

Digital SSI Converter

DIGICON V2

Type: DK/SSS Version 2



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Notification

This handbook corresponds with the unit version of 22.2.1999. The company Digitronic Automationsanlagen GmbH reserves the right to implement changes that result in an improvement of the quality and the functions of the device at any time and without any announcements.

This instructions manual was created with a maximum of care, but mistakes are not out of the question. We are thankful for any comments, regarding possible mistakes in the instruction manual.

Update

You can also obtain this instruction manual on the Internet at <http://www.digitronic.com> in the latest version as PDF file.

Qualified personal only

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Note: This device fulfills the following norms: DIN EN 61000-6-2, DIN EN 61000-4-2, DIN EN 61000-4-4, DIN EN 61000-4-5, DIN EN 61000-4-8 and DIN EN 55011 and RoHS 2 (2011/65/EU)..



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1. Introduction

Measuring systems with a synchronous serial interface (SSI) cannot be simultaneously connected to two separate controllers, both needing the position value. DIGICON makes it possible to transmit (copying the position values) the data of the measuring system to two controllers (e.g. our digital cam controllers and a PLC).

Features:

- Supply voltage: 24V DC $\pm 20\%$
- Power absorption: 200mA in lost motion
- For SSI signals up to 25BIT
- Listening Mode
- or optionally with incremental in- or output
- Cycle time < 1 ms
- Transmitter level SSI: RS422
- Connections: IP20 standard screw-pins
- Assembly: clip-on assembly on symmetrical carrier rail according to EN 50 022, row assembly
- Cover type: cover corresponds with IP20
- Operating temperature: 0°C to + 55° C
- Weight: about 500g

2. Assembly

The device is snapped onto the "EN carrier rail" in the switchboard (see chapter "4. Dimensions" on page 4). The grounding pins and the cable mantling have to be put on the shortest way possible onto a serial grounding pin next to the device. Through the grounded assembly board and its electrical connection to the EN carrier rail, the disturbances are optimally grounded onto the cover. All cable connections have to be realized in a cold state! Use double-wired, shielded connection cable only. Do not lay the cable parallel to high tension power cables. If possible, lay shieldings to both sides.

