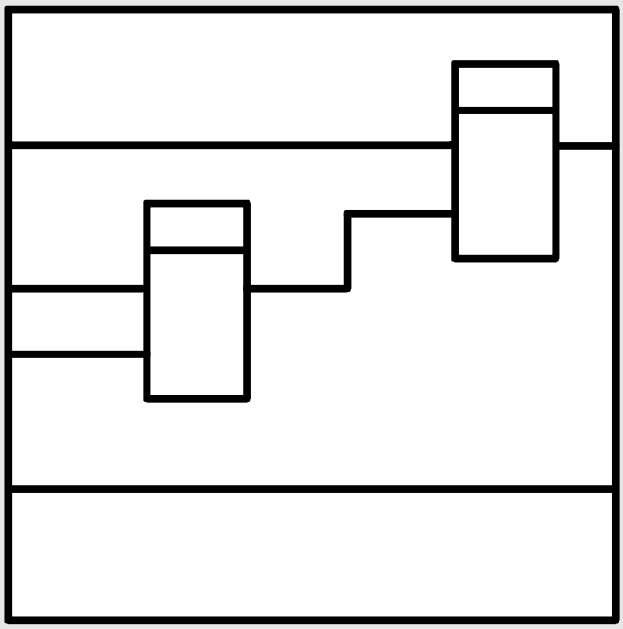
SIMADYN D
Digital Control System

User Manual

Serial interface SS1



Edition 04.97

DK-Nr. 296141

User Manual, Serial interface SS1

Edition		Edition status
1	Serial interface SS1	03.91
2	Serial interface SS1	05.95
3	Serial interface SS1	04.97

We have checked the contents of this Manual to ensure that they coincide with the described hardware and software. However, deviations cannot be completely ruled-out, so we cannot guarantee complete conformance. However, the information in this document is regularly checked and the necessary corrections included in subsequent editions. We are thankful for any recommendations or suggestions.

Contents

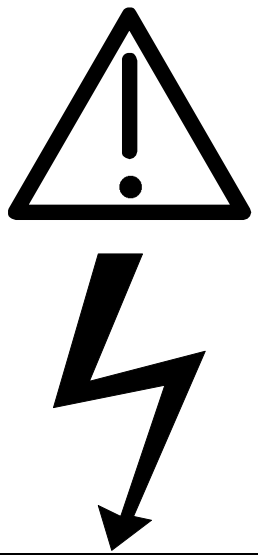
N O T E !

The information in this Manual does not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, please contact your local Siemens office.

Further, the contents of this Manual shall not become a part of or modify any prior or existing agreement, committment or relationship. The sales contract contains the entire obligation of Siemens. The warranty contained in the contract between the parties is the sole warranty of Siemens. Any statements contained herein do not create new warranties nor modify the existing warranty.

Warning information



W A R N I N G !

Electrical equipment has components which are at dangerous voltage levels.

If these instructions are not strictly adhered to, severe bodily injury and material damage can result.

Only appropriately qualified personnel may work on this equipment or in its vicinity.

This personnel must be completely knowledgeable about all the warnings and service measures according to this User Manual.

The successful and safe operation of this equipment is dependent on proper handling, installation, operation and maintenance.

Definitions

* **QUALIFIED PERSONNEL**

For the purpose of this User Manual and product labels, a „Qualified person“ is someone who is familiar with the installation, mounting, start-up and operation of the equipment and the hazards involved. He or she must have the following qualifications:

1. Trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety procedures.
2. Trained in the proper care and use of protective equipment in accordance with established safety procedures.
3. Trained in rendering first aid.

* **DANGER**

For the purpose of this User Manual and product labels, „Danger“ indicates death, severe personal injury and/or substantial property damage will result if proper precautions are not taken.

* **WARNING**

For the purpose of this User Manual and product labels, „Warning“ indicates death, severe personal injury or property damage can result if proper precautions are not taken.

* **CAUTION**

For the purpose of this User Manual and product labels, „Caution“ indicates that minor personal injury or material damage can result if proper precautions are not taken.

* **NOTE**

For the purpose of this User Manual, „Note“ indicates information about the product or the respective part of the User Manual which is essential to highlight.

C A U T I O N !

This board contains components which can be destroyed by electrostatic discharge. Prior to touching any electronics board, your body must be electrically discharged. This can be simply done by touching a conductive, grounded object immediately beforehand (e.g. bare metal cabinet components, socket protective conductor contact).

