Operating / Instruction Manual

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Dereneville
by AVDesignHaus

Content.

1. Foreword.

Above all, we want to congratulate you for choosing one of the most innovative Motor-unit for Turntables.

In our drive, we have brought together for you the advantages and the precision of digital technology with the pure, analogue part of the music.

Our motivation:	Think feasible and make the thinkable.
Our principles:	We believe only in physical limits the technically feasible.
Our maxim:	NO COMPROMISES.

During our six-year development period, we encountered obstacles and seemingly insurmountable limits repeatedly. Such setbacks have only driven us, because if it is conceivable, it must also be feasible.

With partly massive technical effort, we have overcome all hurdles. Our hardware and software design combines the highest precision, flexibility and intuitive operation.

Essential components of our design:

- a powerful Fujitsu 16-bit microcontroller
- a high-precision embedded real-time operating system
- Software designed, programmed and tested to automotive standards
- a sophisticated interrupt system (ensures the "synchronization" of the software)
- Papst BLDC Motor

We are especially proud to be able to offer you this product today.

1.1 A Frequently Asked Question:

How does digital technology agree in analogue drives?

The cynics among us will say, "Exactly, how is that supposed to work?" In addition, with the direct sound reduction, the sound signal transmission and - processing we agree to this without restriction.

However, if we talk about a drive, especially ours, we will contradict this statement massively.

With the components that we have selected and developed, we achieve an accuracy that far exceeds the tolerances of drives with analogue control. (This can be seen quickly, for example, in long-term and temperature stability)

In addition, our drive provides functions that are difficult or impossible to display in the analogue world.

Conclusion:
The music from the pickup is and remains analog, the digital drive makes it precise and round - it brings the full dynamics of the record to the fore.

1.2 A small note is very important to us.

In the manufacture of the drive (as with all our other products), we rely 100% on local partners.

So:

- The raw metal elements of the drive system are manufactured in the workshop for the handicapped on a high-precision CNC turning and milling machine.
- The details are then reworked by hand on the company's own lid FP-2.
- The refining of the surfaces then takes place in a local galvanic operation.
- The assembly as well as the final acceptance of each individual drive is done personally.

2. General information.

Core of the drive is strong BLDC motor, which is controlled via a powerful microcontroller.

The microcontroller enables features that are unique to this drive.

- Fujitsu 16 bit microcontroller (automotive standard)
- Quartz accurate speed
- Highly precise, individual adjustability of the speeds 33,33 and 45,00
- Flexible, variable dynamics to adjust the belt plate pairing
- Pitching (almost) without limits
- Operating hours counter for belt and pickup system
- Motion Care
- High-precision, individual adjustability of the speeds 78.00 and 16.66
- 3 sets for flexible use of the drive
- Operating hours counter for belts and up to 3 pickup systems per set
- Connection to a PC for maximum comfort
- Motion Care with individual settings

2.1 Set.

Set	
Speeds	16.66
	33.33
	45.00
	78.00
Dynamic	Max. Accelerate
	Max. Brake
	Gain
Operating hours	Belt
	Turntable 1
	Turntable 2
	Turntable 3

2.2 Operating conditions.

The drive is in one of the following operating states:

- ON The drive is now ready for use

OFF The drive is switched off and awaits the next use

Motion Care The drive "wakes up" after a delay and rotates the Turntable for a short time (adjustable).

2.3 ON

2.3.1 The Motor is turning.

- If the motor rotates, the corresponding rotational speed is displayed.
- If the speed has been "pitched", the display deviates from the standard speeds.
- If the engine accelerates or brakes, the display flashes at the target speed to indicate that the engine speed has not been reached stably.

Anzeige	Function
	**16,66**
	**33,33**
	**45,00**
	**78,00**
	**Pitch**
	**The display flashes The engine accelerates / brakes**

2.3.2 The Motor is not turning.

When the engine is not turning/stopped, the active pickup system is displayed.

Display	Function
	**Pickup 1 active**
	**Pickup 2 active**
	**Pickup 3 active**

2.3.3 The engine is stopped and there are operating hours warning (s)

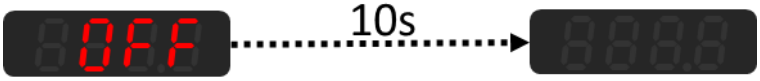
If the adjustable limits for the operating times of the belt or one or more pickup systems are reached, the corresponding warnings are displayed in alternation with the usual display for the stationary engine and it is pointed out that the desired running time of the component has been achieved.

Display	Function
	**Belt overdue**
	**Turntable System 1 overdue**
	**Turntable System 2 overdue**
	**Turntable System 3 overdue**
	**Combination**

Note:
The Hours Warning is just a service that is used to display overdue components. However, this in no way affects the rest of the behavior of the drive.

