

Intrepid Control Systems, Inc.

VSPY for CANoe^[TM] Users

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1. Introduction:

CAPL Conversion feature in VSPY facilitates the conversion of a CANoe configuration to VSPy Configuration. Once this conversion is complete, VSPY can be used for the development of the configuration based on the requirements.

This document explains the CANoe similar features in VSPY which can be used for the development.

2. VSPY for CANoe^[TM] Users

2.1 Messages:

Go to 'Spy Networks' \rightarrow 'Messages' to view bus traffic (Similar to Trace).

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Figure 1: 'Messages' View in VSPY is similar to the 'Trace' window in CANoe

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"View"→"Trace"		"Spy Networks" \rightarrow "Messages"

Tips:

Commonly used buttons:

- "Filter" In each column header you can filter messages you care about.
- "Scroll" View messages in scrolling mode.
- "Details" View details of selected message (Green background).
- "Time Abs" Change message timestamp mode.
- "Save" Save bus traffic for later replay or analysis.

Detailed info on Messages view @ Messages

2.2 Signals

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Go to '**Measurement**' → '**Signal Plot**' to open a signal view window (Similar to Graphic)

Figure 2: 'Signal Plot' View in VSPY is similar to the 'Graphic' window in CANoe

You can also right click on the icon before any signal of the message, click '**Plot Signal**' to plot the signal in chart mode or '**Monitor Signal**' to monitor it in text mode.

Detailed info on Signals and Signal Plot view @ Signals and Signal Plot



Click 'Select Signals...' button to open a new window to choose what signals you want, including signals within messages, application signals etc.

🚟 Enter Signals					
Signal Group Name Graph	12			? Help	Ok X Cancel
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Figure 3: View in VSPY to add more signals to the plot

You can also change signals' values within the message.

# 2.3 Panels

Go to 'Measurement'  $\rightarrow$  'Floating Panels' to open multiple panels at the same time. Click 'More' to see rest of the panels in the project.



Go to 'Measurement'  $\rightarrow$  'Graphical Panels' to edit panels. All the panels will be ranked in alphabetical order at the bottom. Unlock the panel before making changes using the lock button, context menu or Ctrl+E.

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Figure 4: 'Graphical Panels' view in VSPY is similar to 'Panel Editor' in CANoe

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"File" → "Panel Editor"	"Measurement" $\rightarrow$ "Graphical Panels"

Detailed info on Graphical Panels view @ Graphical Panels

# **2.4 Application Signals:** (Environmental Variables - ENV)

Go to 'Scripting and Automation'  $\rightarrow$  'Application signals' to view the Ennvironment Variables.

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Figure 5: Application Signals in VSPY are similar to Environmental Variables in CANoe

#### **Tips:**

After conversion, the environmental variables (ENV) will be listed with the prefix "ENV_" in 'Application Signals'

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	This value is calculated on an interval
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	This value is a timer
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	able Text API Save And Restore Panels Handlers
	rsistent Signal - Will be saved to SD Card when used in CoreMini.
	ver optimize signal out even if unused •
Qpen Cancel	

Panels:- This option will give all the panels this particular signal is present in.

Figure 6: Panels option shows all the panels in which variable is present.

Handlers:- This option will show all Nodes / C Code projects this variable is handled by.

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Figure 7: Handlers option shows all Nodes / C Code projects in which variable is present.

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Figure 8: Panel with the Graphical tool with the ENV Application signal attached to it.

# Tips:

- To find the respective ENV Application signal in the Application Signals list,
- Follow the procedure in above point (2.3) to make the panel editable.
- Highlight the respective tool from the Panel.
- Press **'CTRL + G'** to get the respective Application Signal.

# **2.5 Transmit Panel:** (Interactive Generator - IG)

😇 Vehicle Spy	-	_	_		-				- O X	
<u>File</u> <u>Setup</u> Spy <u>Networks</u> <u>Measurement</u> <u>Embedded Tools</u> Scripting and <u>Automation</u> <u>Run</u> <u>Tools</u> <u>H</u> elp										
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SpyTx_ABS_Info	Periodic	None	FD	8						•
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Figure 9: 'Tx Panel' view in VSPY is similar to 'IG' in CANoe

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"View" $\rightarrow$ "IG"	"Spy Networks" $\rightarrow$ "Tx Panel"

#### **Tips:**

After conversion, messages from Interactive Generators (IG) block will be listed with the prefix "SpyTx_" in Tx Panel, from where you can transmit these messages in Periodic mode or one time mode.

You can also change signals' values within the message.

