# Controller CAN Nodes

## Extending the Control System

Various CAN Nodes are available for Smartpack, Smartpack2 and Smartpack S controllers.

The nodes have dedicated inputs and outputs that expand the system monitoring. The units “plug-and-play” with Smartpack controllers, no local powering of the units is needed.


# CONTROLLER CAN NODES

Doc 242100.CAN.DS3-rev 7

### CONTROL SYSTEM

#### Overview

The controller CAN nodes cover all aspects of DC power system monitoring:

- AC Mains Voltage, current, frequency and energy consumption
- Battery symmetry, current and fuse monitoring
- Alarm outputs and control inputs
- Load branch current and fuse
- Climate control of fan/filter cabinets
- Generator control/fuel tank level measurements

### KEY FEATURES

- FLEXIBILITY AND RELIABILITY

Most CAN Nodes have a rugged sealed-plastic design, with post, DIN-rail or Velcro tabs as standard mounting options.

Power and communication goes through the CAN bus, and hence only a RJ45 patch cable is required for connecting the node to the control system. This allows great flexibility in positioning of the nodes – they can be put close to their measuring connections, reducing wiring.

All controller CAN nodes comes with a DIP-switch to allow multiple modules of the same type on the CAN bus. The maximum number of each type is limited to 14.

- PLUG AND PLAY

After setting the CAN ID of module by the DIP-switch and connecting it to the CAN bus, it will “plug and Play” with the Smartpack, Smartpack2 and Smartpack S controllers. Meaning, the module will automatically communicate with the controller when connected to the CAN bus.

Configuration, setup and calibration is then available via the controller’s front panel and through the controller’s web-based user interface (CWUI) or the PowerSuite PC application.

- GLOBAL COMPLIANCE

The CAN Nodes are approved for global use meeting CE safety and EMC requirements. Units are also UL Recognized for safety (incl. CSA).

See the last pages for technical specifications

# CONTROLLER CAN NODES

## BATTERY MONITOR

Its' compact design and easy connection to the control system through the CAN bus, makes it perfect for both co-located and remote battery banks. Battery temperature is measured by the embedded temperature probe – no external sensor and wiring required.

The unit has 4 voltage measurement inputs used for battery symmetry monitoring based on midpoint or block measurements. Furthermore the battery monitor has inputs for monitoring one battery shunt and battery breaker.

## BATTERY MONITOR

## LOAD MONITOR

Individual distribution breaker monitoring can be done with the Load Monitor.

The unit has the possibility to connect up to 8 current shunts and monitor 8 fuses individually. It can be used for both positive and negative distributions. However it is important for the current measurements that the shunts are connected to the same pole as the system reference of the control system. CAN repeater and CAN Power device can be used in cases where this is not fulfilled.

## LOAD MONITOR

## I/O MONITORS

The I/O Monitors are used to expand the standard monitor and alarm capabilities of the controller.

Each I/O monitor module has 6 configurable inputs for fuse sense and feeding external signals into the control system, and 6 configurable relay outputs for connecting external alarms.

The I/O Monitor Type3 is designed for doing tank level measurements. Some of its inputs are prepared to do high resolution current and voltage measurements.

In addition, special inputs and outputs are added for climate control in outdoor cabinets in the I/O Monitor (Outdoor) and Type3.

## I/O MONITORS

## FLEXIMONITOR

The FlexiMonitor is a multipurpose, additional and optional CAN Node for Eltek Smartpack2 and Smartpack S based control systems.

FlexiMonitor adds many advanced features to your control system, such as high-accuracy current measurements, symmetry and voltage measurements down to battery cell level, high voltage fuse sensing, more control & alarm outputs, additional temperature measurements and more.

For more details, refer to the Fleximonitor datasheet, Doc # 242100.603.DS3.

## FLEXIMONITOR

# CONTROLLER CAN NODES

## CAN POWER

All nodes are powered by the distributed power supplied on the CAN bus by the Smartpack and Smartpack2 basic controllers.

If the CAN bus needs to be isolated or additional CAN bus power is need, the CAN power module can be added to supplement the available power. The CAN power module is mandatory if any CAN control units are to be connected to a Compack controller.

## CAN POWER


## AC MAINS MONITOR

With inputs for measuring voltage and current on up to 3 phases of the AC mains of a system, the mains availability, quality and consumed energy are easily monitored. The energy log keeps track of consumption per phase and total, and stores it by hour, day and week. The log is available for download through the WebPower interface to the system.

