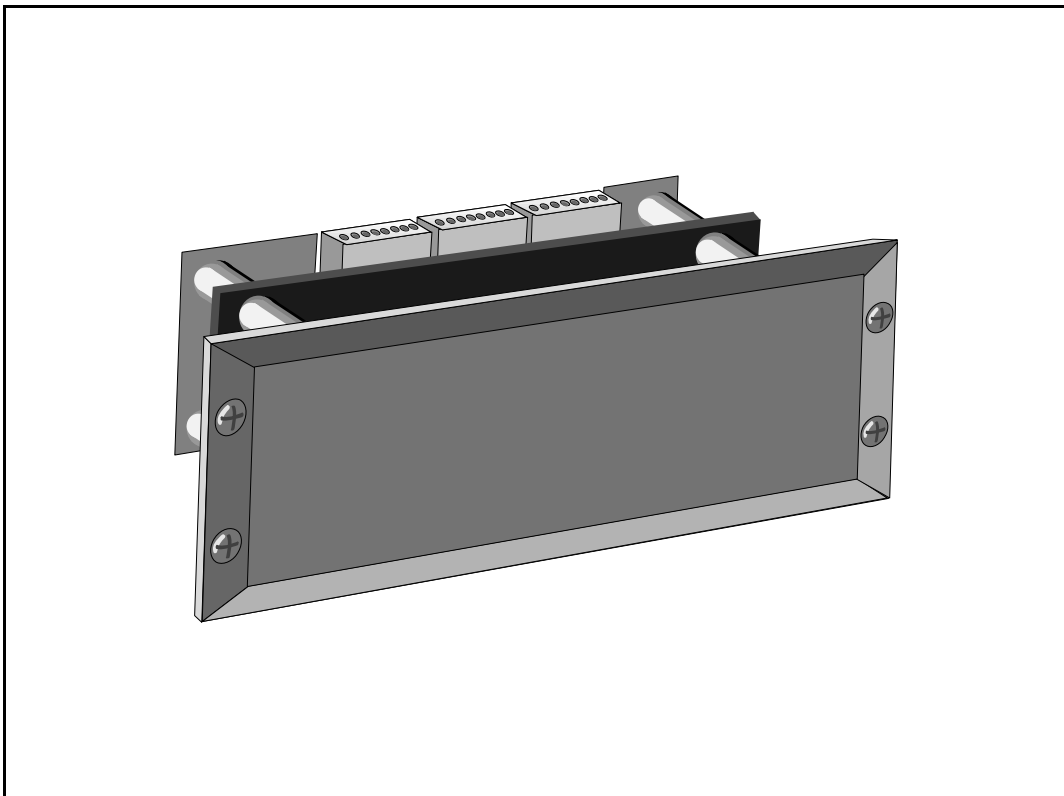




FP2 - Remote Signal Module for the NP2 Automatic Controller



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1 General

The **FP2** Remote Signal Module is the output module for the **NP2** series. The module outputs fault and operating signals from the **NP2** Automatic Controller and their **EP2** Extension Modules via potential-free contacts. Information can be transferred to remotely located control centres.

1.1 Fault Signal Output

The **FP2** Extension Module should be installed close to the **NP2** Automatic Controller or the **EP2** Extension Modules. It is equipped with 8 potential free contacts to output for individual signals and 2 additional potential-free contacts for common signals. Signals which need to be processed by one **FP2** the **FP2** module is assigned to the **NP2** Automatic Controller, it can either output fault signals nos. 1-8 or nos. 2-9 module must therefore be combined by one **NP2** Automatic Controller or one **EP2** module.

1.2 Operating Signal Output

In addition to the output of **NP2** fault signals, the **FP2** module can also be used to output the 7 main **NP2** operating signals "OFF"; "AUTOMATIC"; "TEST"; "MANUAL"; "SPEED TRANSMITTER FAILURE"; "SIGNAL TEST"; "SUPERVISION ON" and the fault signal "START FAILURE".

