



## FIMER Inverter series for the connection to the Public Low Voltage Network in Brazil

### Reference Standard: ABNT NBR 16149:2013

Date	Note
2013/03/15	First release of the document
2013/10/18	Second release of the document. Added PVI-55.0 and derived models
2014/07/30	Update inverter models
2016/06/27	Update inverter models (TRIO-50.0)
2019/05/31	Update inverter models (TRIO-TM, PVS-100/120 and PVS-175)
2021/10/26	Update inverter models (PVS-15(12.5) and PVS-33(30)(20)) and FIMER template

The FIMER inverters listed in the following table comply with the relevant requirements of the Brazilian standard:

- **ABNT NBR 16149:2013** Sistemas fotovoltaicos (FV) – Características da interface de conexão com a rede elétrica de distribuição – Primeira edição (01.03.2013)  
[*Photovoltaic (PV) systems – Characteristics of the utility interface – first edition, March 01-2013*]

As results after internal testing made in accordance to the applicable conformance test protocol:

- **ABNT NBR 16150:2013** Sistemas fotovoltaicos (FV) — Características da interface de conexão com a rede elétrica de distribuição — Procedimento de ensaio de conformidade - Primeira edição (04.03.2013)  
[*Photovoltaic (PV) systems – Characteristics of the utility interface – Conformity test procedure. First edition, March 04-2013*]

Please refer to the conditions and restriction of use specified in the table, as well as in the following notes.

This document is made of No. 5 pages.

FIMER inverter Model	Rated Power	Nominal Voltage/Frequency No. of phases	Cos(phi) =f(P) (§ 4.7.2)	Reactive Power Capability Active/Reactive Power remote control (§ 4.7.3, 6.1 and 6.2)	Interface Protection (§ 5.2)	FRT Capability (§ 7)	Note
UNO-2.0-I-OUTD UNO-2.0-I-OUTD-S	2.0 kW	220V / 60Hz 1 phase	NO <sup>(1)</sup>	NO <sup>(1)</sup>	YES <sup>(2)</sup>	YES	Can be used for PV systems up to 3kW
UNO-2.5-I-OUTD UNO-2.5-I-OUTD-S	2.5 kW	220V / 60Hz 1 phase	NO <sup>(1)</sup>	NO <sup>(1)</sup>	YES <sup>(2)</sup>	YES	Can be used for PV systems up to 3kW
PVI-3.0-TL-OUTD PVI-3.0-TL-OUTD-S	3.0 kW	220V / 60Hz 1 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-3.6-TL-OUTD PVI-3.6-TL-OUTD-S	3.6 kW	220V / 60Hz 1 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-4.2-TL-OUTD PVI-4.2-TL-OUTD-S	4.2 kW	220V / 60Hz 1 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-5000-TL-OUTD PVI-5000-TL-OUTD-S	5.0 kW	220V / 60Hz 1 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-6000-TL-OUTD PVI-6000-TL-OUTD-S	6.0 kW	220V / 60Hz 1 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-6.0-TL-OUTD PVI-6.0-TL-OUTD-S PVI-6.0-TL-OUTD-FS	6.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-8.0-TL-OUTD PVI-8.0-TL-OUTD-S PVI-8.0-TL-OUTD-FS	8.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-10.0-TL-OUTD PVI-10.0-TL-OUTD-S PVI-10.0-TL-OUTD-FS	10.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-12.5-TL-OUTD PVI-12.5-TL-OUTD-S PVI-12.5-TL-OUTD-FS	12.5 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
TRIO-20.0-TL-OUTD-400 TRIO-20.0-TL-OUTD-S2-400 TRIO-20.0-TL-OUTD-S2F-400 TRIO-20.0-TL-OUTD-S2X-400	20.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
TRIO-27.6-TL-OUTD-400 TRIO-27.6-TL-OUTD-S2-400 TRIO-27.6-TL-OUTD-S2F-400 TRIO-27.6-TL-OUTD-S2X-400	27.6 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
TRIO-50.0-TL-OUTD	50.0 kW	380V / 60Hz 3 phase	YES	YES	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-55.0	55.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-110.0	110.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-165.0	165.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems

