

DxINT Configuration-Software



Software Manual

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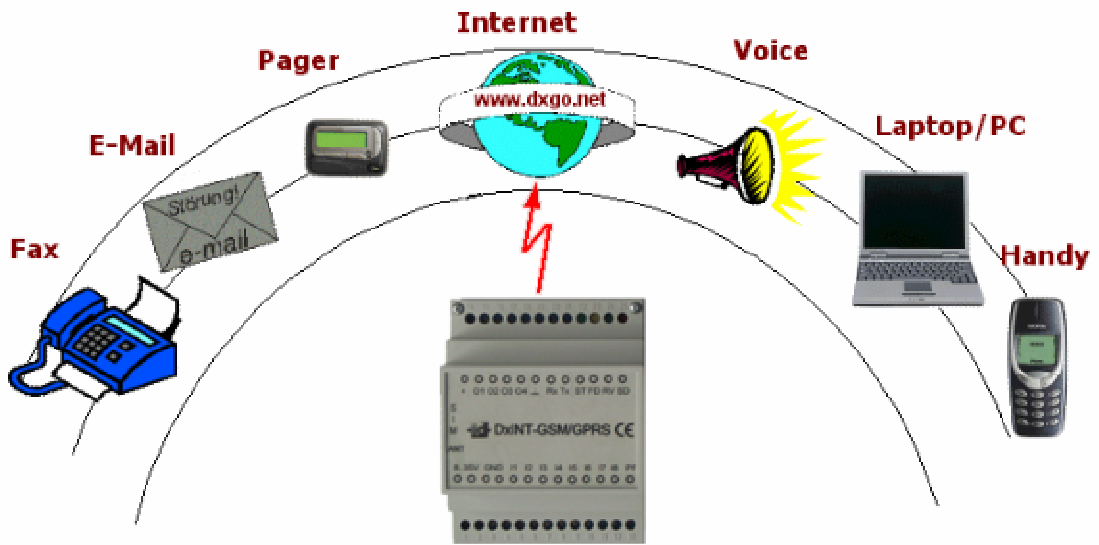
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WEB: www.doebelt.de

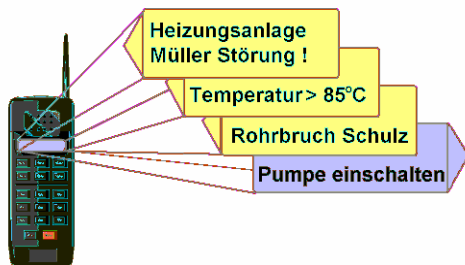
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Communication possibilities (possible receiver and transmitter)



Features

- Event message via GSM as SMS or EMAIL
- Remote control and remote request via SMS
- Command confirmation from DxINT
- Cyclic routine call
- Automatic time synchronisation
- Debouncing for all inputs
- Self supervision

DxINT

DxEVENT

DxLIFE



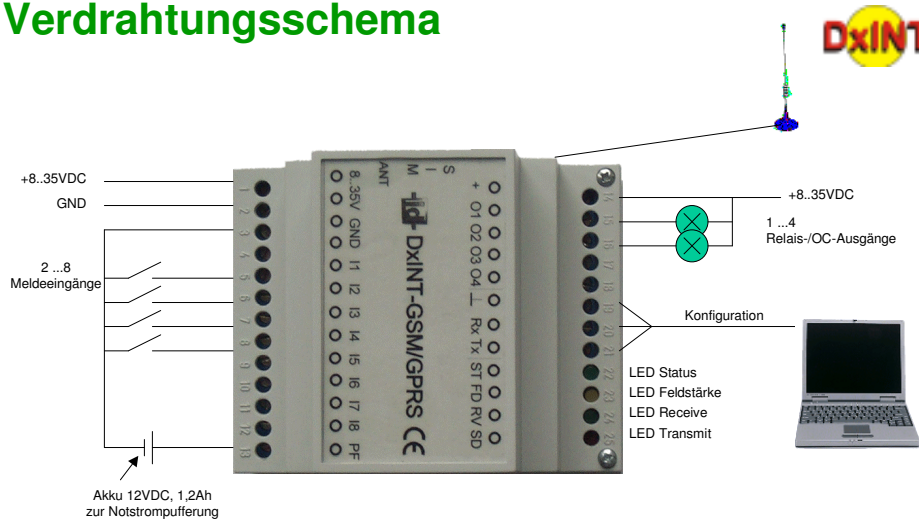
1 General

We thank you for using DxINT, DxEVENT or DxLIFE. With these devices it is possible to report events via SMS messages and switch outputs at the devices with SMS commands. DxINT-devices will be driven with a power supply and in case of power fail with a backup battery for some hours, depending on the battery capacity. The standard device is built in an EN-rail case. DxEVENT and DxLIFE are battery driven devices without external power supply. Usually battery driven devices have no switching outputs. For power saving reasons the internal modem is usually switched off and will be switched on by spontaneous events like state changes at the input's, border value crossing or cyclic transmissions initiated by the internal clock.

Many configuration commands can be sending via SMS to the device (see DxINT hardware manual). In this manual you will find a short description for using the DxINT-configuration software. The configuration for DxINT, DxEVENT or DxLIFE is widely identical. If in the following documentation DxINT is mentioned, all Devices like DxINT, DxEVENT or DxLIFE are meant.

