

## EYL220: nova220, Compact automation station

The nova220, which is the larger of the two compact units in the EY3600 family of systems, is designed primarily for the control and regulation of HVAC systems. It has 48 inputs and 18 outputs. The short cycle time enables it to perform even very fast control tasks. It has communication capability and can be networked without any further provisions having to be made. The unit is programmed (parameterised) using a PC with the EY3600 CASE software and the FBD Editor as per IEC 1131-3.

The station has all assemblies and interfaces necessary for operation, for the connection of plant devices and for communication with other stations and with the management level.



### Products

| Type       | Description                       | Power supply | Weight kg (lb) |
|------------|-----------------------------------|--------------|----------------|
| EYL220F001 | Compact AS                        | 230 V~       | 3.0 (6.6)      |
| EYL220F101 | Compact AS with LED               | 230 V~       | 3.1 (6.8)      |
| EYL220F005 | Compact AS, UL-certified          | 24 V~        | 3.0 (6.6)      |
| EYL220F105 | Compact AS with LED, UL-certified | 24 V~        | 3.1 (6.6)      |

### Technical data

#### Electrical supply

|                   |                  |
|-------------------|------------------|
| Power supply      |                  |
| EYL220F001/F101   | 230 V~, 50/60 Hz |
| EYL220F005/F105   | 24 V~, 50/60 Hz  |
| Power consumption | 24 VA            |
| Power loss, max.  | approx. 27 W     |

#### Execution

|                 |                           |
|-----------------|---------------------------|
| Factory setting | All switches set to "Off" |
|-----------------|---------------------------|

#### Inputs / Outputs

|                  |                |
|------------------|----------------|
| Digital inputs   | 32             |
| Digital outputs  | 4× 0-I         |
|                  | 4× 0-I-II      |
| Analogue inputs  | 8× Ni/Pt1000   |
|                  | 6× U/I/R       |
| Analogue outputs | 6× 0...10 V    |
|                  | (2× 0...20 mA) |
| Counters         | 2              |

#### Interfaces, communication

|  |                      |
|--|----------------------|
| AS network/data cable  | 2× a/b terminals     |
|  | 1× RJ11 socket (6/6) |
| Control Panel EY-OP240 F001  | 1× RJ45 socket       |
| modu240 languages:   |                      |
| German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish (for other languages, see 'Accessories') |                      |

### Accessories

| Type       | Description   |
|------------|---|
| EY-OP240   | Local Operating Panel modu240   |
| 0501112002 | nova220 microprogram with modu240 language: German, French, English, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish, Slovakian |
| 0367842002 | Connecting cable: nova AS   |
| 0367842003 | Connecting cable: nova AS   |
| 0367842004 | Connecting cable: nova AS   |
| 0367862001 | novaNet connecting cable: novaNet290/291 to AS, 1.50 m (4.9 ft)   |
| 0367862002 | novaNet connecting cable: novaNet290/291 to AS, 2.90 m (9.5 ft)   |
| 0367862003 | novaNet connecting cable: novaNet290/291 to AS, 6.0 m (19.7 ft)   |
| 0367883002 | 5× EPROM (empty; USER-EPROM)  |
| 0367888001 | 5× EPROM (4 Mbit; empty)  |
| 0367894001 | Kit for converting EYL220F001 (without LED) to EYL220F101 (with LED)  |
| 0374504001 | Cover, complete with BACnet communication card, MV 505922 (for EYL220F001/F005 only)  |

#### Permitted ambient conditions

|                                   |                             |
|-----------------------------------|-----------------------------|
| Operating temperature             | 0...45 °C (32...113 °F)     |
| Storage and transport temperature | -25...70 °C (-13...158 °F)  |
| Humidity                          | 10...90% rh no condensation |

#### Installation

|                      |                       |
|----------------------|-----------------------|
| Dimensions W × H × D | 280 × 266 × 78 mm     |
|                      | 11" × 10.5" × 3" inch |

#### Standards, guidelines and directives

|                           |                           |
|---------------------------|---------------------------|
| Degree of protection      | IP 00 (EN 60529)          |
| Protection class          | I (EN 60730-1)            |
| Environmental class       | 3K3 (IEC 60721)           |
| CE conformity as per      |                           |
| Directive 2006/95/EC      | EN 60730                  |
| EMC Directive 2004/108/EC | EN 61000-6-1/EN 61000-6-2 |
|                           | EN 61000-6-3/EN 61000-6-4 |
| Agency USA/Canada         | UL listed: UL 916         |
| EYL220F005/F105           | CSA certified: CSA C22.2  |

