



HEIDENHAIN



User's Manual

Cables and Connection
Technology

PWM 20 and PWM 21 (IK 215)
Testing Package

English (en)
08/2017

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The tables in chapter 2 “Items supplied” serve as an orientation for finding adapter cables and interfaces.
The different adapter cables with their IDs are assigned to the interfaces.
The chapter numbers in the tables are links that lead directly to the cable diagrams from which one can see what the adapter cables are used for.

1 General

General information on the PWM test unit:

The PWM 21 supersedes the PWM 20.

To ensure long-term availability of the PWM 2x series, the PWM 20 hardware had to be revised.

The PWM 21 is the functionally compatible successor of the PWM 20.

The following applies regarding the ATS software:

- The PWM 20 will still be supported in the future.
- The PWM 21 is supported as of ATS V3.2.01.
- For convenience, both the PWM 20 and the PWM 21 are referred to as PWM in this User's Manual.



The PWM 21 can be ordered as of Dec 2017!

1.1 How to use this manual

1.1.1 About this manual

This User's Manual describes the test unit PWM 20, ID 1200635-xx, PWM 21 ID 1200635-xx, and the PC expansion board IK 215, ID 386249-xx.

Feed-trough operation is possible and incremental encoders can be tested as of the ATS software version 2.6.



More information:

User's Manual ATS Software ID 543734-xx

The cable diagrams in this manual illustrate the possibilities of connecting adapter cables and the pin layouts of the cables.

1.1.2 Update service

This manual is regularly updated.

The current (printable) version is available on the Internet in PDF format:

www.heidenhain.de



The test cables (adapter cables) are continuously revised to fit the current inspection procedures and match the interfaces.

Thus, specific quotations may differ from the information in this manual. The cable overviews do not pretend to be complete!



Printed copies are only distributed to the participants of our service training courses and are enclosed with new test units.

1.1.3 Notices in this documentation

Safety precautions

Comply with all safety precautions indicated in this manual and in your machine tool builder's documentation!

Precautionary statements warn of hazards in handling the product and provide information on their prevention. Precautionary statements are classified by hazard severity and divided into the following groups:

WARNING

Warning indicates hazards for persons. If you do not follow the avoidance instructions, the hazard **could result in death or serious injury**.

NOTICE

Notice indicates danger to material or data. If you do not follow the avoidance instructions, the hazard **could result in things other than personal injury, like property damage**.

Informational notices

Observe the informational notes provided in this manual to ensure reliable and efficient operation of your HEIDENHAIN product.

In this manual, you will find the following informational notes:



The information symbol indicates a **tip**.

A tip provides important additional or supplementary information.

Cross references

Use the cross references in the documentation for subject-related and comprehensive additional information.

In these instructions, you will find the following cross references:



The book symbol represents a **cross reference** to external documentation, e.g. the documentation of your machine tool builder or other supplier.

1.1.4 Other documentation

**Further important information:**

- HEIDENHAIN User's Manual ATS Software ID 543734-xx
- Documentation of the machine tool builder
- Interfaces of HEIDENHAIN Encoders, ID 1078628-xx
- Mounting instructions of the encoders
- Encoder brochures (www.heidenhain.de)

1.1.5 Target group

The activities described in this manual may only be performed by specialists for service, maintenance and commissioning who have profound knowledge of electronics, electrical engineering and NC machine-tool technology.



Keep these instructions for later reference!

1.2 Safety precautions



More information:
Operating instructions (installation) PWM 20 and PWM 21
ID 1125089-xx

NOTICE

► Observe the safety precautions below to avoid injury or damage to persons or products.

► To avert potential dangers, only use the product in the manner described!

Observe the following before you integrate the test units into the position control loop of an NC-controlled machine tool:

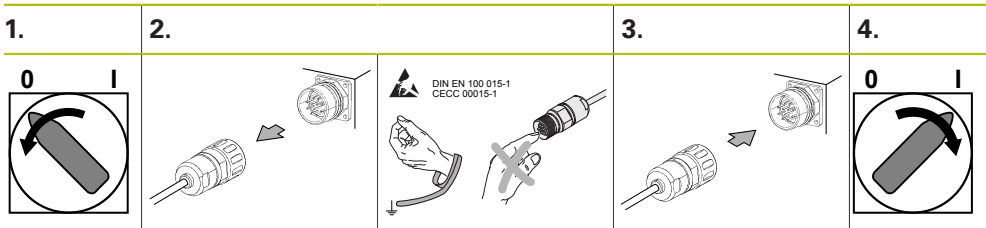
1.

► **Switch off the machine.**
2.

► Then disengage the connecting elements.
► Observe the ESD precautions.
► Do not contaminate connector pins.
3.

► Reestablish all required connections and secure them mechanically.
► Make the required settings on the PWM.
4.

► Switch the machine and the control back on again.



WARNING

Axes moving uncontrolled or vertical axes falling down

Property damage, injury or death

- ▶ Ensure that the EMERGENCY STOP button is instantly accessible during the start-up phase of the machine.
- ▶ After switch-on, check whether the machine axis can be traversed in a controlled manner.
- ▶ Do not operate defective units.
- ▶ No persons are allowed within the working range of the machine.
- ▶ Do not change any parameters or encoder voltages at the test units while the machine tool is moving and a test unit is connected to the position control loop.
- ▶ Changed parameters must be reset to their original values.
- ▶ Ensure that vertical axes cannot fall down.

The ATS software offers the possibility of storing and editing machine-specific or equipment-specific information in the customer's memory area. The data may comprise safety-relevant information.

When servicing, please take care to adjust this memory area.

When troubleshooting always contact the machine tool builder for information (e.g. meaning of the data in the OEM memory).



Support is provided by HEIDENHAIN Traunreut or by the HEIDENHAIN agencies, see "Contacts", page 188

1.3 Information on the encoder diagnostic kits PWM 20 ID 759251-01 and PWM 21 ID 1223097-01

The PWM encoder diagnostic kits serve to diagnose and adjust HEIDENHAIN absolute and incremental encoders with absolute and incremental interfaces.

The diagnostic kits consist of the following components:

- PWM 20 or PWM 21 test unit for direct connection to a laptop or PC via USB interface
- ATS Adjusting and Testing Software on CD with integrated local encoder database for automatic encoder identification
- Standard adapter cables for common testing procedures
- Case for testing equipment
- Further adapters and adapter cables are available (see "Optional accessories", page 18).



The PWM 20 and PWM 21 test units are available in three different variants (see tables below):

- PWM basic kit
- PWM basic kit in aluminum case
- PWM basic kit including case, set of standard adapter cables and User's Manual

1.4 Information on the IK 215 adjusting and testing package

The IK 215 Adjusting and Testing Package serves to diagnose and adjust HEIDENHAIN encoders with absolute interfaces.

The IK 215 adjusting and testing package comprises:

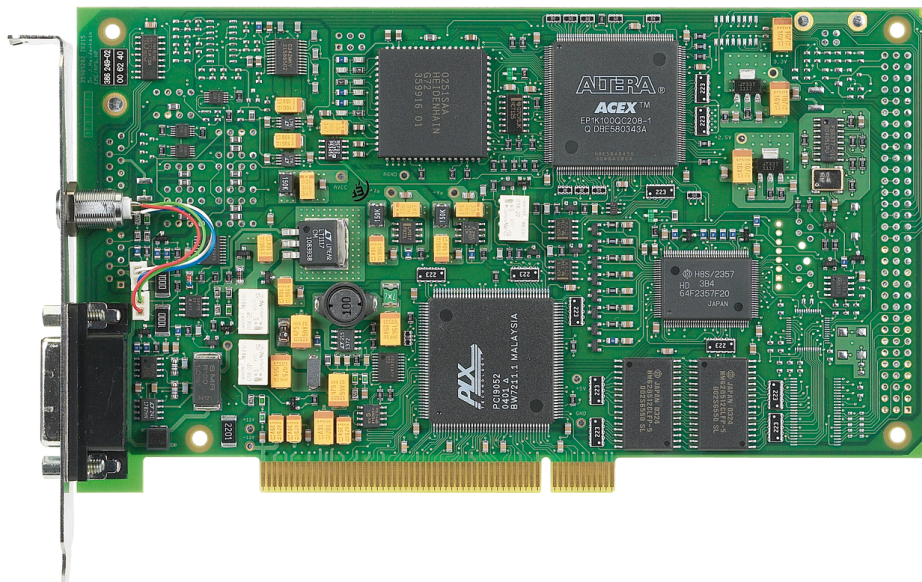
- IK 215 interface card for installation in a PCI expansion slot of a personal computer
- **Adjusting and Testing Software (ATS)** with integrated local encoder database for automatic encoder identification
- Standard adapter cables for common testing procedures
- Further adapters and adapter cables are available (see "Optional accessories", page 18).



The PWM 20 and PWM 21 with expanded scope of functions replace the IK 215.

As compared to the PWM, the IK 215 does not support the following functions:

- Incremental interfaces (1 Vpp, 11 μ App, TTL etc.)
- DRIVE-CLiQ from SIEMENS
- Measurement in feed-through mode



2 Items supplied

2.1 IK 215 adjusting and testing package ID 547858-xx

The packages 1 and 2 are included in delivery.



Package 1: ID 527367-01



Package 2: ID 658110-01

Package 1: ID 527367-01 IK 215

Qty.	Designation	ID
1	IK 215 PCI board	386249-02
1	ATS CD-ROM de/en software version 3.2.xx	539862-27
1	IK 215 operating instructions (installation)	549369-xx

Package 2: ID 658110-01 Accessories kit for absolute encoders

Qty.	Designation	ID
1	Benutzerhandbuch ATS-Software PWM 20 and PWM 21 (IK 215) de	543734-xx
1	User's Manual ATS Software PWM 20 and PWM 21 (IK 215) en	543734-xx
1	Benutzerhandbuch Kabel und Anschlusstechnik PWM 20 and PWM 21 (IK 215) Prüfpaket de	1117945-xx
1	User's Manual Cables and Connection Technology PWM 20 and PWM 21 (IK 215) Testing Package en	1117945-xx
1	Adapter cable (with incremental signal) for IK input, 15-pin/17-pin; D-sub/M23; 2 m	324544-02
1	Adapter cable for LC 18x scanning unit, 12-pin/17-pin; 3 m	369124-03
1	Adapter cable for LC 48x scanning unit, 12-pin/17-pin; 3 m	369129-03
1	Adapter cable for IK input, 15-pin/8-pin; D-sub/M12; 2 m	524599-02
1	Adapter cable for LC xx3, LC xx5, LC 20x scanning unit, 14-pin/17-pin; M12/M23; 3 m	533631-03
1	Adapter cable for RCN 82xx Ultra Lock, 12-pin/17-pin; M12/M23	643450-03

2.2 PWM 20 basic kit ID 731626-51



Basic kit: ID 731626-51

Qty.	Designation	ID
1	PWM 20	731626-01
1	ATS CD-ROM de/en software version 3.2.xx	539862-27
1	Operating instructions (installation) PWM 20 and PWM 21	1125089-xx
1	USB connecting cable, 2 m	354770-02
1	Power cable, 3 m	223775-01
1	PWM packaging (cardboard)	730058-01

2.3 PWM 21 basic kit ID 1200635-51



Basic kit: ID 1200635-51

Qty.	Designation	ID
1	PWM 21	1200635-01
1	ATS CD-ROM de/en software version 3.2.xx	539862-27
1	Operating instructions (installation) PWM 20 and PWM 21	1125089-xx
1	USB connecting cable, 2 m	354770-02
1	Power cable, 3 m	223775-01
1	PWM packaging (cardboard)	730058-01

2.4 PWM 20 Encoder Diagnostic Kit , ID 759251-01

The packages 1 and 2 are included in delivery.



Package 1: ID 759249-01



Package 2: ID 658110-01

Package 1: ID 759249-01 PWM 20 Basic kit

Qty.	Designation	ID
1	PWM 20	731626-01
1	ATS CD-ROM de/en software version 3.2.xx	539862-27
1	Operating instructions (installation) PWM 20 and PWM 21	1125089-xx
1	USB connecting cable, 2 m	354770-02
1	Power cable, 3 m	223775-01
1	Case for testing equipment	785241-01

Package 2: ID 658110-xx Accessories kit for absolute encoders

Qty.	Designation	ID
1	Benutzerhandbuch ATS-Software PWM 20 and PWM 21 (IK 215) de	543734-xx
1	User's Manual ATS Software PWM 20 and PWM 21 (IK 215) en	543734-xx
1	Benutzerhandbuch Kabel und Anschlusstechnik PWM 20 and PWM 21 (IK 215) Prüfpaket de	1117945-xx
1	User's Manual Cables and Connection Technology PWM 20 and PWM 21 (IK 215) Testing Package en	1117945-xx
1	Adapter cable (with incremental signal) for IK input, 15-pin/17-pin; D-sub/M23; 2 m	324544-02
1	Adapter cable for LC 18x scanning unit, 12-pin/17-pin; 3 m	369124-03
1	Adapter cable for LC 48x scanning unit, 12-pin/17-pin; 3 m	369129-03
1	Adapter cable for IK input, 15-pin/8-pin; D-sub/M12; 2 m	524599-02
1	Adapter cable for LC xx3, LC xx5, LC 20x scanning unit, 14-pin/17-pin; M12/M23; 3 m	533631-03
1	Adapter cable for RCN 82xx Ultra Lock, 12-pin/17-pin; M12/M23	643450-03

2.5 PWM 21 Encoder Diagnostic Kit , ID 1223093-01

The packages 1 and 2 are included in delivery.



Package 1: ID 1223097-01



Package 2: ID 658110-01

Package 1: ID 1223097-01 PWM 21 Basic kit

Qty.	Designation	ID
1	PWM 21	1200635-01
1	ATS CD-ROM de/en software version 3.2.xx	539862-27
1	Operating instructions (installation) PWM 20 and PWM 21	1125089-xx
1	USB connecting cable, 2 m	354770-02
1	Power cable, 3 m	223775-01
1	Case for testing equipment	785241-01

Package 2: ID 658110-xx Accessories kit for absolute encoders

Qty.	Designation	ID
1	Benutzerhandbuch ATS-Software PWM 20 and PWM 21 (IK 215) de	543734-xx
1	User's Manual ATS Software PWM 20 and PWM 21 (IK 215) en	543734-xx
1	Benutzerhandbuch Kabel und Anschlusstechnik PWM 20 and PWM 21 (IK 215) Prüfpaket de	1117945-xx
1	User's Manual Cables and Connection Technology PWM 20 and PWM 21 (IK 215) Testing Package en	1117945-xx
1	Adapter cable (with incremental signal) for IK input, 15-pin/17-pin; D-sub/M23; 2 m	324544-02
1	Adapter cable for LC 18x scanning unit, 12-pin/17-pin; 3 m	369124-03
1	Adapter cable for LC 48x scanning unit, 12-pin/17-pin; 3 m	369129-03
1	Adapter cable for IK input, 15-pin/8-pin; D-sub/M12; 2 m	524599-02
1	Adapter cable for LC xx3, LC xx5, LC 20x scanning unit, 14-pin/17-pin; M12/M23; 3 m	533631-03
1	Adapter cable for RCN 82xx Ultra Lock, 12-pin/17-pin; M12/M23	643450-03

2.6 Optional accessories

i The test cables (adapter cables) are continuously revised to fit the current inspection procedures and match the interfaces. Thus, specific quotations may differ from the information in this manual. The cable overviews do not pretend to be complete!

Optional adapter cables and adapters are available for the different interfaces:

Package 3: ID 826440-01 Adapter cables for incremental encoders

Qty.	Designation	ID
11 μA_{PP}		
1	Adapter cable for scanning unit, slimline, 8-pin/9-pin; M23; 1 m	ID 310125-xx
1	Adapter cable for scanning unit, full-size, 12-pin/9-pin; M23; 1 m	ID 310130-xx
1	Adapter cable IN, 15-pin/9-pin; D-sub/M23; 1 m	ID 653231-xx
1 V_{PP}, TTL		
1	Adapter cable IN 15-pin/12-pin; D-sub/M23; 1 V _{PP} /TTL/HTL (IN)	ID 309784-xx
1	Adapter cable for scanning unit, slimline, 12-pin/12-pin; M23; 1 m	ID 310122-01
1	Adapter cable for scanning unit, full-size, 12-pin/12-pin; M23; 1 m	ID 310127-xx
1	Adapter cable for scanning unit, slimline and full-size, 14-pin/12-pin; M12/M23; 1 m	ID 344228-xx
1	Adapter connector; coupling to connector; 12-pin; M23/M23	ID 373848-xx



2.6.1 EnDat 2.1

Designation	See chapter	ID number
Adapter cable (extension) 17-pin (Pos.Enc.)	3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.3.5	ID 323897-xx
Adapter cable 15-pin/17-pin; D-sub/M23; EnDat/SSI/Fanuc/Mitsubishi (IN)	3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.3.5	ID 324544-xx
Adapter cable (extension) 17-pin/17-pin, Mot.Enc.	3.3.5	ID 340302-xx
Adapter connector transforms Mot.Enc. into Pos.Enc.	3.3.5	ID 349312-03
Adapter connector transforms Pos.Enc. into Mot.Enc.	3.3.5	ID 349312-04
Adapter cable with 12-pin PCB connector and 17-pin M23 connector Pos.Enc.EnDat (IN) for absolute encoders; 2 m	3.3.1, 3.3.5	ID 349839-xx
Adapter cable 17-pin/25-pin; 0.3 m (assignment converter)	3.3.2	ID 509666-xx
Adapter cable 17-pin/25-pin; 0.3 m (assignment converter)	3.3.2	ID 509667-xx
Adapter cable 17-pin/15-pin; 0.3 m	3.3.3, 3.3.4	ID 510616-N3 Old ID 332115-xx
Adapter cable 17-pin/15-pin; 0.3 m	3.3.4	ID 510617-xx
Adapter cable 12-pin/15-pin	3.3.1	ID 528015-xx
Adapter cable 17-pin/25-pin; 3 m	3.3.2, 3.3.5	ID 605426-xx Old ID 336376-xx
Adapter cable for RCN 82xx Ultra Lock, 12-pin/17-pin; M12/M23	3.3.1, 3.3.3	ID 643450-xx

2.6.2 EnDat 2.2

Designation	See chapter	ID number
Adapter cable 15-pin/17-pin; D-sub/M23; EnDat/SSI/Fanuc/Mitsubishi (IN)	3.4.1, 3.4.3	ID 324544-xx
Adapter cable with 12-pin PCB connector and 17-pin M23 connector Pos.Enc.EnDat (IN) for absolute encoders; 2 m	3.4.1	ID 349839-xx
SA 100 Service Adapter (listening-in mode EnDat 21 and 22, Fanuc and Mitsubishi), 17-pin connector, M23	3.2.1	ID 363706-01
Adapter cable 8-pin/8-pin (extension) Pos.Enc.	3.4.2	ID 368330-xx
Adapter cable 17-pin/15-pin; 0.3 m	3.4.1	ID 510616-N3 Old ID 332115-xx
Adapter cable 8-pin/25-pin	3.4.2	ID 641926-xx
Adapter cable 15-pin/8-pin (IN); D-sub/M12; 2 m	3.4.2, 3.4.3	ID 524599-xx
Adapter cable 8-pin/12-pin (with PCB connector)	3.4.2	ID 530351-03
Adapter cable 8-pin/15-pin	3.4.2	ID 533627-xx
SA 110 Service Adapter (listening-in mode EnDat 21 and 22, Fanuc and Mitsubishi), 17-pin connector, M23	3.2.2	ID 573547-01
Adapter cable 8-pin/15-pin	3.4.3	ID 628186-xx
Adapter cable for RCN 82xx Ultra Lock, 12-pin/17-pin; M12/M23	3.4.1	ID 643450-xx
Adapter cable 8-pin/9-pin	3.4.2	ID 745796-xx

2.6.3 EXI 11xx/13xx adapter for adjustment

Designation	See chapter	ID number
Adapter cable 12-pin/15-pin	3.5	ID 528015-xx
3 inserts for adapter connector (12-pin)	3.5	ID 528694-01
3 inserts for adapter connector (15-pin)	3.5	ID 528694-02
Set of adapter cables with 2 x 3 inserts for adapter connectors (12-pin and 15-pin)	3.5	ID 621742-02

2.6.4 FANUC SERIAL interface

Designation	See chapter	ID number
Adapter cable 15-pin/17-pin; D-sub/M23; EnDat/SSI/Fanuc/Mitsubishi (IN)	3.6.1	ID 324544-xx
Adapter cable 17-pin/17-pin (extension)	3.6.1	ID 349314-xx
SA 100 Service Adapter (listening-in mode EnDat 2.2 and Fanuc), 17-pin connector, M23	3.2.1	ID 363706-01
Adapter cable 15-pin/8-pin (IN); D-sub/M12; 2 m	3.6.2, 3.6.3	ID 524599-xx
Adapter cable 20-pin/17-pin; 0.5 m (encoder -> SA 100)	3.6.1	ID 550161-01
Adapter cable 17-pin/20-pin; 0.5 m (Fanuc -> SA 100)	3.6.1	ID 550162-01
SA 110 Service Adapter (listening-in mode EnDat 21 and 22, Fanuc and Mitsubishi), 17-pin connector, M23	3.6.3	ID 573547-01
Adapter cable 15-pin/8-pin M12 (OUT)	3.6.2	ID 827096-xx
Adapter cable 20-pin/8-pin M12 (IN)	3.6.2, 3.6.3	ID 1039686-xx
Adapter cable 15-pin/8-pin M12 (OUT)	3.6.2, 3.6.3	ID 1040174-xx

2.6.5 FANUC TTL

Designation	See chapter	ID number
Adapter cable IN 15-pin/12-pin; D-sub/M23; 1 V _{PP} /TTL/HTL (IN)	3.6.4	ID 309784-xx
Adapter cable 12-pin/20-pin (OUT)	3.6.4	ID 556558-xx
Adapter cable 12-pin/20-pin (IN)	3.6.4	ID 577345-01
Adapter cable 15-pin D-sub; 12-pin (OUT)	3.6.4	ID 825422-xx

2.6.6 MISTUBISHI High Speed Serial Interface

Designation	See chapter	ID number
Adapter cable 15-pin/17-pin; D-sub/M23; EnDat/SSI/Fanuc/Mitsubishi (IN)	3.7.1	ID 324544-xx
Adapter cable 17-pin/17-pin (extension)	3.7.1	ID 349314-xx
Adapter cable 17-pin/20-pin	3.7.1	ID 367958-xx
Adapter cable 8-pin/8-pin M12 (extension) Pos.Enc.	3.7.1	ID 368330-xx
Adapter cable 15-pin/8-pin (IN); D-sub/M12; 2 m	3.7.1, 3.7.2, 3.7.3	ID 524599-xx

Designation	See chapter	ID number
Adapter cable 17-pin/10-pin	3.7.1	ID 573661-xx
Adapter cable 8-pin/20-pin	3.7.2, 3.7.3	ID 646806-xx
Adapter cable 8-pin/10-pin	3.7.2, 3.7.3	ID 647314-xx
Adapter cable 20-pin/17-pin (encoder -> SA 100)	3.7.1	ID 750973-xx
Adapter cable 10-pin/17-pin (encoder -> SA 100)	3.7.1	ID 750974-xx
Adapter cable 15-pin/8-pin M12 (OUT)	3.7.2	ID 827096-xx
Adapter cable 20-pin/8-pin M12 (IN)	3.7.2, 3.7.3	ID 1039786-xx
Adapter cable 10-pin/8-pin M12 (IN)	3.7.2, 3.7.3	ID 1039802-xx

2.6.7 Rexroth Indramat

Designation	See chapter	ID number
Adapter connector (1 Vpp/TTL) Rexroth Indramat M23, 12-pin encoded/M23 12-pin	3.12.1	ID 269329-xx
Adapter cable 15-pin/17-pin; D-sub/M23; EnDat/SSI/Fanuc/Mitsubishi (IN)	3.17.1, 3.17.2	ID 324544-xx
Adapter cable (I ² C) Rexroth Indramat M23, 12-pin encoded/M23 17-pin	3.17.2	ID 349595-xx
Adapter cable with 12-pin PCB connector and 17-pin M23 connector Pos.Enc.EnDat (IN) for absolute encoders; 2 m	3.17.1	ID 349839-xx
Adapter cable 12-pin/15-pin	3.17.1	ID 528015-xx
3 inserts for adapter connector (12-pin)	3.17.1	ID 528694-01

2.6.8 Panasonic (Pana01)

Designation	See chapter	ID number
Adapter cable 15-pin/8-pin (IN); D-sub/M12; 2 m	3.19.1	ID 524599-xx
Adapter cable 15-pin/8-pin M12 (OUT)	3.19.1	ID 827096-xx
Adapter cable 15-pin/9-pin D-sub (IN)	3.19.1	ID 1133018-xx
Adapter cable 15-pin/9-pin D-sub (OUT)	3.19.1	ID 1133027-xx

2.6.9 SSI (synchronous serial interface)

Designation	See chapter	ID number
Adapter cable (extension) 17-pin (Pos.Enc.)	3.8.1	ID 323897-xx
Adapter cable 15-pin/17-pin; D-sub/M23; EnDat/SSI/Fanuc/Mitsubishi (IN)	3.8.1	ID 324544-xx
Adapter cable (extension) 17-pin/17-pin, Mot.Enc.	3.8.1	ID 340302-xx
Adapter connector transforms Mot.Enc. into Pos.Enc.	3.8.1	ID 349312-03
Adapter cable with 12-pin PCB connector and 17-pin M23 connector Pos.Enc.EnDat (IN) for absolute encoders; 2 m	3.8.1	ID 349839-xx
Adapter cable 12-pin/15-pin	3.8.1	ID 528015-xx

Designation	See chapter	ID number
Adapter cable with 15-pin PCB connector	3.8.1	ID 635349-xx

2.6.10 DRIVE-CLiQ (registered trademark of Siemens AG)

Designation	See chapter	ID number
Connecting cable 12-pin/12-pin	3.9.2	ID 298400-xx
Connecting cable 12-pin/12-pin	3.9.2	ID 298401-xx
Adapter cable IN 15-pin/12-pin; D-sub/M23; 1 Vpp/TTL/HTL (IN)	3.9.2	ID 309784-xx
Adapter cable 25-pin D-sub (Mot.Enc.); 12-pin (Pos.Enc.) (IN)	3.9.2	ID 533055-01
Adapter cable Siemens RJ45 connector, 8+2-pin	3.9.1	ID 740059-02
Adapter cable 8-pin/9-pin	3.9.1	ID 745796-xx
Adapter cable 12-pin/25-pin (OUT)	3.9.2	ID 758082-xx
Adapter cable Siemens RJ45 connector, 8+2-pin, IP20/IP67	3.9.1	ID 759314-01
Connecting cable 8-pin/8-pin	3.9.1	ID 822504-xx
Adapter cable 15-pin D-sub; 12-pin (OUT)	3.9.2	ID 825422-xx
Adapter cable Siemens RJ45 8+2/M12, 8-pin	3.9.1	ID 1093042-xx Old ID 1078299-xx
Adapter cable Siemens RJ45 connector 8+2-pin/9-pin	3.9.1	ID 1117540-02
Adapter cable RJ45 connector 8+2-pin/8-pin	3.9.1	ID 1121591-xx
Adapter cable 8-pin M12/9-pin speedtec	3.9.1	ID 1121536-xx
Adapter to extend DRIVE-CLiQ cables 8+2-pin RJ45	3.9.1	ID 1170001-01

2.6.11 Absolute interfaces EnDat/SSI

Designation	See chapter	ID number
Adapter cable (extension) 17-pin (Pos.Enc.)	3.10.6	ID 323897-xx
Adapter cable 15-pin/17-pin; D-sub/M23; EnDat/SSI/Fanuc/Mitsubishi (IN OUT)	3.10.1, 3.10.2, 3.10.3	ID 324544-xx
Adapter cable 8-pin/8-pin M12 (extension) Pos.Enc.	3.10.2, 3.10.3	ID 368330-xx
Adapter cable 17-pin/25-pin; 0.3 m (assignment converter)	3.10.1	ID 509667-xx
Adapter cable 17-pin/15-pin; 0.3 m	3.10.1, 3.10.6	ID 510616-N3 Old ID 332115-xx
Connecting cable 15-pin/15-pin D-sub (EnDat)	3.10.1, 3.10.2, 3.10.3	ID 517673-xx
Adapter cable 15-pin/8-pin (IN); D-sub/M12; 2 m	3.10.2, 3.10.3, 3.10.5	ID 524599-xx
Adapter cable 15-pin/8-pin (IN); D-sub/M12	3.10.2	ID 533627-xx
Adapter cable 17-pin/25-pin; 3 m	3.10.4	ID 605426-xx Old ID 336376-xx
Adapter cable 25-pin/8-pin (IN); D-sub/M12	3.10.2	ID 641926-xx

Designation	See chapter	ID number
Connecting cable 15-pin/15-pin (IN)	3.10.1, 3.10.2	ID 675582-xx
Adapter cable 8-pin/9-pin	3.10.5	ID 745796-xx
Adapter cable 9-pin/25-pin	3.10.4	ID 745813-xx
Adapter cable 15-pin/17-pin (OUT)	3.10.1, 3.10.2, 3.10.3	ID 827099-xx
Adapter cable 15-pin/8-pin M12 (OUT)	3.10.3, 3.10.5	ID 827096-xx
Adapter cable 15-pin/25-pin (IN)	3.10.1, 3.10.2, 3.10.4	ID 827551-xx
Connecting cable 15-pin/25-pin (OUT)	3.10.1, 3.10.2, 3.10.3, 3.10.4	ID 827593-xx
Adapter cable 15-pin/15-pin (IN)	3.10.1, 3.10.2, 3.10.6	ID 1040982-xx
Adapter cable 15-pin/15-pin (OUT)	3.10.1, 3.10.2, 3.10.3, 3.10.6	ID 1041017-xx

2.6.12 EnDat/SSI (adapter cable for synchronous servo drives)

Designation	See chapter 3.15.1	ID number
Adapter cable (extension) 17-pin (Pos.Enc.)	Figure D, Figure E	ID 323897-xx
Adapter cable 15-pin/17-pin; D-sub/M23; EnDat/SSI/Fanuc/ Mitsubishi (IN)	Figure D	ID 324544-xx
Adapter cable (extension) 17-pin/17-pin, Mot.Enc.	Figure D	ID 340302-xx
Adapter connector transforms Mot.Enc. into Pos.Enc.	Figure D	ID 349312-03
Adapter connector transforms Pos.Enc. into Mot.Enc.	Figure D	ID 349312-04
Adapter cable with 12-pin PCB connector and 17-pin M23 connector Pos.Enc.EnDat (IN) for absolute encoders; 2 m	Figure D	ID 349839-xx
Adapter cable 17-pin/25-pin; 0.3 m (assignment converter)	Figure E	ID 509666-xx
Adapter cable 17-pin/25-pin; 0.3 m (assignment converter)	Figure E	ID 509667-xx
Adapter cable 17-pin/25-pin; 3 m	Figure D, Figure E	ID 605426-xx
Adapter cable with 15-pin PCB connector	Figure D	ID 635349-xx
Adapter for feed-through operation Pos.Enc. 17-pin M23/15-pin D-sub PWM 20	Figure D, Figure E	ID 1075630-01

2.6.13 EnDat (adapter cable for direct drives)

Designation	See chapter 3.15.1	ID number
Adapter cable (extension) 17-pin (Pos.Enc.)	Figure F	ID 323897-xx
Adapter cable 17-pin/25-pin; 0.3 m (assignment converter)	Figure F	ID 509666-xx
Adapter cable 17-pin/25-pin; 0.3 m (assignment converter)	Figure F	ID 509667-xx

Designation	See chapter 3.15.1	ID number
Adapter cable 17-pin/25-pin; 3 m	Figure F	ID 605426-xx Old ID 336376-xx
Adapter for feed-through operation Pos.Enc. 17-pin M23/15-pin D-sub PWM 20	Figure F	ID 1075630-01

2.6.14 11 μA_{PP}

Designation	See chapter	ID number
Adapter connector 15-pin/9-pin (IN)	3.11.1	ID 294894-02
Connecting cable 9-pin/9-pin	3.11.1	ID 309773-xx
Connecting cable 9-pin/9-pin	3.11.1	ID 310191-xx
Adapter cable 15-pin/9-pin (IN, OUT), (feed-through operation)	3.11.1	ID 368171-xx
Adapter cable 15-pin/9-pin (OUT), (feed-through operation)	3.11.1	ID 368172-xx
Adapter cable 15-pin/9-pin (IN, OUT), M23	3.11.1	ID 653231-xx
Adapter cable 15-pin/9-pin (IN)	3.11.1	ID 826431-xx
Adapter cable 15-pin/9-pin (OUT)	3.11.1	ID 826436-xx
Adapter cable 15-pin/9-pin (OUT)	3.11.1	ID 826508-xx

2.6.15 1 V_{PP}/TTL

Designation	See chapter	ID number
Adapter connector (1 V_{pp}/TTL) Rexroth Indramat M23, 12-pin encoded/M23 12-pin	3.12.2	ID 269329-xx
Connecting cable 12-pin/12-pin	3.12.1	ID 298401-xx
Adapter cable IN 15-pin/12-pin; D-sub/M23; 1 $V_{pp}/TTL/HTL$ (IN)	3.12.1, 3.12.2	ID 309784-xx
Adapter cable 15-pin/12-pin (IN)	3.12.1	ID 310196-xx
Adapter, round 12-pin/15-pin D-sub connector	3.12.1	ID 324555-01
Adapter cable 15-pin/15-pin (IN) without limit/homing signals	3.12.1	ID 335074-xx
Adapter cable 15-pin/15-pin (IN) max. 9 m, without limit/homing signals	3.12.1	ID 355186-xx
Adapter cable 12-pin/12-pin; PWM to PCB connec- tor (1 V_{pp} , TTL, HTL) (Pos.Enc.)	3.12.1	ID 591118-xx
Connecting cable 15-pin/15-pin (IN), LIP 200 (layout for compensation run)	3.16.1	ID 735541-xx
Adapter cable 15-pin D-sub; 12-pin (OUT)	3.12.1, 3.12.2	ID 825422-xx
Adapter cable 15-pin/15-pin (OUT)	3.12.1, 3.12.2	ID 825425-xx
Adapter cable 15-pin/12-pin (OUT)	3.12.1, 3.12.2	ID 825426-xx
Adapter cable 12-pin/15-pin (OTIS)	3.12.2	ID 1118055-01

2.6.16 1 V_{PP}/TTL, LIDA/LIF with LIMIT/HOMING signals

Designation	See chapter	ID number
Adapter cable 15-pin/15-pin (IN) with limit/homing signals	3.12.3	ID 354379-xx
Adapter cable 15-pin/15-pin (IN) max. 9 m, with limit/homing signals	3.12.3	ID 355397-xx
Connecting cable 15-pin/15-pin (OUT); 1:1 assignment; with limit/homing signals	3.12.3	ID 633811-xx

2.6.17 1 V_{PP} A/B (Zn) and commutation signals C/D (Z1) (adapter cable for synchronous servo drives)

Designation	See chapter 3.14.1	ID number
Adapter cable 17-pin/25-pin; PWM to subsequent electronics	Figure A, Figure B	ID 289440-xx
Adapter cable (extension) 17-pin (Pos.Enc.)	Figure A, Figure B	ID 323897-xx
Adapter cable 1 m with 14-pin PCB connector and 17-pin M23 connector Pos.Enc.EnDat (IN) for 1 V _{PP} encoders with Zn/Z1 track	Figure B	ID 330980-xx
Adapter cable 17-pin/17-pin; PWM to motor	Figure B	ID 336847-xx
Adapter connector Zn/Z1 transforms Mot.Enc. into Pos.Enc.	Figure B	ID 349312-01
Adapter connector Zn/Z1 transforms Pos.Enc. into Mot.Enc.	Figure B	ID 349312-02
Adapter cable 17-pin/25-pin; 0.3 m (assignment converter)	Figure A	ID 509666-xx
Adapter cable 17-pin/25-pin	Figure A	ID 511886-xx
Adapter for feed-through operation Pos.Enc. 17-pin M23/15-pin D-sub PWM 20	Figure A, Figure B	ID 1075630-01

2.6.18 1 V_{PP} (adapter cable for direct drives)

Designation	See chapter 3.14.1	ID number
Adapter cable 17-pin/25-pin; PWM to subsequent electronics	Figure C	ID 289440-xx
Adapter cable (extension) 17-pin (Pos.Enc.)	Figure C	ID 323897-xx
Adapter cable 17-pin/25-pin; 0.3 m (assignment converter)	Figure C	ID 509666-xx
Adapter cable 17-pin/25-pin	Figure C	ID 511886-xx
Adapter for feed-through operation Pos.Enc. 17-pin M23/15-pin D-sub PWM 20	Figure C	ID 1075630-01

2.6.19 HTL/HTLs

Designation	See chapter	ID number
Adapter cable IN 15-pin/12-pin; D-sub/M23; 1 V _{PP} /TTL/HTL (IN)	3.13.1	ID 309784-xx
Adapter cable 15-pin/12-pin (IN)	3.13.1	ID 310196-xx
Adapter, round 12-pin/15-pin D-sub connector	3.13.1	ID 324555-01

Designation	See chapter	ID number
Adapter HTL/HTLs PWM 20 X1 (IN)	3.13.1	ID 1093210-01

2.6.20 Incremental commutation encoder 1 V_{pp} (e.g. ERN 1387)

Designation	See chapter	ID number
Adapter cable with PCB connector 14-pin/15-pin; D-sub	3.18.1	ID 1118895-02
3 inserts for adapter connector (14-pin)	3.18.1	ID 528694-04
Set of adapter cables with 3 inserts for adapter connectors (14-pin)	3.18.1	ID 1118892-02
Adapter cable (extension) 17-pin (Pos.Enc.)	3.18.1, 3.18.2	ID 323897-xx
Adapter cable 15-pin/17-pin; D-sub/M23; EnDat/SSI/Fanuc/Mitsubishi (IN)	3.18.1, 3.18.2	ID 324544-xx
Adapter cable 1 m with 14-pin PCB connector and 17-pin M23 connector Pos.Enc.EnDat (IN) for 1 V _{pp} encoders with Zn/Z1 track	3.18.1	ID 330980-xx
Adapter connector Zn/Z1 transforms Mot.Enc. into Pos.Enc.	3.18.2	ID 349312-01



Cables with "(OUT)" in their names are required for the feed-through mode. Not all interfaces support feeding through with the PWM. For measurements in the control loop, please note the chapters "Connect encoder" and "Feed-through mode" in the User's Manual of the ATS Software.