If **NP2** Automatic Controller fault and operating signals need to be transferred, two **FP2** modules must be used. One exception is the fault signal "START FAILURE". This can be combined with fault or operating signals.

1.3 Common Signal Output

Two common signal relays provide a distinction between electrical and mechanical faults. Signals, such as "BATTERY VOLTAGE", "SHORT CIRCUIT", etc., can be indicated by one relay and faults such as "MIN. OIL PRESSURE", "MIN. FUEL", "TEMPERATURE", etc. by the other.

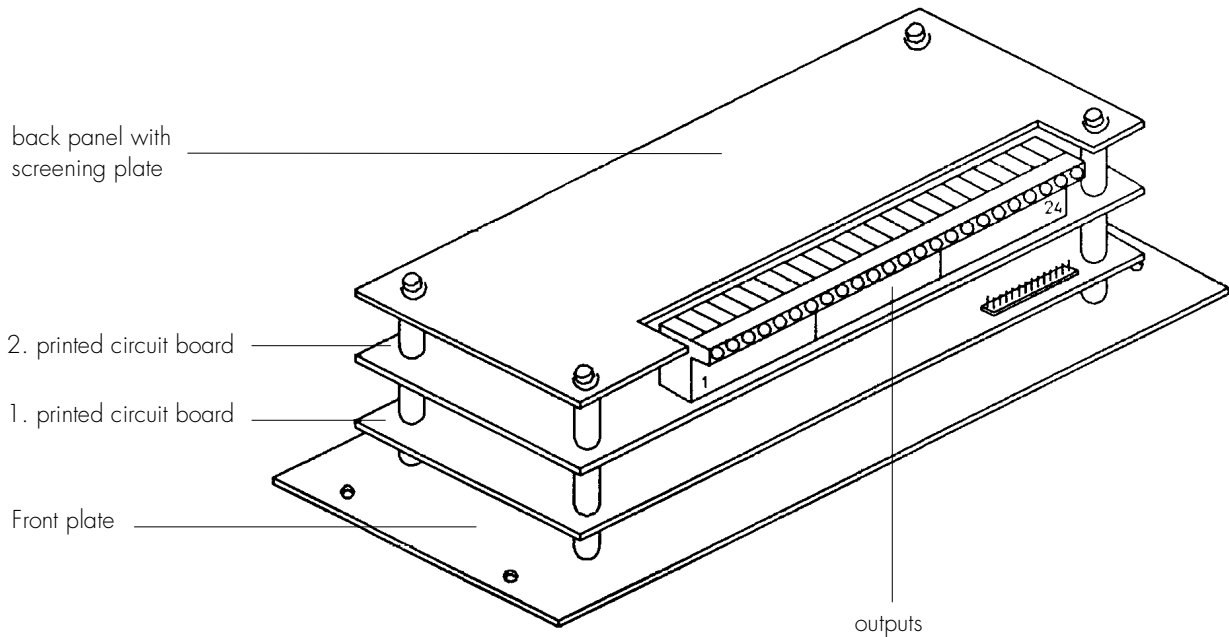


Fig. 1: Mechanical design of remote signal module

2 Mechanical Design and Startup

2.1 Mechanical Design

The *FP2* Remote Signal Module comprises front and rear covers and two printed circuit boards (PCBs) (Figure 1). On the rear cover are explanations of the code strips on the PCB.

2.2 Coding

Remote Signal Module allocated to NP2 Automatic Controller or to an EP2 Extension Module

When the control and monitoring system is fully extended, the NP2 Automatic Function Unit has 7 extension modules. Therefore it must be determined which extension module the *FP2* module is allocated to, or whether the *FP2* module should output signals from the NP2 Automatic Controller. This is performed by a code plug inserted in code strip X3 on the first PCB (Fig. 2).