#### Additional information

|                      |                        |
|----------------------|------------------------|
| Fitting instructions | MV 505390              |
| Dimension drawing    | <a href="#">M04744</a> |
| Wiring diagrams      | <a href="#">A04750</a> |

## Engineering notes

- Using a top-hat rail (EN 50022), the nova220 automation station can be fitted in a panel.
- The EYL220F001/F101 stations require a power supply of 230 V~ and the EYL220F005/F105 require 24 V~ (USA: power source class 2).
- The earthing terminals are connected to ground (PE) and to the housing.
- The plant devices are connected via spring-type terminals. The following conditions must be observed:

### Connection requirements for devices

|                  |   |
|------------------|---|
| Cable size       | min. 0.8 mm <sup>2</sup> (AWG 18), max. 2.5 mm <sup>2</sup> (AWG 13), adhering to the norms   |
| novaNet          | with twisted cable  |
| Digital inputs   | <ul style="list-style-type: none"> <li>potential-free contacts</li> <li>opto-coupler</li> <li>transistors (open collector)</li> </ul>   |
| Digital outputs  | <ul style="list-style-type: none"> <li>EYL220F001/F101: &lt; 250 V~/2 (2)A to the relay contacts</li> <li>EYL220F005/F105: &lt; 30 V~/2 (2)A to the relay contacts</li> </ul> |
| Analogue inputs  | < 10 V=   |
| Analogue outputs | no extraneous voltage   |
| Counters         | potential-free contacts, opto-coupler, transistor (open collector)  |

## Inputs and outputs

### Temperature measurement

|                  |  |
|------------------|--|
| Number of inputs | 8  |
| Type of inputs   | <ul style="list-style-type: none"> <li>Ni1000 (without coding)</li> <li>Pt1000 (software coding)</li> </ul>                            |
| Measuring ranges | <ul style="list-style-type: none"> <li>Ni1000: -50...+150 °C (-58...+302°F)</li> <li>Pt1000: -100...+500 °C (-148...+932°F)</li> </ul> |

The Ni/Pt inputs, which do not need calibrating, already take the resistance of the cable into account and can be used for Ni1000 and Pt1000.

### Temperature measurement

|                                   |  |
|-----------------------------------|--|
| Linear-correction factors a and b | (Y = a X + b)  |
| Slope a                           | No entry is needed here. A proportional factor, which gives the result in °C, can be called up direct from the microprogram.   |
| Zero-point shift b                | <p>No calibration is needed here. A line resistance of 2 Ω is included and has been compensated for. If the line resistance R is greater (deviation &gt; 2 Ω):</p> <ul style="list-style-type: none"> <li>b = -0.18 × (R - 2 Ω) in room-temperature range</li> <li>or b = -0.16 × (R - 2 Ω) at approx. 100 °C</li> </ul> |

The sensors are connected using the two-wire method; the connecting leads can be up to 55 m (AWG 18 max. 180 ft) long if 0.8 mm<sup>2</sup>, or 170 m (AWG 15 max. 558 ft) if 1.5 mm<sup>2</sup>. The measuring voltage is pulsed in order to prevent the sensor from warming up. While the inputs are intended for Ni1000 sensors, they can also be used with Pt1000 sensors. The linearisation guarantees error of a mere 0.06 °C. The measuring method is chosen via the software.

The Ni1000 measuring value is strictly linear and is better than ± 0.06 °C (± 0.1°F) from -50 °C to +150 °C. The linearisation for Pt1000 guarantees negligible error between -50 and +100 °C (-58...212°F).

