Profibus Connection Manual

Laying and Winding System 5101 N-P

Provisional Version Software Status 11/2010

Attention:

- **For laying refer to "Basic device manual"**
- **For core control refer to "Core control manual"**
- **For operation with use of the "5101-Grafik" software module refer to the "5101-Grafik" manual**

I. Functional scope of the "Profibus" module

Profibus

- System bus connection via Profibus – DP (slave)
- Automatic recognition of the bus speed up to 12 M-bit
- Replacement of all target and actual values, all control commands and status
- Access to all system parameters
- Automatic initiation of all necessary calculation processes
- Complete management via Profibus

Laying

- Complete functional scope per manual 5101 N

Winding on

- Complete functional scope per manual 5101 N core control

Master drive

- Complete functional scope per manual 5101 N core control

Winding off

- Complete functional scope per manual 5101 N core control

All functions of the winding and laying system as presented in the 5101N manual are also possible in simultaneous operation with the core control.

In order to operate the system refer to the respective manuals for advice!

Operation and execution via Profibus-DP and operation via the Miniterminal 2780 are possible simultaneously! This provides a recommended commissioning aid.
Additionally, the 2780 terminal can also be used as a local operating, monitoring and correction centre.

II. Description of the data exchange (handling)

16 bytes of data (16 bytes of inputs and 16 bytes of outputs) can be exchanged between the PLC and the 5101 computer on a cyclical basis.
The first 10 bytes are used for rapid cyclical parameter exchanges. These contain the control commands, status and the exchange of rapid actual and target values.
The last 6 bytes serve the multiplex exchange of data as required. It is fundamentally possible to access the complete storage area of the 5101 computer. This requires particular care when modifying the available software.
The customer is provided with a collection of standard modules in addition to an example program in unprotected form.
There is no guarantee of the function of this module in the customer application!
This can only be guaranteed with the generation of the customer application by us, followed by commissioning!

5101 inputs (PLC outputs)			**5101 outputs (PLC inputs)**
Byte 0	Control inputs 1 to 8 basic device		Basic device outputs 1 to 8
Byte 1	Control inputs 11 to 18 optional functions		Basic device outputs 11 to 18 optional functions
Byte 2	Control inputs manual mode support *		Operating messages (classification see below)
Byte 3	Reserved		Alarm messages (classification see below)
Bytes 4-5	Control word 1	Per parameterisation	Analogue value 1 laying support +/- 2000 (DAC 2)
Bytes 6-7	Control word 2	Per parameterisation	Analogue value 2 core speed target +/- 2000 (DAC 3)*
Bytes 8 & 9	Control word 3	Per parameterisation	Analogue value 3 actual master value +/- 2000 (DAC 4)*

* if parameterised accordingly

Faster parameter exchange - inputs

- Control word 1 is parameterised with P_EW1 in the basic data mask 16 bit
- Control word 2 is parameterised with P_EW2 in the basic data mask 16 bit
- Control word 3 is parameterised with P_EW3 in the basic data mask 16 bit

P_EW1-3

- 0 No controlling
- 1 Direct controlling of analogue output DAC 1 (+/-2048)
- 2 Addition to the analogue output DAC 2 (+/-2048)
- 3 Direct controlling of analogue output DAC 3 (+/-2048)
- 4 Direct controlling of analogue output DAC 4 (+/-2048)

It is fundamentally necessary to activate the control words in a rising sequence.
An entry of “0” in P_EW1 also deactivates P_EW2/3

Faster parameter exchange – laying computer outputs

- Output word 1 Analogue output value for the laying support target +/- 2048 (DAC 2) unchangeable
- Output word 2 is parameterised with P_AW2 in the basic data mask 16 bit
  - 0 Analogue output value for the core speed target +/- 2048 (DAC 3)
  - 1 Direct readout of the analogue inputs IN1 und IN2; IN1->H-byte; IN2->L-byte per 8 bit ; 0-10 Volt -> 0-255
  - 2 Readout of the rough displacement value axis 1 (16 bit) actual value core rotation
  - 3 Readout of the rough displacement value axis 2 (16 bit) actual value laying
  - 4 Readout of the rough displacement value axis 3 (16 bit) actual value laying master encoder material feed
- Output word 3 is parameterised with P_AW3 in the basic data mask 16 bit
  - 0 Analogue output value for the actual signal value +/- 2048 (DAC 4)
  - 1 Direct readout of the analogue inputs IN3 and IN4; IN3->H-byte; IN4->L-byte per 8 bit ; 0-10 Volt -> 0-255
  - 2 Readout of the rough displacement value axis 1 (16 bit) actual value core rotation
  - 3 Readout of the rough displacement value axis 2 (16 bit) actual value laying
  - 4 Readout of the rough displacement value axis 3 (16 bit) actual value laying master encoder material feed

Multiplex data exchange (large automobile service) inputs 5101 **Outputs 5101**

Byte 10	Control byte	Bit 0 & 1	Length of the data 1 to 3 bytes	Feedback
		Bit 2	write after 5101; read at 0	Feedback
		Bit 3	Free	Feedback
		Bit 4-7	Command set no. (new no. = new command)	Feedback
Bytes 11-12	Address in the computer 5101			Feedback
Bytes 13-15	User data			

Classification the operating and alarm messages

- Operating messages
  - 0 No function
  - 1 Manual forward
  - 2 Manual back
  - 3 Automatic
  - 4 Target run
  - 5 Reference run
  - 6 Reference missing
  - 7 Edge sensing active (on request)
- Alarm messages
  - 1 Laying motor lag error
  - 3 Laying sensor error
  - 4 Program cannot be executed
  - 5 Stop position touched unpermitted
  - 6 Laying sensor trigger too large
  - 7 Laying path too great
  - 10 Edge sensing malfunction (on request)

III. Calculation of the data in computer 5101

All target values are transferred to the computer in physical quantities (each 2 bytes). In order to carry out the subsequent calculation necessary and to execute faultless transferral it is necessary for a control byte to be set at designated addresses in computer 5101 to #$FF. Following completion of the calculation the byte is set to #00 by the computer. This calculation trigger is only permitted to take place once with a target value change!

With some actual value requests it is first necessary to carry out a calculation with respective cycle time load in the computer. This should only be triggered where required!

The addresses of the data and the control commands should be taken from the data modules provided in the data view.

IV. System and software modules supplied (standard)

Software installation GSD file

GSD file **5101.gsd** import into the S7 program

Under hardware link

“further field devices”
“I/O”
“SCHULZ ENGINEERING”
“LAY5101” to Profibus DP bar

then link the module “**5101 laying**”
and address accordingly.

The Profibus station number of the computer must be set in the basic data menu under “GP1” (1 to 127).
The station number “0” is not permitted!

The addresses for the data and control access are documented in the data modules supplied, in the data view.

