| Tailored Hardware Configuration | Firmware ODM | Rich Comm. and I/O Interfaces | In-system or Stand-alone Commissioning | IOT-Ready |

Hardware Tailored for Your DER Management Product Portfolio

Use the iDLC3 product and our SOFT-ODM service to speed up your product's time to market and reduce the upfront cost.

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The iDLC3 Series ODM solution platform is one of our soft-ODM solution platforms with flexible hardware configuration thanks to the modular structural and electronic design.

This ODM platform and solution is provided to business clients only. Business clients can use this platform as a foundation to define their own energy management device solution. Infinode can develop or co-develop the firmware based on client-defined functionalities and logic.
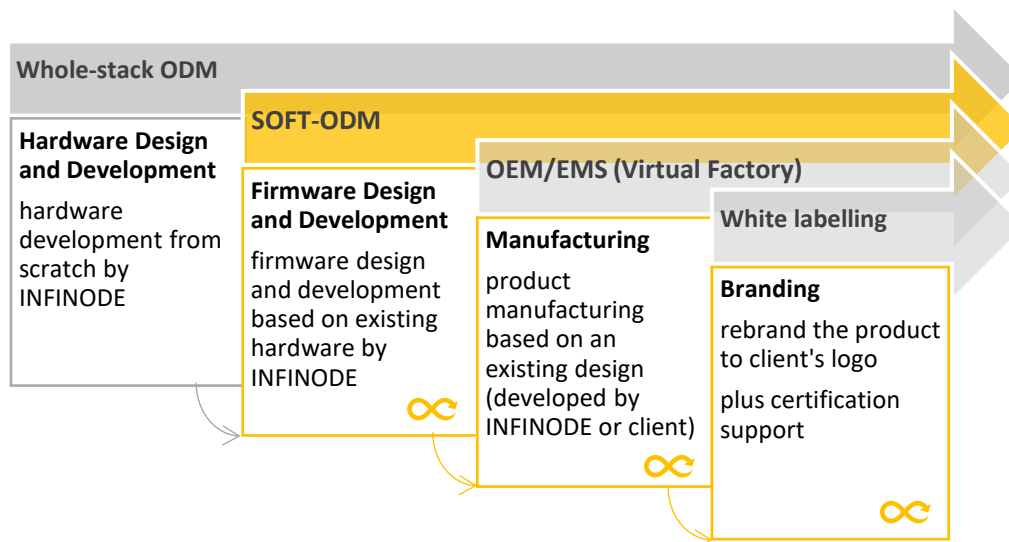
Tailored Hardware Configuration	Firmware ODM
In-system or Stand-alone Commissioning	Rich Comm. and I/O Interfaces
IOT-Ready	

iDLC3 has been tested against CE and Australian RCM related standards. Third party lab testing reports can be provided upon request.
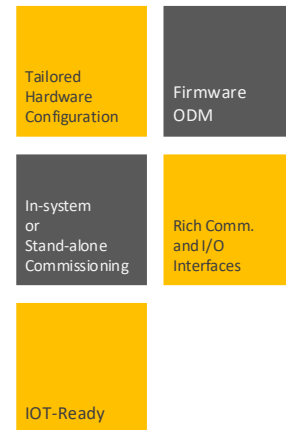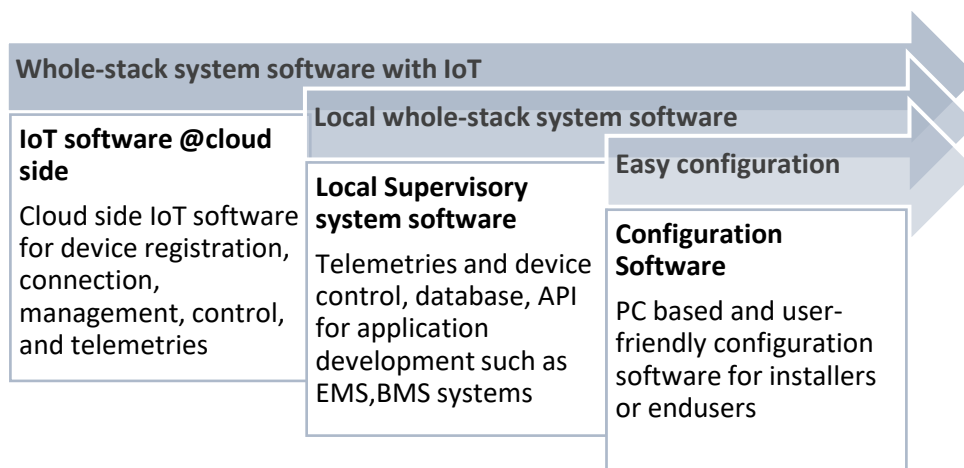
- **Where iDLC3 is positioned in the service/solution frameworks we offer:**