For the full measuring range of the Pt1000, the following table applies:

### Measuring accuracy

| Temperature                     | Absolute difference    |
|---------------------------------|------------------------|
| -100 °C (-148°F)                | -0.05 °C (-0.09°F)     |
| -50 °C to +100 °C (-58...212°F) | < ± 0.02 °C (± 0.04°F) |
| +150 °C (302°F)                 | +0.05 °C (+0.09°F)     |
| 200 °C (392°F)                  | +0.11 °C (+0.2°F)      |
| 300 °C (572°F)                  | +0.29 °C (+0.52°F)     |
| 400 °C (752°F)                  | +0.10 °C (+0.18°F)     |
| 500 °C (932°F)                  | -0.31 °C (-0.56°F)     |

### Measurement of U/I/R

|                                   |  |
|-----------------------------------|--|
| Number of inputs                  | 6  |
| Type of inputs                    | 3 × U/I/R, 3 × U/I   |
| Voltage                           | 0 (2)...10 V, 0 (0.2)...1 V  |
| Current                           | 0 (4)...20 mA  |
| Potentiometer                     | 0 to 500 Ω...2 kΩ  |
| Linear-correction factors a and b | (Y = a X + b)<br>The linearity can be adapted very accurately for every input. |

### Settings for a standardised signal (0...1)

| Linear-correction factors |       | Inputs    |
|---------------------------|-------|-----------|
| a                         | b     |           |
| 1                         | 0     | 0...10 V  |
| 10                        | 0     | 0...1 V   |
| 1                         | 0     | 0...20 mA |
| 20                        | 0     | 0...1 mA  |
| 1.25                      | -0.25 | 2...10 V  |
| 1.25                      | -0.25 | 4...20 mA |
| 12.5                      | -0.25 | 0.2...1 V |

### Input limit values:

|                              |  |
|------------------------------|--|
| Measurement of voltage       | < ± 50 V   |
| Measurement of current       | < 50 mA  |
| Loading of reference outputs | < 10 mA  |
| Return line for all signals  | earth  |
| Accuracy                     | U = ± 0.1% (± 0.01 V)<br>I = ± 0.1% (± 0.02 mA)<br>R = ± 0.5% (± 0.05 V) |
| Resolution                   | U = 5 mV   |

### Measuring the voltage (U)

The voltage can be measured at all 6 inputs. The voltage is measured between one of the input terminals for voltage (marked with a 'U') and an earth terminal. The signal must be potential-free. The two measurements 0 (0.2)...1 V and 0 (2)...10 V are selected via the software. The maximum voltage without damage being incurred is < ± 50 V. The visible range, however, is limited to 10 V. The internal resistance R<sub>i</sub> of the input (load) is 60 kΩ in this case.

### Measuring the current (I)

The current can also be measured at all six inputs. There are special terminals (marked with an 'I') available for measuring the current. The current signal must also be potential-free. The maximum input current must be limited to 50 mA. The internal resistance R<sub>i</sub> is 100 Ω.

### Measuring the resistance (R)

The potentiometer is connected to terminals U, earth and +1 V. If all six measuring inputs are used, the reference outputs must be doubly occupied. The +1 V reference voltage is pulsed. In order not to overload the reference outputs, the lowest potentiometer value should not be less than 500 Ω, even through parallel switching in the event of double occupation. The reference output is protected against short circuits. The potentiometer's upper value of 2 kΩ is prescribed in order to guarantee stable measurements free of interference.

### Pulse metering

|                                      |  |
|--------------------------------------|--|
| Number of inputs                     | 2  |
| Type of inputs                       | <ul style="list-style-type: none"> <li>• potential-free contacts</li> <li>• opto-coupler</li> <li>• transistor (open collector)</li> </ul> |
| Input frequency                      | < 15 Hz  |
| Max. output current of the inputs    | 0.7 mA with respect to earth   |
| De-bounce time                       | 20 ms  |
| Protected against extraneous voltage | up to 24 V ac/dc   |

Potential-free contacts, opto-couplers or transistors with open collectors can be connected to the meter inputs. The maximum pulse frequency is 15 Hz. A de-bounce time of 20 ms is envisaged so that the switching contacts are correctly received. The pulse is received on the falling flank and can remain present indefinitely. The automation station's internal counter value is interrogated every cycle and stored in DW 2 as a dual partial sum. The summation to form the counter value is done by the software after 30s at the latest via the station's processor in DW 6. Through using the FP format, the counter value can have a maximum of approx.  $2,147 \times 10^9$ . With the FP format, it is possible to show counter values up to 67'108'864 with a resolution of 1. Any counter overflow can be curbed by resetting using the 'C\_Preset' function module.

