

Insight Control Software (ICS)

User Manual







Table of Contents

Section 1 – Introduction - 1

1.1	Summ	nary1			
1.2	Process Communication Module (IC-PCM)1				
	1.2.1	IC-PCM 1:11			
	1.2.2	IC-PCM 10:11			
	1.2.3	Rotary Switch Settings1			
	1.2.4	Dip Switch Settings1			
	1.2.5	LED Indicators2			

Section 2 – Installation - 3

2.1	Moun	ting	3
		ical Connection	
2.3	Attach	ning Peripheral I/O Devices	4
	2.3.1	Activating an Input & Receiving an Output	5
2.4	Settin	g up Network Connections for IC-PCM	6
	2.4.1	Ethernet Connection	6
	2.4.2	Configure IC-PCM using serial terminal	6
	2.4.3	Assigning a Static IP address to the PC Host	10
	2.4.4	Assigning a Static IP address to the IC-PCM	11
	2.4.5	Assigning a Dynamic IP address to the PC Host	11
	2.4.6	Assigning a Dynamic IP address to the IC-PCM	11

Section 3 – Programming a Tool - 12

3.1	Tool S	etup				
	3.1.1	Tighter	ning Configuration			
	3.1.2	Genera	ll Setup Screen			
			Tool Setup			
		3.1.2.2	Wireless Setup			
		3.1.2.3	Password Settings	16		
3.2 IC-PC		C-PCM 1:1 General Setup				
	3.2.1	Version	Information			
	3.2.2		l Settings			
			Tightening Control Settings			
		3.2.2.2	IO (Input/Output) Settings			
		3.2.2.3	Socket Tray and Configuration Switch Connection and Setup using IC-PCM 1:1			
		3.2.2.4	Light Box Connection and Setup			
		3.2.2.5	Date Time Settings			
	3.2.3	Protoco	ol Settings			
		3.2.3.1	PCM Serial Port Settings			
		3.2.3.2	Barcode/VIN Settings	23		
		3.2.3.3	Barcode Connection and Setup using IC-PCM 1:1	24		
		3.2.3.4	Serial EOR Settings			
		3.2.3.4	Ethernet EOR Settings Serial EOR Settings:			
		3.2.3.5	Ethernet EOR Setup			
		3.2.3.6	PFCS Settings			
		3.2.3.7	Communication via Serial:			
		3.2.3.8	Communication via Ethernet:			
		3.2.3.9	PLUS Settings			
			XML Settings			
			XML setup using IC-PCM 1:1			
			Open Protocol Settings			
			Open Protocol Setup			
			Label Printing Settings			
		3.2.3.15	Printer Connections and Setup for IC-PCM 1:1			

	3.2.4	FieldBus Settings	
		3.2.4.1 ProfiBus Settings	35
		3.2.4.2 InterBus Settings	
		3.2.4.3 Devicenet Settings	
		3.2.4.4 Modbus RTU Settings	
	_	3.2.4.5 Modbus TCP/IP/Ethernet IP Settings	
3.3	Param	neter Assignment	
3.4	Wirele	ess Tool Settings	
	3.4.1	IC-PCM Settings	
		3.4.1.1 Ethernet Settings	40
	3.4.2	Radio Settings	41
	3.4.3	SNTP Settings	41
	3.4.4.	Channel Hopping Settings	
		3.4.4.1 Secondary Channel Settings	
		3.4.4.2 Selectable Radio Channels	
		3.4.4.3 Mapped Tool Settings 3.4.4.4 Local Settings	
2 5	-		
3.5		load Software	
	3.5.1	Download firmware Procedure for the Tool Connected to USB	
		3.5.1.1 MCE Firmware	
		3.5.1.2 Display rimware	
	3.5.2	Download firmware procedure for a IC-PCM on the Network	
		3.5.2.1 RISC Firmware	
		3.5.2.2 Radio Firmware	
		3.5.2.3 Clear Data	53
3.6	Reboo	Dt	
	3.6.1	Reboot IC-PCM	54
	3.6.2	Reboot Radio Modules	
3.7	PCM V	Vireless Energy Detector	
500	tion /	Monitoring Cyclo log and Event Log of IC DCM 1:1/Tool 56	
		I – Monitoring Cycle log and Event Log of IC-PCM 1:1/Tool - 56	
4.1		lain Cycle Log	
	4.1.1	Run Main View Tab	56
	4.1.2	View Cycle Log Tab	
		4.1.2.2 Data retrieved from the Archived Database	
4.2	Run N	1ain View All	
4.3	IC-PCI	M 1:1/Tool Event Log	
	4.3.1	IC-PCM 1:1 Event Log	
	4.3.2	Tool Event Log	
		-	
4.4		/View Network	
	4.4.1	IC-PCM 1:1	
	4.4.2	IC-PCM 10:1	
	4.4.3	USB Direct Tool Connection	
4.5	Create	e Report	67
	4.5.1	Tool Report	67
	4.5.2	VIN Report	
	4.5.3	Report Generator	
~			
260	tion 5	5 – Archiving Data - 69	

