

1. VACON 100X SOLAR PUMP APPLICATION

The Vacon AC drive contains a preloaded Vacon 100X Solar Pump application for instant use.

1.1 SPECIFIC FUNCTIONS OF VACON SOLAR PUMP APPLICATION

The Vacon 100X Solar Pump application allows flexible use of VACON® 100X frequency converters. This dedicated application SW was developed to drive a Solar Pump with an optimized MPPT (Maximum Power Point Tracking) for 100X supplied by Solar Panels.

The MPPT is based on 4 parallel algorithms:

- Feed-Forward Controller (to follow the radiation variations)
- Correction Controller (to compensate the temperature variations)
- Oscillation Damping Regulator (to prevent the panel entering in the “current source” branch of the characteristic)
- Local Maxima logic (to prevent the regulator from being trapped in a local maximum lower than absolute maximum)

Features

- The MPP Tracker controls DC voltage reference in order to find the maximum power.
- **Extensive wizards** for start-up, PID-control used to facilitate commissioning
- **‘Funct’ button** for easy change between Local (keypad) and Remote control place. The remote control place is selectable by parameter (I/O or Fieldbus)
- **8 preset frequencies**
- **Motor potentiometer** functions
- 2 programmable **ramp times**, 2 **supervisions** and 3 ranges of **prohibited frequencies**
- **Control page** for easy operation and monitoring of the most essential values.
- **Fieldbus** data mapping
- **Automatic reset**
- Different **pre-heat modes** used to avoid condensation problems
- **Maximum output frequency 320Hz**
- **Real-time clock and timer functions** available (optional battery required). Possible to program 3 time channels to achieve different functions on the drive (e.g. Start/Stop and Preset frequencies)
- **External PID-controller** available. Can be used to control e.g. a valve using the AC drive's I/O
- **Sleep mode function** which automatically enables and disables drive running with user defined levels to save energy.
- **2-zone PID-controller** (2 different feedback signals; minimum and maximum control)
- **Two setpoint sources** for the PID-control. Selectable with digital input
- **PID setpoint boost function**
- **Feedforward function** to improve the response to the process changes
- **Process value supervision**
- **Maintenance** counter
- **Underload protection** can be managed by measuring Motor torque (standard sensor-less mode) or by measuring the water flow with a flow meter sensor. This sensor can be an analogue signal or a digital input. With this sensor it is possible to measure the water flow [litres/min] and the total volume of the water flow [m³].
- **Sleep mode** can be enabled or disabled with a parameter.
- Digital inputs can be used to **measure water levels** (minimum and maximum).