### Digital inputs

|                                      |   |
|--------------------------------------|---|
| Number of inputs                     | 32  |
| Type of inputs                       | <ul style="list-style-type: none"> <li>• potential-free contacts, with respect to earth</li> <li>• opto-coupler</li> <li>• transistor (open collector)</li> </ul> |
| Max. output current of the input     | 0.7 mA with respect to earth  |
| De-bounce time                       | 20 ms   |
| Protected against extraneous voltage | up to 24 V ac/dc  |

The nova220 station processes 32 items of digital information. The monitored inputs are connected between the input terminals and earth. The station applies a voltage of approx. 24 V to the terminal. When the contacts are open, this corresponds to bit = 0. When the contacts are closed (equivalent to bit = 1), a current of approx. 1 mA flows at 0 V. Brief changes of 30 ms (at the shortest) between the station's queries are first placed in the buffer and then processed at the next cycle.

It is possible to decide separately for each input whether it should be defined as an alarm or a status input. On the EYL220F101/F105 stations, the status of the inputs are indicated optically. An alarm is indicated in red when the relevant contacts are open. Accordingly, a status is indicated in green when the contacts are closed.

### Digital outputs

|                   |   |
|-------------------|---|
| Number of outputs | 4x 0-I, 4x 0-I-II   |
| Type of outputs   | relay   |
| Outputs' loading  | <ul style="list-style-type: none"> <li>• EYL220F001/F101: 250 V~/2 (2)A</li> <li>• EYL220F005/F105: 30 V~/2 (2)A</li> </ul> |

The digital outputs can also be used as 8 x 0-I. The feedback signals can be received (exclusively genuine) via the digital inputs.

### Analogue outputs

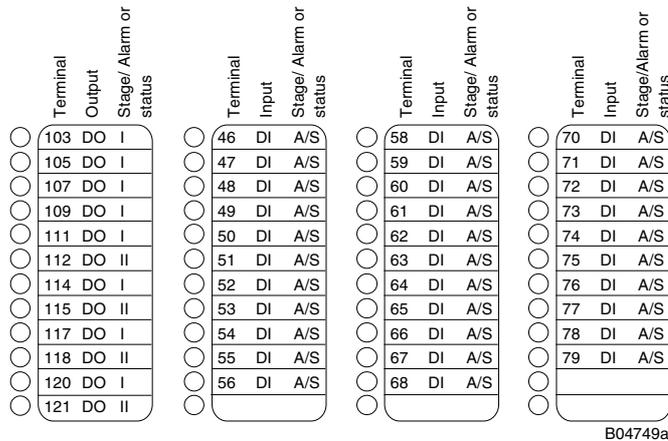
|                   |  |
|-------------------|--|
| Number of outputs | 6  |
| Type of outputs   | <ul style="list-style-type: none"> <li>• 4x 0(2)...10 V dc, 20 mA max.</li> <li>• 2x 0(2)...10 V or 0...20 mA</li> </ul> |

The output voltage is tapped between the relevant output terminal and an earth terminal. Two outputs can provide 0...20 mA. The outputs are protected against static discharges, but not against local alternating or direct current which can destroy the protective diode and the output driver. For this reason, the plant device (e.g. a valve drive) should always be connected in the plant first. Then a check should be made at the station to ensure that there is no potential at all (i.e. 0 V) at both wires with respect to earth and with respect to each other. If this is the case, the earth lead should be connected first and the signal lead last to their respective terminals in the station.

The nova220 automation station has a fast operating program which reads in all inputs, processes the parameterised modules, updates the outputs and carries out the communication with other stations or visualisation PCs. A real-time clock for the time programmes is also integrated in the automation stations.

A lithium battery ensures that the user data (FBD data), time programmes and historical data (HDB) are retained in the SRAM in the event of a power failure. The real-time clock also runs off this lithium battery. The battery makes it possible to retain the data and run the real-time clock for at least 10 years without power having to be applied. Date and time are set ex works. When power is restored, the automation station checks the consistency of the data and starts communication. The user programmes can be loaded from any point in the novaNet. The data stay in the battery-backed SRAM even in the event of a power failure. In addition, the data can be stored captive in a user EPROM. Therefore, the level of protection against loss of data is very high. Every station needs an AS address (0...28671), which is set via coding switches. The station is available in various versions which differ in their indicator elements. All stations have indicators for 'power on' (Power, green LED) and for communication (Send/Receive, one yellow LED for each). The basic versions (EYL220F001 and F005) have no other indicator elements. The EYL220F101 and F105 have, in addition to the above-mentioned LEDs, a dual-colour LED (green and red) for all digital inputs.

