

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.

UP-date

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: The products of Digitronic are so well constructed that they will not be effected by the millenium.

Note: This device fulfills the following norms according to electromagneticalcompatibility: EN 55011, EN 55022, EN 55024 Teil 2, EN 50082 Teil 2, ENV 50140, VDE 0843 Teil 2, VDE 0843 Teil 4, VDE 0871, VDE 0875 Teil 3 ("N"), VDE 0875 Teil 11, VDE 0877 Teil 2, IEC 801 Teil 3, IEC 801 Teil 2, IEC 801 Teil 4, IEC 801 Teil 5.

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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.

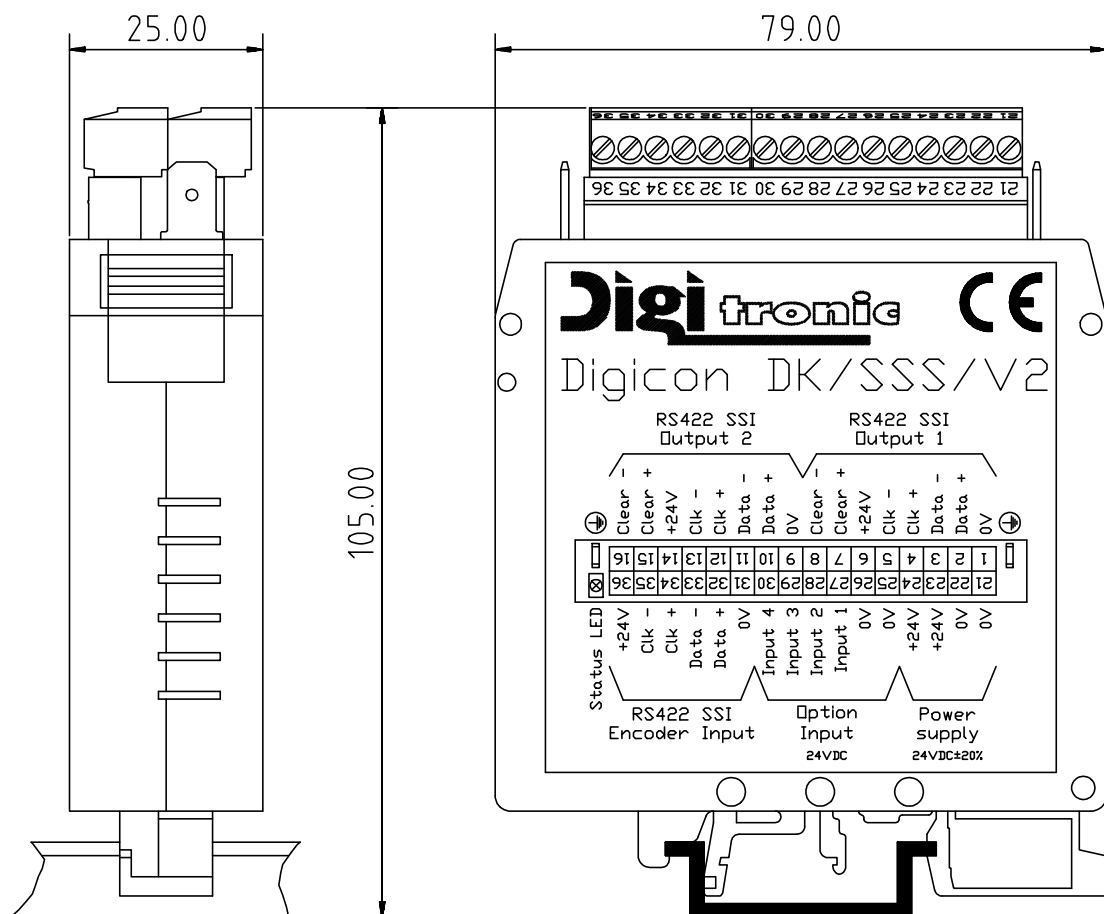
3. Operation

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. Is the LED off or flashes, the device has no power or is defective.

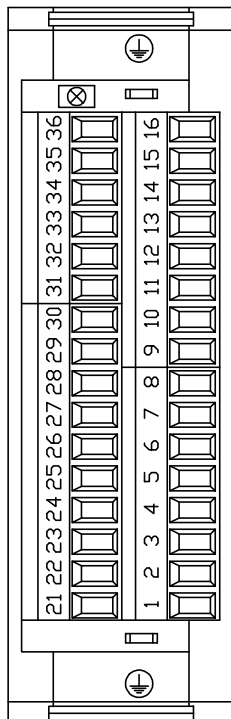
4. Dimensions



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

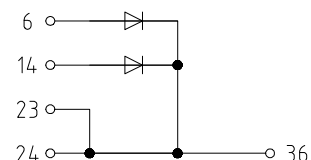
NS 35 / 7.5 (DIN 50022)
NS 35 / 15 (DIN 50022)
NS 32 (DIN 50035)

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 |

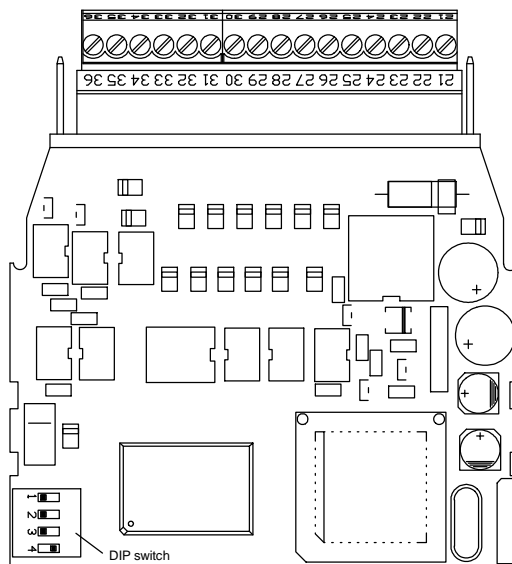
Note: Pins 21, 22, 25, 26, 31, 1 and 9 are interconnected.
Pins 23 and 24 are interconnected.