2.4 OFF

- The drive is switched off and is in a rest phase.
- The engine is freewheeling and easy to move.
- The display is either Off or goes off after about 10s.



Display	Function
	The drive is less than 10 seconds OFF
	The drive is OFF for more than 10 seconds

2.5 Motion Care

The Motion Care operation maintains the drive belt and all bearings associated by turning the turntable. For this purpose, the drive "wakes up" in Motion Care mode after a specified waiting time and rotates the turntable at a low speed for the set rotation time. When the spin time has elapsed, the motor stops and the drive restarts with the Motion Care wait time countdown.

In Motion Care mode, the status is shown in the display:

Display	Description
	Die einstellige Anzeige zeigt die Verbleibenden Tage bis zum Motion Care Lauf
	Ist die verbleibende Zeit bis zum Motion Care Lauf weniger als 24 Stunden, wechselt die Anzeige auf Stunden: Minuten bis zum Erwachen
	Ist die verbleibende Zeit bis zum "Erwachen" weniger als eine Stunde, wechselt die Anzeige auf Minuten: Sekunden
	Ist der Motion Care Lauf, wird die Drehzeit in Sekunden angezeigt. Das führende "P" weißt auf Motion Care Lauf hin.

The Motion Care wait and the Motion Care spin time are fixed in the Comfort drive.

Both times can be set individually.

Motion Care	Value range
Waiting time	10 Minuts - 7 Days
Time of turning	10 - 120 Seconds

3. Operating

3.1 The control panel

3.2 Turning On and Off

3.2.1 Turning On

By pressing the On / Off button for more than 3 seconds, the drive changes to the operating mode.

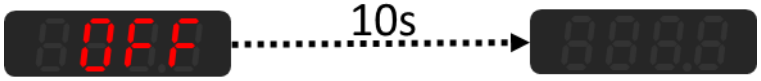
This can be done from any situation in the off or motion care status.

Business	Service	Display	Display
On	On Off > 3s	Turntable 1	
		Turntable 2	
		Turntable 3	

The motor is now ready for use.

3.2.2 Turning Off

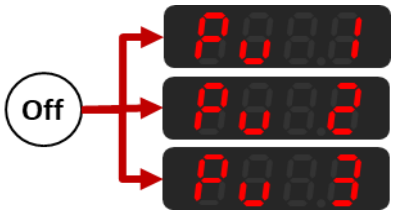
The drive can be set to Off mode or Motion Care mode. The desired mode is selected by pressing the On / Off button for different lengths of time.

Business	Service	Display
Off	On Off > 3s	
Trailing/Service-Mode	On Off > 6s	z.B.: 

3.3 Speed Selection

The drive provides the typical speeds.

Speed	Display
16.66	
33.33	

45.00	
78.00	
Motor stop	

With the double-assigned speed buttons, the drive always starts with the speed 33,33 and then switches alternately to the respective alternative speed.

3.3.1 Why the 16,66 speed?

The answer could be:

- Because it works
- Why not.
- There are still records for this speed.
- You can use this speed for turning your record.

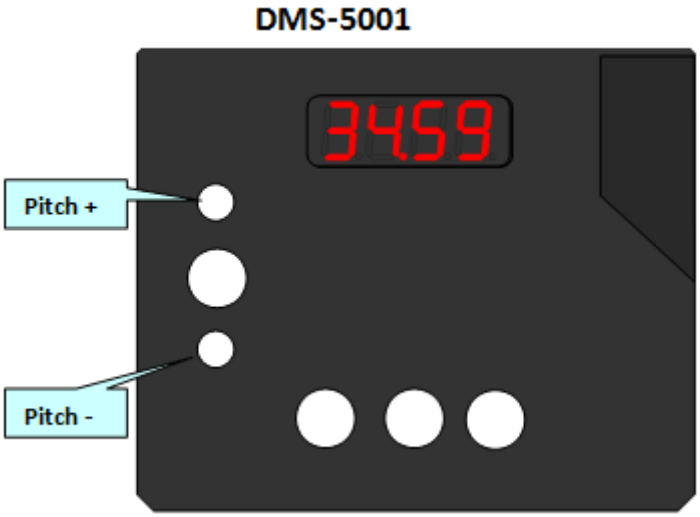
3.3.2 Flashing speed indicator

When the drive is started or the speed is changed, the display starts flashing at the new target speed. This means that the drive accelerates or brakes.

The characteristic of this dynamic is configurable, whereby the duration of this process varies in length depending on the setting.

As soon as the drive reaches the target speed, it is displayed permanently (without flashing) in the display. The drive now runs stably at the selected speed.

3.4 Pitch



By pressing the keys Pitch + and Pitch - the speed can be changed with a resolution of 0.01 rpm.