V. S7 software modules supplied and conditions of use

The software examples supplied can generally be run on S7-300 systems (no guarantee). This software may be freely used and modified by the customer. However, we reserve the copyright. It is not permissible for third parties to protect software created by us, either in whole or in part. Through the use of this software users declare themselves in agreement with these conditions.
The software package "5101-Grafik", which can be optionally supplied, is subject to costs and licence obligations (refer to our licence conditions).

Functionality

The addresses of the data and the addresses of the control and calculation commands are stored in data modules in a structured form. The structure should be taken from the UDT 50 (2 bytes of data) and the UDT 55 (3 bytes of data).

The addressing is stored in the data view of the respective "DB". These modules must therefore **never** be set to the initial value.

The following function modules index-access the data contents in the data modules and execute the commands stored here regarding communication with computer 5101.

Example:
- if the read bit in the DB is set for the respective parameter then the value is read out in the computer with a cyclical throughput of FB50 and the data value is stored in the DB.
- if the send bit in the DB is set for the respective parameter then the data value present in the DB is written to the computer with a cyclical throughput of FB50 and the requisite calculations carried out.

The read or send bit is subsequently reset by the FB.

Module Function

FB50	Must only be active in the system once and not simultaneously with FB52, FB60 (start command). Checks the complete DB data for read and write errors. Carries out directed communication, with triggering of the requisite calculation in the computer. The execution of a calculation can be inhibited by setting the respective blocking bit. Data handling by word (2 bytes)
FB60	As FB50 although by double word (1+3 bytes)
FB52	Must only be active in the system once and not simultaneously with FB50, FB60 (start command). May only be used for DBs with target values. Compares the target value stored in the DB with the target value in the computer and overwrites the computer value in the event of a discrepancy, in addition to triggering the requisite calculation. Application: After changing individual target values
FB51	Handling small cyclical parameter lists. Cyclical parameter exchange of the control and status values alongside some data words.
FB47	Manipulates the specified data module. Sets all write bits and thereby leads to the transfer of all data values stored in the DB to computer 5101 **without** triggering the calculation in the computer. Serves to transfer complete programs. The new calculation should subsequently take place though transferral of the program number.

FB48	Manipulates the specified data module. Sets all write bits and thereby leads to the transfer of all data values stored in the DB to computer 5101 with a triggering of the calculation in the computer.
FB49	Manipulates the specified data module. Sets all read bits and thereby leads to a reading out of all addressed data values with storage in the DB.
FC51	Various examples with application of functional modules above.

DB50	Target values basic device with the basic functions by word (2 bytes)
DB51	Target values sensor-free edge correction by word (2 bytes)
DB52	Target values core control, dancer control, winding computer by word (2 bytes)
DB53	Target values entry angle control with sensor by word (2 bytes) *
DB54	Target values edge offset for mech. correction of the system by word (2 bytes)
DB60	Actual values basic device with the basic functions, however without calculation-intensive actual values, by word (2 bytes)
DB61	Actual values sensor-free edge correction by word (2 bytes)
DB62	Actual values core control, dancer control, winding computer by word (2 bytes)
DB63	Actual values entry angle control with sensor by word (2 bytes)
DB64	Actual values calculation-intensive values by word (2 bytes)
DB70	Basic data basic device with basic functions by word (2 bytes)
DB71	Basic data physical adjustment of both edges double value 3 bytes (4 bytes PLC)
DB72	Basic data sensor-free edge correction by word (2 bytes) *
DB73	Basic data core control, dancer control, winding computer
DB74	Basic data entry angle control with sensor *
DB75	Basic data stored values by word (2 bytes) only for data backup following physical adjustment of the laying path
DB76	Profibus address

* On request

Description UDT50 (manual transfer or reading out of individual values)

Adresse	Name	Typ	Anfangswert	Kommentar
0.0		STRUCT		
+0.0	wert	INT	0	wert zum schreiben oder lesen
+2.0	adresse_wert	WORD	W#16#0	adresse des wertes im rechner
+4.0	adresse_steuern	WORD	W#16#0	adresse der berechnungsaulösung im rechner
+6.0	lesen	BOOL	FALSE	wert lesen aus rechner
+6.1	schreiben	BOOL	FALSE	wert schreiben zum rechner
+6.2	blockade	BOOL	FALSE	keine berechnung im 5101 durchführen
+6.3	res11	BOOL	FALSE	
+6.4	res12	BOOL	FALSE	
+6.5	res13	BOOL	FALSE	
+6.6	res14	BOOL	FALSE	
+6.7	res15	BOOL	FALSE	
+7.0	reservebyte	BYTE	B#16#0	reserve byte
=8.0		END_STRUCT		

The entries in the current values (DBs) “address_value” and “address_control” must not be changed!

Reading or writing the input values is triggered by setting the bits 6.0 or 6.1 relative to the input value. By additionally setting bit 2 the calculation trigger is blocked in the laying computer. With renewed transfer of the program number the calculation of all data is triggered in this instance.
The module FB50 must be executed once after setting the command in order to carry out communication with the computer. The set bits are reset after execution of the command by FB50.

Description UDT55 (manual transfer or reading out of individual values) however for double words
Conditions such as UDT 50. 3 bytes from the value are used, the leading byte is not taken into consideration!

VI. Basic data programming

Supplementation with Profibus

G1

Basic data programming by means of Terminal 2780
Passcode 4711

Supplementation for Profibus connection as follows:

GP1 STATION 0 - 127 (12)
?

Attention: Changing the entry triggers a system restart. Changes are therefore only permissible with a disabled drive!
Presetting the interface with execution with the option "Profibus" -> 12

Provision of the station number, entry of "0" = No Profibus

PC program for this input on request

VII. General information on Profibus coupling

Following correct wiring and earthing/screening and after inputting the station number, the coupling takes place automatically with the setting of the transfer rate. This is indicated by a red LED on the options board extinguishing.

VIII. Project planning information

The following applies for first-time users of the winding and laying system!:

Commissioning support provided by us is absolutely essential!

IX. Allocation of the digital and bus-controlled inputs and outputs

Function of the hardware inputs and via "control byte 1"

The hardware inputs and the control byte 1 are "OR"-linked

Basic functions:

E1	**Connection of the reference point end switch or reference release with gate winder**
E2	**Automatic**
E3	**Drive to start position (only after reference run OK)**
E4	**Winding reversed (reversal of the support)**
E5	**Winding sense left (core rotates backwards)**
E6	**End position front or manual mode forward ***
E7	**End position back or manual mode backwards ***
E8	**Drive to unload position**

* depending on release in the basic data
G22 = 0; end position E6/E7

Function of the hardware outputs and "status byte 1"

The hardware outputs and the status byte 1 are mutually controlled

Basic functions:

A1	**Controller release for the servo**
A2	**Reference point OK and ready for operation**
A3	**Layer number reached or length reached**
A4	**End position left follows**
A5	**End position right follows**
A6	**Pre-contact**
A7	**In position (after target run)**
A8	**Alarm**

Analogue outputs: **DAC1 = Target value for traction moment or torque specification (if required)**
DAC2 = Target value for the support (laying drive) +/- 10V

Access to the inputs and outputs of the basic device is additionally possible via the hardware (OR condition) with the execution of "Profibus".

