InteliMains^{NTC} BaseBox

MAINS SUPERVISION CONTROLLER
BASE UNIT FOR USE WITH DETACHABLE
COLOUR DISPLAY

Green Power systems

1)

Description

InteliMains^{NTC} BaseBox is designed for multiple (up to 31) gen-sets operating in parallel to mains. The controller connects the group of gen-sets to the mains. It can serve as a bus-tie synchronizing controller between two groups of gen-sets or as a feeder controller.

InteliMains^{NTC} BaseBox provides 4 applications for different site topology selectable by software:

▷ with MCB (Mains Circuit Breaker)
▷ with MCB and MGCB (Master Generator Circuit Breaker)
▷ with BTB (Bus-tie Breaker)
▷ with LCB (Local Circuit Breaker)

According to the type of application, it controls MCB, MGCB, BTB or LCB and it allows reverse synchronizing of the gen-set group operating in multi-island mode to the mains (MCB application), to another group of gen-sets (BTB application) or forward synchronizing of the gen-sets (MGCB application). The controller measures mains power, power factor, reactive and apparent power and 3-phase system import / export.

The addition of a new large colour display brings easy to read and improved presentation of critical information.

The controller is available in two models: InteliMains^{NT} BaseBox and InteliMains^{NTC} BaseBox

Benefits

▷ Easy solution even for complex systems with groups of gen-sets – less wiring and components
▷ Can be used as bus-tie synchronizer or feeder controller
▷ Graphical site schematic for easy site overview – aggregates in one place all important system parameters
▷ Many types of communication – easy supervision and servicing

1) InteliMains^{NTC} BaseBox and InteliMains^{NT} BaseBox can be connected with ComAp colour displays InteliVision 5, InteliVision 8 or InteliVision 17Touch.

2) UL Certification is available for InteliMains^{NT} BaseBox model.

Features

▷ Integrated PLC programmable functions (same size as InteliSys^{NTC} BaseBox)
▷ Selectable measurement ranges for AC voltages and currents 120 / 277 V, 0–1 / 0–5 A = high voltage applications support
▷ Inputs and outputs configurable for various customer needs
▷ Controller redundancy
▷ RS232 / RS485 interface with Modbus support; analog / GSM / ISDN / CDMA modem support; SMS messages
▷ The RS232 / RS485 interface can serve as a bridge to all other controllers at the site (via CAN bus)
▷ Event-based history (up to 1000 records) with customer-selectable list of stored values; RTC; statistic values
▷ Interface to remote colour display unit InteliVision 5 or InteliVision 8
▷ DIN-rail mount
▷ Bipolar binary outputs – possibility to use BO as high-side or low-side switch
▷ Secondary isolated RS485 interface
▷ Ethernet connection (RJ45)
▷ USB 2.0 slave interface

