INFO-StandAlone Master

GIN-SAM3

Stand Alone
GinLink
Field Bus
Master

Operating system
- Real-time clock
- Multitasking operating system
- Real-time capabilities

32-Bit RISC Prozessor
- PowerPC 750GX, 1GHz Clockrate
- 110MHz 64-Bit Bus

Memory
- 0.5MByte MRAM (magnetoresistiv)
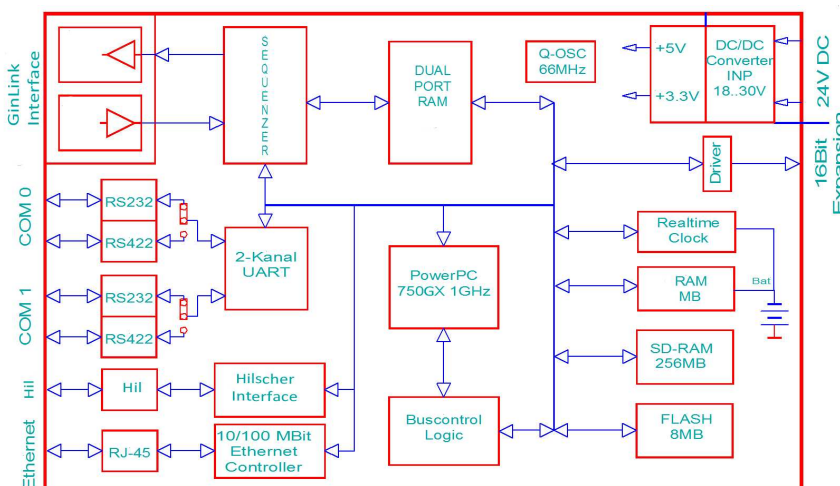- 8MByte Flash-PROM
- 256MByte SD-RAM

GinLink
- 1GBit Ethernet Fieldbus
- Deterministic, realtime
- up to 100kHz cycle time

INFO-Link
- Glass fiber medium
- Ring topology with deterministic access time
- 11MBit/s transmission rate

Interfaces
- 1GBit Ethernet
- 2 independent S-I/O Schnittstellen, RS232 or RS422/RS485
- Feldbus-Interface
  - Hilscher Interface
  - CANopen

The GinLink Stand Alone Master board is the field bus master of a GinLink. The board operates entirely autonomously and does not need any higher-ranking computer for operation. for visualisation and software updates, a 1GBit Eternet port and two RS232 interfaces are available.

The real-time-capable multitasking operating system of the master performs the entire control of the machine or plant. Standard firmware enables the master to control up to 64 axes in addition to the entire machine/plant.

The master is programmed from the integrated C++ development environment or the PLC-like ISM language, which also has real-time and multitasking capabilities. Up to 250 Gin-Modules can be connected to the GIN-SAM Master.

GIN-SAM3	610736800	800-256
GIN-SAM3	610736801	1G-256
GIN-SAM3	610736804	1G-256-Hil

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GIN-SAM3

INFO-StandAlone Master

Connector

Connector Allocation

Board power supply

For the board power supply, a 3-phase rectifier without electrolytic capacitor will suffice. But in order to prevent interference, an electrolytic capacitor of 4,700 ... 10,000µF is recommended. The rack must be provided with a line filter just after the entry of the power supply.

Bus connectors

The connector 2 is not assembled as standard. It incorporates the processor bus (16-bit data bus).
No provision has been made to couple external peripheral devices directly to the processor bus. Options such as PC card adapters use the bus.

Connector 1 rack
90° angled
DIN 41612, Type F-48
2.8mm pins

		d		b		z
2	O	5V	O	GND	I	K_24V
4	O	5V	O	GND	I	K_Gnd
6	O	5V	O	GND		Shield
8	I	RXD(Sin-)	O	TXD(Sout-)		Shield
10	I	DSR(Sin+)	O	DTR(Sout+)		Shield
12	O	V+	O	GND		Shield
14	I		O	GND		Shield
16	I		I/O			Shield
18	I		I/O			Shield
20	I		I/O			Shield
22	I		I/O			Shield
24	O		I/O			Shield
26	O		I/O			Shield
28	O		I/O			Shield
30	O		I/O			Shield
32	O	GND	O	GND		Shield

Connector 1 Box
24V power supply
Drawing seel p.6

1	+24V
2	0V

Serial interface

The shield of the connector 3 (D-Sub connector on the front panel) passes through the connector housing.

