# **EC-11**

# **Ethernet Converter**

# **PSTN Contact ID to TCP Converter**

# **Installation and Operations Manual**

Version 8.H3.MID



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# **About EC-11 Ethernet Converter**

The EC-11 converts any alarm Panel's Contact ID signals in CSV Format to TCP segments and then transmits those segments in IP packets over the internet. A central monitoring station with the CSV Format implemented in their CMS software or running micron's receiver software can receive the TCP/IP packets sent by the EC-11 with the correct setup.

The EC-11 can differentiate between a DTMF alarm panel call to a monitoring station phone number and a regular VoIP call.

The EC-11 is factory defaulted to DHCP to automatically obtain EC-11's IP address from a gateway router. Search and download the 'Micron Device Finder' App from iTunes for IOS devices or the Google Play Store for Android devices to find EC-11's IP address on the network.

# **Circuit Board Layout and Wiring Diagram**



The Factory Default/Account Clear Pins can be used in the following ways:

- Power down the EC-11, maintain a short of the two pins and power the unit up, then remove the short. Performing these steps will **factory default** the EC-11.
- While the EC-11 is powered up, short these two pins and then remove the short.
   Performing these steps will Clear the Ecxx Account Number and Panel Account
   Number to 000000000 (10 digits) in the Monitoring tab (see later section).

#### Link Output 1 to USB Pins

Link these pins to enable output 1 to reset a USB connected mini WiFi router when a programmed Gateway Failure event occurs.

# **EC-11 Setup Procedures and the User Interface**

## Physical Connections

Refer to the "EC-11 Layout Diagram" and connect the "VOIP line out / Alarm Panel" to the "TELCO LINE - IN" of your alarm panel. Connect the EC-11 to your Gateway Router using an Ethernet cable. Apply 12VDC to the EC-11 board.

To enable external remote access to the EC-11, the customer's router must be "**port forwarded**" or "**UPnP enabled**". Use the **public IP address** (eg 123.234.1.234) of the gateway the EC11 is connected to and the **remote port** (eg 4566) which is assigned in the device **user interface** and enter the **URL** <u>http://123.234.1.234:4566</u> in the web browser to connect to EC-11 remotely. See 'Network' page 13 for further explanation of remote ports.

#### Connecting Inputs and Outputs

Use the wire harnesses supplied to connect EC-11's two outputs to alarm inputs on any brand of alarm panel for alarm control from the 'Micron Control' App. EC-11's two inputs can be used to report the connected alarm's status. Additional circuitry such as a relay may be required. See 'Micron Control' App on page 18.

#### > USB Connector and 3G Mini WiFi Router

The EC-11's USB connector provides power for micron's mini WiFi 3G router. This router can be setup as either a WiFi bridge to an on-site router or as a 3G communication gateway. See connection diagram on page 20.

#### > Connect to EC-11 using a Web Browser

Connect to the EC-11 using any compatible internet browser (Internet Explorer, Google Chrome, Firefox or Safari) on any computer or smart phone with an internet connection.

Enter the EC-11's IP address in your web browser and press "Enter". A new window will prompt for Username and Password:

The factory default is:

Username: **micron** Password: **micron** 



After entering the appropriate username and password, click "OK" and a connection will be established to the EC-11. The User Interface will now appear in your web browser.

Alternatively, locate EC-11 with the '**Device Finder**' App, tap the device icon, enter the login and password when prompted and touch "log in" to connect.

Or download the new '**Micron Control**' App to connect directly to EC-11 from within the App, setup push notifications and access the connected alarms cloud based event reporting log.

#### > Output Tab

The **Outputs** tab allows you to view the EC-11 status or to programme the outputs.

micron security innovation						
Outputs Monitoring	Outputs			Gateway		Input 2
Network		EC Output 1		]		
Users		EC	Output 1			
Save		EC Output 2	Output 2			
		Input 1 Input 2				
	Gateway (1) Failed	EC Output 1	Activation Period	EC Output 2	seconds	
	Gateway (2) Failed	EC Output 1	Activation Period	EC Output 2	seconds	
	Transmit Gateway (1)	EC Output 1	Activation Period	EC Output 2	seconds	
	Transmit Gateway (2)	EC Output 1	Activation Period	EC Output 2	seconds	
	Input 1	EC Output 1	Activation Period	EC Output 2	seconds	

GatewayWhen the Gateway indicator is green this means the<br/>connection is secure. When the indicator is red a Fault<br/>condition exists.Input 1 and Input 2These indicators reflect the state of the inputs on<br/>the EC-11 circuit board. Select reporting options in the<br/>Monitoring Tab to report event messages to MyMeridian or<br/>a monitoring station.