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)

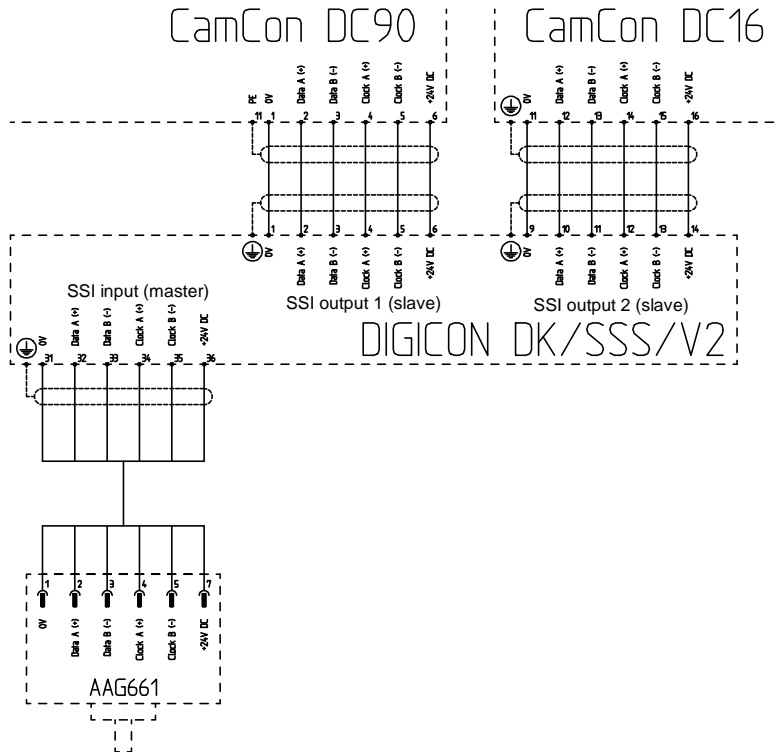
If this DIP switch is set to ON, DIGICON generates an SSI error at the SSI outputs, as soon as an error is detected on the SSI input (default = ON). If the DIP switch is set to OFF, the data on the SSI outputs is frozen until the error at the SSI input has been corrected.

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

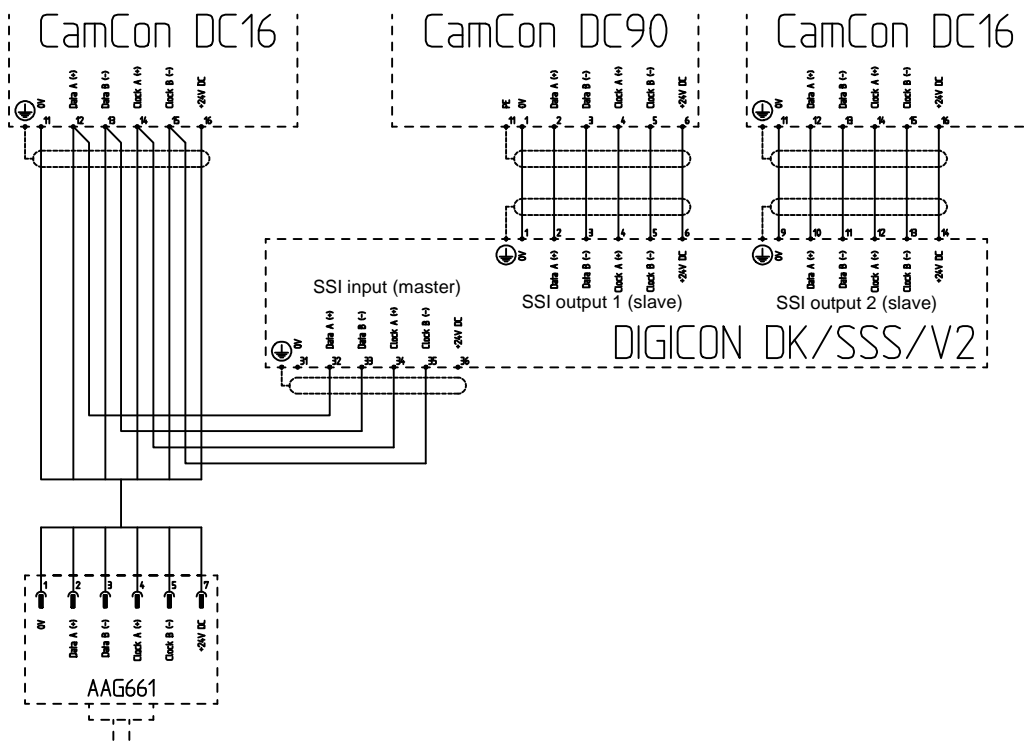
7.1. Connection example: Default

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. |