Detailed info on Transmit Panel view @ Tx Panel

# **2.6 Message Editor:** (CANdb++ Editor)

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out2	RPM_Value	Std 11 bit	129	None	8									•
out4	ABS_Sensor_Values	Std 11 bit	FE	None	8									
out5	ABS_Info	Std 11 bit	FD	None	8									
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Figure 10: 'Messages Editor' view in VSPY is similar to 'CANdb++Editor' in CANoe

CANoe	VSPY						
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"File" → "Open CANdb++ Editor" or Double click on database file	"Spy Networks" → "Messages Editor"						

# **Tips:**

- "Receive" window means messages defined here are expected received from bus.
- "Transmit" window means messages defined here are going to be sent out.
- "Database" window mean messages listed here are from database (DBC etc.).

Detailed info on Messages Editor @ Messages Editor

#### X 🚾 Vehicle Spy Spy <u>N</u>etworks <u>M</u>easurement <u>E</u>mbedded Tools Scripting and <u>A</u>utomation <u>F</u>ile <u>S</u>etup <u>R</u>un <u>T</u>ools <u>H</u>elp 🐻 🌬 Platform: Logger Test 🔻 😝 🔍 Data 💽 🔻 Offline **B** • 👐 Messages Editor 🔯 🖳 Tx Panel 🔯 曻 C Code Interface 🕰 én, Setup Output Add Project. Remove Edit b Update Support Files 60 Open Project in Visual Studio 🔍 Folder Project Name Status Node Networks Project Path ☑ 🤜 Node 1 HS CAN E:\Work Space\Data Directory\ 🗹 😡 Node 2 HS CAN E:\Work Space\Data Directory\ 🗹 😡 Node 3 E:\Work Space\Data Directory\ HS CAN • (edit) • (edit) (edit) No Bus Errors Ó

2.7 C Code Interface (CCIF): (Simulation)



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Calve Like Vice Calve	C Code Interface Setup Output Add Project. Remove Edit Update Support Files Or Open Project in Visual Studie Fo Project Name Status Node Networks Project Project Project Name Loaded Light HS CAN D: (Workspace_VSPY/Data Directory/Fred Lu/(SSMD Or of display Loaded Display HS CAN D: Workspace_VSPY/Data Directory/Fred Lu/(SSMD ()) () () () () () () () () () () () ()
"View" $\rightarrow$ "Simulation Setup" $\rightarrow$ Left	"Scripting and Automation" $\rightarrow$ "C Code Interface" $\rightarrow$ "Setup"

#### **Tips:**

Each node from CANoe will be converted into one project in VSPY. Open each node project with Visual Studio, you can edit the code according to your requirement like in CAPL Browser.

Detailed info for C Code interface @ <u>CCIF</u> and <u>Working with CCIF</u>

# **2.8 Output (CCIF): (**Write in CANoe)

CANoe	VSPY
Write         Source       Message         System       CAN 2 Extended acceptance filter: 1 1111 1111 1111 1111         System       CAN 2 Extended code/mask:         System       CAN 2 Standard solestance filter:         System       Ol-0003 CAN 1 real bus with 500000 BFS.         System       Ol-0003 CAN 2 real bus with 500000 BFS.         System       CAN 2 Standard acceptance filter:         System       CAN 2 Standard acceptance filter:         System       CAN 2 Standard acceptance filter:         System       CAN 2 Standard code/mask:         System	C Code Interface
"View" → "Write"	"Scripting and Automation" $\rightarrow$ "C Code Interface" $\rightarrow$ "Output"

# Tips:

Write area for function 'write' called in CAPL will be converted Output area in VSPY.

# 2.9 Network Databases: (Databases)

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La HS CAN (VNET A)	😝 E: \Work Space \Data Directory \ logg	er Test \CANTraining.dbc		$ \cdot $
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HS CAN3 (peoVL3G)				
"出HS CAN3 (VNET A)				$ \cdot $
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LISO9141/KW2K	FIBEX Database File (optional)			
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Figure 12: 'Network Databases' view in VSPY is similar to 'Databases' in CANoe

CANoe	VSPY
X Networks  CAN Networks  Reary  Same and the served of th	Network Databases            • Current Platform GSMDemo            • Current Platform GSMDemo            • Metwork Databases            • Metwork Databases
"View" $\rightarrow$ "Simulation Setup" $\rightarrow$ Right	"Setup" $\rightarrow$ "Network Databases"

## **Tips:**

Select the required bus from the left column, Click "Add…" button on right side to add a database file to selected bus.

Details about Network Database @ Network Database

# 2.10 Bus Statistics

Go to 'Spy Networks'  $\rightarrow$  'Networks', Click the 'Statistics' button at the top to open a view for bus statistics information.