EC Output 1 and 2	<ul> <li>These buttons work to turn on or off the EC output pins on the EC11. These outputs can be used to automatically reboot routers when an internet connection is dropped, arm or disarm a connected alarm panel using a key switch input or control a garage door. Additional circuitry, such as a relay may be required.</li> <li>Change the EC Output name to something more meaningful to the user by over-typing into the text-input field and then eliciting the "Cove" teh.</li> </ul>
	field and then clicking the "Save" tab.
Gateway (1) Failed	Network communication failure on Gateway (1) will trigger the "EC Output" if selected. This output can be used to reset the router after a communication fail event. Checking the "Inverted" check-box will invert the output. "Activation Period" is the time in seconds that the output will be turned on (off if inverted).
Gateway (2) Failed	Network communication failure on Gateway (2) will trigger the "EC Output" if selected. This output can be used to reset the router after a communication fail event. Checking the "Inverted" check-box will invert the output. "Activation Period" is the time in seconds that the output will be turned on (off if inverted).
Transmit Gateway (1)	Output turns on for the duration of the selected "Activation Period" when a transmission occurs on Gateway (1). The output can be inverted by checking the "Inverted" box.
Transmit Gateway (2)	Output turns on for the duration of the selected "Activation Period" when a transmission occurs on Gateway (2). The output can be inverted by checking the "Inverted" box.

## > Monitoring Tab

Click on the **Monitoring** tab to view and configure the monitoring related information.

nicron	n						
Outputs Monitoring	Monitoring				Choose file No file chosen	Restore Backup	
Routing Network	Ecxx Account Number Panel Account Number	000000000 000000000			User Name Password	TxID RxID	
Users	Contact ID Events	Code	Gateway (1)	Gateway (2)			
Account Info	Reset Communication Failed	305 354	1	2			
Suve	Input 1 Input 2	000	0	0			
	Web Access Periodic Test (1) Periodic Test (2)	412 602 603	1	2	Test Period Test Period	3600 seconds 3600 seconds	
	Panel Messages Panel CID 1	000	1	2			
	Panel CID 2 Panel CID 3 Panel CID 4	000 000 000					
	Gateway (1)						
	IP Destination (1) 192 1	68 1 7	DNS Addres	ss (1) al Port (1) 21	arms.co.nz		
	IP Destination (2) 192 1	68 1 7	DNS Addres	ss (2) al	arms.co.nz		

#### **Choose File, Restore, Backup**

The EC-11's settings can be backed up by clicking on the "**Backup**" button. Enter a name for the backup file in the popup window and click "Save". The backup file is in **.xml** format. To restore from a backup file, click the "**Choose File**" button and select a saved file, then click the "**Restore**" button.

Ecxx Account NumberThis is an account number used for identifying the EC-11's<br/>internal event messages, such as a reset or a periodic test<br/>transmitted to MyMeridian and/or a monitoring station.

Panel Account NumberThis is an account number used for identifying the alarm<br/>panel. Messages received from the panel are transmitted<br/>to MyMeridian and/or a monitoring station with this<br/>account number.

If the Panel and the Ecxx account numbers are set to **000000000** (10 digits), after a successful alarm transmission to a monitoring station, the EC-11 will automatically fill both the Ecxx Account Number and Panel Account Number fields with the account number stored in the alarm panel.

#### **Username and Password**

The username and password associated with the unique QR code for the EC-11 are factory loaded in these fields to enable MyMeridian event reporting. Removing the content of these fields will disable MyMeridian reporting.

#### **Contact ID Events**

A Contact ID code can be specified for each event to be transmitted to the monitoring station.

The EC-11 can be connected to two internet gateways. The numbers in the Gateway (1) and Gateway (2) columns indicate the reporting priority. A 1 indicates the first priority and 2 means secondary priority. If **0** is entered in a gateway column, that event will not be transmitted via that gateway.

If Gateway (1) and/or Gateway (2) are selected for sending contact ID events, EC-11 will attempt to deliver those messages using the assigned Gateway(s).