**Overview of MFA/LED indicators**



The nova240 control panel (EYT 240 F001), which is available for all versions, is connected via an RJ-45 socket to the station. The control panel enables the user to edit all the station's data (except the HDB), i.e. to read out measured values, alarms and status, to change setpoints, and to issue positioning commands.

**Putting into operation**

When connecting the power supply, the earthing lead must be connected to the screw terminal provided (protection class I). When working with these units, the power supply must be disconnected. Before being linked to the novaNet, each station must be given a clear (unique) address. This station number is binary-encoded via the block of DIL switches and can be anywhere between 0 and 28671 (for the stations).

The numbers 0...28671 are available for the automation stations.

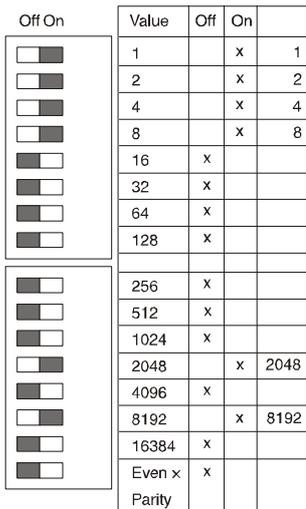
The AS address is set by means of the 16-digit switch-blocks. The last switch is for setting the parity, which refers to the address and not to the four other switches situated below. The parity should be set so that the number of switches in the 'on' position, including parity, is even.

**Example:** 8192 + 2048 + 8 + 4 + 2 + 1 = 10255

The following example is intended as an explanation of the binary encoding: AS number 10255.

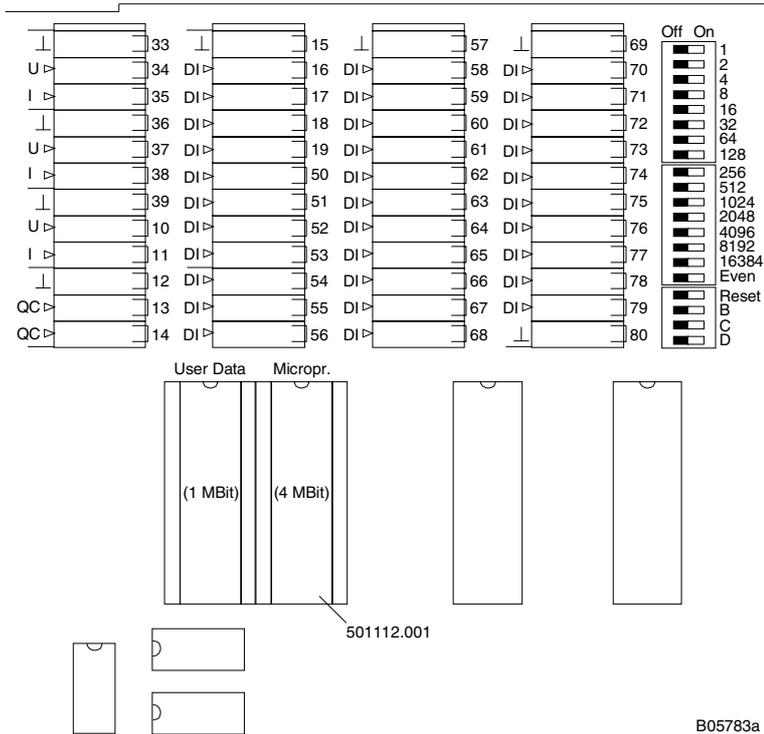
If the station has not already got an EPROM with the parameterised user data, they must be transmitted to the station. Communication is performed via the novaNet bus and the corresponding terminals or the RJ-11 connector. Programming can be done in parallel to the data traffic, though this may lengthen the response time of the other network subscribers. For this reason, the station can be separated from the novaNet for the duration of the data transfer and the 'parameterising' PC can be connected locally. After the data transfer has been complete, the data are immediately active. The station can then be re-connected to the network and is ready for operation. You are strongly advised to save the user data in an EPROM as well. Apart from enhancing data security, it facilitates fault-finding. The EPROM can be loaded with any normal loading device and employed in the station.

**novaNet addressing**



B04723

nova220



Before opening, the station, disconnect the power supply! Protective measures to prevent electrostatic discharges must be taken before performing any work on the unit. Afterwards, the station must be reset by means of the reset switch.

**Reset**



The reset switch is set to 'ON' for approx. ½ s, causing the station to load the user data from the EPROM and to start operation under defined starting conditions.

