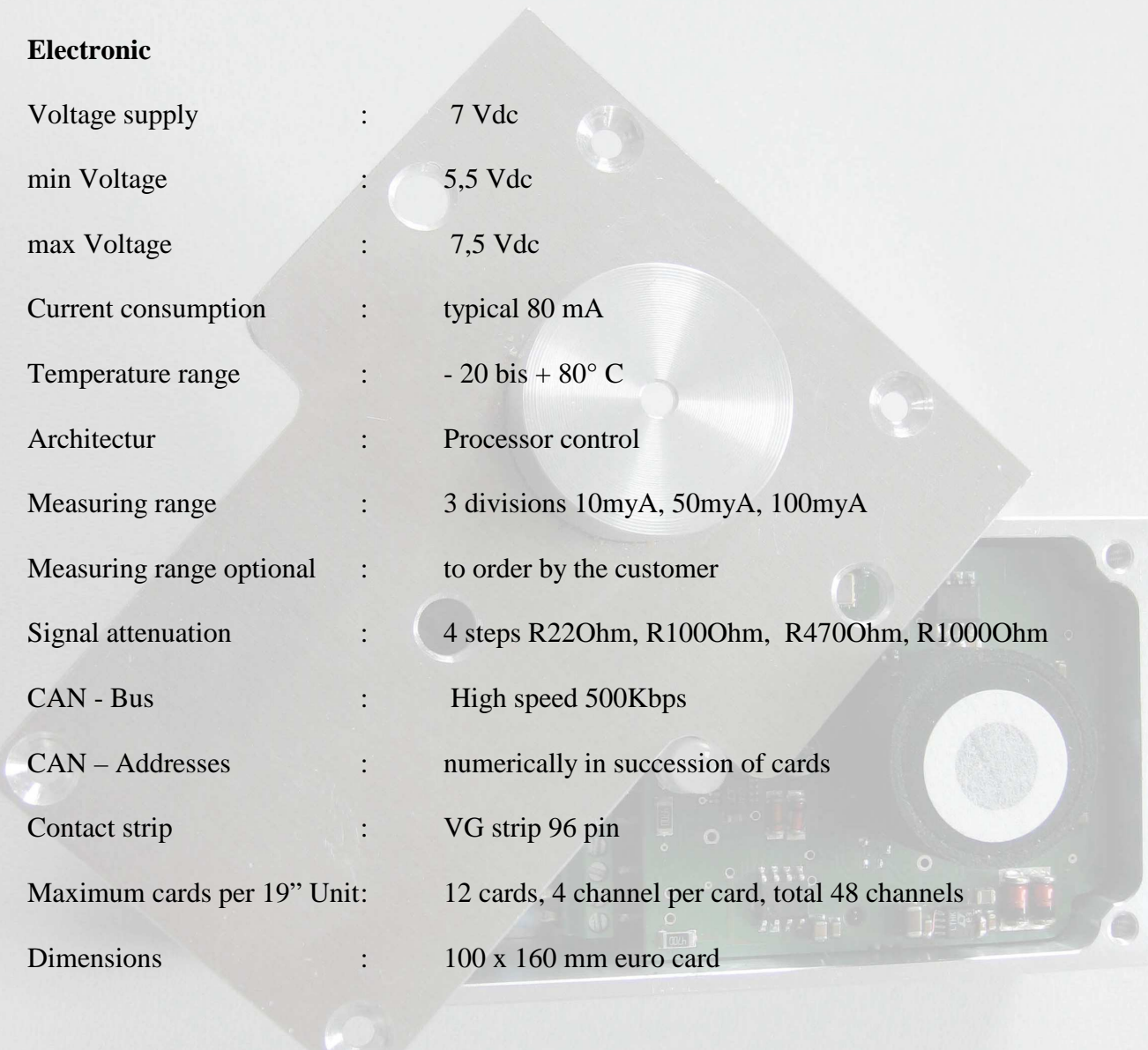


Specification Sheet for Potentiostat

Device-Type: 4 Channel Potentiostat V2 Card

Electronic



Voltage supply	:	7 Vdc
min Voltage	:	5,5 Vdc
max Voltage	:	7,5 Vdc
Current consumption	:	typical 80 mA
Temperature range	:	- 20 bis + 80° C
Architectur	:	Processor control
Measuring range	:	3 divisions 10myA, 50myA, 100myA
Measuring range optional	:	to order by the customer
Signal attenuation	:	4 steps R220hm, R1000hm, R4700hm, R10000hm
CAN - Bus	:	High speed 500Kbps
CAN – Addresses	:	numerically in succession of cards
Contact strip	:	VG strip 96 pin
Maximum cards per 19" Unit:	:	12 cards, 4 channel per card, total 48 channels
Dimensions	:	100 x 160 mm euro card

all calibration and setting on the cards are performed in the company of HATEL, before left our house to the customers.