1.1 Wiring figure (sample)

Verdrahtungsschema

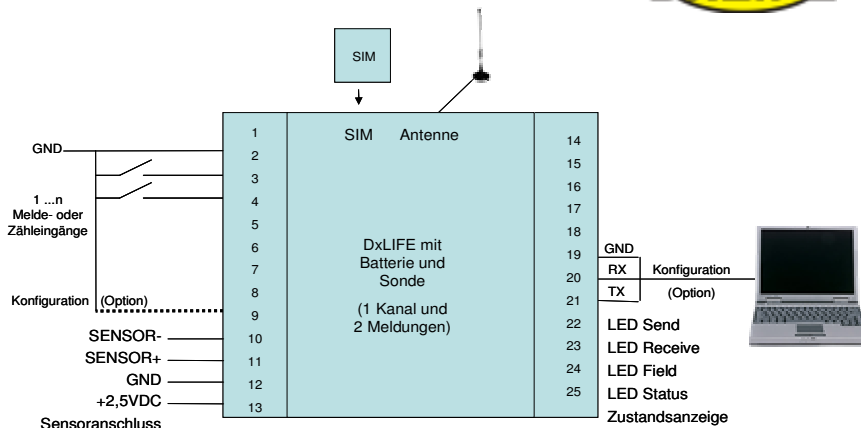


Pinning:

1:	+12VDC
2:	GND/Masse
3:	Input 1
4:	Input 2
5:	Input 3
6:	Input 4
7:	Input 5/AI1
8:	Input 6/AI2
9:	Input 7/AI3
10:	Input 8/AI4
11:	GND
12:	GND
13:	battery
14:	Relay Out 1
15:	Relay Out 1
16:	Relay Out 2
17:	Relay Out 2
18:	GND/Ground
19:	GND
20:	RX
21:	TX
22:	LED SEND
23:	LED RECEIVE
24:	LED FIELD
25:	LED STATE

Depending of the device different functions and pinning are available. All digital inputs must be wired with potential free wires between the corresponding input and ground (pin 2).

Verdrahtungsschema DxLIFE Sensor



Programming-cable



red=RX, black.=TX, yellow=GND

1.2 Getting started

For the configuration of a device please make a connection with the RS232C-configuration cable between your PC and the DxINT (19=GND, 20=RX, 21=TX). DxINT devices needs a power supply of 12VDC or optionally 24VDC at connector 1 (+) and 2 (-).

For switch on a battery driven device like DxEVENT/DxLIFE set a wire between the configuration input (C, pin 9) and ground (pin 2). The device will change state to the working mode and the GSM-modem will book in. Some devices use connector 9 for other applications. In this cases use the connector marked with "C". The LED's should have the following status: STATE: „on", FIELD: ">2Hz blinking", RECV "off" and SEND: "off". For energy saving reasons the device will switch off automatically after 10 minutes. After finishing the configuration the configuration bridge must be removed.

1.3 DxINT/DxEVENT/DxLIFE-state indication

DxINT/DxEVENT/DxLIFE has different LED's for showing the state of the device. States will be selected by different blink frequencies. By battery devices the LED's are only active during receive, transmit and configuration.

2 Configuration software DxINT-CONFIG for Dx-Devices

The configuration software DxINT-CONFIG is simple and easy to use software for the configuration of devices from the DxINT family like DxINT, DxEVENT and DxLIFE. It needs Windows 98/2000/NT/XP operation system and a graphic solution of minimal 600*800 pixels. Please start the setup program and install the software on your computer in a special directory. Start the software with DxINT-CONFIG.exe".



After starting the software you will see the opening screen for DxINT-CONFIG. With a mouse click in the window or after approx. one minute you will reach the main window of the program. All configuration data are classified in different register cards. In the following you will find the description of the register cards.

2.1 Register card „general data“

In the Register card “general data” all configuration data and parameters for the use of a Dx-Device will be filled in.

One group of Parameter contains the “initial settings of the device”. First the station-name is requested. This name will be displayed in a text-message to the receiver.

For GSM/GPRS devices is in the filed „voice call number” the voice call number and in the field „Data call number” the data call number of the used SIM-card in the Dx-Device required. Fill in the call numbers in the international format, i.e. +491723821220.

Dx-Devices with ISDN modems needs in the Field „Data call number (MSN)” the ISDN call number in the national Format (03046440506) (MSN: multiple subscriber number). The Field “time synchronisation via SMS” is for the time interval to synchronise with the time of the mobile network provider.

The next group of parameter is for the data of the “GSM provider”. For some German network providers the data are already stored in the device and the network provider will be automatically recognised.

In the Group „Modem at Dx-Device” the build in modem will be shown. For this it is necessary that the configuration software is connected with the Dx-Device and the modem is recognised (look at STATE LED). A connection to the device can only be established if the modem is in idle state. Is a connection impossible you can connect your PC direct after power on or after all actions has been done.

The group „settings for GPRS” is active, if a GPRS-MODEM is in the Dx-Device and a GPRS connection will be used. Here you can configure the disconnecting time after that the GPRS-connection has to close. If you need a confirmation for the transmission, set a mark in the check box. Furthermore the IP-Address and port of the communication partner is required.

For a GPRS Point-to-point connection one Dx-Device will be defined as Server (Master). The communication partner can receive the IP-Address of the TCP-Server via SMS. For application via Internet we deliver the TCP-Server DxAPS Application Server Software. More Details you will find on our web pages www.doebelt.com.

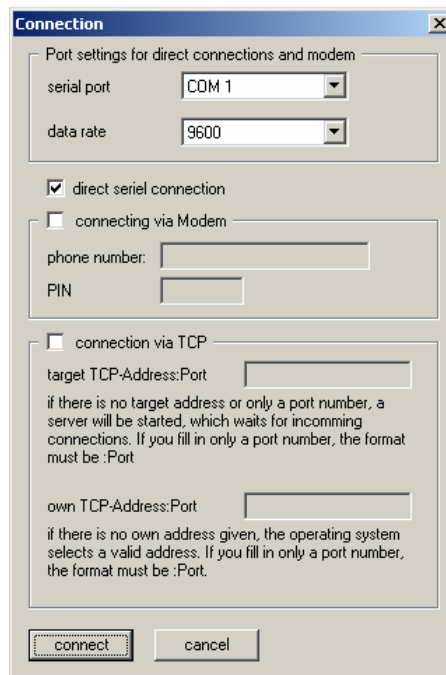
The Group „settings for MINIBUS (MBUS)” will be activating if the Dx-Device is for the use with M-BUS or MINIBUS meters specified.