In terms of speed, there are no restrictions on the pitch. The speed can be pitched through the minimum to maximum speed of the drive.

A short press changes the speed by 0.01 rpm. Prolonged pressure changes the speed steadily, whereby rate of change increases. The maximum rate of change can be set individually in the key delay configuration.

The display shows the target speed. Again, as long as the display is flashing, the drive is in dynamic phase and the desired speed has not yet been reached.

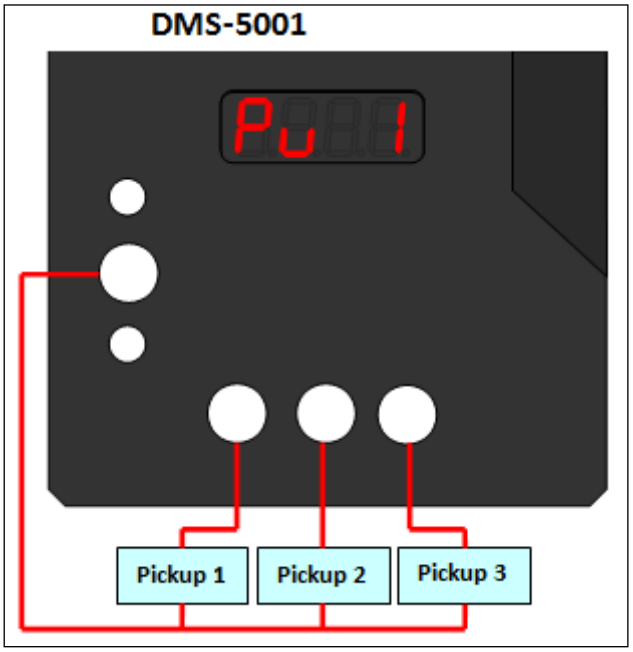
- The pitch setting is not saved.
- The pitch-changed speed remains until one of the speed buttons or the off-key is pressed, or the unit is turned off.

Note:

If a set pitch is needed frequently, the Micro Seiki drive also has an option to use a set for that speed. By switching the set, the individual adjusted speeds can then be selected directly via the speed buttons. Configuring the speeds also allows an even finer speed adjustment than is possible with the pitch.

3.5 Turntable system selection. (Premium)

If the drive is switched on and the engine is stopped, the active Turntable system is displayed:



By pressing the key combination On / Off and at the same time one of the speed keys a pickup (needle) can be selected. As long as the engine is rotating, the operating hours counter of the selected pickup will be increased.

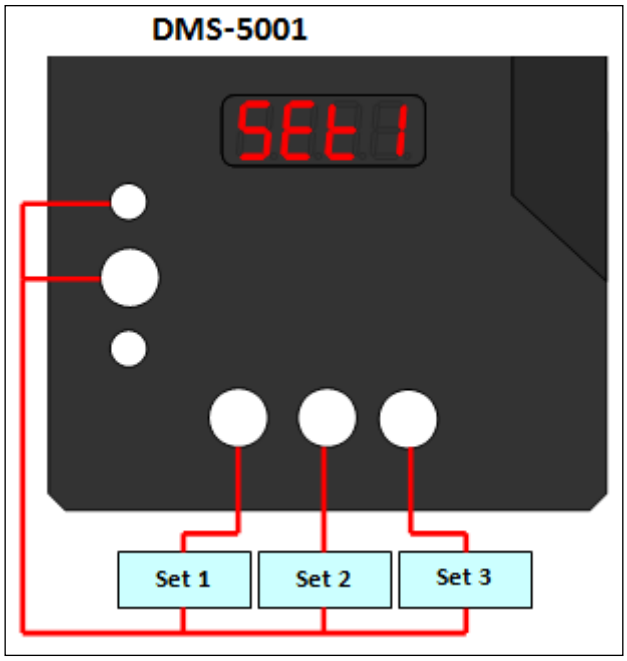
Turntable	Service	Display
Turntable System 1	On Off + 33	Pu 1
Turntable System 2	On Off + 45	Pu 2
Turntable System 3	On Off + 78	Pu 3

Note on operation:

It is advisable to first press the On / Off button and shortly thereafter the corresponding speed buttons. This should be done (if possible) when the engine is stopped, as this action stops the engine.

More information can be found in the chapter Operating Hour Counter.

3.6 Set-Selection



The set can be toggled by simultaneously pressing the On / Off key combination together with Pitch + and one of the speed keys.

Set	Service	Display
Turntable System 1	On Off + P + + 33	SEt 1
Turntable System 2	On Off + P + + 45	SEt 2
Turntable System 3	On Off + P + + 78	SEt 3

Note on the operation:

It is recommended to first press the on / off button shortly after the pitch + and then shortly thereafter the corresponding speed button.