3 Overview of cables and adapters

3.1 General information – PWM encoder connection and grounding

Encoder connection

Please ensure that the correct supply voltage is selected to avoid damage to the encoder. The cable between the encoder and the PWM must not be connected or disconnected while under power. Otherwise the encoder and the PWM might be damaged. Check whether the cable between the encoder and the PWM is correctly wired. The pin layout of the encoder is included in the specifications. The pin layouts of the connecting cables are described in the catalog. An incorrectly wired connecting cable might damage the encoder and the PWM.

Encoder output

The encoder input X1 of the PWM is electrically connected with the encoder output X2. The signals and the pin layout at the output correspond to the respective signals at the input.

NOTICE

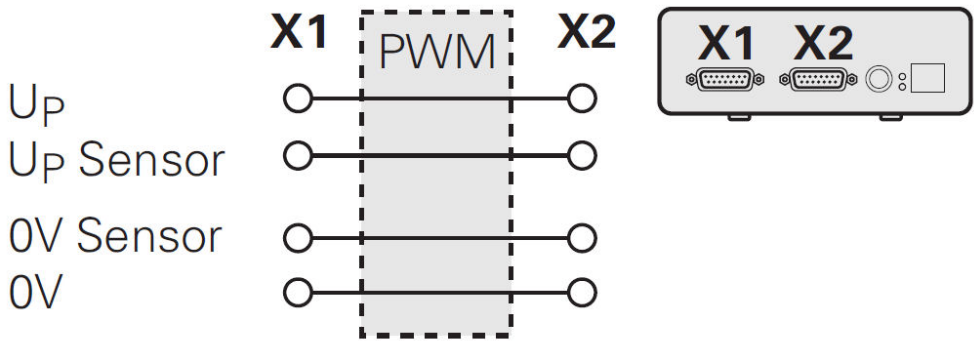
The signals are not electrically isolated. The supply and sensor lines are switched via the ATS software (as of ATS V2.6) depending on the respective mode of operation, and can be connected (see examples). It is always ensured that the supply voltage generated by the PWM is not present at X2.

DANGER

There is no metallic isolation of the signals. The supply and sensor lines are switched via the ATS software (as of ATS V2.6) depending on the respective mode of operation, and can be connected (see examples). It is always ensured that the supply voltage generated by the PWM 20 is not present at X2.

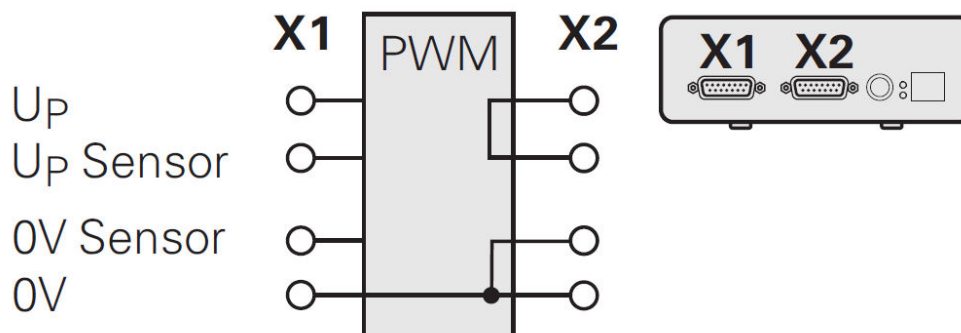
Example 1:

PWM in feed-through mode (the encoder is powered by the subsequent electronics) or ATS software not started



Example 2:

PWM powers the encoder via X1

**Grounding conditions**

The PWM features an internal wide-range switching power supply. Therefore, the PE protective conductor terminal (protective earth) is required. It is also connected to the PWM housing.

If the PWM is integrated in the position control loop of an NC-controlled machine, the PWM constitutes an additional grounding point, which changes the shielding concept.

To prevent this,

- the PWM can be supplied via an isolating transformer
- the PWM can be supplied with 24 VDC

To evaluate the PWM measuring data, a PC is connected to the USB interface of the PWM. The 0-V potential and the protective earth terminal are usually connected to each other in the PC (also USB). If the PWM is integrated in the position control loop of an NC-controlled machine, the conditions on the 0-V connection change, too.

To prevent this,

- you can use a battery-operated laptop computer
- the laptop can be used with a power supply unit without protective earth terminal

Feed-through operation (listening-in) with PWM in the position control loop of an NC-controlled machine tool

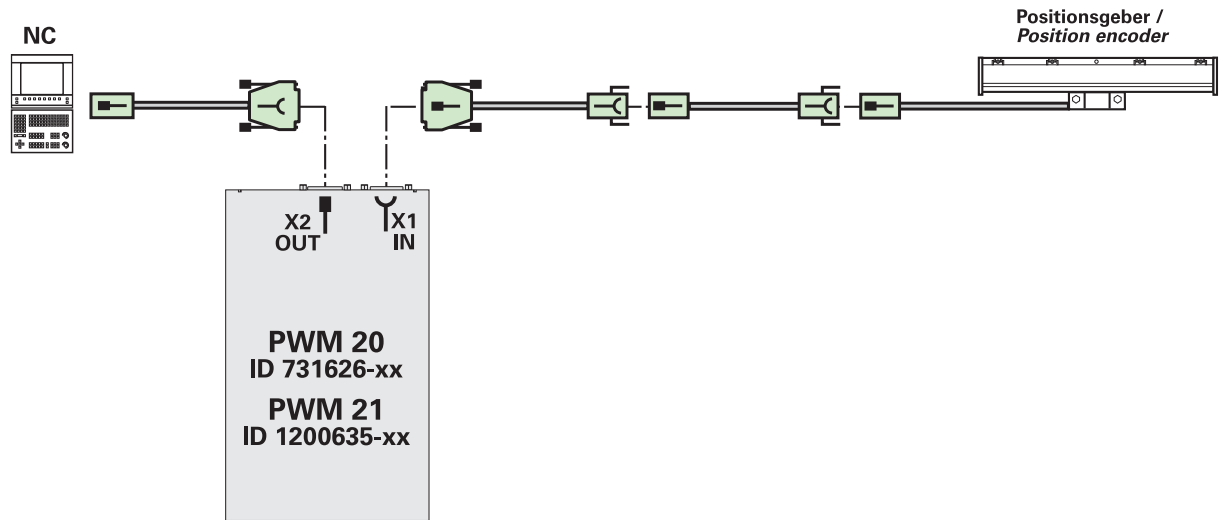
For diagnosing, the PWM can be integrated into the control loop of an NC-controlled machine tool via the encoder input and output (see "Encoder output"). Note the changed grounding conditions and the origin of the supply voltage (see "Encoder output"). Depending on the ATS software version and under compliance with the notes listed above, the PWM can be operated in a closed loop. However, a signal adapter (e.g. SA 100, SA 110, ...) must be used, or is recommended for use.

The following applies in addition:

1. Switch off the machine.
2. Then disengage the connecting elements.

3.1.1 Feed-through operation (listening-in)

Feed-through mode means connecting the PWM into the control loop of an NC-controlled machine. For diagnosing, the PWM can be integrated into the control loop of an NC-controlled machine tool via adapter cables at the encoder input X1 and the encoder output X2.



Before activating the feed-through mode: Determine the ID of the encoder at the machine axis.

Caution: In this case the PWM output must not be connected to the control, as otherwise the terminating resistors would disturb the PWM measuring functions.

For the feed-through mode the power supply must be switched to the subsequent electronics in the ATS software.



Use power supply from subsequent electronics

Set the check mark in feed-through mode only. If no subsequent electronics is connected, the encoder is not powered (error message).

The feed-through mode is supported as of the software version 2.6. We recommend always using the current software version (see www.heidenhain.de).

The feed-through mode cannot be used for all interfaces supported by the ATS.

In principle, the following interfaces allow for feed-through mode:

EnDat, Fanuc, Mitsubishi, 1 V_{PP}, TTL, 11 μA_{PP}

EnDat/Fanuc/Mitsubishi

- Metallic isolation is possible with the service adapters SA 100 and SA 110.
- No metallic isolation, if the measurement is conducted with the PWM only.
- For encoders that also support incremental signals, the incremental signals can now also be displayed and evaluated.

EnDat 2.1

Normally, the only communication over the EnDat interface takes place during the start-up stage of the NC (interrogation and transfer of the absolute position data):

- “Listening in” on the EnDat communication is not possible (since the synchronization time is too short for the PWM).
- The 1 V_{PP} signals A and B can be displayed.



Siemens NC controls currently use EnDat 2.1 with A/B signals and do not support the listening-in function!

EnDat 2.2

Communication takes place continuously. However, there is no prescribed communication pattern. Instead, every OEM determines the sequence of EnDat communication on his own.

- Universal “listening in” on the communication is not possible.
- **The listening-in function is only possible, if the valuation numbers for online diagnosis are included in data transfer.** (The following controls support the listening-in function: TNC 620, TNC 640, iTNC 530 [as of NC-SW 34049x-04], iTNC 530 HSCI with diagnostic function and DriveDiag.)
- Synchronization with communication may take some time.

1 V_{PP}

- No metallic isolation, if the measurement is conducted with the PWM only.
- Metallic isolation is possible with the SA 100.
- The PWM picks off the signals without 120-Ω signal termination.
- The limit frequency is influenced by the test setup (adapter cable, etc.)

11 μA_{PP}

- The line is interrupted in feed-through mode, i.e. the PWM has an 11 μA_{PP} receiver and reproduces the (emulated) input signals at the 11 μA_{PP} output.
- The limit frequency is influenced by the test setup (adapter cable, etc.)
- Not released yet for ATS V2.8! Signal errors may occur!

TTL

- Without PWT switchover:
The PWM picks off the RS-485 signals, i.e. a standard RS-485 receiver without 120-Ω termination is connected to the lines.

⚠ WARNING

Axes moving uncontrolled

Property damage, injury or death

Uncontrolled axis movements cannot be ruled out, when test devices and cables are connected!

Testing cables for feed-through mode are not suitable for regular machine operation.

Due to the great variety of machine designs and their grounding variants it is not possible to exhaustively test all testing cables.

- ▶ It is absolutely necessary that you check the safe and proper function of the testing cables for every test situation.

WARNING

Uncontrolled machine movements

Personal injury or death

Integrating the PWM into the control loop influences the power supply and the grounding conditions. The feed-through function must be handled with great care and caution!

- ▶ No persons are allowed within the traverse range of the machine.
- ▶ Ensure that vertical axes cannot fall down.
- ▶ Do not disengage any connecting elements during the measurement.
- ▶ Move the machine axis to the middle of the traverse range before you connect the PWM.
- ▶ When you have integrated the PWM into the control loop of the machine, check whether the axis concerned can be traversed in a controlled manner.
- ▶ One operator must be at the EMERGENCY STOP button to make sure that the machine can be switched off at any stage of this "setup phase".

Possible axis behavior caused by grounding problems:

- Uncontrolled machine movements
- Machine switches off (emergency stop)
- Machine axis drifts
- Machine axis accelerates at rapid traverse



HEIDENHAIN recommends running the feed-through mode with floating supply with the service adapters SA 100 or SA 110.



- The encoder output (OUT) of the PWM must not be connected,
- if the PWM test setup was prepared for feed-through operation.
 - if an absolute encoder on a machine axis is supposed to be inspected **while the machine is not switched on** (e.g. reading out the encoder memory to determine the encoder model).

Therefore, the adapter cable has to be disconnected from the control for this special test.

Reason: As long as the control is connected, the terminating resistors of the PWM encoder output disturb the measuring function.

3.2 SA 100/110 Service Adapter for floating feed-through operations (listening-in)

3.2.1 SA 100 Service Adapter (online diagnostics)

The SA 100 Service Adapter serves to integrate the test units PWM and IK 215 into the measuring circuit of the machine axis ("closed loop").

Using the SA 100 allows for controlled traverse of the machine axis during measurement.



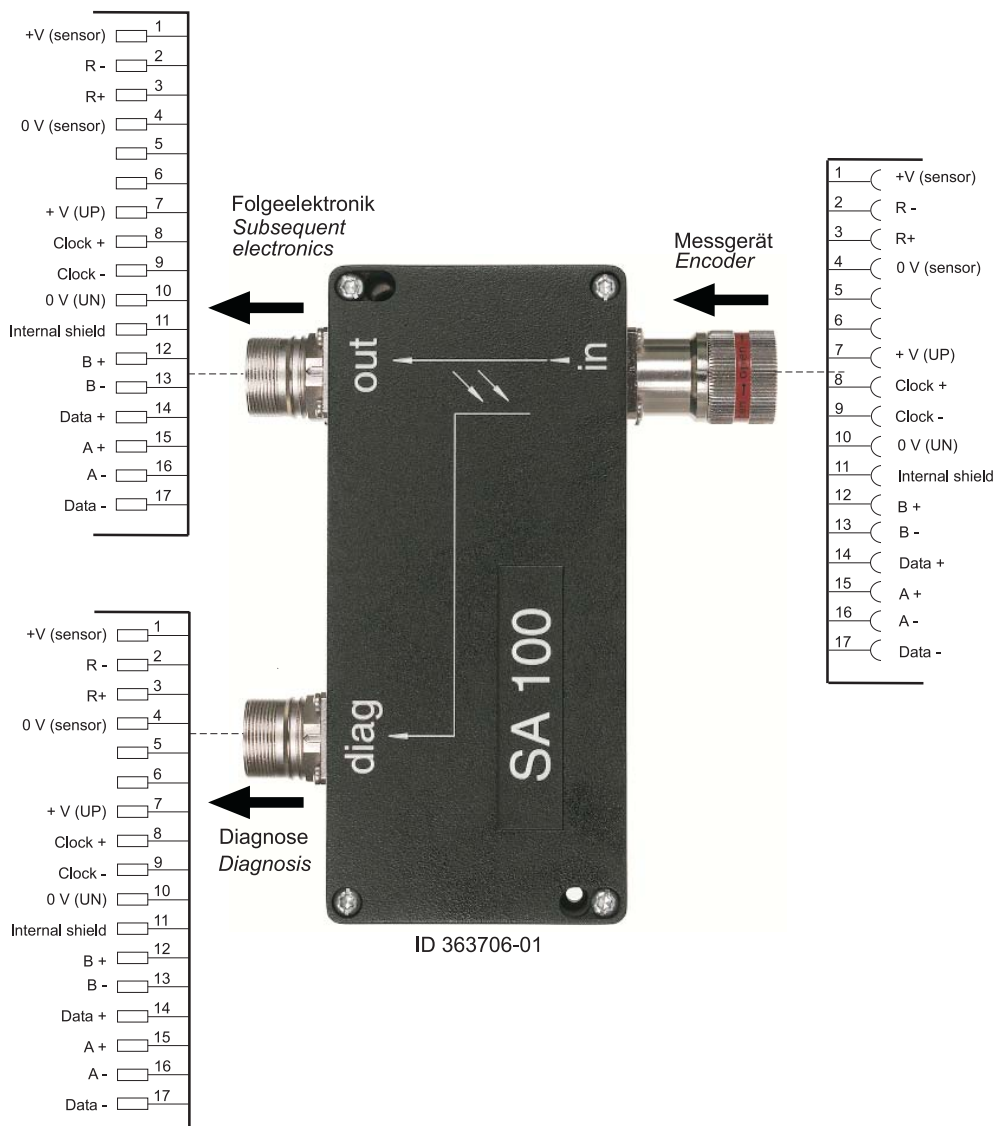
Closed-loop operation with SA 100 is possible with the EnDat 02, 21 and 22, Fanuc and Mitsubishi interfaces. Moreover, the encoder and the control must support the diagnostic function.

If an SA is integrated into the measuring circuit, the ATS software no longer can actively intervene in data transfer (control/encoder) to delete errors and warnings, etc.

The supply voltage must be provided by the PWM ; do not activate "Use power supply from subsequent electronics"!

Data transfer can only be listened in (monitored).

More information: "Feed-through operation (listening-in)", page 29



The diag output of the SA is connected to the input (IN) of the PWM (or of the interface card IK 215 IN). Data exchange between the encoder and the subsequent electronics can be observed via optocouplers (passive listening-in).

3.2.2 SA 110 Service Adapter (online diagnostics) for floating feed-through (listening-in)

The SA 110 **S**ervice **A**dapter serves to integrate the test units PWM and IK 215 into the measuring circuit of the machine axis ("closed loop") with purely serial data transfer (no incremental signals).

Using the SA 110 allows for controlled traverse of the machine axis during measurement.



The following interfaces allow for closed-loop operation:

- EnDat 2.2 (purely serial, no incremental signals)
- Fanuc
- Mitsubishi as of version 02 (with PWM only)

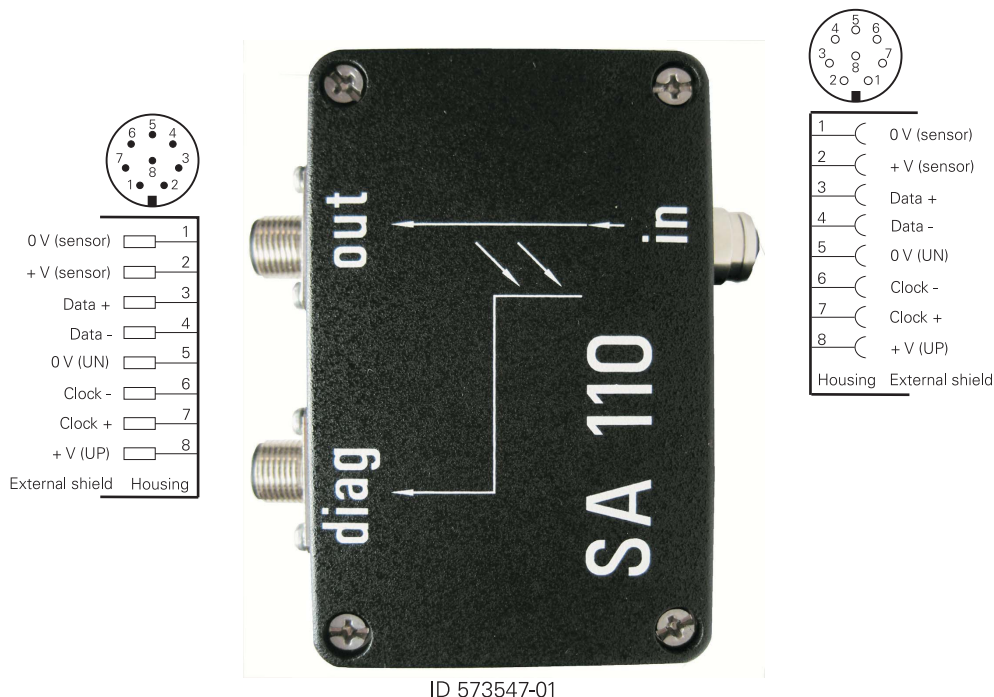
The TNC must support the diagnostic function.

If an SA is integrated into the measuring circuit, the ATS software no longer can actively intervene in data transfer (control/encoder) to delete errors and warnings, etc.

The supply voltage must be provided by the PWM ; do not activate "Use power supply from subsequent electronics"!

Data transfer can only be listened in (monitored).

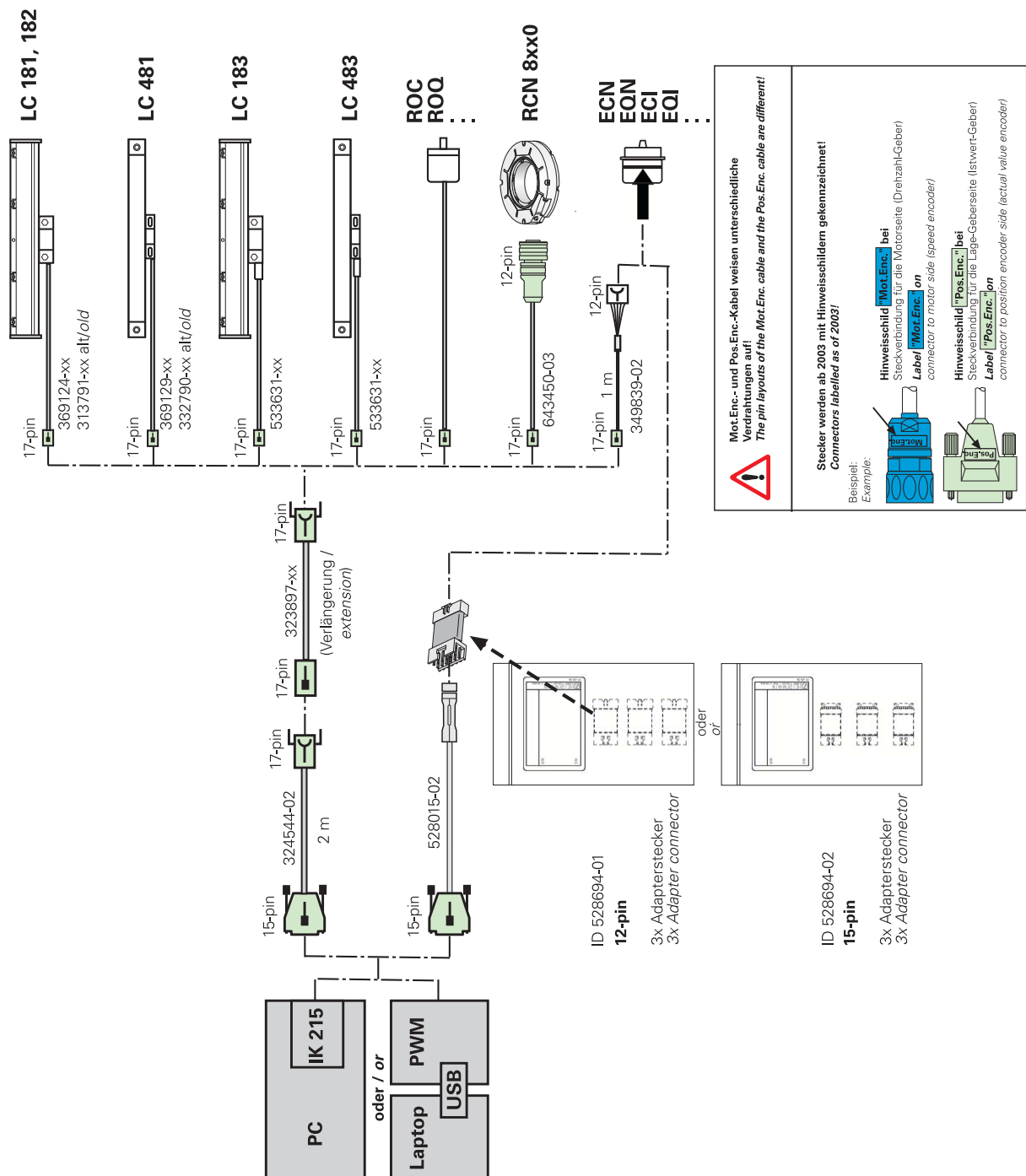
More information: "Feed-through operation (listening-in)", page 29



The diag output of the SA is connected to the input (IN) of the PWM (or of the interface card IK 215 IN). Data exchange between the encoder and the subsequent electronics can be observed via optocouplers (passive listening-in).

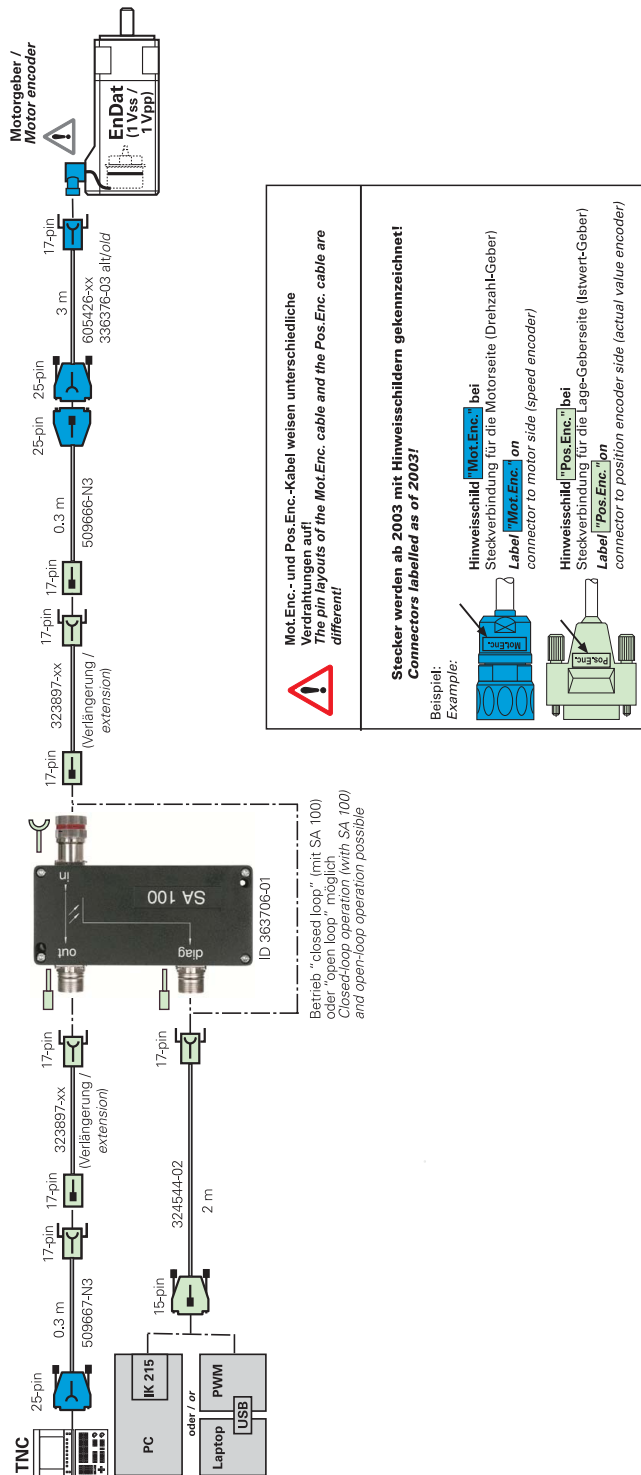
3.3 EnDat 2.1 and EnDat 2.2 absolute interface with incremental signals

3.3.1 Measuring the absolute EnDat interface with A/B incremental signals, without subsequent electronics

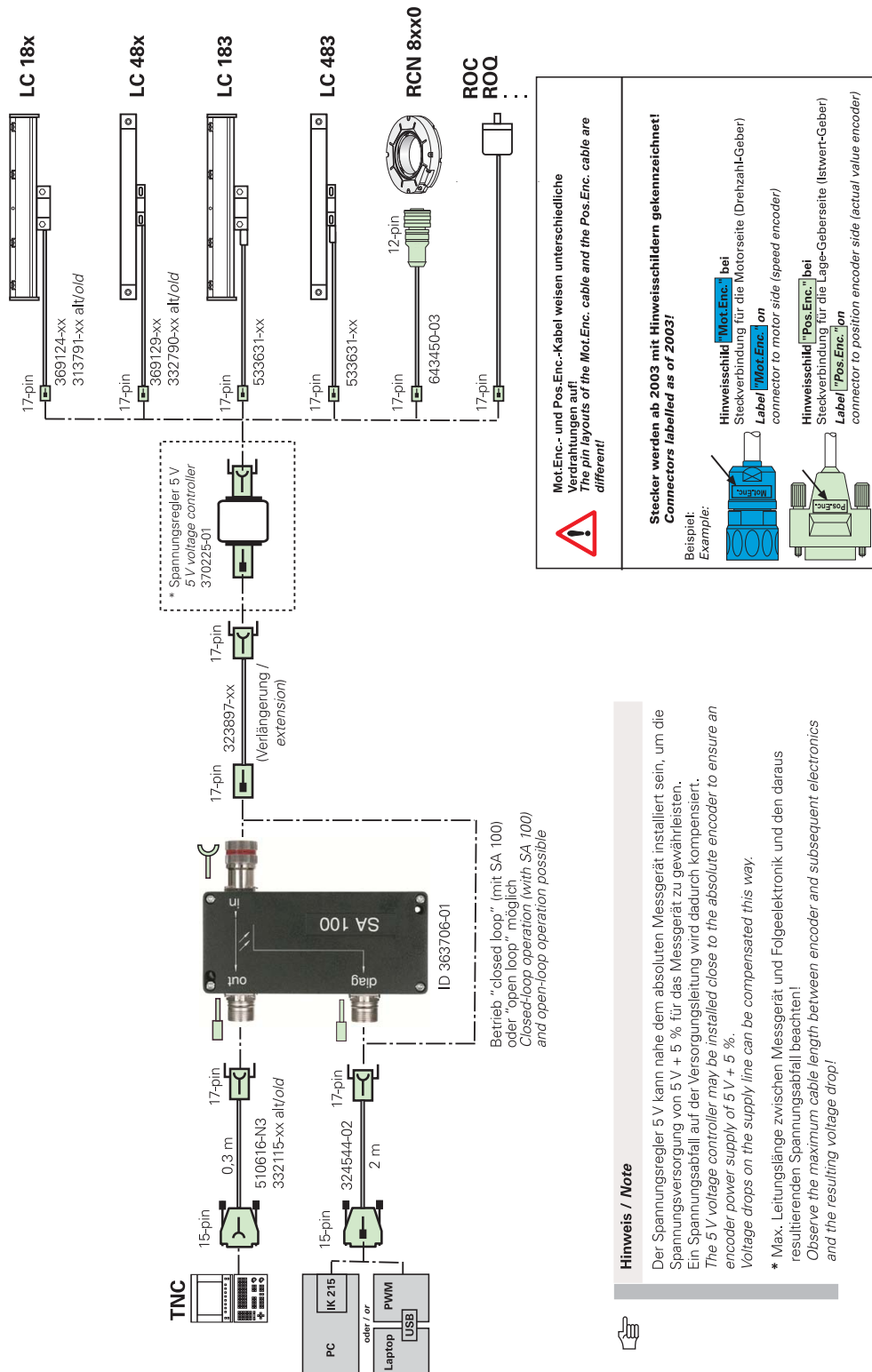


Further information: "Inductive absolute EnDat rotary encoders ExI 11xx/13xx; adapter for PCB connector", page 43