If the code plug is placed in position 1 of the code strip, signals are sent out from the NP2 Automatic Controller. If the code plug is in position 2, the *FP2* module is allocated to the first EP2 module. If it is in position 3, the *FP2* module is allocated to the second EP2 module (the "position number" of the EP2 module is determined by the position coding on the EP2 module).

If the *FP2* module is allocated to the NP2 Automatic Controller, it must be defined whether operating or fault signals should be sent out. This is performed using the code strip X2 on the first PCB. If the code plug is not inserted, fault signals are sent out. If the code plug is in position 1, operating signals are sent out. Positions 2 to 4 on code plug X2 have no function.

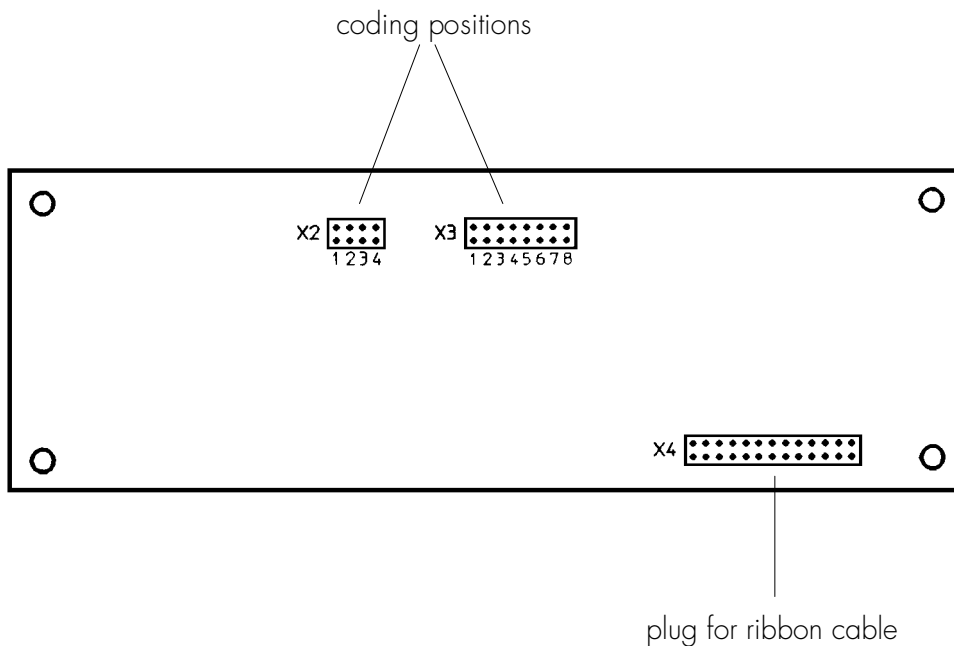


Fig. 2 1: printed circuit board

Table 1 shows a number of coding examples.

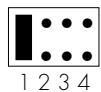
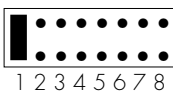
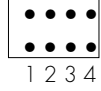
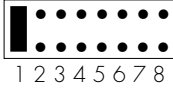
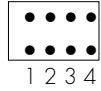
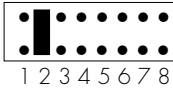
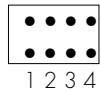
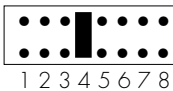
Coding examples for code strips X2 and X3		
Code		Output signals
 X2 1 2 3 4	 X3 1 2 3 4 5 6 7 8	Operating signals of NP2 Automatic Controller
 X2 1 2 3 4	 X3 1 2 3 4 5 6 7 8	Fault signals 1 to 8 or 2 to 9 of NP2 Automatic Controller (depending on coding of NP)
 X2 1 2 3 4	 X3 1 2 3 4 5 6 7 8	Fault signals of the 1st EP2
 X2 1 2 3 4	 X3 1 2 3 4 5 6 7 8	Fault signals of the 3rd EP2

Fig. 3: Wiring diagram: FP2 module

Coding the NP2

If NP2 fault signals need to be sent out, a code should be set on the NP2 for signals nos. 1 to 8 or nos. 2 to 9. When viewing the NP2 Automatic Controller, the solder straps to code the voltage ranges for network and generator monitoring are located on the right. The solder bridge in position 4 is for coding the function of the Remote Signal Module. Fault signals nos. 2 to 9 are sent out via the FP2 module using solder bridges. If the solder bridges are omitted, signals nos. 1 to 8 are sent out. The NP2 is supplied as standard with the solder bridge in position 4.