Order codes

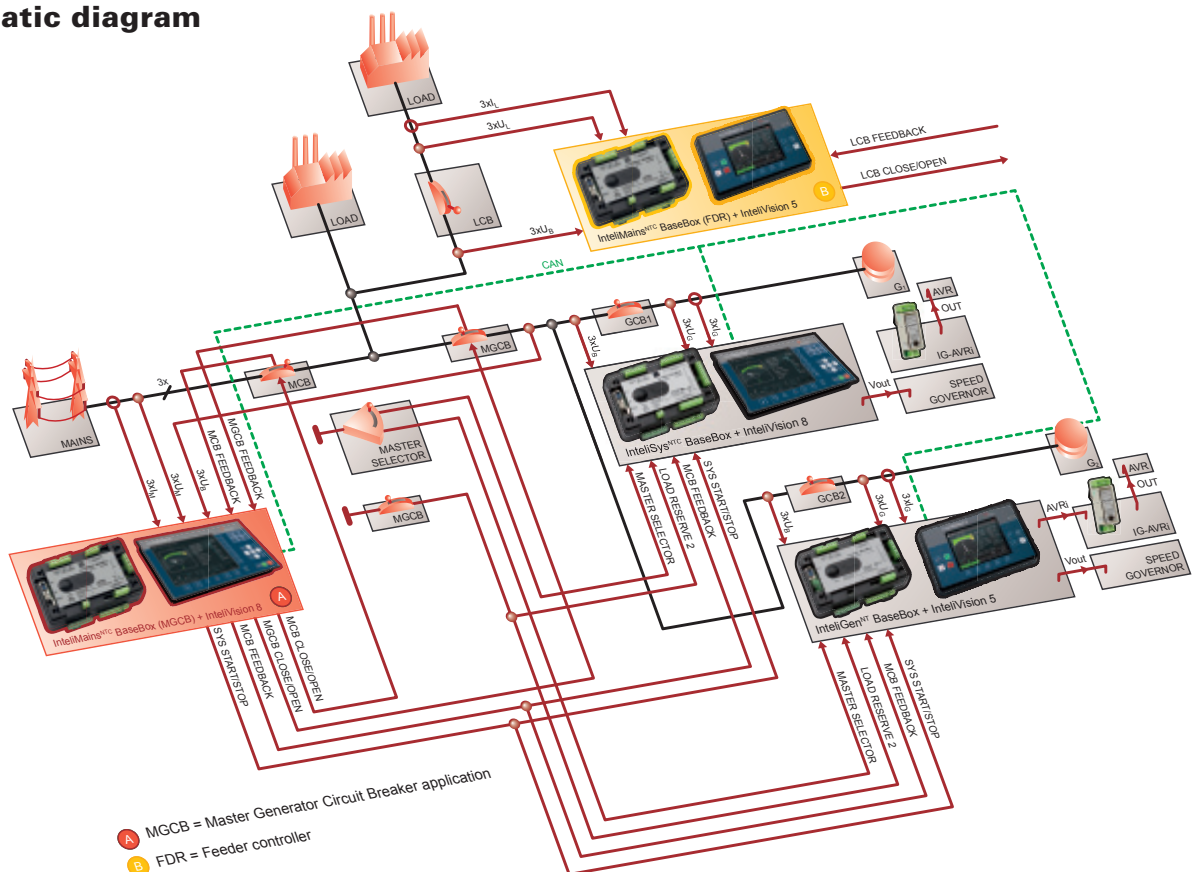| Product	Order code
InteliMains^{NT} BaseBox	IM-NT-BB
InteliMains^{NTC} BaseBox	IM-NTC-BB

Integrated fixed and configurable protections

▷ 3 phase integrated mains protections (U + f), voltage unbalance
▷ Mains IDMT overcurrent + shortcurrent protection, current inbalance, mains import/export
▷ Vector Shift and ROCOF protection
▷ All binary inputs free configurable for various protection types:
  • Yellow level: five various settings
  • Red level: two various settings
▷ Phase rotation and phase sequence supervision
▷ Application security

ANSI codes

ANSI code	Protection	ANSI code	Protection
25	Synchronism check	50	Overcurrent
27	Undervoltage	51	Overcurrent, IDMT
32	Overload	55	Power factor*
32P	Load shedding	59	Overvoltage
37	Undercurrent*	78	Vectorshift
46	Current unbalance	79	AC Reclosing
47	Voltage asymmetry and phase sequence	81H	Overfrequency
49T	Temperature monitoring*	81L	Underfrequency
		81R	ROCOF