Function of the control inputs of the additional functions via "control byte 2"

E11	**Core start normal speed**
E12	**Core creeping fixed speed**
E13	**Core backwards**
E14	**Support stop once edge reached**
E15	**Target run in the middle**
E16	**Start edge sensing (fully automatic)**
E17	**Measuring probe or mech. scanner signal for edge sensing**
E18	**Activation of level 2 (presently not assigned)**

All signals *E11-E18* are constant signals as long as the associated function is desired or present.
The signal *E16* should only be reset after resetting the confirmation output *A12*.

Function of the status outputs additional functions “status byte 2”

A11 Control release core
A12 Edge sensing in action
A13 Start the core rotation for edge sensing
A14 Reserved
A15 Reserved
A16 Reserved
A17 Reserved
A18 Reserved

Function of the control inputs of the additional functions via “control byte 3”

E21 Reserved
E22 Reserved
E23 Reserved
E24 Reserved
E25 Reserved
E26 Manual mode forward support *
E27 Manual mode back support *
E28 Half speed manual mode

* depending on release in the basic data
G22 = 0; end position E6/E7

Analogue outputs: **DAC3 = Target value for the paddle drive (core rotation) +/- 10 V with paddle control operating mode**
DAC4 = Actual signal value material speed +/- 10V with paddle control operating mode

Analogue inputs: **IN1 = Target value core rotation or material speed with paddle control operating mode**
IN2 = Actual dancer value (dancer position) with paddle control operating mode
IN3 = External signal value with paddle control operating mode
IN4 = Actual value entry angle with respective operating mode
All inputs 0-10 V

X. Technical data on the winding and laying system 5101 N-P

Issue date 01/2010
Version with Profibus

Function:		Control of multiple laying stations within a network, winders, unwinders
Dimensions:		Euroboard, 3 height units, optionally in cartridge for individual installation with integrated power supply unit and options board
Connection:		via VG edge connector, 64-pole and/or terminal strip with flat cable connection
Supply:		24V DC or AC voltage +/-20%, 0.38A plus external power requirement
Displacement transducer inputs Incremental encoder or encoder emulation:	Basic device:	2 inputs per channel A,B ; /A,/B,/0 galvanically free with external supply, optional supply via device 5V= and 15V= limit frequency 100 / (400) kHz ①..
	Options board:	1 input channels A,B; /A,/B, galvanically free with external supply, optional supply via device 5V= and 15V= limit frequency 100 / (400) kHz ①.. all values alternatively via Profibus
Digital control inputs:	Basic device:	8 x galvanically free 24V= per 4mA, mutual base point and/or via Profibus 1 x interrupt input reference for gate winder
	Options board:	8 x via Profibus
Analogue inputs:	Options board:	4 analogue inputs 0 - 10V , resolution 8 bit non-floating against supply voltage and/or via Profibus
Digital control outputs:	Basic device:	8 x galvanically free 24V= 30mA, mutual supply parallel via Profibus
	Options board:	8 x via Profibus
Analogue outputs:	Basic device:	2 analogue outputs +/- 10V, resolution 12 bit driver 5mA non-floating against supply voltage and output via Profibus
	Options board:	2 analogue outputs +/- 10V, resolution 12 bit driver 5mA non-floating against supply voltage and output via Profibus

①..after quadruplication

Permissible ambient conditions:	Ambient temperature 0 to 60 °C Condensation impermissible
Interface:	Profibus up to 12 M-bit, automatic coupling, potential-free RS 232 or RS 422 network-compatible up to 48 systems
Data retention:	EEPROM , data retention min. 4 weeks via high energy capacitor.
Incremental encoder evaluation:	Optionally single, double or fourfold; (factory setting fourfold) partially with intelligent zero track evaluation
Deviation correction:	max. 32000
Path resolution Support:	max. for *support* 24 bit approx.2,000,000 incremental encoder pulses with fourfold evaluation max. for *material width* 16 bit approx.8000 incremental encoder pulses with fourfold evaluation *with double evaluation double the number of useable pulses* *with single evaluation four times the number of useable pulses*
Path resolution Core:	32000 encoder pulses
Scale of translations:	Endless
Cycle time:	approx. 4 msec per operating mode
Operating device:	Intelligent mini terminal 2780 2x40 characters, alphanumeric illuminated and function keyboard in addition to numeric key field Operator guidance, bilingual for user data, German, English Power supply unit, interface RS422 Memory space for 200 programs and 5 adjustments Second interface with control technology as optional RS232
Operating device protection type:	IP65 with professional installation
Resolution of the phys. inputs:	0.1mm Core data and edge data 0.1 ° Angle 0.01mm Material data and edge changes 0.001mm Layer growth
Input limit values:	0 – 3200.0 mm Core data and 1st target position 0- 3200.0 mm or 0- 9999 mm 2nd target or unloading position 0 – 320.00 mm Material data and edge changes 0 – 25.5 mm Edge offset (correction dimension)
EMC:	CE conformant for industrial application and installation with consideration to our specifications

XI. Programming package "5101-Grafik"

Application

The optionally available programming package "5101-Grafik" constitutes a fully loadable software environment under Siemens S7-300/400 with the following scope:

- **Convenient graphical operation via terminals written in WinCC**
  - Supports terminals from TP 177 B (colour) upwards
  - Graphic operating overview with self-explanatory input fields for all standard operating values
  - Status overview
  - Graphic presentation of the edge acceleration, skew angle and ancillary values
  - Input mask for the operating mode "sensor-free edge correction"
  - Program handling prepared for 50 material programs (expandable) and 10 system programs
  - Material programs editable on 2nd level without influencing the current working process
    - Data transferral optionally into the "teach-in"
  - Commissioning support with semi-automated physical alignment
  - Terminal screens and variables list loadable to existing projects

- **Parameterisable function module for the entire data traffic between the controller and the laying computer with the following characteristics**
  - Image number freely designated (preset with 100-114)
  - Numbers of the system DB and the program DB freely designated
  - No noteworthy software outlay for the user
  - Problem-free inclusion into the customer application

Scope of supply

- S7 modules
  - OB1 Example applications
  - FB 90 Correspondence program for laying computer, FB no. changeable
  - FB 91, FB 92, FB93 sub-programs FB-no. assignment fixed
  - UDT 50 structure data configuration for the data handling by word, name changeable
  - UDT 58 structure data configuration text memory product designations, name changeable
  - UDT 59 structure data configuration handling data terminal, name changeable
  - SFC14 Siemens standard module available in the CPU
  - SFC15 Siemens standard module available in the CPU
  - SFC20 Siemens standard module available in the CPU
  - SFC51 Siemens standard module available in the CPU
  - DB99 Addressing the data, DB no. changeable
  - DB110 (UDT59, UDT58) Terminal general, DB no. changeable
  - DB111- DB113 (UDT50) Computer correspondence address, **current values must not be changed**, DB no. changeable
  - DB 116 (UDT58) Product text, DB no. changeable
  - DB120, DB121 (UDT50) Examples of stored basic data programs, DB no. changeable
  - DB115, DB122- DB124 (UDT50) Examples of stored user programs, DB no. changeable
- WinCC flexible
  - Images 100- 115, image numbers changeable
  - Variables list DB no. relative designation, assignment fixed
  - Text lists and help text
  - Executable from TP177B

Integration into a customer application

S7 program and WinCC

- Integrate the GSD file provided into the hardware configuration

- Load sub-programs FB91- FB93; do **not** change name! Called up by FB90.
- Load modules SFC14, SFC15, SFC20, SFC51, UDT50, UDT58, UDT59

- Load data modules DB110- DB113, if necessary change DB no., **whilst retaining the data content!!** Make a note of the names of the DBs because these must be subsequently entered into DB99!