-	Vehicle	Spy											2	×
Ei	e <u>S</u> etu	ıp Spy <u>N</u> etworks <u>M</u>	easurement <u>E</u>	mbedded Too	ls Script	ting and <u>A</u> ut	omation	<u>R</u> un ]	Tools	<u>H</u> elp				
Ū	D 🗸 Offline 📰 📴 Platform: Logger Test 🔹 🧃 🍕 🔧 🞯 Desktop 1 🔍 Data 🗸													
	Messa	ages Editor 📧 県 Tx	Panel 🔝 😝	Network Data	bases 🔀	다. Netwo	rks 📧							Ó
1	1-1				0.01			- D-6-		t Due	Defender 1			_
L.			Prop	erties	Sta	tistics	Save a	is Derau		estore Program	Deraults			
11.	Netw	orks Spreadsh	eet	💷 Hardw	are Setu	p								-
K	iey	Description		Count	Tx Count	Err Count	Rate	% U	lse	CAN Tx Errors	CAN Rx Erro	Max Rate		
	et0	HS CAN		0	0		0	0	0.0	-	-			•
10	et1	MS CAN		0	0		0	0	0.0	-	-			<u> </u>
10	et2	SW CAN		0	0		0	0	0.0	-	-			
l n	et3	J1850 VPW		0	0		0	0	0.0	-	-			•
10	et4	ISO9141/KW2K		0	0		0	0	0.0	-	-		=	<u> </u>
10	et5	LSFT CAN		0	0		0	0	0.0	-	-			
l n	et6	J1850 PWM		0	0		0	0	0.0	-	-			
10	et7	J1708		0	0		0	0	0.0	-	-			
10	et8	neoVI		0	0		0	0 Bau	drate?	-	-			
l n	et9	HS CAN2 (neoVI 3G)		0	0		0	0	0.0	-	-			
l n	et10	HS CAN3 (neoVI 3G)		0	0		0	0	0.0	-	-			
l n	et11	LIN2 (neoVI 3G)		0	0		0	0	0.0	-	-			
l n	et12	LIN3 (neoVI 3G)		0	0		0	0	0.0	-	-			
l n	et13	LIN4 (neoVI 3G)		0	0		0	0	0.0	-	-			
l n	et14	CGI (neoVI 3G)		0	0		0	0	0.0	-	-			
10	et15	LIN		0	0		0	0	0.0	-	-			
1	et16	ISO9141/KW2K 2		0	0		0	0	0.0	-	-			
l n	et17	ISO9141/KW2K 3		0	0		0	0	0.0	-	-			-
l n	et18	ISO9141/KW2K 4		0	0		0	0	0.0	-	-			
п	et19	HS CAN4		0	0		0	0	0.0	-	-			1
п	et20	HS CAN5		0	0		0	0	0.0	-	-			-
l n	et21	UART (neoVI 3G)		0	0		0	0	0.0	-	-		Ŧ	
												+		
6	3	• (edit)	• (edi	t)	• (e	dit)	•	(edit)		• (edit)		No Bus Err	ors	

Figure 13: 'Statistics' view in VSPY is similar to 'Can Statistics' in CANoe

CANoe							VSPY								
CAN Statistics CAN Channel: CAN 1 - ex Statistic Bulload [%] Min. Send Dist. [ms] Burst [otal] Burst Time [ms] Frames per Burst Std. Data [fr/s] Ext. Data [fr/s] Ext. Data [fr/s] Std. Bata [fr/s] Ext. Data [fr/s] Ext. Data [fr/s] Ext. Remote [fr/s] Ext. Remote [fr/s] Ext. Remote [total] Ext. Remote [total] Ext. Remote [total] From frames [fr/s] From frames [fr/s]	ssy Current . 0.00 0.020 0 - - 22 0 0 22 0 0 0 0 0 0 0 0 0 0 0 0 0	<ul> <li>Min</li> <li>0.00</li> <li>n/a</li> <li>-</li> <li>-</li> <li>0</li> <li>n/a</li> <li>0</li> <li>n/a</li> <li>0</li> <li>n/a</li> <li>0</li> <li>n/a</li> <li>0</li> <li>n/a</li> </ul>	Max 0.17 x/a - 13 x/a 0 x/a 0 x/a 0 x/a 0 x/a 0 x/a	Avg 0.01 n/a n/a - - 1 n/a 0 n/a 0 n/a 0 n/a 0 n/a 0 n/a 0 n/a		Network	ks	Properties Hardy Count	Statistics     vare Setup      Tx Count Err Count 26 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Save a	as Default 9% Use 0 0 0 0 0 0 0 0 0 0 0 0 0	CANTX         0           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -           0.0         -         -			
"View" → "CAN Statistics"						"Sp "St	y Networ atistics"	ks" →	"```	Jetw	vork	s" →			

Details about Network Statics @ Network Statistics

#### 2.11Hardware Setup

Go to 'Setup'  $\rightarrow$  'Hardware' to open the hardware setup window.



