

FEATURES

Network peripheral with 16 inputs and 16 outputs; it doesn't have any communication module, to allow choosing which one is best fitting plant's needs: FTT10A, 485 galvanic insulated and 485 polarized modules are available.

INPUTS

Double balance inputs for a total of four states: STANDBY, ALARM, SHORT CIRCUIT, and CUT

Each input is completely independent and can be programmed in modes:

- Double balance
- Single balance
- Normally Open contact
- Normally Closed contact

With programming you can choose:

- Detection time
- Self-exclusion on enabling
- Enabling delay
- Alarm delay
- Maximum number of alarms, with the possibility to define the interval
- Maximum number of detections before alarm, with the possibility to define the interval
- Tampering signal exclusion (short and cut)
- Event generation
- Logic zone

Inputs are available on removable terminal boards and relating flat cable connectors, arranged for MORS-0 board connection.

OUTPUTS

They are Open Collector (500mA) and are available on fixed terminals and relating flat cable connectors, arranged for connection to MORS-1, MORS-2 and MORS-3 relay boards.

Outputs support the following commands:

- Continuously enabled
- 1Hz pulsing enabled
- 2Hz pulsing enabled
- Standby

With programming it's possible to set

- positive security (inverted functioning logic)
- continuous activation time
- pulsing activation time 1Hz
- pulsing activation time 2Hz

EXCLUSIONS

It's possible to set the following functions:

- battery and power control
- missing communication with the control panel can be signalled on output 8

Other information is shown in installing paragraph



Picture with FTT10A module, not included



INSTALLING

IND-16 peripheral was built to be installed into **E-CAB2** or **E-RACK-9** boxes, to which it must be fixed with 6 spacers 10mm long. Fix the board avoiding bending or flexing it: mechanical stresses can damage the board. During insertion and removal of connectors, block the board in order to avoid bending. After fixing operations check that line module's board and connectors are completely inserted into their housings.

IN SERVICE

To put the peripheral in service:

- Check it is not powered
- Set peripheral's number through dip-switches
- Power the peripheral
- Check that L2 led blinks RED fast
- Press SW1 until L2 led becomes GREEN, fixed first and blinking then
- Check through PC or TAD-M terminal that peripheral is in service.

EXCEPTIONS

L2 led is RED fixed

There's no communication between peripheral and control panel.

- Check network connections
- Check that line module and connectors are completely inserted into their housings
- If connections are ok it's possible that peripheral has in memory binding with another line or control panel. In this case it's necessary to delete the old binding.

L2 led blinks RED/YELLOW/GREEN

Peripheral has in memory a binding configuration with a peripheral number different from the one now set. Set the correct peripheral number or delete the old binding.

DELETE BINDING

- remove peripheral power
- press and hold SERVICE key
- reconnect power

Binding deletion is signalled by L2 led blinking fast RED.

LINE MODULE

Please check P0 jumper's position on line module. With P0 jumper you can choose termination to apply to the line.

For 485IG and 485 modules, jumpers are two. To choose points where add terminations, see technical manual in NETWORK CONFIGURATION paragraph.

INPUTS

Inputs available schemes are under INPUT SCHEMES paragraph.

POWER SUPPLY AND BATTERY CONTROL

This control is used when the peripheral is installed in a sub-control panel with separated power supply. When this function is active, the peripheral controls power supply and battery status each hour or at the moment, pressing SW1 button.

Power supply check uses input 1, battery check input 2 and output 1, that in this way can't be used for other functions.

