

Datasheet  
Variable frequency drive VYBO Electric a.s.  
Typ: V900-4T2200



**V900 Series 400V**



|  |             |
|--|-------------|
| Rated power  | 220 kW      |
| Rated output current                                 | 420 A       |
| Supply voltage                                       | 3 x 400 V   |
| Output voltage                                       | 0 – 400 V   |
| Output frequency                                     | 0 – 600 Hz  |
| Overload capacity in ND mode - Normal load (N. Duty) | 120% / 60 s |
| Overloading in HD mode - Heavy load (H. Duty)        | 150% / 60 s |
| Control mode V/F scalar control                      | ✓           |
| Open-loop vector SFVC control mode                   | ✓           |
| Closed-loop vector CLVC control mode                 | ✓           |
| Analog inputs  | 2           |
| Digital inputs                                       | 6           |
| Analog outputs                                       | 2           |
| Relay outputs  | 2           |
| Open collector outputs                               | 1           |
| Brake transistor                                     | ✗           |
| EMC filter   | ✓           |
| +10 V output   | ✓           |
| +24 V output   | ✓           |
| Input for PTC  | ✓           |
| Safe Torque Off (STO)                                | ✗           |
| Emergency STOP (EMS)                                 | ✓           |
| Integrated Ethernet                                  | ✗           |
| Integrated MODBUS RTU                                | ✓           |
| PROFINET   | ✓           |
| PG card for encoder                                  | ✓           |
| PID  | ✓           |
| PLC intelligent function                             | ✓           |
| External panel connection (normally up to 30 m)      | ✓           |
| Degree of protection IP 20                           | ✓           |
| Degree of protection IP 65                           | ✗           |
| Change of direction of rotation via external input   | ✓           |
| Change of direction of rotation from the panel       | ✓           |

Detailed specification

| VFD model type V900 | Rated output power (kW) | Maximum input current (A) | Rated output current (A) | Recommended motor power (kW) |
|---------------------|-------------------------|---------------------------|--------------------------|------------------------------|
| V900-4T2200         | 220                     | 430                       | 420                      | 220                          |

| Input voltage (V)<br>50/60Hz | Power (kW) | Cross section of the voltage cable (mm <sup>2</sup> ) | Recommended circuit breaker (A) |
|------------------------------|------------|---|---------------------------------|
| 3 phase 3 x 400 V            | 220        | 185   | 500                             |

Table of suitable braking resistors

| Type of VFD | Braking resistance  |  | Braking unit  | Recommended power (kW) |
|-------------|---------------------|--|---------------|------------------------|
|             | Resistor power (kW) | Resistance value ( $\Omega$ ) ( $\geq$ ) |               |                        |
| V900-4T2200 | 19*2                | 2,5*2                                    | 19000W-2.5R*2 | 220                    |

General technical parameters for all types of V900

|                            |  |
|----------------------------|--|
| Power supply               | Input voltage range:<br>1 x 230 V AC $\pm$ 10 %<br>3 x 400 V AC $\pm$ 10 %                                     |
| Input frequency resolution | Power frequency range: 47 to 63 Hz   |
| Control mode               | V/F control<br>SFVC vector control with open circuit<br>CLVC vector control with closed circuit (above 4,0 kW) |
| Maximum frequency          | 0 - 600 Hz   |
| Carrier frequency          | 0.5 kHz - 8 kHz<br>The carrier frequency is automatically set based on the load characteristic.                |
| Input frequency resolution | Digital setting 0.01 Hz<br>Analog setting: maximum frequency x 0.025%  |
| Initial torque             | G type: 0.5 Hz / 150 % (SFVC)<br>P type: 0.5 Hz / 180 % (CLVC)<br>P type: 0.5 Hz / 100 %                       |
| Speed range                | 1:100 (SVC) 1:1000 (CLVC)  |

