tecned

INDUSTRIAL ENERGY SYSTEMS
Industrial Inverters and UPS

tecned | **Committed to Reliable Energy**
MADE IN HOLLAND

Industrial Inverters
OM (SF/D) Series

Reliable AC power is indispensable for infrastructure and industrial processes alike. Public transport, power plants, oil & gas and industry demand absolute reliability for their critical processes.

Secure AC is used to supply power to monitoring and control systems such as DCS, PLC, control rooms, SCADA, security, railway signaling and critical communication systems.

Each of these processes is mission critical and therefore demands the highest reliability and durability of the back-up equipment. With this in mind, TECNED designed the OM inverter series. In its core an analog controlled inverter with fault tolerant design and output isolation transformer. Additional features include a built-in static and manual bypass switch and LCD display.

Industrial grade inverters

Industrial grade inverters are based on transformer technology for robustness and endurance. The output isolation transformer protects the semiconductors against peak currents and distortion, supplying short circuit currents and filtering noise. Transformer based technologies offer therefore a longer service life and higher degree of protection.

All TECNED OM inverters can be supplied with fault tolerant topology. Minimum two inverter ECU's are combined in a single enclosure. The default level of output is maintained under all failure conditions, ensuring continuous supply to the load.

Product range:

The TECNED OM (SF/D) inverter series is available with

- Input voltages from 24Vdc to 600Vdc (-15 to +45%)
- Output voltage single phase 110/220/230/240V
- Output frequency 50Hz or 60 Hz
- Output rating 5 to 50 kVA depending on DC bus voltage levels

Your advantage:

- Output Power factor 0.8 / 0.9 / 1
- Inverter bridge with IGBT technology
- Output galvanic separation transformer
- No DC component can be present on the output
- Designed based on industry requirement
- Fault tolerant in control and power
- Best price / Performance ratio
- Highest reliability
- Possibility of customization

Industrial Inverter
Technology

The TECNED OM (SF/D) inverter series is available with input voltages from 24Vdc to 600Vdc nominal and single output.

The OM(SF/D) inverters are available in capacities from 5 kVA up to 50 kVA depending on DC voltage levels.
OM (SF/D) inverters can be supplied as standard or fault tolerant systems within a single enclosure to meet customer requirements for safety and reliability. Fault tolerance design is standard from 15 kVA up.
The OM-SF (software free) model is a strictly analog inverter available with natural convection and forced air cooling depending on rating. Standard features include DC-high/low, output out of limits and general alarm, output V/A metering, potential free contacts and input/output fuse monitoring.

The OM (D) model includes additional digital monitoring with LCD display that shows the system's current state of operation and system values, allows setting of system parameters and includes event and alarm logs.

With a separate mains input the inverter can be equipped with a static bypass and manual bypass switch. A visualization of the operating status is given by a mimic diagram on the front door.

Front panel LED
Standard

- Operation
- Battery operation
- General Alarm
- Inverter failure
- DC Voltage High
- DC Voltage Low
- High Temperature
- Bypass out of limits
- Output out of limits

On Mimic diagram

- Input DC Fuse trip
- Output Fuse trip
- By-pass breaker trip
- Load on inverter
- Load on bypass

Controls

- Push button-on
- Push button-off
- Push button silent buzzer
- Push button LED test
- Scroll-up/down (OM(D) only)

Potential free contact

- General alarm
- DC input Low
- Inverter overload
- Load on bypass

Option

All alarms and indicators can be made available on PFC (expandable to 12 PFC per control)

- Mains bypass out-off range, DC ground fault,
- Fuse Trip, High temperature, Output not Syn.
- Fan failure,

Industrial UPS

Combined with the TECNED GR (SF/D) series, the TECNED OM inverter series is a part of the industrial UPS configuration.

The TECNED ONV(SF/D) UPS series is available with single phase and three phase input and single phase output with ratings up to 50 kVA in a single enclosure. The ONV (SF/D) series can be configured to charge all common battery types from VRLA to Ni-cad.