5.1	1 Archival Settings Screen	
-----	----------------------------	--

Section 6 – Quality Control - 70

6.1	Statistics	70
	6.1.1 Statistical Data Saved/Retrieved from Local Database	71
Sec	tion 7 – System Diagnostics - 72	
7.1	Tool Test	72
7.2	Tool Status	73
7.3	Keypad, LED and Audio Diagnostics	74
	7.3.1 Keypad Status	74
	7.3.1 Keypad Status 7.3.2 LED Test	75
	7.3.3 Audio Diagnostics	75
7.4	Tool Calibration	
7.5	PM Alarms	76
7.6	System Diagnostics – View Inputs	78
7.7	System Diagnostics – View/Set Output	78
	7.7.1 View Outputs Mode (Normal Mode)	
	7.7.2 Set Outputs Mode (Diagnostic Mode)	
7.8	Direct Controller Discovery	79

Section 8 – Wireless Diagnostics - 80

8.1	Wireless statistics of USB Connected Tool	.80
8.2	Wireless Statistics of the IC-PCM	80

Section 9 – General Screen Layout - 81

9.1	ICS Sc	reen Components	81
	9.1.1	Title Bar	. 81
	9.1.2	Selection of Family Type	. 81
	9.1.3	Menu Bar	. 82
		9.1.3.1 File Menu	
		9.1.3.2 Run Menu	82
		9.1.3.3 Setup Menu	
		9.1.3.4 Status Menu	
		9.1.3.5 Statistics Menu	
		9.1.3.6 Diagnostic Menu	
		9.1.3.7 ICS Menu	
		9.1.3.8 Data Source Menu	
		9.1.3.9 View Menu	
		9.1.3.10 Window Menu	
		9.1.3.11 Help Menu	
	9.1.4	Main Tool Bar	. 86
	9.1.5	Communication Tool Bar	. 86
	9.1.6	Database Tool Bar	. 86
	9.1.7	Work Space	. 87
	9.1.8	Graphics Screens	. 87
	9.1.9	Status and Progress Bar	. 87
	9.1.10	Icons	. 87

Contact Information - 88

Section 1 – Introduction

1.1 Summary

ICS software is designed to give a programming interface and archiving functionality to extend the functionality of the controllers and QX series tools. Each version of ICS is designed to satisfy a specified customer environment. Unless otherwise noted, the controllers have all functionality within their operating software. Functionality is restricted through the version of ICS software used to interface with the controller or tool. when a controller has been programmed, ICS can be disconnected and the controller will run independently.

Wireless tools that can communicate with the IC-PCM are designated as QXX. Non-wireless tool that communicate with ICS directly through USB are designated as QXC.

This document will only detail the scope of functionality for the ICS software products. This document will not detail use of any IC family of controllers, tools or the interface necessary to communicate.

1.2 Process Communication Module (IC-PCM)

The IC-PCM's (Process Communication Module) are Fastening Systems which can wirelessly communicate to QX tool and can be programmed to send commands to control the way the tool behaves. Programming functions for the two units (IC-PCM 1:1 and 10:1) are done through ICS software. Tool and the IC-PCM communicates to each other wirelessly. IC-PCM devices can be configured to work in following modes.

1.2.1 IC-PCM 1:1

In this mode the IC-PCM can communicate to only one QX tool. This mode offers below functions in addition to the communication with ICS:

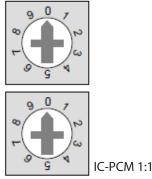
- 1. Protocols (PFCS, PLUS, XML, Ford Open Protocol, Label Printing, Ethernet EOR, Serial EOR etc.)
- 2. Field bus support
- 3. Smart socket
- 4. Programmable I/O
- 5. Config Selection

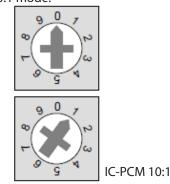
1.2.2 IC-PCM 10:1

In this mode, the IC-PCM can communicate to maximum of 10 QX tools, it acts as a bridge to send messages between tools and ICS.