If the reset switch is left in the ON position, the station remains in the reset mode and cannot function correctly. The nova220 has in the top left-hand corner three LEDs which indicate the status of the automation station. The green LED, at the top, indicates that the power supply is on when lit continuously; the two yellow LEDs indicate telegram traffic in both directions on the novaNet. If the station has stopped or a fault has been detected in the RAM, the watchdog detects this and the station is then restarted with the EPROM data. In this case, no telegrams are sent to the exterior for a brief period, so the yellow 'Send' LED (at the bottom) no longer flashes. If this LED does not light up, it means that the EPROM is either the wrong one or is faulty, or that no EPROM has been inserted. In this case, the station is no longer operable. In stand-alone mode (without a novaNet), the 'Receive' LED (in the middle) remains unlit; the 'Send' LED flashes quickly (approx. 7 times per second), since a dummy telegram is sent each cycle.

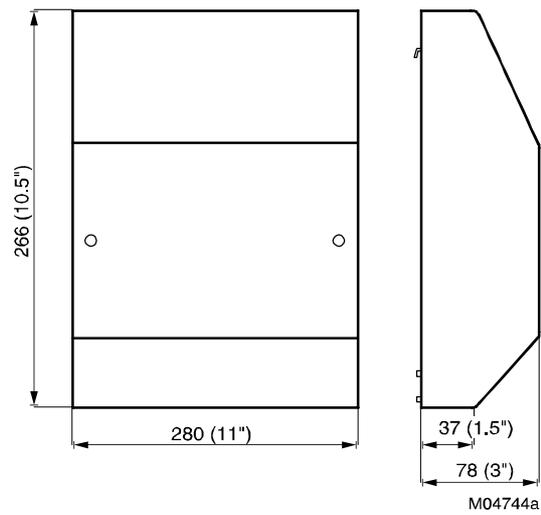
If the station is reset manually, the microprogram and the user data are also read in afresh. As soon as this has been done, the yellow 'Send' LED again flashes in time to the outgoing telegrams.

