

Fact Sheet

VLT® HVAC Drive FC 102 with **integrated energy meter** – the NABERS-compliant drive

>25%
reduction in
purchasing cost

Compliance with energy metering requirements is as simple as this – install VLT® HVAC Drive FC 102, the NABERS-compliant AC drive.

What's in it for you?

When you choose the VLT® HVAC Drive FC 102 to control motor operation, you obtain a complete package of high efficiency AC drive with integrated energy meter.

The drive already fulfils NABERS requirements for energy metering, which ensures you obtain optimal energy consumption and monitoring. You save on installation time and cost, because there is no need for an extra energy meter.

You reduce the complexity of building management, via:

- reduced maintenance
- reduced investment
- a single operation interface
- easy communication with the building management system (BMS)

You can achieve greener projects which run more smoothly, by making the most of our system integration expertise and partnership approach.

What you avoid

There is no need to purchase, install, validate and maintain a separate energy meter for each installed AC drive. This is a huge complexity reduction, considering the number of AC drives installed in just one building.

Reduce complexity

Non-utility electricity meters can vary significantly in their ability to correctly measure energy consumption, especially due to incorrect wiring of the meter and incorrect meter multipliers (CT ratios).

The FC 102 with integrated energy meter reduces complexity. It ensures no more incorrect wiring, incorrect selection of CT ratios, or troubleshooting after installation, saving both labour costs and commissioning time.

Avoid separate meter validation

Where a Remote Meter Reading System is used to record the pulse meter reading, this must be validated in accordance with the NABERS **non-utility meter** validation requirements, to ensure it is recording the measured consumption correctly.

When using the FC 102 with integrated energy meter, this separate validation process is usually not required, saving time and cost. These savings are achievable because in normal practice, the BMS installation maps the energy consumption data from the AC drive. The validation of the energy meter is therefore already a part of the process of BMS commissioning.

What can you save?

Using VLT® HVAC Drive with built-in NABERS-compliant energy metering, there is no need to invest in a separate energy meter. For a project involving 50 drives, this means a savings of \$25,000.

Example of a medium-size project involving 50 drives:

Total price of 50 nos. non-Danfoss VSDs (A)	\$ 50,000
Total installed cost of providing 50 nos. additional energy meters (B)	\$ 50,000
Net cost of using non-Danfoss VSDs (C=A+B)	\$ 100,000
Net cost of using VLT® HVAC Drives, with NABERS compliant energy meter (D)	\$ 75,000
Net Savings (C-D)/C	25%

What is NABERS?

The National Australian Built Environment Rating System (NABERS) is a performance-based rating system for buildings in Australia. Put simply, NABERS measures the energy efficiency, water usage, waste management and indoor environment quality of a building or tenancy and its impact on the environment.

In Australia, if you own, manage or occupy a building, a NABERS rating can provide you with a simple indication of how well you are managing these environmental impacts compared to similar buildings.

Find more information at www.nabers.gov.au.


Nabers rating	Performance comparison
6 stars ★★★★★★	Market leading building performance
5 stars ★★★★★	Excellent building performance
2.5 – 3 stars ★★★	Market average building performance

NABERS ratings

NABERS ratings are expressed as a number of stars. The more stars in a NABERS Energy rating, the lower the greenhouse gas emissions for the rated premises. The number of stars for offices is calculated by benchmarking the energy consumption and comparing it against buildings of the same category, using 12 months of actual data.

NABERS requirements for drives

NABERS Rules for collecting and using data, Version 3.0, published Feb. 2013, requires that an assessment for an accredited rating must cover all of the energy end uses specified for the rating type. The energy meter integrated into the VLT® HVAC Drive FC 102 series, 1.1-90 kW, complies fully with the requirements of the metering systems as outlined in the NABERS rules for collecting and using data, as follows:

NABERS requirement	VLT® HVAC Drive FC 102 compliance
<p>Each individual energy meter must be:</p> <ul style="list-style-type: none"> Connected to all equipment Able to record and transmit the energy consumption data to a management system 	<ul style="list-style-type: none"> The energy meter is built into the drive as standard The actual energy consumption can be transmitted to the building management system or energy management system either via the analog output (4-20 mA) or via serial communication using Modbus RTU, BACnet or Lonworks protocols
<p>The non-utility energy meter used for monitoring and recording the energy consumption of each individual AC drive must:</p> <ul style="list-style-type: none"> Be accurate, where the difference in measured and recorded energy readings is not more than 10% Have an on-board counting device and display 	<ul style="list-style-type: none"> The accuracy of the integrated energy meter is NABERS compliant The cumulative energy consumption is recorded by a built-in energy counter and is displayed on the Local Control Panel of the drive 
<ul style="list-style-type: none"> Be validated on installation 	<ul style="list-style-type: none"> Energy meter validation requirements are met as follows: <ul style="list-style-type: none"> If the energy readings are manually read from the drive itself, there is no need for additional validation of the built-in energy meter If the energy readings are transmitted to a management system using analog output or serial communication, the readings shall be validated using the procedures outlined in Section 10.4, Appendix D of the NABERS Rules. This validation is identical to the procedure normally undertaken as a part of BMS commissioning