

STATOGRAPH® ECM 6.421 Multiplexer System



Figure 1: STATOGRAPH® Multiplexer System

- Probe multiplexer for STATOGRAPH ECM 6.421
- Connection of a maximum of 16 probes to one test instrument
- Control module for automatic channel and parameter set selection

Characteristics

- standard version for up to 8 probes
 - expandable for up to 16 probes
 - PLC module for automatic switching of probes with simultaneous selection of parameter setting on the test instrument
 - usable with or without separate cable adaptation (depending on the distance between test coils, multiplexer, and test instrument)
 - one cable adaptation for all probes or individual cable adaptations for each probe (depending on the configuration)
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Application

- sequential multi-channel eddy-current testing for surface flaws (cracks, pores, etc.)
 - low-cost alternative to simultaneous multi-channel applications
 - usage in applications with no stringent time-requirements
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Construction

The STATOGRAPH multiplexer system is composed of the following components:

- a) STATOGRAPH ECM 6.421
- b) Multiplexer
- c) PLC module
- d) Control cable ECM
- e) Control cable Multiplexer

Optionally for certain applications additional coil cables and cable adaptations can be added.

Figure 2 shows the front while Figure 3 shows the backside of the multiplexer. In Figure 4 the PLC module is displayed.

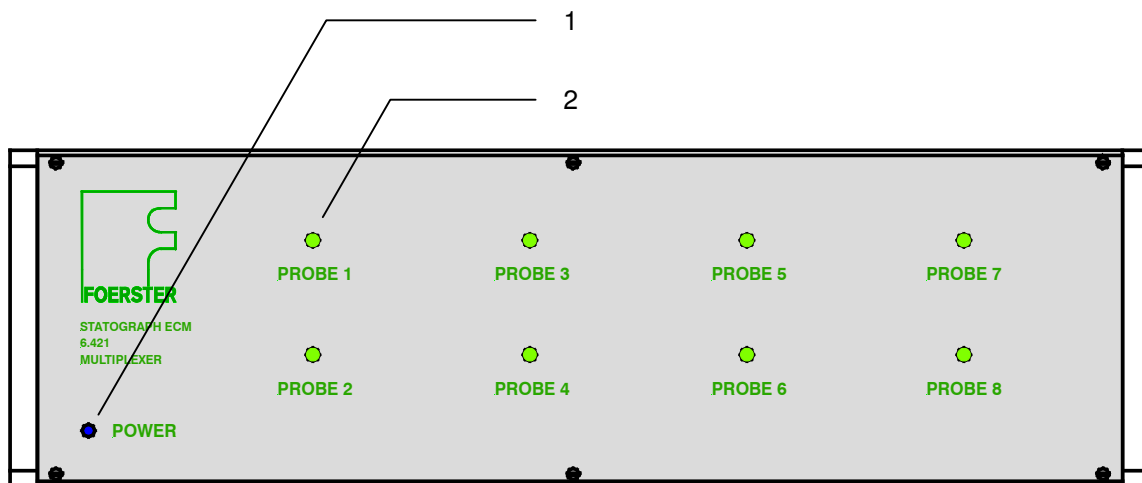