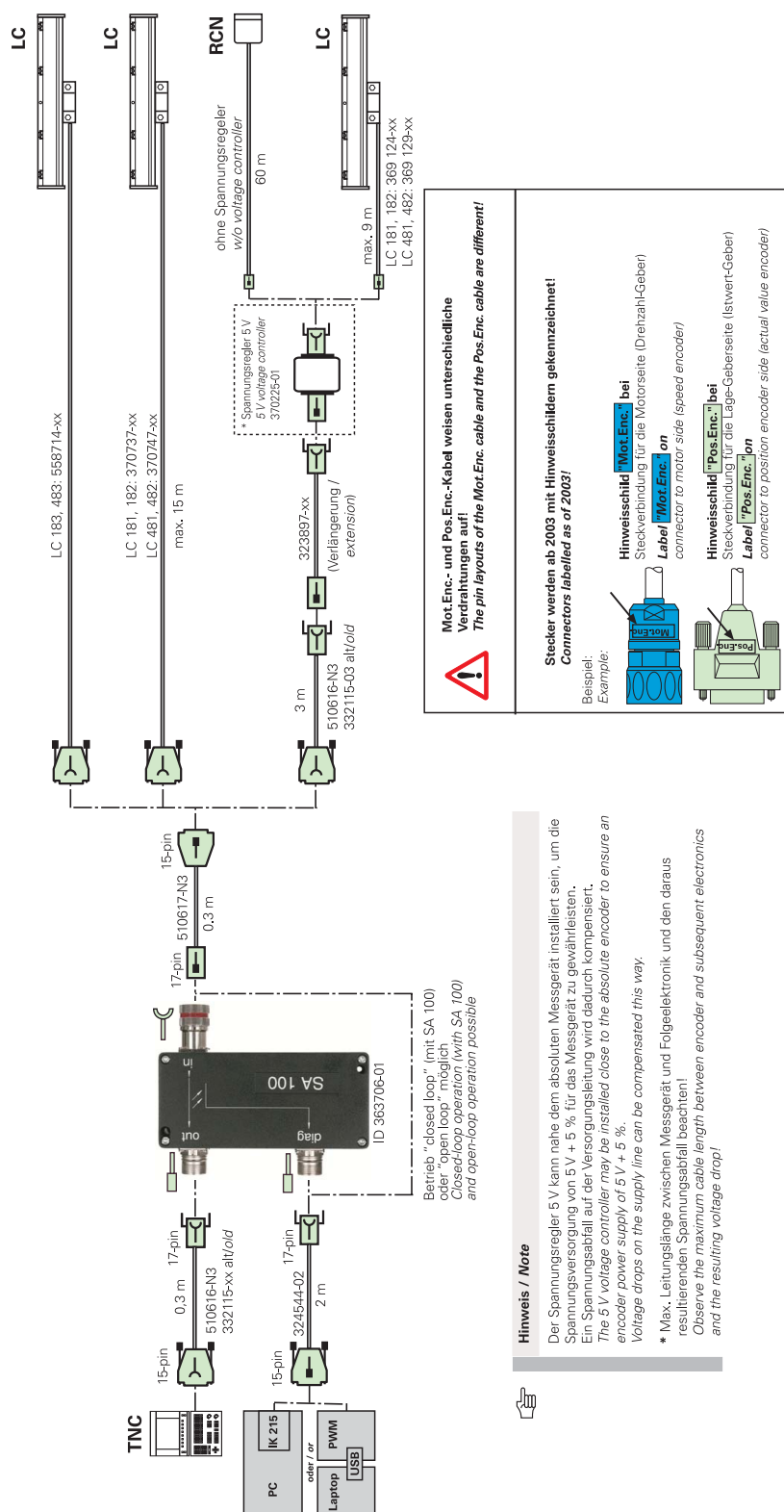
3.3.2 Feed-through operation (listening-in) with SA 100 and PWM/IK 215 in an absolute EnDat/SSI Mot.Enc. measuring circuit with 25-pin D-Sub connector (NC side)



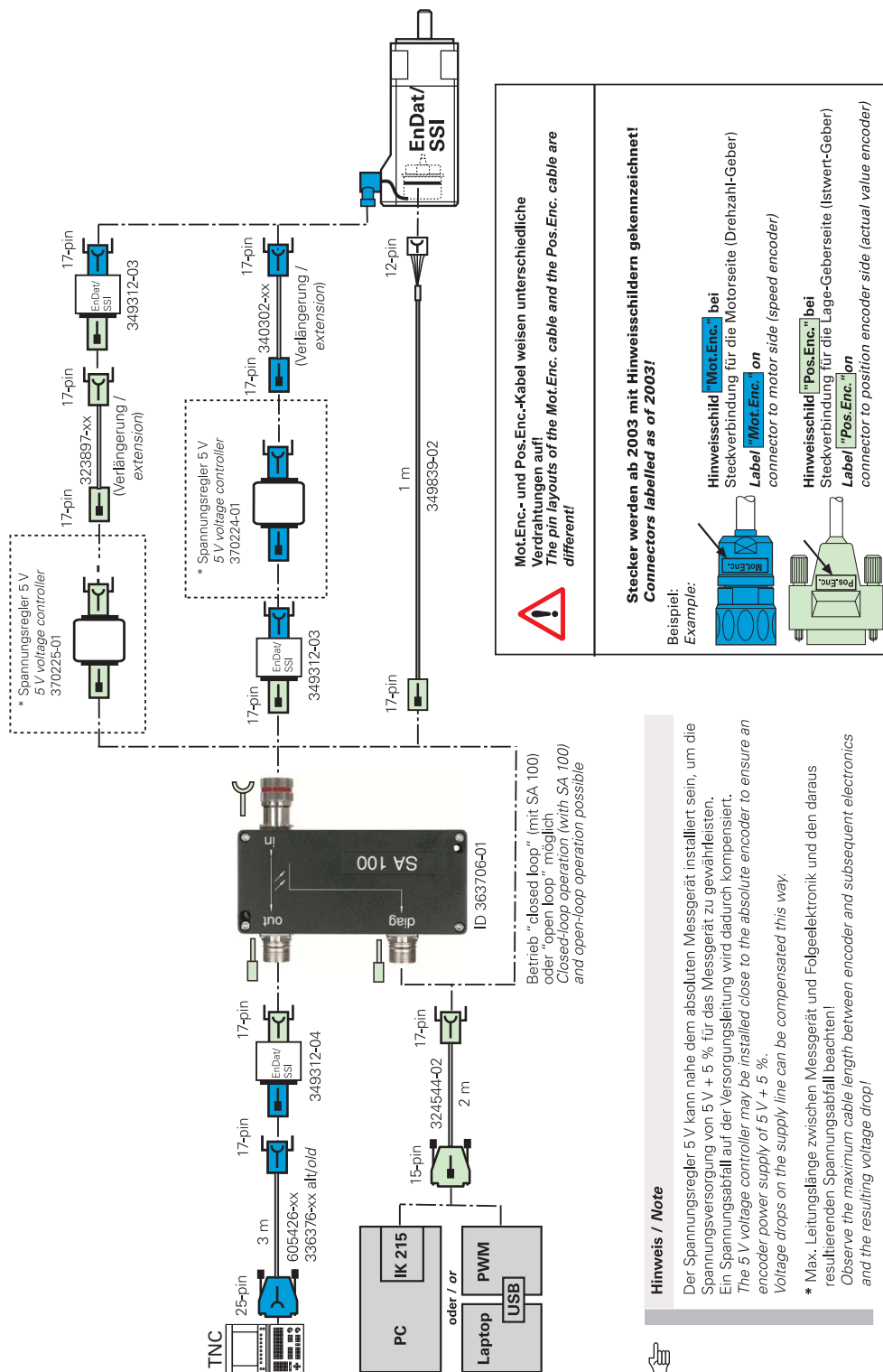
3.3.3 Feed-through operation (listening-in) with SA 100 and PWM/IK 215 in an absolute EnDat position encoder measuring circuit



3.3.4

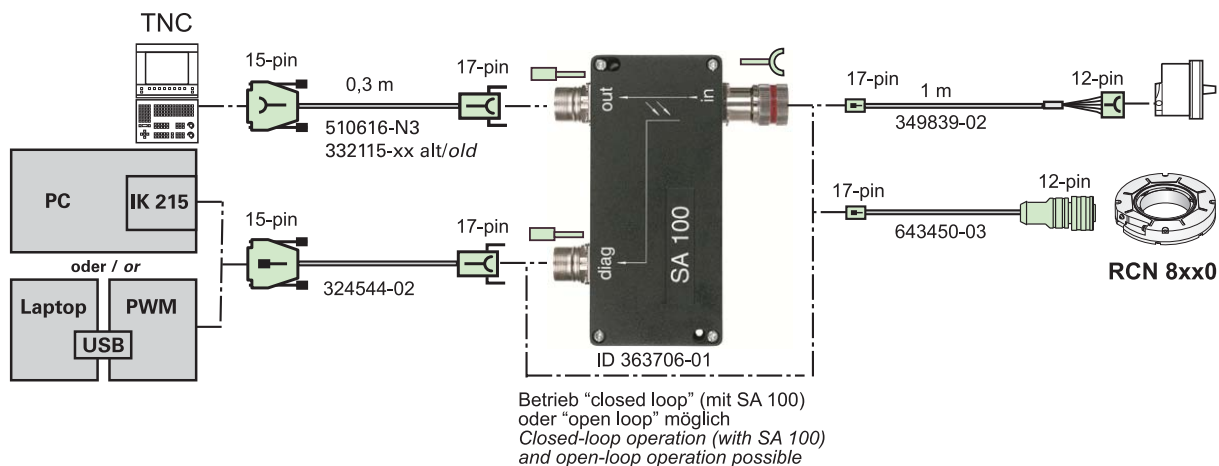


3.3.5 Feed-through operation (listening-in) with SA 100 and PWM/IK 215 in an absolute EnDat motor encoder measuring circuit with assignment converter (synchronous motor side)



3.4 EnDat 2.2 absolute, purely serial, no incremental signals

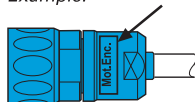
3.4.1 Feed-through operation (listening-in) with SA 100 and PWM/IK 215 in an absolute EnDat position encoder measuring circuit (encoder side)



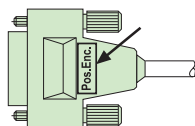
Mot.Enc.- und Pos.Enc.-Kabel weisen unterschiedliche Verdrahtungen auf!
The pin layouts of the Mot.Enc. cable and the Pos.Enc. cable are different!

Stecker werden ab 2003 mit Hinweisschildern gekennzeichnet!
Connectors labelled as of 2003!

Beispiel:
Example:

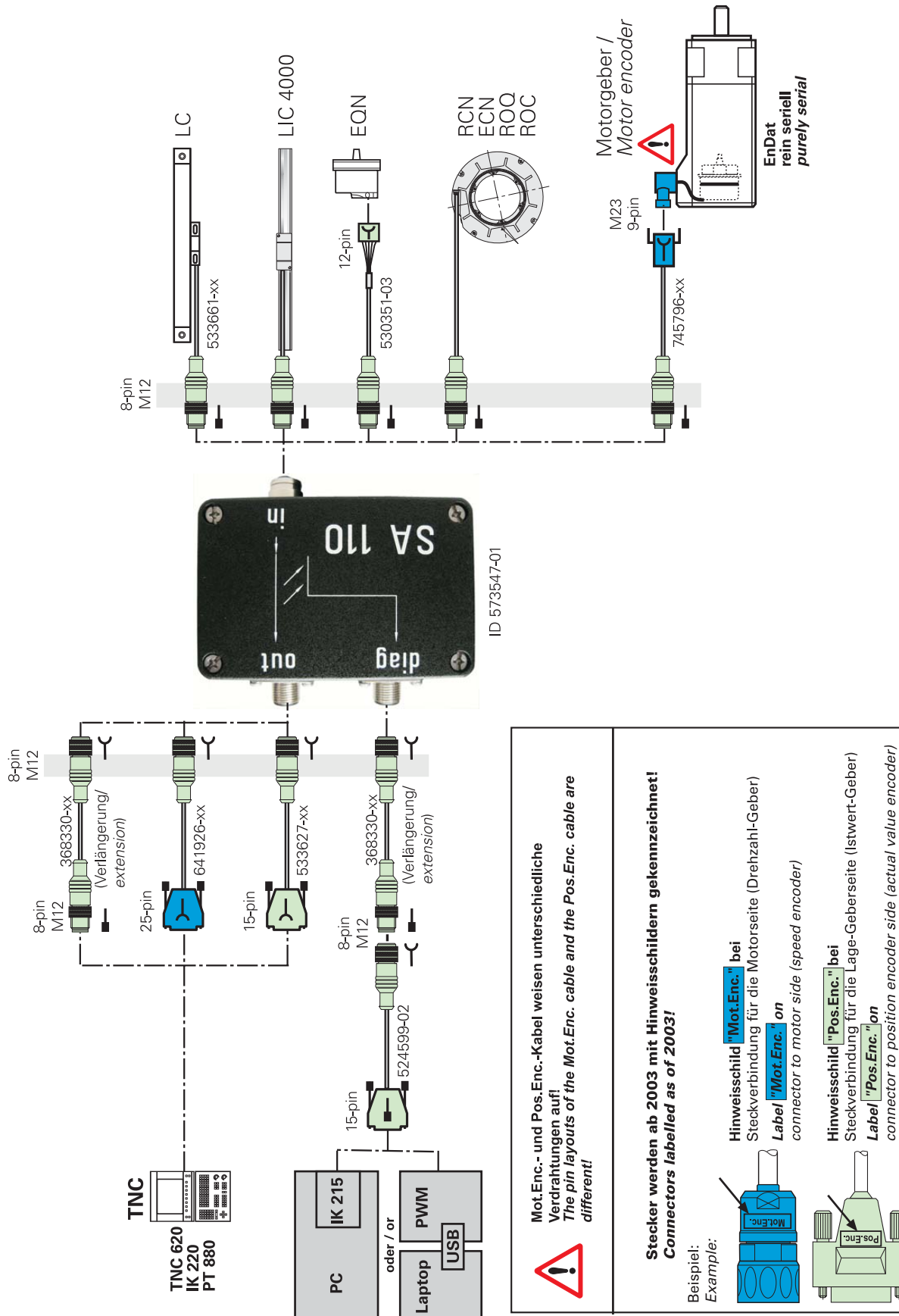


Hinweisschild "**Mot.Enc.**" bei
Steckverbindung für die Motorseite (Drehzahl-Geber)
Label "Mot.Enc." on
connector to motor side (speed encoder)



Hinweisschild "**Pos.Enc.**" bei
Steckverbindung für die Lage-Geberseite (Istwert-Geber)
Label "Pos.Enc." on
connector to position encoder side (actual value encoder)

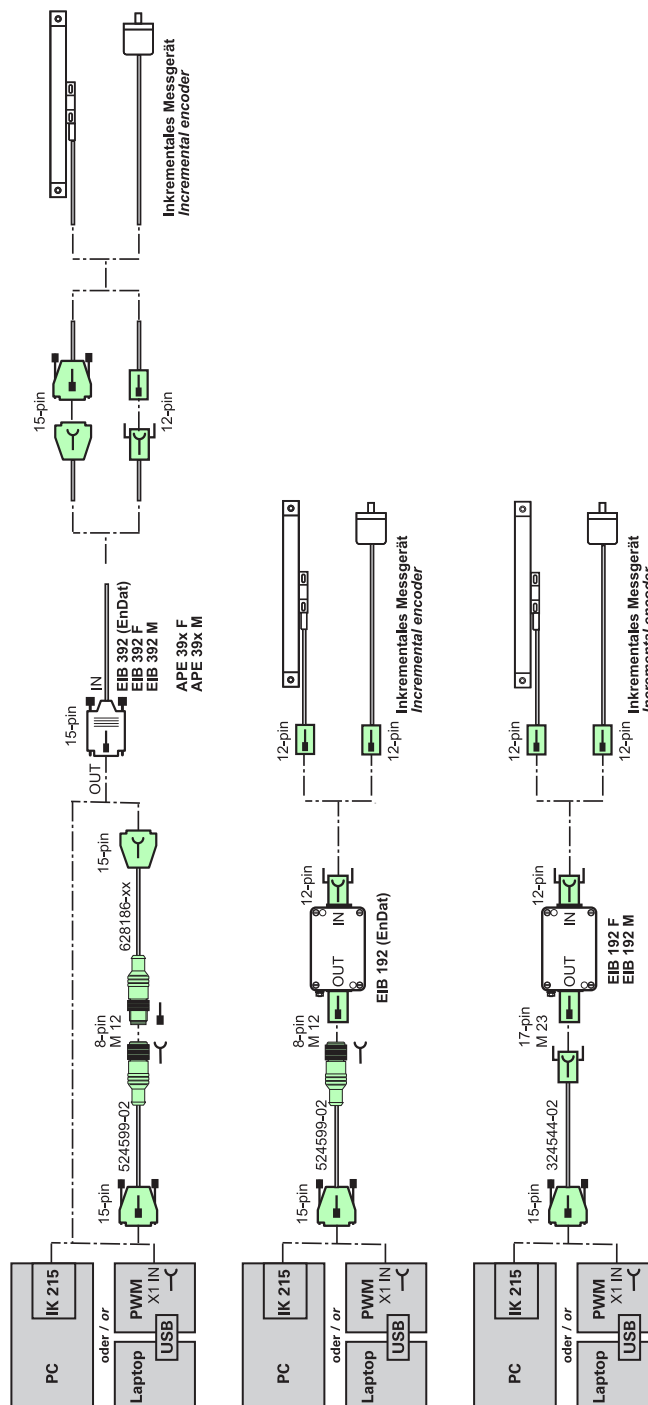
3.4.2 Feed-through operation (listening-in) with SA 110 and “purely serial” EnDat 2.2 interface (encoder side)



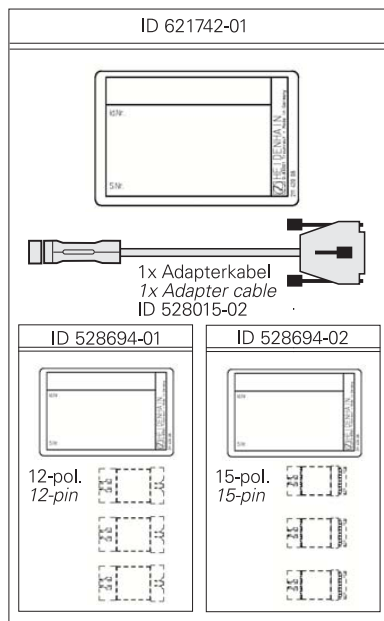
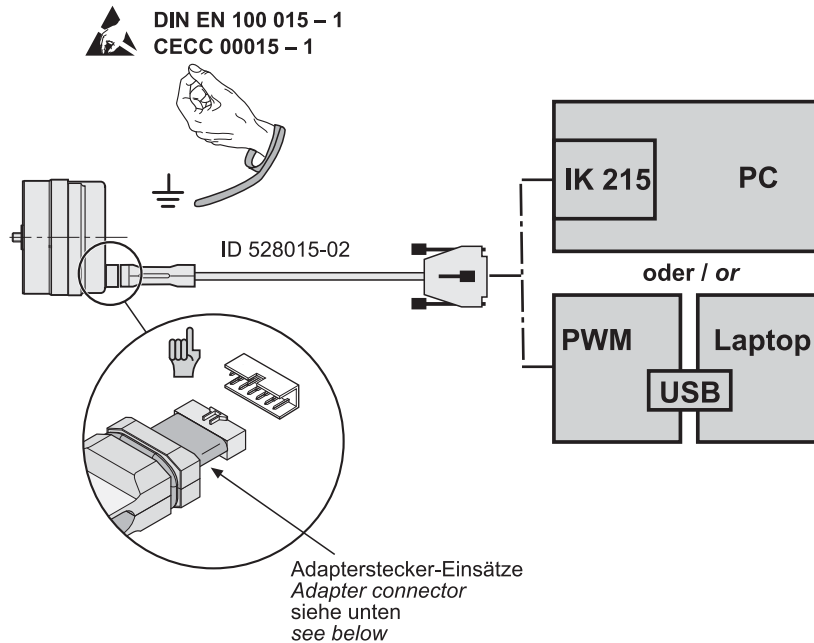


Closed-loop operation with SA 110 is possible with the EnDat 02, 21, 22 and Fanuc interfaces. With the Mitsubishi interface, the closed loop check can only be performed as of version 02 and with the PWM. The control must support the diagnostic function. Data transfer can only be listened in (monitored).

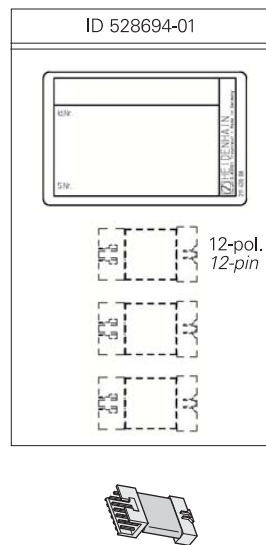
3.4.3 Adapter cables for APE 3xx and EIB 1xx/3xx



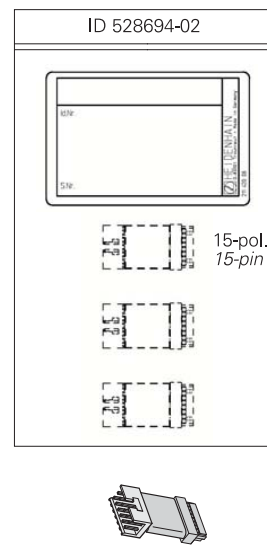
3.5 Inductive absolute EnDat rotary encoders Exl 11xx/13xx; adapter for PCB connector



Set of
1 adapter cable,
3 inserts for adapter
connector, 12-pin,
3 inserts for adapter
connector, 15-pin



Set of
3 inserts for adapter
connector, 14-pin



Set of
3 inserts for adapter
connector, 15-pin
(new mini jacks)



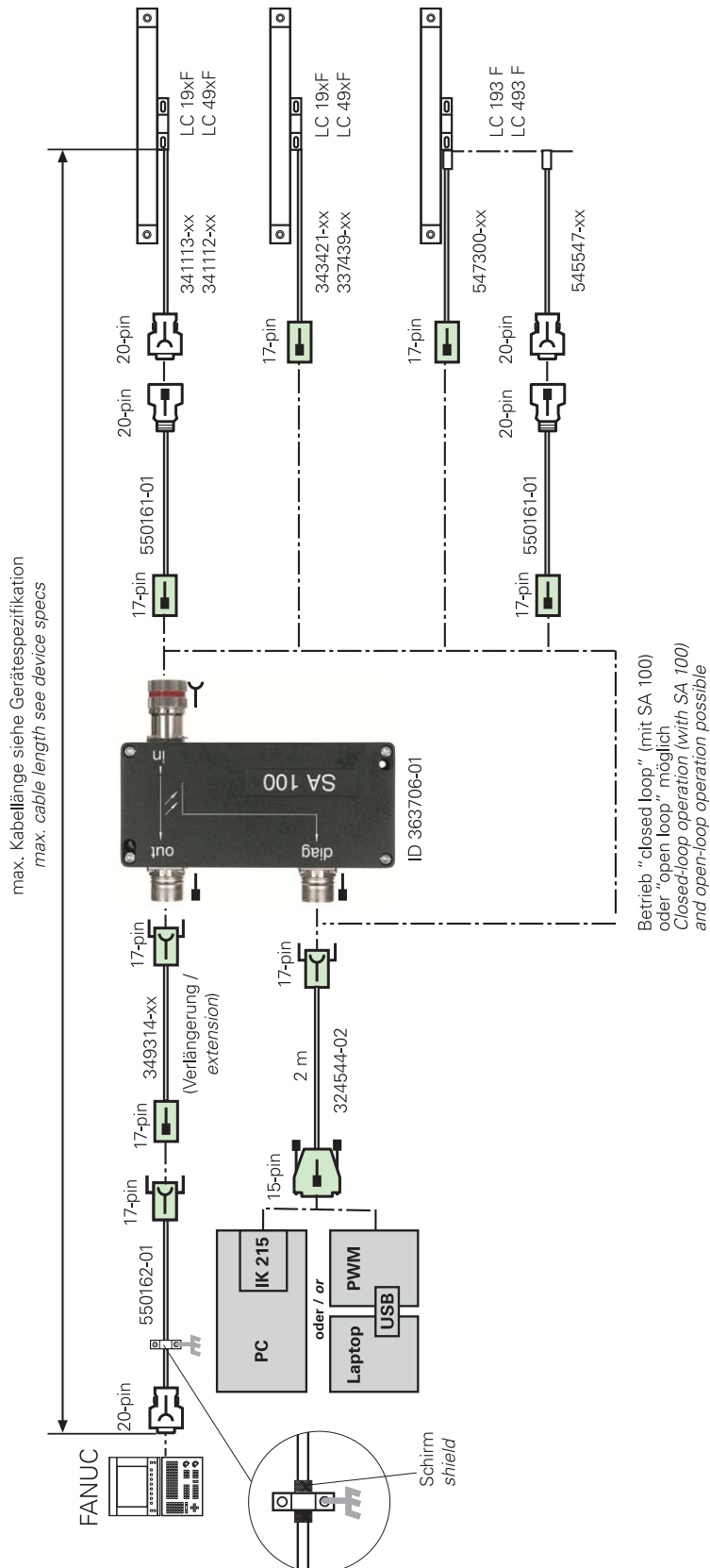
To ensure good contact we recommend replacing the adapter insert after approximately 500 insertion/withdrawal cycles!

More information:

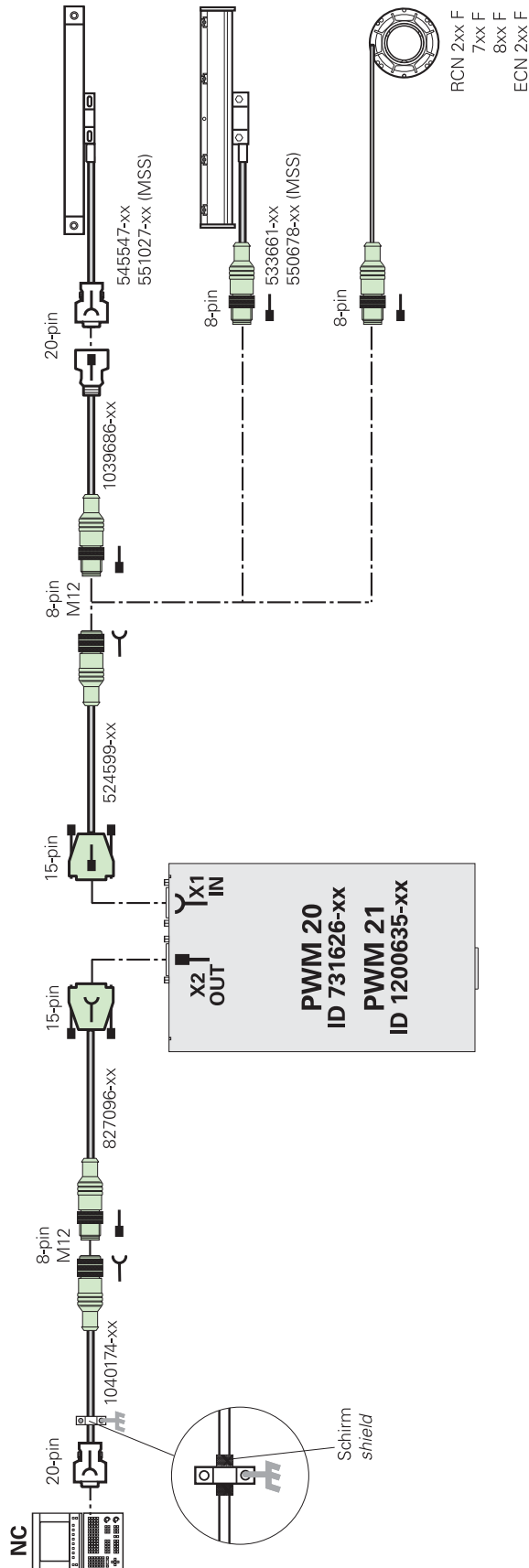
HEIDENHAIN mounting instructions ID 526838-xx (12-pin adapter) or ID 647671-xx (15-pin adapter) "Encoder Cable Adapter for Installation of the Exl 11xx/13xx Inductive Rotary Encoder"

3.6 Fanuc

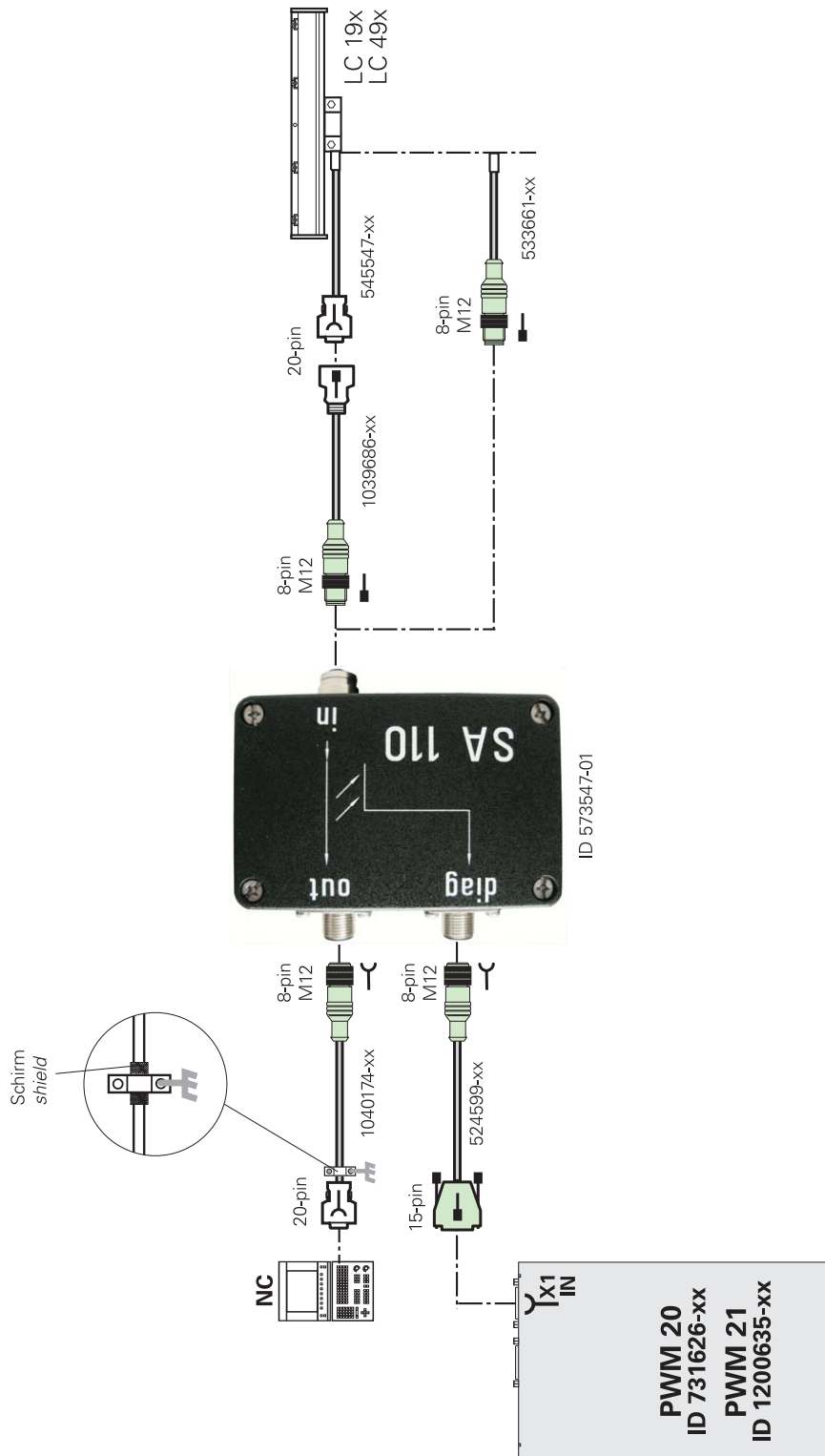
3.6.1 Absolute FANUC SERIAL interface; feed-through (listening-in) with SA 100 (NC side)



3.6.2 Adapter cable for absolute FANUC SERIAL interface; 15-pin (20-pin) and 8-pin M12, feed-through (listening-in)

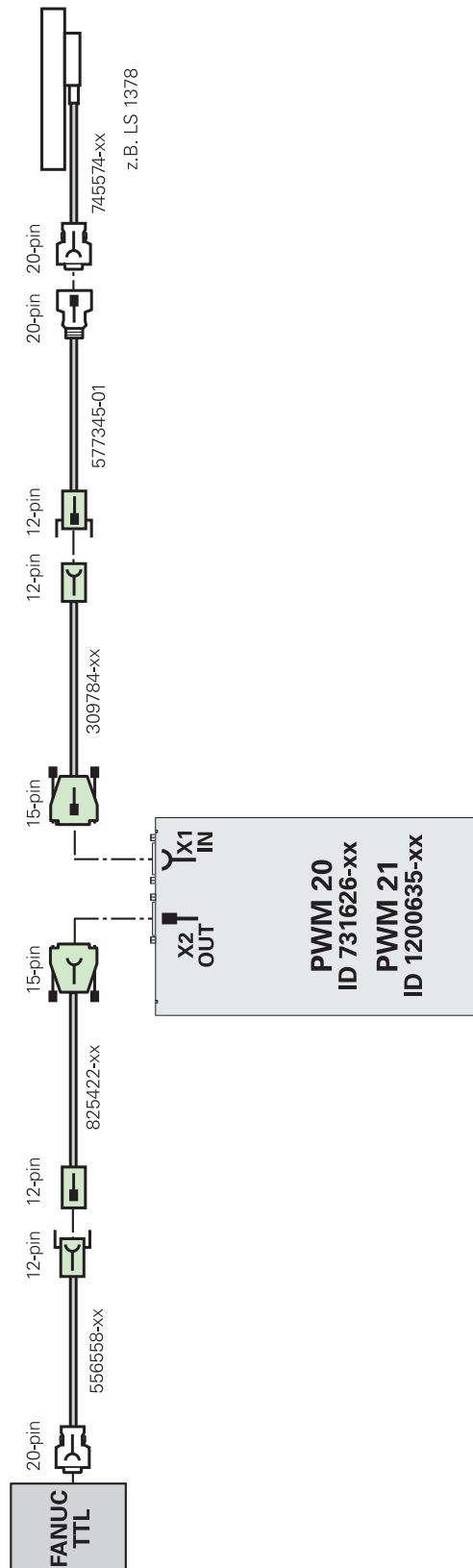


3.6.3 Absolute FANUC SERIAL interface; feed-through (listening-in) with SA 110 (NC side)



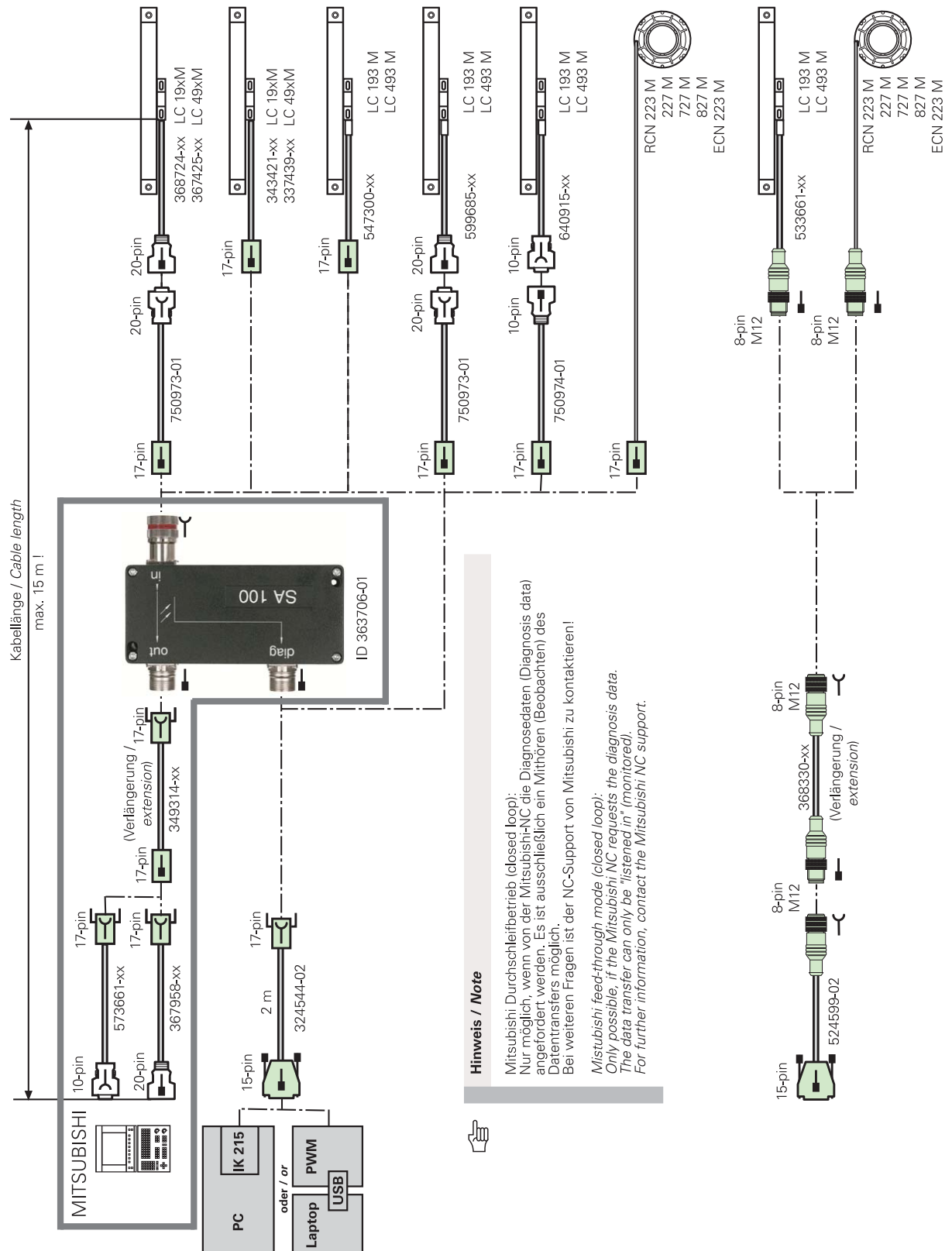
The "closed loop" check can only be run with the PWM.
The control must support the diagnostic function.
Data transfer can only be listened in (monitored).