3.7 Hours of Operation Warning

Although this is a "Motor Unit" for driving a turntable, it offers the use of more existing resources.

In order to obtain an optimum quality of reproduction, the question arises as to the age or operating hours of the drive belt and the cartridge systems. Therefore, we have integrated an hour’s counters for the drive belt and the cartridge systems.

Based on our experience, many drives can be operated with up to three tonearms, so there are three pickup hour meters (per set) available for the Micro Seiki drive.

The operating hours with a warning for replacing the components appears on the display. This can be specified individually. (See chapter Configuration of operating hours counter)

When the operating time has been reached, a corresponding message appears on the display when the engine has stopped.

Overdue	Display
Belt	
Turntable 1	
Turntable 2	
Turntable 3	
Combination	

The information may also be combined, e.g. operating time of the belt and all pickup systems reached.

3.8 For the Experts among us:

To calculate the operating hours for the belt and the pickups, the engine running time is used. There are certain inaccuracies here, because e.g. the "real" game time of the system on the disk can not really be detected by the drive.

In addition, in order to detect the wear of the diamond needle, actually the mileage in meters would have to be measured. An estimate would even be possible with reasonable effort.

In the end, however, the question remains, how many meters of vinyl can a needle play?

Here it is now academic and actually, we want to listen to music.

We believe that the life of the needles can be estimated with the method used.

The final decision to exchange is up to you, the user.

4. Configuration

The configuration allows the drive to be adapted to the individual characteristics of the drive. The speeds are adapted to the relationship between sweater and turntable very accurately. It is also important to optimize the acceleration and braking values to take into account the material properties of the belt and the weight of the turntable.

The drive can be optimally matched to the mating with the drive or adapted to personal needs.

All setting options as well as the operation of the configuration mode are described in detail below.

The Micro Seiki drive offers 3 sets.

Thus, the drive can be adapted flexibly and quickly to recurring change requests, such as e.g. Drive up to three different drives or use belt, tape or string alternately.

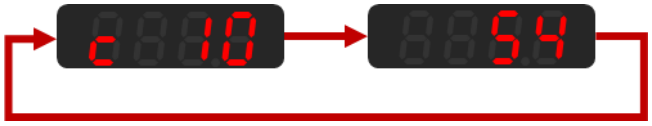
The tuning of the favorite record to the individual speed.

4.1 Display during Configuration

Since only one display is available on which both the configuration channel and the value to be set (or the value to be checked) should be displayed, we have opted for an alternating display.

- The channel display starts with a "c" in the left side.
- The value display, on the other hand, represents only the data.
- The channel is displayed about 0.5s after the value for about 1s, then again from the beginning.

e.g. Channel 10 and value 54

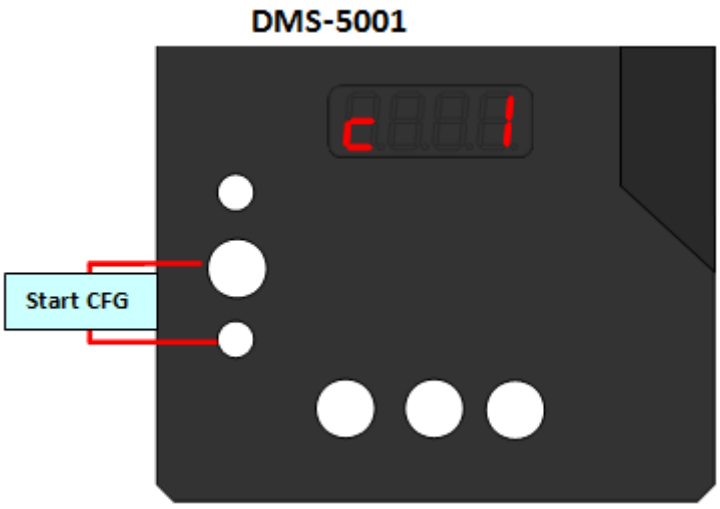


Notes:

- During channel selection, the display does not alternate and represents only the current channel.
- During the wait change, the display also does not alternate and only displays the current value.

If neither the value nor the channel is changed, the display changes back to the cyclical display between channel and value display.

4.2 Initiate configuration



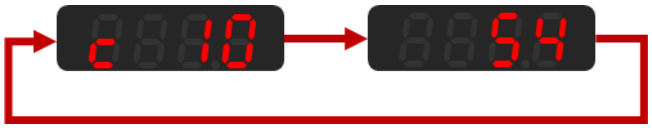
The configuration mode is initiated by pressing the buttons On / Off and Pitch - simultaneously.

The display changes to the channel display of the first channel. The representation of the channel number is indicated by a "c" = channel in the left side of the display.