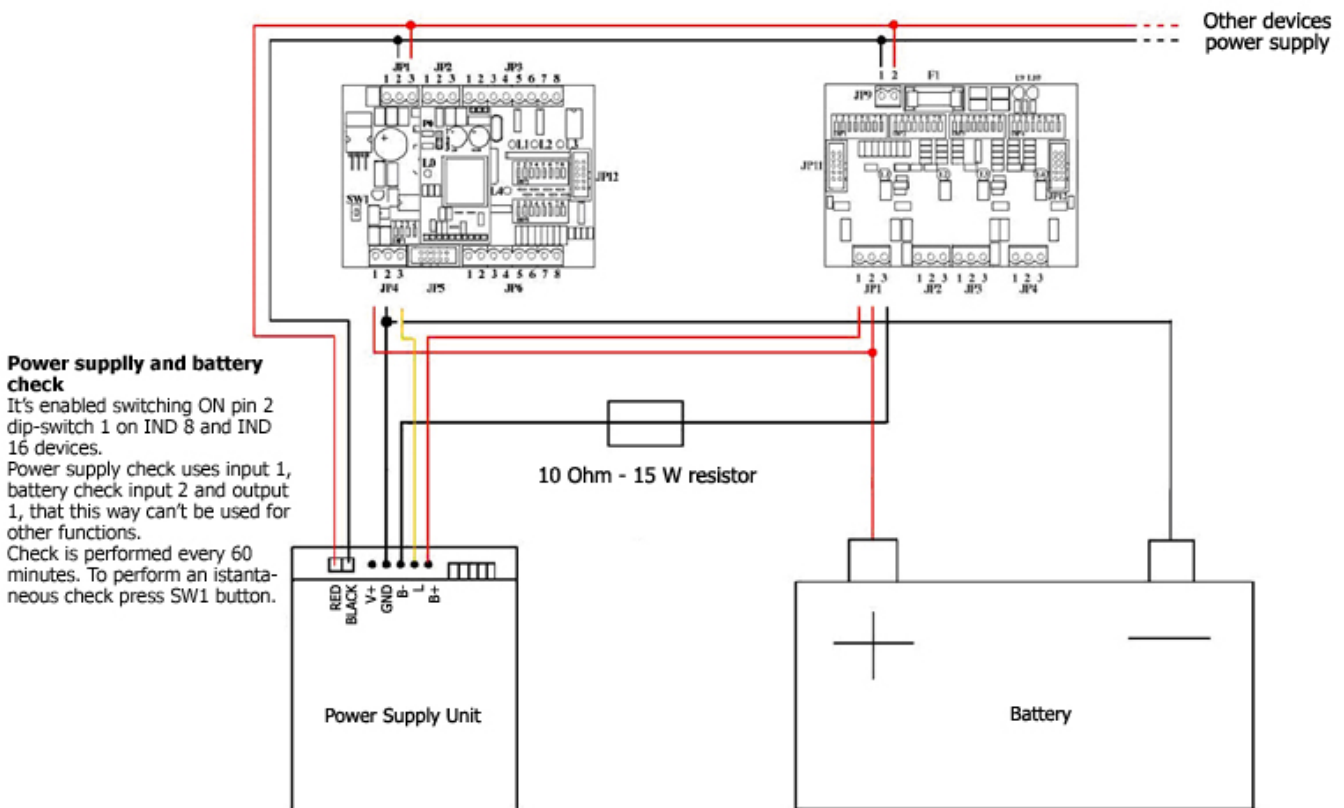
Battery check is enabled setting dip-switch 1 pin 2 ON. IND-CBR scheme contains all indications useful for connections.

COMMUNICATION MISSING SIGNALLING

Enabling this function, peripheral signals on output 8 missing communication. To use this function it's necessary to set dip-switch 1 pin 1 ON and program output 8 with positive security. Whenever communication with the control panel was interrupted, 8 will be disabled. This function is used to drive radio-links and alarm signalling with maximum security.

TECHNICAL DATA

Voltage power	9-15	Vdc
Standby current	75	mA
Maximum output current	500	mA
Operating temperature	-10 +50	°C
Dimensions	200x72	mm



Power supply and battery check

It's enabled switching ON pin 2 dip-switch 1 on IND 8 and IND 16 devices.