3.6.4 Adapter cables for incremental FANUC TTL interface; feed-through (listening-in)

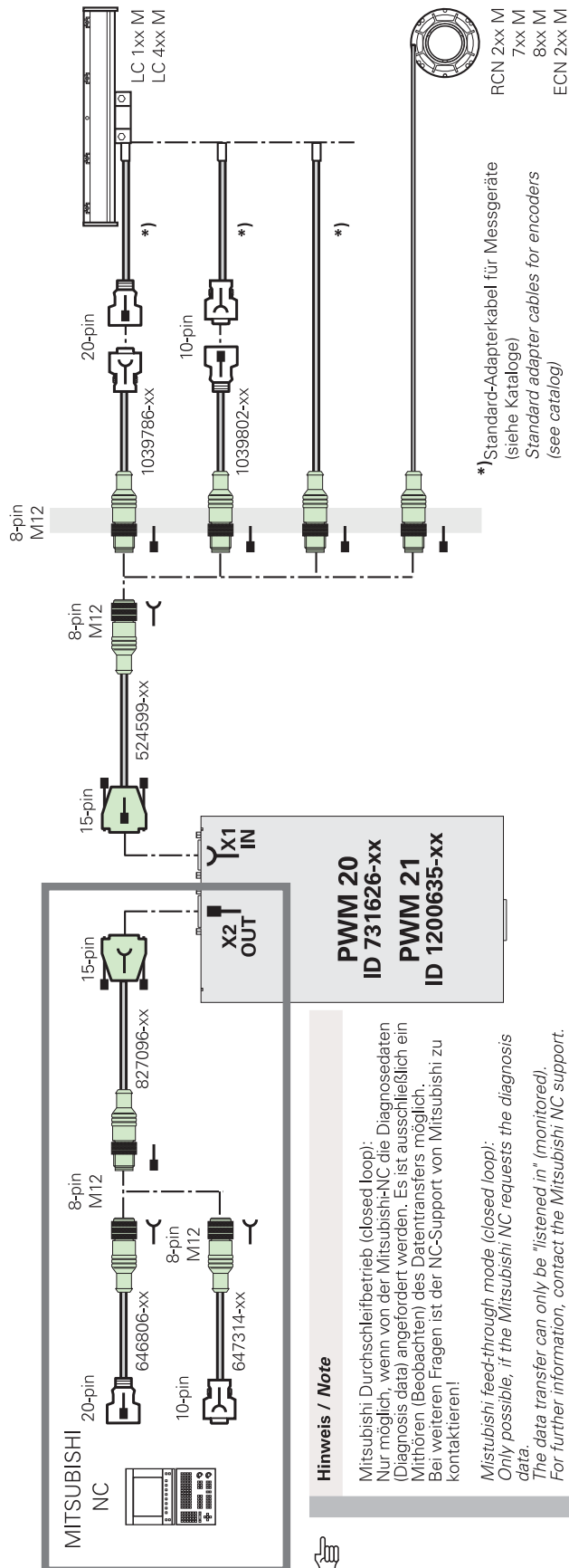


3.7 Mitsubishi

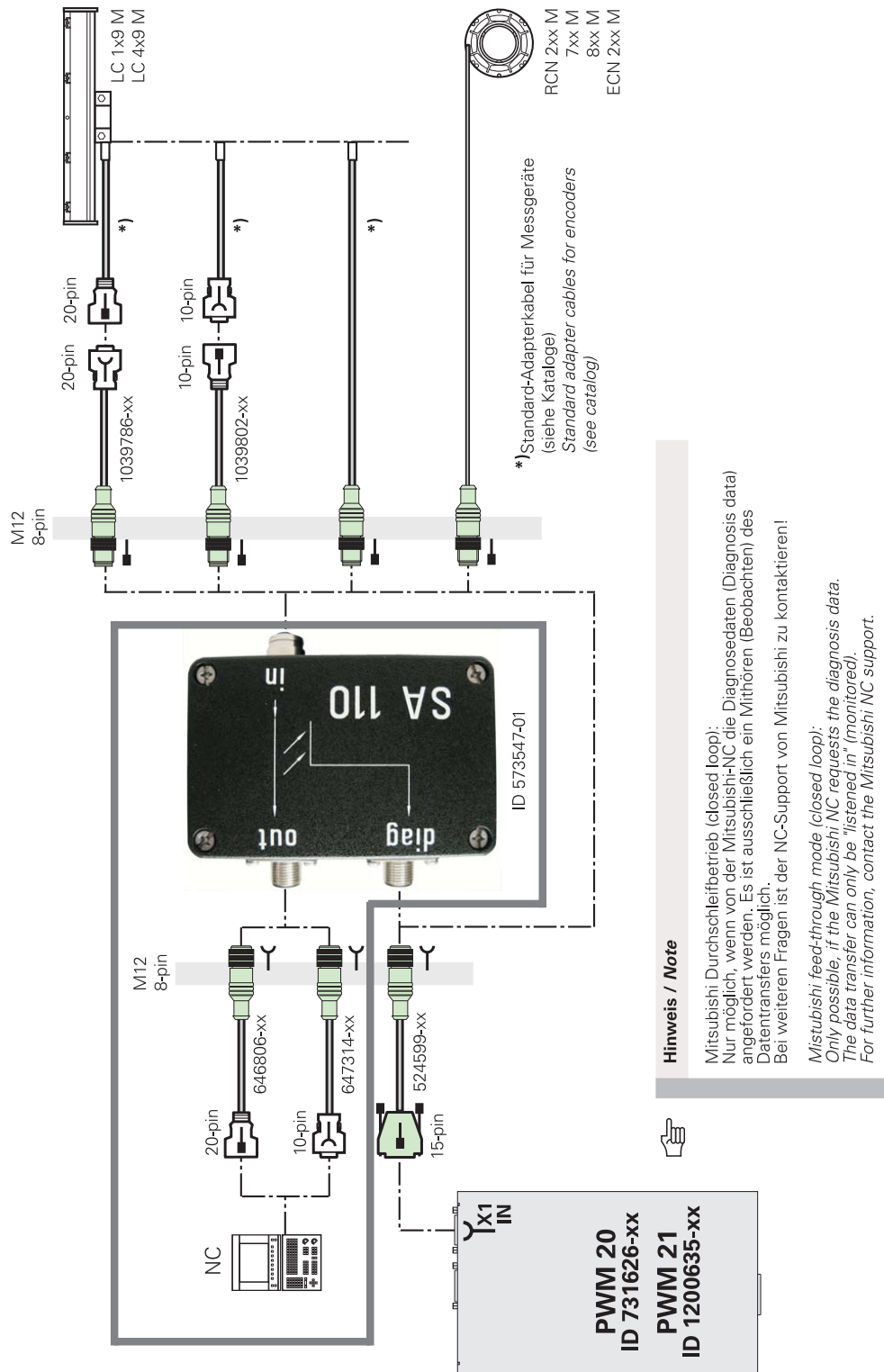
3.7.1 Absolute MITSUBISHI High Speed Serial interface; feed-through (listening-in) with SA 110



3.7.2 Absolute MITSUBISHI High Speed Serial interface (8/10/20-pin); feed-through (listening-in) with PWM

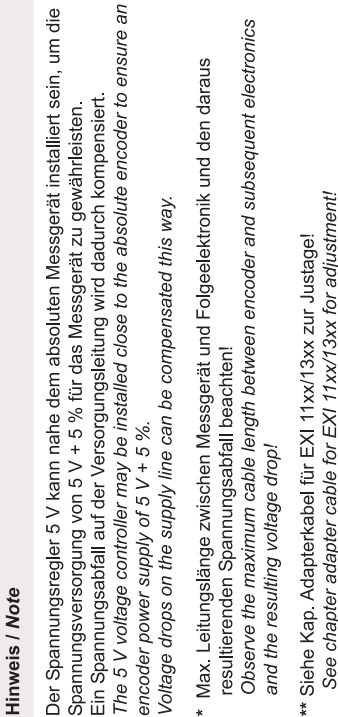


3.7.3 Absolute MITSUBISHI High Speed Serial interface; feed-through (listening-in) with SA 110 (NC side)



With the Mitsubishi interface, the closed loop check can only be performed as of version 02 and with the PWM!
The control must support the diagnostic function.
Data transfer can only be listened in (monitored).

3.8.1 Adapter cables for synchronous motors with absolute SSI motor encoders, measured with assignment converter or PCB connector



Mot.Enc.- und Pos.Enc.-Kabel weisen unterschiedliche Verdrahtungen auf!
The pin layouts of the Mot.Enc. cable and the Pos.Enc. differ!

Stecker werden ab 2003 mit Hinweischildern gekennzeichnet!
Connectors labelled as of 2003!

Beispiel:
Example:

Hinweisschild "Mot.Enc." bei Steckverbindung für die Motorseite (Drehzahl-Geber)

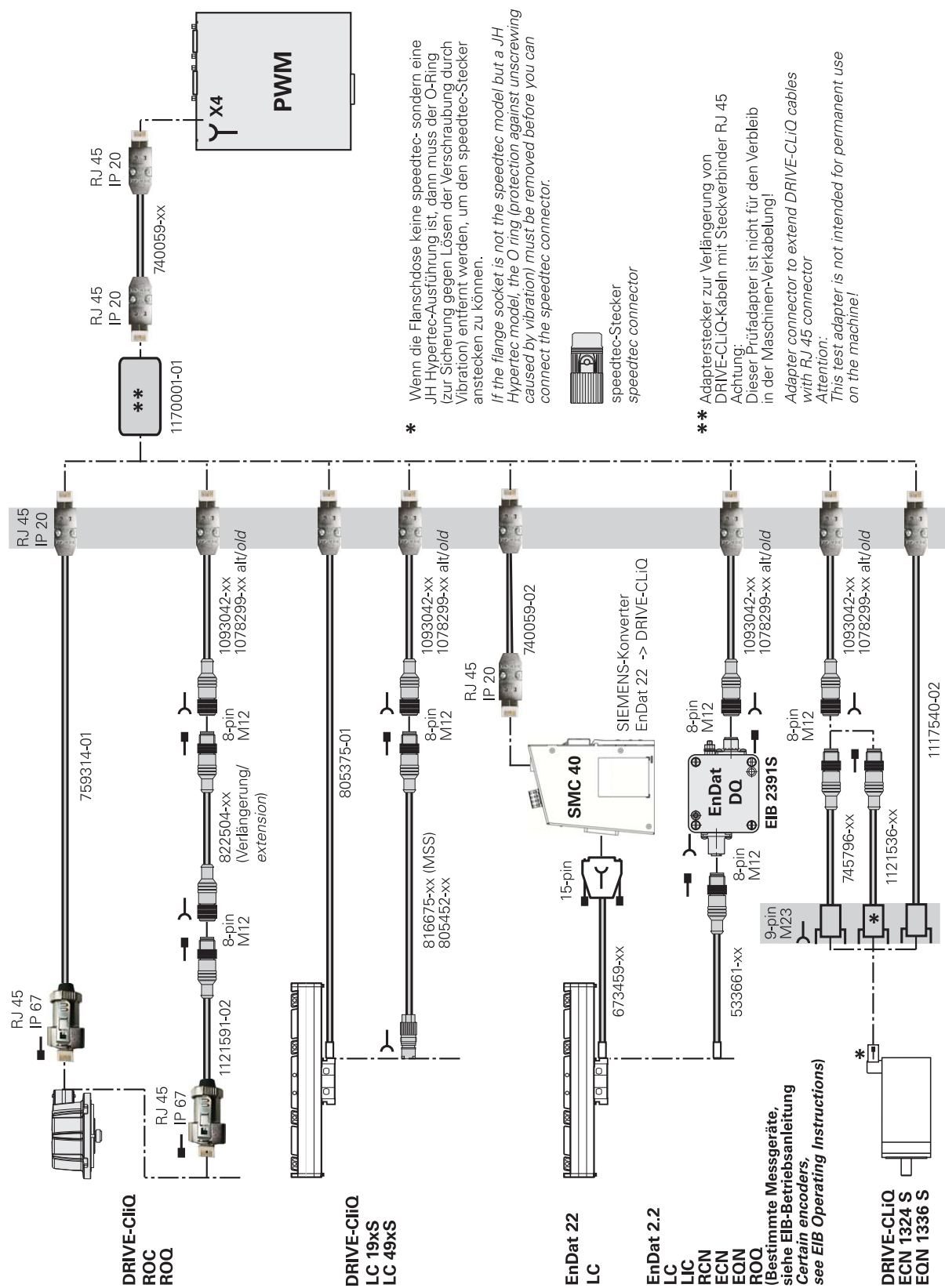
Label "Mot.Enc." on connector to motor side (speed encoder)

Hinweisschild "Pos.Enc." bei Steckverbindung für die Lage-Geberseite (Istwert-Geber)

Label "Pos.Enc." on connector to position encoder side (actual value encoder)

3.9 DRIVE-CLiQ

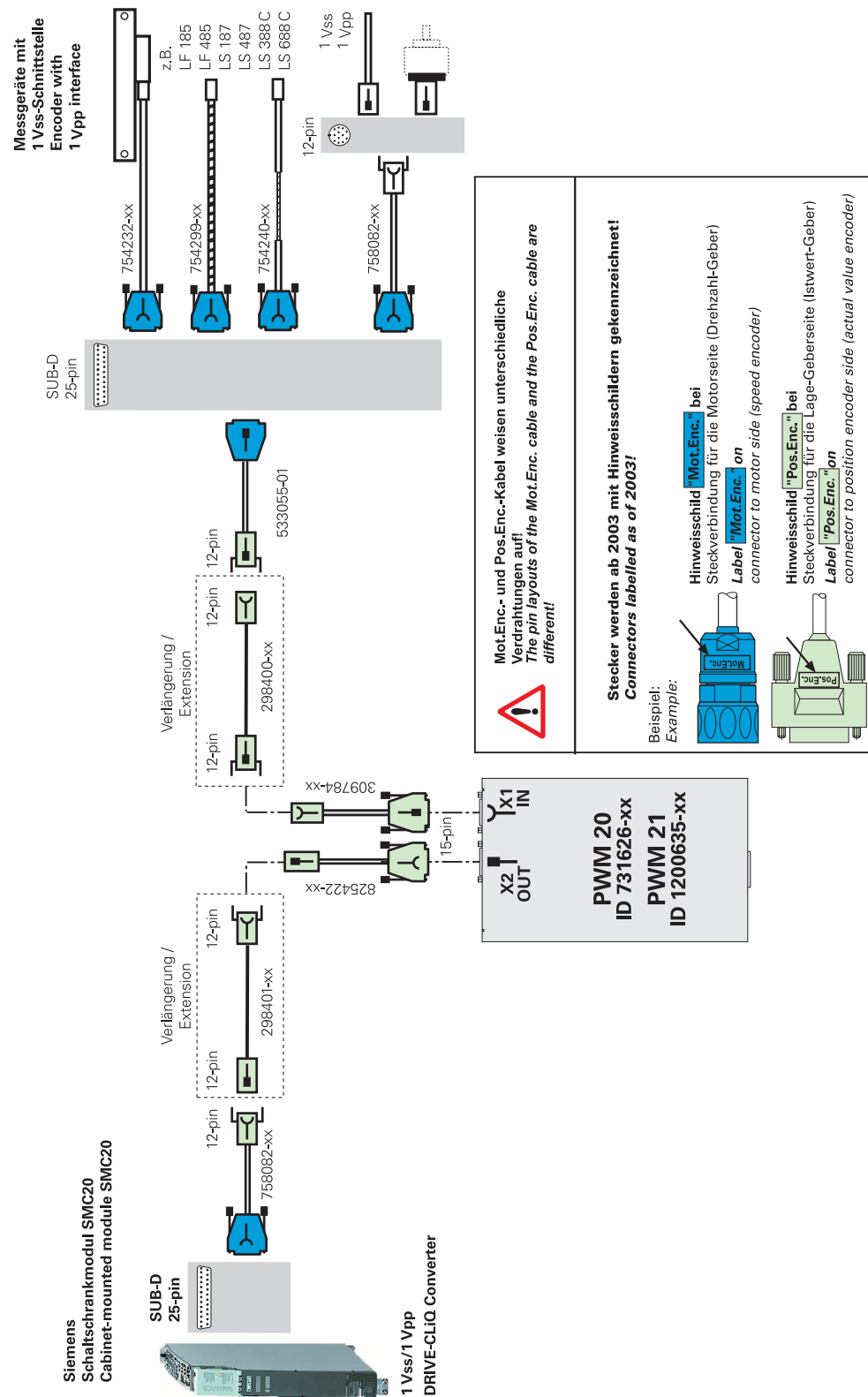
3.9.1 Adapter cables for Siemens DRIVE-CLiQ and SMC 40 converter



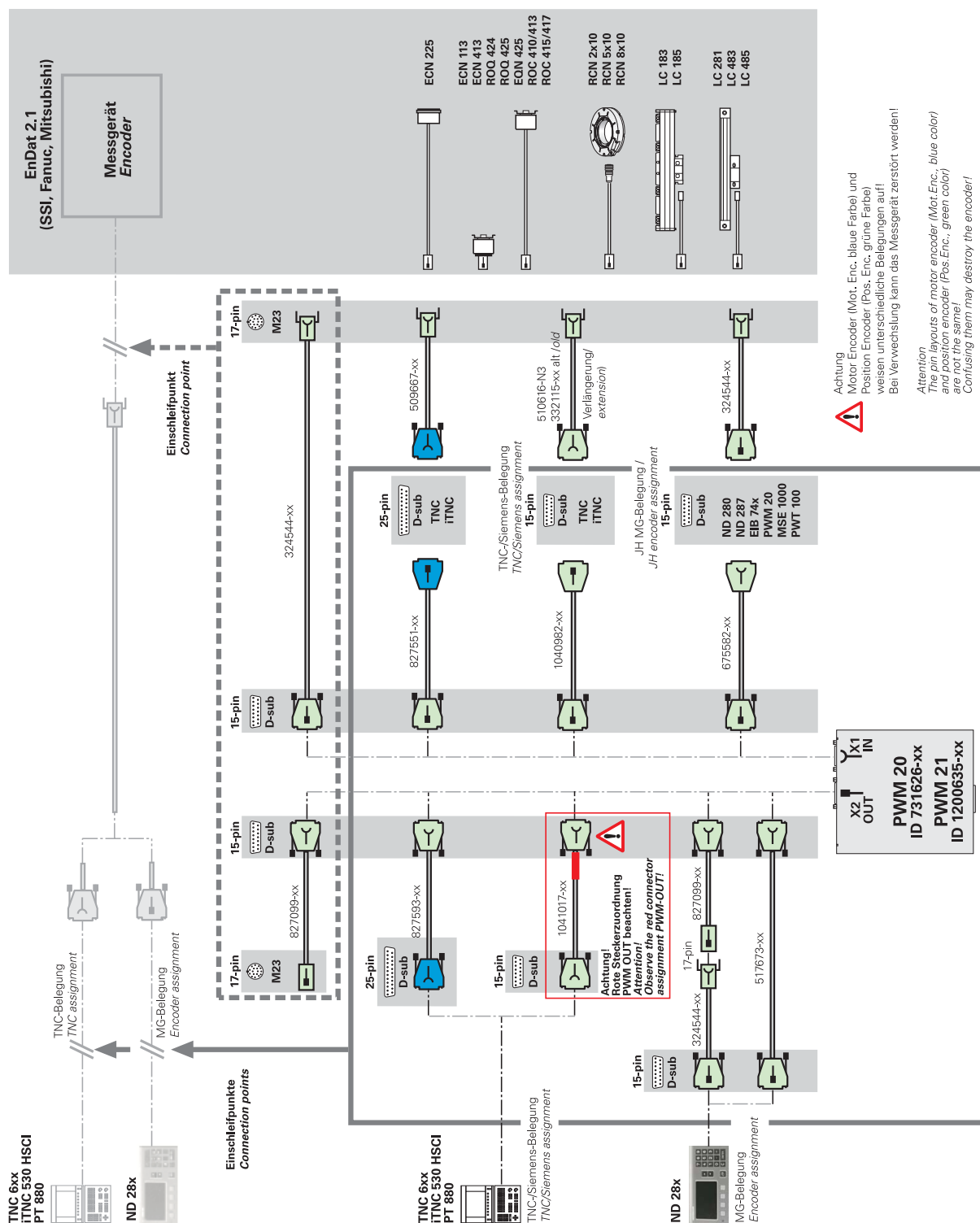


The PWM only supports HEIDENHAIN DRIVE-CLiQ products!
It does not work with non-HEIDENHAIN products. Feed-through
(listening-in) is not possible.

3.9.2 Adapter cables for the incremental 1 V_{pp} range of the SIEMENS 1 V_{pp}/DRIVE-CLiQ converter SMC 20



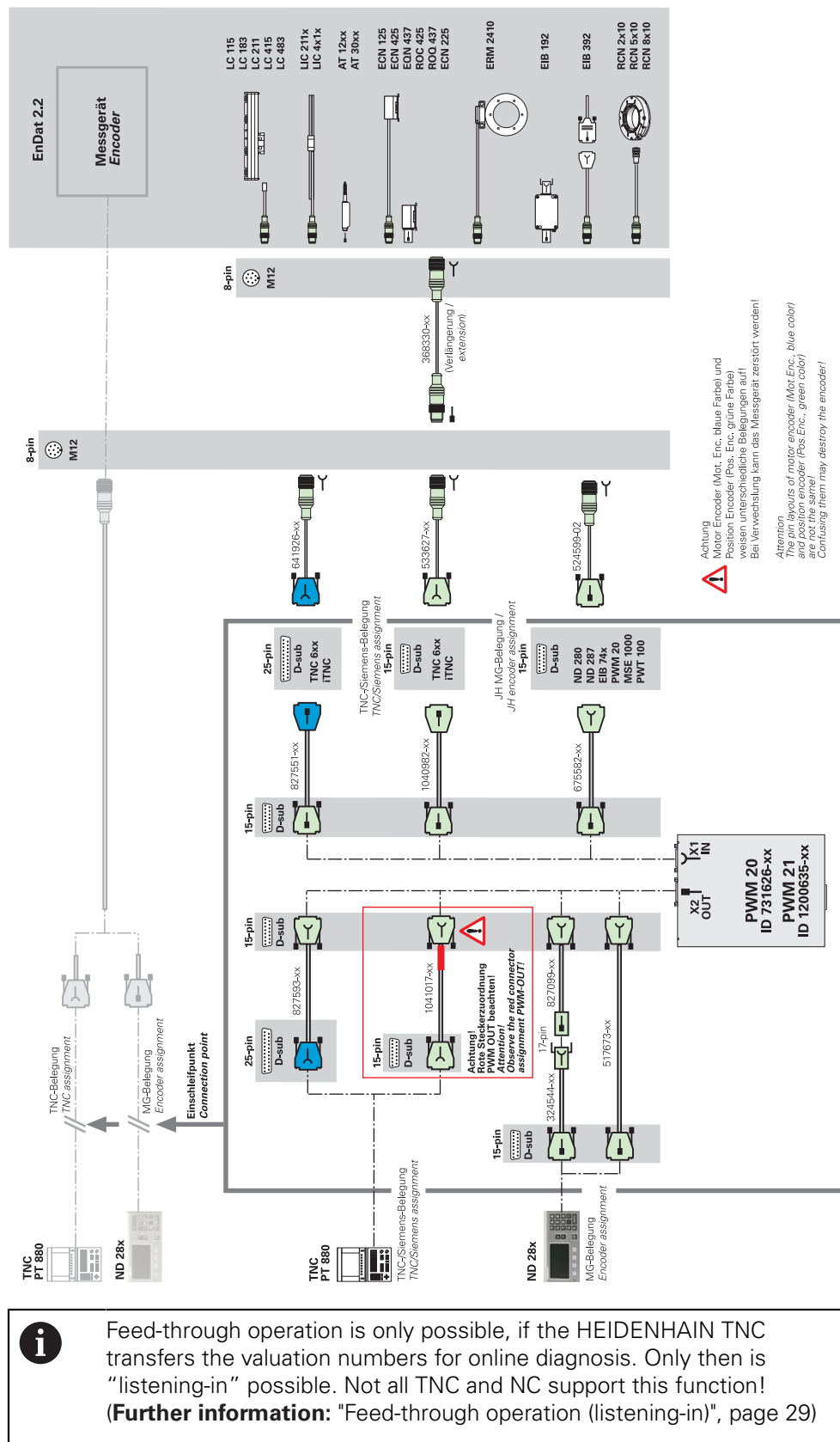
3.10.1 Adapter cables for EnDat 2.1 absolute interfaces, feed-through (listening-in) with PWM



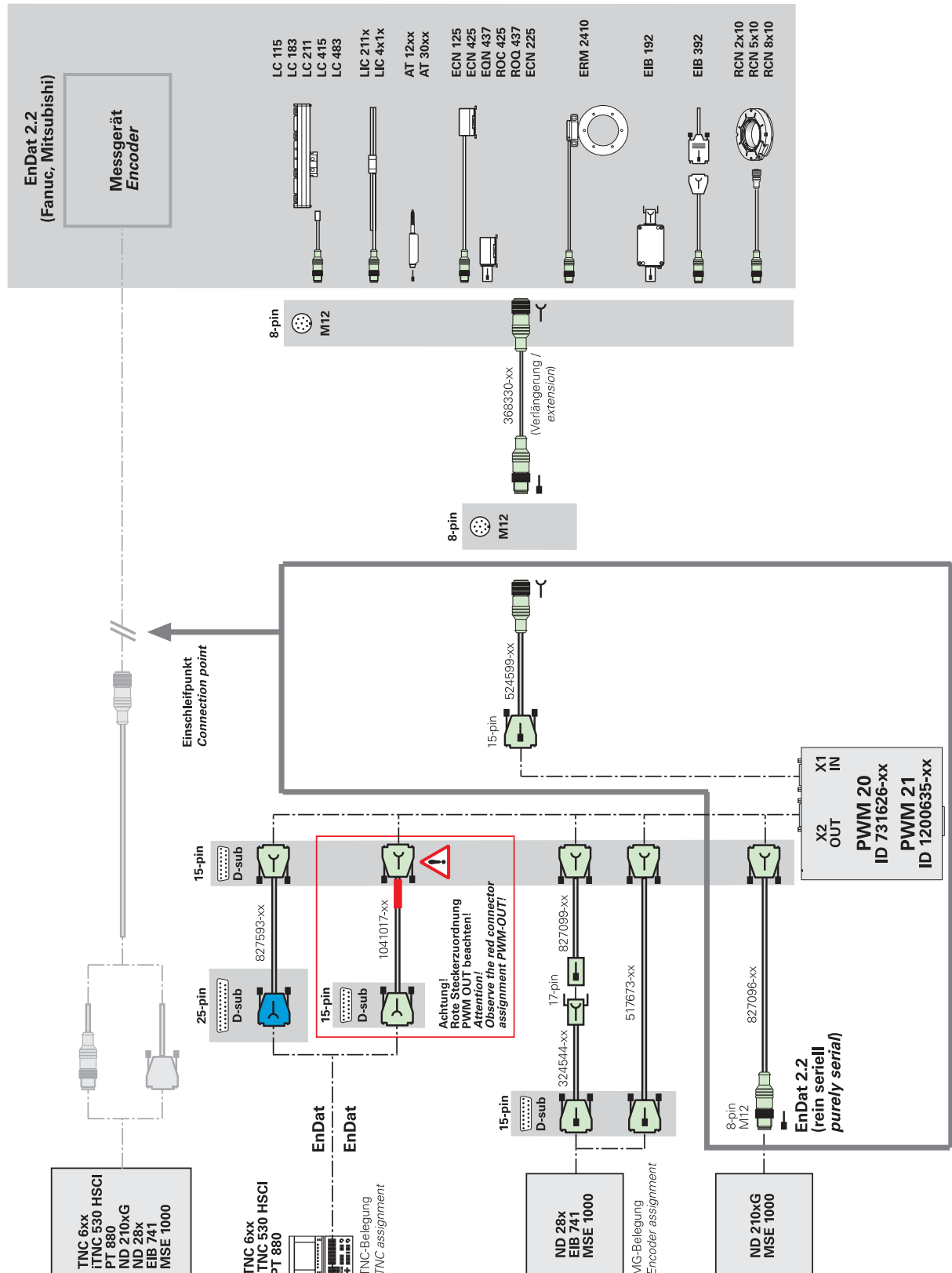


Feed-through operation is only possible, if the HEIDENHAIN TNC transfers the valuation numbers for online diagnosis. Only then is "listening-in" possible. Not all TNC and NC support this function!
(Further information: "Feed-through operation (listening-in)", page 29)

3.10.2 Adapter cables for EnDat 2.2 absolute interfaces, NC side, feed-through (listening-in) with PWM



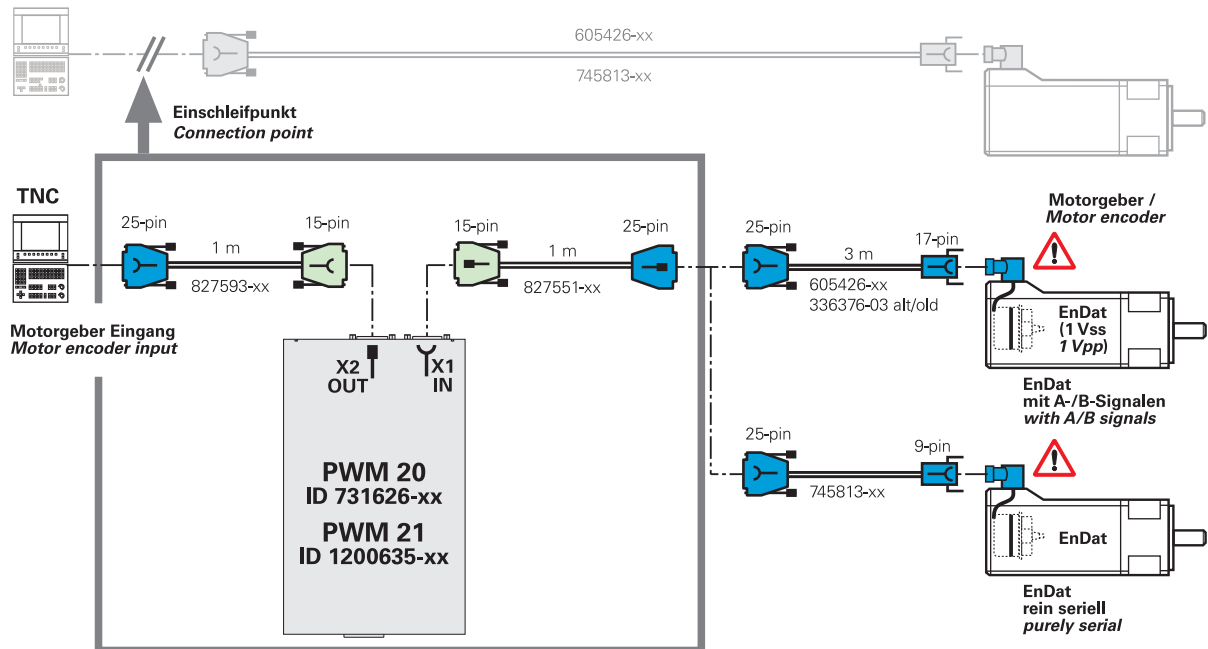
3.10.3 Adapter cables for EnDat 2.2 absolute interfaces, encoder side, feed-through (listening-in) with PWM





Feed-through operation is only possible, if the HEIDENHAIN TNC transfers the valuation numbers for online diagnosis. Only then is "listening-in" possible. Not all TNC and NC support this function!
(Further information: "Feed-through operation (listening-in)", page 29)

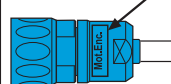
3.10.4 Adapter cables for absolute EnDat encoders for Mot.Enc. measuring circuit, 25-pin D-sub connector, PWM X1 IN, X2 OUT, feed-through (listening-in)



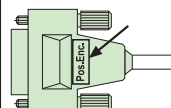
Mot.Enc.- und Pos.Enc.-Kabel weisen unterschiedliche Verdrahtungen auf!
The pin layouts of the Mot.Enc. cable and the Pos.Enc. cable are different!

Stecker werden ab 2003 mit Hinweisschildern gekennzeichnet!
Connectors labelled as of 2003!