W A R N I N G !

Hazardous voltages are present in this electrical equipment during operation.

Non-observance of the safety instructions can result in severe personal injury or property damage.

It is especially important that the warning information in all of the relevant Operating Instructions are strictly observed.

1. Description

The SS1 thick-film interface IC is used in the SIMADYN D system for configuring a physical interface for a processor module.

The interface connector configured with SS1 is a 20 mA interface. This is also referred to as a TTY or current loop interface.

The chip has pins for power supply (+15 V, GND, -15 V), current sources (+Iq1 +Iq2), current sinks (-Iq1, -Iq2) and an input for the send signal (T*D) at TTL level as well as an output for the receive signal (R*D), also at TTL level (5 V). Two pins for the transistor switch (sender, +T*D and -T*D) and two pins for the LED display (receiver, +R*D and -R*D) are available via optocouplers.

2. Design of the thick-film IC

* 40-pin dual-in-line chip

* Pins for supply voltage (+15V, GND, -15V)

* Drive and receive signal for TTL (+5 V)

* Independent send and receive sections

* Two independent 20 mA current sources

* Two independent 20 mA current sinks

* Optical isolation

* Up to 19,200 baud

* Transmission distance up to 1000 m

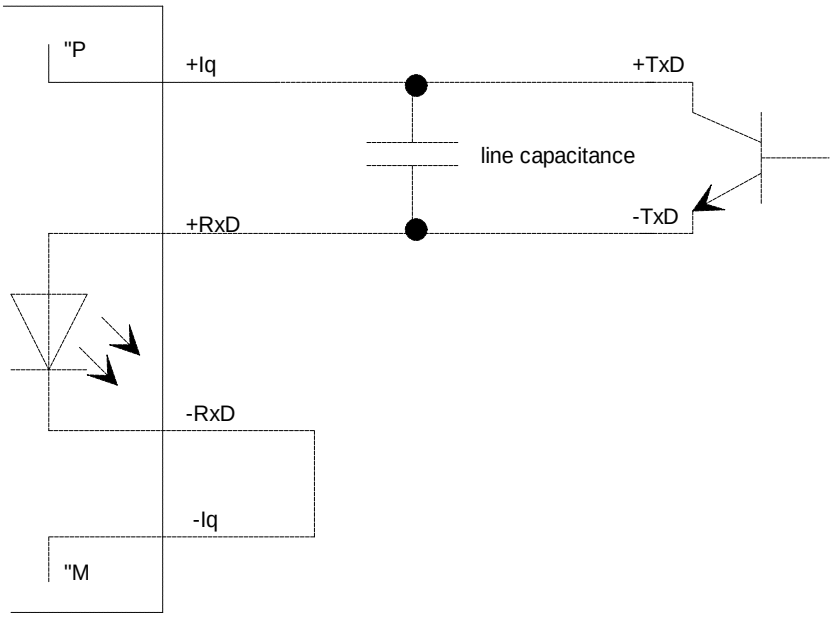
3. Notes for the user

A communications system in 20 mA technology permits transmission at reasonable cost over long distances (up to 1000 m).

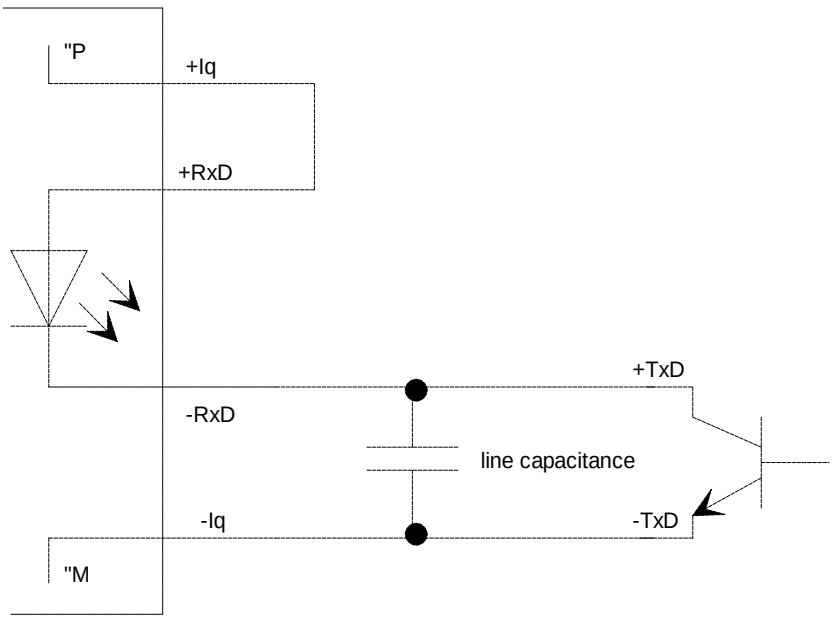
The SS1 thick-film IC (20 mA interface) provides a current source and sink for the receiver as well as for the sender. This is useful, if the communications partner does not have its own power supply. If the customer is using his own cables, he should make sure that each sender is supplied from its own side to prevent line capacitances building up and delaying every time the line is switched (see sketch).

