Lineup Overview

PLANNING » DESIGN » PROTOTYPING » EVALUATION » CALIBRATION » PRODUCTION » SERVICING

SINV — SMART INVERTER

Ultra-compact low cost multi-purpose inverter providing smart evaluations

1 Command Unit
(user interface module)

XEVC22 | **Navigator** (bundled application)

Control functions	Torque instruction control, anomaly determination, error logging
Interface	CAN/CANFD 8ch GPI 4ch GPO 4ch Thermistor 4ch, Ethernet 1ch
External dimensions (mm)	W74 × H36 × D107
Weight (kg)	0.25

Torque instruction control, anomaly determination, error logging

2 Controller
(PWM, rectangular wave control module)

	RECU23 (high speed model)	RECU22
Control protocols	PWM, overmodulation, rectangular wave	PWM, overmodulation, rectangular wave
Carrier frequency (Hz)	50k	10k
External dimensions (mm)	To be announced	W158 × H75 × D300
Weight (kg)	To be announced	1
Instruction protocol	Torque, speed, current	Torque, speed, current
Position detection protocol	Resolver	Resolver

3 Driver
(motor drive module)

	U600A (high speed model)	T300A (low capacity model)	T800A (high capacity model)	T800A-X (high capacity, high voltage model)
Maximum drive current (Arms)	600 (*with derating)	300	800 (*with derating)	800 (*with derating)
Maximum input voltage (V)	800	750	750	1000
Carrier frequency (Hz)	50k	10k	10k	10k
External dimensions (mm)	To be announced	W350 × H145 × D389 (*excluding protrusions)	W350 × H250 × D770 (*excluding protrusions)	W350 × H250 × D770 (*excluding protrusions)
Weight (kg)	To be announced	16	75	75

4 Options

P-Auto (automatic tuning application)

Automatically identify RECU parameters.
Dedicated logic easily produces drive suited to the motor within a short time.

P-Editor (parameter editing application)

No-code version of software compatible with tests and motors enabling the direct editing of the RECU parameters. Editing only involves modifying values, and can be done by anyone.

Pattern Operation Tool (torque pattern automation application)

Automatically switch control and link to existing equipment based on elapsed time or motor state.

MG-switch (motor switching device)

Reduce control signal switching time by placing the unit between several controllers and inverters.

Engineering support will be provided on a case-by-case basis for other models.
Feel free to contact us at the following address.

xev-sales@ml.toyota-td.jp

TOYOTA TECHNICAL DEVELOPMENT CORPORATION (TTDC)

URL https://www.toyota-td.jp/

■1-9, Imae, Hanamoto-cho, Toyota, Aichi, 470-0334
■Weekdays from 9 AM to 5 PM (Japan time, except between 12 and 1 PM)
■TEL(0565)46-7500
Email: marketing_strategy@ml.toyota-td.jp

■Intellectual Property (IP) Field

- Searches and technical trend analysis
- Global filing and rights acquisition
- Translation and interpretation

■Keisoku Business Field

- Vehicle and human body measurement
- Control and physical phenomena visualization
- Facility installation support

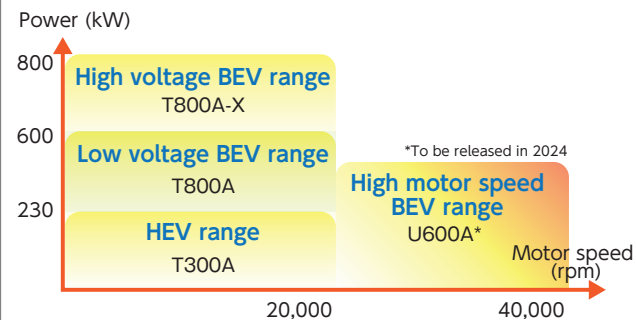**TOYOTA TECHNICAL DEVELOPMENT CORPORATION**
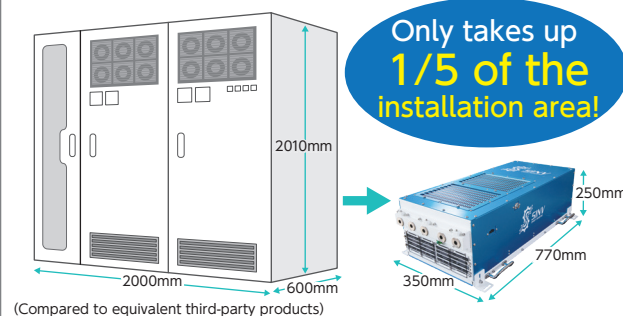
Lineup suited to diverse needs

- Choose from four series of drivers matched to the evaluation characteristics of the HEV and BEV ranges.
- Supports the 40,000 rpm high motor speed range.