The group „settings for text logger” specifies the delimiter between the logger data. All Data will be separated by the given “separator” and transmitted to the receiver address.

The Group „Data call of the radio modem with" is for choosing the data transmission protocol. For the transmission to a PSTN network V.32 is recommended. For radio to radio transmission a V.110 or V.32 can choose. With V.110 a fast connection is possible.

The buttons at the end of the register card are responsible for the handling of the configuration data. It is possible to read or write configuration data in or out a file or a Dx-Device.

With the button „ establish configuration connection" a connection to the Dx-Device will be established. A connection can be established direct via cable or remote via Modem (GSM, ANALOG, ISDN). For the direct configuration via RS232 the correct COM Port and data rate 9600 must be selected. We deliver the right configuration cable.



For the connection via modem the phone-number will be taken from the Field „Data call number". A PIN input is only necessary, if a connection via a connected GSM Modem will be established. The port is the port where the GSM modem is connected. the port-settings can be verified in the windows operation system under „System control"-„System"-„Hardware"-„device-Manager"-„devices".

For the correct Initialisation of the connected GSM Modem the PIN-Number of the used SIM-card must be filled in. After 3 tries with the wrong PIN number the SIM card is automatically blocked. With the PUK-Number the SIM card can be unblock. The device uses as standard the PIN: 1111.

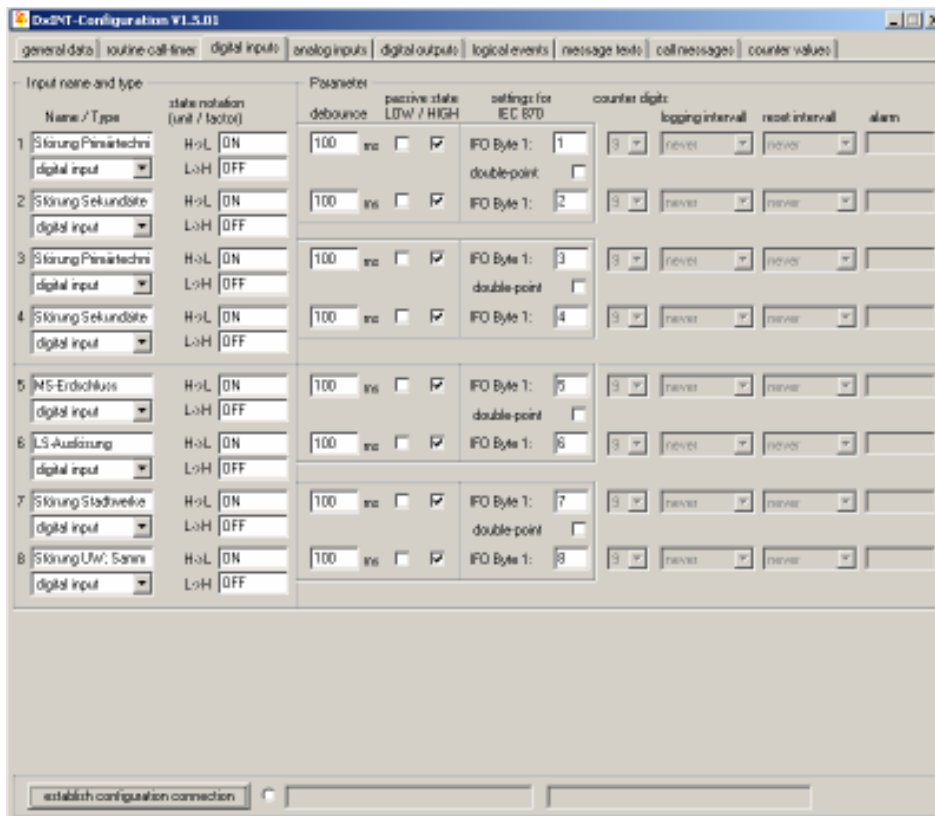
It is recommended to read out the configuration data from the Dx-Device and save it in a file. After read out the configuration data from the device all old data in the configuration software will be overwritten. The configuration data will be transferred to the Dx-Device with the button „write configuration data to DxDEVICE".

Programming cable:



2.2 Register card „Digital Inputs“

Here you will define the reaction of state changes of the digital in- and outputs. On the left side define first the inputs with name and type. There are up to 8 digital inputs.



An input can be configured as **event input**, as **counter input** as **run time counter** or as **logger trigger input**. An event input can transmit every state change. A counter input counts the pulses at the corresponding input and a run time counter counts the time in seconds for the signal active time. The optional type **logger-trigger** is for starting a measurement of a signal and logging it in a second interval for 15 Minutes.

On the right side of the register card you will find parameter for the signal conditioning. Here you can define the passive state of an input.

After a restart all inputs which are not in the idle state will generate a message if configured. The "debounce time" will eliminate short spikes in the signal and will generate message if the signal is stable longer than the debounce time.

Each input may count pulses with frequency up to 10Hz, optional up to 1 kHz. For power meters we offer Dx-Devices with S0-inputs.

The length of signal- and device names is limited by 16 characters.