In order to read the can-data an external module must present..

Such a module may be obtained from Hatel.

To check the correct signal conversion, a power source is necessary. It allows the simulation of a sensor.

Specification CAN interface for potentiostat V2.00

Physical Layer:

ISO 11898 / CAN High Speed Bus Interface Application

Baud rate: 500 Kbps

Message layer:

Short Identifier (max. 2048) / 0..8 data bytes per object

Application-layer (up to 128 nodes including PC):control

The identifier address range 512..1023 are the identifiers for the control and parameterization. Each node has 4 IDs, node "0" (identifier 512..515) is usually the PC (as master).

The four identifiers are used for

+0 ID: OUT command

+1 ID data master to slave (PC Potent Istat)

+2 ID: slave to master data (Istat Potent to PC) REMOTE FRAME

+3 ID: Acknowledge Out

Measured data:

In the identifier address range 1024 .. 1536 are the measured data identifier.

Each node has 4 consecutive IDs for measurement data.

Each Potentiostatenkanal shipped 20 * per second following 7-byte data packet its measurement data base id +0 (= 1024 + node number * 4):

Byte 0 to 3: SINGLE: Measured current [A]: SINGLE

Byte 4 .5: INEGER16: temperature at 0.01 ° C / 0 = LSB byte

Byte 6: Sensor Status

Bits, sensor status':

Bit 0: Sensor Error / 1 = Sensor failure / defective sensor

Bit 1: OVERTMP / 1 = temperature

Bit 2: VCCError / 1 = Power / Voltage reference error

Bit 3: Flash Error / 1 = EEPROM error

Bit 4: KomError / 1 = Data error CAN

Bit 5: CANRXOV / 1 = Receive buffer overrun CAN

Bit 6: Calibration mode / 0 = normal / 1 = calibration operation

Bit 7: Commode / 0 = passive mode CAN / CAN Mode 1 = active.

Overview participant structure:

Each CANbus device has a unique serial number "SN" (currently 2 bytes), and a dynamic node number for the bus. This may temporarily from the master PC (permanently or by writing to the flash) can be changed by command.

For devices (eg directly after production) do not have a node number, is a binary search algorithm (which interrogates the serial numbers) scanned and these will then be assigned a node number.

For all instruments, a data block can be read via "C_GetDaten-> bank = CFG), the specific details of device type, firmware version, Software version, hardware version, and contains stored node number.

Sequential flow of control commands:

1) PC selects one or more slaves (Kommand C_SELECT)

2) In most of the commands / the slave responds with a Acknowledgebyte, which consists of the slave status (see below for explanation)

3) data exchange that goes beyond the actual command parameters by setting a read-write address, bank (Rom / Ram etc) and number with the two corresponding Commands (C_GetDaten / C_PutDaten).

The identifier of the data sent from the PC data sequentially then migrate into the target area (letters, each block is a Acknowledg acknowledged by the slave) and can be read sequentially through a remote frame (read).

News:

Commands specific to the potentiostat are highlighted.

news

(Byte 0)

worth

(Dec)

function

Read C_STAT slave status 0

C_COM1 1 ALL slaves go to communications mode, and set their node number to "0", while Select = OFF

C_COM 2 Turns Sleep mode on / off (continuous), if supported C_COM also switched OFF
SELECT = OFF

C_ID_RST 3 Sets the temporary node number to "0"

C_SN_REQ 4 All slaves with serial number >= 0 and node number SuchSN reply within 5ms with Identifier 515 without data bytes.