Figure 2: Front panel of the multiplexer

1. Power indicator
2. Channel selection indicator

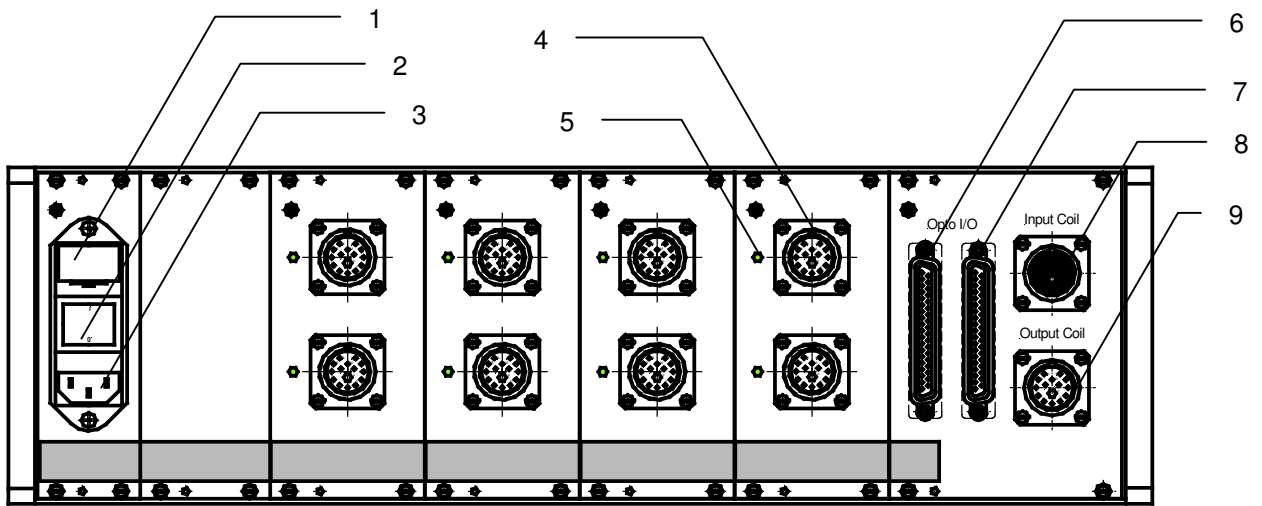


Figure 3: Rear side of the multiplexer

1. Fuse
2. Mains switch
3. Mains connector
4. Probe connector
5. LED for channel selection
6. Interface for PLC module
7. Interface for second multiplexer
8. Input coil cable for STATOGRAPH ECM
9. Output coil cable for second multiplexer

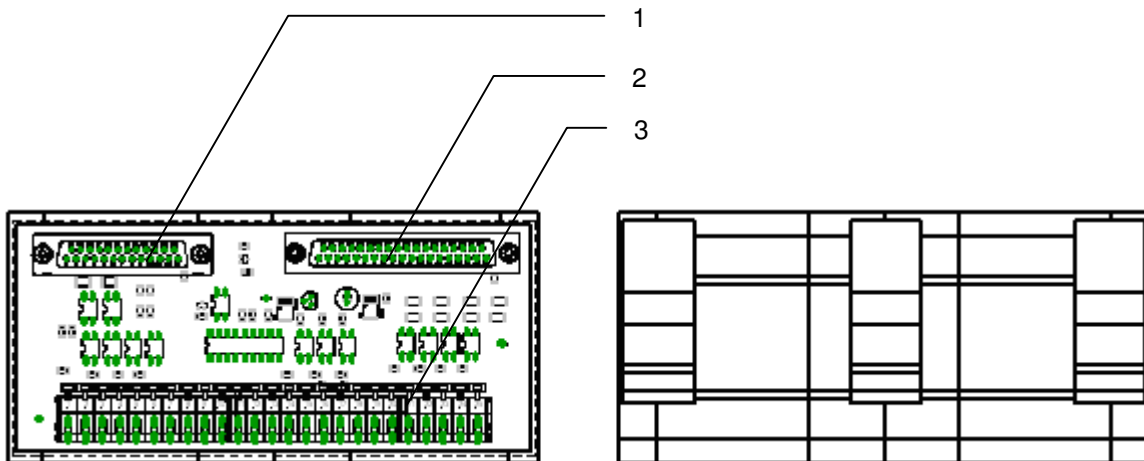


Figure 4: PLC module for EN rail mounting

1. Interface STATOGRAPH ECM
2. Interface multiplexer
3. Connectors for external PLC

Mode of operation

Selection of the active test sensor is initiated by the external PLC and signaled to the PLC-module by usage of the PS_A, PS_B, PS_C, PS_D, and PS_STROBE signals.

The switch-over process is then controlled by the PLC-module. The PLC module switches the multiplexer to the selected channel. Then it initiates the parameter selection on the STATOGRAPH ECM.

The TESTING line serves as a handshake signal for the switching process.

The whole process may take up to approx. 1.6 seconds – depending on the selected parameter setting. During switch-over the test channel of the STATOGRAPH ECM is deactivated; testing therefore is interrupted during this interval.

Please note that switch-over is inhibited as long as an error condition is present on the STATOGRAPH ECM (output signal ERROR). In this case first the error condition must be acknowledged (ERR ACK), before channel selection can be effected.