Service	Display
On Off + P-	c 1

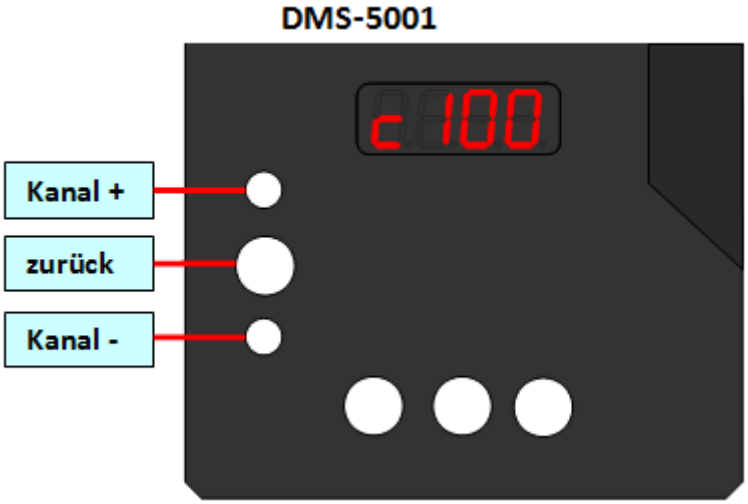
Note on operation:

It is recommended to first press the on / off button and then shortly after the pitch.



Note:
Some channels are only for display, the displayed values cannot be changed in this case.

4.3 Channel selection



The different settings are carried out in so-called channels. Their meaning and handling will be explained in detail below.

To select the desired channel, use the Pitch + and Pitch - buttons

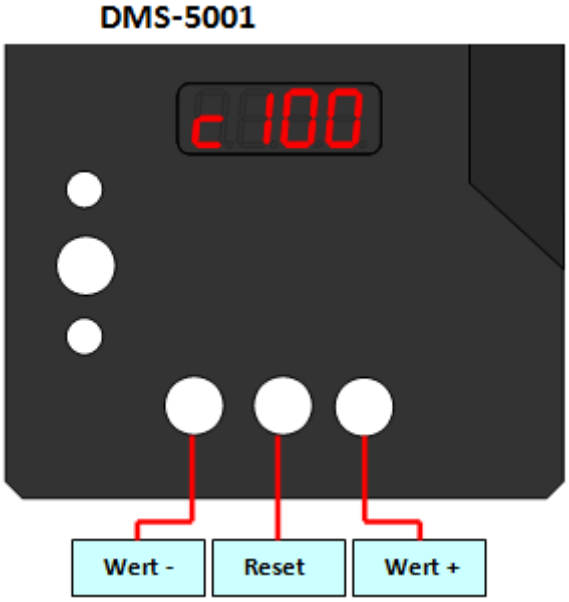
Function	Display
Reduce channel	P -
Increase channel	P +

The numbering of the channels are not consecutive, as the numbers also represent categories. Numbers below 100 represent the general channels.

- The channels 100 ... 199 are for the set 1
- The channels 200 ... 299 are for the set 2
- The channels 300 ... 399 are for the set 3
- The channels 500 ... 510 are reserved for the off-timer
- The channel 999 resets to factory settings

It can therefore come in the selection of the channel to jumps. See overview of channels.

4.4 Change values



Function	Display
Decrease value	33
Increase value	78
Undo / Reset	45

Undo / Reset restores the "old" value. Thus, e.g. accidentally changed value of the selected channel back to the value before the change (Undo).

While a value is being changed, only the value display is shown in the display.

The effect of the value is, if possible, carried out immediately. For example, the settings of the speeds are passed on directly to the motor with each value change in order to be able to directly check the changes.

If it does not change for some time, the display changes again between channel and value.

If the diagnostic mode is exited again, the newly set values are transferred to the non-volatile memory, so that they are also used in the following. This also applies if the motor can is not supplied with power for a long time. All set parameters are retained.

4.5 Overview configuration channels

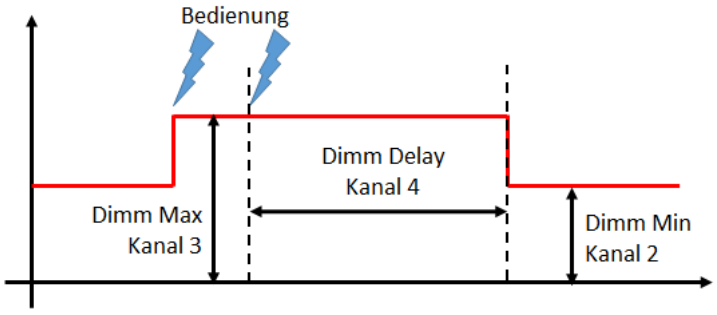
4.5.1 General

	Channel	Function	Variable	Value
General	1	Minimum dimming value	X	0 - 999
	2	Maximum dimming value	X	0 - 999
	3	Delay timer dimming	X	0 - 999
	10	Key delay	X	10 - 200
	20	Set	x	1, 2, 3
	21	Needle / Turntable	x	1, 2, 3

4.5.2 Dimming

	Channel	Function	Variable	Value
General	1	Dimming Min	X	0 - 999
General	2	Dimming Max	X	0 - 999
General	3	Dimming Delay	X	0 - 999

During operation, the display is brighter to facilitate handling. If no more operations are carried out, the display remains lit for some time and then darkens to be not disturbing perceived.