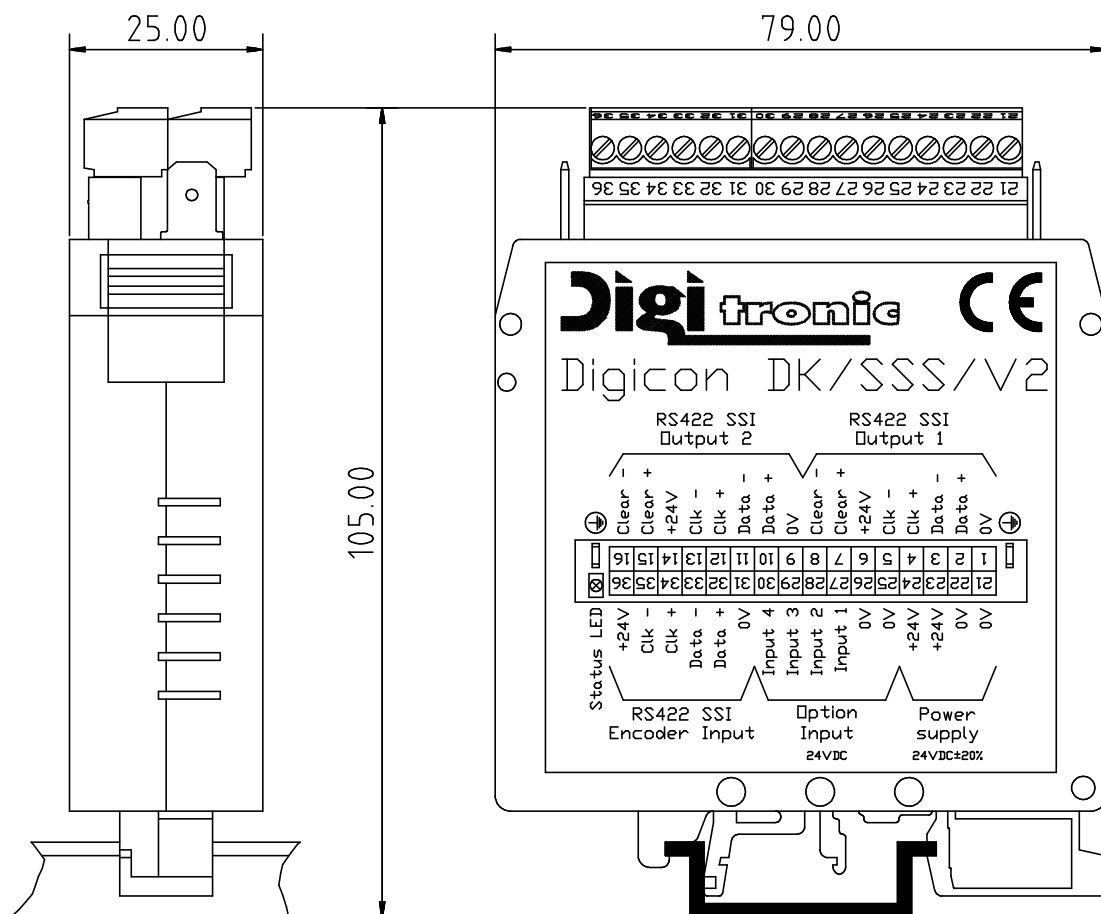
3. Operation

Connect DIGICON to the measuring system and the controller according to the pin allocation. See also chapter 5. Pin allocation on page 5. After activation DIGICON receives its voltage supply, and it, in turn, supplies the measuring system. Which of the controllers is activated first does not matter, since both currents are connected through diodes in the DIGICON. DIGICON has an activation delay of about 10 sec, during which the SSI output gives non-defined signals. Connected devices (e.g. PLC) have to consider this!

3.1. Status LED

The status LED announces after approx. 10 seconds ready status by continuous lights. If the LED off or flashes, the device has no power or is defective.

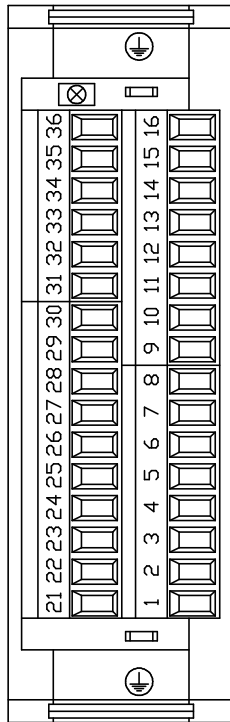
4. Dimensions



The following carrier rails can be used for the assembly of the cover:

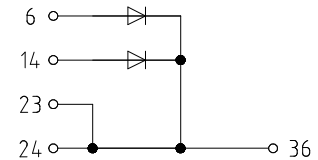
NS 35 / 7.5 (DIN 50022)
NS 35 / 15 (DIN 50022)
NS 32 (DIN 50035)

5. Pin allocation



5.1. Pin allocation: Supply voltage

Pin	Description
21	0V Supply voltage
22	0V Supply voltage
23	+ 24V Supply voltage
24	+ 24V Supply voltage
25	0V
26	0V
27	Input 1
28	Input 2
29	Input 3
30	Input 4



5.2. Pin allocation: SSI Input (Master)

Pin	Description
31	0V measuring system supply
32	Data A (+) of the measuring system
33	Data B (-) of the measuring system
34	Clock A (+) of the measuring system
35	Clock B (-) of the measuring system
36	+ 24 VDC Supply voltage of the measuring system

5.3. Pin allocation SSI Output 1 (Slave)

Pin	Description
1	0V Supply voltage
2	Data A (+)
3	Data B (-)
4	Clock A (+)
5	Clock B (-)
6	+ 24 VDC Supply voltage
7	Clear (+) with incremental output option
8	Clear (-) with incremental output option

5.4. Pin allocation SSI Output 2 (Slave)

Pin	Description
9	0V Supply voltage
10	Data A (+)
11	Data B (-)
12	Clock A (+)
13	Clock B (-)
14	+ 24 VDC Supply voltage
15	Clear (+) with incremental output option
16	Clear (-) with incremental output option