Figure 5 shows a time diagram of the channel selection process.

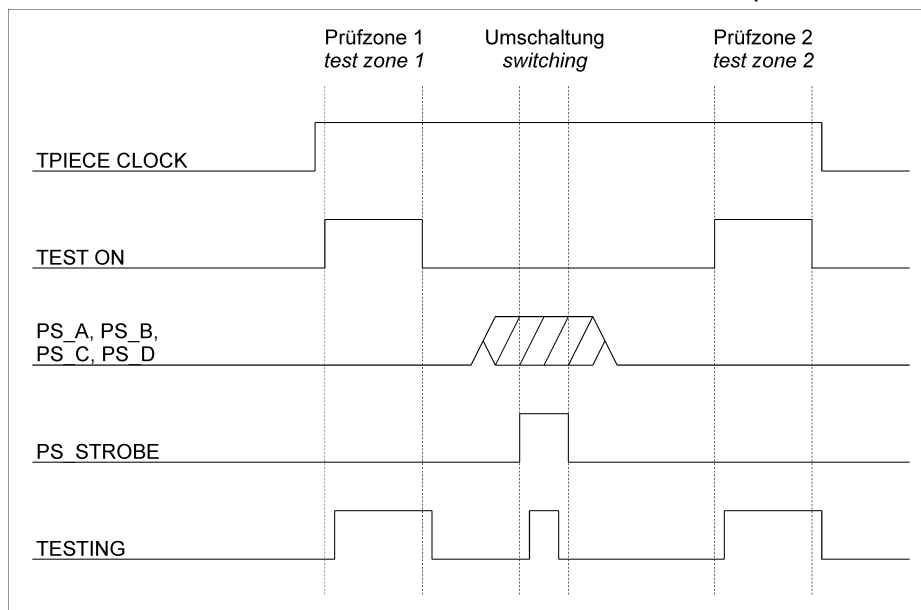


Figure 5: Time diagram for the multiplexer switching process

Connection scheme

Depending on the distances between test sensors and multiplexer resp. between multiplexer and test instrument different connection schemes might be applied.

In case of short distances of up to 1.5 m maximum the usage of a cable adaptation might be obsolete, see Figure 6.

For larger distances the usage of a cable adaptation is mandatory. There are two possibilities: usage of a common cable adaptation for all probes, see Figure 7. For some application the usage of a separate cable adaptation for each probe might be necessary, see Figure 8.

For applications with more than 8 (maximum of 16) test probes a second multiplexer can be employed, which has to be connected by another control cable as well as another coil cable, see Figure 9.

Connection to the external PLC is to be done using the screw terminal, see Figure 4, Pos. 3 and Figure 10. On this terminal all input and output signals of the STATOGRAPH ECM are available. A list of these signals can be found in Table 1.