Power (kW)

- 800 — High voltage BEV range **T800A-X**
- 600 — Low voltage BEV range **T800A**
- 230 — HEV range **T300A**

*To be released in 2024

High motor speed BEV range **U600A***

Motor speed (rpm)

20,000   40,000

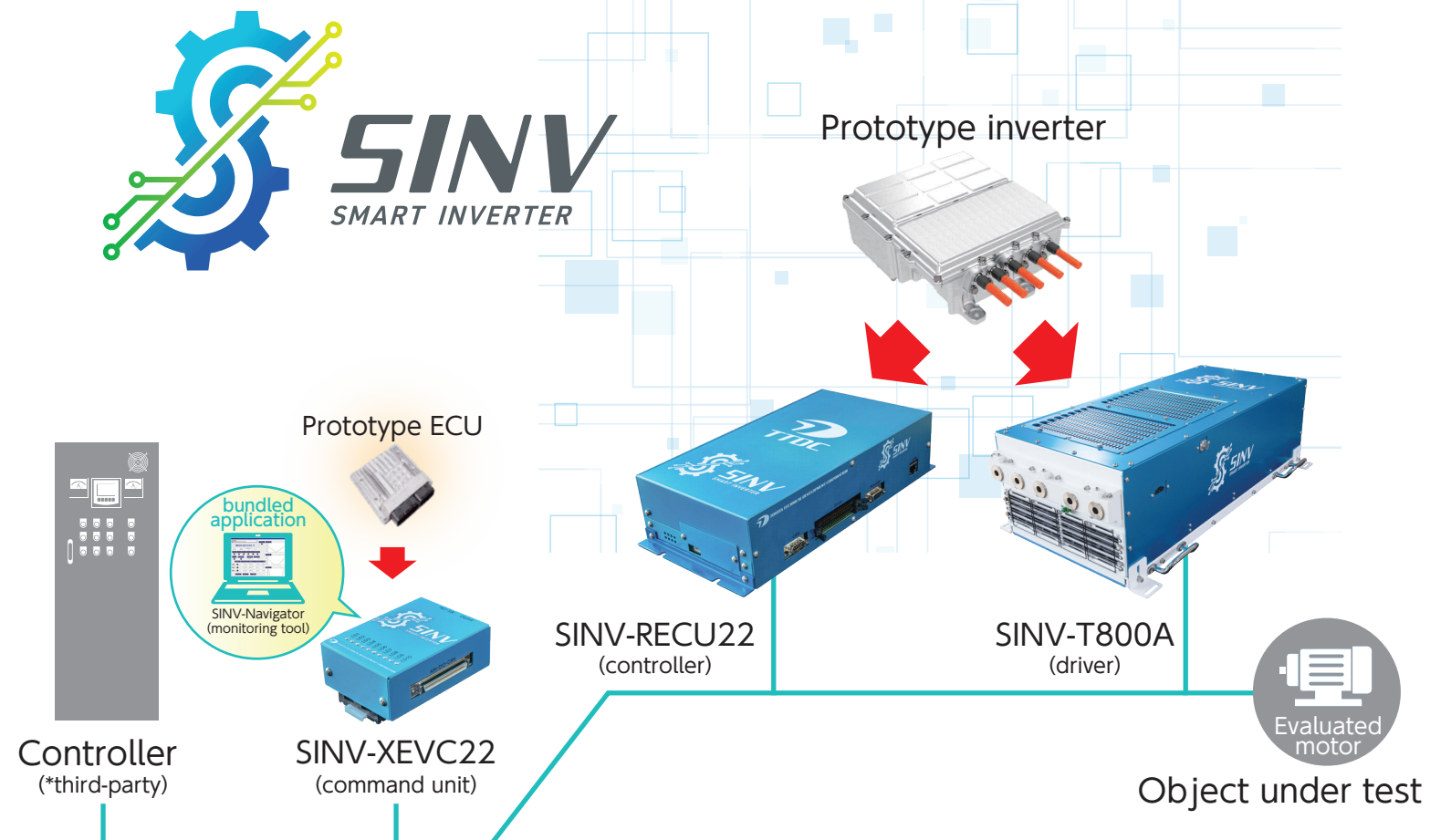## The most compact design in the industry enable easy installation and replacement.

- Minimum installation area : 0.27㎡、weight : 75kg
- Offers a flexible layout that can be set in narrow spaces.
- Simply replace an individual unit when changing the specifications.

Only takes up 1/5 of the installation area!