1.2.3 Rotary Switch Settings

If the rotary switches are set to "00", then the device will be in IC-PCM 1:1 mode. If the rotary switches are set to "01", then the device will be in IC-PCM 10:1 mode.





1.2.4 Dip Switch Settings

With the switch number 2 'ON', serial debug information will be sent to serial port of the IC-PCM at the baud rate 38400.

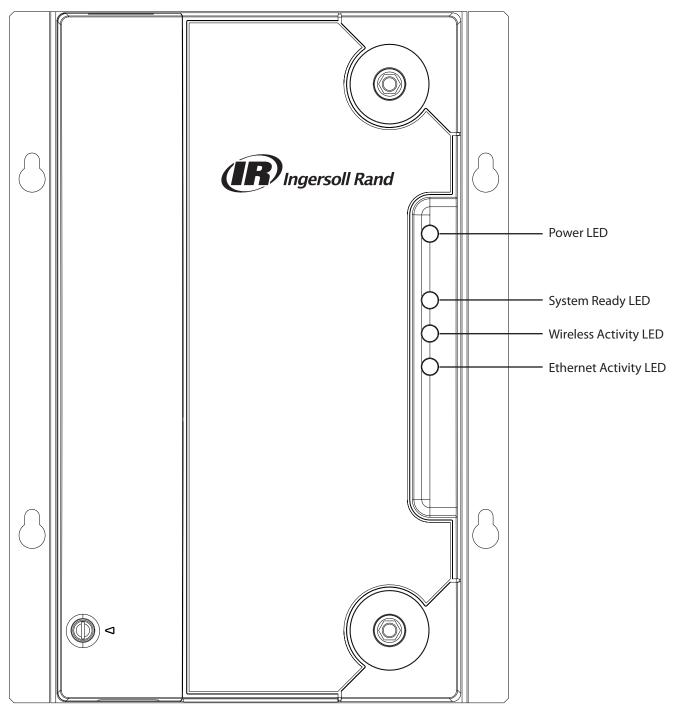
NOTE: If serial debug switch is ON, all Serial Protocol (Serial Barcode, Serial EOR, PLUS, etc.) functionality will be in disabled condition.



48619696_ed1

1.2.5 LED Indicators

Power LED	LED must turn ON when IC-PCM is ON
System Ready LED	LED must turn ON when the IC-PCM is fully booted and ready to communicate.
Wireless Activity LED	LED must turn ON when there is a wireless transaction between the IC-PCM and a tool.
Ethernet Activity LED	LED must turn ON when Ethernet cable is connected to the Port.



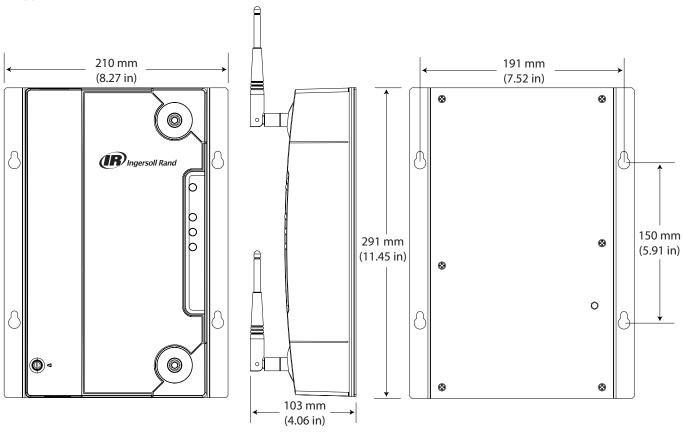
Section 2 – Installation

This section gives information on how to install, setup, program, operate, and troubleshooting IC-PCM. The figure below shows the major elements of the IC-PCM.

2.1 Mounting

IC-PCM must be installed on a suitable rigid surface near the assembly area using the mounting brackets behind the enclosure. See the drawings below for dimensions, information on bracket hole distance. Make sure that the mounting is stable, secure within range. The IC-PCM enclosure is rated for ingress protection of IP52 installed in an vertical position as shown.

NOTE: If environmental more than than IPX0 is necessary, more protection will be necessary for the external power supplies.