DEVICE **development service:**

Whole-stack ODM

SOFT-ODM

OEM/EMS (Virtual Factory)

White labelling

Hardware Design and Development

hardware development from scratch by INFINODE

Firmware Design and Development

firmware design and development based on existing hardware by INFINODE

Manufacturing

product manufacturing based on an existing design (developed by INFINODE or client)

Branding

rebrand the product to client's logo
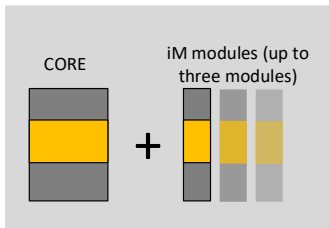
plus certification support

Optional *SYSTEM* development service:

Apart from the device development service, our clients can also ask for the optional system development service:

Whole-stack system software with IoT

Local whole-stack system software

Easy configuration

IoT software @cloud side

Cloud side IoT software for device registration, connection, management, control, and telemetries

Local Supervisory system software

Telemetries and device control, database, API for application development such as EMS,BMS systems

Configuration Software

PC based and user-friendly configuration software for installers or endusers

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- **DEVICE framework options for iDLC3-CORE**

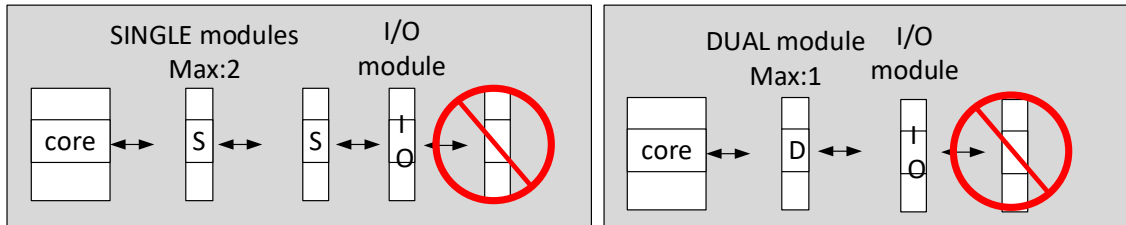| Item code	Description	Features	Type
iDLC3	Local device platform with optional extern control/config	AC or DC aux. power supply Measurement, e.g., power data, energy data, temperature, residual current, power quality data, etc. Logic control I/O Comm. for both up and down stream network topology Expansion via **iM** modules (*up to three iM modules*)	CORE
iDLC3-W	Local device platform with built-in WEB for configuration	*All features of **iDLC3** plus:* Built-in WEB for easy configuration via Ethernet/Wi-Fi and web browser	CORE
iDLC3-IoT	IoT device platform	*All features of **iDLC3** plus:* IoT capabilities	CORE
iM	Expansion modules	Comm. expansion I/O expansion Field bus expansion	expansion

- **Hardware configuration options for iDLC3**
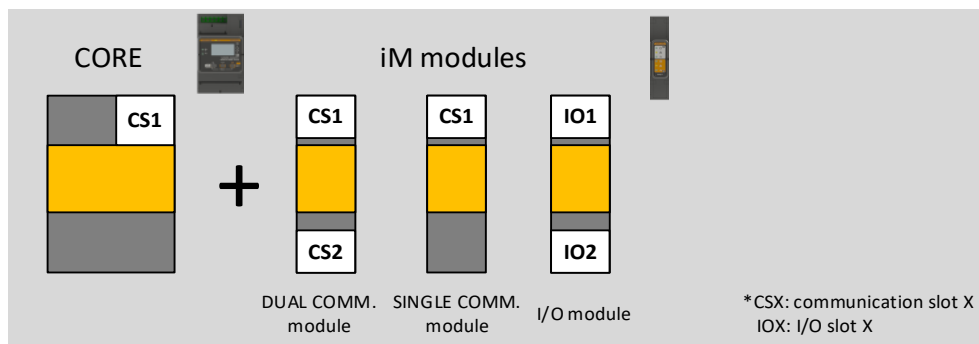
Both the CORE modules (iDLC3, iDLC3-W, iDLC3-IoT) and the DUAL/SINGLE COMM iM modules come with internal communication board slot(s), with which the client can define the communication or field bus functionalities. The CORE modules also come with standard digital input/output and one RS485 port. A full list of supported configurable functionalities is show in the table below.