Beispiel:
Example:



Hinweisschild "Mot.Enc." bei Steckverbindung für die Motorseite (Drehzahl-Geber)
Label "Mot.Enc." on connector to motor side (speed encoder)



Hinweisschild "Pos.Enc." bei Steckverbindung für die Lage-Geberseite (Istwert-Geber)
Label "Pos.Enc." on connector to position encoder side (actual value encoder)

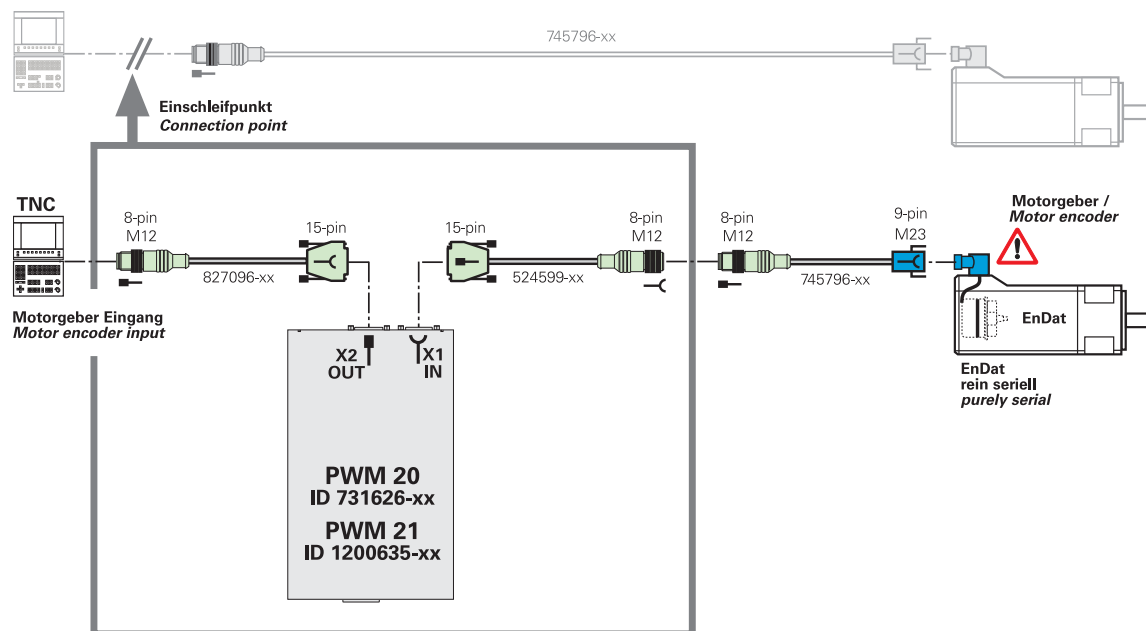


The motor temperature is not transferred via the 15-pin D-sub connectors of the PWM. If the control requires temperature data, the machine cannot be operated with closed loop.

The adapter with 17-pin M23 circular connectors is required.

More information: as of chapter "Incremental 1 VPP interface with commutation for synchronous and linear drives in feed-through mode (listening-in)"

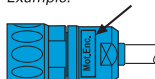
3.10.5 Adapter cables for absolute EnDat encoders for Mot.Enc. measuring circuit, 8-pin M12 connector, PWM X1 IN, X2 OUT, feed-through (listening-in)



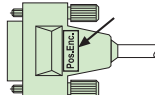
Mot.Enc.- und Pos.Enc.-Kabel weisen unterschiedliche Verdrahtungen auf!
The pin layouts of the Mot.Enc. cable and the Pos. Enc. cable are different!

Stecker werden ab 2003 mit Hinweisschildern gekennzeichnet!
Connectors labelled as of 2003!

Beispiel:
Example:

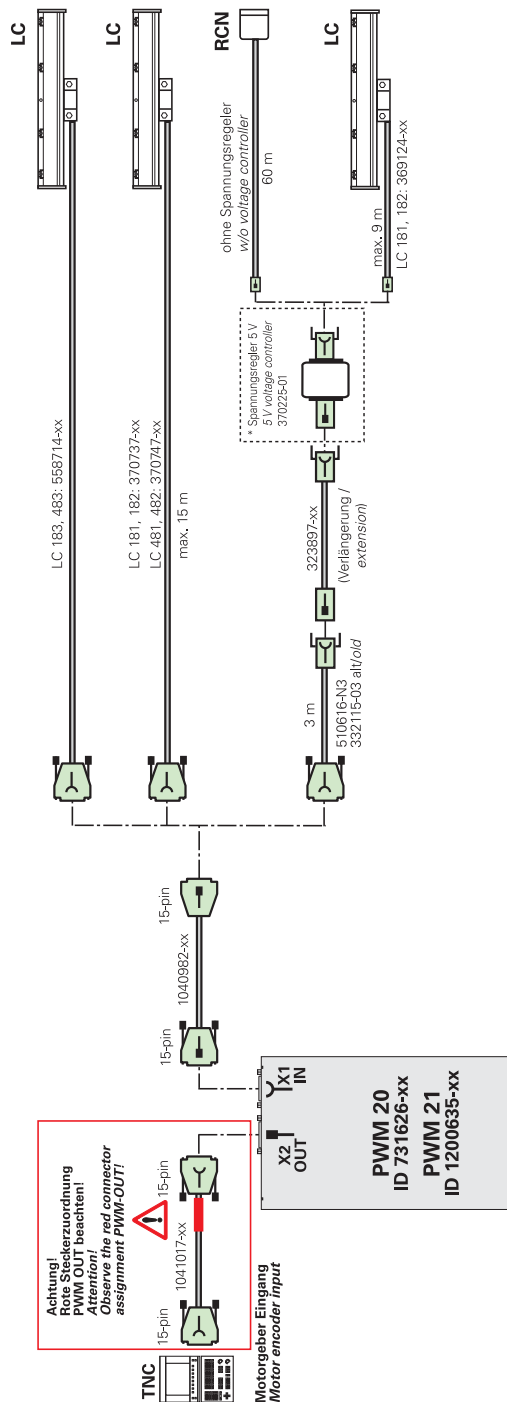


Hinweisschild "Mot.Enc." bei Steckverbindung für die Motorseite (Drehzahl-Geber)
Label "Mot.Enc." on connector to motor side (speed encoder)



Hinweisschild "Pos.Enc." bei Steckverbindung für die Lage-Geberseite (Istwert-Geber)
Label "Pos.Enc." on connector to position encoder side (actual value encoder)

3.10.6 Adapter cables for absolute EnDat encoders for Pos.Enc. measuring circuit, 15-pin D-sub connector, PWM X1 IN, X2 OUT, feed-through (listening-in)



Hinweis / Note

Der Spannungsregler 5 V kann nahe dem absoluten Messgerät installiert sein, um die Spannungsversorgung von $5\text{ V} \pm 5\%$ für das Messgerät zu gewährleisten. Ein Spannungsabfall auf der Versorgungsleitung wird dadurch kompensiert. *The 5 V voltage controller may be installed close to the absolute encoder to ensure an encoder power supply of $5\text{ V} \pm 5\%$.*

encoder power supply of $5\text{ V} \pm 3\%$. Voltage drops on the supply line can be compensated this way.

* Max. Leitungslänge zwischen Messgerät und Folgeelektronik und den daraus resultierenden Spannungsabfall beachten!
Observe the maximum cable length between encoder and subsequent electronics and the resulting voltage drop!



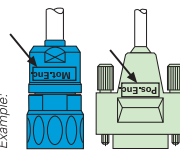
Stecker werden ab 2003 mit Hinweischildern gekennzeichnet!
Connectors labelled as of 2003!

Beispiel:
Example:

Hinweissschild "Mot.Enc." bei
Steckverbindung für die Motorseite (Drehzahl-Geber)

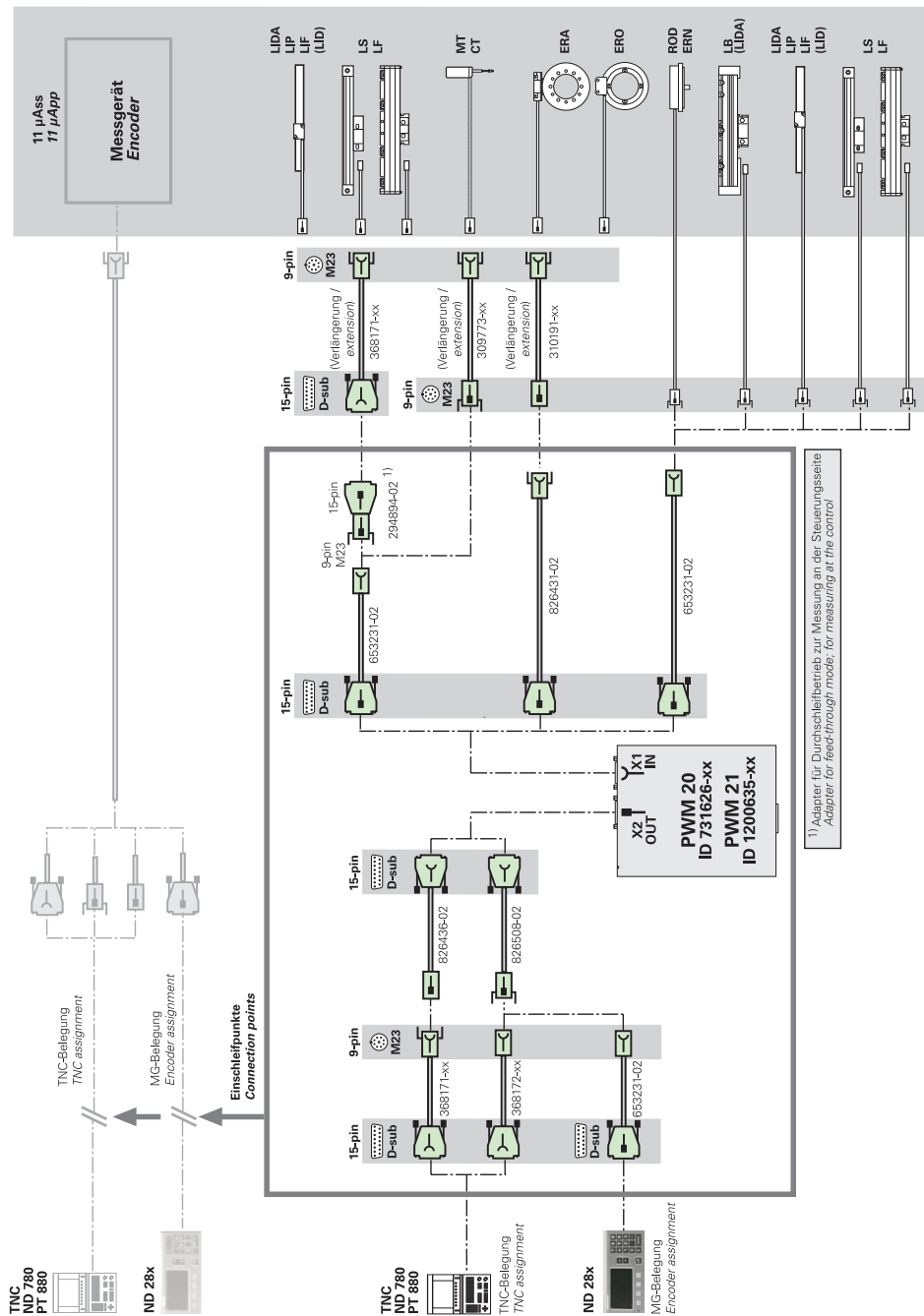
Label "Mot.Enc." on
connector to motor side (speed encoder)

Hinweisschild "Pos.Enc." bei Steckverbindung für die Lage-Gründung
Label "Pos.Enc." on



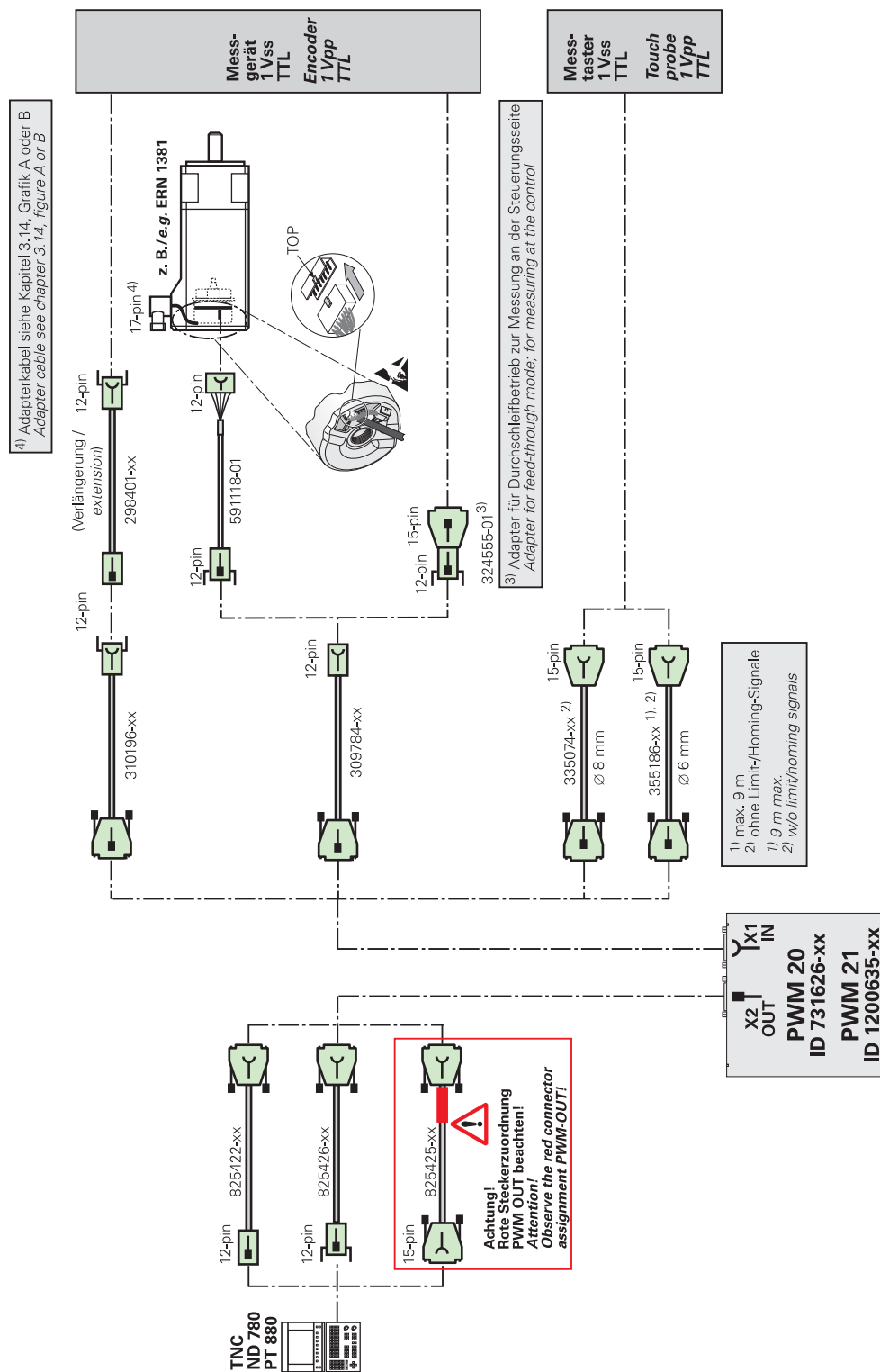
3.11 Incremental 11/25 μA_{PP} interface in feed-through mode (listening-in)

3.11.1 Adapter cable 11/25 μA_{PP} PWM X1 IN, X2 OUT (feed-through mode)

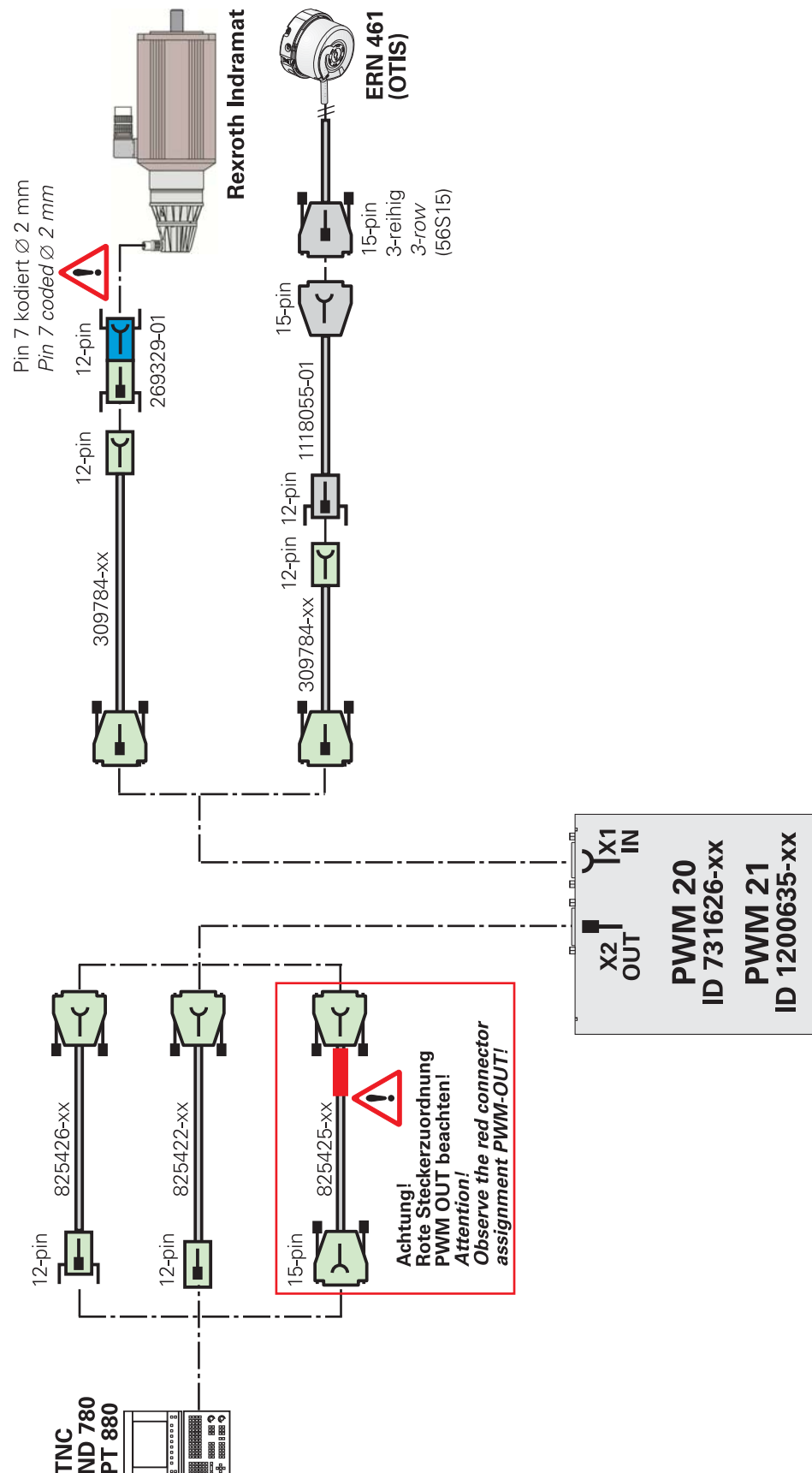


3.12 Incremental 1 V_{PP}/TTL interface in feed-through mode (listening-in)

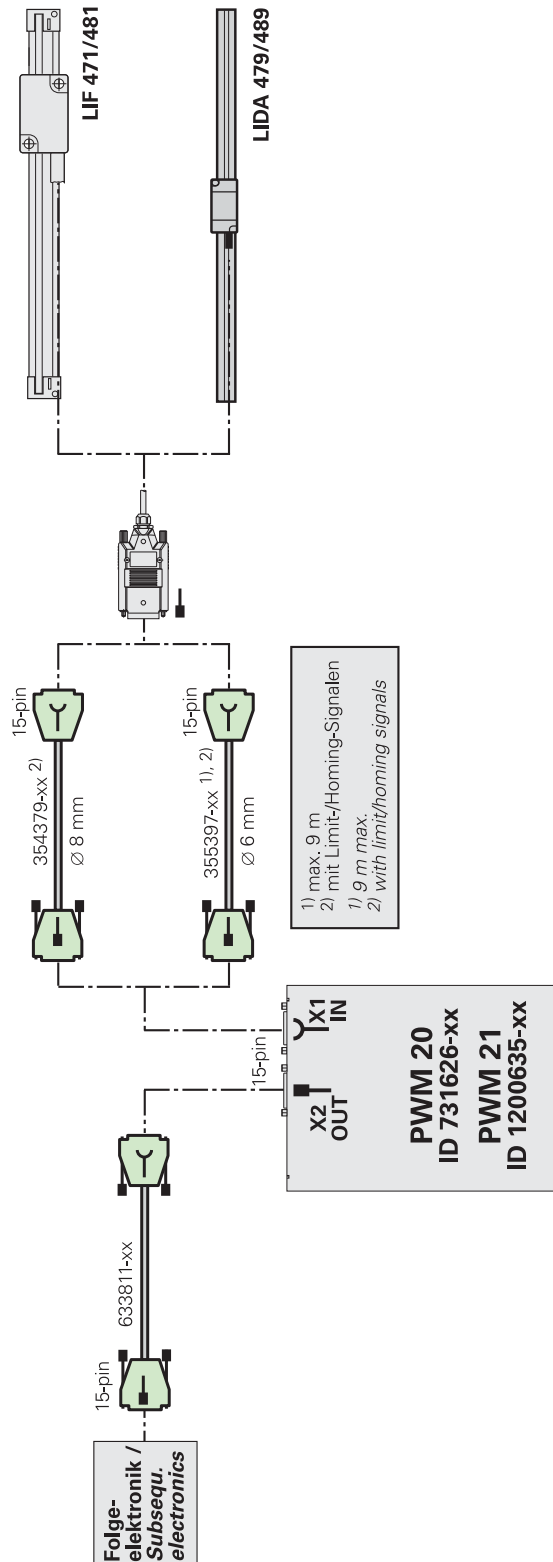
3.12.1 Adapter cables for incremental encoders 1 V_{PP}/TTL, PWM, feed-through mode (listening-in)



3.12.2 Adapter cables for incremental encoders 1 V_{pp}/TTL encoders, Rexroth Indramat, OTIS, PWM, feed-through (listening-in)



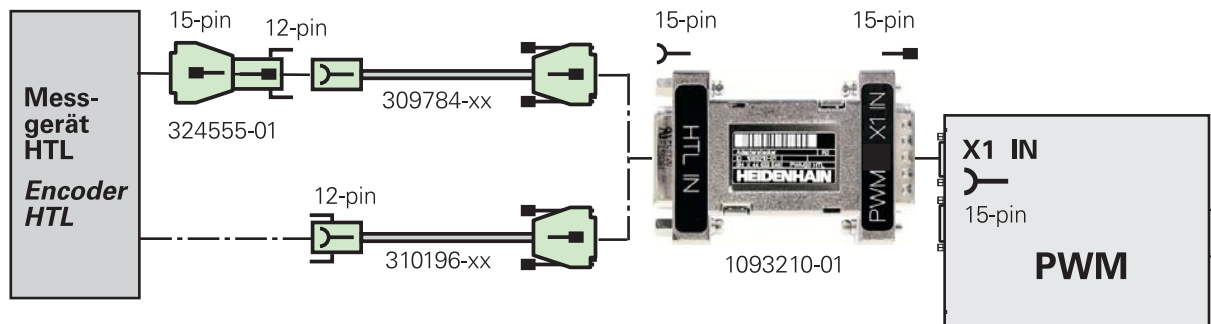
3.12.3 Adapter cables for incremental encoders 1 V_{pp}/TTL PWM, LIDA/LIF with LIMIT/HOMING signals



Note the pin layouts of encoders with limit/homing signals!

3.13 HTL/HTLs incremental interface

3.13.1 Adapter cable/adapter for incremental encoders HTL/HTLs PWM X1 IN



Feed-through mode is not possible!

3.14 Incremental 1 V_{PP} interface with commutation for synchronous and linear drives in feed-through mode (listening-in)

3.14.1 Adapter for monitoring (listening-in) between TNC and incremental rotary encoder in synchronous motors (e. g. ERN 1387 with AB track and CD commutation track)



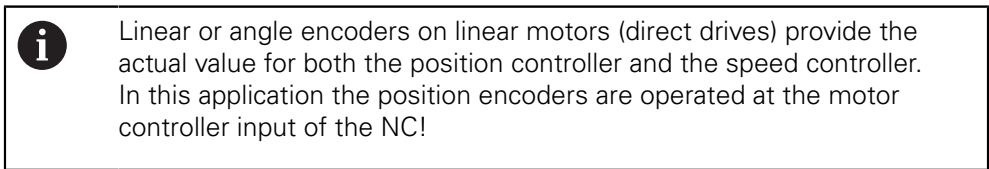
In the adapter ID 1075630-01 the temperature wires lead from input IN to output OUT (PIN 5 IN / PIN 5 OUT and PIN 6 IN / PIN 6 OUT).

The diagram illustrates the electrical connection for a motor encoder system. It includes the following components and wiring:

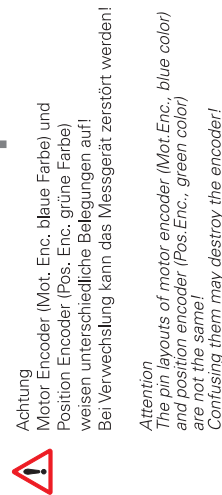
- Messgerät** (Measurement device) connected to **1Vss u. Z1**.
- Encoder** connected to **25-pol. (Drehzahl)** / **Encoder ~ 1Vpp and Z1** and **25-pin (speed)**.
- Einschleifpunkt Connection point** indicated by a double arrow.
- TNC** ground connection at the bottom left.
- SUB-D 25-pin** connectors for the motor and encoder.
- Motor Encoder (Mot. Enc.)** with pinout: X1 IN, X2 OUT.
- Position Encoder (Pos. Enc.)** with pinout: IN, OUT.
- PWM Controller** with pinout: IN, OUT.
- Cables and Extensions:**
 - 0.3 m cable from TNC to SUB-D 25-pin connector.
 - 3 m extension cable (Verlängerung / extension) connecting the SUB-D 25-pin connector to the Position Encoder.
 - 0.3 m cable from Position Encoder to SUB-D 25-pin connector.
 - 3 m extension cable (Verlängerung / extension) connecting the SUB-D 25-pin connector to the Motor Encoder.
 - 0.3 m cable from Motor Encoder to SUB-D 25-pin connector.
 - 3 m extension cable (Verlängerung / extension) connecting the SUB-D 25-pin connector to the PWM Controller.
- Warnings:**
 - Achtung! The pin layouts of motor encoder (Mot.Enc., blue color) and position encoder (Pos.Enc., green color) are not the same!
 - Bei Verwechslung kann das Messgerät zerstört werden!

[illegible]

i Linear and torque drives operate with incremental encoders without commutation signal (encoder connector M23, 12-pin). Temperature sensor information is input in addition via the voltage controller ID 383951-01 (17-pin output flange socket). The shown adapter cables are also used in figure A.



Measurement at the 25-pin speed encoder input of the TNC (control side):
EnDat absolute encoders with sinusoidal A/B signals and ordering designation
EnDat 01 and EnDat 02



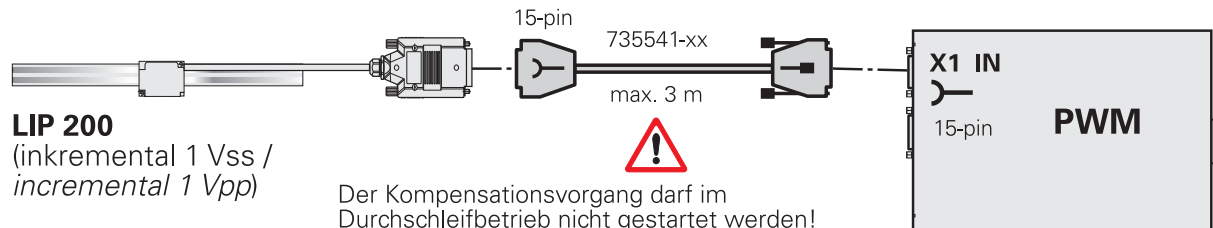
EnDat absolute encoders with sinusoidal A/B signals and ordering designation EnDat 01 and EnDat 02. Linear and/or torque drives are mounted to the machine. Temperature sensor information is input externally via the voltage controller ID 368210-02 (17-pin output flange socket of voltage controller). The shown adapter cables are also used in figure E.



75

3.16 1 V_{PP} incremental interface LIP 200 adapter for compensation

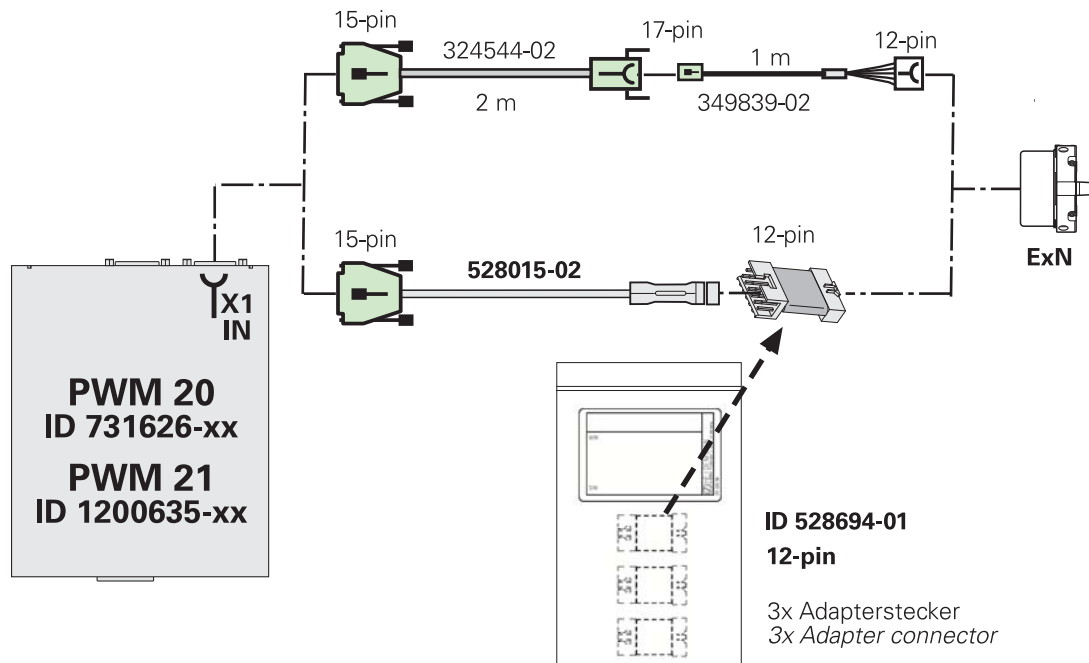
3.16.1 Adapter cable incremental 1 V_{PP} LIP 200 X1 IN



Der Kompensationsvorgang darf im Durchschleifbetrieb nicht gestartet werden!
Unkontrollierte Maschinenbewegungen möglich!
Für eine Signalüberprüfung wird das LIP 2xx wie ein 1V_{SS}-Messgerät angeschlossen, auch das Adapterkabel 735541-xx kann am X1 IN als Verlängerung verwendet werden.
LIP-Montageanleitung beachten!
*Compensation must not be started in feed-through mode!
Uncontrolled machine movements may occur!
To check the signal, connect the LIP 2xx like a 1 V_{pp} encoder.
The adapter cable 735541-xx can be connected to X1 IN as an extension. Observe the LIP mounting instructions!*

3.17 I2C Rexroth Indramat

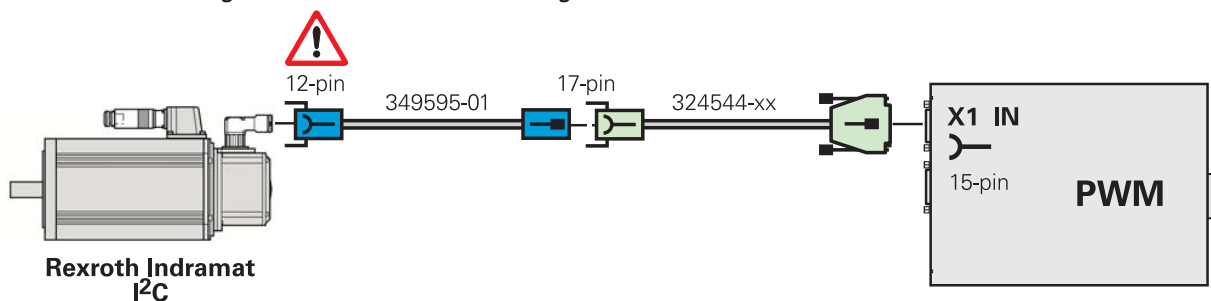
3.17.1 Adapter cable for I2C Rexroth Indramat connected with PCB connector



Depending on the encoder interface (e.g. EnDat, 1 V_{PP}, etc.) an adapter connector (see figures) must be connected to the adapter cable ID 528015-02.

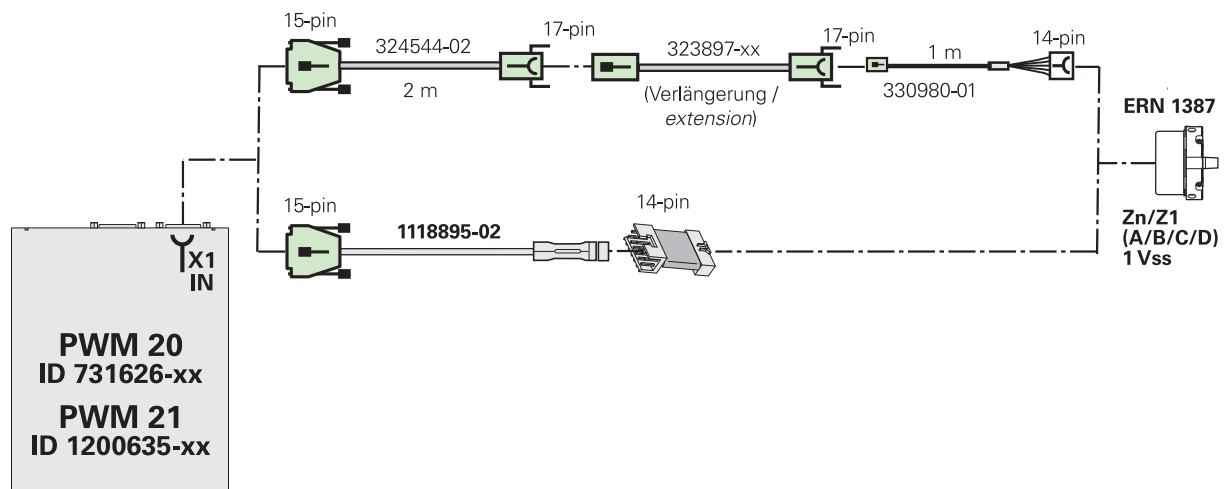
3.17.2 Adapter cable for I2C Rexroth Indramat connected via motor flange socket

Hinweis
Steckergehäuse mit zwei Codierungen!
Connector housing with two mechanical encodings!

