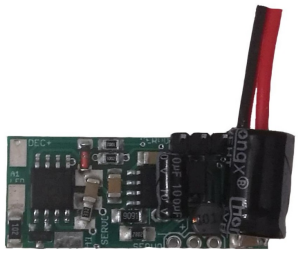
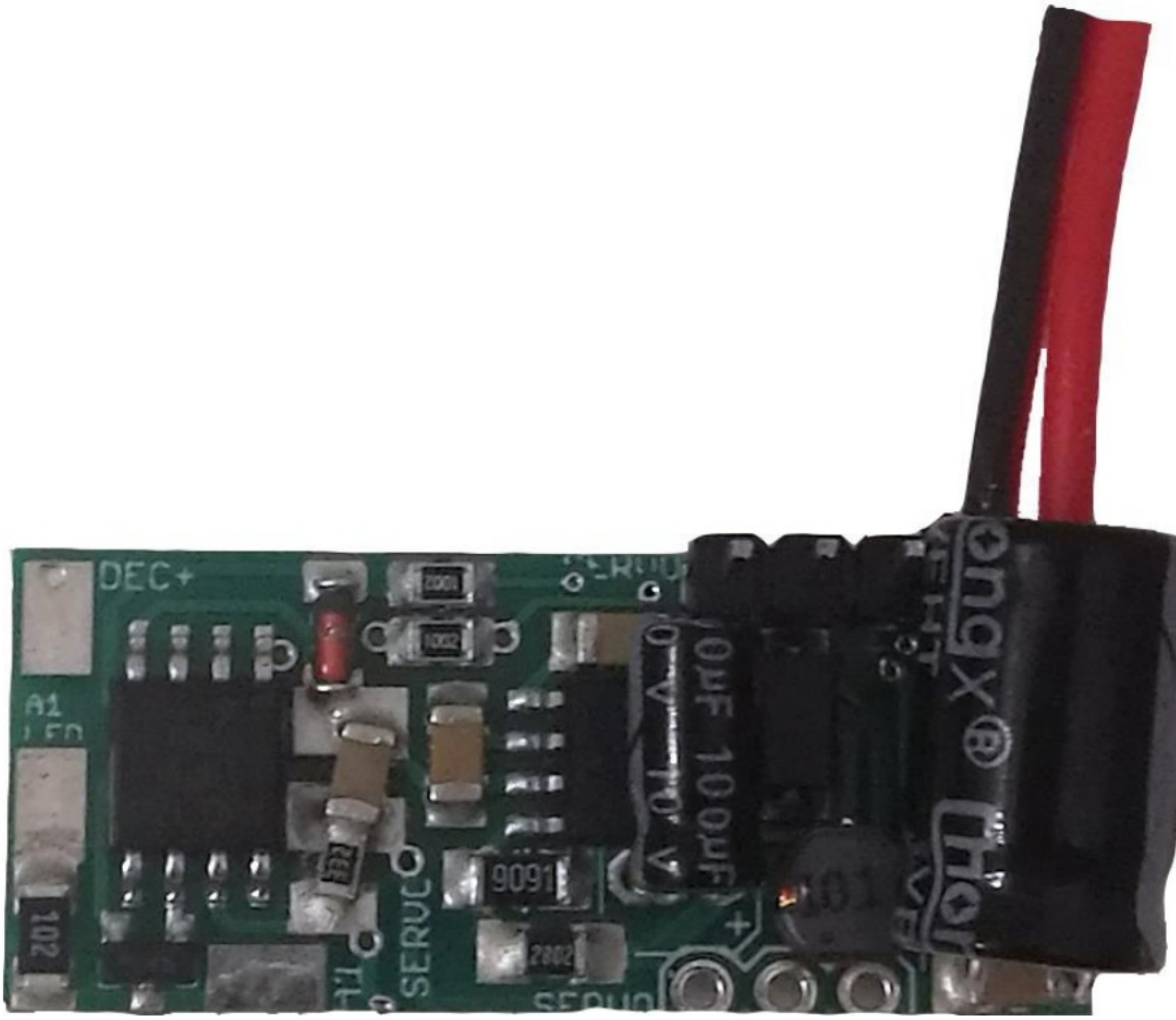


mXion SWD-ED 1-Channel Servo Decoder User Manual

mXion SWD-ED 1-Channel Servo Decoder


DEC+
A1
102
9091
SERVO

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Introduction

Dear customer, we strongly recommend that you read these manuals and the warning notes thoroughly before installing and operating your device. The device is not a toy (15+).