* can be created using universal protections

Schematic diagram

Ⓐ MGCB = Master Generator Circuit Breaker application
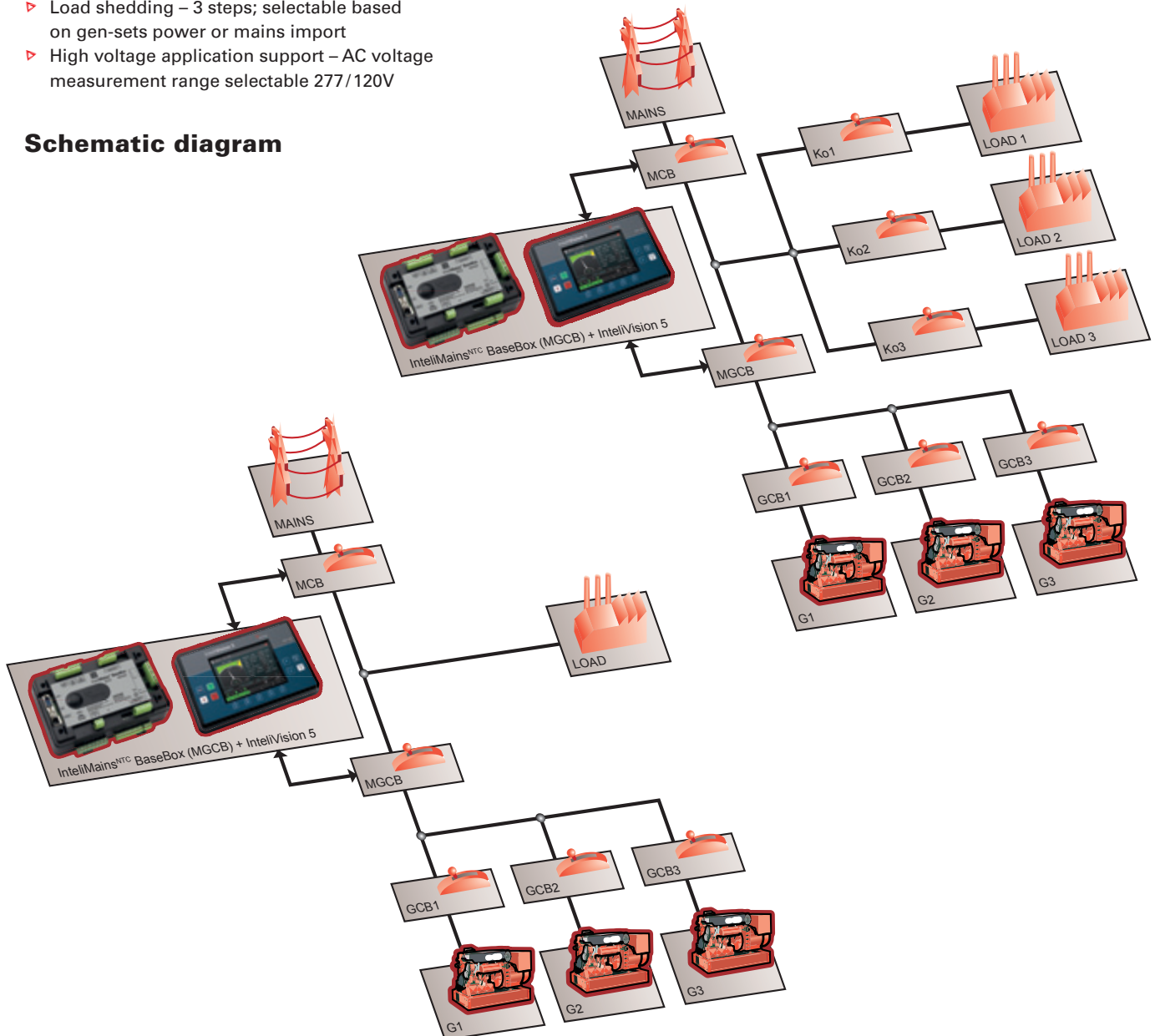Ⓑ FDR = Feeder controller

ComAp

MCB (Mains Circuit Breaker) + MGCB (Master Generator Circuit Breaker) applications

Features

▷ AMF function based on mains failure, outputs a signal to start the gen-set group

▷ Many SPtM – equivalent mains parallel modes based on constant produced power request, based on constant imported/exported power request, based on dynamically changing imported/exported power request, based on measured temperature (PID regulation)

▷ Peak shaving kW and kVA

▷ Test Mode (test on load for the complete gen-set group)

▷ Two application layouts – MCB only or MCB+MGCB control (see schematics)

▷ Mains measurement: U, I, Hz, kW, kVAr, kVA, PF, kWh exp., kWh imp., kVAhr exp., kVAhr imp.