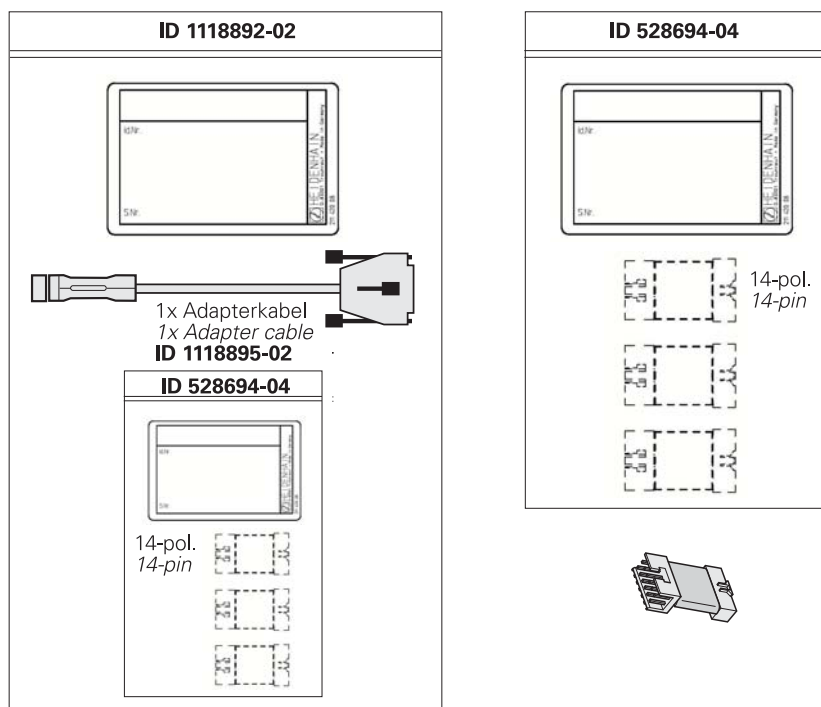


3.18 1 V_{PP} incremental interface with commutation; without evaluation of temperature sensor

3.18.1 Adapter cable for incremental commutation encoders (ERN 1387 A/B/C/D or Zn/Z1) PWM X1 IN without temperature information; connected via PCB connector



Depending on the encoder interface (e.g. EnDat, 1 V_{PP}, etc.) an adapter connector (see figures) must be connected to the adapter cable ID 528015-02.



Set of
1 adapter cable and
3 inserts for adapter connector, 14-pin

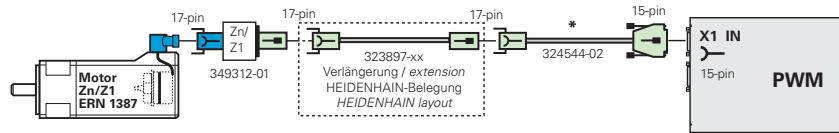
Set of
3 inserts for adapter connector, 14-pin



To ensure good contact we recommend replacing the adapter insert after approximately 500 insertion/withdrawal cycles! The adapter cable does not transfer the temperature value of the motor coil. If temperature data is required, the PWM must be connected via the adapter ID 1075630-01 and an appropriate adapter cable.

3.18.2 Adapter cable for incremental commutation encoders (ERN 1387 A/B/C/D or Zn/Z1)

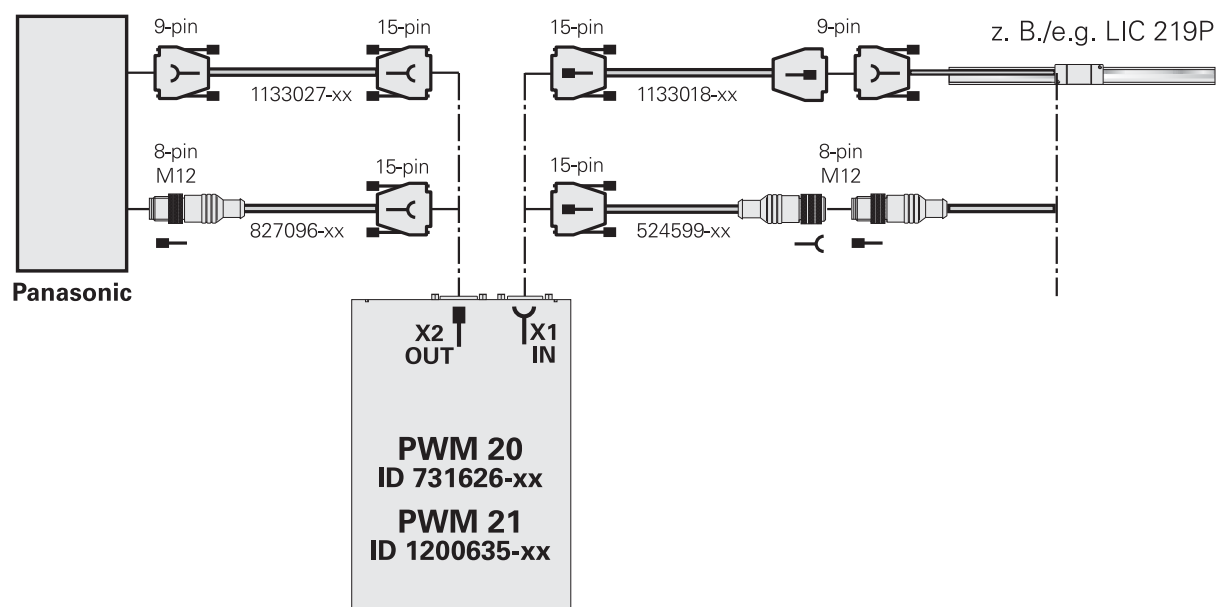
PWM X1 IN without temperature information; connected via motor flange socket



* Adapterkabel unterstützt nicht die Wicklungstemperatur des Motors! Wird die Temperaturinformation benötigt, muss das PWM mit Adapter ID 1075630-01 eingeschleift werden.
The adapter cable does not transfer the temperature value of the motor windings. If information on the temperature is required, the PWM must be connected via the adapter ID 1075630-01.

3.19 Panasonic

3.19.1 Panasonic (Pana01)



4 Pin layouts

4.1 Pin layout of the PWM

The signal assignment of the PWM encoder input (X1) and output (X2) depends on the connected encoder.

If an EnDat encoder is connected and identified, the pin assignment of the EnDat interface is active; if it is a 1 V_{PP} encoder, it is the pin assignment of the 1 V_{PP} interface.



For the assignments of the PWM, refer to the PWM 20 and PWM 21 operating instructions (installation), ID 1125089-xx (supplied with the PWM).

- PWM 20 and PWM 21 basic kit
- PWM 20 and PWM 21 encoder diagnostic kit

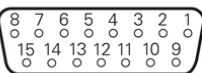
4.2 Pin layout of IK 215

Connection of encoder X1

The encoder is connected to the encoder input X1.

The layout of the 15-pin D-sub connector is as follows:

15-pin D-sub, female

View	Pin no.	Assignment	
		EnDat	~ 1 V _{PP}
	4	Up	Power supply
	12	Sensor Up	
	2	0 V	
	10	Sensor 0 V	
	1	A+	Incremental signals ¹⁾
	9	A–	
	3	B+	
	11	B–	
	14	Vacant	R+
	7	Vacant	R–
	5	DATA	Vacant
	13	DATA	Vacant
	8	CLOCK	L1 ²⁾ H ³⁾
	15	CLOCK	Vacant
	6	Internal shield	L2 ²⁾ L ³⁾
Absolute position values			

Cable shield connected to housing; **Up** = power supply voltage

Sensor: The sensor line is connected internally with the corresponding power line.

Vacant pins or wires must not be used!

¹⁾ Only with ordering designations EnDat 01 and EnDat 02

²⁾ Only for LIDA 4xx with limit signal

³⁾ Only for LIF 481 with limit and homing signal

Shield on housing; **Up** = Power supply

Unused pins must not be assigned!

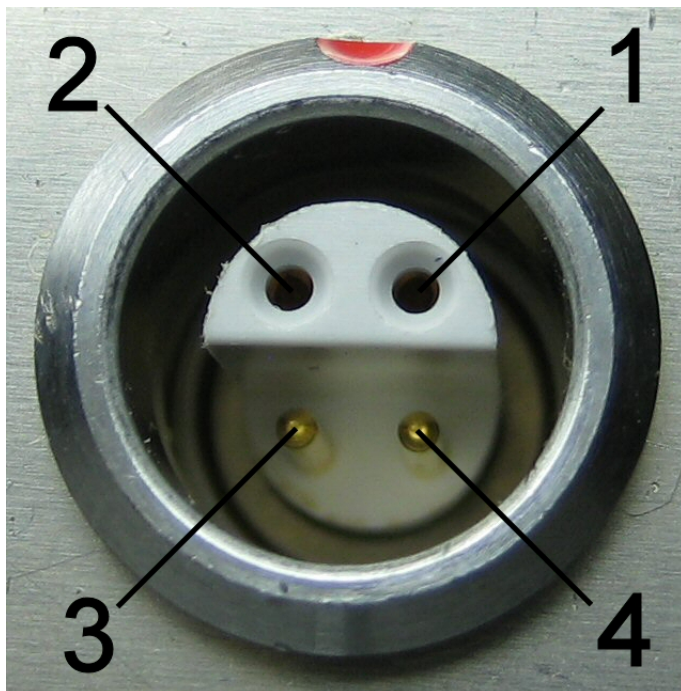


The encoder power supply (pin 4) can be adjusted by software. Care must be taken that the correct supply voltage is set at the encoder, since otherwise the encoder, the IK or the computer may be damaged! Only connect or disconnect encoders while the supply voltage is switched off!

Connection for the external functions X3

For external functions, a 4-pin female connection is available through which the recording of measured values can be externally controlled. The required connector can be ordered from HEIDENHAIN under the ID 282 168-01. The signals are arranged as follows (view of the connector from outside):

Pin	Assignment
1	Input: Latch pulse (for HEIDENHAIN internal use)
2	Output: Synchronization pulse (for HEIDENHAIN internal use)
3	Output: MSB of the position value (singleturn range); serves as mounting aid for EnDat motor encoders
4	GND

**More information:**

IK 215 Operating Instructions ID 549369-xx

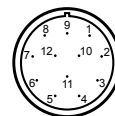
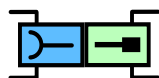
4.3 Pin layout of the encoders

4.3.1 Adapter connector Rexroth Indramat M23, 12-pin encoded/M23 12-pin (1 V_{PP}/TTL)

ID 269329-xx



Connector, 12-pin, female



Connector, 12-pin, male

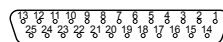
PIN	Signal ~ 1 V _{PP}	Signal □ TTL	Color	PIN
1	B–	–Ua2	Pink	1
2	+V sensor	+V sensor	Blue	2
3	R+	+Ua0	Red	3
4	R–	–Ua0	Black	4
5	A+	+Ua1	Brown	5
6	A–	–Ua1	Green	6
7 Encoding Ø 2 mm	Vacant	Vacant	–	7
8	B+	+Ua2	Gray	8
9	Shield	Shield	–	9
10	0 V U _N	0 V U _N	White/Green	10
11	0 V sensor	0 V sensor	White	11
12	+V U _P	+V U _P	Brown/Green	12

4.3.2 Adapter cable 17-pin/25-pin D-sub; PWM to subsequent electronics (Mot.Enc. 1 V_{PP})

ID 289440-xx



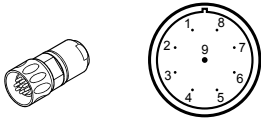
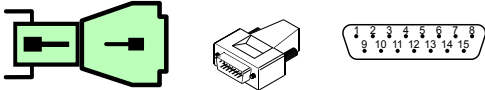
Connector, 17-pin, female



D-sub connector, 25-pin, female

PIN	Signal $\sim 1 V_{PP}$	Color	PIN
1	A+	Green/Black	3
2	A-	Yellow/Black	4
3	R+	Red	17
4	D-	Pink	22
5	C+	Green	19
6	C-	Brown	20
7	0 V U _N	White/Green	2
8	Temp+	Yellow	13
9	Temp-	Violet	25
10	+V U _P	Brown/Green	1
11	B+	Blue/Black	6
12	B-	Red/Black	7
13	R-	Black	18
14	D+	Gray	21
15	0 V sensor	White	16
16	+V sensor	Blue	14
17	Internal shield		8
	Vacant		5, 9, 10, 11, 12, 15, 23, 24
Connector housing	External shield		Connector housing

4.3.3 Round adapter, 9-pin/15-pin D-sub connector (Pos.Enc./Pos.Enc)
(11 μA_{PP})

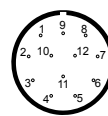
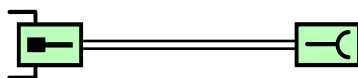
ID 294894-02		
		
Connector, 9-pin, male	D-sub connector, 15-pin, male	
PIN	Signal $\sim$ 11 μA_{PP}	PIN
1	0°+	3
2	0°−	4
3	+V U _P	1
4	0 V U _N	2
5	90°+	6
6	90°−	7
7	RI+	10
8	RI−	12
9	Internal shield	5
Housing	External shield	Housing
	Vacant External shield	8, 9, 11, 13, 14, 15

4.3.4 Connecting cable 1 V_{PP} or TTL/HTL 12-pin/12-pin for PWM

ID 298400-xx



Connector, 12-pin, male



Connector, 12-pin, female

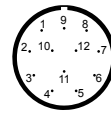
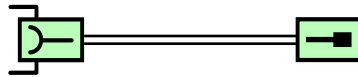
PIN	Signal $\sim 1 V_{PP}$	Signal $\square$ TTL/HTL	Color
1	B-	-Ua2	Pink
2	+V sensor	Sensor UP	Blue
3	R+	+Ua0	Red
4	R-	-Ua0	Black
5	A+	+Ua1	Brown
6	A-	-Ua1	Green
7	Vacant	-UaS	Yellow
8	B+	+Ua2	Gray
9	Vacant	Vacant	Violet
10	0 V U _N	0 V	White/Green
11	0 V sensor	Sensor 0 V	White
12	+V U _P	UP	Brown/Green
Housing	Shield	Shield	

4.3.5 Connecting cable 1 V_{PP} or TTL/HTL 12-pin/12-pin for PWM

ID 298401-xx



Connector, 12-pin, female

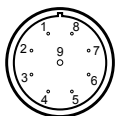


Connector, 12-pin, male

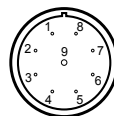
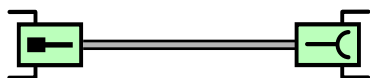
PIN	Signal $\sim 1 V_{PP}$	Signal $\square$ TTL/HTL	Color
1	B-	-Ua2	Pink
2	+V sensor	+V sensor	Blue
3	R+	+Ua0	Red
4	R-	-Ua0	Black
5	A+	+Ua1	Brown
6	A-	-Ua1	Green
7	Vacant	-UaS	Yellow
8	B+	+Ua2	Gray
9	Vacant	Vacant	Violet
10	0 V U _N	0 V U _N	White/Green
11	0 V sensor	0 V sensor	White
12	+V U _P	+V U _P	Brown/Green
Housing	Shield	Shield	Shield

4.3.6 Connecting cable 9-pin/9-pin (11 μA_{PP})

ID 309773-xx



Connector, 9-pin, male

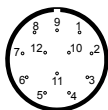


Connector, 9-pin, female

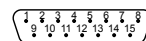
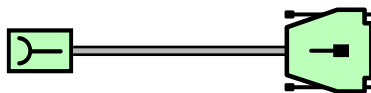
PIN	Signal $\sim$ 11 μA_{PP}	Color	PIN
1	0°+	Green	1
2	0°−	Yellow	2
3	+V U _P	Brown	3
4	0 V U _N	White	4
5	90°+	Blue	5
6	90°−	Red	6
7	RI+	Gray	7
8	RI−	Pink	8
9	Internal shield	White/Brown	9
Housing	External shield	Shield	Housing

4.3.7 Adapter cable 1 V_{PP} or TTL/HTL 15-pin D-sub-D/12-pin

ID 309784-xx



Connector, 12-pin, female

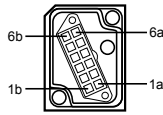


D-sub connector, 15-pin, male

PIN	Signal ~ 1 V _{PP}	Signal □ TTL/HTL	Color	PIN
4	R-	-Ua0	Black	7
6	A-	-Ua1	Green	9
11	0 V sensor	0 V sensor	White	10
2	+V sensor	+V sensor	Blue	12
8	B+	+Ua2	Gray	3
12	+V U _P	+V U _P	Brown/Green	4
3	R+	+Ua0	Red	14
10	0 V U _N	0 V U _N	White/Green	2
1	B-	-Ua2	Pink	11
5	A+	+Ua1	Brown	1
7	Vacant	-UaS	Violet	13
9	Vacant	Vacant Vacant	Yellow	15
Housing	External shield	Shield	Shield	Housing
			Vacant	5, 6, 8

4.3.8 Adapter cable for scanning unit, slimline, 12-pin/12-pin; M23; 1 m (1 V_{PP}/TTL)

ID 310122-01



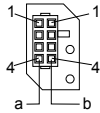
Connector, 12-pin, femaleS



Connector, 12-pin, male

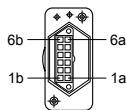
PIN	Signal ~ 1 V _{PP}	Signal □ TTL	Color	PIN
5a	B–	–Ua2	Pink	1
2b	+V sensor	+V sensor	Blue	2
4b	R+	+Ua0	Red	3
4a	R–	–Ua0	Black	4
6b	A+	+Ua1	Brown	5
6a	A–	–Ua1	Green	6
3a	–UaS	–UaS	Violet	7
5b	B+	+Ua2	Gray	8
3b	Vacant	PWT test pulse	Yellow	9
1a	0 V U _N	0 V U _N	White/Green	10
1b	0 V sensor	0 V sensor	White	11
2a	+V U _P	+V U _P	Brown/Green	12
Housing	Shield	Shield	Shield	Housing

4.3.9 Adapter cable for scanning unit, slimline, 8-pin/9-pin;
M23; 1 m (11 μ A_{PP})

ID 310125-xx			
			
Connector, 8-pin, female		Connector, 9-pin, male	
PIN	Signal $\sim$ 11 μ A _{PP}	Color	PIN
1a	0 V U _N	White	4
4b	+V U _P	Brown	3
Vacant	Internal shield	White/Brown	9
3b	0°+	Green	1
4a	0°−	Yellow	2
2b	90°+	Blue	5
3a	90°−	Red	6
1b	RI+	Gray	7
2a	RI−	Pink	8
Housing	External shield	Shield	Housing

4.3.10 Adapter cable for scanning unit, full-size, 12-pin/12-pin; M23; 1 m (1 V_{PP}/TTL)

ID 310127-xx



APE, 12-pin female



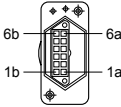
Connector, 12-pin, male

PIN	Signal ~ 1 V _{PP}	Signal □ □ TTL	Color	PIN
5a	B–	–Ua2	Pink	1
2b	+V sensor	+V sensor	Blue	2
4b	R+	+Ua0	Red	3
4a	R–	–Ua0	Black	4
6b	A+	+Ua1	Brown	5
6a	A–	–Ua1	Green	6
3a	–UaS ¹⁾	–UaS	Violet	7
5b	B+	+Ua2	Gray	8
3b	Vacant ²⁾	Vacant	Yellow	9
1a	0 V U _N	0 V U _N	White/Green	10
1b	0 V sensor	0 V sensor	White	11
2a	+V U _P	+V U _P	Brown/Green	12
Housing	Shield	Shield	External shield	Housing

¹⁾ Not used by all JH encoders

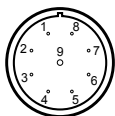
²⁾ Exposed encoders: TTL/11 μA_{PP} switchover

4.3.11 Adapter cable for scanning unit, full-size, 12-pin/9-pin;
M23; 1 m (11 μ A_{PP})

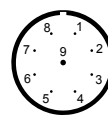
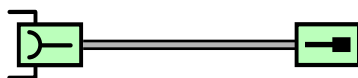
ID 310130-xx			
			
Connector, 12-pin, female		Connector, 9-pin, male	
PIN	Signal $\sim$ 11 μ A _{PP}	Color	PIN
1a	0 V U _N	White	4
2a	+V U _P	Brown	3
Vacant	Internal shield	White/Brown	9
6b	0°+	Green	1
6a	0°−	Yellow	2
5b	90°+	Blue	5
5a	90°−	Red	6
4b	RI+	Gray	7
4a	RI−	Pink	8
3a 1b, 2b, 3b	Vacant		
Housing	External shield	Shield	Housing

4.3.12 Connecting cable 9-pin/9-pin (11 μA_{PP})

ID 310191-xx



Connector, 9-pin, female



Connector, 9-pin, male

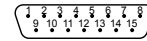
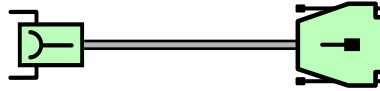
PIN	Signal $\sim$ 11 μA_{PP}	Color	PIN
1	0°+	Green	1
2	0°−	Yellow	2
3	+V U _P	Brown	3
4	0 V U _N	White	4
5	90°+	Blue	5
6	90°−	Red	6
7	RI+	Gray	7
8	RI−	Pink	8
9	Internal shield		9
Housing	External shield	Shield	Housing

4.3.13 Adapter cable 15-pin D-sub/12-pin (1 V_{PP}/TTL)

ID 310196-xx



Connector, 12-pin, female

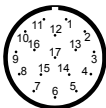


D-sub connector, 15-pin, male

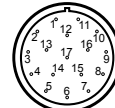
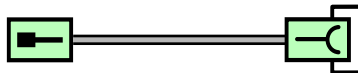
PIN	Signal ~ 1 V _{PP}	Signal □ □ TTL	Color	PIN
1	B–	–Ua2	Pink	11
2	+V sensor	+V sensor	Blue	12
3	R+	+Ua0	Red	14
4	R–	–Ua0	Black	7
5	A+	+Ua1	Brown	1
6	A–	–Ua1	Green	9
7	Vacant	–UaS	Violet	13
8	B+	+Ua2	Gray	3
9	Vacant	Vacant	Yellow	15
10	0 V U _N	0 V U _N	White/Green	2
11	0 V sensor	0 V sensor	White	10
12	+V U _P	+V U _P	Brown/Green	4
			Vacant	5, 6, 8
Housing	External shield	External shield	Shield	Housing

4.3.14 Adapter cable 17-pin/17-pin, 1 V_{PP}/EnDat

ID 323897-xx



Connector, 17-pin, male



Connector, 17-pin, female

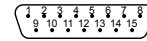
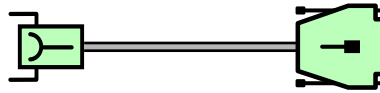
PIN	Signal ~ 1 V _{PP}	Signal 	Color	PIN
1	+V sensor	+V sensor	Blue	1
2	R–	Vacant	Black	2
3	R+	Vacant	Red	3
4	0 V sensor	0 V sensor	White	4
5	Temp+	Vacant	Green	5
6	Temp–	Vacant	Brown	6
7	+V U _P	+V U _P	Brown/Green	7
8	D–	CLOCK	Violet	8
9	D+	$\overline{\text{CLOCK}}$	Yellow	9
10	0 V U _N	0 V U _N	White/Green	10
11	Internal shield	Internal shield	Internal shield	11
12	B+	B+	Blue/Black	12
13	B–	B–	Red/Black	13
14	C+	DATA	Gray	14
15	A+	A+	Green/Black	15
16	A–	A–	Yellow/Black	16
17	C–	$\overline{\text{DATA}}$	Pink	17
Housing	External shield	External shield	Shield	Housing

4.3.15 Adapter cable 17-pin/15-pin D-sub(1 V_{PP}/EnDat) PWM X1 IN

ID 324544-xx



Connector, 17-pin, female



D-sub connector, 15-pin, male

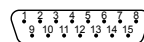
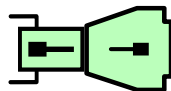
PIN	Signal ~ 1 V _{PP}	Signal $\xleftrightarrow{\text{EnDat}}$	Color	PIN
1	+V sensor	+V sensor	Blue	12
2	R–	Vacant	Black	7
3	R+	Vacant	Red	14
4	0 V sensor	0 V sensor	White	10
7	+V U _P	+V U _P	Brown/Green	4
8	D–	CLOCK	Violet	8
9	D+	$\overline{\text{CLOCK}}$	Yellow	15
10	0 V U _N	0 V U _N	White/Green	2
11	Internal shield	Internal shield	Internal shield	6
12	B+	B+	Blue/Black	3
13	B–	B–	Red/Black	11
14	C+	DATA	Gray	5
15	A+	A+	Green/Black	1
16	A–	A–	Yellow/Black	9
17	C–	$\overline{\text{DATA}}$	Pink	13
5.6			Vacant	
Housing	External shield	External shield	Shield	Housing

4.3.16 Round adapter, 12-pin/15-pin D-sub connector (Pos.Enc./Pos.Enc) (1 V_{PP}/TTL)

ID 324555-01



Connector, 12-pin, male

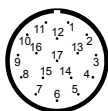


D-sub connector, 15-pin, male

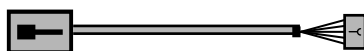
PIN	Signal $\sim$ 1 V _{PP}	Signal $\square$ TTL	PIN
1	B-	-Ua2	7
2	+V sensor	+V sensor	9
3	R+	+Ua0	10
4	R-	-Ua0	12
5	A+	+Ua1	3
6	A-	-Ua1	4
7	-UaS	-UaS	14
8	B+	+Ua2	6
10	0 V U _N	0 V U _N	2
11	0 V sensor	0 V sensor	11
12	+V U _P	+V U _P	1
9	Vacant		5, 8, 13, 15
Housing	Shield	Shield	Housing

4.3.17 Adapter cable 17-pin with 14-pin PCB connector – Zn/Z1

ID 330980-xx



Connector, 17-pin, male



PCB connector, 14-pin

PIN	Signal	Color	PIN
1	+V sensor	Blue	7a
2	R–	Black	4a
3	R+	Red	4b
4	0 V sensor	White	3a
5	Temp+	Green	–
6	Temp–	Brown	–
7	+V U _P	Brown/Green	1b
8	D–	Violet	6a
9	D+	Yellow	2b
10	0 V U _N	White/Green	5b
11	Internal shield		–
12	B+	Blue/Black	3b
13	B–	Red/Black	5a
14	C+	Gray	7b
15	A+	Green/Black	6b
16	A–	Yellow/Black	2a
17	C–	Pink	1a

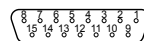
4.3.18 Adapter cable 17-pin/15-pin D-sub (EnDat)

Old ID 332115-xx

New ID 510616-N3



Connector, 17-pin, female



D-sub connector, 15-pin, female

PIN	Signal 	Color	PIN
1	+V sensor	Blue	9
2	Vacant		–
3	Vacant		10
4	0 V sensor	White	11
5	Vacant		12
6	Vacant		–
7	+V U _P	Brown/Green	1
8	CLOCK	Violet	14
9	$\overline{\text{CLOCK}}$	Yellow	15
10	0 V U _N	White/Green	2
11	Internal shield		13
12	B+	Blue/Black	6
13	B–	Red/Black	7
14	DATA	Gray	5
15	A+	Green/Black	3
16	A–	Yellow/Black	4
17	$\overline{\text{DATA}}$	Pink	8
Housing	External shield		Housing

4.3.19 Connecting cable 15-pin/15-pin D-sub (Signal $\sim 1 V_{PP}$)

ID 335074-xx



PIN	Signal $\sim 1 V_{PP}$	Color	PIN
1	A+	Brown	1
2	0 V U_N	White/Green	2
3	B+	Gray	3
4	+V U_P	Brown/Green	4
5	Vacant		5
6	Vacant		6
7	R-	Black	7
8	Vacant		8
9	A-	Green	9
10	0 V sensor	White	10
11	B-	Pink	11
12	+V sensor	Blue	12
13	Vacant	Violet	13
14	R+	Red	14
15	Vacant	Yellow	15
Housing	External shield		Housing

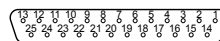
4.3.20 Adapter cable 17-pin/25-pin D-sub (EnDat)

Old ID 336376-xx

New ID 605426-xx



Connector, 17-pin, female



D-sub connector, 25-pin, female

PIN	Signal 	Color	PIN
1	A+	Green/Black	3
2	A–	Yellow/Black	4
3	DATA	Red	15
4	Vacant		–
5	CLOCK	Green	10
6	Vacant		–
7	0 V U _N	White/Green	2
8	Temp+	Yellow	13
9	Temp–	Violet	25
10	+V U _P	Brown/Green	1
11	B+	Blue/Black	6
12	B–	Red/Black	7
13	$\overline{\text{DATA}}$	Black	23
14	$\overline{\text{CLOCK}}$	Brown	12
15	0 V sensor	White	16
16	+V sensor	Blue	14
17	Internal shield		8
–	Vacant		5, 9, 11, 17–22, 24
Housing	Shield		Housing

4.3.21 Adapter cable 17-pin/17-pin; PWM to motor
(Mot.Enc. Signal $\sim 1 V_{PP}$)

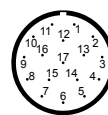
ID 336847-xx			
			
Connector, 17-pin, female		Connector, 17-pin, male	
PIN	Signal $\sim 1 V_{PP}$	Color	PIN
1	A+	Green/Black	1
2	A-	Yellow/Black	2
3	R+	Red	3
4	D-	Pink	4
5	C+	Green	5
6	C-	Brown	6
7	0 V U _N	White/Green	7
8	Temp+	Yellow	8
9	Temp-	Violet	9
10	+V U _P	Brown/Green	10
11	B+	Blue/Black	11
12	B-	Red/Black	12
13	R-	Black	13
14	D+	Gray	14
15	0 V sensor	White	15
16	+V sensor	Blue	16
17	Internal shield		17
Housing	External shield		Housing

4.3.22 Adapter cable 17-pin/17-pin (EnDat/SSI)

ID 340302-xx



Connector, 17-pin, female

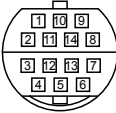


Connector, 17-pin, male

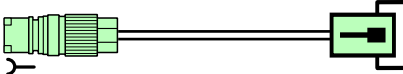
PIN	Signal $\overleftrightarrow{\text{EnDat/SSI}}$	Color	PIN
1	A+	Green/Black	1
2	A-	Yellow/Black	2
3	DATA	Red	3
4	Vacant		4
5	CLOCK	Green	5
6	Vacant		6
7	0 V U_N	White/Green	7
8	Temp+	Yellow	8
9	Temp-	Violet	9
10	+V U_P	Brown/Green	10
11	B+	Blue/Black	11
12	B-	Red/Black	12
13	$\overline{\text{DATA}}$	Black	13
14	$\overline{\text{CLOCK}}$	Brown	14
15	0 V sensor	White	15
16	+V sensor	Blue	16
17	Internal shield		17
Housing	External shield		Housing

4.3.23 Adapter cable for scanning unit, slimline and full-size, 14-pin/12-pin; M12/M23; 1 m (1 V_{PP}//TTL)

ID 344228-xx



Connector, 14-pin, female





Connector, 12-pin, male

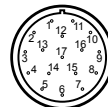
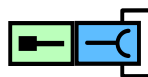
PIN	Signal  TTL	Signal  1 V _{PP}	Color	PIN
1	Vacant			—
2				—
3	+Ua0	R+	Red	3
4	–Ua0	R–	Black	4
5	+Ua1	A+	Brown	5
6	–Ua1	A–	Green	6
7	+Ua2	B+	Gray	8
8	–Ua2	B–	Pink	1
9	Vacant		Yellow	9
10	–UaS	–UaS	Violet	7
11	+V U _P	+V U _P	Brown/Green	12
12	0 V U _N	0 V U _N	White/Green	10
13	0 V sensor	0 V sensor	White	11
14	+V sensor	+V sensor	Blue	2

4.3.24 Adapter connector Zn/Z1 transforms Mot.Enc. into Pos.Enc.

ID 349312-01



Connector, 17-pin, male



Connector, 17-pin, female



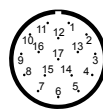
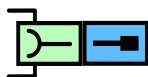
	PWM side (Pos.Enc.) PIN	Signal $\sim 1 V_{PP}$	Color	Motor side (Mot.Enc.) PIN
	1	+V sensor	Blue	16
	2	R–	Black	13
	3	R+	Red	3
	4	0 V sensor	White	15
	5	Temp+	Green	8
	6	Temp–	Brown	9
	7	+V U_P	Brown/Green	10
	8	D–	Violet	4
	9	D+	Yellow	14
	10	0 V U_N	White/Green	7
	11	Internal shield		17
	12	B+	Blue/Black	11
	13	B–	Red/Black	12
	14	C+	Gray	5
	15	A+	Green/Black	1
	16	A–	Yellow/Black	2
	17	C–	Pink	6

4.3.25 Adapter connector Zn/Z1 transforms Pos.Enc. into Mot.Enc.

ID 349312-02



Connector, 17-pin, female



Connector, 17-pin, male



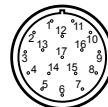
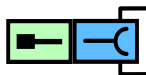
	PWM side (Pos.Enc.) PIN	Signal $\sim 1 V_{PP}$	Color	Motor side (Mot.Enc.) PIN
	1	+V sensor	Blue	16
	2	R–	Black	13
	3	R+	Red	3
	4	0 V sensor	White	15
	5	Temp+	Green	8
	6	Temp–	Brown	9
	7	+V U_P	Brown/Green	10
	8	D–	Violet	4
	9	D+	Yellow	14
	10	0 V U_N	White/Green	7
	11	Internal shield		17
	12	B+	Blue/Black	11
	13	B–	Red/Black	12
	14	C+	Gray	5
	15	A+	Green/Black	1
	16	A–	Yellow/Black	2
	17	C–	Pink	6

4.3.26 Adapter connector EnDat/SSI transforms Mot.Enc. into Pos.Enc.

ID 349312-03



Connector, 17-pin, male



Connector, 17-pin, female



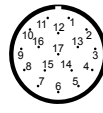
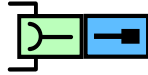
	PWM side (Pos.Enc.) PIN	Signal $\overleftrightarrow{\text{EnDat/SSI}}$	Color	Motor side (Mot.Enc.) PIN
	1	+V sensor	Blue	16
	2	Vacant		–
	3	Vacant		–
	4	0 V sensor	White	15
	5	Temp+	Green	8
	6	Temp–	Brown	9
	7	+V U _P	Brown/Green	10
	8	CLOCK	Violet	5
	9	$\overline{\text{CLOCK}}$	Yellow	14
	10	0 V U _N	White/Green	7
	11	Internal shield		17
	12	B+	Blue/Black	11
	13	B–	Red/Black	12
	14	DATA	Gray	3
	15	A+	Green/Black	1
	16	A–	Yellow/Black	2
	17	$\overline{\text{DATA}}$	Pink	13