2.2 Electrical Connection

IC-PCM is available with different power cord options. Review the electrical circuit information on the label (on the Bottom panel) and in the safety information manual. Make sure that your electrical circuit meets the power requirements and circuit breaker ratings. Plug the AC power cord into an appropriate receptacle.



It is the user's responsibility to make sure that the IC-PCM is installed and wired by a qualified electrician.

2.3 Attaching Peripheral I/O Devices



NOTE: The Power-head synchronization bus and USB port are not in use.

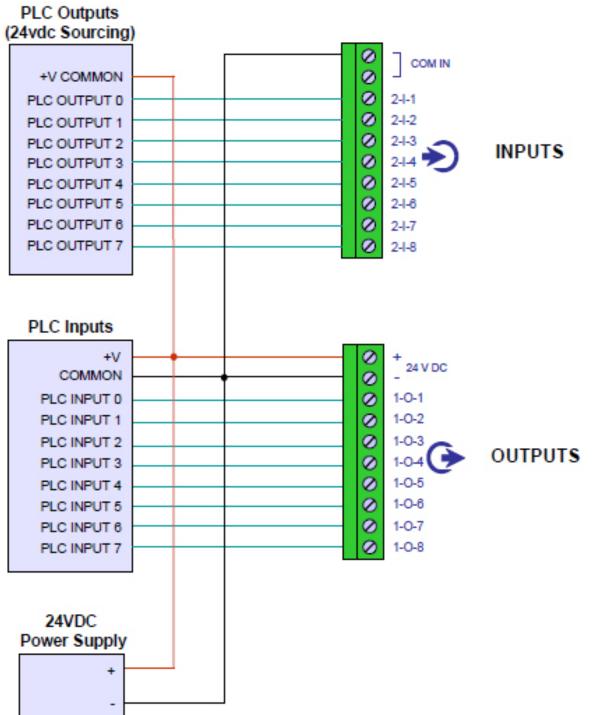
2.3.1 Activating an Input & Receiving an Output

All input signals operate at 24VDC. The Return for the 24V signal must be connected to COM IN for each input bank.

All output signals operate at 24VDC. The 24V signal and its return must be connected to the terminal blocks labeled +/- 24VDC EXT on each output connector bank. The output signals will be switched back from the appropriate output signal (ACCEPT, REJECT, HIGH TORQUE, etc...).

Example: PLC Connection and Setup

All connections to a PLC are made via the IC-PCM 1:1 I/O terminal blocks, except data collection. Data collection is done via the serial Fieldbus and/or Ethernet ports. For data collection, follow the procedures for setup using the serial or Ethernet port. Through the terminal blocks, a PLC can send inputs to the IC-PCM 1:1 and receive outputs from the IC-PCM 1:1. It is important to always use a shielded cable (to avoid external noise and interference) for all PLC signals to IC-PCM 1:1 and the shield should be terminated at the IC-PCM 1:1 end.



2.4 Setting up Network Connections for IC-PCM

2.4.1 Ethernet Connection

An Ethernet port can be found on the connector panel of the IC-PCM unit. ICS can communicate with IC-PCM only using Ethernet connection.

To change Ethernet settings of the IC-PCM, go to the Wireless Settings screen. The settings for IP Address, Subnet Mask, and Gateway can be viewed/modified. User has an option to Enable/Disable Dynamic Host Communications Protocol (DHCP). When DHCP is turned ON, it lets the network server to set the IP addresses for the IC-PCM.

2.4.2 Configure IC-PCM using serial terminal

IC- PCM network settings can be configured using and terminal emulator software (Hyper Terminal, Clear Terminal etc.). Following are the settings that can be changed.

- 1. IP Address.
- 2. Subnet Mask.
- 3. DHCP.
- 4. Default Gateway.

If Hyper Terminal software is not available in the computer then Clear Terminal software can be downloaded from following location.

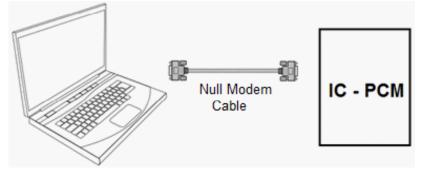
http://www.clearconnex.com/content/clearterminal

Follow the steps below the configure IC-PCM.