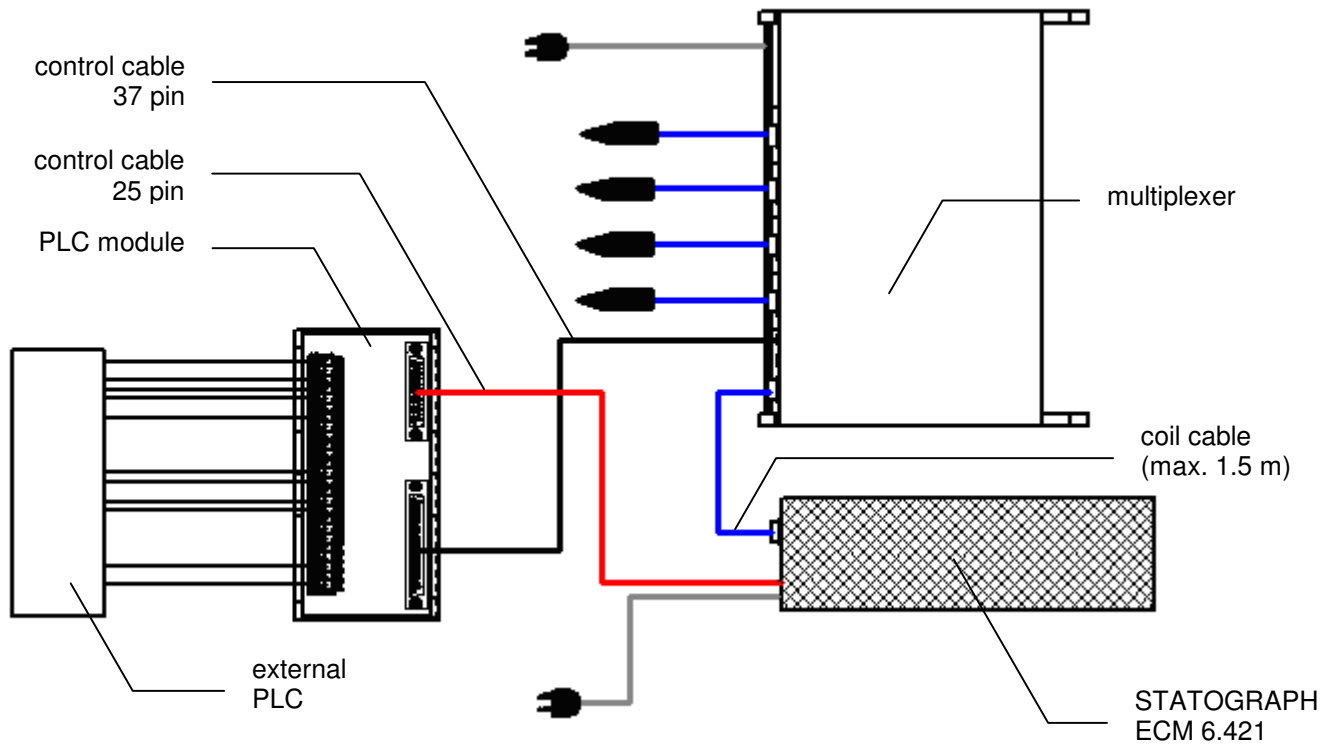


Figure 6: Connection scheme for short distances

Usage of a cable adaptation is avoided. This connection scheme might only be used when both the probe cables and the coil cable from multiplexer to STATOGRAPH ECM 6.421 are 1.5 m or shorter.