Figure 14 a: Setup Hardware to configure hardware

1	🔄 Hardware Setup									l
	+ -				5	Save as I	Default	Restore Prog	ram Defaults	
	Networks Spreadsheet		🕮 Hardv	vare Setup						
I	Description	Hardware	Network	Protocol	Baud Rate	Color	Hardy	vare Rate	Bus State	Database Net
I	HS CAN	Default	HS CAN	CAN	500000	)	N/A			(Default)
	MS CAN	Default	MS CAN	CAN	500000	)	N/A			(Default)
I	SW CAN	Default	SW CAN	CAN	33333	1	N/A			(Default)
	11850 VPW	Default	11850 VP	11850 VPW	10417	,	N/A			(Default)

Figure 14 b: Setup Hardware to configure hardware

- Click 'Hardware Setup' button to open the 'neoVI 3rd Generation Explorer' window.
- Click 'Connect' button to connect to the hardware after which you can enable your hardware's bus channel, setup the baudrate, etc. After you setup, DO NOT forget to click the 'Write Settings' button to save the changes before you 'Disconnect' the hardware.

CANoe	VSPY							
Network Hardware Configuration         CAN 1         Acceptance Filter         Options         Stad rate (R8 aud)         Stad rate (R8	Image: Second							
Right click on "Network" → "Network Hardware	Setup" → "Hardware" → "Hardware Setup…"							

#### **Tips:**

- 'Connect' the selected hardware before modification and 'Write Setting' to make it take effect.
  - "**Connect**" Connect the hardware.
  - "**Read Setting**" Read current settings in hardware.
  - "Write Setting" After change config, need to write the settings.
  - "**Disconnect**" Disconnect the hardware after finishing configuration.
- Check box 'Enable' to enable or disable each channel on the hardware.

#### 3. More Tips in VSPY

#### **3.1 Start Running Modes:**

Click the black inverted triangle to the left of "Offline" word, then choose:

- "**Run with Transmit**" Run online and transmit/receive messages from the hardware.
- "Run Monitor Only" Run online and only receive messages from the hardware.
- "**Stop**" Stop Running
- "Run Simulation" Browse the file you want to replay when running in simulation. To run in simulation mode without specifying a replay file, use "No Replay File".

	<u></u>	/ehicle Sp	ру								
	<u>F</u> ile	<u>S</u> etup	Spy <u>N</u> etworks	N	<u>l</u> easurement <u>E</u> m	bedded	l Tools	Scripting a	nd <u>A</u> uto	mation	<u>R</u> un <u>T</u>
		▼ Offlin	e 🕎		📱 📴 Platform	:		_		•	
		Run wit	h Transmit	hica	al Panels 🔀 🈡	C Code	Interfac	e 🔜 🗠	Message	es Editor [	23
		Run Mo	nitor Only								
l		Stop	r		Edit DUndate	🐼 Open Project in Visual Studio 🛛 🔯					
		Run Sim	nulation		No Replay File	F	Node	Networks	Project	t Path	
		-		È	Browse						
			L	-		_					
	•										
	Ó		• (edit)		• (edit)			• (edit)			(edit)

Figure 15: Running and stopping modes in VSPY

Details about Running Modes @ Running and Stopping

#### **3.2 Projects Location**

Go to "File"  $\rightarrow$  "Explore Data Directory", or click the "Data" button in the upper right corner to view the converted projects in the data directory

	and the local data		
Organize	▼ Open Burn	New folder	
*	Name	Туре	Size
	鷆 ConversionDemo	File folder	
	🌗 Release	File folder	
	🗒 Build.log	Text Document	24 KB
E	🚳 ConversionDemo.bat	Windows Batch File	1 KB
	😡 ConversionDemo.sln	Microsoft Visual S	1 KB
	📓 ConversionDemo.vs3	Vehicle Spy Setup	161 KB
	convert.log	Text Document	1 KB
	Panel1.vs3gp	VS3GP File	5 KB
	Panel2.vs3gp	VS3GP File	18 KB
	Panel3.vs3gp	VS3GP File	7 KB
-	•		÷.
	Panel3.vs3gp		
	tarren 100a		

Figure 16: Running and stopping modes in VSPY

#### **Tips:**

- File types:

*.vs3 – Main Vehicle Spy project file.