NOTE: Make sure that the outputs are set to appropriate value before hooking up any other device. We can't be responsible For any damage if this is disregarded.

NOTE: Der Decoder is set to SWITCH ADDRES when you want to switch with F-key LOCOADRESS then put CV29 = 6 to have loco mode.

The decoder can drive over 2 switch addresses 3 positions (right, left, mid), so you can handle signals with 3 states or other movements.

General Information

We recommend studying this manual thoroughly before installing and operating your new device.

NOTE: Some functions are only available with the latest firmware.
Please make sure that your device is programmed with the latest firmware.

Summary of Functions

- DC/AC/DCC operation, analog and digital!
- Compatible NMRA-DCC module

- Switchable with loco or switch adresses
- Decoder to implement into loc and buildings
- Swinging, for e.g. bells
- Re-Swinging, for e.g. signals, barriers
- Control via Speed Steps or Drive-Controller
- Optionally flash light while servo moving
- Extra switch output for lamps
- Switch output dimmable
- 3 positions can be driven (right, left, mid)
- Switch time and speed configurable
- Full analog compatible
- Defined start switching position
- Automatic switch back functions
- Reset function for all CV values
- Easy function mapping
- 28 function keys programmable, 10239 loco addresses, 2048 switch addresses
- 14, 28, 128 speed steps (automatically)
- Multiple programming options (Bitwise, CV, POM accessories decoder, register)
- Needs servo for programming load

Scope of Supply

- Manual
- mXion SWD-ED
- Servo 9G

Hook-Up

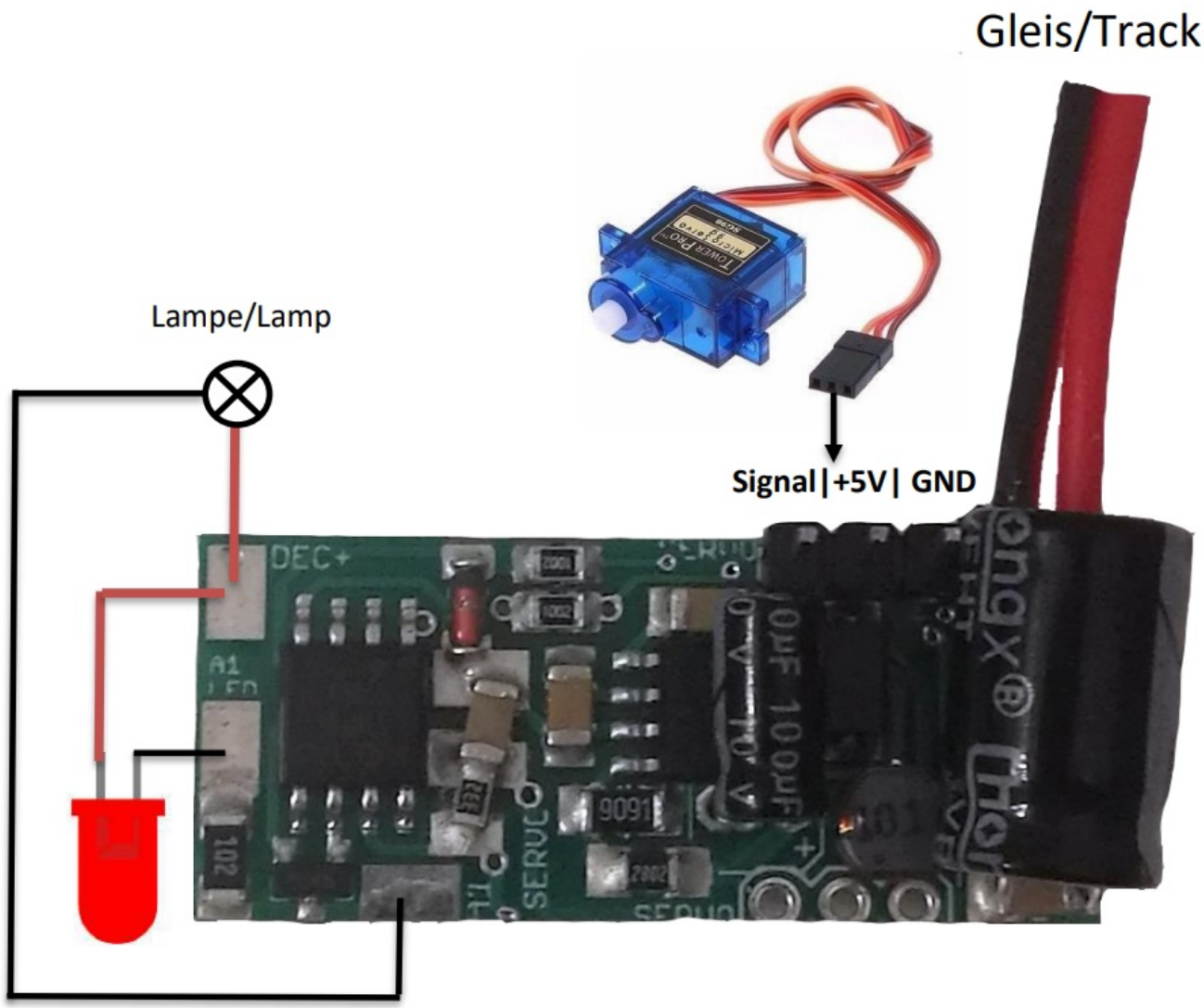
Install your device in compliance with the connecting diagrams in this manual. The device is protected against shorts and excessive loads. However, in case of a connection error e.g. a short this safety feature can’t work and the device will be destroyed subsequently.
Make sure that there is no short circuit caused by the mounting screws or metal.