▷ Bus measurement: U, Hz

▷ Sum gen-sets kW and kVAr

▷ Selectable partial or full MCB and/or MGCB control

▷ Load shedding – 3 steps; selectable based on gen-sets power or mains import

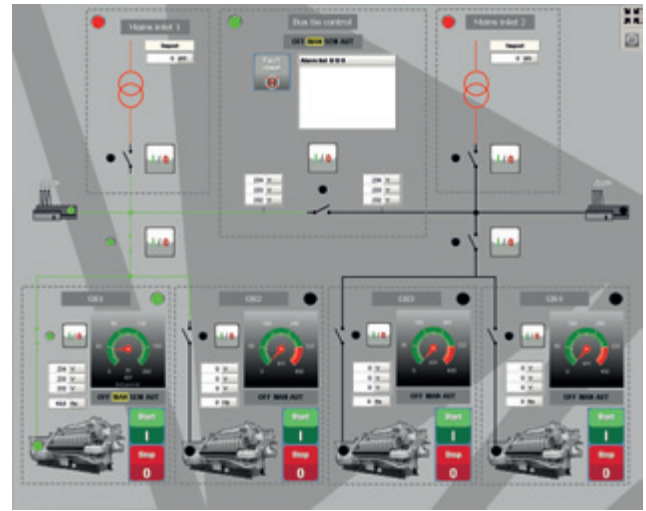▷ High voltage application support – AC voltage measurement range selectable 277/120V
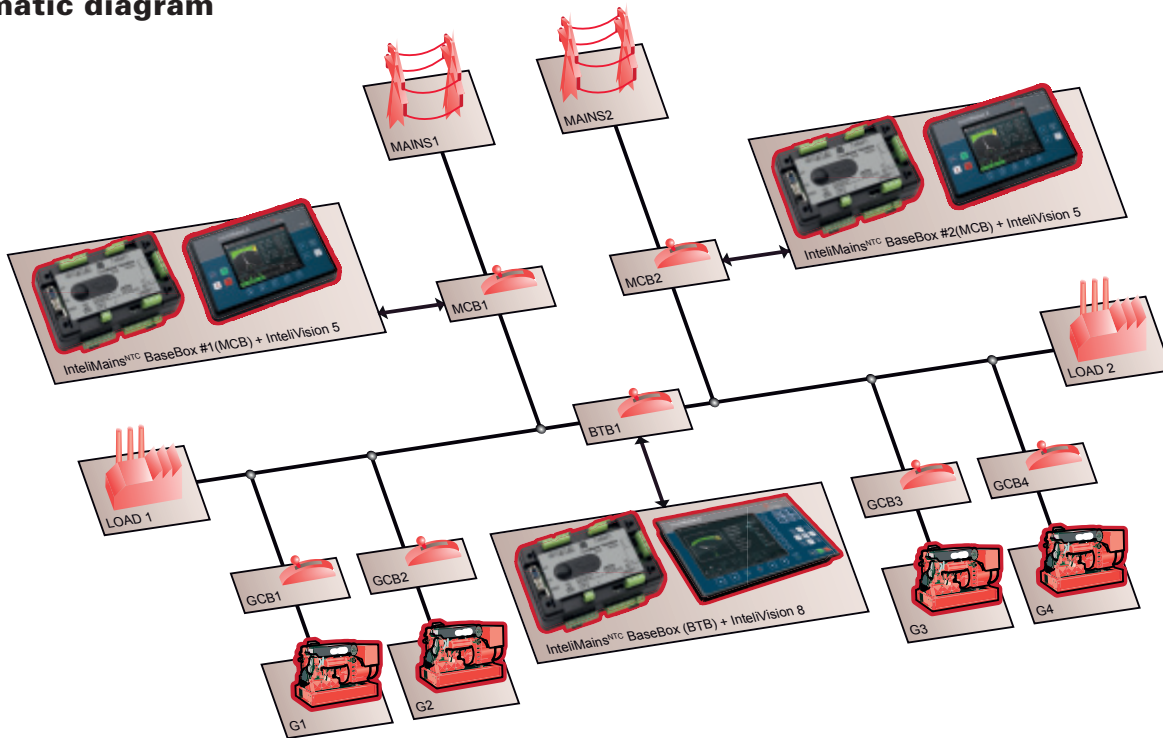
Schematic diagram

InteliMains^NTC BaseBox

BTB (Bus-tie Breaker) application

Features

▷ Left bus measurement: U, I, Hz, kW, kVAr, kVA, PF, kWh exp., kWh imp., kVAhr exp., kVAhr imp.
▷ Right bus measurement: U, Hz
▷ Manual or automatic selection of the gen-set group (side) to be influenced during synchronizing
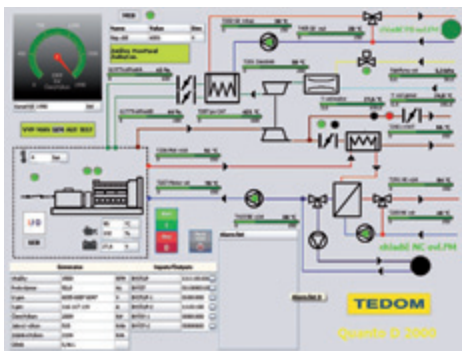▷ Selectable partial or full BTB control