Contact ID Events	Code	Gateway (1)	Gateway (2)			
Reset	305	1	2			
Communication Failed	354	1	2			
Input 1	000	0	0			
Input 2	000	0	0			
Web Access	412	1	2			
Periodic Test (1)	602	1	2	Test Period	3600	seconds
Periodic Test (2)	603	2	1	Test Period	3600	seconds
Panel Messages		1	2			
Panel CID 1	000					
Panel CID 2	000					
Panel CID 3	000					
Panel CID 4	000					

#### Reset

Sent when the following resets occur

#### **Event 305 (Reset Event)**

Area	Zone	
01	2	Cold Reset; sent on power up
01	3	Watch Dog; software reset

01 4 Web connection reset

#### **Communication Failed**

Sent to the central station when a communication fail event has occurred. This event transmits the communication failure of the panel as an Area and a Zone, defined as follows.

#### **Event 354 (Communication Failed)**

	Area	Zone	
	99	01	Gateway 1 IP Destination 1/IP Destination 2 Failed
	99	02	Gateway 2 IP Destination 3/IP Destination 4 Failed
	99	07	Line Sense Voltage
	99	08	Alternate Gateway Failure – Gateway 1
	99	07	Alternate Gateway Failure – Gateway 2
	99	11	Panel Kiss-Off Window Error (network latency problem)
	99	12	No message after four attempts and/or remote socket closed
	99	13	Fault in DTMF Format (unknown communication protocol)
	99	14	Checksum Error (incorrect checksum received)
	99	15	Blank Message
	99	16	Ethernet Link Error (Cable has been disconnected)
Input 1 and Inpu	t 2		Defaults are 000 and no events are transmitted.
			Enter the CID code of the event to be reported.
Web Access		Ser	nt to MyMeridian or the central station when EC-11 is accessed
		for	programming or operational control. Area sent will be 01 and
		the	Zone will indicate the User Code; where 001 indicates User
		Co	de 1, 002 indicates User Code 2 and so on and 000 indicates an
		una	uthorized user. When a username and password are entered
		inc	orrectly three times, the keypad access is locked for 5 minutes.
Periodic Test (1) & (2)			Sent to MyMeridian or the central station when a periodic
			system test occurs for the selected paths at the programmed
			time.
Panel Messages			All Panel CID messages.
Panel CID 1-4			These fields can be over typed and used to make messages more meaningful to the end user when using MyMeridian.

Gateway (1)			
IP Destination (1)	192 168 1 7	DNS Address (1) Destination Port (1)	alarms.co.nz 27000
IP Destination (2)	192 168 1 7	DNS Address (2) Destination Port (2)	alarms.co.nz 27000
Gateway (2)			
IP Destination (1)	192 168 1 7	DNS Address (1) Destination Port (1)	alarms.co.nz 27000
IP Destination (2)	192 168 1 7	DNS Address (2) Destination Port (2)	alarms.co.nz 27000
EC 1x Area	99 Reserved ✓ C SV++ Reserved ✓ Tone Gen.		

#### Gateway (1) and Gateway (2) Setup

No changes required when using MyMeridian event reporting. Removing or changing the alarms.co.nz DNS and destination port data will disable MyMeridian cloud based event log reporting and alarm push notifications.

It is important to enter the correct IP addresses for a central monitoring station and the port numbers on which the monitoring software is listening in the Gateway (1) and Gateway (2) fields. This information can be obtained from your monitoring station. Two **IP destinations** can be entered for each gateway.

#### If a DNS address is entered, this will override the IP destination address.

EC 1x Area	This code differentiates internally generated EC-11 messages from			
	alarm panel messages. Enter the code required by the monitoring			
	station to differentiate EC-11 reporting.			
CSV++	Selecting this option reports actual partition, area and zone names			
	in the MyMeridian event log and in push notifications.			
T C				
Tone Gen.	Ticked by default to enable EC-11 to generate a dial tone for the			
	connected alarm panel. Unticked if the alarm panel is set to blind			
	dialling.			

# > Routing Tab

micron security innovation		
Outputs Monitoring Routing Network Users	Routing DTMF Delay (1) DTMF Delay (2) DTMF Delay (3) DTMF Delay (4)	150 50 2660 100
Account Info Save	DTMF Tone Gen. (1) DTMF Tone Gen. (2) DTMF Tone Gen. (3) Phone Number (1)	201 800 150
	Phone Number (1) Phone Number (2) Phone Number (3) Phone Number (4)	

**DTMF Delay** (1) – (4) No change required. Leave as default.

**DTMF Tone Gen.** (1) - (3) No change required. Leave as default.

Should these values need to be changed the following describes these values in more detail.