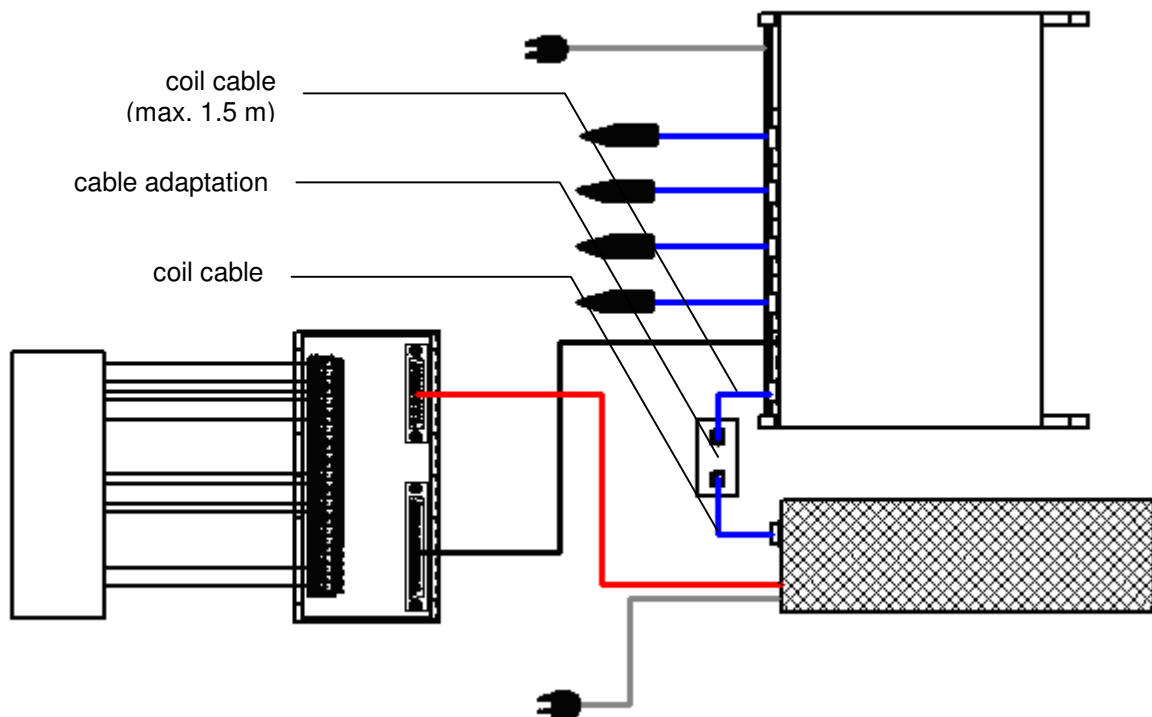


Figure 7: Connection scheme with one common cable adaptation

This connection scheme is used whenever the multiplexer can be installed near to the test probes. The probe cables may not be longer than 1.5 m. The common cable adaptation has to be mounted near to the multiplexer (cable length max. 1.5 m). The distance from the cable adaptation to the STATOGRAPH ECM 6.421 may be larger.

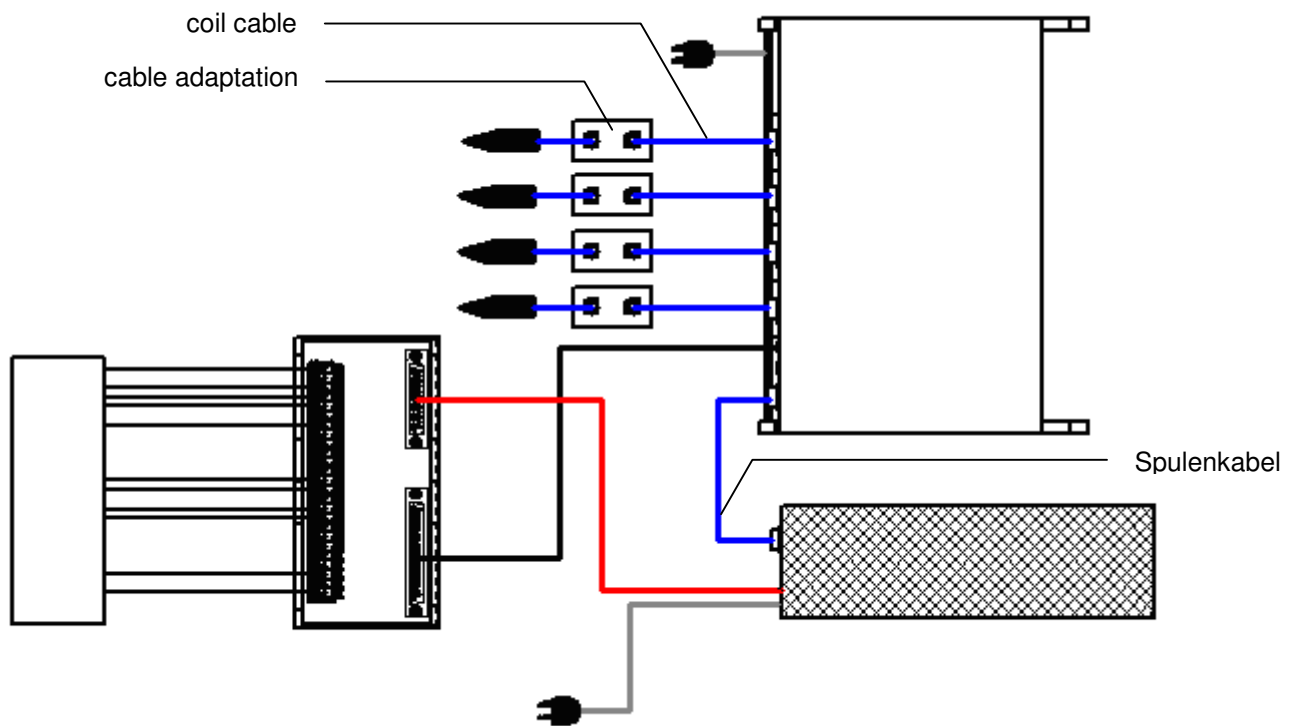


Figure 8: Connection scheme with separate cable adaptations

A separate cable adaptation for each probe must be used whenever the distance between probes and coil multiplexer exceeds 1.5 m. Connection of the cable adaptations to the multiplexer as well as the multiplexer to the STATOGRAPH ECM is effected by one coil cable (any length) each.