Power supply check uses input 1, battery check input 2 and output 1, that this way can't be used for other functions.

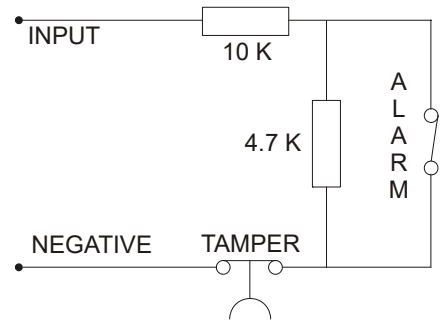
Check is performed every 60 minutes. To perform an instantaneous check press SW1 button.

IND-CBR scheme

Double balance Normally Closed (N.C.) inputs

This setting grants maximum protection. Each input gives signalling for: STANDBY, ALARM, CUT, SHORT-CIRCUIT. Signalling is given basing on resistance value seen between input and negative.

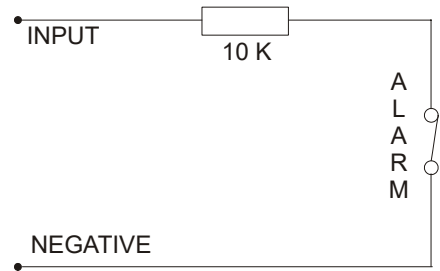
STATE	VALUE
STANDBY	from 6,8 to 12 KOhm
ALARM	from 12 to 22 KOhm
CUT	more than 22 KOhm
SHORT CIRCUIT	less than 6,8 KOhm



Single balance Normally Closed (N.C.) inputs

Each input gives signalling for: STANDBY, ALARM, CUT, SHORT-CIRCUIT. Signalling is given basing on resistance value seen between input and negative.

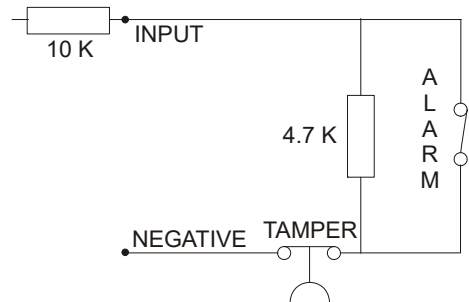
STATE	VALUE
STANDBY	from 6,8 to 12 KOhm
ALARM	more than 10 KOhm
SHORT CIRCUIT	less than 6,8 KOhm



Single balance Normally Closed (N.C.) inputs

On the peripheral 10K serial resistors are mounted that make it possible to set double balance mode, mounting on the detector only a 4,7K serial resistor. This way you obtain a single balance input that gives signalling of: standby, alarm, cut. Signalling is given basing on resistance value seen between input and negative.

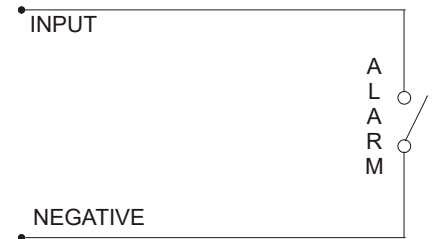
STATE	VALUE
STANDBY	from 6,8 to 12 KOhm
ALARM	from 12 to 22 KOhm
CUT	more than 22 KOhm



Normally Open (N.O.) technological inputs

Each input gives signalling for: STANDBY and ALARM. Signalling is given basing on resistance value seen between input and negative.

