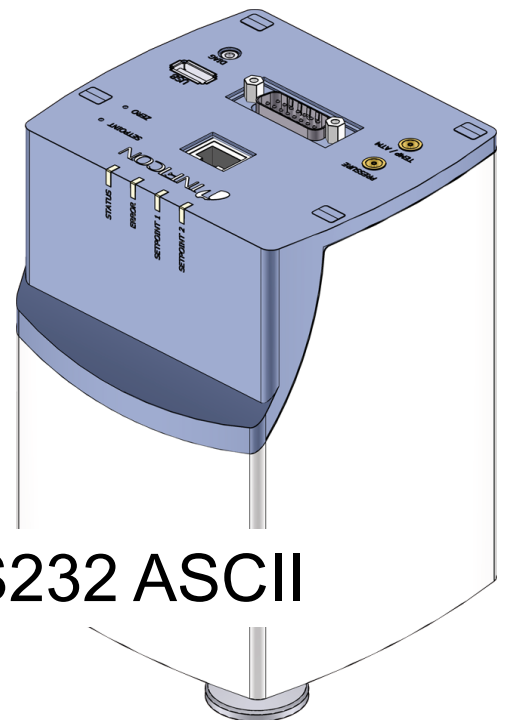


RS232 ASCII

Serial Interface

Cube CDGsci



RS232 ASCII

General Information

The RS232 ASCII Serial Interface for Cube CDGsci permits the communication between this digital INFICON Capacitance Diaphragm Gauge and

- a computer or
- a general device that understands RS232 ASCII.

The protocol is easy to implement and best suited to try out certain parameters of the Cube gauge before programming an interface because it can be directly accessed by a terminal program that can communicate on a RS232 interface.

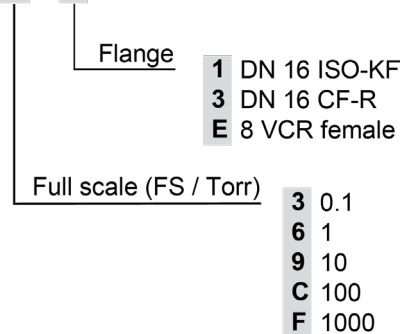
The RS232 ASCII Serial Interface integrated in the Capacitance Diaphragm Gauge allows to digitally transmit measurement values and information on the gauge status as well as to make parameter settings.

When a cable is attached to the diagnostic port all other interfaces except the analogue outputs are automatically deactivated.

Validity

This document applies to products with part numbers:

3 C S 1 - 3 1 1 - 2 3 0 0



The part number (PN) can be taken from the product nameplate.

If not indicated otherwise in the legends, the illustrations in this document correspond to CDGsci gauges with the DN 16 ISO-KF vacuum connection.

We reserve the right to make technical changes without prior notice.

Functional Principle

The RS232 ASCII Serial Interface is used in duplex operation.

Data format

- ASCII
- 8 data bits
- 1 stop bit
- no parity bit
- no handshake

Transmission rate

- 9600 Baud

Pin assignment

- TxD Pin 13
- RxD Pin 14
- GND Pin 5
(sensor cable connector)

1 Interface Protocol

1.1 Send and Receive

Commands are sent to the Cube gauge as an ASCII string. Each command is terminated with an CR/LF.

The input of only the command results in Cube sending the actual value of the parameter corresponding to the command (read access). The value is transmitted as an ASCII string terminated with a CR/LF.

The input of the command with a trailing parameter value will result in a writing attempt of the value into the corresponding parameter on the Cube. If successful, the string "o.k." is returned, otherwise an error message will result.

The data type in the parameter table 1.2 indicates how the string can be interpreted. The column "Access Right" denotes if the command is read only ("R") or has a read and write access ("RW").

Response time

100 ms for pressure values
200 ... 1000 ms for other information or write commands

Example 1

Command: `AUN` (displays / sets the currently set pressure unit)
Possible parameter values: mbar, Pa, Torr

Entry of command without parameters displays the current unit:

```
Cube> AUN
Torr
Cube>
```

Entry of command with parameter sets Cube to the specified unit:

```
Cube> AUN mbar
o.k.
Cube>
```

Entry of command with not recognized / allowed parameter results in an error:

```
Cube> AUN psi
Value does not fall within the expected range
Cube>
```

If unsure about the parameters, the help function will display them:

```
Cube> HLP aun
Device unit, 0=mbar, 1=torr, 2=pa
Cube>
```

Example 2

Write commands that do not have a parameter list need a trailing zero.
Command: `ZAD` (performs zero adjust at base pressure)

```
Cube> ZAD 0
O.k.
Cube>
```