2.2.1 Counter logging

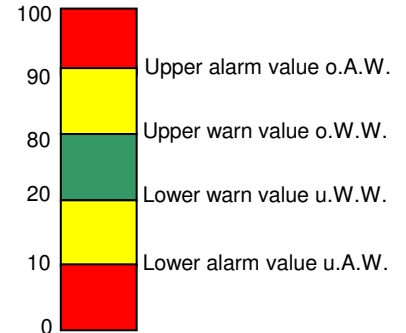
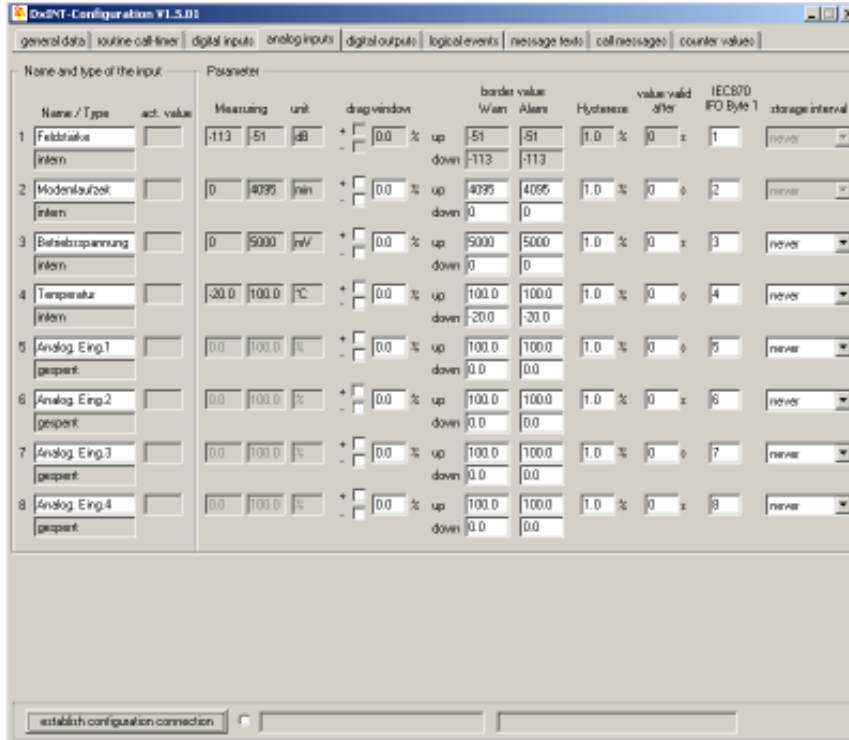
For inputs defined as counter you can specify the number of digits, the reset interval and the logg interval. Dx-Devices offer a channel logger, also called **mini logger**. Each input can be logged and transmit with the given parameter.

An input with the type „external counter“ counts pulses, collect and stores it in the configured time interval. Like that 15-minute values, hour values, day values or month value can be build. After the **reset interval** the counter will be cleared.

The number of stored data values is limited by the Dx-Device and the transmission type.

2.3 Register card „analog inputs“

The parameter of the analog inputs of the Dx-Device will be defined in this mask. The first 4 analogue inputs represent internal measurement values like shown in the mask. From this values only the temperature and the battery voltage is loggable. Inputs 5 to 8 are analogue inputs for external signals. If you are connected with the configuration software to the device and readout the data from the device the inputs 1 to 4 are already predefined. The standard interface for analog inputs is 0-20mA, optionally: 0...1V, 0...10V or special. In the field „actual value“ the measurement value will be displayed.

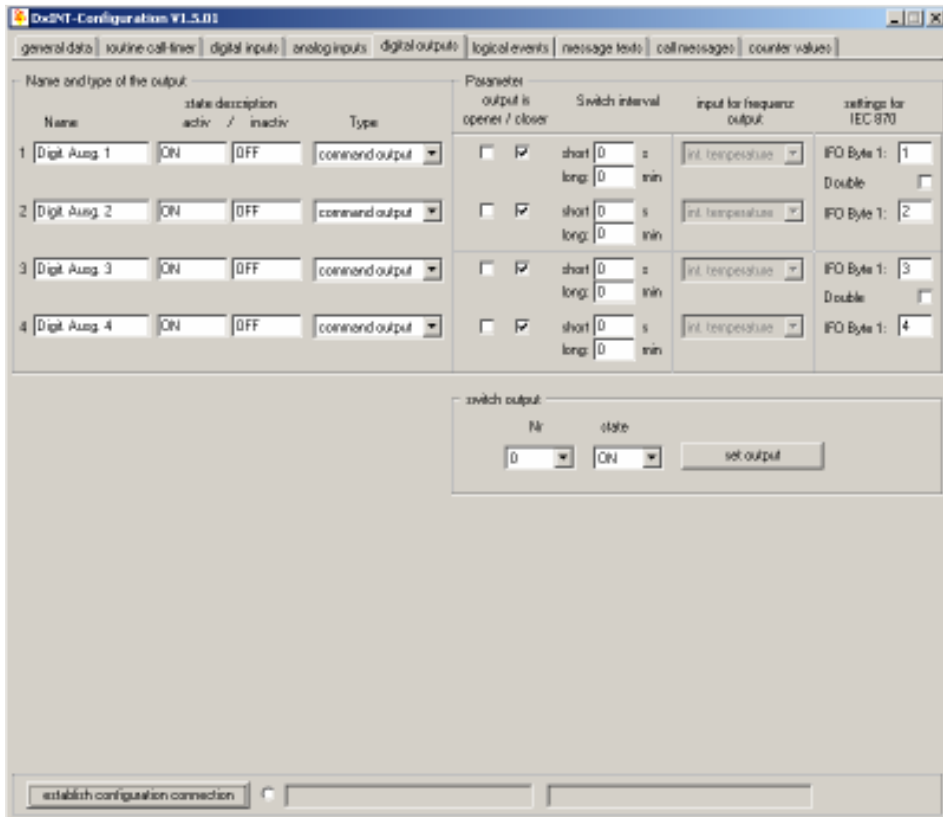


The drag window gives a delta of the scale value as changing range. If the drag value is over- or under crossed a transmission event will be generated. The new value is the reference point for the drag value. A 0.0 value means no drag window is active. As Parameter the measurement range (Start- and end value), unit, lower and upper warn value, lower and upper alarm value must be given. If the warn and alarm values are not needed the start and end value has to be used. A measurement value may be „o.k.“, or a warn- or alarm value is over- or under crossed. The scaling of the values will be done automatically. Only the start and end value and the unit must be given. The measurement will be done by power driven devices in 1s rhythm and by battery driven devices in a 1min rhythm. The survey of the measurement values will be done with the average value of the last 4 measured values. The logger values are average values over the given storage interval.