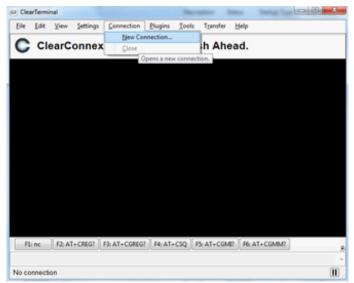
1. Push dip switch 2 to ON Position to place into debug mode as shown below.



2. Connect serial port cable (DB 9) to the computer and IC-PCM.



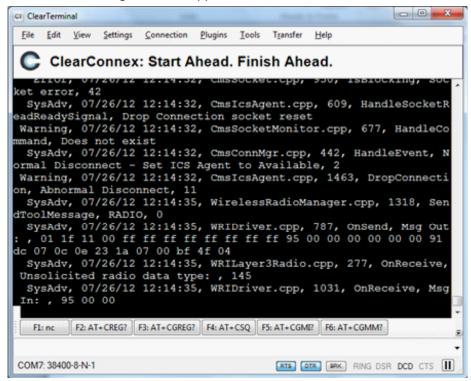
3. Open terminal emulator software.



- 4. Select the connected COM Port.
- 5. Select following parameter for COM Port.
 - a. Baud Rate : 38400
 - b. Data bits : 8
 - c. Stop bits : 1
 - d. Parity : None
 - e. Flow Control : None

June .	TCP	UDP	HTTP				
Avala	able Seria	Ports:					
Port	Name						Status
CON							Ready
CON	17						Ready
Baud	Irate: 3	8400		a	Party	None	•
	irate: 3 abts: 8			a	Parity: Row control		•
Data				b		None	•
Data	a bits: 8			b	Row control:	None	-

6. Click on Connect Button. Following screen will appear with some data.



7. Type 'nc' and press 'Enter' key to view current settings.

CT ClearTerminal								00	X
Ele Edit View Settings	Genn	ection	Plugins	Icols	Tgansfer	Help			
C ClearConne	x: Sta	art Al	head.	Fini	sh Ahe	ad.			
<u> </u>									_
Network Configurat									
Ethernet Address					:04				
IP Address			00.82.						
Netmask			255.25	2.0					
INDRT	(R):								
DHCP	(P):	ON							
System:									
Default Gateway				1					
	(M):								
Hostname	(H):	1320	DM						
Network Boot:									
	(B):								
TFTP Boot Delay									
TFTP Boot Server									
Boot Filename	(\mathbf{r}) :	<uns< td=""><td>pecifi</td><td>ed></td><td></td><td></td><td></td><td></td><td></td></uns<>	pecifi	ed>					
									_
n .									
	_		V.	Y		M.			
F1: nc F2: AT+CREG?	F3: AT+	CGREGT	F4: AT+0	CSQ F	5: AT+CGN	F6: A	T+CGMM?		
nq									
COM7: 38400-8-N-1					AT2 (IR MK	RING DS	R DCD C	TS 🕕

8. Following is the format to change the settings

nc <code> <new value> ↩

Following are the codes that can be used to change the settings

#	Code	Value	Description
1	i	XXX.XXX.XXX.XXX	New IP address will be assigned.
2	n	XXX.XXX.XXX.XXX	New sub net mask will be assigned.
3	р	on/off	DHCP will be enabled or disabled.
4	g	XXX.XXX.XXX.XXX	New gateway address will be assigned.

Note:

- Make sure that Ethernet Address is not changed, if changed it must be unique in the network else the IC-PCM is not discovered in network. To change Ethernet Address (MAC Address) enter nc e xx:xx:xx:xx:xx:xx where xx is number between 00 to FF in hexadecimal.
- To change the IP address DHCP should be disabled (OFF) else the IP address is taken from DHCP server.
- Default Gateway value should be same as system where is ICS is running.

9. Send save command to apply the changes and restart after 30 seconds. Command to save the settings is 'nc s' ---.

- Follow the procedure to assign static IP.
- Type 'nc p off' to disable the DHCP.