2010mm
2000mm   600mm
250mm
350mm
770mm

(Compared to equivalent third-party products)

Overall Visualization of the SINV Smart Inverter

Operate the motor in any way you want.

Supports evaluation for electric-powered vehicles

SINV SMART INVERTER

Prototype inverter

Prototype ECU

bundled application

SINV-Navigator (monitoring tool)

Controller (*third-party)

SINV-XEVC22 (command unit)

SINV-RECU22 (controller)

SINV-T800A (driver)

Evaluated motor

Object under test

Drive the evaluated motor at optimal efficiency.

- Quickly and easily achieve optimal motor drive thanks to the torque map automatically generated by the automatic tuning application.
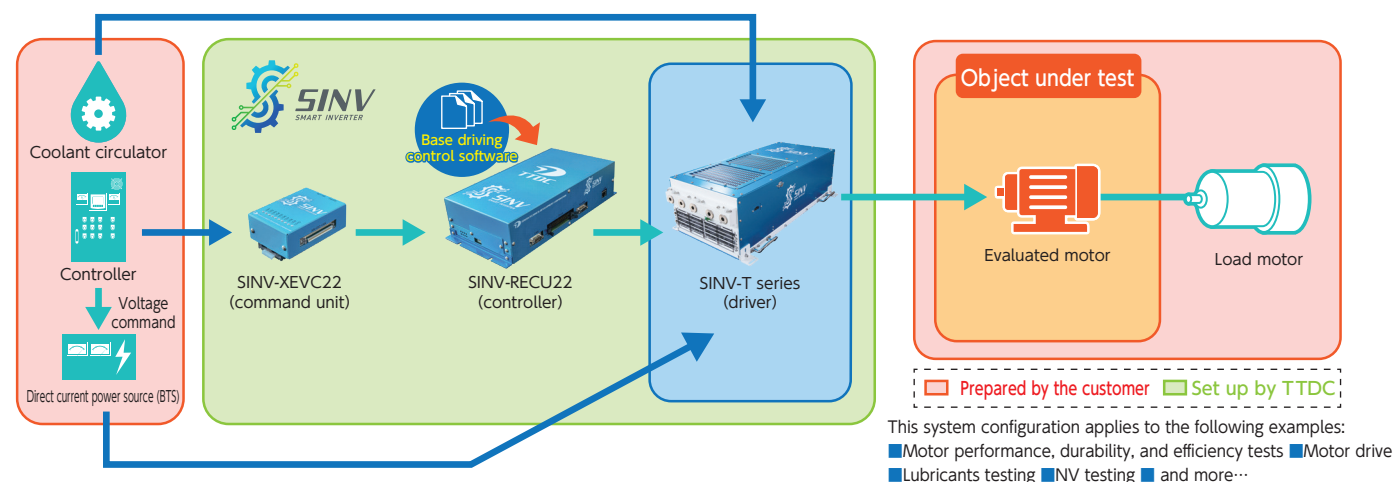- Start evaluations easily simply by preparing the evaluation motor.
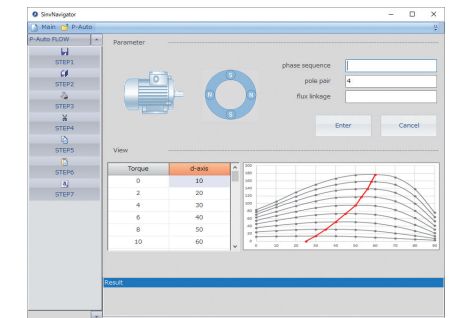
Full range of maintenance support and after-sales service

- Swift support provided by a specialized team.
- Instant problem solving through remote support via email, phone, or online conferencing.

Scenario 1: Development Bench

Coolant circulator

Controller

Voltage command

Direct current power source (BTS)

SINV-XEVC22 (command unit)

Base driving control software

SINV-RECU22 (controller)

SINV-T series (driver)

Object under test

Evaluated motor

Load motor

Prepared by the customer   Set up by TTDC

This system configuration applies to the following examples:
- Motor performance, durability, and efficiency tests
- Motor drive
- Lubricants testing
- NV testing
- and more…

Scenario 2: xEV Motor Unit Production Line

Coolant circulator

Controller

Voltage command

Direct current power source (BTS)

SINV-XEVC22 (command unit)

SINV-RECU22 (controller)

Base driving control software A

SINV-RECU22 (controller)

Base driving control software B

switch

MG-switch (motor switching device)

SINV-T series (driver)

Evaluated motor A ↔ Evaluated motor B

Prepared by the customer   Set up by TTDC

This system configuration enables instant switching of the software for each evaluated product, and is used in mass production facilities such as production lines.