Power supply V+

The power supply is only allowed to be wired to the connectors of the SAM.

Connector 3, 3a
90° angled
D-SUB, 9-pin

1		NC
6	I	DSR(Sin+)
2	I	RXD(Sin-)
7	O	V+
3	O	TXD(Sout-)
8		NC
4	O	DTR(Sout+)
9		NC
5	I	GND

network interface

The shield of the RJ-45 patchcable passes through the connector housing.

Connector 4
90° angled
RJ-45, shielded

1	O	TX+
2	O	TX-
3	I	RX+
4		NC
5		NC
6	I	RX-
7		NC
8		NC

INFO-StandAlone Master

GIN-SAM3

Assembly

Connector 2

Connector 1

Transmitter power (green)

The transmitter jumper influences the illumination intensity of the emitting LED and thereby the length of the light distance to the next board.

For the correct matching of the emitted light intensity to the cable attenuation, the jumper must be plugged as follows:

Segment length	Jumper position
0 ... 10m	no jumper
8 ... 30m	>10
20 ... 50m	>30

Watchdog enable (magenta)

A possibility exists to bridge the watchdog by a hardware implementation. For this purpose, disconnect the jumper J1. If the jumper is set, the watchdog must be handled by a software function at least every 70ms, otherwise a reset will be initiated.

LEDs on receiver module:

LED-Power(red)   =   +5V power supply
LED-Rec(yellow)   =   INFO-Link receiver signal OK;
                                is lit if link is ok

LEDs on LAN connector:

LED-Power(red)   =   +5V power supply
LED-Rec(yellow)   =   INFO-Link receiver signal OK;
                                is lit if link is ok

Ok, error LED:

The Ok and error LEDs are handled by the operating system.

Customized modifications are available as needed.

Specifications

Power supply
24V DC +10%, -5%,, 400mA max.

Cooling
- The board generates approx. 8W dissipation power. It must be removed by sufficient air circulation, e.g. by means of a fan. For racks, ready-for-connection plug-in fans are available.

Climatic conditions
- Ambient temperature:
  Storage: -20...+80°C
  Operation: 0 ... +45°C
- Board temperature:
  Operation: 0...+70 °C
- Relative air humidty
  no condensation: 95%

Standard version
- Real-time clock with battery
- PowerPC 603E, 200MHz
- 1MByte CRAM with battery

Serial interfaces (cyan)
Both interfaces can be operated using jumpers either as RS232 or RS422. The INFO-SAM board has an automatic baud rate detector. The maximum baud rate is 115200 baud.

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Mounting

Stand Alone box

Rack mounting
- Connector DIN 41612, Type F-48
- Mounting in 19" chassis
- Dimensions:
  234 x 20 x 100 mm (LxWxD)
- 6U x 4SU

Box mounting
The standalone box will be mounted on a grounded wall with two M5 screws. You have to watch for enough air circulation for cooling.

Shielded lines
It is essential to operate the RS232 interfaces with shielded leads. The shielding must be connected inside the connector at both ends to the metallic connector housing. (Do not ground through the shield pin!)

The RS422 interface can be operated with twisted pair wires. For short distances, an unshielded cable will suffice. For connections of the RS422 over long distances (>400m), it is advisable to use a shielded twisted pair wire.

Grounding
The INFO-SAM board is grounded via its front panel. Make sure that the connection between the rack housing and the control cabinet is conductive (EMC grounding). This is best achieved using chromatized mounting bars.

The box is grounded via the conductive backplane.

Shielding plate
If the StandAlone Master is installed together with controllers of the INFO-ACSr series in the same rack, a shield plate must be inserted between the master and the controller. In addition, the manufacturer recommends a minimum distance of 5 … 10cm between the master and power-voltage-carrying INFO boards. Possibly provide an empty space.