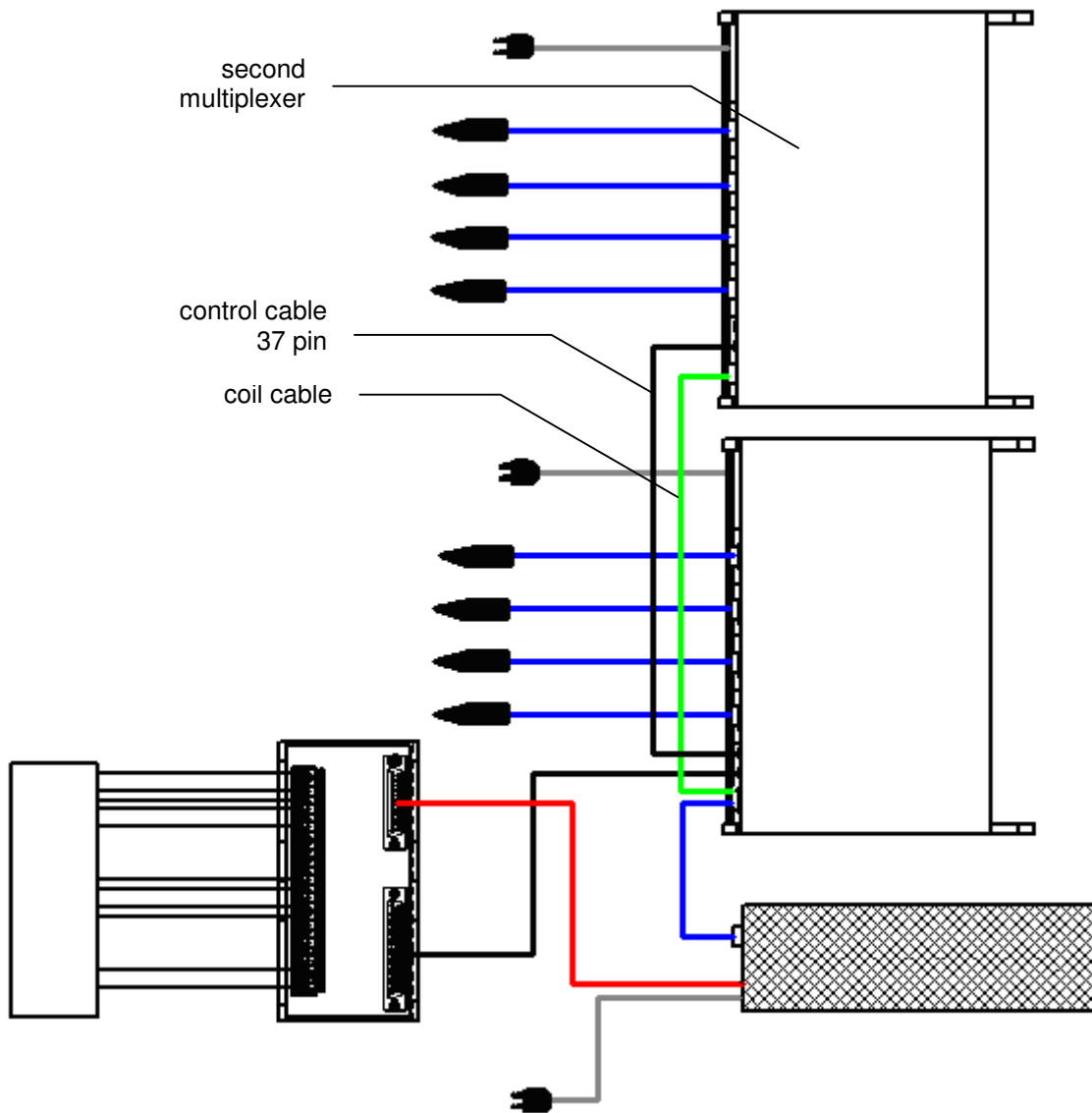


Figure 9: Connection scheme with second multiplexer for applications with up to 16 probes
 As an example the usage without cable adaptations is show here, whereby the maximum length of probe cables as well as coil cable may be 1.5 m. For applications with a common cable adaptation for all probes or with separate cable adaptations for each probe the connection of a second multiplexer is done in analogy.