Relationship between MFAs and terminals

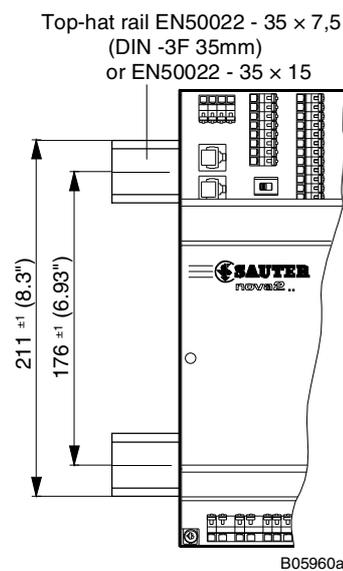
| nova220 connection     | MFA  | Bit | Code | Terminals  |              |           |                  |
|------------------------|------|-----|------|------------|--------------|-----------|------------------|
| <b>Ni1000/Pt1000</b>   |      |     |      | <b>GND</b> | <b>Input</b> |           |                  |
|                        | 00   |     | 51   | 5          | 6            |           |                  |
|                        | 01   |     | 51   | 7          | 8            |           |                  |
|                        | 02   |     | 51   | 9          | 10           |           |                  |
|                        | 03   |     | 51   | 11         | 12           |           |                  |
|                        | 04   |     | 51   | 13         | 14           |           |                  |
|                        | 05   |     | 51   | 15         | 16           |           |                  |
|                        | 06   |     | 51   | 17         | 18           |           |                  |
|                        | 07   |     | 51   | 19         | 20           |           |                  |
| <b>Analogue input</b>  |      |     |      | <b>GND</b> | <b>U/R</b>   | <b>I</b>  | <b>+1 V Ref.</b> |
| U/I/R                  | 08   |     | 50   | 21         | 22           | 23        | 24               |
| U/I/R                  | 09   |     | 50   | 25         | 26           | 27        | 28               |
| U/I/R                  | 10   |     | 50   | 29         | 30           | 31        | 32               |
| U/I/R                  | 11   |     | 50   | 33         | 34           | 35        |                  |
| U/I/R                  | 12   |     | 60   | 36         | 37           | 38        |                  |
| U/I/R                  | 13   |     | 60   | 39         | 40           | 41        |                  |
| <b>Analogue output</b> |      |     |      | <b>GND</b> | <b>U</b>     | <b>I</b>  |                  |
| 0-10V                  | 20   |     | 82   | 122        | 123          |           |                  |
| 0-10V                  | 21   |     | 82   | 122        | 124          |           |                  |
| 0-10V                  | 22   |     | 82   | 125        | 126          |           |                  |
| 0-10V                  | 23   |     | 82   | 125        | 127          |           |                  |
| 0-10V or 0-20 mA       | 24   |     | 81   | 128        | 129          | 130       |                  |
| 0-10V or 0-20 mA       | 25   |     | 81   | 131        | 132          | 133       |                  |
| <b>Digital output</b>  |      |     |      | <b>COM</b> | <b>I</b>     | <b>II</b> |                  |
| 0-I                    | 32   |     | 20   | 102        | 103          |           |                  |
| 0-I                    | 33   |     | 20   | 104        | 105          |           |                  |
| 0-I                    | 34   |     | 20   | 106        | 107          |           |                  |
| 0-I                    | 35   |     | 20   | 108        | 109          |           |                  |
| 0-I-II                 | 36   |     | 20   | 110        | 111          | 112       |                  |
| 0-I-II                 | 37   |     | 20   | 113        | 114          | 115       |                  |
| 0-I-II                 | 38   |     | 20   | 116        | 117          | 118       |                  |
| 0-I-II                 | 39   |     | 20   | 119        | 120          | 121       |                  |
| <b>Pulse counter</b>   |      |     |      | <b>GND</b> | <b>Input</b> |           |                  |
|                        | 50   |     | C1   | 42         | 43           |           |                  |
|                        | 51   |     | C1   | 42         | 44           |           |                  |
| <b>Digital input</b>   |      |     |      | <b>GND</b> | <b>Input</b> |           |                  |
|                        | 52-1 | 24  | 10   |            | 46           |           |                  |
|                        | 52-2 | 25  | 10   | 45/        | 47           |           |                  |
|                        | 52-3 | 26  | 10   | 57/        | 48           |           |                  |
|                        | 52-4 | 27  | 10   | 69/        | 49           |           |                  |
|                        | 52-5 | 28  | 10   | 80/        | 50           |           |                  |
|                        | 52-6 | 29  | 10   |            | 51           |           |                  |
|                        | 52-7 | 30  | 10   |            | 52           |           |                  |
|                        | 52-8 | 31  | 10   |            | 53           |           |                  |
|                        | 53-1 | 24  | 10   |            | 54           |           |                  |
|                        | 53-2 | 25  | 10   |            | 55           |           |                  |
|                        | 53-3 | 26  | 10   | 45/        | 56           |           |                  |
|                        | 53-4 | 27  | 10   | 57/        | 58           |           |                  |
|                        | 53-5 | 28  | 10   | 69/        | 59           |           |                  |
|                        | 53-6 | 29  | 10   | 80         | 60           |           |                  |
|                        | 53-7 | 30  | 10   |            | 61           |           |                  |
|                        | 53-8 | 31  | 10   |            | 62           |           |                  |
|                        | 54-1 | 24  | 10   |            | 63           |           |                  |
|                        | 54-2 | 25  | 10   |            | 64           |           |                  |
|                        | 54-3 | 26  | 10   | 45/        | 65           |           |                  |
|                        | 54-4 | 27  | 10   | 57/        | 66           |           |                  |
|                        | 54-5 | 28  | 10   | 69/        | 67           |           |                  |
|                        | 54-6 | 29  | 10   | 80         | 68           |           |                  |
|                        | 54-7 | 30  | 10   |            | 70           |           |                  |
|                        | 54-8 | 31  | 10   |            | 71           |           |                  |
|                        | 55-1 | 24  | 10   |            | 72           |           |                  |
|                        | 55-2 | 25  | 10   |            | 73           |           |                  |
|                        | 55-3 | 26  | 10   | 45/        | 74           |           |                  |
|                        | 55-4 | 27  | 10   | 57/        | 75           |           |                  |

| nova220 connection        | MFA  | Bit | Code |            | Terminals        |    |
|---------------------------|------|-----|------|------------|------------------|----|
| Digital input (continued) |      |     |      | <b>GND</b> | <b>Input</b>     |    |
|                           | 55-5 | 28  | 10   |            | 69/              | 76 |
|                           | 55-6 | 29  | 10   |            | 80               | 77 |
|                           | 55-7 | 30  | 10   |            |                  | 78 |
|                           | 55-8 | 31  | 10   |            |                  | 79 |
|                           |      |     |      |            | Earth connection |    |