Relay contacts

If not requested otherwise on the purchase order, the relays on the second PCB are supplied ex works for operation in the open circuit mode, e.g. the contact is closed when a fault occurs (see contacts in figure 3).

Every relay can also be operated in the closed circuit mode, i.e. the contact is opened when a fault occurs. This is achieved by removing the solder bridge of the corresponding relay and replacing it with a solder bridge at the previously open location.

Combination of signals

Relays K9 and K10 (terminals 17 to 20) are provided to output common signals. The signals are combined via a code strip on the second PCB (see figures 3 and 4). A code plug in position a) of one of the 8 signals means that the signal is passed on via relay K9, and a plug in position b) outputs the signal via relay K10.

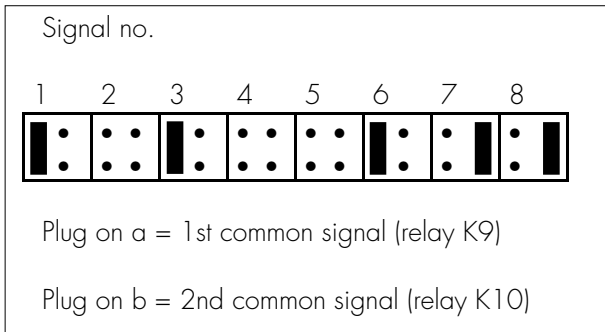


Fig. 4: Code strip for common signals

In the example shown here, signals 1, 3 and 6 are combined at relay K9 and signals 7 and 8 at relay K10. Signals 2, 4 and 5 are not considered in this example.

2.3 Connection to NP2 Automatic Controller or EP2 Module and Earthing

A ribbon cable connects the NP2 Automatic Controller and the Extension Modules. The plug is inserted in socket X4 on the first PCB (figure 2). Connect the inner sheet metal side of the module rear cover to earth. A socket is provided to connect an AMP plug. The modules can then be interconnected as well as connected to earth.

2.4 Terminal Assignment

Terminals 1 to 16 (Figure 3) are the potential-free outputs of relays K1 to K8 on the second PCB and pass on 8 fault or 8 operating signals. The first signal is assigned to relay K1, the second signal to relay K2, etc. (see table 2). Common signals are presented to the outputs with potentialfree contacts at relays K9 and K10 (second PCB, terminals 17 to 20).

The output relays are only provided for passing on information. They are not suitable for large or inductive loads. For such applications use protective circuits or interposing relays. Connect the supply voltage 12 or 24 V DC to terminals 21 (+) and 22 (-) (Figure 3).

Relay	Terminals	Fault signal	Operating signal
K1	15, 16	1	OFF
K2	13, 14	2	AUTOMATIC
K3	11, 12	3	TEST
K4	9, 10	4	MANUAL
K5	7, 8	5	START FAILURE
K6	5, 6	6	SPEED TRANSMITTER FAILURE
K7	3, 4	7	SIGNALTEST
K8	1, 2	8	SUPERVISION ON
K9	17, 18	Common fault signal a	-
K10	19, 20	Common fault signal b	-

Table 2

3 Mounting the Remote Signal Module

FP2 Remote Signal Modules are designed for mounting in switchboards. They can be fixed by using the enclosed screws. In order to keep the cables between the extension modules and the NP2 as short as possible, the modules should be mounted close to the NP2 Automatic Controller (for examples of mounting layouts, see "Information Required with Order"). The dimensions of the FP2 module are contained in the dimensional drawing.