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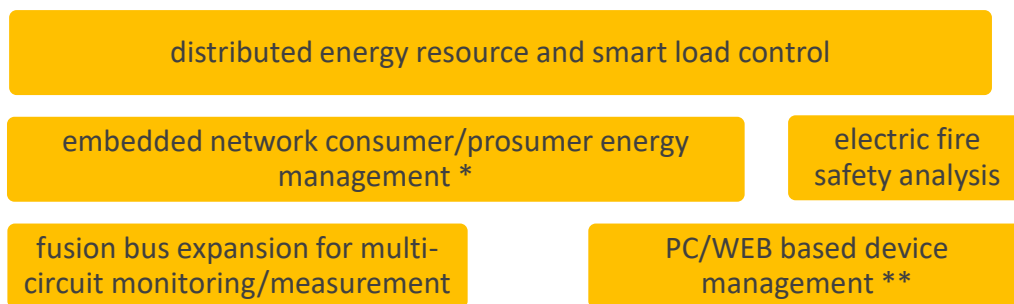| Configuration code	Description	Selectables					
		iDLC3	iDLC3-W	iDLC3-IoT	iM-DUAL	iM-SINGLE	iM-IO
Metering-H	High sampling rate and refreshing rate of power/energy measurement data, conform to VPP requirements according to MASS (by AEMO) Harmonic measurement for power quality analysis, predictive maintenance, conditional monitoring	Y	Y	Y	NA		
Metering-B	Power/energy measurement Harmonic measurement for power quality analysis	Y	Y	Y			
Energy safety	Continuous residual current monitoring (type A, type B) Cable temperature monitoring	Y	Y	Y			
UI	User interface (LCD, LED, button) functions according to client's requirement and design	Y	Y	Y	LED	LED	LED
RS485	RS485 with Modbus RTU master or slave	Y	Y	Y	NA		
IO	digital inputs and/or digital outputs	Y 2DI or 2DO			NA		Y 4DI or 4DO or 2DI/2DO
Comm. slot - 1 (CS1)	Choose one of the following: LAN(Ethernet) Wi-Fi Wi-Fi with BLE	Y	Wi-Fi or LAN only	Wi-Fi or LAN or LTE only	Y	Y	NA
Comm. slot-2 (CS2)	LoRa LTE cat-M1 LTE cat-1 RS485 Fusion-bus CT-bundle (for when both **Metering** and **Energy Safety** are chosen)	NA			Y	NA	NA
Control logic	Functionality/logic/algorithm of the device	Y	Y	Y	NA		

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(i) *info: RULES for using the expansion modules*

- The iDLC3CORE can expand up to **TWO** 'SINGLE' expansion modules *OR* **ONE** 'DUAL' expansion module at the same time.
- Sequency of assembly of the 'SINGLE' expansion modules will not affect the functionality.
- The iDLC3CORE can expand up to only **ONE** 'I/O' module regardless of the number of the 'SINGLE', 'DUAL' modules connected.

SINGLE modules   I/O
Max:2   module
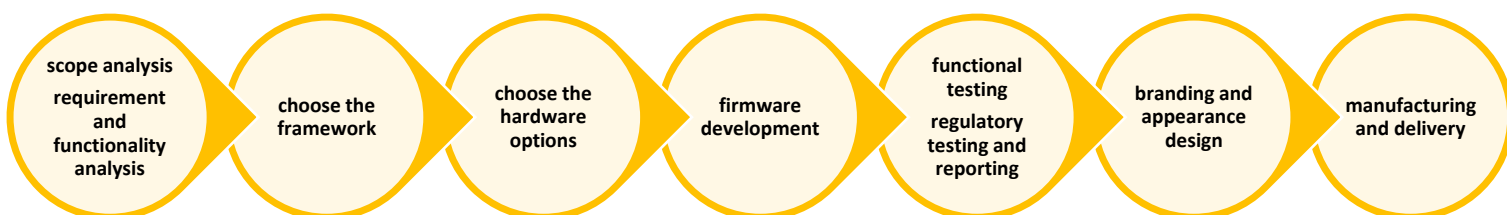
core ↔ S ↔ S ↔ I/O ↛ ⊘

DUAL module   I/O
Max:1   module

core ↔ D ↔ I/O → ⊘

▪ **Modular firmware options for iDLC3**

We have some pre-developed firmware modules for faster development, deployment, and evaluation.

distributed energy resource and smart load control

embedded network consumer/prosumer energy management *

electric fire safety analysis

fusion bus expansion for multi-circuit monitoring/measurement

PC/WEB based device management **

Use along with INFINODE FOURIER

**Use along with INFINODE POLARIS for PC based device management*

▪ **What is the process**

scope analysis requirement and functionality analysis → choose the framework → choose the hardware options → firmware development → functional testing regulatory testing and reporting → branding and appearance design → manufacturing and delivery