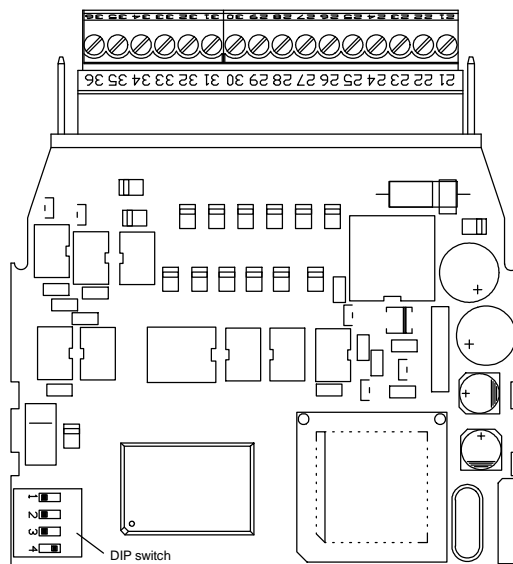
Note: Pins 21, 22, 25, 26, 31, 1 and 9 are interconnected.
Pins 23 and 24 are interconnected.

6. DIP Switch configuration

DIGICON can be configured for many different applications through the DIP switch of the device.

To change the DIP switch setting, you have to open the device. You can open the cover in the center with a screwdriver.

Attention: Please take care not to damage the board or the other devices with the screwdriver.



The factory setting (default): switch 1 - 3 = OFF and 4 = ON.

6.1. DIP Switch 1 + 2 (Clock frequency)

DIP Switch 1	DIP Switch 2	Clock
OFF	OFF	576 KHz Clock (default)
ON	OFF	288 KHz Clock
OFF	ON	144 KHz Clock
ON	ON	external Clock at pins 4 & 5 (max. 600 KHz).

DIGICON does not create the clock for the measuring system, if both DIP switches are set to ON, but it transmits the Clock signal on pins 4 and 5 to pins 34 and 35. This synchronizes the data of the SSI output 1 to the data of the SSI input.

6.2. DIP Switch 3 (Listening mode)

If this DIP switch is set to ON, DIGICON produces no own Clock signals, but triggers upon an external Clock signal (listening) (max. 600 KHz) on pins 34 and 35. This makes it possible to send the data of the SSI interface to two further devices (default = OFF).

6.3. DIP Switch 4 (Error Bit)

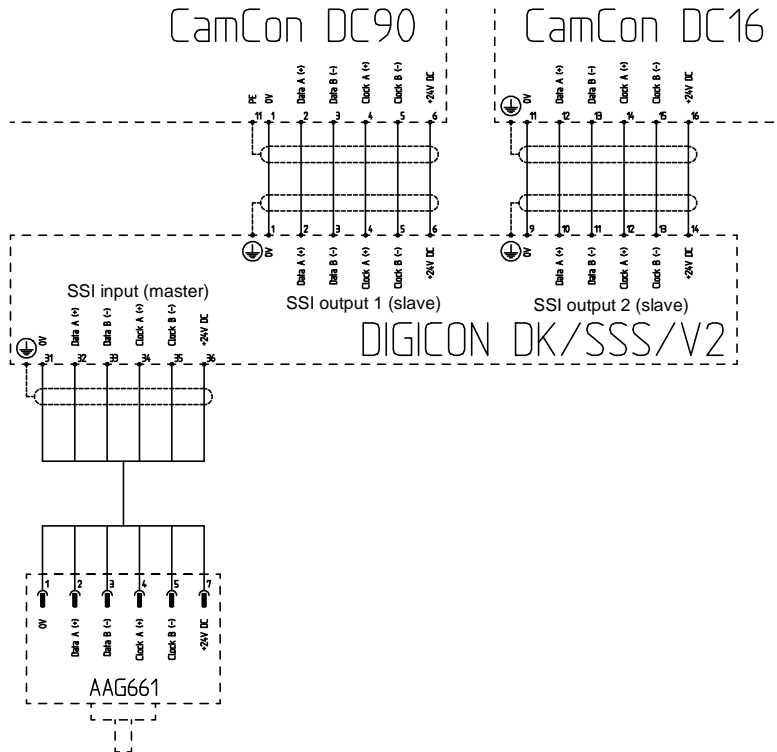
If this DIP switch is set to ON, DIGICON generates an SSI error at the SSI outputs, as soon as an error is detected on the SSI input (default = ON). If the DIP switch is set to OFF, the data on the SSI outputs is frozen until the error at the SSI input has been corrected.