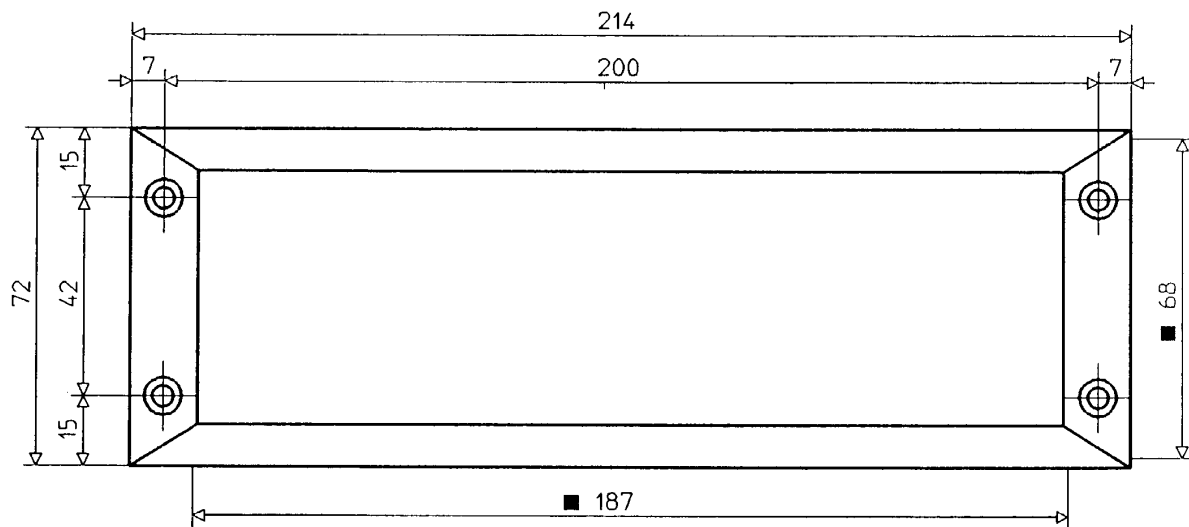


Fig. 4: Dimensional Drawing

Depth (behind panel): 58 mm

■ = Switchboard cut-out (W x H): 187 mm x 68 mm

4 Technical Data

General Data

Maintenance:	no maintenance
Duty:	continuous
Mounting position:	optional (close to NP2)
GL Nr.:	99.821.HH
VRS Nr.:	92.001.272

Input Circuits

Supply voltage:	9 - 15 V/DC	17 - 32 V/DC
Nominal voltage:	12 V/DC	24 V/DC
Max, input voltage:	16 V/DC	32 V/DC
Nominal power consumption (depending on number of activated relays):	0.13 - 2.13 W	0.43 - 2.28 W
Max. power consumption:	3.84 W (at $U_v = 16$ V)	4.48 W (at $U_v = 32$ V)

Output circuits

Signal relays:	10 relays												
• contacts:	potential free; each with 1 NC or 1 NO (depending on code)												
• max. switching surge:	230 V/AC, 110 V/DC												
• max. resistor load current:	<table><thead><tr><th>Voltage</th><th>current</th></tr></thead><tbody><tr><td>12 V/DC</td><td>2.0 A</td></tr><tr><td>24 V/DC</td><td>2.0 A</td></tr><tr><td>60 V/DC</td><td>1.0 A</td></tr><tr><td>110 V/DC</td><td>0.5 A</td></tr><tr><td>230 V/AC</td><td>0.2 A</td></tr></tbody></table>	Voltage	current	12 V/DC	2.0 A	24 V/DC	2.0 A	60 V/DC	1.0 A	110 V/DC	0.5 A	230 V/AC	0.2 A
Voltage	current												
12 V/DC	2.0 A												
24 V/DC	2.0 A												
60 V/DC	1.0 A												
110 V/DC	0.5 A												
230 V/AC	0.2 A												
• contact material:	gold plating												
• contact service life:	min. 50×10^6 operations												