NOTE: Please note the CV basic settings in the delivery state.

Connectors Single Decoder With Servo

The SWD decoder is also single including servo available. It is ideal for electr.
decoupler (e.g. Heyn®) or for mobile doors, bells (here there is a vibration mode) as well as other tasks to be controlled by servo.

He can also by locomotive address and thus by F-key be switched!
Servo included, plugable on the pcb.
At the servo, the cable colors are:
+SV = red
GND = brown or black



Product Description

The mXion SWD-ED is a very small 1 ch.
servo decoder. 2 servos can be connected to it will then run symmetrically (e.g. for uncoupling). Prepared is one connector for directly attaching a servo. A separate switching output with own address or function key is also integrated.

The decoder supports besides the control over point addresses (delivery) also the controller about locomotive addresses (CV29 = 6). The control between endpoints are standard. Location and speed can be adjusted freely. Via CV116 the switching time can be adapted to the servo (for digita.1 servos, a value of 1 or O is recommend!).

The peculiarity of the decoder lies in div. novel control options:

1. Bell swinging with realistic up and down motion. Through the following CVs the swinging can be perfect with everyone sync sound!
   The mode is activated with CV115 = 1.
   About CV103 can swing be set (increasing speed).
   About CV104 can swing out be set.
   About CV114 can wait at the end positions be set.
2. Rocking for signals and barriers.
   The mode is activated with CV115 = 2.

About CV113 is the speed for the teetering set.

About CV114 is the way (in degrees) for the seesaw is set.

3. Control via rotary control for cranes

   The mode is activated with CV115 = 3.

   In addition, CV29 = 6 must be set (loc mode).

   If the corresponding function key (CV119) is pressed, the servo follows the throttle.

The decoder can also have 3 positions (right, left, central, layers adjustable in CV117/118 and CV102) separately control via 2 turnout addresses. The 2nd address is switched off by delivery (O), in CV130/131 this can be activated, this is interesting function for signals with 3 positions or other objects that are approached in 3 positions should.

Programming lock

To prevent accidental programming to prevent CV 15/16 one programming lock. Only if CV 15 = CV 16 is a programming possible. Changing CV 16 changes automatically also CV 15.
With CV 7 = 16 can the programming lock reset.
STANDARD VALUE CV 15/16 = 225

Programming Options

This decoder supports the following programming types: bitwise, POM and CV read & write and register-mode. There will be no extra load for programming.
In POM (programming on main track) the programming lock is also supported.
The decoder can also be on the main track programmed without the other decoder to be influenced. Thus, when programming the decoder can not be removed.