- Proceed in the same way with modules DB116 for product text,
  DB 115, DB122- DB124 for user programs and
  DB120- DB121 for basic data programs. Up to 50 DBs can be named for user programs in the basic configuration (can be expanded). Up to 10 DBs are planned for the basic data. **During this work data contents must never be changed (no initialisation)**

- Open **system- DB99** (if necessary after changing the DB no.) and add the intended DB no. During this process the structure must not be changed. Transfer initial values into current values!

- **WinCC flexible**

  - Load complete list of variables without address change, if necessary with new connection
    - It is not necessary to observe DB numbers because all DB no. accesses are (relatively) indexed.
    - Exception: The last 4 variables must be described with retention of the address with the no. of the system DB (DB99).
  - The area designators (only image numbers) must be loaded and if necessary named per the system DB (DB99).
  - Load all text lists
  - Transfer collated graphics
  - Load and align user administration
  - Load all images 100-115 (edit or amend, later if necessary)
  - Note image numbers if these have been changed (must be entered in the parameter list with FB90 call-up)
  - The **password 5101** for the administrator (**ADMIN**) is set in the software when delivered.

- An example of a laying station is shown in FC1. This FC1 can be directly accepted, if necessary with amendment of the FC no. (load the FB90)
- An example of two laying stations is shown in FC2. This FC2 can be directly accepted, if necessary with amendment of the no. Expansion to a chosen number of laying stations is possible without difficulty. FB90 is only ever programmed once.
- DB10 contains the general variables for this application. DB11-DB12 the variables for laying 1+2
- The reset variables **must** be set in the start-up OB (OB100).

  Alternatively with one laying station
- Load FB 90 and integrate into the cyclical program sequence. *Name changeable*
- Parameterise FB90 (see below) and stipulate a free distance - DB
- Set a variable (e.g. marker) in the start-up module (OB100) and apply to FB90.
- **The laying computer setting is Profibus interface 12 at the time of delivery**

With individual applications (1 laying station) controlling the laying station is implemented with rapid parameter exchange via the FB90 module.
When using multiple laying stations in a single control and operating via a shared terminal the integration of FB51 is necessary per laying station for the purpose of rapid data exchange of the control commands.

The FB90 module is logically used only once in the system and where applicable via relative data access to the selected laying station.

Following installation of the system and correct Profibus connection the alarm line of the main screen requests licensing data.
Read the reference number under “Service” and “Licence” (requires administrator password) and request the associated licence test number from us by email or telephone. After inputting this number it is necessary to carry out a reset on the FB90 module (usually triggered by a restart of the CPU).
This test no. is bound to the serial no. of the S7-CPU and must therefore be requested anew upon its exchange.

Without the licence data a test operation without alarm messages is possible after a restart for 20 screen changes.
The functions of the laying stations are not influenced by a lack of licensing data!
Checking via the graphical system is no longer possible after the test phase is complete.

After complete system installation including licensing it is possible to complete laying station commissioning with basic data setting, in addition to physical alignment via the panel.

Additionally, the option always exists to operate Terminal 2780 in parallel as a head station because this has its own network. (Independent of licence!)

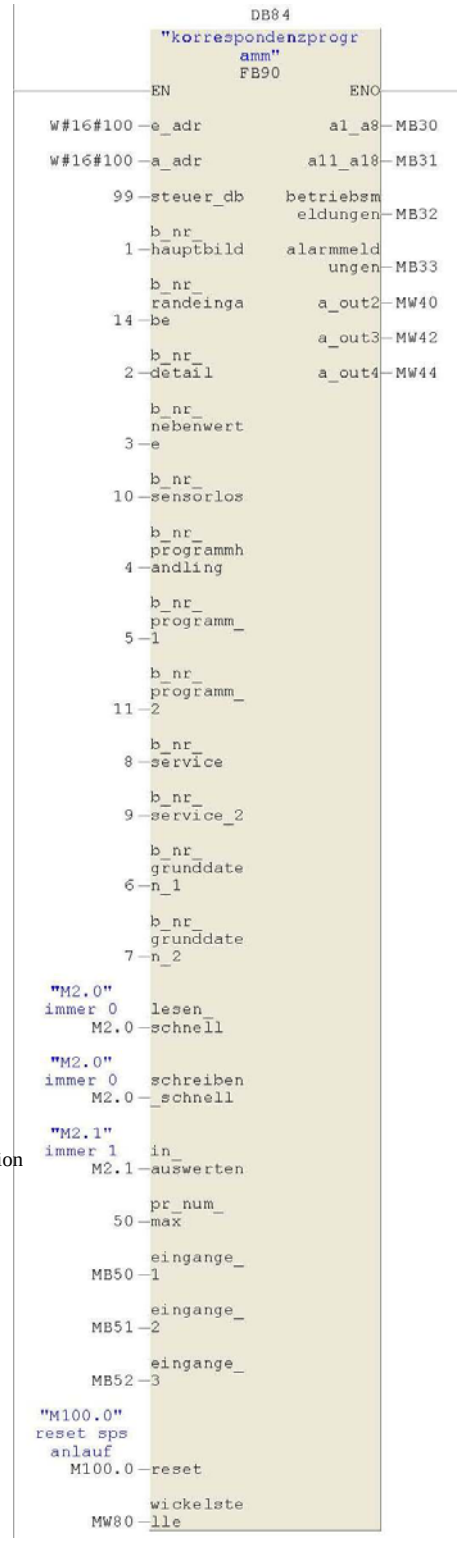
Correspondence FB (FB90)

Attention: Image numbers in the example already tagged with 100-114

Profibus-DP input address
Profibus-DP output address

DB no. of the system DB

Image numbers under WinCC



Outputs a1-a8 (see assignment)
Outputs a11-a18 (see assignment)

Operating messages (see handling)

Alarm messages (see handling)

Target value +/- 2000 laying support
Core speed target +/- 2000
Actual master value +/- 2000

The output values a_out2 to a_out4 are not evaluated in the standard process!
The digital outputs of the computer a1- a18 are only used with individual applications

Accelerated data exchange when reading with the computer (longer cycle time)

Accelerated data exchange when writing with the computer (longer cycle time)