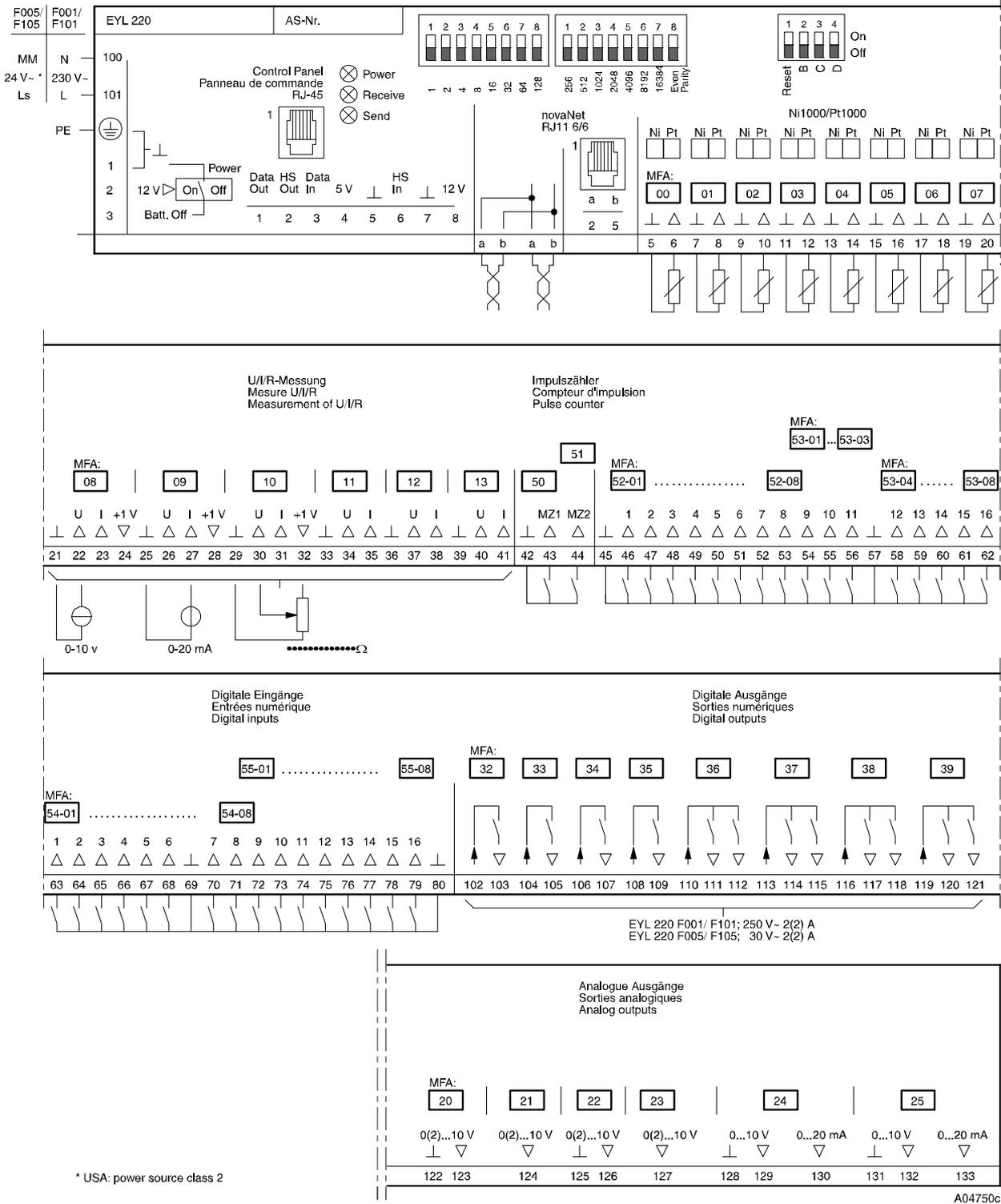
**Dimension drawing**



**Fitting to top-hat rail**



**Wiring diagram**



In cases where the industry standard (EN 61000-6-2) has to be met, the power cables for the digital inputs (DI), the analogue inputs/outputs (AI/AO) and the counter inputs (CI) should be no longer than 30 m.