DTMF Delay (1) [150] [x10ms]	Minimum panel quiet period signalling panel dialling is complete
	Maximum EC-11 wait period until retrying a second panel handshake
DTMF Delay (2) [50] [x10ms]	Maximum EC-11 wait period between DTMF tones and end of the panel message
DTMF Delay (3) [2660]	EC-11 kiss off length in 1400Hz cycles
	DTMF (3) = $2 \times 1400 \times kiss$ off length required in seconds
DTMF Delay (4) [100] [x10ms]	If the Maximum time a panel waits for a kiss off is exceeded, EC-11 activates its 'sliding window' function to kiss off repeated messages within this communication and before a socket timeout. See also Time Out in Network Tab
DTMF Ton Gen (1) (201)	' <b>Frequency</b> ' = $1 \div (256 - \text{Gen}(1) \ge 40.96 \mu \text{sec})$
DTMF Ton Gen (2) (800)	Number of frequency cycles on (1 ÷ <b>'Frequency'</b> ) x Gen (2) = seconds on
DTMF Ton Gen (3) (150)	Number of frequency cycles off
	$(1 \div `Frequency')$ x Gen $(3)$ = seconds off

#### **Phone Numbers**

If there is no connection to the EC-11's **VoIP Line In** type **No Capture** (case sensitive) in the **Phone Number** (1) field.

VOIP line out To ALARM	00
VOIP linein From ATA	00
	VOIP line out To ALARM VOIP line in From ATA

In **No Capture** mode power to the phone line is provided by the EC-11.

If the **VoIP Line In** of the EC-11 is connected to the VoIP output of your gateway then:

- If the phone number(s) the alarm panel uses to dial out are known, then type them into each Phone Number field. Only these numbers will trigger EC-11 to convert the Contact ID signals to IP.
- 2: If the phone number(s) the alarm panel uses to dial out are unknown, Capture Mode must be selected. Type Capture (case sensitive) in the Phone Number (1) field.



You must now activate a panel transmission and receive a successful acknowledgement from MyMeridian or the monitoring station for the EC-11 to **capture** that phone number as the monitoring station number. Only this number will then trigger EC-11 to convert the Contact ID signals to IP.

#### (Only one phone number can be captured automatically).

In Capture mode line voltage is provided by the VoIP line.

# > Network Tab

micron security innovation											
Outputs Monitoring	Network		Re	boot							
Routing	MAC Address	00 01	02 03	04	28						
Network Users	IP Address Subnet	192 168 255 255	1 28 255 0								
Account Info Save	Remote Port	8 8	8 8								
	Gateway (1) Gateway (2)	192 168 192 168	1 1 1 1		Sync Sync	180 180	seconds seconds	Maximum Resets Maximum Resets	5 5	Within Within	3600 3600
	Time Out TCP/IP Packet Size After Reset Delay	200 1432 1	x10ms								
		<ul> <li>✓ UPnP</li> <li>✓ DHCP (</li> <li>□ DHCP (</li> </ul>	1) 2)								

MAC Address	This is the MAC address of your EC-11 board. If you have more than one EC-11 board on the same local network, you <b>must</b> ensure that each board has a unique MAC address.			
IP Address	This is the IP address of the EC-11 board. EC-11 factory defaulted to DHCP (see page 3). If the network router is not DHCP enabled then the IP address entered this field will be used. If you have more the one EC-11 board on the same local network, the address of each board <b>must</b> be unique.			
Subnet	Indicates which portion of the IP address is the network address.			
DNS Server	This is the domain name server address. No changes required			
Remote Port	This is the port number that is used to login to the EC-11			
	from a WAN (wide area network). No matter what Remote Port is assigned; port <b>80</b> is always used by EC-11 on the			
	LAN (local area network).			
Gateway (1) and Gateway (2)	Gateway IP addresses to which the EC-11 will be connected			
	if DHCP is not selected.			

Gateway (1) & Gateway (2) Sync	When a router is powered on, it takes a short period to successfully connect to an outside network. The values in these fields specify the period after a router restart that EC-11 will wait before it checks for gateway connectivity (do not make this value too short). The maximum number of permitted router resets within a defined period is recorded in the two adjacent fields.
Maximum Resets: Within	When an output is used to reset a router this sets the number of router resets permitted in the period in seconds
Time Out	The time in x10ms intervals that EC-11 waits until a packet is considered to be lost and is re-sent. Packets are retried a maximum of 4 times. This value multiplied by 4 is the maximum time the socket will be kept open. Change to a higher number for slow networks (500 works best for 3G).
TCP/IP Packet Size	Define the TCP/IP packet size (MTU - no change required)
After Reset Delay	Time before attempting to re-transmit after a router reset to allow the router to synchronise with the network
UPnP	If your router is UPnP enabled and this box is checked, your router will forward all incoming traffic for the port specified in <b>Remote Port</b> to the connected EC-11. This enables remote access to the EC-11.
DHCP (1) and DHCP (2)	DHCP options are used to automatically obtain EC-11 Lite's IP address from a gateway router. To use DHCP, tick the checkboxes according to the physical configuration of the network. EC-11 is factory defaulted to DHCP.
<b>DHCP</b> (1);	Tick this option if DHCP is active on Gateway1.
<b>DHCP (2)</b> ;	Tick this option if DHCP is active on Gateway2.