- In channel 2, the minimum brightness (without operation) is set.
- Channel 3 sets the maximum brightness (during operation).
- In channel 4, the time is set for which the display remains bright after the last operation.

4.5.2.1 Key Delay

	Channel	Function	Variable	Value
General	10	Key delay	X	10 - 200

Some inputs, such as Pitch, change values. This can be done by repeatedly pressing the corresponding key or by pressing and holding.

In channel 5, you can set the speed at which the value is changed by permanently holding down the key by setting the delay time. (The larger the value, the slower the change.)

4.5.2.2 Set and Needle

	Channel	Function	Variable	Value
General	20	Set	X	1, 2, 3
	21	Needle / Turntable	X	1, 2, 3

The motor can supports 3 configurations. In channel 1 the configuration can be selected. The selection of a set is also possible via the quick configuration.

4.5.3 Set(s)

	Channel			Function	Variable	Value
Set	1	2	3			1,2,3
	100	200	300	33,33 Rough setting	X	19 - 166
	101	201	301	33,33 Fine adjustment	X	0 - 9999
	102	202	302	45,00 Fine adjustment	X	0 - 9999
	103	203	303	78,00 Fine adjustment	X	0 - 9999
	104	204	304	16,66 Fine adjustment	X	0 - 9999
	110	210	310	Reinforcement	X	1 - 200
	111	211	311	Acceleration	X	10 - 999
	112	212	312	Brake	X	10 - 999
	120	220	320	Timer Belt Target	X	0 - 9999
	121	221	321	Timer Belt Ist	-	Time
	122	222	322	Timer Needle 1 Soll	X	0 - 9999
	123	223	323	Timer Needle 1 Ist	-	Time
	124	224	324	Timer Needle 2 Soll	X	0 - 9999

	125	225	325	Timer Needle 2 Ist	-	Time
	126	226	326	Timer Needle 3 Soll	X	0 - 9999
	127	227	327	Timer Needle 3 Ist	-	Time

4.5.3.1 Speeds

	Channel			Function	Variable	Value
Set	1	2*)	3*)			1,2,3
	100	200	300	33,33 Rough setting	X	19 - 166
	101	201	301	33,33 Fine adjustment	X	0 - 9999
	102	202	302	45,00 Fine adjustment	X	0 - 9999
	103	203	303	78,00 Fine adjustment	X	0 - 9999
	104	204	304	16,66 Fine adjustment	X	0 - 9999

We wanted to make the setting as simple as possible but still as accurate as possible.

The idea is. There is one channel per set for coarse adjustment of speed 33,33 (channel 100, 200, 300). By setting the 33.33 coarse value, the other speeds will be recalculated

NOTE!!!!

If the speed can not be adjusted within this value range of the coarse adjustment, the pulley must be changed

If the speed has been roughly adjusted to 33.33, the fine adjustment starts.

For this purpose the channels (x01 for 33,33, x02 for 45, x03 for 78 and x04 for 16,66) are used.

The fine adjustments are individual for each speed and have no effect on the other speeds.

The value range of the fine adjustment is 0 ... 9999 and overflows, i. turns in a circle. If the display reaches 9999, it jumps to 0, the display reaches 0, it jumps to 9999.

With these overflows, no information is lost, the invisible upper digits change the values of the coarse channels (only available for 33.33). Theoretically, the speed can also be completely adjusted in the fine adjustment.

The speeds can also be adjusted via a SW very comfortably via a PC or laptop.

4.5.3.1.1 Recommended procedure

The fastest way to set all speeds is therefore as follows:

- First, set the speed 33.33 coarse (channel 100, 200, 300).
- Then, adjust 33.33 until the drive rotates at the desired speed (channel 101, 201, 301).
- Switch back to the coarse adjustment for 33,33.
- Now change the value once and reset to the previously set.

This also takes into account the fine adjustment in the calculation of all other speeds. All other speeds are already pre-set very precisely.

Although the other speeds have already been set very precisely, it is recommended to check each individual speed and adjust it slightly if necessary.