*.vs3gp – Panel import file in case you wish to re-import a panel.

*.log – Project conversion log file.

*.bat – Build Visual Studio projects bat file.

*.sln – Visual Studio solution project created for *.cfg file from CANoe.

Besides, each node will be converted to one separated project of this solution with one folder, named with its node name

# **3.3 Node Setting in CCIF**

In CCIF setup tab, click any one of the node project listed in the window, then click "**Edit**" button to open C Code Module Setup window, where there are 5 tabs for different usage

General Settings       Message Events       Application Signal Events       Events       Events       OK         Project Description

Figure 17: General Settings of a CCIF project in VSPY

"General Setting" is used to show more information about the node. You can "**Browse**" to relocate another Visual Studio project for the node

C Code Module Setup	ivent Handler Code	ОК
eneral Settings Message Events Application Signal Events Timer Events E ort By: Networks  Find  Clear C Database Messages G Tx Messages G Database Messages G Databas	Selected Messages       Add Signal handlers       Remove       Clear <ul> <li> [*] [*]</li></ul>	Cancel

Figure 18: Settings to add Messages Events in a CCIF project

"Message Events" is used to add callbacks for any messages from Receive (Rx Message), Transmit (Tx Message) or Database (Database Messages). Click the message on the left part window and click "**Add** >>" to add the handler.

eneral Settings Message Events Application Signal Events	Timer Events Event Handler Code	OK
Find Clear	Add >> Selected Application Signals Remove Clear	Cancel
"     EnvEngineSpeedDspMeter	[®] ∕° EnvHeadLightSwitch	
🙄 EnvEngineSpeedDspText	Msg. GenMsgCvdeTimeFast	
🙄 EnvEngineSpeedEntry		
🙄 EnvEngineStateDsp		Help
🖕 EnvEngineStateSwitch		
🗳 EnvHazardLightsSwitch		
🐇 EnvHazardState		
🐝 EnvHeadLightSwitch		
🙄 EnvLightDsp		
🗳 Msg_GenMsgCycleTime		
🏠 Msg_GenMsgCydeTimeFast		
🐝 Msg_GenMsgDelayTime		
🏰 Msg_GenMsgFastOnStart		
🍄 Msg_GenMsgILSupport		
Vsg_GenMsgNrOfRepetition		
🏰 Msg_GenMsgSendType		
🐝 Msg_GenMsgStartDelayTime		
💥 Net_BusType		
🐝 Node_ILUsed		
Vode_NodeLayerModules		
🐝 Sig_GenSigInactiveValue		
🐝 Sig_GenSigSendType		
🚏 Sig_GenSigStartValue		

Figure 19: Settings to add Application Signals Events in a CCIF project

"Application Signal Events" is used to add callbacks for any signals from messages or global application signals. Click the signal on the left part window and click "**Add** >>" to add the handler.

C Code Module Setup						- 0 <b>X</b>
General Settings Message Even	ts Application Signal Events Time	er Events Event Handler Code	1			ОК
Timer Settings Name	Туре			Add		Cancel
tFlashLightFrequency	One Shot	👻 🔲 Run at start		100		
Description	Initial Period	Resolution		Update		
	500	Millisecond	•			
Namo	Description	Type	DupAtStart	InitalPariad	Resolution	Help
tElashLightEreguency	Description	One Shot	No	500	Millisecond	
Remove					Clear	

Figure 20: Settings to add Timer Events in a CCIF project

"Timer Events" is used to setup a timer event. Set the timer in 'Timer Setting' and click 'Add' button to add the handler



Figure 21: Settings to add the Event Handler code in a CCIF project

"Event Handler Code" is used to generate all the handler codes automatically. Copy all the codes and click "**OK**" button to close the window, then Paste them to *NodeName*.cpp file before compiling the node project

## 4. Help links for VSPY

#### 4.1 Full VSPY Help:

http://www.intrepidcs.com/support/ICSDocumentation/VehicleSpy/neoFrameMain.htm

#### **4.2 CCIF:**

http://www.intrepidcs.com/support/ICSDocumentation/VehicleSpy/CCIF.htm

Working with CCIF:

http://www.intrepidcs.com/support/ICSDocumentation/VehicleSpy/CCIFWorkingWith. htm

#### 4.3 Tutorial for C Code Interface:

http://www.intrepidcs.com/support/ICSDocumentation/VehicleSpy/spyExampleCCIIntr o.htm

#### 5. Contact Us:



Intrepid Control Systems, Inc. Email: <u>icsindia@intrepidcs.com</u> Website: <u>www.intrepidcs.com</u>