresponds to the set logic result. This setting is selected as default.
Flash interval	In this case, the Flash interval selection appears below. Here, you can select the flash interval by which the set logic result is output. If no flash interval is selected, the output corresponds to the set logic result.
Pulse	In this case, the Pulse duration selection appears below. If the result is positive, the output is set once for the set pulse duration. A new pulse is not output until the logic result is negative and then positive again. If no pulse duration is selected, the output corresponds to the set logic result.

Signal extension	<p>In this case, the Time selection as well as the at least check box appear below.</p> <ul style="list-style-type: none"> • Under the Time selection, it is possible to specify the duration in seconds that the output should remain set for a positive logic result. • If the “at least” check box is not selected, the output is set exactly for this time for a positive logic result, regardless of whether the logic result remains positive for longer or shorter. <p>If the “at least” check box is selected, the output remains set for a positive logic result as long as the logic result remains positive, but at least for the entered time.</p> <ul style="list-style-type: none"> • If no time is selected, the output corresponds to the set logic result.
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Overview of signals that can be selected

Signal	Description
Parts counter	Corresponds to M1=89. Optionally also the total work-piece counter
Product. time	<p>Signal output occurs under the following conditions:</p> <ul style="list-style-type: none"> – FEED RATE and SPINDLE OVERRIDE = 100% (regardless of the key switch position) – Automatic - program is running – No alarm active – No M00/M01 active – No single block active – No dry-run active – No feed hold active – No start-up functions active <p>Output for bar change programs:</p> <p>M12=98 H165000375 - Activate function M13=98 H165000375 - Deactivate function</p> <p>Output for loading and unloading programs:</p> <p>M12=98 H165000376 - Activate function M13=98 H165000376 - Deactivate function</p> <p><i>It should be noted that the functions are always disabled after the PLC startup.</i></p>
Program running	Automatic mode - program is running.
Program started	At least one channel is not in the reset state.
warming-up run	Warm up of the machine.
Program change	The workpiece program is changed.

Signal	Description
FTOT3	Error with stop at the end of the workpiece program is pending.
FTOT1 2	Error with immediate stop or stop after relief cutting time is pending.
CNC error	Error from the CNC.
Hydraulic fault	Malfunction of the hydraulic system without fault effect.
Pneumatic fault	Malfunction of the pneumatic system without fault effect.
Coolant fault	Malfunction of the cooling lubricant system without fault effect.
Drive fault	Drive fault without fault effect.
Tool breakage	Tool breakage with program stop.
Scrap	Scrap was measured.
Program stopped	Program has stopped for one of the following reasons: <ul style="list-style-type: none"> – Key SPINDLE STOP AND FEED HALT has been pressed – M0/M1 active – FEED OVERRIDE is 0 – Reader stop – No automatic mode - no program active
JOG	Machine is in JOG NC mode
Setup engineer	Access level "Setup Engineer" is active. <ul style="list-style-type: none"> – The OPERATING MODE SELECTOR SWITCH on SETUP POSITION.
M0/M1 active	Program has been interrupted by M00/M01
M30 active	End of program M30
M392 active	Program run M392
Follow-up start acti.	Continuous cycle is active
Prg reset	Program aborted by pressing the RESET key
EMER. STOP	EMERGENCY STOP is pending.
Hydraulic is off	Hydraulic unit has been switched off
Service activities	Service activities are pending
Maintenance activ.	Maintenance activities are pending
L408 / L409	Reset cycle L408 / L409 is active
End of bar	User help end of material from handling system or bar feeder
Main spindle running	Main spindle is running
Counter spindle run.	Counter spindle is running
Feed rate overrid.=0	FEED OVERRIDE is at 0%
Feed rate over.=100	FEED OVERRIDE is at 100%

Signal	Description
Feed rate ov.>=100	FEED OVERRIDE is at 100% or greater
Spindle overrid.=100	SPINDLE OVERRIDE is at 100%
Feed rate limit<100	Feed rate limitation is less than 100%
Rapid trav. lim.<100	Rapid traverse rate limitation is less than 100%
Bar feeder	Bar feeder process is active
Auto ready	Machine is ready for operation in AUTOMATIC mode
IB function active	A setup function is active
Load	The "Load" process is active
Unload	The "Unload" process is active
Working feed active	The working feed is active in a channel



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