Evaluate control inputs with individual application “input_1; input_2; input_3”
For list see input assignment e1-e28
Max. number of saveable programs

e1- e8 if “in_evalute”= 1

e11- e18 if “in_evalute”= 1

e21- e28 if “in_evalute”= 1

System reset must be set in OB100 = 1
- is reset by module

No. of the winding station changed
- is externally reset if necessary
- serves new addressing with multiple application

Basic data programming following functional readiness

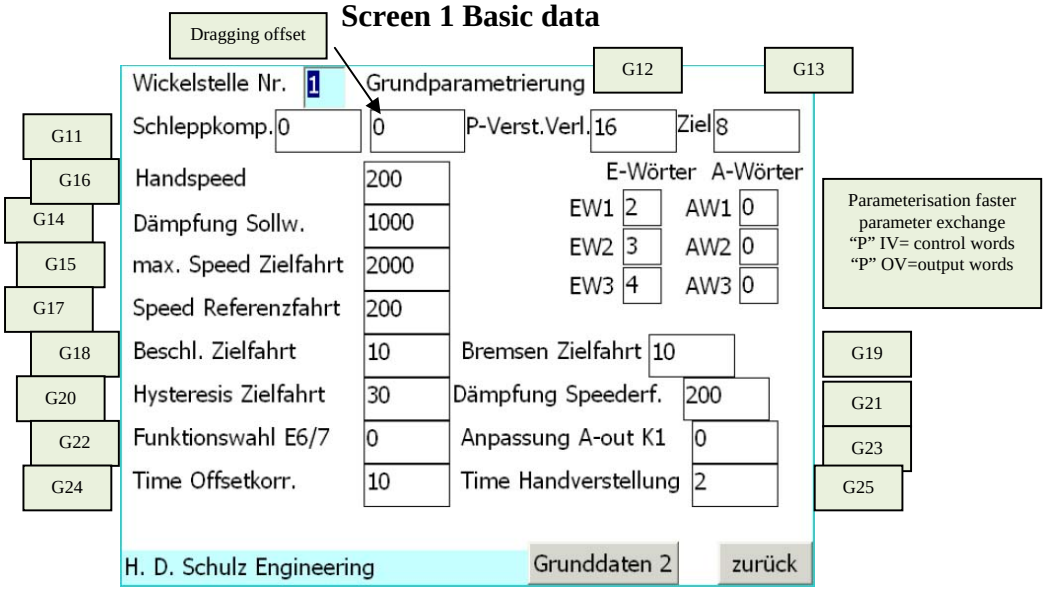
For basic data programming and physical adjustment it is necessary to use the standard 5101N manual for the process to be implemented.

The entries according to the manual can be found in the two basic data masks.

Select the basic data mask as follows:

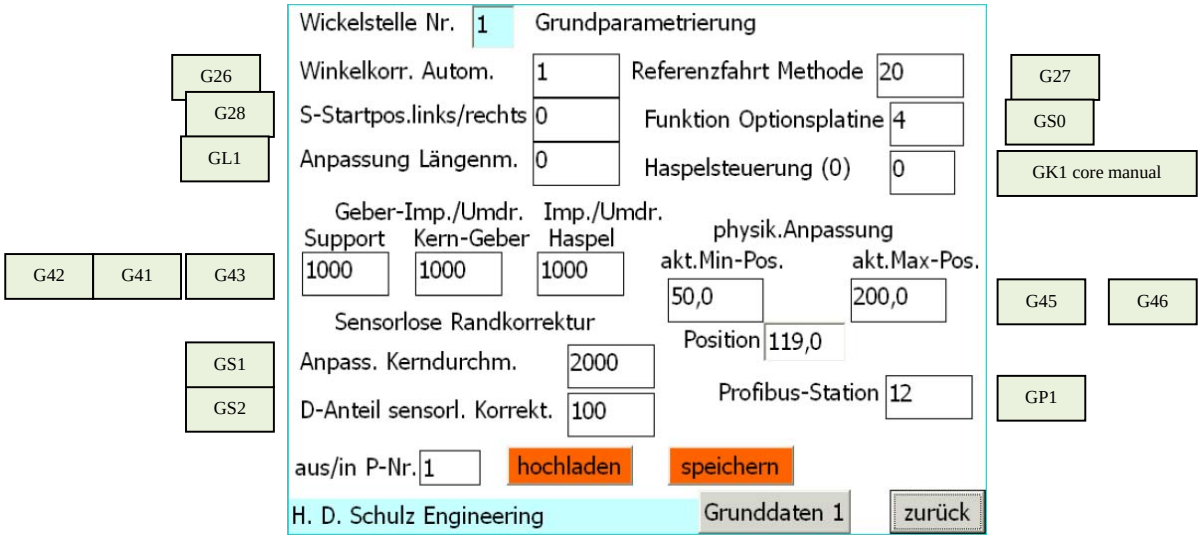
- Service button in the main screen
  - Basic data button (poss. password necessary)
  - The number of the winding station must not be observed with individual applications
  - Use the "basic data 2" button to access the 2nd screen
    - Possibility of physical adjustment
    - Save the basic data in a DB of the PLC (program 1 – 10)

Screen 1 Basic data



Description and explanation of the function in the 5101 N manual

Screen 2 Basic data



Attention:
After exceeding the Profibus address establishing a connection is only possible under a new address

The following entries must only be input when the system is at a standstill:

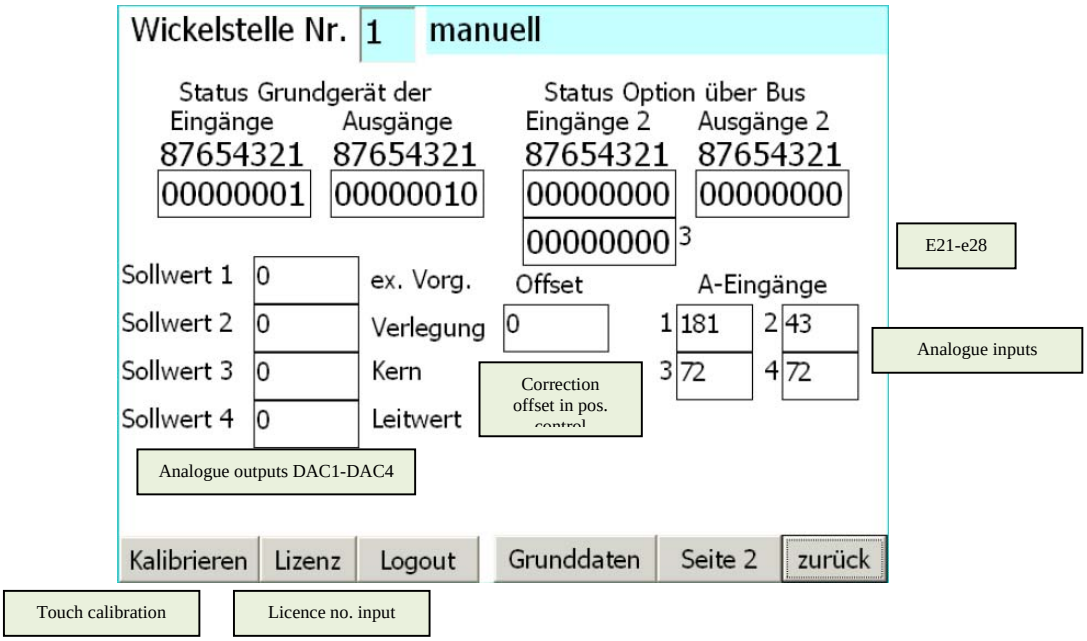
- GS0, GK1, GP1, G45, G46, G41- G43, G28

The physical alignment takes place through inputs in G45 and G46 per the manual.
After inputting a program no. from 1 to 10 the basic data as well as all ancillary values are stored in the data module, named after the system DB.