See also INDEL Wiring Guidelines and INDEL Design Guidelines.
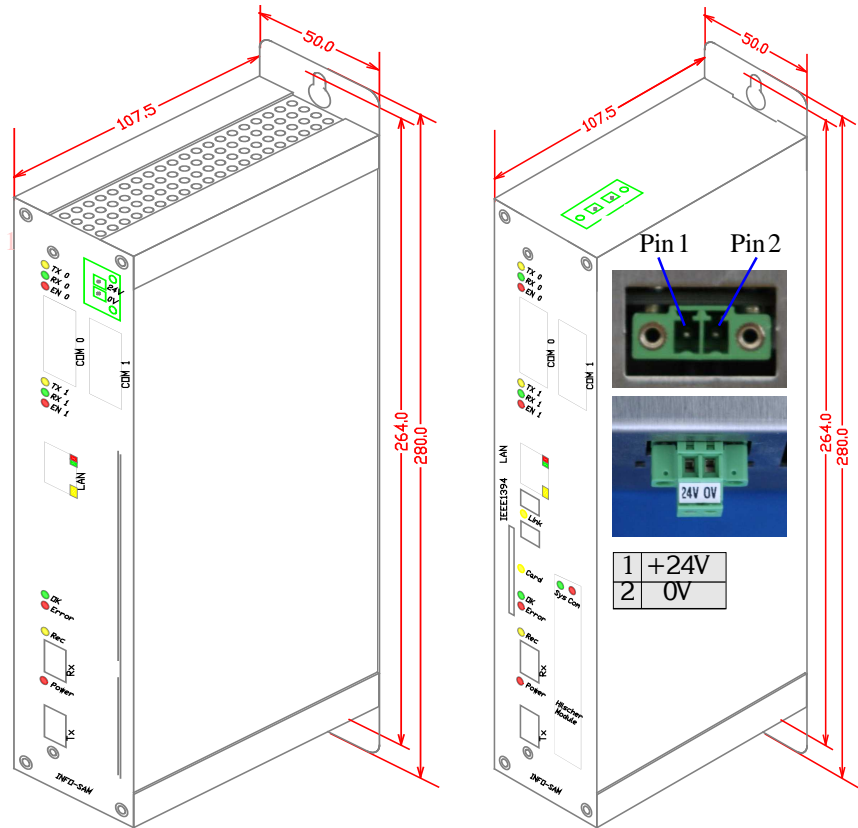
1	+24V
2	0V

Connector for 24V Power Supply:
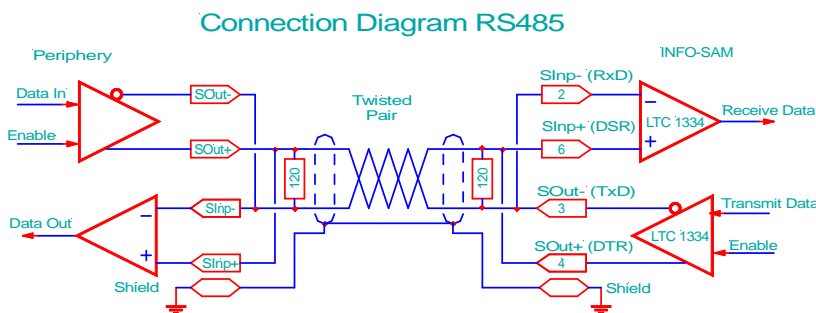Phoenix Contact: 18 28 346 MCVR   1,5/2 STF-3.81: 24V, 0V
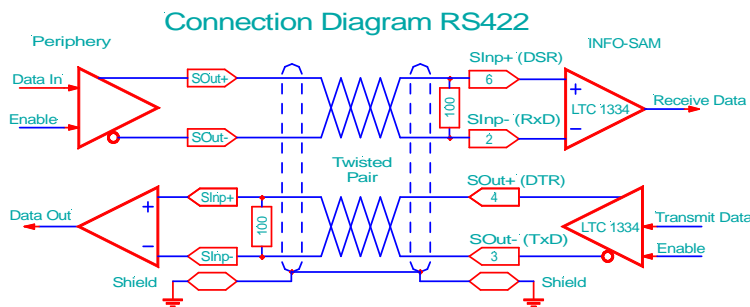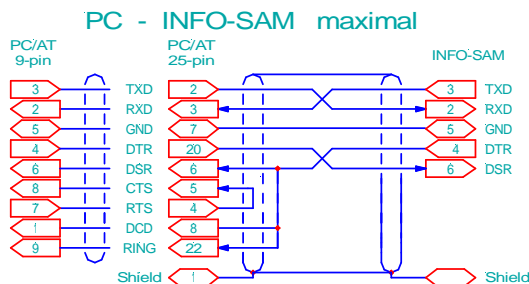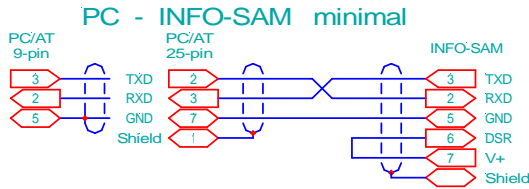
Caution: laptop users
Observe the following sequence when connecting a laptop computer to the INFO-SAM:

1.   Isolate the power supply of the laptop so that it is only supplied with power from the accumulator.
2.   Connect the INFO-SAM and the laptop by appropriate serial cables.
3.   Reconnect the power supply.

Reason: As a result of the electrical isolation of the transformer, the laptop power supply is raised to a potential of 110V (providing the laptop is supplied via the mains). Because there is no assurance with conventional SUB-D connectors that the shield will contact before the signal lines, there is a risk of potential equalization taking place via the signal ground line. This will destroy the relevant SIO channel.

Serial Interface

PC - INFO-SAM minimal

PC - INFO-SAM maximal

Connection Diagram RS422

Connection Diagram RS485

Description

The serial interfaces can be operated as RS232 or RS485/422 interfaces. Switchover is done by jumper J6→COM-0 and J7→COM-1.
(See P. 5)

RS232 interface

In order to ensure reliable operation between the INFO-SAM and the connected periphery, wiring recommendations are given opposite. The sketched cable connections correspond to the connector allocation of channel 0 of the INFO-SAM board. The connector allocations of the peripheral devices (modem, printer, etc.) are standardized.

Minimum

This connection (PC - INFO-SAM) is mainly used for debugging, data transmission and operating data collection. It is often also called the minimum connection with software handshake.

Maximum

This connection type must be supported by the PC software. This variant uses ONE handshake line:
Data Terminal Ready→Data Set Ready.

RS422 interface

RS422 and RS485 interfaces have been developed for serial data transmission across long distances. It is possible to implement data transmission lines across distances as long as 1200m. The termination resistors must be additionally mounted.

Pin allocation

RS232		RS485	COM0	COM1
TxD	→	SOut-	3	8b
DTR	→	SOut+	4	10b
RxD	→	SInp-	2	8d
DSR	→	SInp+	6	10d
Gnd	→	Gnd	5	12,14b

Pin description

TxD	Transmitted Data	DTR	Data Terminal Ready
RxD	Received Data	DSR	Data Set Ready
RST	Request to Send	DCD	Data Carrier Detect (CD)
CTS	Clear to Send	RI	Ring Indicator

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CH-8332 Russikon
Tüfiwis 26

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Description

Network connection

Network connection

Use a standard 1GBit patch cable to connect the Gin-SAM3 to a Ethernet hub or switch. The maximum patch cable length is 100m

If you connect the Gin-SAM3 directly to your PC-Network card, use a crossover patch cable.

Please be careful about the placing of the IP-Addresses especially in large ethernets to avoid address conflicts.

The Gin-SAM3 needs a static IP-Address.

Important: The IP-Address must be set correctly before the card is connected to he ethernet. If not the network traffic can be affected seriously.

Change IP Address

- Boot your Gin-SAM3 either in emergency system or in user system (use emergency plug, see page 2).
- Connect your PC with your SAM3 with a serial cable.
- Now you can edit the IP-Address: **Target.IPAdress**
- Boot your Gin-SAM3
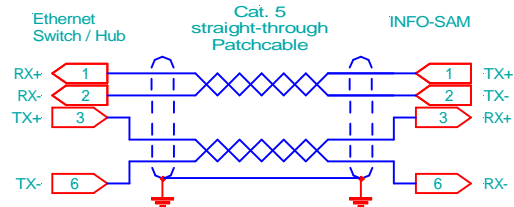- Now you can access the Gin-SAM3 over the specified IP-Address.