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- **Features**

Versatile and Configurable Communication Modes

Supporting IoT Applications

Combining High-Speed Measurement and Control in One Unit

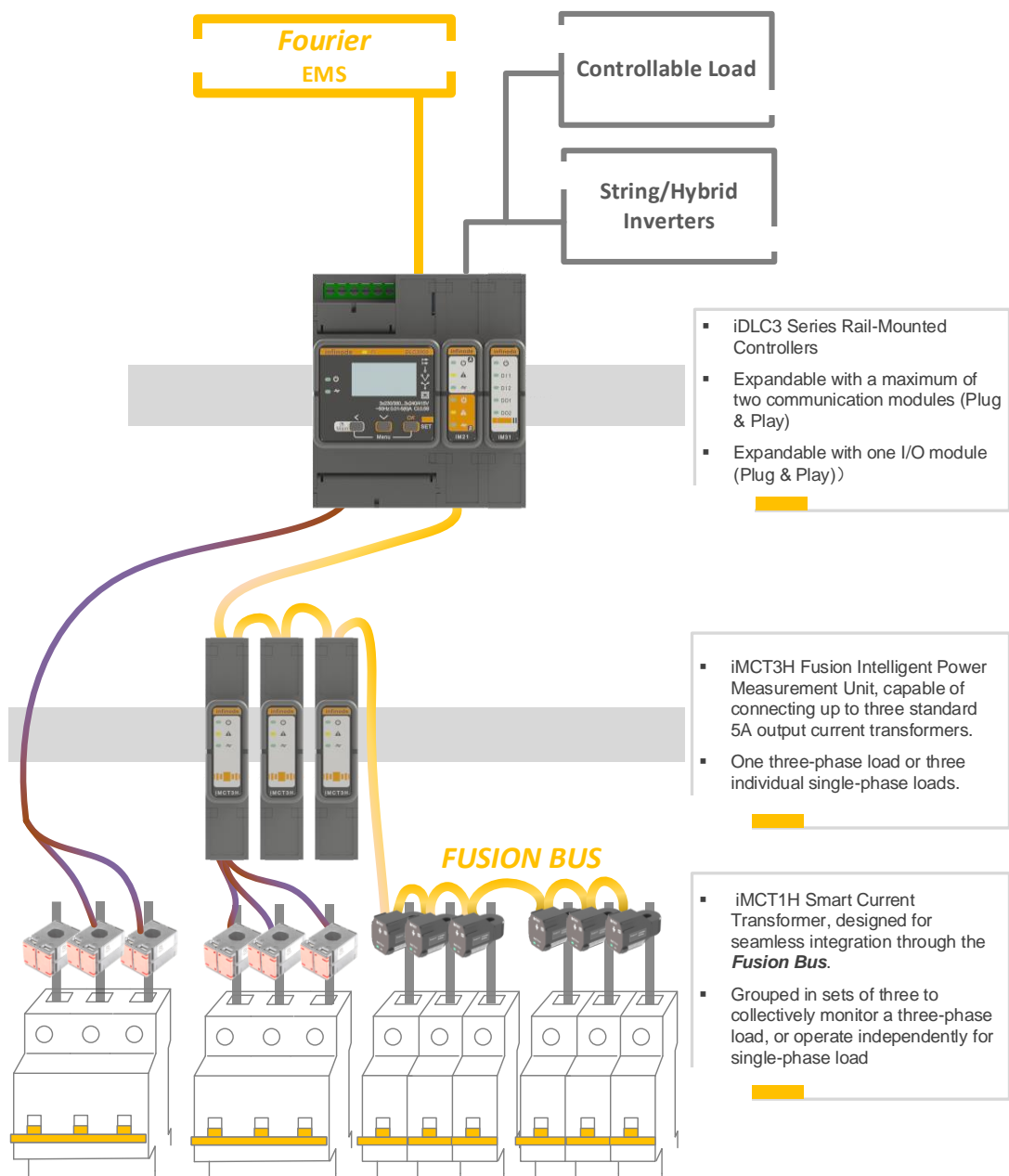Enabling Connectivity and Control of Third-Party Distributed Energy Resources

Fusion BUS Expansion for Multi-circuit Measurement

Client-defined, tailored control logic firmware, with the interface of DERs and loads we provide

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▪ **Example**

*Below is an example of a configuration, featuring expansion modules respectively the ethernet/fusion bus dual-comm iM module and the digital I/O iM module for the control of loads. Particularly noteworthy is the **FUSION BUS** featured in the iM module. Through **FUSION BUS**, the iDLC3 can conveniently expand multiple measurement circuits (based on the iMCT1H smart CT and iMCT3H multi-channel measurement module) for energy management or pure energy logging applications.*

▪ iDLC3 Series Rail-Mounted Controllers

▪ Expandable with a maximum of two communication modules (Plug & Play)

▪ Expandable with one I/O module (Plug & Play)）

▪ iMCT3H Fusion Intelligent Power Measurement Unit, capable of connecting up to three standard 5A output current transformers.

▪ One three-phase load or three individual single-phase loads.

▪ iMCT1H Smart Current Transformer, designed for seamless integration through the *Fusion Bus*.

▪ Grouped in sets of three to collectively monitor a three-phase load, or operate independently for single-phase load

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