Connection to external PLC

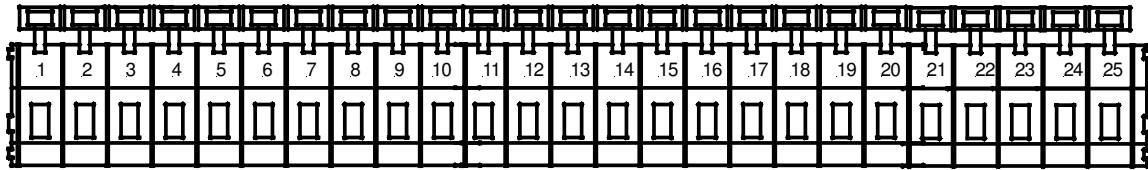


Figure 10: Screw terminal PLC module

Pin	Signal	I* = Input O** = Output
1	COMMON IN	-
2	TPIECE CLOCK	I
3	PS_STROBE	I
4	PS_B	I
5	PS_D	I
6	IN1	I
7	GND	-
8	ROT SYNC	I
9	OUT1	O
10	SORT S0	O
11	THRESH C	O
12	THRESH A	O
13	COMMON OUT	-
14	TEST ON	I
15	ERROR ACK	I
16	PS_A	I
17	PS_C	I
18	IN2	I
19	GND	-
20	+15V	-
21	-	-
22	SORT S1	O
23	ERROR	O
24	THRES B	O
25	TESTING	O

Table 1: Pin assignment of PLC module

Further information can be found in the Installation Instructions ECM-SYSTEM 2.010, order no. 158 593 2.

* The range for the input signals is 15 V to 30 V / 2 mA; constant current

** The maximum current on the output signals is 70 mA

Technical data

	STATOGRAPH MULTIPLEXER	PLC module
probes	max. 8 per multiplexer	-
cascadable	max. 2 multiplexers	-
supply voltage	230 V~ ±10%, 50/60 Hz	-
dimensions	appr. 132 x 483 x 300 mm ³ (HxWxD)	appr. 40 x 160 x 77 mm ³ (HxWxD)
mass	appr. 6.5 kg	appr. 0.2 kg
operating temperature	+5°C to +40°C	+5°C to +40°C
relative humidity	8% to 80%, non condensing	8% to 80%, non condensing
enclosure	IP64, front side	-

Product information

Leaflets

STATOGRAPH ECM 6.421	107 521 7
STATOGRAPH Probes 6.421	144 728 9
Rotating Probe 6.481	130 094 6
Sensor System CIRCOSCAN H 6.482	157 548 1

Applikation Leaflets

Ball pins	134 837 0
Valve seat rings	134 838 8
Break drum	136 379 4
Drive shafts	137 134 7
Ball housing	139 288 3
Break disk	142 270 7
Rotationally symmetric parts	142 497 1
Yoke shaft	145 759 4
Axle hub	146 072 2
Shock absorber	146 800 6
Break piston	148 831 7

Should you have any special problems please contact:

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or one of our agencies abroad. Order no. **188 238 4**
Information and illustration may be Edition **01/2009 b**
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Order Information

Designation		Part No.	Order No.
MULTIPLEXER	STATOGRAPH ECM	6.421.01-1111	188 184 1
PLC MODULE	F. STATOGRAPH MULTIPLEXER	6.421.01-9722	188 182 5
CONTROL CABLE	37 PIN, 1M	DS37R100DS	038 590 5
CONTROL CABLE	37 PIN, 2M	DS37R200DS37	038 573 5
CONTROL CABLE	25 PIN, 1M	EK137.1	038 277 9
CONTROL CABLE	25 PIN, 2M	671466	038 275 2
COIL CABLE 1M		2.899.51-1110 M1	181 034 0
COIL CABLE 3M		2.899.51-1110 M3	140 793 7
COIL CABLE 5M		2.899.51-1110 M5	149 743 0
COIL CABLE 10M		2.899.51-1110	138 161 0
CABLE ADAPTATION	15/15 PIN	6.421.01-9703	126 939 9