Default IP-Addresses:

- Default IP-Address: 192.168.1.251

Important: The lowest byte corresponds to the slave number of the target. Slave number 255 works always.
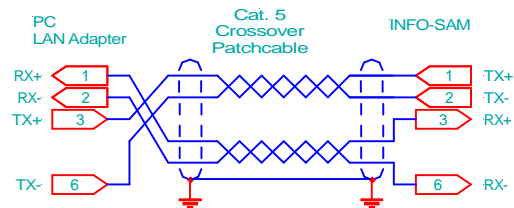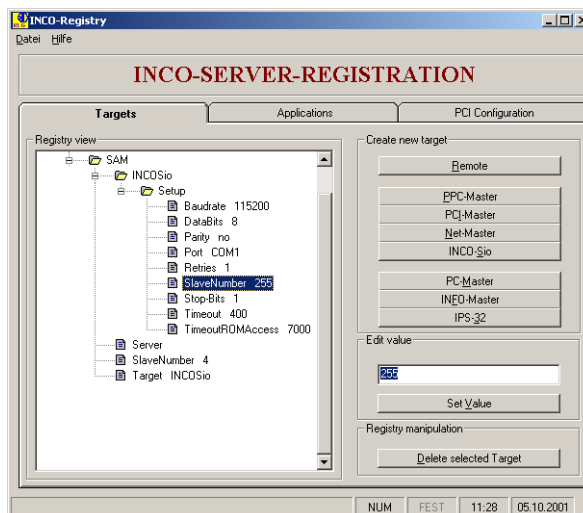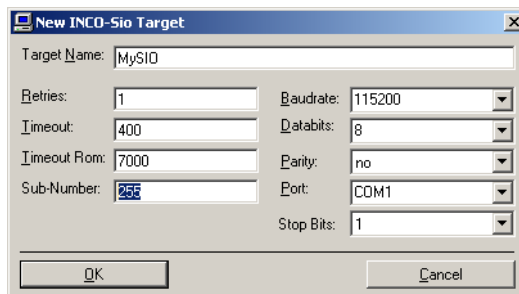
Connection Diagram LAN <-> SAM

Connection Diagram PC <-> SAM

Serial Target

Troubleshooting

Fault

As all INFO modules are connected in series, the link is interrupted as soon as a module is without power supply. Therefore take care to ensure that all boards are supplied with power (the red LED at the receiver module must be lit).
Some INFO modules from older series (e.g. INFO-16P, INFO-4KP) have built-in fuses. When these have blown, an LED will be lit underneath the defective fuse. Therefore, if necessary remove the cover in order to determine whether a fuse has failed.

Red LED (Power) is not lit:

When the master is active (TRANS successfully completed), it will continuously transmit data via the INFO-Link. In order to determine whether the master is active and performing properly, make a direct connection using a fiberoptic line between the master transmitter and the master receiver. (Remove the transmit power jumper if the fiberoptic line is shorter than 10m.). Now, the yellow LED on the master must be lit.

Yellow LED (Rec) is not lit

Now include the first INFO board in the fiberoptic loop and set the transmit power jumper according to the fiberoptic cable length. If this module is properly addressed by the master, the yellow LED must be lit here, too.

Include all the other INFO modules in the same way in the fiberoptic loop until all modules are working and also the last yellow LED in the circuit and on the master is lit. Now the link is OK throughout.

The link is obviously closed and OK. Either your module is not included in this circuit at all, or it is not addressed by the master. Check that the board type and the address switch of your configuration corresponds to the Config-File. In case of customized boards, also the associated software must be loaded in the master.

Yellow LED on the master is lit, but not on the external module

Your link obviously contains a section that can be exposed to interference. The cause is usually an inadequate amount of light arriving at the receiver, in rare cases also too much light. In any event, check first that the transmit power jumpers are correctly set on all INFO modules and on the master and that sufficient light reserves are available (see page 3).
With the diagnostic tool of th Indel Master Desk IMD, yuo can find the cards whitch generates the errors.

Error or LinkDown counter is counting

From an electrical point of view, the receiver is the most sensitive component of every INFO module, since the light pulses are here converted to currents of merely a few pA. Although the casings of the INFO modules are made of special ferrous plastic with shielding properties, unfavorably arranged relays or contactors with unquenched contacts may easily interfere with the receiver. An adequate distance and grounded shield plates will help most in such a case. (See also INDEL Wiring Guidelines, Design Guidelines.)

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