1.2 Parameter Table

Parameter name	ASCII command	Data type	Access right	Comment
Reset	RST	uint8	W	Power on reset [RST 0] or [q RST]. Power cycles the gauge.
FilterSettings	FIL	uint8 or string	RW	Adaptive filter settings. Parameters: 0=dynamic, 1=fast, 2=slow, 3=bypass Input can be e.g. "0" or "dynamic". Transmitted back is always string, e.g. "fast".
SP1LevelLow	S1L	real32	RW	Setpoint 1 switch on, pressure units
SP2LevelLow	S2L	real32	RW	Setpoint 2 switch on, pressure units
SP1LevelHigh	S1H	real32	RW	Setpoint 1 switch off, pressure units
SP2LevelHigh	S2H	real32	RW	Setpoint 2 switch off, pressure units
PerOfAtmSP1	S1P	uint8	RW	Setpoint 1, percentage of atmosphere (only for 1000Torr gauges).
PerOfAtmSP2	S2P	uint8	RW	Setpoint 2, percentage of atmosphere (for 1000 Torr gauges only).
ZeroAdjust	ZAD	uint8	W	Execute zero adjust function. [ZAD 0]
ZeroAdjValue	ZAV	real32	RW	Offset compensation value after zero adjust [Volt]
DcOutputOffset	DOO	real32	RW	Generates a customer DC-output offset in Volts. Scale 0...10 V
RemainingZero	RZE	sint16	R	Remaining zero value after a zero adjust. Scale in counts
FirmwareRevisionCPU2	SSV	string	R	Software version Cube application program
ImageRevisionCPU2	AIM	string	R	Image version of the Linux operating system
FirmwareRevisionCPU1	SWV	uint8	R	Software version CPU1
SwDateYear	SWY	string	R	Year of low level firmware version [YYYY].
SwDateMonthDay	SWD	string	R	Month and day of low level firmware version [MMDD].
CalibDate	CDA	string	R	Cube calibration date [DD.MM.YYYY hh:mm]
PartNo	PAN	string	R	Part number on customer label
SerialNumber	SNU	uint32	R	Unique Cube serial number
RunHours	RHO	uint16	R	Running hours: 1 = 1h run hours [hours]
ExtendedError	EXE	uint16	R	List of extended error High byte: Bit 0 PT1000 fault Bit 1 Heater block overtemperature Bit 2 Electronic overtemperature Bit 3 Zero adjust error Low byte: Bit 0 Atm. pressure out of range Bit 1 Temperature out of range Bit 4 Cal. mode wrong Bit 5 Pressure underflow Bit 6 Pressure overflow Bit 7 Zero adjust warning
SensPressRange	SPR	uint8	R	Full scale of Cube (Exponent): 0=E-3, 1=E-2, 2=E-1, 3=E0, 4=E+1, 5=E+2, 6=E+3
SensFSR	SFS	uint8	R	Full scale of Cube (Mantissa): 0=1.0, 1=1.1, 2=2.0, 3=2.5, 4=5.0, 5=1.4
Help	HLP	string	R	Returns all the available commands
SystemDateTime	SDT	string	RW	Date and time of Cube via [DD/MM/YYYY hh:mm:ss]
ComportCPU2	COA	string	RW	Selector for RS232 Baudrate (RS232 ASCII), [9600, 19200, 38400, 57600]

(continued)

(concluded)

Parameter name	ASCII command	Data type	Access right	Comment
WLAN	WLA	uint8	RW	Switch WLAN [on/off]
Ethernet LAN	CLA	string	R	Switch LAN [on/off]
FindAccessPoints	FAP	string	R	Find a Wifi access point
ConnectAccessPoint	CAP	string	RW	Connect to an access point with index and password [2 password]
WLANSettings	IPW	string	R	TCP-IP address of Wifi connection. Change with IPW [IP-address][Subnetmask].
LANSettings	IPL	string	RW	TCP-IP address of current Ethernet connection. Change with IPL [IP-address][Subnetmask]. Gauge resets after successful command.
AnalogOutPLow	APL	real32	RW	Lower limit for analog zoom function (equals output of 0V), pressure units
AnalogOutPHigh	APH	real32	RW	Higher limit for analog zoom function (equals output of 10V), pressure units
CustomAnalogOut	CAO	uint8	RW	Switch analog zoom function [on/off]
CPU2Unit	AUN	uint8	RW	Cube pressure unit, 0=mbar, 1=torr, 2=pa
Pressure	PRE	real32	R	Current reading of vacuum sensor
ATMValue	ATM	unit16	R	Current reading atmospheric pressure sensor [mbar]
MACAddress	MAC	string	R	Mac address of the Ethernet adapter
SecondStageFilter ^{*)}	SSF	uint8	RW	Extended noise filter. [0=Moving Exponential Average, 1=SGS (Salvitzky-Golay Smoothing 4th order), 2=Loess Filter, 3=None
ResetFactory	RSF	uint8	W	Factory reset device
StoreFlash	SFL	uint8	W	Write new values to EEPROM
CubeMode	DOS	uint8	RW	Change digital 24bit output signal. 1= SL TempOut, 2= SL AtmOut

^{*)} The filter only operates on the digital data stream.

Data type

Abbr.	Meaning
STRING	Array of ASCII characters
REAL32	32 bit floating point
SINT16	16 bit signed integer
SINT32	32 bit signed integer
UINT8	8 bit unsigned integer
UINT16	16 bit unsigned integer
UINT32	32 bit unsigned integer

Access right

Abbr.	Meaning
R	Read only
RW	Read and write
W	Write only

Notes

Original: English



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