4.3.27 Adapter connector EnDat/SSI transforms Pos.Enc. into Mot.Enc.

ID 349312-04



Connector, 17-pin, male



Connector, 17-pin, female

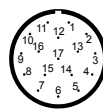
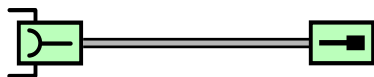
	PWM side (Pos.Enc. EnDat) PIN	Signal $\overleftrightarrow{\text{EnDat/SSI}}$	Color	Motor side (Mot.Enc. EnDat) PIN
	1	+V sensor	Blue	16
	2	Vacant		–
	3	Vacant		–
	4	0 V sensor	White	15
	5	Temp+	Green	8
	6	Temp–	Brown	9
	7	+V U _P	Brown/Green	10
	8	CLOCK	Violet	5
	9	$\overline{\text{CLOCK}}$	Yellow	14
	10	0 V U _N	White/Green	7
	11	Internal shield		17
	12	B+	Blue/Black	11
	13	B–	Red/Black	12
	14	DATA	Gray	3
	15	A+	Green/Black	1
	16	A–	Yellow/Black	2
	17	$\overline{\text{DATA}}$	Pink	13

4.3.28 Connecting cable 17-pin/17-pin (Fanuc/Mitsubishi)

ID 349314-xx



Connector, 17-pin, female



Connector, 17-pin, male

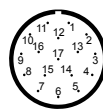
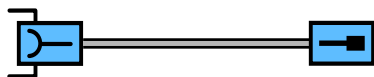
PIN	Signal	Color	PIN
1	+V sensor	Blue	1
4	0 V sensor	White	4
7	+V U _P	Brown/Green	7
8	Request Frame	Violet	8
9	Request Frame	Yellow	9
10	0 V U _N	White/Green	10
14	DATA	Gray	14
17	DATA	Pink	17
2, 3, 5, 6, 11, 12, 13, 15, 16	Vacant		2, 3, 5, 6, 11, 12, 13, 15, 16
Housing	External shield		Housing

4.3.29 Adapter cable Rexroth Indramat M23, 12-pin encoded/M23 17-pin (I²C)

ID 349595-xx



Connector, 12-pin, female

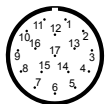


Connector, 17-pin, male

PIN	Signal Indramat	Color	Signal HEIDENHAIN	PIN
1	Cos–	Blue/Black	B+	12
2	SCL	Violet	SCL	8
3	F Sample	Yellow	F Sample	9
4	SD in	Gray	SD out	14
5	Sin+	Yellow/Black	A–	16
6	Sin–	Green/Black	A+	6
7	SD out	Pink	SD in	17
8	Cos+	Red/Black	B–	13
10	0 V	White/Green	0 V U _N	10
12	+V	Brown/Green	+V U _P	7
–	Internal shield			11
9, 11	Vacant			1, 2, 3, 4, 5, 6

4.3.30 Adapter cable with PCB connector 17-pin/12-pin (EnDat/SSI)

ID 349839-xx



Connector, 17-pin, male

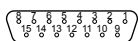


PCB connector, 12-pin

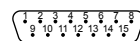
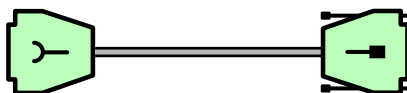
PIN	Signal $\overleftrightarrow{\text{EnDat/SSI}}$	Color	PIN
1	+V sensor	Blue	6a
2	Vacant	Black	–
3	Vacant	Red	–
4	0 V sensor	White	3a
5	Temp+	Green	–
6	Temp–	Brown	–
7	+V U _P	Brown/Green	1b
8	CLOCK	Violet	2b
9	$\overline{\text{CLOCK}}$	Yellow	5a
10	0 V U _N	White/Green	4b
11	Internal shield		–
12	B+	Blue/Black	4a
13	B–	Red/Black	3b
14	DATA	Gray	6b
15	A+	Green/Black	2a
16	A–	Yellow/Black	5b
17	$\overline{\text{DATA}}$	Pink	1a

4.3.31 Connecting cable 15-pin/15-pin D-sub (TTL)

ID 354379-xx



D-sub connector, 15-pin, female

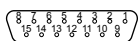


D-sub connector, 15-pin, male

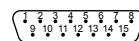
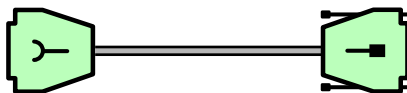
PIN	Signal  TTL	Color	PIN
1	+Ua1	Brown	1
2	0 V U _N	White/Green	2
3	+Ua2	Gray	3
4	+V U _P	Brown/Green	4
5	Vacant		5
6	L2 (limit position)	Yellow/Black	6
7	-Ua0	Black	7
8	L1 (limit position)	Green/Black	8
9	-Ua1	Green	9
10	0 V sensor	White	10
11	-Ua2	Pink	11
12	+V sensor	Blue	12
13	-UaS	Violet	13
14	+Ua0	Red	14
15	PWT test pulse	Yellow	15
Housing	External shield	Shield	Housing

4.3.32 Connecting cable 15-pin/15-pin D-sub (1 V_{PP}/TTL)

ID 355186-xx



D-sub connector, 15-pin, female

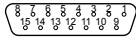
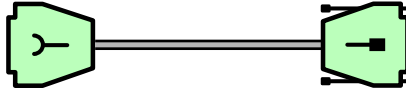
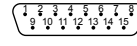


D-sub connector, 15-pin, male

PIN	Signal ~ 1 V _{PP}	Signal □ □ TTL	Color	PIN
1	A+	+Ua1	Brown	1
2	0 V U _N	0 V U _N	White/Green	2
3	B+	+Ua2	Gray	3
4	+V U _P	+V U _P	Brown/Green	4
5	Vacant			5
6	Vacant			6
7	R-	-Ua0	Black	7
8	Vacant			8
9	A-	-Ua1	Green	9
10	0 V sensor	0 V sensor	White	10
11	B-	-Ua2	Pink	11
12	+V sensor	+V sensor	Blue	12
13	Vacant	-UaS	Violet	13
14	R+	+Ua0	Red	14
15	Vacant	PWT test pulse	Yellow	15
Housing	External shield			Housing

4.3.33 Connecting cable 15-pin/15-pin D-sub (1 V_{PP}/TTL)

ID 355397-xx

D-sub connector, 15-pin, female

D-sub connector, 15-pin, male

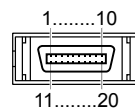
PIN	Signal ~ 1 V _{PP}	Signal □ □ TTL	Color	PIN
1	A+	+Ua1	Brown	1
2	0 V U _N	0 V U _N	White/Green	2
3	B+	+Ua2	Gray	3
4	+V U _P	+V U _P	Brown/Green	4
5	Vacant			5
6	L2 (limit-position)	L2 (limit-position)	Yellow/Black	6
7	R–	–Ua0	Black	7
8	L1 (limit-position)	L1 (limit-position)	Green/Black	8
9	A–	–Ua1	Green	9
10	0 V sensor	0 V sensor	White	10
11	B–	–Ua2	Pink	11
12	+V sensor	+V sensor	Blue	12
13	Vacant	–UaS	Violet	13
14	R+	+Ua0	Red	14
15	Vacant	PWT test pulse	Yellow	15
Housing	External shield			Housing

4.3.34 Adapter cable 17-pin/20-pin (Mitsubishi)

ID 367958-xx



Connector, 17-pin, female



Connector, 20-pin, male

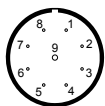
PIN	Signal	Color	PIN
1	+V sensor	Blue	19
4	0 V sensor	White	11
7	+V U _P	Brown/Green	20
8	Request Frame	Violet	7
9	Request Frame	Yellow	17
10	0 V U _N	White/Green	1
14	DATA	Gray	6
17	DATA	Pink	16
2, 3, 5, 6, 11, 12, 13, 15, 16	Vacant		2, 3, 4, 5, 8, 9, 10, 12, 13, 14, 15, 18
Housing	External shield		Housing

4.3.35 Adapter cable 15-pin D-sub/9-pin (11 μA_{SS}) PWM X2 OUT

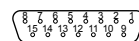
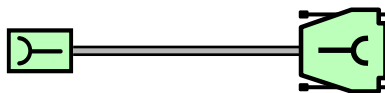
ID 368171-xx			
			
Connector, 9-pin, female		D-sub connector, 15-pin, female	
PIN	Signal ~ 11 μA _{PP}	Color	PIN
1	0°+	Green	3
2	0°–	Yellow	4
3	+V U _P	Brown	1
4	0 V U _N	White	2
5	90°+	Blue	6
6	90°–	Red	7
7	RI+	Gray	10
8	RI–	Pink	12
9	Internal shield	White/Brown	13
	Vacant		5, 8, 9, 11, 14, 15
Housing	External shield	Shield	Housing

4.3.36 Adapter cable 15-pin D-sub/9-pin (11 μA_{SS}) PWM X2 OUT

ID 368172-xx



Connector, 9-pin, female



D-sub connector, 15-pin, female

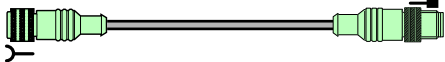
PIN	Signal $\sim 11 \mu\text{A}_{\text{PP}}$	Color	PIN
1	0°+	Green	3
2	0°–	Yellow	4
3	+V U_{P}	Brown	1
4	0 V U_{N}	White	2
5	90°+	Blue	6
6	90°–	Red	7
7	RI+	Gray	10
8	RI–	Pink	12
9	Internal shield	White/Brown	13
	Vacant		5, 8, 9, 11, 14, 15
Housing	External shield	Shield	Housing

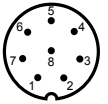
4.3.37 Connecting cable 8-pin/8-pin (EnDat)

ID 368330-xx



Connector, 8-pin, female



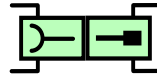


Connector, 8-pin, male

PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	0 V sensor	White	1
2	+V sensor	Blue	2
3	DATA	Gray	3
4	$\overline{\text{DATA}}$	Pink	4
5	0 V U_N	White/Green	5
6	$\overline{\text{CLOCK}}$	Yellow	6
7	CLOCK	Violet	7
8	+V U_P	Brown/Green	8
Housing	External shield	Shield	Housing

4.3.38 Adapter connector; coupling to connector; 12-pin; M23/M23 (1 V_{PP}/TTL)

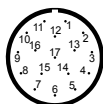
ID 373848-xx



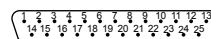
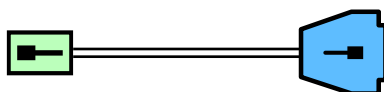
PIN	Signal ~ 1 V _{PP}	Signal □ □ TTL	Color	PIN
1	B–	–Ua2	Pink	1
2	+V sensor	+V sensor	Blue	2
3	R+	+Ua0	Red	3
4	R–	–Ua0	Black	4
5	A+	+Ua1	Brown	5
6	A–	–Ua1	Green	6
7	–UaS	–UaS	Violet	7
8	B+	+Ua2	Gray	8
9	Vacant	PWT test pulse	Yellow	9
10	0 V U _N	0 V U _N	White/Green	10
11	0 V sensor	0 V sensor	White	11
12	+V U _P	+V U _P	Brown/Green	12
Housing	External shield		Shield	Housing

4.3.39 Adapter cable 17-pin/25-pin D-sub (EnDat, 1 V_{PP} Zn/Z1)

ID 509666-xx



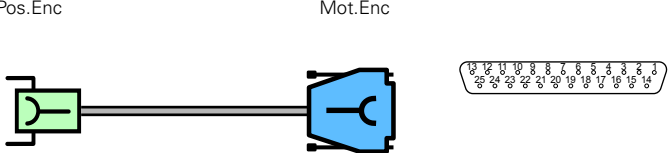
Connector, 17-pin, male



D-sub connector, 25-pin, male

PIN	Signal 	Signal  1 V _{PP}	Color	PIN
1	+V sensor	+V sensor	Blue	14
2	Vacant	R–	Black	18
3	Vacant	R+	Red	17
4	0 V sensor	0 V sensor	White	16
5	Temp+	Temp+	Green	13
6	Temp–	Temp–	Brown	25
7	+V U _P	+V U _P	Brown/Green	1
8	CLOCK	D–	Violet	10, 22 (bridge)
9	$\overline{\text{CLOCK}}$	D+	Yellow	12, 21 (bridge)
10	0 V U _N	0 V U _N	White/Green	2
11	Internal shield			8
12	B+	B+	Blue/Black	6
13	B–	B–	Red/Black	7
14	DATA	C+	Gray	15, 19 (bridge)
15	A+	A+	Green/Black	3
16	A–	A–	Yellow/Black	4
17	$\overline{\text{DATA}}$	C–	Pink	20, 23 (bridge)
–	–	–	Vacant	5, 9, 11, 24
Housing	External shield			Housing

4.3.40 Adapter cable 17-pin/25-pin D-sub (EnDat with A/B signals)

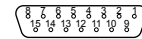
ID 509667-xx			
  Pos.Enc Mot.Enc Connector, 17-pin, female D-sub connector, 25-pin, female			
PIN	Signal 	Color	PIN
1	+V sensor	Blue	14
4	0 V sensor	White	16
5	Temp+	Yellow	13
6	Temp–	Violet	25
7	+V U _P	Brown/Green	1
8	CLOCK	Green	10
9	$\overline{\text{CLOCK}}$	Brown	12
10	0 V U _N	White/Green	2
11	Internal shield		8
12	B+	Blue/Black	6
13	B–	Red/Black	7
14	DATA	Red	15
15	A+	Green/Black	3
16	A–	Yellow/Black	4
17	$\overline{\text{DATA}}$	Black	23
2, 3	Vacant		5, 9, 11, 17, 18, 19, 20, 21, 22, 24

4.3.41 Adapter cable 17-pin/15-pin D-sub(1 V_{PP}/EnDat)

ID 510616-N3



Connector, 17-pin, female

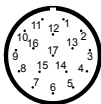


D-sub connector, 15-pin, female

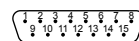
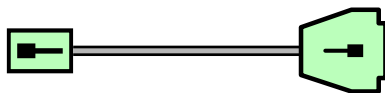
PIN	Signal ~ 1 V _{PP}	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	+V sensor	+V sensor	Blue	9
2	R–	Vacant	Black	12
3	R+	Vacant	Red	10
4	0 V sensor	0 V sensor	White	11
5	Temp+	Vacant	Green	–
6	Temp–	Vacant		–
7	+V U _P	+V U _P	Brown/Green	1
8	Vacant	CLOCK	Violet	14
9	Vacant	$\overline{\text{CLOCK}}$	Yellow	15
10	0 V U _N	0 V U _N	White/Green	2
11	Internal shield			13
12	B+	B+	Blue/Black	6
13	B–	B–	Red/Black	7
14	Vacant	DATA	Gray	5
15	A+	A+	Green/Black	3
16	A–	A–	Yellow/Black	4
17	Vacant	$\overline{\text{DATA}}$	Pink	8
Housing	External shield			Housing

4.3.42 Adapter cable 17-pin/15-pin D-sub(1 V_{PP}/EnDat)

ID 510617-xx



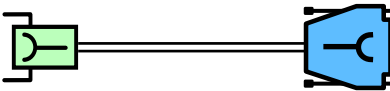
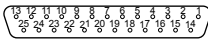
Connector, 17-pin, male



D-sub connector, 15-pin, male

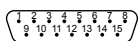
PIN	Signal ~ 1 V _{PP}	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	+V sensor	+V sensor	Blue	9
2	R–	Vacant	Black	12
3	R+	Vacant	Red	10
4	0 V sensor	0 V sensor	White	11
5	Temp+	Vacant	Green	–
6	Temp–	Vacant		–
7	+V U _P	+V U _P	Brown/Green	1
8	Vacant	CLOCK	Violet	14
9	Vacant	$\overline{\text{CLOCK}}$	Yellow	15
10	0 V U _N	0 V U _N	White/Green	2
11	Internal shield			13
12	B+	B+	Blue/Black	6
13	B–	B–	Red/Black	7
14	Vacant	DATA	Gray	5
15	A+	A+	Green/Black	3
16	A–	A–	Yellow/Black	4
17	Vacant	$\overline{\text{DATA}}$	Pink	8
Housing	External shield			Housing

4.3.43 Adapter cable 17-pin/25-pin; TNC with 25-pin D-sub connector (Pos.Enc./Mot.Enc. 1 V_{PP} Zn/Z1)

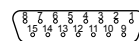
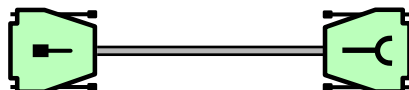
ID 511886-xx			
			
Connector, 17-pin, male		D-sub connector, 25-pin, male	
PIN	Signal $\sim 1\text{ V}_{PP}$	Color	PIN
1	+V sensor	Blue	14
2	R-	Black	18
3	R+	Red	17
4	0 V sensor	White	16
5	Temp+	Yellow	13
6	Temp-	Violet	25
7	+V U _P	Brown/Green	1
8	D-	Pink	22
9	D+	Gray	21
10	0 V U _N	White/Green	2
11	Internal shield		8
12	B+	Blue/Black	6
13	B-	Red/Black	7
14	C+	Green	19
15	A+	Green/Black	3
16	A-	Yellow/Black	4
17	C-	Brown	20
-	-	Vacant	5, 9, 10, 11, 12, 15, 23, 24
Housing	External shield		Housing

4.3.44 Connecting cable 15-pin/15-pin D-sub (1 V_{PP}/EnDat)

ID 517673-xx



D-sub connector, 15-pin, male

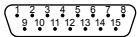
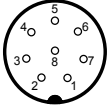


D-sub connector, 15-pin, female

PIN	Signal ~ 1 V _{PP}	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	A+	A+	Green/Black	1
2	0 V U _N	0 V U _N	White/Green	2
3	B+	B+	Blue/Black	3
4	+V U _P	+V U _P	Brown/Green	4
5	C+	DATA	Gray	5
6	Internal shield			6
7	R–	Vacant	Black	7
8	D–	CLOCK	Violet	8
9	A+	A+	Yellow/Black	9
10	0 V sensor	0 V sensor	White	10
11	B–	B–	Red/Black	11
12	+V sensor	+V sensor	Blue	12
13	C–	$\overline{\text{DATA}}$	Pink	13
14	R+	Vacant	Red	14
15	D+	$\overline{\text{CLOCK}}$	Yellow	15
Housing	External shield			Housing

4.3.45 Adapter cable 8-pin/15-pin D-sub (EnDat)

ID 524599-xx



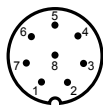
Connector, 8-pin, female

D-sub connector, 15-pin, male

PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	0 V sensor	White	10
2	+V sensor	Blue	12
3	DATA	Gray	5
4	$\overline{\text{DATA}}$	Pink	13
5	0 V U_N	White/Green	2
6	$\overline{\text{CLOCK}}$	Yellow	15
7	CLOCK	Violet	8
8	+V U_P	Brown/Green	4
–	–	Vacant	1, 3, 6, 7, 9, 11, 14
Housing	External shield		Housing

4.3.46 Adapter cable 8-pin/12-pin (EnDat) encoder PCB connector to subsequent electronics

ID 530351-03



Connector, 8-pin, male



PCB connector, 12-pin

PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	0 V U_N	White	3a
2	+V U_P	Blue	6a
3	DATA	Gray	6b
4	DATA	Pink	1a
5	0 V U_N	White/Green	4b
6	$\overline{\text{CLOCK}}$	Yellow	5a
7	CLOCK	Violet	2b
8	+V U_P	Brown/Green	1b
–	–	Vacant	2a, 4a, 3b, 5b

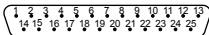
4.3.47 Adapter cable 25-pin D-sub (Mot.Enc.)/12-pin (Pos.Enc.) for PWM IN

ID 533055-01



Connector, 12-pin, male



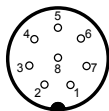


D-sub connector, 25-pin, male

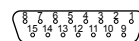
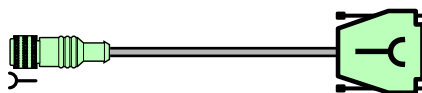
PIN	Signal ~ 1 V _{PP}	Signal □ □ TTL	Color	PIN
1	B-	-Ua2	Pink	7
2	+V sensor	+V sensor	Blue	14
3	R+	+Ua0	Red	17
4	R-	-Ua0	Black	18
5	A+	+Ua1	Brown	3
6	A-	-Ua1	Green	4
7	Vacant			-
8	B+	+Ua2	Gray	6
9	Vacant			-
10	0 V U _N	0 V U _N	White/Green	2
11	0 V sensor	0 V sensor	White	16
12	+V U _P	+V U _P	Brown/Green	1
-	-	-	Vacant	5, 8-13, 15, 19-25
Housing	External shield			Housing

4.3.48 Adapter cable 8-pin/15-pin D-sub (EnDat)

ID 533627-xx



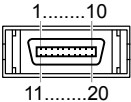
Connector, 8-pin, female



D-sub connector, 15-pin, female

PIN	Signal $\xleftrightarrow{\text{EnDat}}$	Color	PIN
1	0 V sensor	White	11
2	+V sensor	Blue	9
3	DATA	Gray	5
4	$\overline{\text{DATA}}$	Pink	8
5	0 V U_N	White/Green	2
6	$\overline{\text{CLOCK}}$	Yellow	15
7	CLOCK	Violet	14
8	+V U_P	Brown/Green	1
–	–	Vacant	3, 4, 6, 7, 10, 12, 13
Housing	External shield		Housing

4.3.49 Adapter cable 17-pin/20-pin (Fanuc)

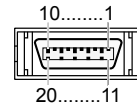
ID 550161-01			
			
Connector, 17-pin, male		Connector, 20-pin, male	
PIN	Signal	Color	PIN
1	+V sensor	Blue	18, 20
4	0 V sensor	White	14
7	+V U _P	Brown/Green	9
8	Request Frame	Violet	5
9	<u>Request Frame</u>	Yellow	6
10	0 V U _N	White/Green	12
14	DATA	Gray	1
17	<u>DATA</u>	Pink	2
2, 3, 5, 6, 11, 12, 13, 15, 16	Vacant		3, 4, 7, 8, 10, 11, 13, 15, 17, 19
Housing	External shield		16

4.3.50 Adapter cable 17-pin/20-pin (Fanuc)

ID 550162-01



Connector, 17-pin, female



Connector, 20-pin, female

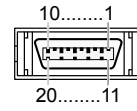
PIN	Signal	Color	PIN
1	+V sensor	Blue	18, 20
4	0 V sensor	White	14
7	+V U _P	Brown/Green	9
8	Request Frame	Violet	5
9	Request Frame	Yellow	6
10	0 V U _N	White/Green	12
14	DATA	Gray	1
17	DATA	Pink	2
2, 3, 5, 6, 11, 12, 13, 15, 16	Vacant		3, 4, 7, 8, 10, 11, 13, 15, 17, 19
Housing	External shield		16

4.3.51 Adapter cable 12-pin/20-pin (Fanuc)

ID 556558-xx



Connector, 12-pin, female



Connector, 20-pin, female

PIN	Signal  TTL	Color	PIN
1	-Ua2	Pink	4
2	+V sensor	Blue	18, 20
3	+Ua0	Red	5
4	-Ua0	Black	6
5	-Ua1	Brown	1
6	-Ua1	Green	2
7	-UaS	Violet	–
8	+Ua2	Gray	3
9	Vacant	Yellow	7
10	0 V U _N	Gray	12
11	0 V sensor	White	14
12	+V U _P	Brown/Green	9
		Vacant	8, 10, 11, 13, 15, 17, 19
Housing	External shield		16

4.3.52 Adapter cable 17-pin/10-pin (Mitsubishi)

ID 573661-xx



Connector, 17-pin, female



Connector, 10-pin, female

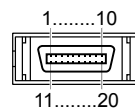
PIN	Signal	Color	PIN
7	+V U _P	Brown/Green	1
8	Request Frame	Violet	3
9	Request Frame	Yellow	4
10	0 V U _N	White/Green	2
14	DATA	Gray	7
17	DATA	Pink	8
1–6, 11–13, 15, 16	Vacant		5, 6, 9, 10
Housing	External shield		Housing

4.3.53 Adapter cable 12-pin/20-pin (Fanuc)

ID 577345-01



Connector, 12-pin, male



Connector, 20-pin, male

PIN	Signal  TTL	Color	PIN
1	-Ua2	Pink	4
2	+V sensor	Blue	18, 20
3	+Ua0	Red	5
4	-Ua0	Black	6
5	+Ua1	Brown	1
6	-Ua1	Green	2
7	-UaS	Violet	–
8	+Ua2	Gray	3
9	PWT test pulse	Yellow	–
10	0 V U _N	White/Green	12
11	0 V sensor	White	14
12	+V U _P	Brown/Green	9
–	–	Vacant	7, 8, 10, 11, 13, 15, 1, 19
Housing	External shield		16

4.3.54 Adapter cable 12-pin/12-pin; PWM to PCB connector (1 V_{PP}, TTL, HTL) (Pos.Enc.)

ID 591118-xx



Connector, 12-pin, male



PCB connector, 12-pin

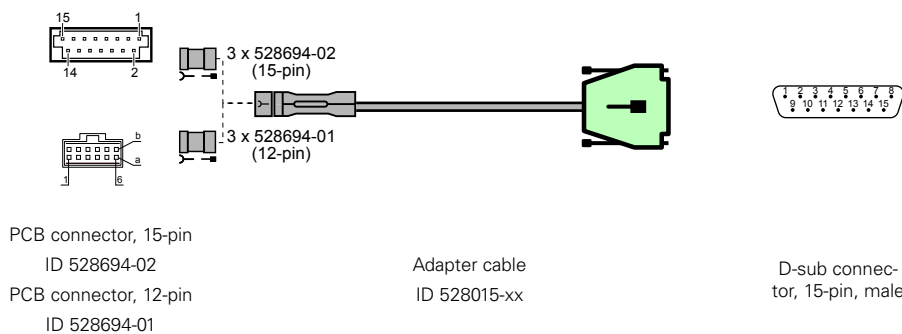
PIN	Signal TTL/HTL	Signal 1 V _{PP}	Color	PIN
1	-Ua2	B-	Pink	5a
2	+V sensor	+V sensor	Blue	2b
3	+Ua0	R+	Red	4b
4	-Ua0	R-	Black	4a
5	+Ua1	A+	Brown	6b
6	-Ua1	A-	Green	6a
7	-UaS	-UaS	Violet	3a
8	+Ua2	B+	Gray	5b
9	Vacant			3b
10	0 V U _N	0 V U _N	White/Green	1a
11	0 V sensor	0 V sensor	White	1b
12	+V U _P	+V U _P	Brown/Green	2a

4.3.55 Adapter cable 17-pin/25-pin D-sub (EnDat)

ID 605426-xx			
			
Connector, 17-pin, female		D-sub connector, 25-pin, female	
PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	A+	Green/Black	3
2	A-	Yellow/Black	4
3	DATA	Red	15
5	CLOCK	Green	10
7	0 V U _N	White/Green	2
8	Temp+	Yellow	13
9	Temp-	Violet	25
10	+V U _P	Brown/Green	1
11	B+	Blue/Black	6
12	B-	Red/Black	7
13	$\overline{\text{DATA}}$	Black	23
14	$\overline{\text{CLOCK}}$	Brown	12
15	0 V sensor	White	16
16	+V sensor	Blue	14
17	Internal shield		8
4, 6	Vacant		5, 9, 11, 17–22, 24
Housing	External shield		Housing

4.3.56 Adapter cable for PCB connector 12-pin/15-pin D-sub (EnDat)

ID 621742-02



12-pin	15-pin	Signal 	Color	PIN
2a	1	A+	Green/Black	1
4b	14	0 V U _N	White/Green	2
4a	3	B+	Blue/Black	3
1b	13	+V U _P	Brown/Green	4
6b	7	DATA	Gray	5
–	–	Internal shield		6
–	–	–	Black	7
2b	9	CLOCK	Violet	8
5b	2	A–	Yellow/Black	9
3a	12	0 V sensor	White	10
3b	4	B–	Red/Black	11
6a	11	+V sensor	Blue	12
1a	8	$\overline{\text{DATA}}$	Pink	13
–	–	–	Red	14
5a	10	$\overline{\text{CLOCK}}$	Yellow	15

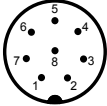


The set of adapter cables (ID 621742-02) consists of:

- 1 × adapter cable ID 528015-xx
- 3 × insert for adapter connector ID 528694-02 (15-pin)
- 3 × insert for adapter connector ID 528694-01 (12-pin)

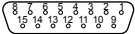
4.3.57 Adapter cable 15-pin D-sub/8-pin (EnDat)

ID 628186-xx



Connector, 8-pin, male

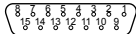
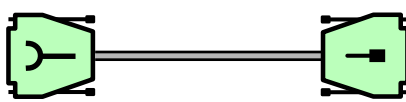
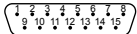




D-sub connector, 15-pin, female

PIN	Signal 	Color	PIN
1	0 V sensor	White	10
2	+V sensor	Blue	12
3	DATA	Gray	5
4	$\overline{\text{DATA}}$	Pink	13
5	0 V U _N	White/Green	2
6	$\overline{\text{CLOCK}}$	Yellow	15
7	CLOCK	Violet	8
8	+V U _P	Brown/Green	4
	Vacant		1, 3, 6, 7, 9, 11, 14
Housing	External shield		Housing

4.3.58 Connecting cable 15-pin/15-pin D-sub (1 V_{PP}/TTL)

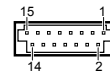
ID 633811-xx				
				
D-sub connector, 15-pin, female		D-sub connector, 15-pin, male		
PIN	Signal ~ 1 V _{PP}	Signal □ TTL	Color	PIN
1	A+	+Ua1	Brown	1
2	0 V U _N	0 V U _N	White/Green	2
3	B+	+Ua2	Gray	3
4	+V U _P	+V U _P	Brown/Green	4
5	Vacant			5
6	Vacant			6
7	R–	–Ua0	Black	7
8	Vacant			8
9	A–	–Ua1	Green	9
10	0 V sensor	0 V sensor	White	10
11	B–	–Ua2	Pink	11
12	+V sensor	+V sensor	Blue	12
13	Vacant			13
14	R+	+Ua0	Red	14
15	Vacant			15
Housing	External shield			Housing

4.3.59 Adapter cable with 15-pin PCB connector EnDat

ID 635349-xx



Connector, 17-pin, male

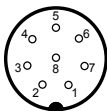


PCB connector, 15-pin

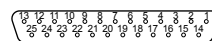
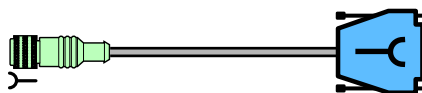
PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	+V sensor	Blue	11
2	Vacant	Black	–
3	Vacant	Red	–
4	0 V sensor	White	12
5	Temp+	Green	5
6	Temp–	Brown	6
7	+V U _P	Brown/Green	13
8	CLOCK	Violet	9
9	$\overline{\text{CLOCK}}$	Yellow	10
10	0 V U _N	White/Green	14
11	Internal shield		–
12	B+	Blue/Black	3
13	B–	Red/Black	4
14	DATA	Gray	7
15	A+	Green/Black	1
16	A–	Yellow/Black	2
17	$\overline{\text{DATA}}$	Pink	8

4.3.60 Adapter cable 8-pin/25-pin D-sub (EnDat)

ID 641926-xx



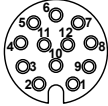
Connector, 8-pin, female



D-sub connector, 25-pin, female

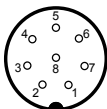
PIN	Signal $\xleftrightarrow{\text{EnDat}}$	Color	PIN
1	0 V sensor	White	16
2	+V sensor	Blue	14
3	DATA	Gray	15
4	$\overline{\text{DATA}}$	Pink	23
5	0 V U_N	White/Green	2
6	$\overline{\text{CLOCK}}$	Yellow	12
7	CLOCK	Violet	10
8	+V U_P	Brown/Green	1
	Vacant		3–9, 11, 13, 17–22, 24, 25
Housing	External shield		Housing

4.3.61 Adapter cable 12-pin/17-pin (EnDat) with Ultra Lock connector

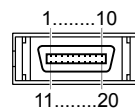
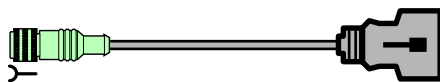
ID 643450-xx			
			
Connector, 12-pin, female		Connector, 17-pin, male	
PIN	Signal 	Color	PIN
1	+V U _P	Brown/Green	7
2	A ⁻	Yellow/Black	16
3	B ⁺	Blue/Black	12
4	B ⁻	Red/Black	13
5	0 V sensor	White	4
6	DATA	Gray	14
7	$\overline{\text{DATA}}$	Pink	17
8	$\overline{\text{CLOCK}}$	Yellow	9
9	CLOCK	Violet	8
10	A ⁺	Green/Black	15
11	+V sensor	Blue	1
12	0 V U _N	White/Green	10
	Vacant		2, 3, 5, 6, 11

4.3.62 Adapter cable 8-pin/20-pin (Mitsubishi)

ID 646806-xx



Connector, 8-pin, female

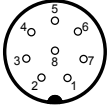


Connector, 20-pin, male

PIN	Signal	Color	PIN
1	0 V sensor	White	11
2	+V sensor	Blue	19
3	DATA	Gray	6
4	$\overline{\text{DATA}}$	Pink	16
5	0 V U_N	White/Green	1
6	$\overline{\text{Request Frame}}$	Yellow	17
7	Request Frame	Violet	7
8	+V U_P	Brown/Green	20
	Vacant		2–5, 8–10, 12–15, 18
Housing	External shield		Housing

4.3.63 Adapter cable 8-pin/10-pin (Mitsubishi)

ID 647314-xx



Connector, 8-pin, female





Connector, 10-pin, female

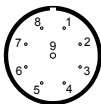
PIN	Signal	Color	PIN
3	DATA	Gray	7
4	DATA	Pink	8
5	0 V U _N	White/Green	2
6	Request Frame	Yellow	4
7	Request Frame	Violet	3
8	+V U _P	Brown/Green	1
1, 2	Vacant		5, 6, 9, 10
Housing	External shield		Housing

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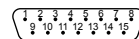
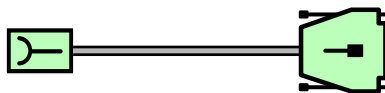
147

4.3.64 Adapter cable 15-pin D-sub/9-pin (11 μA_{PP})

ID 653231-xx



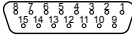
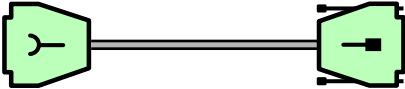
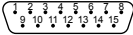
Connector, 9-pin, female



D-sub connector, 15-pin, male

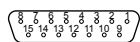
PIN	Signal $\sim 11 \mu\text{A}_{\text{PP}}$	Color	PIN
1	0°+	Green	1
2	0°−	Yellow	9
3	+V U _P	Brown	4
4	0 V U _N	White	2
5	90°+	Blue	3
6	90°−	Red	11
7	RI+	Gray	14
8	RI−	Pink	7
9	Internal shield	White/Brown	6
	Vacant		5, 8, 10, 12, 13, 15
Housing	External shield		Housing

4.3.65 Connecting cable 15-pin/15-pin D-sub (1 V_{PP}/EnDat)

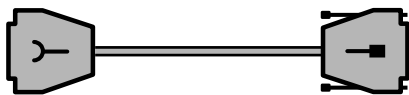
ID 675582-xx				
   D-sub connector, 15-pin, female D-sub connector, 15-pin, male				
PIN	Signal ~ 1 V _{PP}	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	A+	A+	Green/Black	1
2	0 V U _N	0 V U _N	White/Green	2
3	B+	B+	Blue/Black	3
4	+V U _P	+V U _P	Brown/Green	4
5	C+	DATA	Gray	5
6	Internal shield			6
7	R–	Vacant	Black	7
8	D–	CLOCK	Violet	8
9	A–	A–	Yellow/Black	9
10	0 V sensor	0 V sensor	White	10
11	B–	B–	Red/Black	11
12	+V sensor	+V sensor	Blue	12
13	C–	$\overline{\text{DATA}}$	Pink	13
14	R+	Vacant	Red	14
15	D+	$\overline{\text{CLOCK}}$	Yellow	15
Housing	External shield			Housing

4.3.66 Connecting cable for LIP 2xx compensation 15-pin/15-pin D-sub (1 V_{PP}) PWM X1 IN

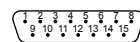
ID 735541-xx



D-sub connector, 15-pin, female



PWM IN



D-sub connector, 15-pin, male

PIN	Signal $\sim 1 V_{PP}$	Color	PIN
1	A+	Brown	1
2	0 V U _N		2
3	B+	Gray	3
4	+V U _P	Brown/Green	4
5	Self-test signal	Red/Black	5
6	Vacant		6
7	R-	Black	7
8	Vacant		8
9	A-	Green	9
10	0 V sensor	White	10
11	B-	Pink	11
12	+V sensor	Blue	12
13	CLOCK	Violet	13
14	R+	Red	14
15	DATA	Yellow	15
Housing	External shield		Housing

WARNING

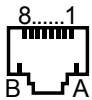
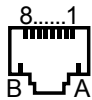
Axes moving uncontrolled

Property damage, injury or death

Three additional pins are assigned for LIP 2xx adjustment.