For binary search for CAN bus devices with unknown structure C_ID_SET 5 Sets a slave with determiner serial number, the node number C_SELECT 6 Selects slaves for subsequent commands Read C_GETDATEN 8 data from the slave 9 C_PUTDATEN send data to slave C_ANWENDUG 10 Starts / Ends the measurement program (application) of the slave C_MODE 16 calibration mode on / off
C_BEREICH set 32 measuring range
C_OFFSET 33 put biasvoltage

Message parameters, each byte by byte if not stated otherwise:

C_STAT: -
C_COM1: -
C_COM: -
C_ID_RST: -
C_SN_REQ: SuchSN LO / HI-SuchSN
C_ID_SET: new node number / SN-LO / HI-SN
C_SELECT: NODENUM / OnOff
NODENUM = \$ 00: broadcast to all
\$ 01. \$ 7FKnotennummer slave
OnOff = \$ 00: Selection Off
\$ FF: A Selection
C_GETDATEN: Banking / AdresseLO / AdresseHI / CountLO / CountHI
Bank: DATA FLASH = 0
RAM = 1
ROM = 2
CFG = 3
Address: \$ 0000 .. \$ FFFF
Count \$ 0000 .. \$ FFFF

_PUTDATEN: Banking / AdresseLO / AdresseHI / CountLO / CountHI
Bank: DATA FLASH = 0
RAM = 1
ROM = 2
CFG = 3
Address: \$ 0000 .. \$ FFFF
Count \$ 0000 .. \$ FFFF
C_ANWENDUNG: OnOff
0 = Exit
1 = Start
C_MODE: operating mode
0 = 0.5 Hz measurement mode
1 = 8 Hz calibration operation
C_BEREICH: Range
0 = 1uA
1 = 10µA
2 = 100µA
C_OFFSET: preload: SINGLE (4 bytes) in [mV] {-531 .. +531 mV}

Reaction to news of the slaves:

C_STAT: return status (see structure below)

C_COM1: -No response

C_COM: return status

C_ID_RST: -

C_SN_REQ: If the serial number of the slave > = serial number of the search is a datenloser identifier returned 515 (actually acknowledge the identifier of the PC)

C_ID_SET: return status

C_SELECT: return status

C_GETDATEN: return status,

The actual data is read from the PC via Remote Frame

C_PUTDATEN: return status,

The PC can send another status after each data block.

C_ANWENDUNG: return status

C_MODE: return status

C_BEREICH: return status

C_OFFSET: return status

Status of the slaves: (Acknowledge)

Bit 0: 1 = hardware error unknown hard error

Bit 1: 1 = AnwFehler application program error (CRC or not loaded)

Bit 2: 1 = Data error ComFehler CAN / "EWARN Level"

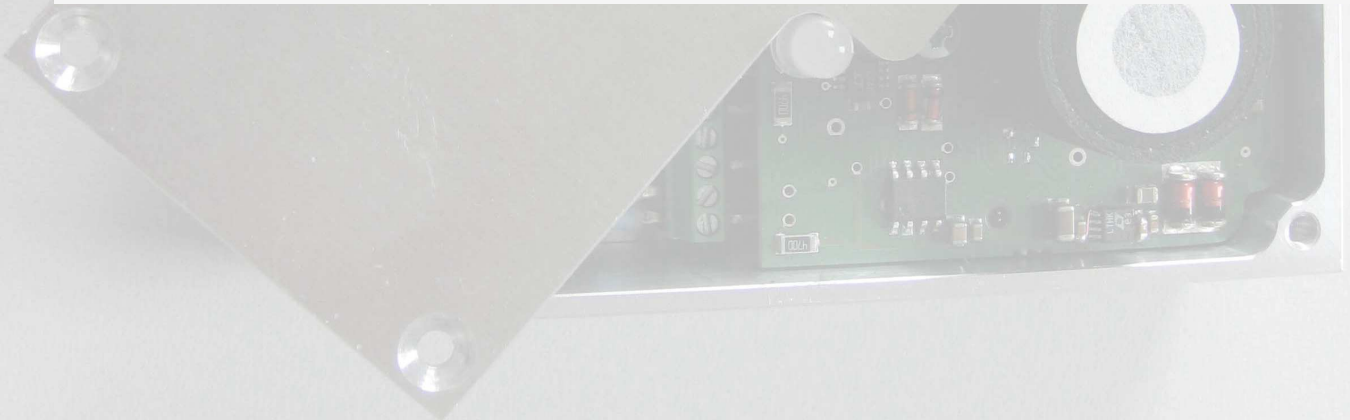
Bit 3: 1 = Flash or Flash error code error