Unfavourable arrangements (sender and supply at opposite ends):

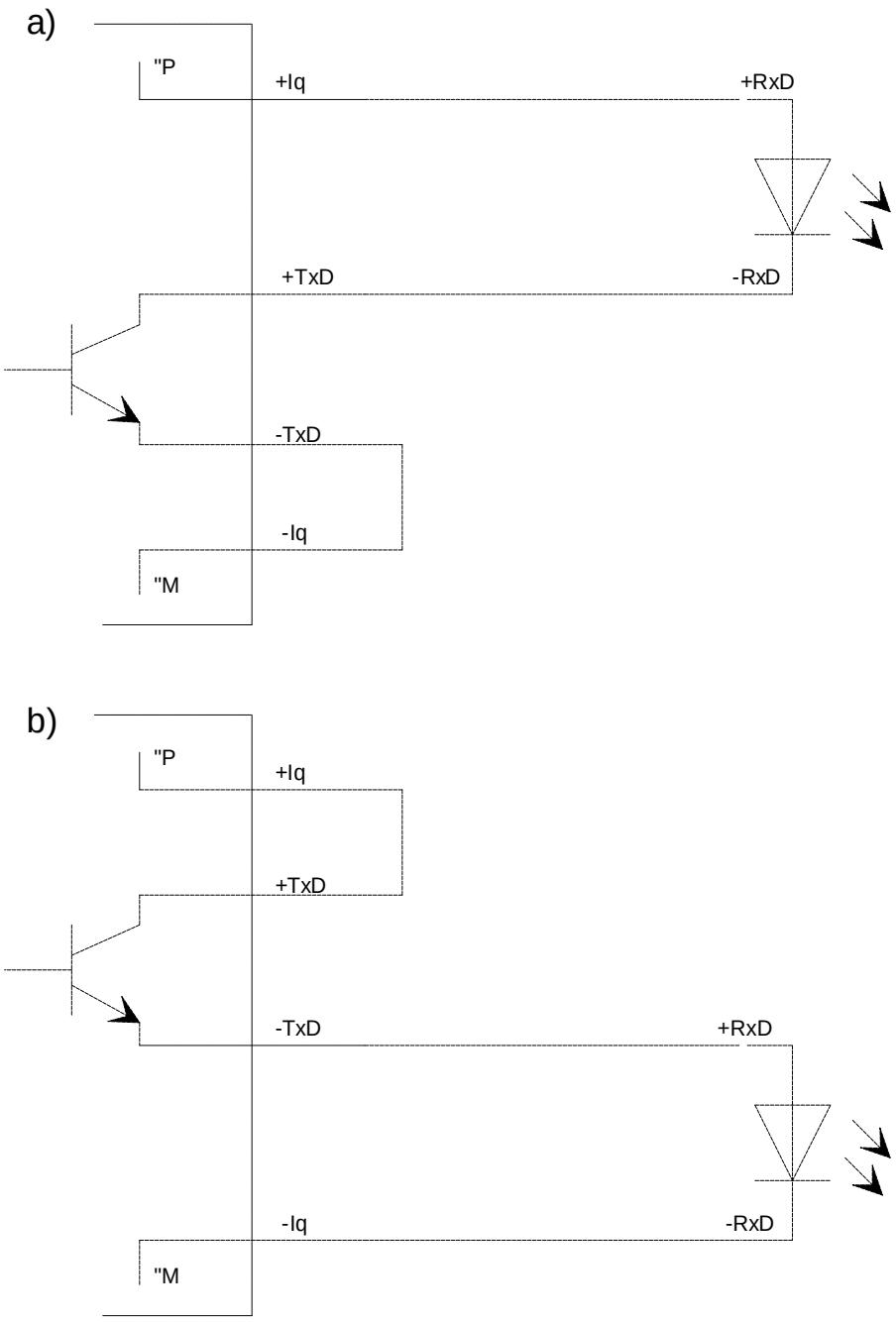
a)



b)



Recommended arrangements (sender and supply at the same end)



The chip can be used in the processor modules of the SIMADYN D system.