4.5.3.2 Dynamics

	Channel			Function	Variable	Value
Set	1	2*)	3*)			1,2,3
	110	210	310	Amplification	X	1 - 200
	111	211	311	Acceleration	X	10 - 999
	112	212	312	Brake	X	10 - 999

The drive has a powerful engine that easily accelerates or decelerates a 60kg turntable to its rated speed. At this point the belt comes into play.

By changing the dynamics (acceleration and braking curves) properties

of the belt such as:

- Belt forms
- Belt elasticity (material)
- belt surface

...

- of the plate
- Dish weight and
- Plate drive surface

...

- of the pulley
- surface
- diameter

...

- be considered and adjusted.
  For example, a heavy turntable can be accelerated or slowed down to its target speed very quickly.

The values for braking and acceleration are the parameters for linear functions, while Gain is a non-linear function of first order.

Both functions are combined during braking and acceleration. The mode of operation is described in more detail below.

Why do we use two different linear behaviors for braking and acceleration?

Physically a legitimate question. Since the material will behave during braking exactly as in acceleration, a characteristic curve for both would be sufficient.

But, there are no physical, e.g. aesthetic reasons to accelerate the drive differently than to brake.

The decision and the taste lie with the user.

4.5.3.2.1 Gain

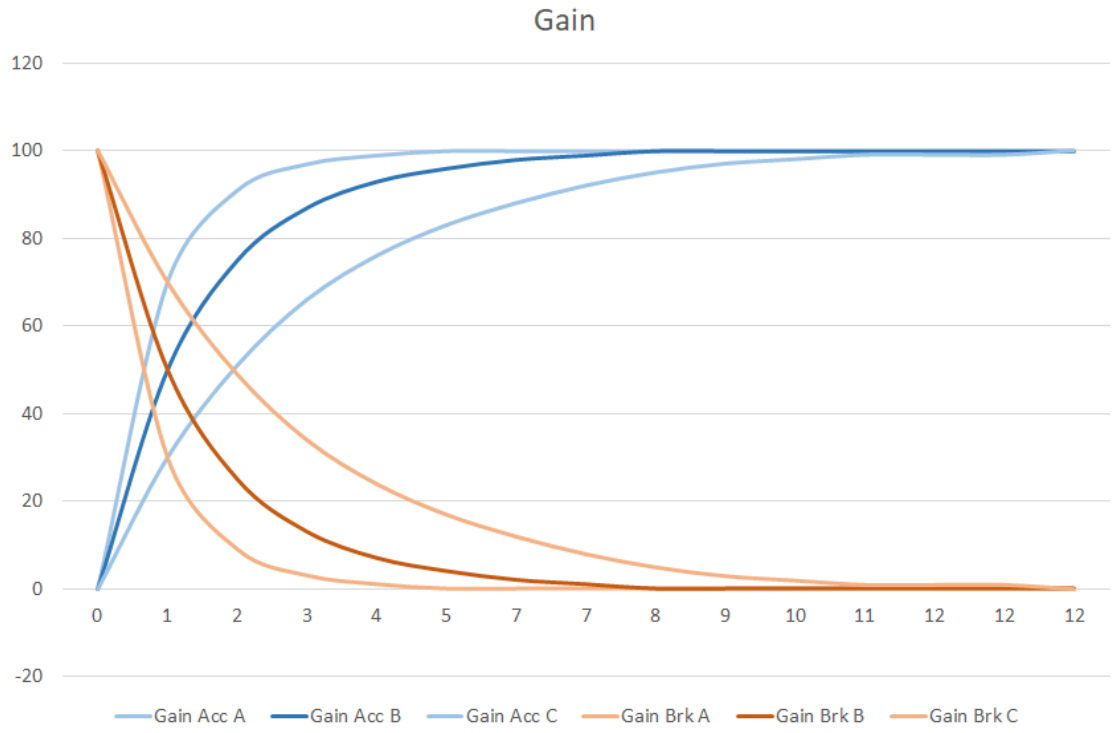
	Channel			Function	Variable	Value
Set	1	2*)	3*)			1,2,3
	110	210	310	Amplification	X	1 - 200

The Gain describes the non-linear behaviour of first order acceleration and braking.

Simplified, one could say it is the curve used to approach the target speed.

The higher the value is set, the "sharper" is the curve see e.g. Gain Acc A or Gain Brk A and the faster the final speed is achieved.

The graph shows examples of acceleration in blue and braking in red.



4.5.3.2.2 Accellerate & Brake

	Channel			Function	Variable	Value
Set	1	2*)	3*)			1,2,3
	111	211	311	Accellerate	X	10 - 999
	112	212	312	Brake	X	10 - 999

The acceleration or braking values describe the maximum acceleration or braking effect.

The higher the values, the faster the acceleration.

Decisive for the behavior is the value set in the gain.

The acceleration or braking values can only limit this behavior.