The current range are set by selecting the sensor, 0 – 50 A up to 0 – 600 A are available. Due to software restraints the energy log supports only up to 200A.

There is also a configurable data log that by default stores AC frequency together with current and voltage for each measured phase and a time stamp. The log interval is configurable and the log has space for the last 5000 samples.

The 5 configurable digital inputs can be used for monitoring SPDs and other external equipment

## AC MAINS MONITOR

# CONTROLLER CAN NODES

## ADDITIONAL TECHNICAL SPECIFICATIONS

| CAN POWER | |
|---|---|
| Input | 20 - 75Vdc (Screw terminals) |
| Outputs | +/-15V, 500mA (Dual RJ45 connector) |
| Functionality | o Isolates the power distributed on the CAN bus<br>o Increase power available for the CAN nodes in the system |
| Dimensions (WxDxH) | 155.5 x 70.5 x 31 mm (6.12 x 2.78 x 1.22 “) |

Note: 500mA is supplied per Smartpack, 1A per Smartpack2 Basic

| CONTROLLER CAN NODES — CAN ID # RANGE | | | |
|---|---|---|---|
| **CAN Device** | **Start** | **End** | **Num. of nodes** |
| Smartpack | 1 | 14 | 14 |
| Smartpack2 Basic | 1 | 10 | 10 |
| Smartpack2 Master | 11 | 14 | 4 |
| Smartnode | 17 | 30 | 14 |
| Battery Monitor | 33 | 46 | 14 |
| Load Monitor | 49 | 62 | 14 |
| FlexiMonitor | 65 | 78 | 14 |
| I/O Monitors | 81 | 94 | 14 |
| Mains Monitor | 97 | 110 | 14 |

| AC MAINS MONITOR | |
|---|---|
| 3 mains current sensor ports (for LEM HAL or equivalent) | |
| o Sensor reference | 0 V |
| o Signal | 0-4 $V_{pp}$ (45-65 Hz) |
| o Sensor supply - | -15 V |
| o Sensor supply + | 15 V |
| 3 mains voltage input:<br>Signal | 0-300 $V_{rms}$ (45-65 Hz) |
| 5 configurable “digital” inputs:<br>NO/NC, Pull Up/Dn, Diode matrix | (0 – 60 V) |
| | |
| 1 RS 485 Communication port for customer connection: | CSCP Protocol |
| Max. CAN Power consumption | Max 300 mA |
| SW Part number | 402093.009 |
| Functionality | |
| o Energy log | Last 52 hours, last 52 days and last 52 weeks |
| o Data log | Up to 5000 samples with timestamp (default: VAC, IAC and frequency) |
| Dimensions | 176 x 97.6 x 42.8 mm (WxDxH) (6.93 x 3.84 x 1.69”) |

| BATTERY MONITOR | |
|---|---|
| Inputs | o 4x Symmetry Voltage (0 - 60V)<br>o 1x Fuse failure detect, NO/NC or Diode Matrix<br>o 1x Current sense |
| Accuracy based on resolution (calibrated) | Voltage: 76mV Current (200A): +/- 1A |
| Functionality | o Symmetry measurement: 2, 6, 12, 24, 30 or 36V<br>o Fuse failure: NO, NC or Diode Matrix<br>o Current sense: 50mV or 60mV shunt<br>o Temperature measurement: Embedded in unit |
| SW Part number | 402086.009 |
| Max. Can Power consumption | 90mA |
| Dimensions (WxDxH) | 72 x 54 x 25 mm (2.83 x 2.13 x 0.98 “) |

Specifications are subject to change without notice

# CONTROLLER CAN NODES

## ADDITIONAL TECHNICAL SPECIFICATIONS

| LOAD MONITOR | | |
|---|---|---|
| Inputs | o 8x Configurable (Fuse failure)<br>o 8x Current sense | |
| Accuracy based on resolution (calibrated) | Current (200A): +/- 1A | |
| Functionality | o Fuse failure: NO, NC or Diode Matrix<br>o Current sense: 50mV or 60mV shunt | |
| SW Part number | 402087.009 | |
| Max. CAN Power consumption | 120mA | |
| Dimensions (WxDxH) | 155.5 x 70.5 x 31 mm | (6.12 x 2.78 x 1.22 “) |