NOTE: To use POM without others decoder must affect your digital center POM to specific decoder addresses

Programming Binary Values

Some CV's (e.g. 29) consist of so-called binary values. The means that several settings in a value. Each function has a bit position and a value. For programming such a CV must have all the significances can be added. A disabled function has always the value 0.
EXAMPLE: You want 28 drive steps and long loco address. To do this, you must set the value in CV 29 2 + 32 = 34 programmed.

Programming Switch Address

Switch addresses consist of 2 values. For addresses< 256 the value can be directly in address low. The high address is 0. If the address is > 255 this is as follows (for example address 2000):

2000 / 256 = 7,81, address high is 7 2000 – (7 x 256) = 208, address low is then 208.
Program these values into the SW1 CVs CV120/121 and A2 (CV127 /128).

Programming loco Address

Locomotives up to 127 are programmed directly to CV 1. For this, you need CV 29 Bit 5 ,,off" (will set automatically).
If larger addresses are used, CV 29 – Bit 5 must be ,,on" (automatically if change CV 17/18). The address is now in CV 17 and CV 18 stored. The address is then like follows (e.g. loco address 3000):

3000 / 256 = 11,72; CV 17 is 192 + 11 = 203.
3000 – (11 x 256) = 189; CV 18 is then 189.

Reset Functions

The decoder can be reset via CV 7. Various areas can be used for this purpose.
Write with the following values:
11 (basic functions)
16 (programming lock CV 15/16)
33 (function and switch outputs)

CV-Table

S = Default, L = Loco address, S = Switch address, LS = Loco and switch address usable

CV	**Description**	**S**	**L/S**	**Range**	**Note**
1	Loco address	3	L	1 – 127	if CV 29 Bit 5 = 0 (automatically reset)
7	Software version	–		–	read only (10 = 1.0)
7	**Decoder reset functions**				
	3 ranges available			11 16 33	basic settings (CV 1,11-13,17-19,29-118) programming lock (CV 15/16) function- & Switch outputs (CV 119-129)
8	Manufacturer ID	160		–	read only
7+8	**Register programming mode**				
	Reg8 = CV-Address Reg7 = CV-Value				CV 7/8 don’t changes his real value CV 8 write first with cv-number, then CV 7 write with value or read (e.g.: CV 49 should have 3) è CV 8 = 49, CV 7 = 3 writing

11	Analog timeout	30		30 – 255	1ms each value		
15	Programming lock (key)	225	LS	0 – 255	to lock only change this value		
16	Programming lock (lock)	225	LS	0 – 255	changes in CV 16 will change CV 15		
17	Long loco address (high)	128	L	128 – 10239	activ only if CV 29 Bit 5 = 1 (automatically set if change CV 17 /18)		
18	Long loco address (low)						
29	**NMRA configuration**	**132**	**LS**		**bitwise programming (add value)**		
	Bit	**Value**	**OFF (Value 0)**		**ON**		
	1	2	14 speed steps		28/128 speed steps		
	2	4	only digital operation		digital + analog operation		
	5	32	short loco address (CV 1)		long loco address (CV 17/ 18)		
	7	128	control with loco address		control with switch address		
48	Switch address calculation	0	S	0/1	0 = Switch address like norm 1 = Switch address like Roco, Fleischmann		
	mXion configuration	0*	LS		bitwise programming (add value)		
	Bit	**Value**	**OFF (Value 0)**		**ON**		

49	0	1	Servo no defined position	Servo defined position		
	1	2	Servo def. position „straight“	Servo def. position „turned“		
	2	4	Servo normal output	Servo inverted output		
	3	8	Servo don’t hold endposition	Servo hold endposition		
	4	16	A1 normal output	A1 inverted output		
	5	32	A1 normal function	A1 heart polarisation		
	6	64	A1 normal function	A1 flashes while switching		
	7	128	A1 normal function	A1 autom. on if moving		

102	Switch position mid	66	LW	0 – 255	Turn area in degree	
103	Bell-Mode drive on ramp	15	LW	0 – 255	1 ms / value for ramp	
104	Bell-Mode swing-off numbers	8	LW	0 – 255	numbers of swings in bell-mode	
113	Servo-Mode special time	5	LW	0 – 255	If CV115 = 2: Speed for Re-Swinging	
114	Servo-Mode switch time	20	LW	0 – 255	CV115 = 1: Wait time at end position with time base 0,1 sec. per value CV115 = 2: Back-Swinging in degree	