The ONV (SF/D) series can be supplied as standard or fault tolerant systems within a single enclosure to meet customer requirements for safety and reliability.

The ONV-SF (software free) model is a strictly analog UPS available with natural convection and forced air cooling depending on the rating. Standard features include output V/A/F metering, mains failure, DC-high/DC-low, general alarm with potential free contacts, input/output fuse and battery fuse monitoring.

The ONV-D model includes additional digital monitoring with LCD display that shows the system's current state of operation and system values allows setting of system parameters and includes event and alarm logs.

Option list (ONV-SF &D)

- Extend to 12x PFC (NO/NC) with LED
- Fan failure alarm
- Manual / automatic boost charge
- Individual fuse failure indicator
- DC ground fault
- Over temperature
- Up to 9 (DIN 96) meters / cabinet
- Static Bypass Switch / Full STS
- Manual bypass switch

Additional features ONV-D

- Battery Monitoring
- Programmable values for charge voltage/current, boost-charge
- RS485, Modbus / Profibus communication

Note: The TECNED ONV-series can be supplied with either a built-in single leg static bypass or a double leg static bypass (STS) within the same or separate enclosure.

TECNED OM - SPECIFICATIONS										
TOPOLOGY	**TRANSFORMER BASED TECHNOLOGY**									
Rated kVA	**5Kva**	**6kVA**	**8kVA**	**10kVA**	**15kVA**	**20kVA**	**25kVA**	**30kVA**	**40kVA**	**50kVA**
Nominal input voltage (DC)	24/48/110/125/220/240/380/400/540/600									
Nominal input range	-15% to +45%									
Nominal output voltage (AC)	110/220/230/240V, 2W									
Available output power factor	0.8 / 0.9 / 1									
Output frequency	50 or 60 Hz									
Overall efficiency	Up to 97% (depending on DC bus voltage)									
Inverter bridge	Pulse wide modulation and IGBT Technology									
Output Galvanic separation	Integrated isolation transformer									
OUTPUT										
Output wave form	Sine wave									
THD-V for 100% linear load	Max 1,5%									
THD-V for 100% non-linear load	Max 3%									
Stability, Static	+/- 1%									
Dynamic (at load step 0-100-0%)	+/-3%									
Dynamic (at load step 0-50-0%)	+/-2%									
Recovery time +/- 1%	< 20 ms									
Output frequency tolerance (free running)	+/-0,1%									
Overload capacity standard	110% 10 min, 125% 1 min, 150% 30 sec.. (higher values available as option)									
Crest factor	> 3:1									
Static by- pass (option)	Static transfer switch on by-pass line (SCR type)									
Overload on by pass	200% for 5 min. & 45 time I-nom for 10 ms.									
Option	Input isolator, step down transformer in the by-pass line									
	back feed protection at by-pass line (IEC62040-3)									
	Built-in Industrial grade voltage stabilizer									
Audible noise level (dB A)	63					72				
Operating temperature range	0 to 40 ^{0}C									
Relative humidity	Max 95% (non-condensing)									
Protection degree	IP20 (higher IP values available as option)									
Enclosure floor standing	Aluzinc frame/ powder coat RAL 7035									
Service access	Front access only									