| I/O MONITORS: [1]-OUTDOOR, [2]-TYPE 2 AND [3]-TYPE 3 | | |
|---|---|---|
| 6 configurable inputs:<br>“digital”, voltage/current measurement: | | |
| o NO/NC, Pull Up/Dn, Diode Matrix<br>Voltage range 0-75V (78mV res) | No1-6(1,2), No1-2(3) | |
| o NO/NC, Voltage range 0-10V (13mV resolution) | No3-6(3) | |
| o Current measurement 4-20mA (27µA resolution) | No5-6(3) | |
| 6 configurable relay outputs:<br>normally activated/deactivated: | | |
| o Dry/Form C, Max 1A/60W/75V<br>o Dry/Form C, Max 8A/300W/75V | No1-4(1,3), No1-6(2)<br>No5-6(1,3) | |
| Outdoor cabinet specific ports:<br>temp, fan control/monitoring: | | |
| o 2x Temp sensor inputs:<br>o 2x Fan speed inputs:<br>o 2xFan speed control outputs: | (-40-100°C with 0.14°C res.)(1,3)<br>(0-5V or pulse sense 1-10 p/r)(1,3)<br>(0-10V, max -10/+20mA) (1,3) | |
| Max. CAN Power consumption | Max 3.4W(1,2,3) | |
| SW Part number | 402088.009(1,2,3) | |
| Functionality:<br>Data logging (non-volatile memory) | o 10000 time stamped logs<br>o 4 user selectable data points<br>o Default: 2x Temp. 2x Fan Speed | |
| Dimensions (WxDxH) | 155.5 x 85.2 x 31 mm (1,3)<br>135.9 x 59 x 25.6 mm (2) | (6.1 x 3.4 x 1.2 “)<br>(5.4 x 2.3 x 1.2 “) |

| FLEXIMONITOR | | |
|---|---|---|
| Part number | 242100.603 | |
| Relay Extension Board, 8 outputs<br>Relay Extension Board, 4 outputs | 242100.604<br>242100.605 | |
| Mounting:<br>DIN Rail clips<br>Screw hole (M4) clips | <br>282523<br>282524 (vertical) or 315068 (horizontal) | |
| Dimensions (WxDxH) | 115 x 84 x 33.6 mm | (4.53 x 3.31 x 1.32”) |
| Dimensions (LxWxH) with relay extension board | 115 x 84 x 56.5 mm | (4.53 x 3.31 x 2.22”) |

For more details, refer to the Fleximonitor datasheet, Doc # 242100.603.DS3

Specifications are subject to change without notice

# CONTROLLER CAN NODES

## ADDITIONAL TECHNICAL SPECIFICATIONS

| ALL CAN NODES | |
|---|---|
| Max. nodes | 14 units of same type can be added a single CAN bus<br>(Also see CAN Power) |
| Mounting | Slotted groove for post mounting or DIN rail/Velcro (for Battery Monitor) |
| Visual Indication:<br>3xLED (1xLED CAN Power) | o GREEN: Power<br>o YELLOW: Warning<br>o RED: Alarm (Flashing LED: insufficient power) |
| SW Upload tools | o From the controller's storage device, via the front panel, (Smartpack2 Master's SD card or Smartpack S Flash memory) OR<br>o From a PC, using FWLoader app. (Ver ≥3.25) and "IXXAT USB-to-CAN Converter" (p/n: 208565) |
| Casing material | Plastic - V0 rated / Steel (CAN Power) |
| Operating temp. and Storage temp. | -40 to 70°C (-40 to 158°F) and -40 to 85°C (-40 to 185°F) |
| **APPLICABLE STANDARDS** | |
| Electrical safety | IEC 60950-1<br>UL 60950-1<br>CSA C22.2 |
| EMC | IEC 61000-6-1<br>IEC 61000-6-2<br>IEC 61000-6-3 /A1<br>IEC 61000-6-4<br>ETSI EN 300 386 v1.3.3<br>FCC Part 15B Subpart 109 |
| Environment | 2002/95/EC (RoHS) & 2002/96/EC (WEEE)<br>ETS 300 019-2-1 Class 1.2<br>ETS 300 019-2-2 Class 2.3<br>ETS 300 019-2-3 Class 3.2 |

| PART NUMBERS | |
|---|---|
| **Part No.** | **Description** |
| 242100.300 | Battery Monitor |
| 242100.301 | Load Monitor |
| 242100.304 | I/O Monitor (Outdoor) |
| 242100.502 | I/O Monitor Type 2 |
| 242100.306 | I/O Monitor Type 3 |
| 242100.603 | Fleximonitor |
| 242100.303 | CAN Power |
| 242100.305 | AC Mains Monitor |

Specifications are subject to change without notice