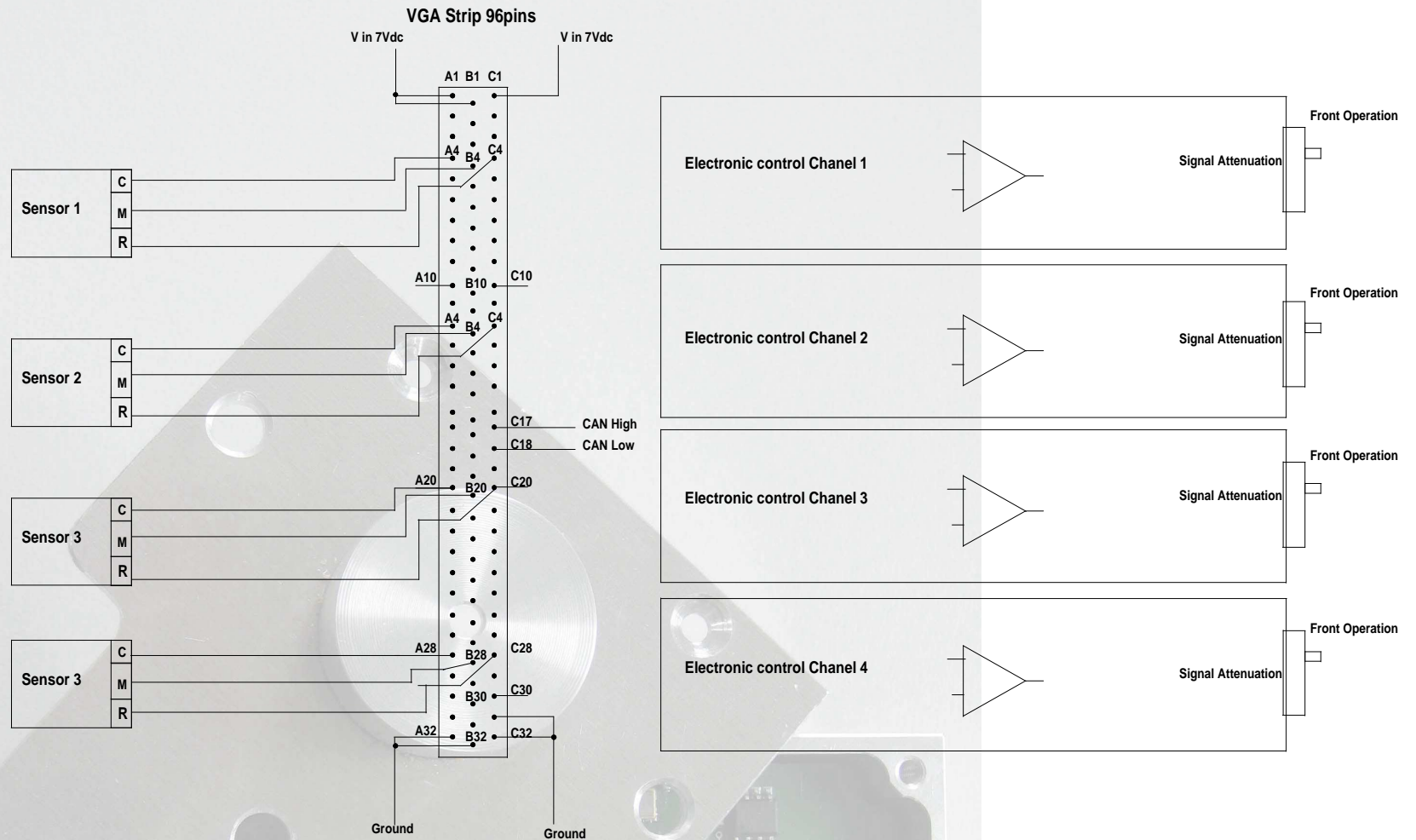
Bit 4: 1 = MonitorLaeuft only operating system currently running ...

Bit 5: 1 = commode continuous operation (for nodes with sleep mode) ...

Bit 6: 1 = success last command was successfully processed.

Bit 7: 1 = Busy command can not be processed at this time was discarded.





Dimensions of the electronic Card:
L= 160mm, W= 100mm

Material	Revisions Nr.	Datum	Auftrags Nr.	Datum	Firma		
Rittal 19" Gehäuseträger			Erstellt von Haag	14.05.12	HATEL GmbH elektronische Anlage		
			Geprüft von			Titel Connection diagram for VGA strip 96 pin	
			Geändert von		Größe A4	Ausgabe 01	Zeichnungs Nr. POT004
			Zuordnung		Maßstab ohne		Blatt 1 von 1
technische Änderung vorbehalten			Kunde				