Possible Codes

Possible codes:	setting of FP2 module function using code plug
Possible outputs:	common signal K 9 common signal K10 NP2 - fault signal NP2 - operating signals EP2 - fault signals

GL-Approbation:	99 821 HH
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Processing Time

Time (depending on:
number of extension
modules) 40 - 100 ms

Tests

Mechanical strength: Test in operation acc. to "Germanischer Lloyd", i.e. with the following vibration stress:
f = 2 - 13.2 Hz, amplitude: ± 1 mm
f = 13.2 - 100 Hz, acceleration = 0.7g

Ambient conditions

Min./max. ambient temperatures

- storage: - 40°C to + 75°C
- operation: - 25°C to + 70°C

Humidity resistance: Class F to DIN 40040, tested to DIN IEC 68 part 2-3 (56 days 40°C and 93 %R.H.)

Housing, Dimensions, Weight and Housing

Construction:	for through-panel mounting in switchboards
Material front cover:	Foil front panel
rear cover:	macrolon / sheet steel
Width x height x depth:	214 mm x 72 mm x 58 mm
Switchboard cut-out (W x H):	187 mm x 68 mm
Housing attachment:	by screws
Weight:	approx. 390 g
Protection front cover:	IP 54
rear cover:	IP 00

Technical data subject to change without notice.

5 Order form

Please use the form on this page when ordering. Use one form for each Remote Signal Module.
Please cross the desired option.

If no details on coding are given, modules are supplied with standard coding.

Minimum information:

Supply voltage 12 V 24 V
 Coding standard details below

Coding details

Allocation of FP2 module

NP operating signals NP fault signals
 1. EP 2. EP 3. EP 4. EP 5. EP 6. EP 7. EP


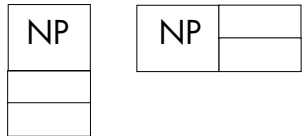
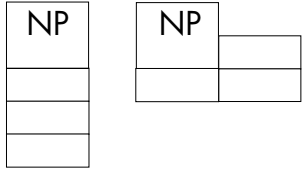
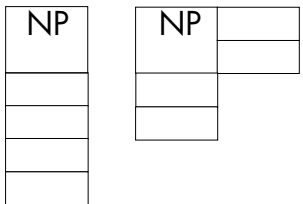
Relay contacts

Relay	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
N.O. contact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
N.C. contact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Combination of common alarms

Relay	K1	K2	K3	K4	K5	K6	K7	K8
to relay K9 (a)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
to relay K10 (b)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Mounting layouts of NP2 and extension modules
(please enter the position of EP2 or FP2 in the desired layout):**

<p><i>NP</i> + 1 module</p> <div style="text-align: center; margin: 10px 0;">  </div> <p style="text-align: center;">1a) <input type="checkbox"/></p>	<p><i>NP</i> + 2 modules</p> <div style="text-align: center; margin: 10px 0;">  </div> <p style="text-align: center;">2a) <input type="checkbox"/> 2b) <input type="checkbox"/></p>		
<p><i>NP</i> + 3 modules</p> <div style="text-align: center; margin: 10px 0;">  </div> <p style="text-align: center;">3a) <input type="checkbox"/> 3b) <input type="checkbox"/></p>	<p><i>NP</i> + 4 modules</p> <div style="text-align: center; margin: 10px 0;">  </div> <p style="text-align: center;">4a) <input type="checkbox"/> 4b) <input type="checkbox"/></p>		
<p>Other layouts</p> 			
<p>Special requirements</p>			
<p>In case of clarification:</p>			
<p>P/O date:</p>	<p>Company:</p>	<p>Contact:</p>	<p>Telephone:</p>

The arrangement of the **NP2** and the **FP2** extension modules determine the length of the supplied ribbon cable. Please cross the mounting layout required. If your layout is not listed, please use the field "other layouts" (hand sketch is sufficient).



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