2.4 Register card „digital outputs“

The parameters of all outputs of the Dx-Device will be configured in this register card. Up to 4 outputs are available. It is possible to give the outputs and states individual names. The type of the output can be chosen in between **command-**, **failure-** or **frequency-output**. The command-output will switch on and off depending on an internal logical assignment or by a command from other Dx-Devices or mobile phones.

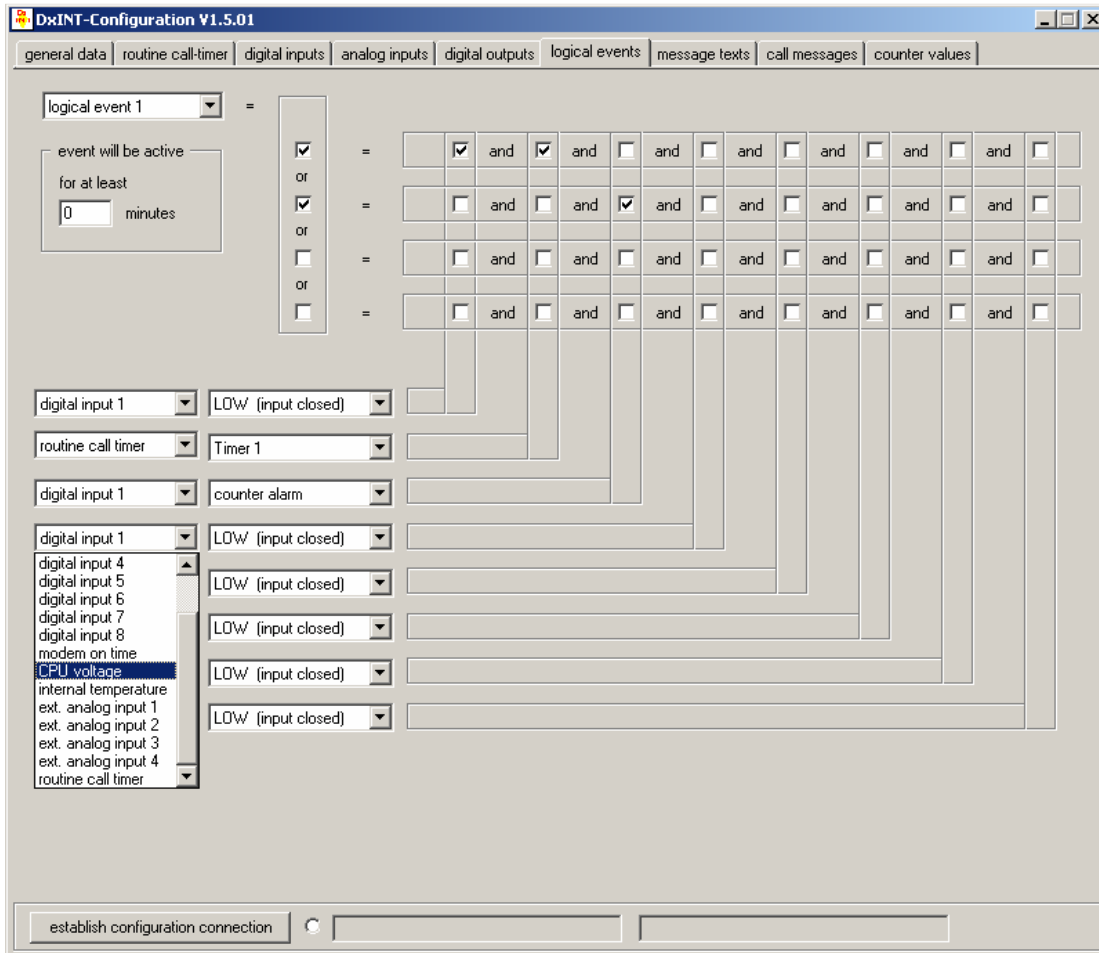
A failure output will be activated by internal failure in the Dx-Device or by data transmission errors until the failure reason will be removed. The field „**Parameter**“ defines the output as an opening or closing contact. Furthermore configuration for frequency-outputs and IEC 870-5-104 Protocol transmission can be done.



The outputs can be remote controlled by the given name and state. The idle state (open- or closing contact) of the output take place after power on.

2.5 Register card „logical events“

With internal combinations new logical events can be created. As input signals can be used: digital inputs, timer, counters and measurement values. In the combination field of this mask all signals can configured with a logical “AND“ and “OR“combination. With the state of the signal a “NOT” function can be realised. In the register card “call-messages” the new events can be used for communication.



Upper example:

**Logical event 1 = „Digital input 1 ON“ AND „Routine call timer1“
OR „counter 1 Alarm (Alarm value).**

The logical event is usable in other register cards.

2.6 Register card „message texts“

Here all texts for transmission and for output control will be defined.

It is possible to define 4 text-messages with 120 characters or 8 text-messages with 60 characters. In the register-card „message texts“ this text-messages can be assigned to an event and transmitted by occurrence. By activating the field „transmit text with station name und status“ additionally the station name and the status of the device will be transmitted.

The screenshot shows the 'DxINT-Configuration V1.5.01' window. The 'message texts' tab is active. The interface is divided into several sections:

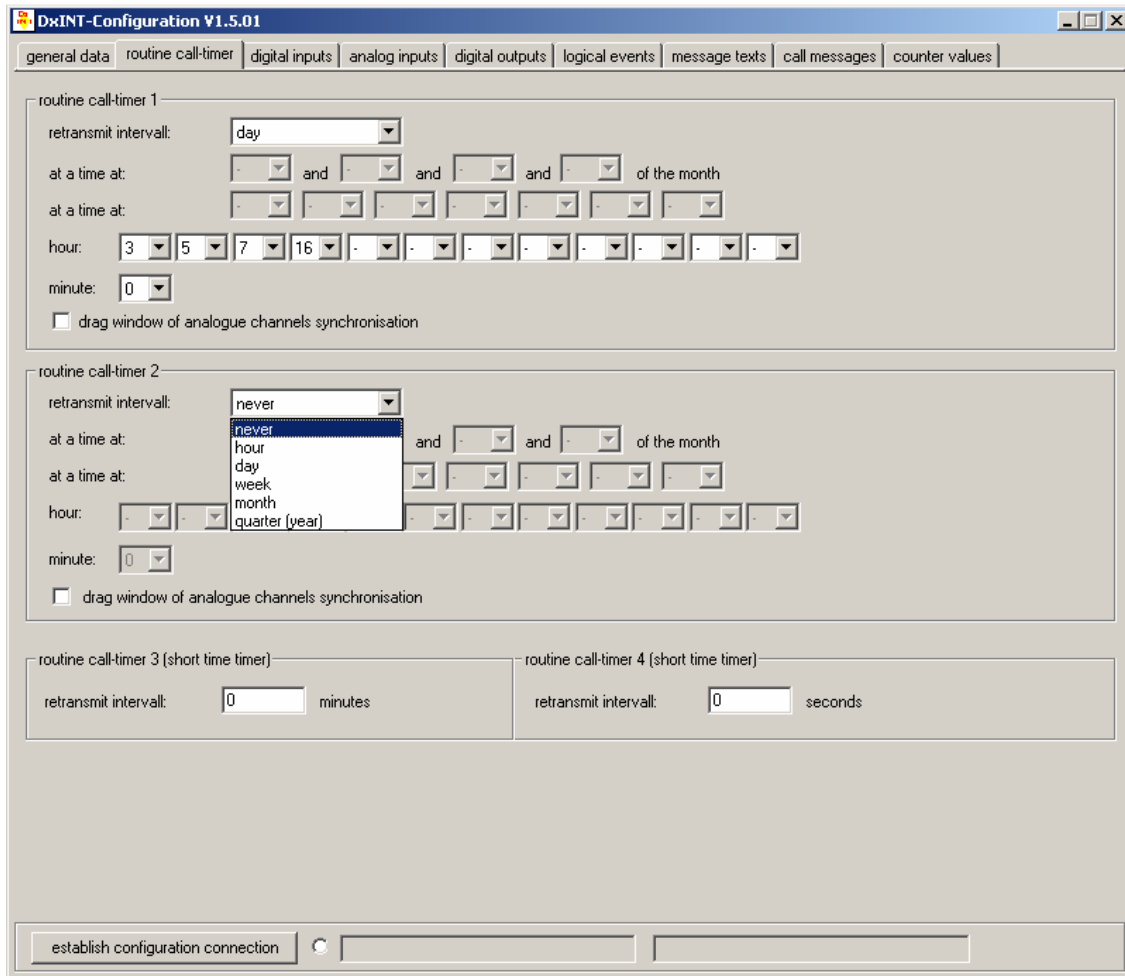
- message texts:** A table with 8 rows. Each row has a text input field and a checkbox labeled 'transmit text with station name and state'.
- max. number of message texts:** Two radio buttons:
 - 4 message texts max. 120 characters
 - 8 message texts max. 60 character
- control texts with max. 9 character:** A table with 8 rows, each with a text input field.
- Buttons:** At the bottom, there is a button labeled 'establish configuration connection'.

In the area „Maximum number of text-messages“ can be choose between 4 text-messages with 120 or 8 text-messages with 60 characters.

The group „control texts“ is for the definition of variable text messages to control by transmission a remote Dx-Device. In sum 8 different control texts with maximum 9 characters can be defined and used in the register card „message texts“.

2.7 Register card „Routine call-timer“

In the register card „Routine call-timer“ 4 Routine call-timer are available. This Routine call-timer can be used as trigger event for message transmission. In the register card „call messages“ the event „routine call“ can be chosen and you can select between timer1 to timer4 as trigger event for transmission. Timer 1 and timer 2 are designed as comfort-timer.