FIMER inverter Model	Rated Power	Nominal Voltage/Frequency No. of phases	Cos(phi) =f(P) (§ 4.7.2)	Reactive Power Capability Active/Reactive Power remote control (§ 4.7.3, 6.1 and 6.2)	Interface Protection (§ 5.2)	FRT Capability (§ 7)	Note
PVI-220.0	220.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVI-330.0	330.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
TRIO-TM-60.0-480	60.0 kW	480V / 60Hz 3 phase	N/A	YES <sup>(3)</sup>	YES <sup>(6)</sup>	YES	Can be used on all PV systems
TRIO-TM-50.0-400	50.0 kW	380V / 60Hz 3 phase	N/A	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVS-120-TL	120.0 kW	480V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(6)</sup>	YES	Can be used on all PV systems
PVS-100-TL	95.7 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVS-175-TLX-WIRINGBOX- Opz.1 Opz.2 Opz.3 Opz.4 Opz.5 Opz.6 Opz.7	175.0 kW	800V / 60Hz 3 phase	N/A	YES <sup>(4)</sup>	YES <sup>(5)</sup>	YES	Can be used on all PV systems
PVS-50-TL PVS-50-TL-S PVS-50-TL-SX PVS-50-TL-SX2	50.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVS-60-TL PVS-60-TL-S PVS-60-TL-SX PVS-60-TL-SX2	60.0 kW	480V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(6)</sup>	YES	Can be used on all PV systems
PVS-33-TL-SX PVS-33-TL-SY PVS-33-TL-SI	33.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVS-30-TL-SX PVS-30-TL-SY	30.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVS-20-TL -SX PVS-20-TL-SY PVS-20-TL-SXD	20.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVS-15-TL-SX PVS-15-TL-SY	15.0 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems
PVS-12.5-TL-SX PVS-12.5-TL-SY	12.5 kW	380V / 60Hz 3 phase	YES	YES <sup>(3)</sup>	YES <sup>(2)</sup>	YES	Can be used on all PV systems

4/5 **Note:**

- (1) The inverter can operate with a power factor of  $\cos\phi \geq 0,98$  lead or lag. The inverter is not able to operate with adjustable power factor.
- (2) Voltage protection is set in accordance with the limits and trip times listed in Table 2, chapter 5.2.1, considering a nominal voltage of 220V/1-phase and 380V/3-phase respectively. Frequency trip limits and trip times are in accordance with the values specified in chapter 5.2.2.
- (3) Reactive power capability in accordance with the requirements listed in chapter 4.7.3. Qmax (maximum inductive/capacitive reactive power) is 43,6% of rated active power (see Fig.2).
- (4) The PVS-175-TLx reactive power capability (Qmax) is 100% of rated active power up to 40°C (see Fig. A of Annex).
- (5) As reported in the Nominal Voltage/Frequency No. Phases column, the PVS-175-TLx model has 800V/3-phase nominal voltage.
- (6) As reported in the Nominal Voltage/Frequency No. Phases column, the TRIO-TM-60.0-480 model has 480V/3-phase nominal voltage.

**Terranuova Bracciolini, 28 October 2021**



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Fig.A:

**Normalized semicircular P-Q capability area vs ambient temperature:**  
 — capability with ambient temperature up to 40°C  
 — capability with ambient temperature up to 30°C

*P/Q capability in the temperature range 30°C... 40°C is:*

- $P_{max}$  → linearly decrease as function of temperature increase between 185kW and 175kW
- $Q_{max}$  → 175kVAR

*P/Q capability also linearly decrease with the AC voltage →  $P_{max}$  and  $Q_{max} = f(V_{ac})$*