Schematic diagram

Monitoring tools

InteliMonitor with SCADA

InteliMonitor is a free SCADA SW for visualization of data in process applications. It can be customized to create visualization of individual systems as well as producing automatically generated screens using the supplied templates.
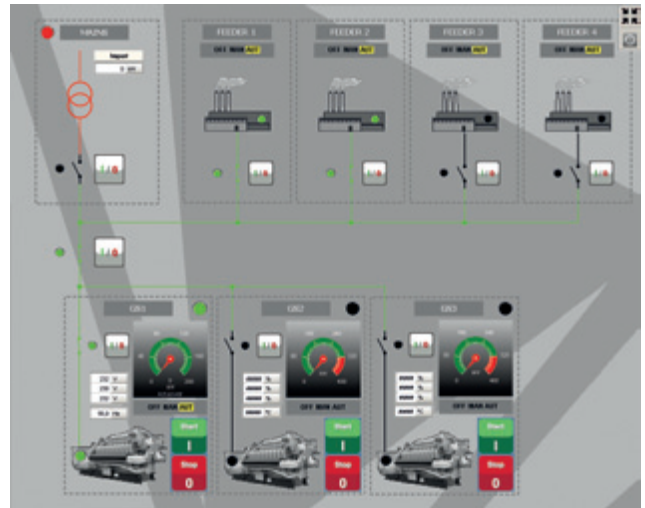
WebSupervisor & AirGate

WebSupervisor is cloud-based system designed for monitoring and controlling ComAp controllers via the Internet. This system offers a number of beneficial features that help optimize revenue for machinery fleets, as each piece of equipment can be individually monitored for all important operation values.
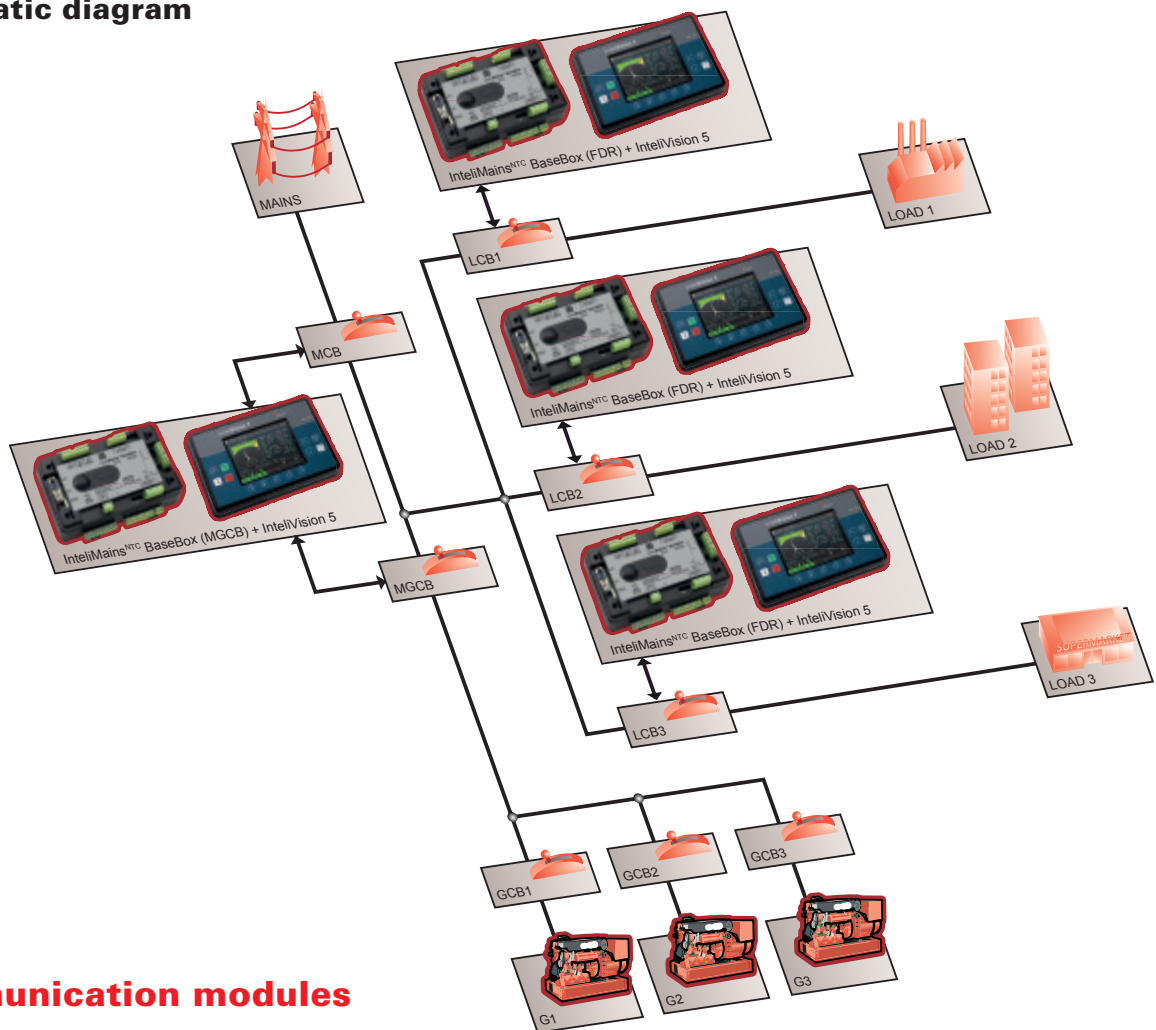
InteliMains^NTC BaseBox