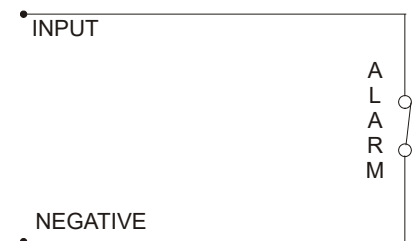
STATE	VALUE
STANDBY	more than 22 KOhm
ALARM	less than 6,8 KOhm

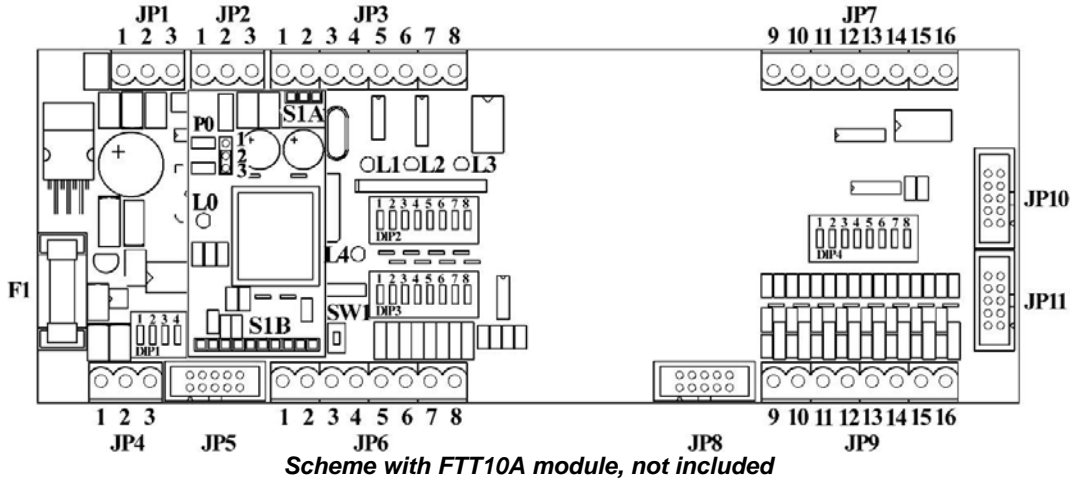


Normally Closed (N.C.) technological inputs

Each input gives signalling for STANDBY and ALARM. Signalling is given basing on resistance value seen between input and negative.

STATE	VALUE
STANDBY	less than 6,8 KOhm
ALARM	more than 22 KOhm





CONNECTIONS		
JP1		Board power
1	2	3
JP2		Data network
1	2	3
JP3		Outputs 1/8 terminal board
1-8		
JP4		Battery connection
1	2	3
JP5		Flat inputs 1/8
JP6		Inputs terminal board 1/8
1-8		
JP7		Outputs 9/16 terminal board
1-8		
JP8		Flat inputs 9/16
JP9		Inputs terminal board 9/16
1-8		
JP10		1/8 Output flat
JP11		9/16 Output flat
		LON line
S1A	S1B	

BUTTONS	
SW1	SERVICE button

SETTINGS		
P0		Data network termination configuration
FTT	NC	No resistance
	1,2	Free configuration
	2,3	Bus configuration
485	NC	Termination disabled
485IG	1,2	Termination enabled, terminal is positioned at one end of 485 bus
	1,2	
DIP 1		Special settings
	1	Outputs 8 signals missing communication with the control panel (set positive security on output 8)
	2	Battery test
	3	Dip 9 peripheral address
	4	Dip 10 peripheral address
DIP 2		Peripheral address
	...	See peripheral address table
DIP 3		1/8 inputs balance
	ON	Removes 10 KOhm resistance on input 1 ... 8
DIP 4		9/16 inputs balance
	ON	Removes 10 KOhm resistance on input 9 ... 16

SIGNALLING	
L1	
Power supply	
Green	12V presence
Off	12V missing
L2	
Data network test	
Fixed red	Communication with the control panel missing
Fast Red	Peripheral doesn't have binding
Slow Green	Peripheral has binding and is communicating correctly with the control panel
Alternate blinking Red/Green/Yellow	Address has been changed after binding. Set the correct address or delete binding and repeat the procedure to put in service the peripheral.
L3	
Microprocessor Test	
Red	Microprocessor stopped
Green	Microprocessor works correctly
L4	
SERVICE	
	Enabled when SERVICE key is pressed