4. Technical specification

INSULATION GROUP	Within circuits: VDE 0110 paragraph 13, group 1 with rated voltages of 36 V DC Among circuits: VDE 0110 paragraph 8, group B Galvanic isolation confirmed test voltage 500 V AC Important: does not apply when installed
AMBIENT TEMPERATURE	0 to 55 deg. C
STORAGE TEMPERATURE	-40 to +70 deg. C
HUMIDITY CLASS	F to DIN 40040
ALTITUDE RATING	S to DIN 40040
MECHANICAL STRESS	Installation in stationary equipment, sensitive to vibrations
CURRENT CONSUMPTION	P15 max. 75 mA P5 max. 95 mA N15 max. 75 mA
DIMENSIONS	50.8 mm x 18.6 mm x 8.6 mm (Height above PCB) Effective pin length: 3.5 mm
DESIGN	Dual-in-line package, 40-pin
WEIGHT	11 g
BAUD RATE	Up to 19,200 baud

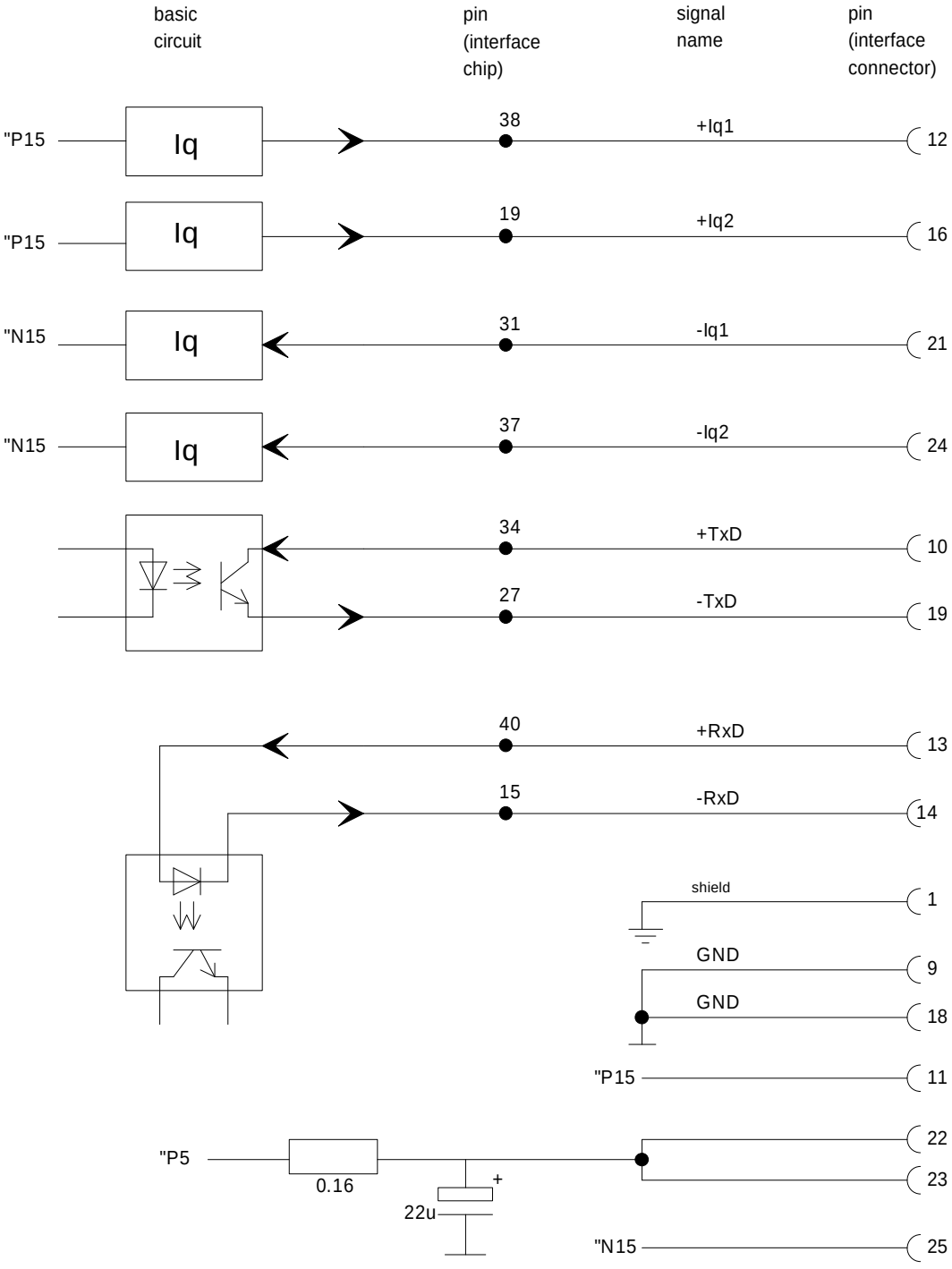
5. Pin assignments

5.1. SS1 interface chip

Pin		Pin	
1	+15 V	21	GND
2	GND	22	GND
3	---	23	---
4	GND	24	---
5	-15 V	25	---
6	NC	26	---
7	NC	27	-T*D
8	NC	28	---
9	NC	29	NC
10	T*D	30	NC
11	NC	31	-Iq2
12	R*D	32	---
13	---	33	---
14	---	34	+T*D
15	-R*D	35	---
16	---	36	---
17	---	37	-Iq1
18	NC	38	+Iq1
19	+Iq2	39	---
20	NC	40	+R*D

5.2. Interface connector

If the interface chip is used in a processor module, the interface connector on the frontplate has the following pin assignments:



6. STRUC-L menus of the SS1 in the master program

++

:SS1 "serial interface submodule 20 mA"

++

7. Appendices

7.1. Block diagram

Block diagram	3GE 465 688 9100.00 SU

7.2. Dimension drawing