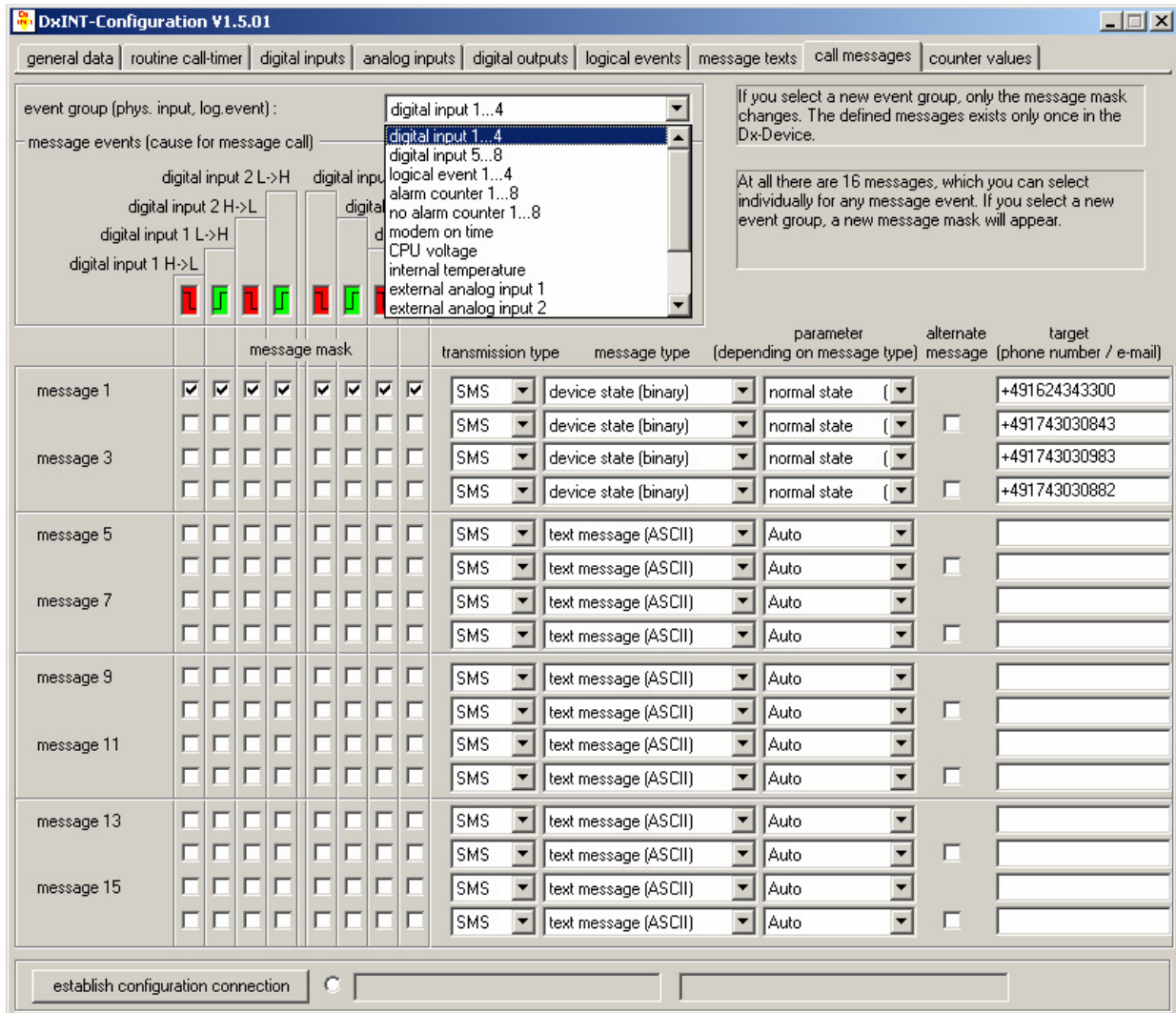


For each comfort-routine-call-timer a repetition interval from hours to quarters can be selected. In the repetition interval week-day or month-day and hour and minute of the trigger time can be select. Overall configuration can be done with up to 4 days in a quarter or up to 7 week days with 12 different hours. Minutes are valid for each hour.

Routine-call-timer 3 and 4 can be used as short time timers for transmission in short time intervals.

2.8 Register card „call messages“

In this register card the data to transmit and the receivers in relation to the input state will be configured. As input all physical inputs (events, counters, measurement values) even logical events and internal signals like battery voltage, temperature, modem running time, routine-call, etc...are listed and available. All over 16 receivers for all events are configurable.



For each input or event different trigger signals for data transmission can be selected. With click to check box the selected state will activate.

The type of transmission can be selected between **SMS, DATA, GPRS and LOCAL**. For a SMS transmission all numbers and addresses off the receivers which are allowed by the network provider, are possible. It is possible to fill in phone numbers, mobile phone numbers, email-addresses or IP-address:port. The offered services of the network providers are available.

The type DATA will transmit information to receiver via a data connection. The receiver needs a program to receive, handle and display the data.

The Type GPRS initiate a GPRS-connection to the given IP-Address and transmit data to that address. Even here an adequate program on the receiver side is necessary to receive, handle and display the data. With the transmission type LOCAL and a control text i.e. a local output can be switched. Hereby the control text must be identical with the name and the state of the output (i.e. Pump on).

The message type defines what kind of data will be transferred to the receiver, depending on the input state. It is possible to transmit information of the event, of the status of the device or logging data in different formats.

2.8.1 Event triggered logger (Option)

By occurrence of an event or a given time a previous defined measurement input can be logged every second 15 minutes long and afterwards transmitted to a receiver. The measurement will be done every second 15 minutes long after occurrence of a trigger event. The transmitted data can be treated and displayed i.e. with our DxLEIT remote control software.

2.8.2 Voice messages to fixed network

As calling number the normal fixed network phone number with pre-selection will be used. The configured text message will be read out via voice to the called receiver. This service works only with fixed network users. Usually the function is available with every German GSM card, no special services has to be booked. If no one off hook the phone it will be three times tried to retransmit the message to the receiver. If the receiver has a fixed network phone with SMS features, the message will displayed directly.

2.8.3 SMS as FAX-message (Option)

The Dx-Device can transmit SMS-messages as FAX-messages. For that a special FAX service from the network provider is used, which transforms SMS messages in FAX messages. As receiver phone number the number of the FAX-Receiver with pre-selection is used.

A FAX will be transmitted, if in front of the phone number the Text "FAX" is written. Between the text and the phone number a blank is possible, other characters are not allowed.

Example:

FAX 03046404507

FAX03046404507

But not

FAX:03046404507

2.8.4 SMS as Email

Similar to send a FAX message the Dx-Device will send a SMS as Email message. A special email service of the network provider will be used, which forwards the SMS as an email. It is necessary that an email message will send over a special SMSC Gateway with sometimes an own number (by D2 Vodafone „+491720333“), which the Dx-Device will use automatically by sending an email. With the DxINT-CONFIG-Software all settings will done automatically. Only the email address has to fill in the field "phone number/email".

2.8.5 SMS as CITYRUF message

Similar to send a FAX message the Dx-Device can send a CITYRUF PAGER message. For sending a pager call a special PAGER-service from the network provider will be used, which forwards the SMS to the PAGER network provider, who sends the message to the pager. As calling number fill in the CITYRUF-number with pre-selection (i.e. **01681234567**). It is possible to send Ton-, Numeric- or Alphanumeric-messages. As transmission type „SMS“ is to use. This service is only available with a D1 t-mobile phone network.

2.9 Register card „counter values“

With this register card counter will be read out or preset.

Depending on the Device there are up to 8 counters. Each counter can be cleared in a selected time interval and starts counting from zero.

As absolute live time counter value a start value can be configured.