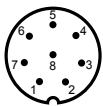
- Do not start the adjustment, if the PWM is in feed-through mode.

4.3.67 Adapter cable SIEMENS RJ45 connector, 8+2-pin (DRIVE-CLiQ)

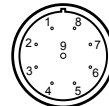
ID 740059-02			
			
Connector, 10-pin, male		Connector, 10-pin, male	
PIN	Signal DRIVE-CLiQ	Color	PIN
1	TX+	Green	3
2	TX-	Yellow	6
3	RX+	Pink	1
6	RX-	Blue	2
A	+V U _P	Red	A
B	0 V U _N	Black	B
4, 5, 7, 8	Vacant		4, 5, 7, 8
Housing	External shield		Housing

4.3.68 Adapter cable 8-pin/9-pin (EnDat)

ID 745796-xx



Connector, 8-pin, male



Connector, 9-pin, female

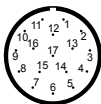
PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	0 V sensor	White	8
2	+V sensor	Blue	7
3	DATA	Gray	5
4	$\overline{\text{DATA}}$	Pink	6
5	0 V U_N	White/Green	4
6	$\overline{\text{CLOCK}}$	Yellow	2
7	CLOCK	Violet	1
8	+V U_P	Brown/Green	3
	Vacant		9
Housing	External shield		Housing

4.3.69 Adapter cable 9-pin/25-pin D-sub (EnDat)

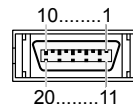
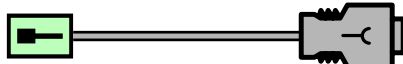
ID 745813-xx			
			
Connector, 9-pin, female		D-sub connector, 25-pin, female	
PIN	Signal 	Color	PIN
1	CLOCK	Violet	10
2	$\overline{\text{CLOCK}}$	Yellow	12
3	+V U _P	Brown/Green	1
4	0 V U _N	White/Green	2
5	DATA	Gray	15
6	$\overline{\text{DATA}}$	Pink	23
7	+V sensor	Blue	14
8	0 V sensor	White	16
9	Vacant		3–9, 11, 13, 17–22, 24, 25
Housing	External shield		Housing

4.3.70 Adapter cable 17-pin/20-pin (Mitsubishi)

ID 750973-xx



Connector, 17-pin, male



Connector, 20-pin, female

PIN	Signal	Color	PIN
1	+V sensor	Blue	19
4	0 V sensor	White	11
7	+V U _P	Brown/Green	20
8	Request Frame	Violet	7
9	Request Frame	Yellow	17
10	0 V U _N	White/Green	1
14	DATA	Gray	6
17	DATA	Pink	16
2, 3, 5, 6, 11-13, 15, 16	Vacant		2-5, 8-10, 12-15, 18
Housing	External shield		Housing

4.3.71 Adapter cable 17-pin/10-pin (Mitsubishi)

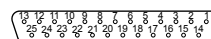
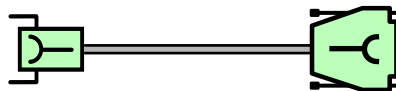
ID 750974-xx			
			
Connector, 17-pin, male		Connector, 10-pin, male	
PIN	Signal	Color	PIN
7	+V U _P	Brown/Green	1
8	Request Frame	Violet	3
9	Request Frame	Yellow	4
10	0 V U _N	White/Green	2
14	DATA	Gray	7
17	DATA	Pink	8
1–6, 11–13, 15, 16	Vacant		5, 6, 9, 10
Housing	External shield		Housing

4.3.72 Adapter cable for DRIVE-CLiQ 1 V_{PP} 12-pin/25-pin D-sub for PWM OUT

ID 758082-xx



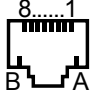
Connector, 12-pin, female



D-sub connector, 25-pin, female

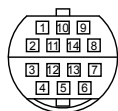
PIN	Signal $\sim 1 V_{PP}$	Color	PIN
1	B-	Pink	7
2	+V sensor	Blue	14
3	R+	Red	17
4	R-	Black	18
5	A+	Brown	3
6	A-	Green	4
8	B+	Gray	6
10	0 V U _N	White/Green	2
11	0 V sensor	White	16
12	+V U _P	Brown/Green	1
7, 9	Vacant		5, 8-13, 15, 19-25
Housing	External shield		Housing

4.3.73 Adapter cable Siemens RJ45 connector IP20/IP67

ID 759314-01			
 IP67 Connector, 10-pin, male		 Connector, 10-pin, male	
PIN	Signal DRIVE-CLiQ	Color	PIN
1	TX+	Green	3
2	TX-	Yellow	6
3	RX+	Pink	1
6	RX-	Blue	2
A	+V U _P	Red	A
B	0 V U _N	Black	B
4, 5, 7, 8	Vacant		4, 5, 7, 8
Housing	External shield		Housing

4.3.74 Adapter cable 14-pin/10-pin (DRIVE-CLiQ)

ID 805375-xx



Connector, 14-pin, female

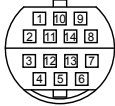


Connector, 10-pin, male

PIN	Signal DRIVE-CLiQ	Color	PIN
1	RX–	Blue	2
2	RX+	Pink	1
9	TX–	Yellow	6
10	TX+	Green	3
12	0 V U _N	Black	
13	+V U _P	Red	A
3–8, 11, 14	Vacant		4, 5, 7, 8
Housing	External shield		Housing

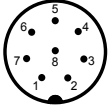
4.3.75 Adapter cable 14-pin/8-pin (DRIVE-CLiQ)

ID 816675-xx



Connector, 14-pin, female



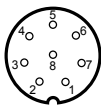


Connector, 8-pin, male

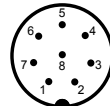
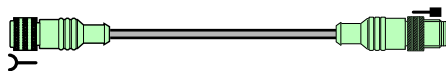
PIN	Signal DRIVE-CLiQ	Color	PIN
1	RX-	Blue	4
2	RX+	Pink	3
9	TX-	Yellow	6
10	TX+	Green	7
12	0 V U _N	Black	5
13	+V U _P	Red	1
3-8, 11, 14	Vacant		2, 8
Housing	External shield		Housing

4.3.76 Connecting cable 8-pin/8-pin (DRIVE-CLiQ)

ID 822504-xx



Connector, 8-pin, female



Connector, 8-pin, male

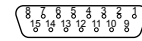
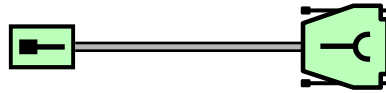
PIN	Signal DRIVE-CLiQ	Color	PIN
1	+V U _P	Red	1
3	RX+	Pink	3
4	RX–	Blue	4
5	0 V U _N	Black	5
6	TX–	Yellow	6
7	TX+	Green	7
2, 8	Vacant		2, 8
Housing	External shield		Housing

4.3.77 Adapter cable 15-pin D-sub/12-pin (1 V_{PP}/TTL)

ID 825422-xx



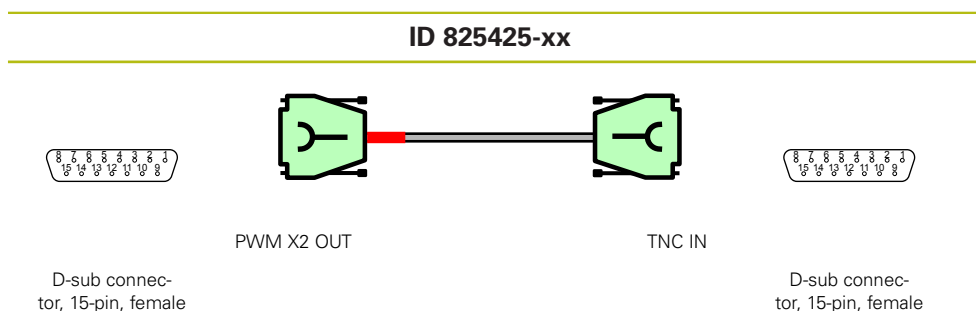
Connector, 12-pin, male



D-sub connector, 15-pin, female

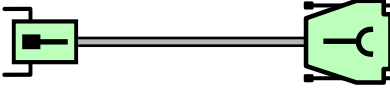
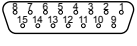
PIN	Signal ~ 1 V _{PP}	Signal □ □ TTL	Color	PIN
1	B–	–Ua2	Pink	11
2	+V sensor	+V sensor	Blue	12
3	R+	+Ua0	Red	14
4	R–	–Ua0	Black	7
5	A+	+Ua1	Brown	1
6	A–	–Ua1	Green	9
7	Vacant	–UaS	Violet	13
8	B+	+Ua2	Gray	3
9	Vacant	Vacant	Yellow	15
10	0 V U _N	0 V U _N	White/Green	2
11	0 V sensor	0 V sensor	White	10
12	+V U _P	+V U _P	Brown/Green	4
	Vacant			5, 6, 8
Housing	External shield			Housing

4.3.78 Adapter cable 15-pin/15-pin D-sub (1 V_{PP}/TTL)



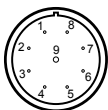
PIN	Signal ~ 1 V _{PP}	Signal □ □ TTL	Color	PIN
1	A+	+Ua1	Brown	3
2	0 V U _N	0 V U _N	White/Green	2
3	B+	+Ua2	Gray	6
4	+V U _P	+V U _P	Brown/Green	1
7	R-	-Ua0	Black	12
9	A-	-Ua1	Green	4
10	0 V sensor	0 V sensor	White	11
11	B-	-Ua2	Pink	7
12	+V sensor	+V sensor	Blue	9
13	Vacant	-UaS	Violet	14
14	R+	+Ua0	Red	10
15	Vacant	Vacant	Yellow	5
5, 6, 8	Vacant			13-15
Housing	External shield			Housing

4.3.79 Adapter cable 15-pin D-sub/12-pin (1 V_{PP}/TTL)

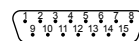
ID 825426-xx				
				
Connector, 12-pin, male		D-sub connector, 15-pin, female		
PIN	Signal ~ 1 V _{PP}	Signal □ □ TTL	Color	PIN
1	B-	-Ua2	Pink	11
2	+V sensor	+V sensor	Blue	12
3	R+	+Ua0	Red	14
4	R-	-Ua0	Black	7
5	A+	+Ua1	Brown	1
6	A-	-Ua1	Green	9
7	Vacant	-UaS	Violet	13
8	B+	+Ua2	Gray	3
9	Vacant	Vacant	Yellow	15
10	0 V U _N	0 V U _N	White/Green	2
11	0 V sensor	0 V sensor	White	10
12	+V U _P	+V U _P	Brown/Green	4
	Vacant			5, 6, 8
Housing	External shield			Housing

4.3.80 Adapter cable 15-pin D-sub/9-pin (11 μA_{PP})

ID 826431-xx



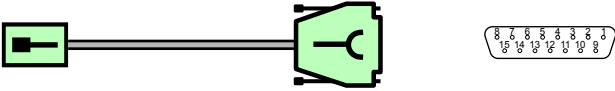
Connector, 9-pin, female



D-sub connector, 15-pin, male

PIN	Signal $\sim 11 \mu A_{PP}$	Color	PIN
1	0°+	Green	1
2	0°–	Yellow	9
3	+V U_P	Brown	4
4	0 V U_N	White	2
5	90°+	Blue	3
6	90°–	Red	11
7	RI+	Gray	14
8	RI–	Pink	7
9	Internal shield	White/Brown	6
	Vacant		5, 8, 10, 12, 13, 15
Housing	External shield		Housing

4.3.81 Encoder cable 15-pin D-sub/9-pin (11 μA_{PP})

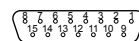
ID 826436-xx			
			
Connector, 9-pin, male		D-sub connector, 15-pin, female	
PIN	Signal ~ 11 μA _{PP}	Color	PIN
1	0°+	Green	1
2	0°–	Yellow	9
3	+V U _P	Brown	4
4	0 V U _N	White	2
5	90°+	Blue	3
6	90°–	Red	11
7	RI+	Gray	14
8	RI–	Pink	7
9	Internal shield	White/Brown	6
	Vacant		5, 8, 10, 12, 13, 15
Housing	External shield		Housing

4.3.82 Encoder cable 15-pin D-sub/9-pin (11 μA_{PP})

ID 826508-xx



Connector, 9-pin, male

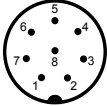


D-sub connector, 15-pin, female

PIN	Signal $\sim 11 \mu\text{A}_{\text{PP}}$	Color	PIN
1	0°+	Green	1
2	0°–	Yellow	9
3	+V U_{P}	Brown	4
4	0 V U_{N}	White	2
5	90°+	Blue	3
6	90°–	Red	11
7	RI+	Gray	14
8	RI–	Pink	7
9	Internal shield	White/Brown	6
	Vacant		5, 8, 10, 12, 13, 15
Housing	External shield		Housing

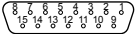
4.3.83 Adapter cable 15-pin D-sub/8-pin (EnDat)

ID 827096-xx



Connector, 8-pin, male





D-sub connector, 15-pin, female

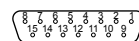
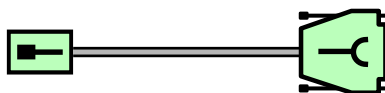
PIN	Signal 	Color	PIN
1	0 V sensor	White	10
2	+V sensor	Blue	12
3	DATA	Gray	5
4	$\overline{\text{DATA}}$	Pink	13
5	0 V U_N	White/Green	2
6	$\overline{\text{CLOCK}}$	Yellow	15
7	CLOCK	Violet	8
8	+V U_P	Brown/Green	4
	Vacant		1, 3, 6, 7, 9, 11, 14
Housing	External shield		Housing

4.3.84 Adapter cable 15-pin D-sub/17-pin (EnDat)

ID 827099-xx



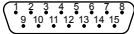
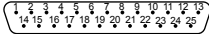
Connector, 17-pin, male



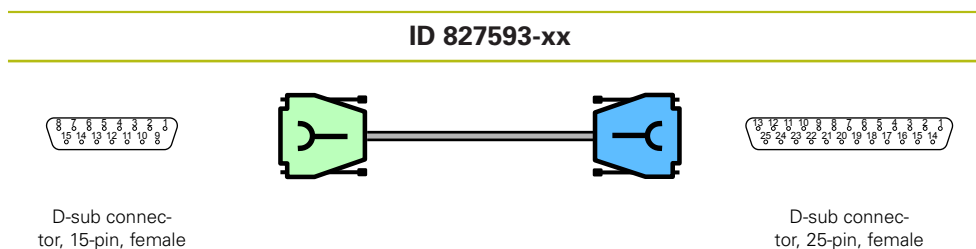
D-sub connector, 15-pin, female

PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	+V sensor	Blue	12
4	0 V sensor	White	10
7	+V U _P	Brown/Green	4
8	CLOCK	Violet	8
9	$\overline{\text{CLOCK}}$	Yellow	15
10	0 V U _N	White/Green	2
11	Internal shield		6
12	B+	Blue/Black	3
13	B-	Red/Black	11
14	DATA	Gray	5
15	A+	Green/Black	1
16	A-	Yellow/Black	9
17	$\overline{\text{DATA}}$	Pink	13
2, 3, 5, 6	Vacant		7, 14
Housing	External shield		Housing

4.3.85 Adapter cable 15-pin/25-pin D-sub (EnDat)

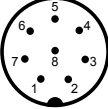
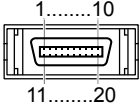
ID 827551-xx			
 D-sub connector, 15-pin, male			
			
 D-sub connector, 25-pin, male			
PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	A+	Green/Black	3
2	0 V U_N	White/Green	2
3	B+	Blue/Black	6
4	+V U_P	Brown/Green	1
5	DATA	Red	15
6	Internal shield	White/Brown	8
7	Temp–	Violet	25
8	CLOCK	Green	10
9	A–	Yellow/Black	4
10	0 V sensor	White	16
11	B–	Red/Black	7
12	+V sensor	Blue	14
13	$\overline{\text{DATA}}$	Black	23
14	Temp+	Yellow	13
15	$\overline{\text{CLOCK}}$	Brown	12
	Vacant		5, 9, 11, 17–22, 24
Housing	External shield		Housing

4.3.86 Connecting cable 15-pin/25-pin D-sub (EnDat)



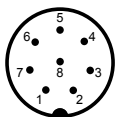
PIN	Signal $\xleftrightarrow{\text{EnDat}}$	Color	PIN
1	A+	Green/Black	3
2	0 V U_N	White/Green	2
3	B+	Blue/Black	6
4	+V U_P	Brown/Green	1
5	DATA	Red	15
6	Internal shield	White/Brown	8
7	Temp–	Violet	25
8	CLOCK	Green	10
9	A–	Yellow/Black	4
10	0 V sensor	White	16
11	B–	Red/Black	7
12	+V sensor	Blue	14
13	$\overline{\text{DATA}}$	Black	23
14	Temp+	Yellow	13
15	$\overline{\text{CLOCK}}$	Brown	12
	Vacant		5, 9, 11, 17–22, 24
Housing	External shield		Housing

4.3.87 Adapter cable 8-pin M12/20-pin (Fanuc) IN

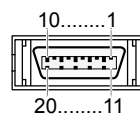
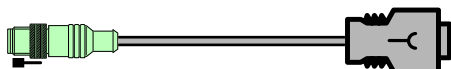
ID 1039686-xx			
			
Connector, 8-pin, male		Connector, 20-pin, male	
PIN	Signal	Color	PIN
1	0 V sensor	White	14
2	+V sensor	Blue	18, 20
3	DATA	Gray	1
4	$\overline{\text{DATA}}$	Pink	2
5	0 V U_N	White/Green	12
6	$\overline{\text{Request Frame}}$	Yellow	6
7	Request Frame	Violet	5
8	+V U_P	Brown/Green	9
	Vacant		3, 4, 7, 8, 10, 11, 13, 15, 17, 19
Housing	External shield		16

4.3.88 Adapter cable 8-pin M12/20-pin (Mitsubishi)

ID 1039786-xx



Connector, 8-pin, male

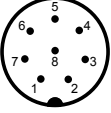


Connector, 20-pin, female

PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	0 V sensor	White	11
2	+V sensor	Blue	19
3	DATA	Gray	6
4	$\overline{\text{DATA}}$	Pink	16
5	0 V U_N	White/Green	1
6	$\overline{\text{Request Frame}}$	Yellow	17
7	Request Frame	Violet	7
8	+V U_P	Brown/Green	20
	Vacant		2–5, 8–10, 12–15, 18
Housing	External shield		Housing

4.3.89 Adapter cable 8-pin M12/10-pin (Mitsubishi)

ID 1039802-xx



Connector, 8-pin, male



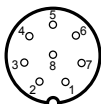


Connector, 10-pin, male

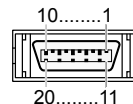
PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	0 V sensor	White	Vacant
2	+V sensor	Blue	Vacant
3	DATA	Gray	7
4	$\overline{\text{DATA}}$	Pink	8
5	0 V U_N	White/Green	2
6	$\overline{\text{Request Frame}}$	Yellow	4
7	Request Frame	Violet	3
8	+V U_P	Brown/Green	1
	Vacant		5, 6, 9, 10
Housing	External shield		Housing

4.3.90 Adapter cable 8-pin/20-pin (Fanuc) OUT

ID 1040174-xx



Connector, 8-pin, female

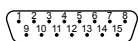


Connector, 20-pin, female

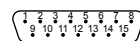
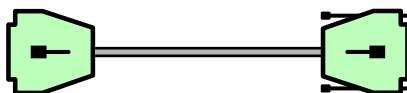
PIN	Signal	Color	PIN
1	0 V sensor	White	14
2	+V sensor	Blue	18, 20
3	DATA	Gray	1
4	$\overline{\text{DATA}}$	Pink	2
5	0 V U_N	White/Green	12
6	$\overline{\text{Request Frame}}$	Yellow	6
7	Request Frame	Violet	5
8	+V U_P	Brown/Green	8
	Vacant		3, 4, 7, 8, 10, 11, 13, 15, 17, 19
Housing	External shield		16

4.3.91 Connecting cable 15-pin/15-pin D-sub (EnDat)

ID 1040982-xx



D-sub connector, 15-pin, male

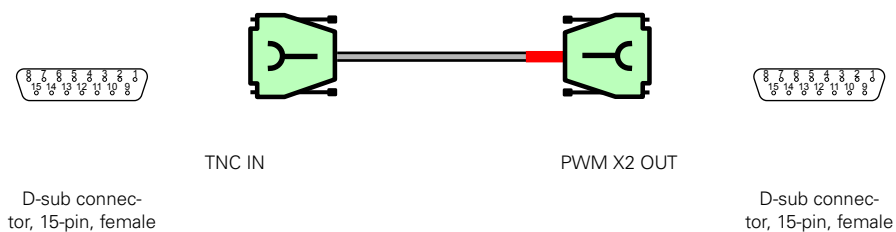


D-sub connector, 15-pin, male

PIN	Signal $\xleftrightarrow{\text{EnDat}}$	Color	PIN
1	+V U _P	Brown/Green	4
2	0 V U _N	White/Green	2
3	A+	Green/Black	1
4	A-	Yellow/Black	9
5	DATA	Gray	5
6	B+	Blue/Black	3
7	B-	Red/Black	11
8	$\overline{\text{DATA}}$	Pink	13
9	+V sensor	Blue	12
11	0 V sensor	White	10
13	Internal shield		6
14	CLOCK	Violet	8
15	$\overline{\text{CLOCK}}$	Yellow	15
10, 12	Vacant		7, 14
Housing	External shield		Housing

4.3.92 Adapter cable 15-pin/15-pin D-sub (EnDat)

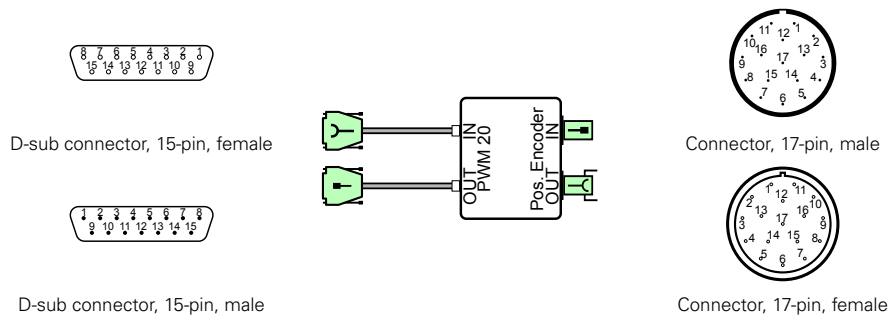
ID 1041017-xx



PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Color	PIN
1	+V U _P	Brown/Green	4
2	0 V U _N	White/Green	2
3	A+	Green/Black	1
4	A-	Yellow/Black	9
5	DATA	Gray	5
6	B+	Blue/Black	3
7	B-	Red/Black	11
8	$\overline{\text{DATA}}$	Pink	13
9	+V sensor	Blue	12
11	0 V sensor	White	10
13	Internal shield		6
14	CLOCK	Violet	8
15	$\overline{\text{CLOCK}}$	Yellow	15
10, 12	Vacant		7, 14
Housing	External shield		Housing

4.3.93 Adapter for feed-through (listening-in) Pos.Enc. 17-pin M23/15-pin D-sub PWM

ID 1075630-01



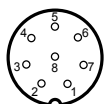
PIN	Signal $\overleftrightarrow{\text{EnDat}}$	Signal $\sim 1 V_{PP}$	Color	PIN
1	A+	A+	Green/Black	15
2	0 V U_N	0 V U_N	White/Green	10
3	B+	B+	Blue/Black	12
4	+V U_P	+V U_P	Brown/Green	7
5	DATA	C+	Gray	14
6	Internal shield			11
7	Vacant	R–	Black	2
8	CLOCK	D–	Violet	8
9	A–	A–	Yellow/Black	16
10	0 V sensor	0 V sensor	White	4
11	B–	B–	Red/Black	13
12	+V sensor	+V sensor	Blue	1
13	$\overline{\text{DATA}}$	C–	Pink	17
14	Vacant	R+	Red	3
15	$\overline{\text{CLOCK}}$	D+	Yellow	9
	Vacant	Temp+	Green	5 ¹⁾
	Vacant	Temp–	Brown	6 ¹⁾
Housing	External shield			Housing

¹⁾ Temp+ and Temp– each directly connected between IN and OUT

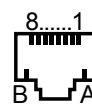
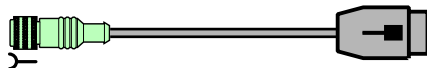
4.3.94 Adapter cable Siemens RJ45 connector 8+2-pin/8-pin (DRIVE-CLiQ)

ID 1093042-xx

Old ID 1078299-xx



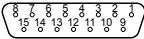
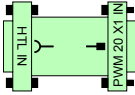
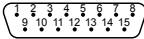
Connector, 8-pin, female



Connector, 10-pin, male

PIN	Signal DRIVE-CLiQ	Color	PIN
1	+V U _P	Red	A
3	RX+	Pink	1
4	RX-	Blue	2
5	0 V U _N	Black	B
6	TX-	Yellow	6
7	TX+	Green	3
2, 8	Vacant		4, 5, 7, 8
Housing	External shield		Housing

4.3.95 Adapter 15-pin/15-pin (HTL/HTLs)

ID 1093210-01		
		
D-sub connector, 15-pin, female D-sub connector, 15-pin, male		
PIN	Signal (prescribed by encoder)	PIN
1	HTL: +Ua1	1
2	0 V U _N	2
3	HTL: +Ua2	3
4	HTL: +V U _P	4
5	EnDat: DATA	5
6	Internal shield ¹⁾	6
7	HTL: -Ua0	7
8	EnDat: CLOCK	8
9	HTL: -Ua1	9
10	HTL: 0 V sensor	10
11	HTL: -Ua2	11
12	HTL: +V sensor	12
13	HTL: -UaS EnDat: $\overline{\text{DATA}}$ I ² C: DAT	13
14	HTL: +Ua0	14
15	EnDat: $\overline{\text{CLOCK}}$ I ² C: DAT	15

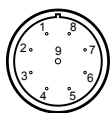
¹⁾ Switchover I²C-PWM20_AdapterHTL on/off via: PWM20.ioPorts.EN_SHIELD



The assignment of the female connector is set via the active PWM input (X1) according to the connected encoder.

4.3.96 Adapter cable Siemens RJ45 connector 8+2-pin/M23 9-pin (DRIVE-CLiQ)

ID 1117540-02



Connector, 9-pin, female

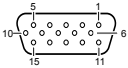


Connector, 10-pin, male

PIN	Signal DRIVE-CLiQ	Color	PIN
1	TX+	Green	3
2	TX-	Yellow	6
4	0 V U _N	Black	
5	RX+	Pink	1
6	RX-	Blue	2
8	+V U _P	Red	A
3, 7, 9	Vacant		4, 5, 7, 8
Housing	External shield		Housing

4.3.97 Adapter cable 15-pin D-sub, three-row/12-pin (TTL)

ID 1118055-01



Connector, 12-pin, male

D-sub connector, 15-pin, female

PIN	Signal  TTL	Color	PIN
1	-Ua2	Pink	11
2	+V sensor	Blue	15
3	+Ua0	Red	4
4	-Ua0	Black	5
5	+Ua1	Brown	3
6	-Ua1	Green	9
7	-UaS	Violet	-
8	+Ua2	Gray	6
9	PWT test pulse	Yellow	-
10	0 V U _N	White/Green	10
11	0 V sensor	White	10
12	+V U _P	Brown/Green	15
	Vacant		1, 2, 7, 8, 12-14
Housing	External shield		Housing

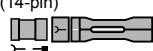
4.3.98 Adapter cable for PCP connector 14-pin/15-pin D-sub(1 V_{PP})

ID 1118892-02

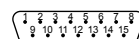


Connector, 14-pin, male
ID 528694-04

3 x 528694-04
(14-pin)



Adapter cable
ID 1118895-02



D-sub connector, 15-pin, male

PIN	Signal $\sim 1 V_{PP}$	Color	PIN
6b	A+	Green/Black	1
5b ¹⁾	0 V U _N	White/Green	2 ¹⁾
3b	B+	Blue/Black	3
1b ¹⁾	+V U _P	Brown/Green	4 ¹⁾
7b	C+	Gray	5
4a	R-	Black	7
6a	D-	Violet	8
2a	A-	Yellow/Black	9
3a ¹⁾	0 V sensor	White	10 ¹⁾
5a	B-	Red/Black	11
7a ¹⁾	+V sensor	Blue	12 ¹⁾
1a	C-	Pink	13
4b	R+	Red	14
2b	D+	Yellow	15
	Vacant		6
Flange, housing	External shield		Housing

¹⁾ Supply line connected with sensor line in the encoder



The set of adapter cables (ID 1118892-02) consists of:

- 1 x adapter cable ID 1118895-02
- 3 x insert for adapter connector ID 528694-04 (14-pin)

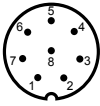
4.3.99 Adapter cable 9-pin M23 speedtec/8-pin M12 (DRIVE-CLiQ)

ID 1121536-xx



Connector, 9-pin, female





Connector, 8-pin, male

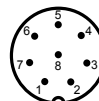
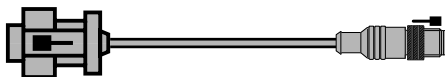
PIN	Signal DRIVE-CLiQ	Color	PIN
1	TX+	Green	7
2	TX-	Yellow	6
4	0 V U _N	Black	5
5	RX+	Pink	3
6	RX-	Blue	4
8	+V U _P	Red	1
3, 7, 9	Vacant		2, 8
Housing	External shield		Housing

4.3.100 Adapter cable RJ45 connector 8+2-pin/8-pin (DRIVE-CLiQ)

ID 1121591-xx



Connector, 10-pin, male

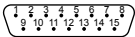


Connector, 8-pin, male

PIN	Signal DRIVE-CLiQ	Color	PIN
1	RX+	Pink	3
2	RX-	Blue	4
3	TX+	Green	7
6	TX-	Yellow	6
A	+V U _P	Red	1
B	0 V U _N	Black	5
4, 5, 7, 8	Vacant		2, 8

4.3.101 Adapter cable 15-pin/9-pin D-sub (Panasonic)

ID 1133018-xx



D-sub connector, 15-pin, male





D-sub connector, 9-pin, male

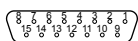
PIN	Signal	Color	PIN
2	0 V U _N	White/Green	5
4	+V U _P	Brown/Green	1
8	DATA	Violet	2
10	0 V sensor	White	9
12	+V sensor	Blue	3
15	DATA	Yellow	6
1, 3, 5–7, 9, 11, 13, 14	Vacant		4, 7, 8
Housing	External shield		Housing

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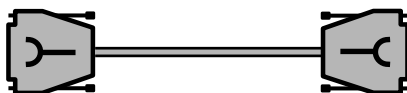
185

4.3.102 Adapter cable 15-pin/9-pin D-sub (Panasonic)

ID 1133027-xx



D-sub connector, 15-pin, female



D-sub connector, 9-pin, female

PIN	Signal	Color	PIN
2	0 V U_N	White/Green	5
4	+V U_P	Brown/Green	1
8	DATA	Violet	2
10	0 V sensor	White	9
12	+V sensor	Blue	3
15	$\overline{\text{DATA}}$	Yellow	6
1, 3, 5–7, 9, 11, 13, 14	Vacant		4, 7, 8
Housing	External shield		Housing

4.3.103 Adapter to extend DRIVE-CLiQ cables

ID 1170001-01		
		
Connector, RJ 45, 8+2-pin, female		Connector, RJ 45, 8+2-pin, female
PIN	Signal DRIVE-CLiQ	PIN
1	TX+	1
2	TX-	2
3	RX+	3
6	RX-	6
A	+V U _P	A
B	0 V U _N	B
4, 5, 7, 8	Vacant	4, 5, 7, 8
Housing	External shield	Housing

5 Contacts

Your HEIDENHAIN helpline

The qualified, multilingual specialists of the HEIDENHAIN helpline in Traunreut support you in solving your problems.

Especially if you need **technical support** the HEIDENHAIN helpline team can provide detailed advice and information on measuring systems, controls, and NC and PLC programming.

The HEIDENHAIN technical helpline

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