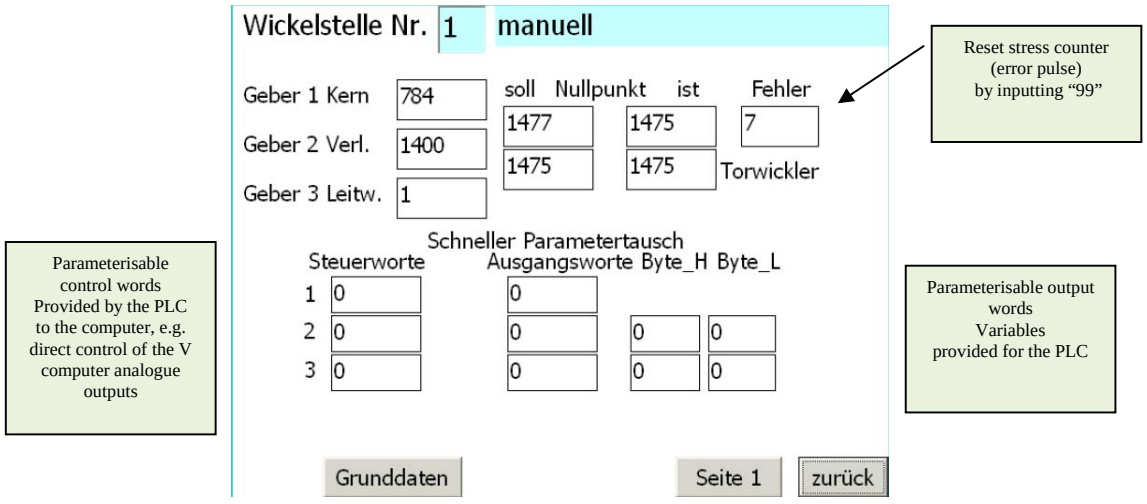
The uploading of a basic program, is implemented in the same way.
It is necessary to note, with the saving process, that all addresses for handling with the computer are also stored.
External manipulation of the data is therefore impermissible.
It is recommended that the system DBs be externally safeguarded.

Service and monitoring views

Control mask 1 for the computer inputs and outputs

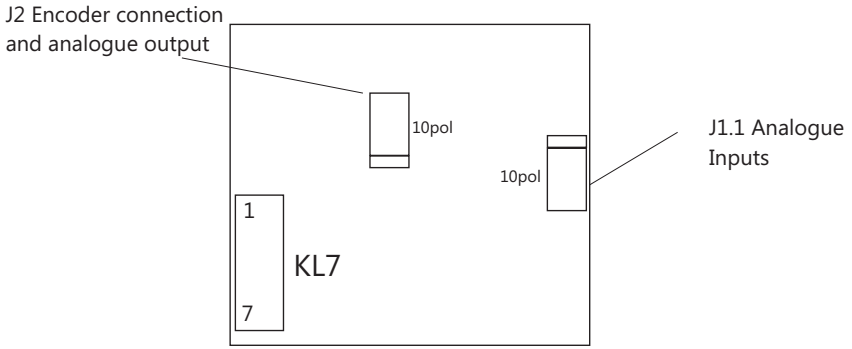


Control mask 2 for the computer inputs and outputs
Check of the position encoder inputs (incremental encoder)
Reference point offset with gate winder application
Check of the input control words and output values



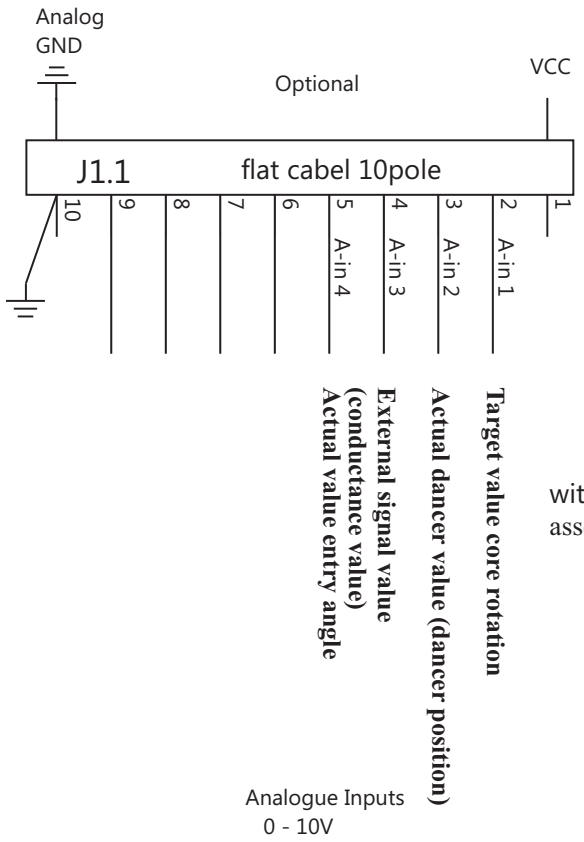
Licensing (graphic package)

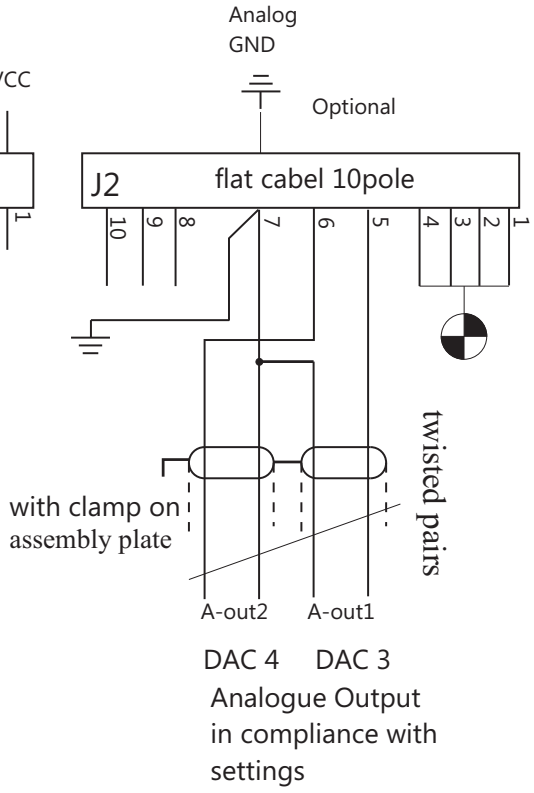
Request the licence test number (enter reference no.)