Dimension drawing	3GE 465 688 9100.00 MB

8. ECB instructions

Components which can be destroyed by electrostatic discharge (ECB)

Generally, electronic boards should only be touched when absolutely necessary.

The human body must be electrically discharged before touching an electronic board. This can be simply done by touching a conductive, grounded object directly beforehand (e.g. bare metal cubicle components, socket outlet protective conductor contact.

Boards must not come into contact with highly-insulating materials - e.g. plastic foils, insulated desktops, articles of clothing manufactured from man-made fibers.

Boards must only be placed on conductive surfaces.

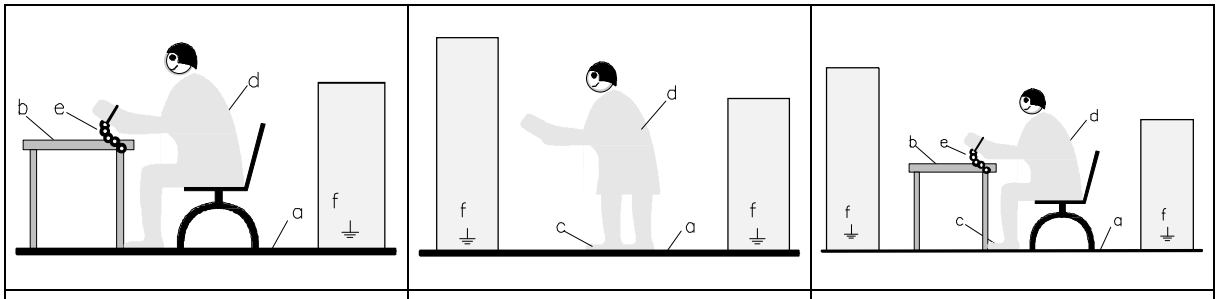
When soldering, the soldering iron tip must be grounded.

Boards and components should only be stored and transported in conductive packaging (e.g. metalized plastic boxes, metal containers).

If the packing material is not conductive, the boards must be wrapped with a conductive packing material, e.g. conductive foam rubber or household aluminum foil.

The necessary ECB protective measures are clearly shown in the following diagram.

a = Conductive floor surface
b = ECB table
c = ECB shoes
d = ECB overall
e = ECB chain
f = Cubicle ground connection



Seated	Standing	Standing/sitting

Drives and Standard Products
Motors and Drives Systems Group
Postfach 3269, D-91050 Erlangen

System-Based
Technology