As EC-11 is defaulted to DHCP launch the "**Device Finder**" or "**Micron Control**" App to find the EC-11's IP address and connect. When located, swipe the device icon to the right to access the device's installation manual.

## > Users Tab

micron security innovation	
Outputs Monitoring Routing Network	Users System Vser Name micron Locked Password micron
Users Account Info Save	

You can set up to 30 end user codes for each EC-11		
and assign each user a different username and password		
and a different level of system access authority. You cannot		
assign anyone a higher access authority to your own.		
Defined as the owner of the EC-11 Unit. The System		
Code can check the Locked box to make nominated tabs		
inaccessible to other users. If Locked is checked, the		
Monitoring tab is only accessible to the System Code.		
Setup and defined by the System Code.		
Defined as the final user codes by the Installer Code.		

## Account Info Tab

micron security innovation				
Outputs				Compiled : Nov 19 2015 15:43:36
Monitoring	Account Info			
Pouting				
Kouding		Installer		
Network	Name	INSTALLER		
Users	Address		1	
Account Info	City Doct Code	CITY		
	Plone	ZIP		
Save	E-mail	EMAIL		
		Monitoring Station		
	Name	MONITORING	]	
	Address		1	
	City Post Code			
	Phone	PHONE		
	E-mail	EMAIL		
		Site		
	Name	SITE		
	Address		1	
	City	CITY		
	Post Code	ZIP		

The Installer Name, Monitoring Station and Site details can be entered in this page.

#### > Save Tab

Use this tab to save any setting changes that have been made.

# **Pass Thru Communications**



EC-11 provides incoming and outgoing Pass Thru to enable:

- 1 Incoming upload and download to any brand of alarm panel + Voice
- 2 Outgoing PSTN and VoIP backup + Voice

EC-11 inbound pass thru enables any brand of alarm panel to be uploaded and downloaded using legacy PSTN connected software and voice pass thru for medical alarms.

EC-11 outbound pass thru provides a backup for PSTN, VoIP and voice communications.

#### > Alarm Programming for Outbound Pass Thru

The following programming example enables outbound pass thru to any micron Scorpion alarm. Programming will vary for other brands of alarm panels.

In the EC-11 Routing Tab overwrite No Capture with 0000 in the Phone Number (1) field

#### **TELCO First; IP Backup**

In Location 0, program the monitoring station receiver number, then the protocol digits, then four zeros and the protocol digits to enable IP backup.

#### EXAMPLE 1234567\*590000\*59

#### **IP First; Telco Backup**

In Location 0, program four zeros, then the protocol digits for IP, then the monitoring station receiver number, then the protocol digits to enable Telco backup.

#### EXAMPLE 0000\*591234567\*59

#### **Account Code**

Enter the account code at Location 164

#### Dialer

Enter the dial attempts you require at Location 361 (Default 8)

#### **Test Time**

Set the test time at Location 180

#### **EC-11 Inputs**

These will only report to IP, NOT Telco

# **EC-11 Input Output Wiring Diagram**



# Mini WiFi Router Connection

Refer to the mini WiFi 3G router programming documentation for setting the mini router as either a WiFi bridge or as a 3G communication gateway.



# **EC-11 Connection Diagrams**

> Capture Mode



> No Capture Mode



# **EC-11 Quick Communications Setup Using MyMeridian**



# **EC-11 Quick Setup to a Monitoring Station**

After confirming EC-11 is communicating successfully to MyMeridian:



# **Micron Control App**



Download the **Micron Control** App from iTunes or Google Play for EC-11 control of arming, disarming and output control of any connected alarm panel.

Use the App to register for alarm event push notifications from the connected alarm panel to selected smartphones and to access micron's MyMeridian cloud based event reporting log, anyplace, anytime.

#### > Micron Control App and MyMeridian Setup

Follow this procedure when first installing the Micron Control App on its local network.





Save

Cancel

×

#### Touch Scan QR Code; Scan Product QR Code, Touch Done to Confirm