Note: This DIP - Switch must with single turn - encoders and/or Measuring systems with less than 25 SSI - Bits become switched OFF, there the SSI - error bit in the software is fix on bit 26.

7. Connection examples

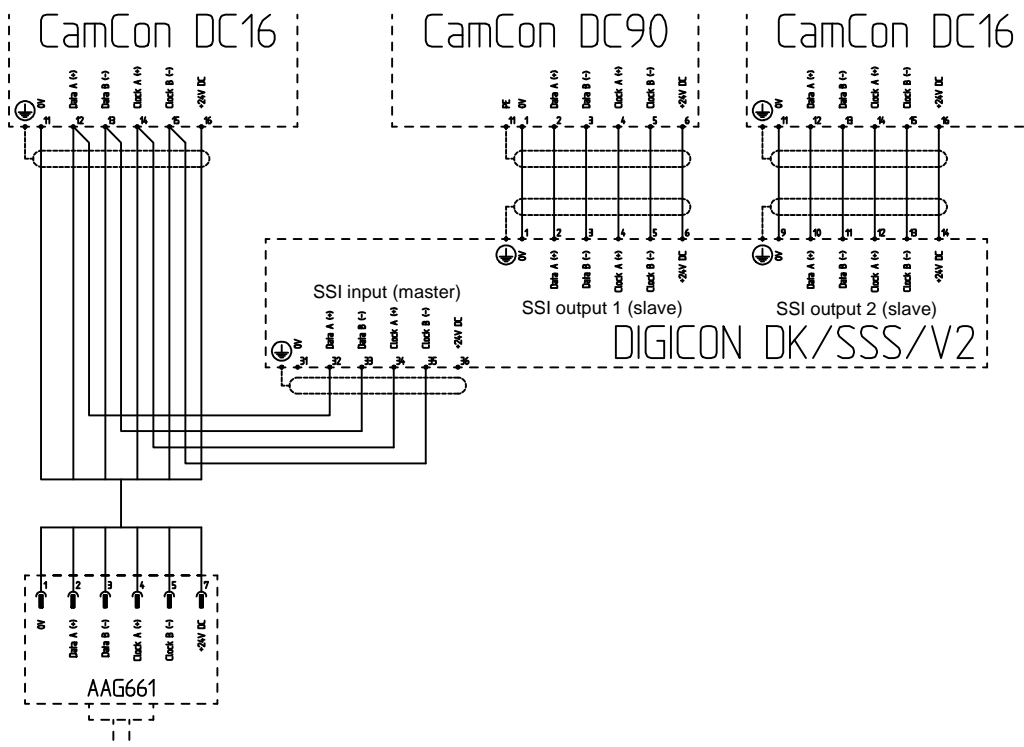
7.1. Connection example: Default

DIP switch 1 - 3 = OFF and 4 = ON.



7.2. Connection example: Listening mode

DIPswitch 1 + 2 = OFF and 3 + 4 = ON.



8. Technical Data

Supply voltage	24 VDC +/- 20% via the voltage supply of the controllers, connected at the outputs
Power absorption	100 mA without load.
Display	1 x LED "ready for operation"
Input	1 * synchronous serial (SSI) RS422, optional incremental input RS422. 4 * 24V PNP inputs for options.
Output	2 * synchronous serial (SSI) RS422, optional incremental output RS422.
Transmitting depth	25 Bit (see chapter "6.3. DIP Switch 4 (Error Bit)").
Monoflop time	25µs.
Clock SSI Input	144, 288, 576 KHz or external (max. 600KHz).
Clock SSI Output	100 - 600 KHz.
Cycle time	synchronous to SSI read-in: 120µsec - 450µsec or external
Transmitting level	RS422, one-sided galv. separated
Cover	hardly ignitable Thermoplast plastic, continuous temperature up to 100°C
Connections	plug block pins
Connection cable	covered cable, max. length between measuring system and DIGICON 300 meters according to set Clock frequency.
Assembly	comfortable snap-on assembly onto symmetrical carrier rail according to EN 50 022, row assembly possible.
Disassembly	by pulling back the snap clip.
Dimensions	see chapter 4. Dimensions.
Cover type	Cover corresponds with IP20.
Operating temperature	0° to + 55° C.
Weight	about 500g.