|                                      |   |
|--------------------------------------|---|
| Speed stability                      | $\pm 0,5\%$ (SVC) $\pm 0,2\%$ (CLVC)  |
| Overloadability                      | G type: 60s for 150% of rated current, 3s for 180% rated current<br>P type: 60s for 120% of rated current, 3s for 150% of rated current   |
| Increase torque                      | Automatic torque increase or<br>manual increase by user from 0,1 % to 30,0 %  |
| V/F curve                            | Linear V/F curve<br>Multipoint V/F curve<br>N-voltage V/F curve (multiple 1,2*voltage, 1,4*voltage, 1,6*voltage, 1,8*voltage, square)   |
| V/F separation                       | Two types: full separation; half separation   |
| Ramp modes                           | Linear ramp<br>4 groups of acceleration / deceleration times with a range of 0.0-6500.0 s   |
| DC braking                           | Braking frequency: 0.0 Hz to maximum frequency<br>Braking time: 0.0-36.0 s<br>Braking current value: 0.0% -100.0%   |
| Control in JOG mode<br>(stepping)    | JOG frequency range: 0.00-50.00 Hz<br>JOG acceleration / deceleration time: 0.0-6500.0 s  |
| Simple PLC, multiple preset speeds   | Implemented up to 16 speeds using<br>a simple PLC function or combination of<br>end states of clamps  |
| Built-in PID regulator               | Facilitates a process-controlled closed-loop control system.  |
| Automatic voltage regulation (AVR)   | It can automatically maintain a constant output voltage<br>when the supply voltage changes.   |
| Oversvoltage and overcurrent control | Current and voltage are automatically limited during operation to prevent<br>frequent tripping due to oversvoltage and overcurrent.   |
| Fast limit of current                | Helps prevent common errors due to AC motor overcurrent   |
| Torque and steering limitation       | It can automatically limit the torque and prevent frequent<br>overcurrent change during running. Torque control can be<br>implemented in CLVC mode  |
| High performance                     | AC motor control is performed by high-performance<br>vector current control technology.   |
| PG card support                      | Support for differential input PG card, resolver PG card, rotary<br>transformer PG card, etc.<br>PG cards can be connected to models V900-4T0040 and larger<br>PG cards can be connected to models V900-2S0040 and 2S0055 |

|                               |   |
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| STO safety function           | "Emergency Stop" system: in case of emergency, stops the inverter immediately, after activating the J4 switch on the STO.   |
| PTC motor temperature control | Input for PTC motor or thermal contact protection.  |
| Time management               | Time range: 0 - 6500 minutes  |
| Communication protocol        | MODBUS RTU; PROFINET  |
| Boot Command Channel          | Control panel / Control terminals / Serial communication port<br>You can switch between these sources in different ways.  |
| Frequency source              | 10 kinds of frequencies , Setting digital, analog voltage, analog current, pulse, serial port. You can switch between these sources in different ways.  |
| Auxiliary frequency source    | 10 kinds of frequencies. Allows fine tuning of auxiliary frequency and frequency synthesis.   |
| Input terminals               | 5 digital inputs for types 0,4 - 5,5 kW<br>1 analog input for types 0,4 - 5,5 kW<br>6 digital inputs for types above 7,5 kW<br>2 analog inputs for types above 7,5 kW   |
| Output terminals              | 1 high-speed pulse output (open collector)<br>1 relay output for types 0,4 - 5,5 kW<br>1 analog output for models 0,4 - 5,5 kW  |
|                               | 2 relay outputs for types 7,5 - 500 kW<br>2 analog outputs for performance 7,5 - 500 kW<br>1 high-speed pulse output (open collector)   |
| EMC (compatibility)           | IE 61000-4-6; IEC 61000-4-4; IEC 61000-4-11; IEC 61000-4-5  |
| Standards                     | EN/IEC 61800-3:2017; C1, which is suitable for the 1st environment;<br>EN/IEC 61800-3:2017; C2, which is suitable for the 1st environment;  |
| LED display                   | Displays parameters   |
| Lock keys and select features | Can block buttons partially or completely and define the range of functions of some buttons to prevent malfunctions.  |
| Protection mode               | Motor short-circuit detection at power-up, input/output phase loss protection, over-current protection, over-voltage protection, under-voltage protection, over-temperature protection and overload protection.   |
| Installing in an environment  | Install indoors, avoid direct sunlight, salt, dust, corrosive or flammable gas, smoke, steam.<br>Resistance to chemical contaminants class 3C3 EN/IEC 60721-3-3<br>Dust pollution resistance 3S3EN/IEC 60721-3-3. |

|                        |  |
|------------------------|--|
| Height above sea level | Under 1000 m n.m (reduce the power when used above 1000 m.n.m.)        |
| Ambient temperature    | -10 °C - 40 °C (reduce the power when used above 40 °C (max. to 50 °C) |
| Humidity               | Less than 95% relative humidity, no condensation IEC 60068-2-3         |
| Vibration              | Less than 5,9 m/s <sup>2</sup> (0,6g) IEC 60068-2-6                    |
| Storage temperature    | - 20 °C to + 60°C  |

Dimensional drawing V900 - 220kW 4T2200