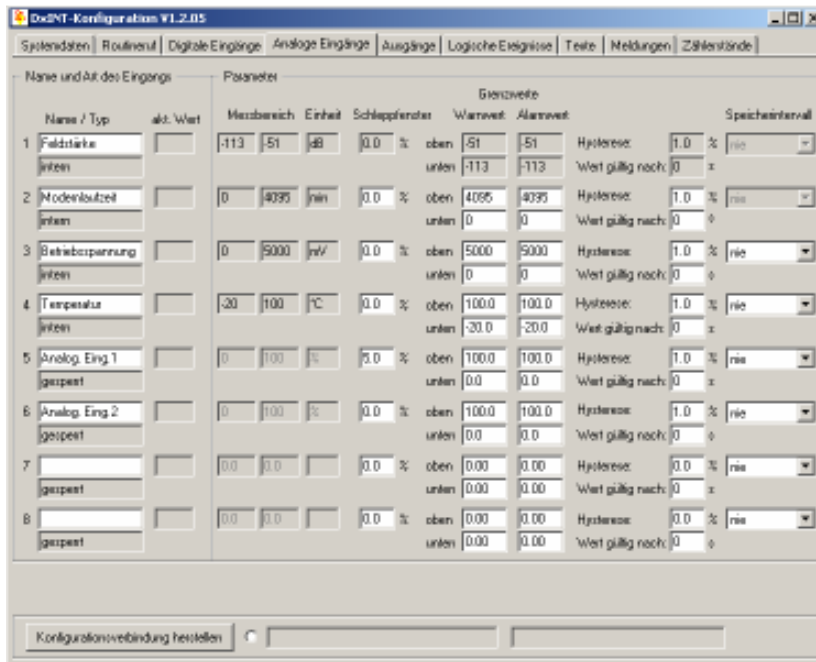
The interval counter value shows the actual counter value in the selected time interval. A counter setting is also possible in this register card.

For the proper counting even by power off we recommend a battery option to supply the Dx-Device during power off.

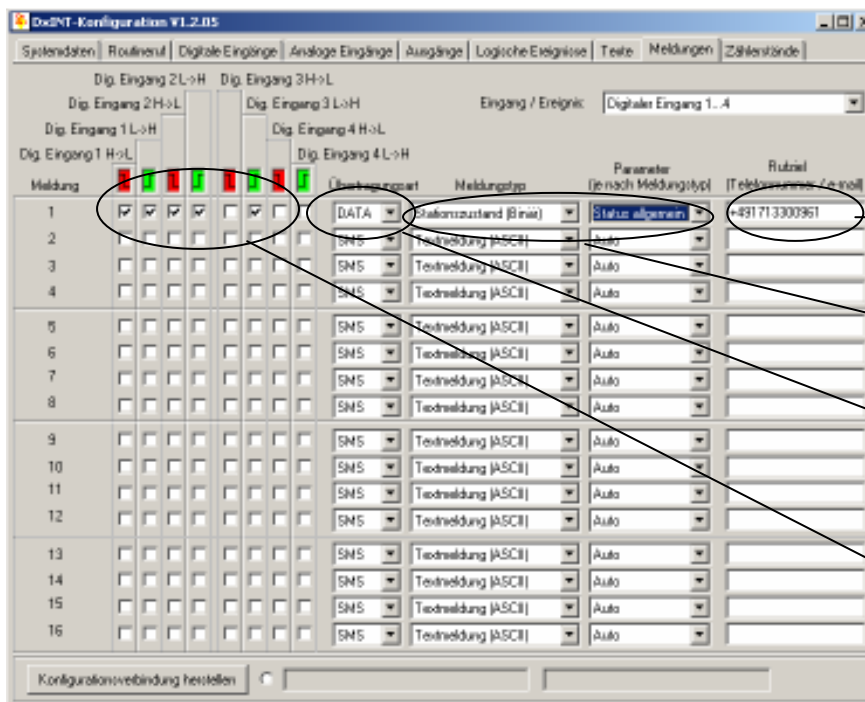
counter	absolute counter value	intermediate counter value	operation hour counter			
1	<input type="text" value="0"/>	<input type="text" value="0"/>	on	<input type="text" value="0"/>	off	<input type="text" value="0"/>
2	<input type="text" value="0"/>	<input type="text" value="0"/>	on	<input type="text" value="0"/>	off	<input type="text" value="0"/>
3	<input type="text" value="0"/>	<input type="text" value="0"/>	on	<input type="text" value="0"/>	off	<input type="text" value="0"/>
4	<input type="text" value="0"/>	<input type="text" value="0"/>	on	<input type="text" value="0"/>	off	<input type="text" value="0"/>
5	<input type="text" value="0"/>	<input type="text" value="0"/>	on	<input type="text" value="0"/>	off	<input type="text" value="0"/>
6	<input type="text" value="0"/>	<input type="text" value="0"/>	on	<input type="text" value="0"/>	off	<input type="text" value="0"/>
7	<input type="text" value="0"/>	<input type="text" value="0"/>	on	<input type="text" value="0"/>	off	<input type="text" value="0"/>
8	<input type="text" value="0"/>	<input type="text" value="0"/>	on	<input type="text" value="0"/>	off	<input type="text" value="0"/>

If an input is configured as counter for hours of operation on the right side of the register card you will see the operation hours in seconds. It will be shown the time for switch on and switch off. These fields will be activated as soon as the DxINT Configuration software is connected to the Dx-Device.

2.10 Point-to-point connection of two DxINT Devices



In the register card „analogue inputs“ measurement values will be configured. If analogue outputs exist, no special configuration is needed. The transmission to the communication partner will define in the following register card „messages“.



A transmission to the communication partner can be initiated on different ways:

- with a routine call timer
- with a border value crossing
- with delta event transmission
- with an internal event activation or an activation of an virtual input

The configuration of the transmissions will be done on the register card „messages“ with the type „Station state (binary)“ and the parameter „Status general“. The transmission is possible with SMS or dial-connection (DATA).

The trigger event or the trigger input will be selected on the left side on the mask. With a data dial connection bidirectional data will be exchanged and the status of the inputs and outputs will be updated.

3 Configuration of the DxINT-GPRS Device with IEC 60870-5-104 protocol

For the configuration of the DxINT-GPRS with IEC 60870-5-104 protocol with the DxINT-CONFIG Software are special appendix to this manual is available.