TECNED ONV - SPECIFICATIONS										
TOPOLOGY	**TRANSFORMER BASED TECHNOLOGY**									
Rated kVA	**5kVA**	**6kVA**	**8kVA**	**10kVA**	**15kVA**	**20kVA**	**25kVA**	**30kVA**	**40kVA**	**50kVA**
Rectifier bridge										
Rectifier bridge	IGBT & Thyristor technology									
Standard input voltage 3 phase	208/220/240/380/415/460/480 V (3W+E), (-15% to +20%)									
Standard input voltage 1 phase	110/120/200/220/230/240/277 V (2W+E), (-15% to +20%)									
Frequency	50 or 60 Hz +/- 10% (40 to 70 Hz)									
Input Galvanic separation	Integrated input isolation transformer									
Input power factor	0,98									
Input current THDI (IEC 61000-3-12)	< 10% for 3Ph input / < 15% for 1Ph input (20-100% load)									
Inrush current	Limited by soft start circuit									
Power walk-in	1-15 sec.									
Output voltage regulation	< 0.5% (full input voltage range)									
Voltage ripple (DC)	< 1% (3Ph without battery)/ < 2% (1Ph without battery)									
Battery charging current limit	Programmable (D) version / setting (SF) version									
Battery										
Nominal voltage (DC)	24/48/110/125/220/240/380/400/540/600									
Max. boost voltage (DC)	600 VDC									
Battery	Ni-cad, open lead acid or seal lead acid									
Ni-Cad	Up to 380 cell									
Lead acid	Up to 265 cell									
Inverter										
Nominal input voltage (DC)	24/48/110/125/220/240/380/400/540/600									
Nominal input range	-15% to +45%									
Nominal output voltage (AC)	110/220/230/240V, 2W									
Available output power factor	0.8 / 0.9 / 1									
Output frequency	50 or 60 Hz									
Inverter efficiency	Up to 94% (depending on DC bus voltage)									
Inverter bridge	Pulse width modulation with IGBT technology									
Output Galvanic separation	Integrated isolation transformer									
Output wave form	Sine wave									
Output voltage THD. V for 100% linear load	Max. 1,5%									
Output voltage THD. V for 100% non-linear load	Max. 3 %									
Output voltage:										
• **Static stability**	+/- 1%									
• **Dynamic (at 0-100-0%)**	+/-3%									
• **Dynamic (at 0-50-0%)**	+/-2%									
• **Recovery time to +/-1%**	< 20 ms									
Output frequency tolerance (free running)	+/-0,1%									
Overload capacity standard	110% 10 min, 125% 1 min, 150% 30 sec. (higher values available as option)									
Crest factor	> 3:1									

TECNED ONV - SPECIFICATIONS										
TOPOLOGY	**TRANSFORMER BASED TECHNOLOGY**									
Rated kVA	**5Kva**	**6kVA**	**8kVA**	**10kVA**	**15kVA**	**20kVA**	**25kVA**	**30kVA**	**40kVA**	**50kVA**
Bypass	Standard 1 leg , option 2 legs (full Static Transfer Switch (STS)									
Standard input voltage 3 phase	208/220/240/380/415/460/480 V (3W+E), (-15% to +20%)									
Standard input voltage 1 phase	110/120/200/220/230/240/277 V (2W+E)									
Electromechanical bypass stabilizer	Input range +/- 10%, 15%, 20%, 25%, 30%, 35%									
Static bypass type	SCR, make before break									
Manual bypass switch	200% for 5 min. & 45 time I-nom. for 10 ms.									
General										
Overall efficiency	Up to 94% (depending on DC voltage)									
Audible noise level (dB A)	60					72				
Operating temperature range	0 to 40 ^{0}C									
Relative humidity	Max. 95% (non-condensing)									
Standards										
ISO 9001	Quality management systems									
IEC-60146	Semiconductor converters - General requirements and line commutated converters									
EN/IEC62040-1	Uninterruptible power systems (UPS) – Part 1 General and safety requirements for UPS									
EN/IEC62040-2	Uninterruptible power systems (UPS) – Part 2 Electromagnetic compatibility (EMC)									
EN/IEC62040-3	Uninterruptible power systems (UPS) – Part 3 Method of specifying the performance and test requirements									
EN 60950-1	Safety of information equipment including electrical business equipment									
EMC 55011	Industrial, scientific, and medical (ISM) radio-frequency equipment, Radio disturbance characteristics-Limits and methods of measurement; Amendment A1:1999 to EN 55011:1998.									
IEC 61000-3-2	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for current emissions (equipment input current < 16 A per phase)									
IEC 61000-3-12	Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and < 75 A per phase									
IEC/61000-6-5	Low voltage AC Surge 1.2/50 µs, 2 kV line to ground,1 kV line to line (equipment installed in power stations and MV substations). Low - voltage DC surge 1.2/50 µs, 2 kV line to ground, 1 kV line to line.									

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