Feeder application

Features

- ▷ Manual or automatic connection of the load to the bus bar
- ▷ Load prioritization
- ▷ Load shedding on each feeder
- ▷ LCB (Local Circuit Breaker) closing supervision
- ▷ Possibility to monitor remotely status of each feeder (connection to other InteliMains^NTC BaseBox and gen-set controllers on site)

Schematic diagram

InteliMains^NTC BaseBox (FDR) + InteliVision 5

InteliMains^NTC BaseBox (FDR) + InteliVision 5

InteliMains^NTC BaseBox (MGCB) + InteliVision 5

InteliMains^NTC BaseBox (FDR) + InteliVision 5

MAINS

LCB1

LOAD 1

MCB

LOAD 2

LCB2

MGCB

LOAD 3

LCB3

GCB1 GCB2 GCB3

G1 G2 G3

Communication modules

- ▷ **InternetBridge-NT** – Internet bridge module with wireless connection
- ▷ **I-CR** – CAN repeater module
- ▷ **I-LB+** – Local bridge supporting USB communication

Remote colour displays

- ▷ **InteliVision 5** – Controller 5.7″ colour display unit
- ▷ **InteliVision 8** – Controller 8″ colour display unit
- ▷ **InteliVision 17Touch** – Site 17″ colour display unit

Extension modules

- ▷ **IGS-PTM** – Analog/binary input/output module
- ▷ **I-AOUT8** – Analog output extension module
- ▷ **Inteli IO8/8** – Binary input/output module
- ▷ **Inteli AIN8** – Analog input module

InteliMains^NTC BaseBox

Functions chart

Controller	InteliMains^NT	InteliMains^NT BaseBox	InteliMains^NTC BaseBox
Order code	IM-NT	IM-NT-BB	IM-NTC-BB
Binary inputs/outputs	6 / 6	12 / 12	12 / 12
Analog inputs/outputs	0 / 0	3 / 1	3 / 1
Integrated PLC	Extended	Extended	Extended
Voltage measurement	3ph / 3ph 277V	3ph / 3ph 120V / 277V	3ph / 3ph 120V / 277V
Current measurement	3ph+1 / 5A	3ph+1 / 5A 3ph+1 / 1A	3ph+1 / 5A 3ph+1 / 1A
kW / kWh / kVA measurement	● / ● / ●	● / ● / ●	● / ● / ●
Communication interfaces	CAN1, CAN2, RS232, RS485, Modbus, Ethernet [1]	CAN1, CAN2, RS232, RS485 (terminal only), Modbus, Ethernet [1]	CAN1, CAN2, RS232, RS485 (terminal only), RS485 (multipurpose), USB, Ethernet, Modbus, Modbus TCP, AirGate, Web server
Active call / SMS support	●	●	●
Forward / Reverse synchronizing	●	●	●
Multiple parallel to Mains operation (Import / Export etc.)	●	●	●
Power Management System	●	●	●
Display	BW LCD 128x64	External	External
History (max records) [2]	500	1000	1000
Peak Shaving in kVA	-	●	●
Distributed virtual binary inputs and outputs	-	●	●
User Modbus	-	●	●
Binary outputs low-side/high-side switch	-	●	●

KEY
- ● included
- – excluded

[1] With communication modules
[2] Depends on number of values in history record

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Customer satisfaction is our mission. We continuously develop our people to be the best to succeed in our mission.