115	Servo-Mode	0	LW	0 – 3	0 = normal function 1 = swinging (e.g. bells) 2 = re-swing at the end levels, e.g. for signals 3 = control via turn-wheel/speed steps	
116	Servo wait time	5	LS	1 – 20	Fit to servo if bad moving	
117	Switch position right	70	LS	0 – 255	Turn area in degree change if e.g. slider will be pressed hard	
118	Switch position left	35	LS	0 – 255		
119	Servo command allocation	1	L		see attachment 1, active if CV 29 Bit 7 = 0	
120	Servo address high	0	S	1 – 2048	active if CV 29 Bit 7 = 1 switch address for servo	
121	Servo address low	1	S			
122	Servo speed value	15	LS	0 – 255	Speed value 1 ms each value	
123	Servo time for automatic switch back function	0	LS	0 – 255	0 = off 1 – 255 = time base 0,25 sec. each value	
124	Servo stay time hold time after reach end position	0	LS	0 – 255	0 = off 1 – 255 = time base 0,1 sec. each value important, when drives peed is small	
125	A1 command allocation	2	L		see attachment 1, active if CV 29 Bit 7 = 0	

126	A1 dimming value	100	LS	1 – 100	dimming value in % (1 % ca. 0 ,2 V)	
127	A1 address high	0	S	1 – 2048	active if CV 29 Bit 7 = 1 switch address for output A1	
128	A1 address low	2	S			
129	A1 time for special function	2	LS	1 – 255	time base (0,1s / value)	
130	Servo address 2 high	0	LW	1 – 2048	2. Switch address for middle p osition Specify center position using CV102	
131	Servo address 2 low	0	LW			

ATTACHMENT 1 – Command allocation

Value	Application	Note
0 – 28	0 = Switch with light key 1 – 28 = Switch with F-key	
+64	permanent off	Not for Servo
+128	permanent on	Not for Servo

Technical Data

- Power supply:
  10-27V DC/DCC 5-18V AC
- Current:
  5mA (with out functions)
- Maximum function current:
  Al 0.1 Amps.
  Servo 0.5 Amps.
- Maximum current:
  1 Amps.
- Temperature range:
  -20 up to 85°C

- Dimensions L *B*H (cm):

  1.5*3.3*2

NOTE: In case you intend to utilize this device below freezing temperatures, make sure it was stored in a heated environment before operation to prevent the generation of condensed water. During operation is sufficient to prevent condensed water.

Warranty, Service, Support

micron-dynamics warrants this product against defects in materials and workmanship for one year from the original date of purchase. Other countries might have different legal warranty situations. Normal wear and tear, consumer modifications as well as improper use or installation are not covered.
Peripheral component damage is not covered by this warranty. Valid warrants claims will be serviced without charge within the warranty period. For warranty service please return the product to the manufacturer. Return shipping charges are not covered by micron-dynamics. Please include your proof of purchase with the returned good. Please check our website for up to date brochures, product information, documentation and software updates. Software updates you can do with our updater or you can send us the product, we update for you free. Errors and changes excepted.

EC Declaration Of Conformity

This product meets the requirements of the following EC directives and bears the CE mark for this.
2014/30/EU on electromagnetic compatibility.
Underlying standards: EN 55014-1 and EN 61000-6-3. To the electromagnetic compatibility during operation to maintain, follow the instructions in this guide.
EN IEC 63000:2018 to limit the use of certain hazardous substances in electrical and electronic equipment (RoHS).

WEEE Directive

This product meets the requirements of EU Directive 2012/19/EC on electrical and waste electronic equipment (WEEE). Dispose of this product does not have the (unsorted) household waste, but run it the recycling to.
WEEE:DE69511269

Hotline

For technical support and schematics for application examples contact:

micron-dynamics

info@micron-dynamics.de
service@micron-dynamics.de

Customer Support

www.micron-dynamics.de
https://www .youtube.com/@micron-dynamics

RoHS Compliant

Documents / Resources

	mXion SWD-ED 1-Channel Servo Decoder [pdf] User Manual SWD-ED 1-Channel Servo Decoder, SWD-ED, 1-Channel Servo Decoder, Servo Decoder, Decoder

References

- Top Fahrradbekleidung für Damen & Herren - Ride your Style
- micron-dynamics
- micron-dynamics