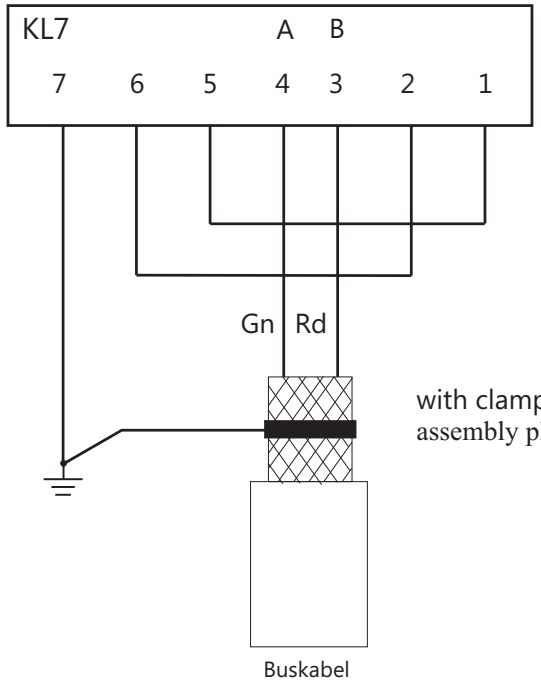
Adapter 5101
PROFIBUS

only suitable for use in industrial plants
in closed metal casing.
install by qualified installers.

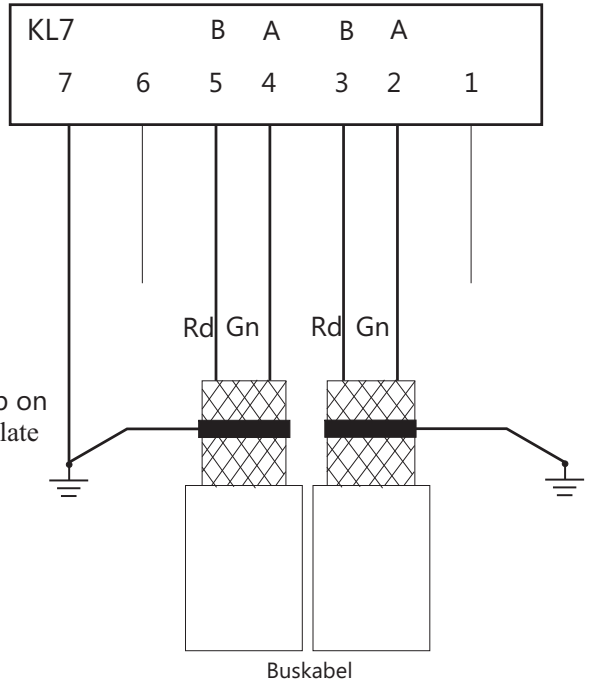




Only one device



Node Version



Verlege- und Wickelsystem
5101 N
Profibus

H.D.SCHULZ
Engineering

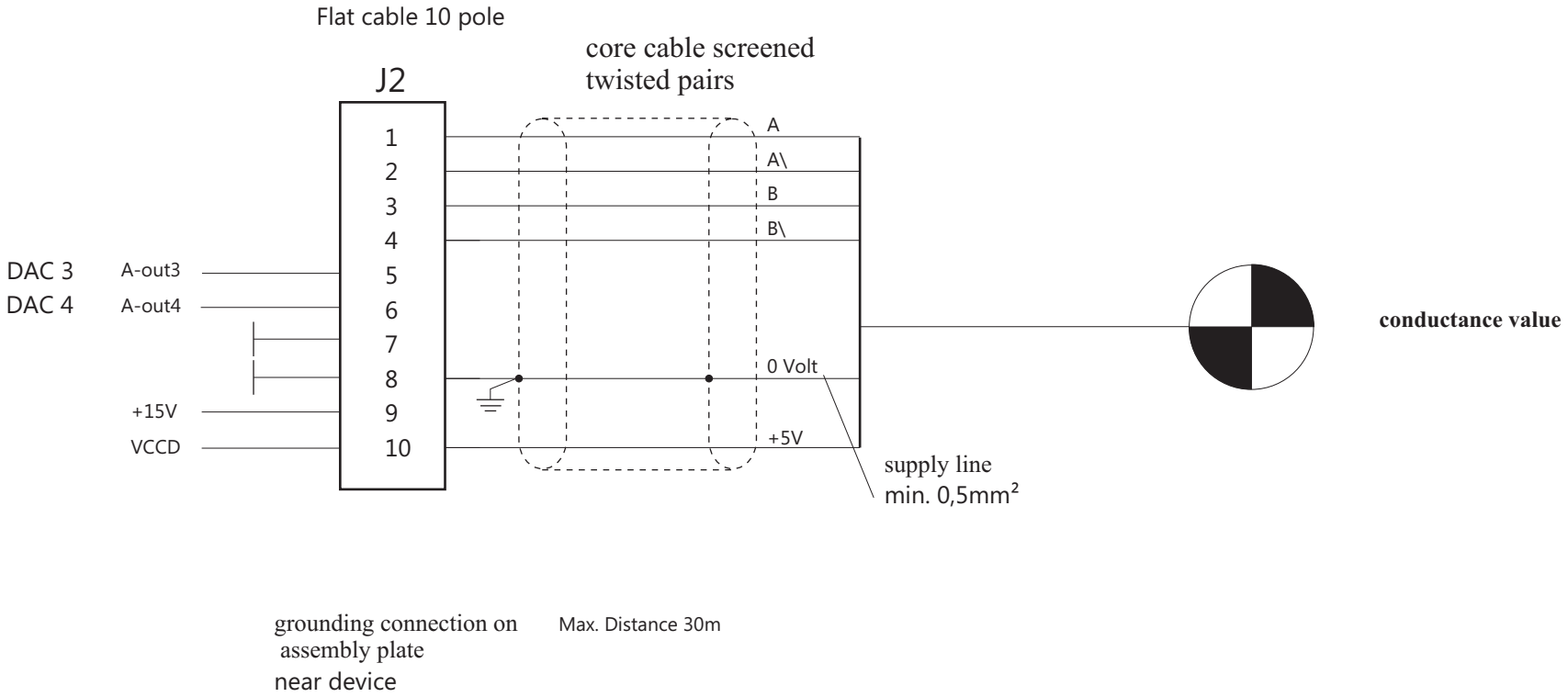
Auf den Steinen 10
41812 Erkelenz-Keyenberg