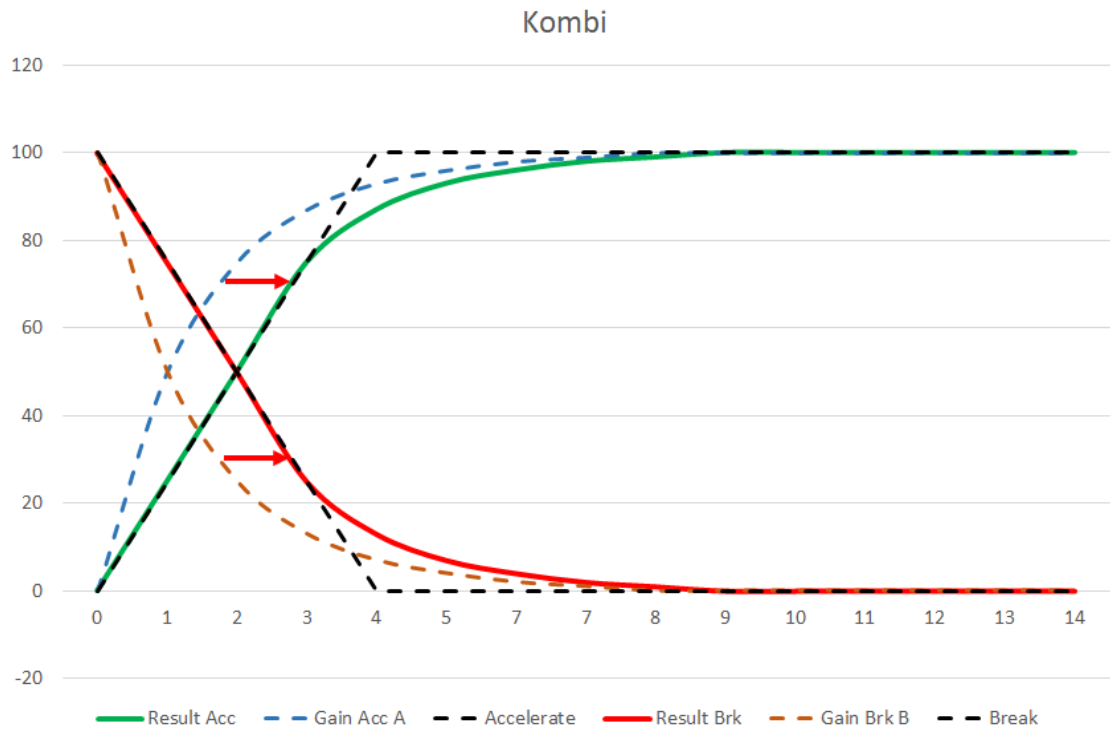
The acceleration set by the gain can be very high at first.

Should e.g. the "coasting curve" is pointed but the acceleration is low, the gain is set to a high value while the Accelerate or Brake are set to small values.

The curves are now combined, it always wins the smaller value.

In this example, the dynamics in the first 3s are determined by the linear acceleration. After that, the gain returns smaller values and is taken over as result. The gain function is shifted by 3s to the right.

In the same way, the brake function only mirrored accordingly.



4.5.3.3 Operating hours belts and Turntables

	Channel			Function	Variable	Value
Set	1	2*)	3*)			1,2,3
	120	220	320	Timer Belt Soll	X	0 - 9999
	121	221	321	Timer Belt Ist	-	Time
	122	222	322	Timer Needle 1 Soll	X	0 - 9999
	123	223	323	Timer Needle 1 Ist	-	Time
	124	224	324	Timer Needle 2 Soll	X	0 - 9999
	125	225	325	Timer Needle 2 Ist	-	Time
	126	226	326	Timer Needle 3 Soll	X	0 - 9999
	127	227	327	Timer Needle 3 Ist	-	Time

In the set points, the warning thresholds are set in hours, after which a message is shown on the display when the actual values reach or exceed it.

The actual values can be selected by pressing the key.

4.5.4 Offtimer

	Channel	Function	Variable	Value
Offtimer	500	Offtimer Days d	X	0-7
	501	Offtimer Houres hhh	X	1-168
	510	Playtimer Minuts m:ss	X	0:05-2:00

4.5.4.1 Operating hours engine and drive

	Channel	Function	Variable	Value
General	900	Operating hours Motor	-	Time
General	901	Operating hours PCB	-	Time

Channel 10 indicates the running time of the engine in days.

Channel 11 indicates the running time of the drive in days.

Why do we show this?

We think this is an interesting information.

But this may be ignored as well.

4.5.5 Default

	Channel	Function	Variable	Value
Default	999	Default values	X	X

5. MoDoMania

Note:

The Micro Seiki drive can be addressed from any state of off, overrun or spin mode from the PC.

(see chapter: Control with PC)