Tel. 02164/ 4053
Fax 02164/ 49235

Internet
http://www.schulz-engineering.de

Verlege- und Wickelsystem 5101 N

Adapter 5101 Profibus
Connection diagram by
Encoder supply 5 V



H.D.SCHULZ
Engineering

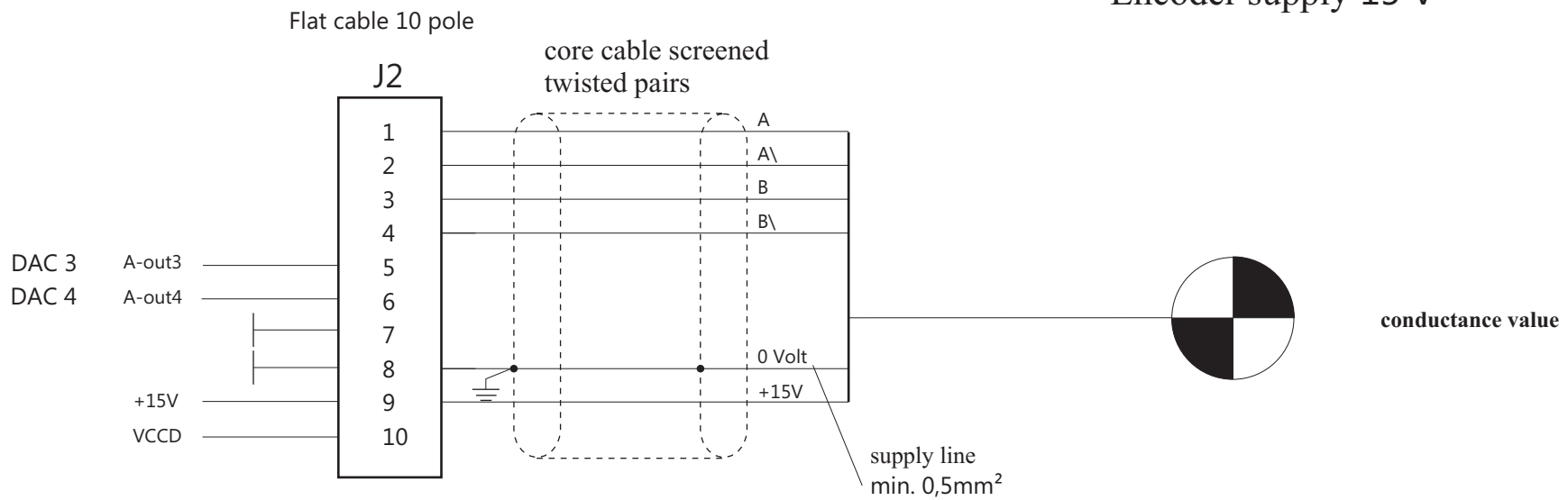
Auf den Steinen 10
41812 Erkelenz-Keyenberg

Tel. 02164/ 4053
Fax 02164/ 49235

Internet
http://www.schulz-engineering.de

Adapter 5101 Profibus

Connection diagram by
Encoder supply 15 V



H.D.SCHULZ
Engineering

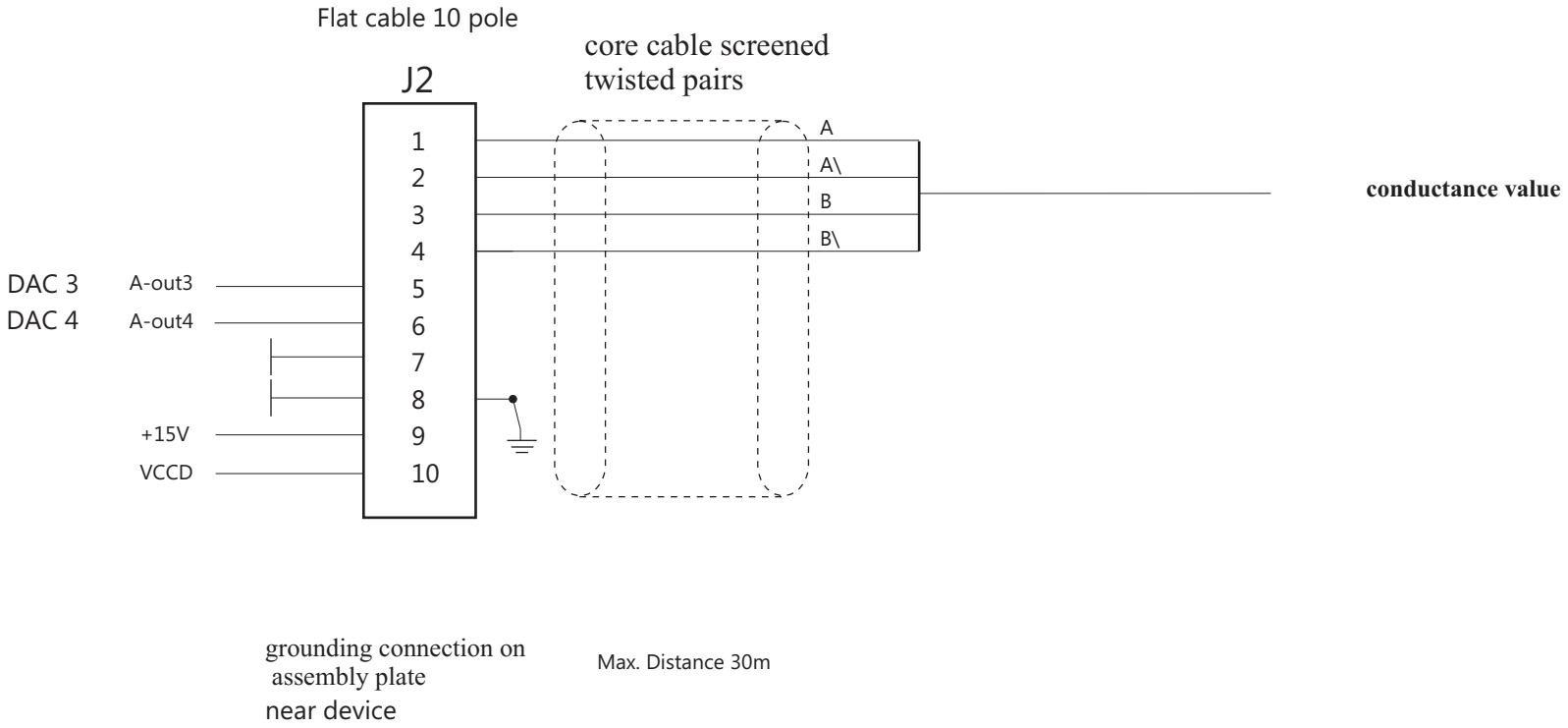
Auf den Steinen 10
41812 Erkelenz-Keyenberg

Tel. 02164/ 4053
Fax 02164/ 49235

Internet
http://www.schulz-engineering.de

Verlege- und Wickelsystem 5101 N

Adapter 5101 Profibus
Connection diagram by
Encoder emulation (5VTTL)



H.D.SCHULZ
Engineering

Auf den Steinen 10
41812 Erkelenz-Keyenberg

Tel. 02164/ 4053
Fax 02164/ 49235

Internet
http://www.schulz-engineering.de