ClearTerminal						00
Eile Edit Yiew Settings	⊆onn	ection	Plugins Ico	ls Tgansfer	Help	
C ClearConne	x: Sta	art Al	nead. Fir	nish Ahe	ad.	-
Network Configurat	ion:	Devi	ce O			
Ethernet Address				EE:04		
IP Address	(I):	10.2	00.82.33			
Netmask	(N):	255.	255.252.0)		
INDRT	(R):	ON				
DHCP	(P):	OFF	1			
System:			-			
Default Gateway	(G):	10.2	00.82.1			
Nameserver	(M) :	0.0.	0.0			
Hostname	(B):	1320	DM			
Network Boot:						
	(B):					
TFTP Boot Delay						
TFTP Boot Server						
Boot Filename	(F):	<uns< td=""><td>pecified:</td><td></td><td></td><td></td></uns<>	pecified:			
-						
F1: nc F2: AT+CREG?	F3: AT+	CGREG?	F4: AT+CSQ	PS: AT+CGMI	F6: AT+CGMM?	
COM7: 38400-8-N-1				ATE OT	RING DS	R DCD CTS

• Set IP address to 192.168.1.1 'nc i 192.168.1.2'.

CI ClearTerminal					00 .
Eile Edit View Settings	Connection	Plugins Icols	Tgansfer	Help	
C ClearConne	x: Start Al	head. Fini	sh Ahe	ad.	
Network Configurat	ion: Devi	ce 0			
Ethernet Address			1:04		
IP Address	(I): 192.	168.1.2			
Netmask	(N): 255.	255.252.0			
INDRT	(R): ON				
DHCP	(P): OFF				
System:					
Default Gateway					
Nameserver	(M): 0.0.				
Rostname	(H): I320	DM			
Network Boot:					
TFTP Boot	(B): OFF				
TFTP Boot Delay					
TFTP Boot Server					
Boot Filename	(F): <uns< td=""><td>pecified></td><td></td><td></td><td></td></uns<>	pecified>			
n .					
F1: nc F2: AT+CREG?	F3: AT+CGREG?	F4: AT+CSQ	P5: AT+CGME	F6: AT+CGMMP	
COM7: 38400-8-N-1			ATA (20	RING DS	R DCD CTS

• Set default gateway to 'nc g 192.168.1.1'.

	-		Dadage To	ols Tjansfer	Help		
C ClearConne	x: Sta	art Al	nead. Fi	nish Ah	ead.		
etwork Configurat							
Ethernet Address				ff:04			
IP Address			168.1.2				
Netmask INDRT			255.252.	.0			
DHCP	(R): (P):						
vstem:	(8):	044					
Default Gateway	(G) :	192.	168.1.1	7			
Nameserver		0.0.					
Hostname		1320					
letwork Boot:							
TFTP Boot	(B):	OFF					
TFTP Boot Delay	(L):						
TFTP Boot Server							
Boot Filename	(F):	<uns< td=""><td>pecified</td><td>i></td><td></td><td></td><td></td></uns<>	pecified	i>			
1							
and a second	(and) and (1	-		
F1: nc F2: AT+CREG?	F3:AT+	CONTOS	P4: AT+CSQ	FS: AT+CGN	EP PE AT+CG	NING	

• Type 'nc s' to save any changes made.

-				ex: Start	~	au.	- min	an An	au.		
				ration()		D A	ddras	a = 0x	c0a8010	2	
				ration()				= 0xff			
				ration()					0000000		
				ration()				bled =			
				ration()				0xc0a			
				ration()					ce = 0x	000000	00
				ration()					Offset		
				iration()	- 1	oar	dConf	ig->Po	sitionI	d = 0x	00000000
				iration()					ffset =		
				<pre>iration()</pre>					= 0x00	000268	
				ration()				97a014			
				ration()					0x20500		
				ration()		puff	er_us	ed = 0	x205002	cc	
				figFlash							
				nfigFlas			ucces				
				nfigFlas					=167766	00	
ini	sh i	Write	юувСо	nfigFlas	h()	Ь	urrer	_len=6	16		
	_										
	inc.	15.0	T-CREGO	FI: AT+CGR	662	64-AT-	CSO I	S-AT-COL	E F6: AT+	COMMO	

- Reboot after 30 seconds for the changes to take place.
- Once rebooted verify the settings using nc command. (Type nc)

EP ClearTerminal		0 0 0
Ele Edit Yew Settings	Connection Blugins Icols Tjansfer Help	
C ClearConne	x: Start Ahead. Finish Ahead.	
Network Configurat	tion: Device 0	
	(E): 00:02:31:ff:ff:04	
IP Address	(I): 192.168.1.2	
Netmask	(N): 255.255.252.0	
INDRT	(R): ON	
DHCP	(P): OFF	
System:		
Default Gateway	(G): 192.168.1.1	
Nameserver	(H): 0.0.0.0	
Hostname	(H): I320DM	
Network Boot:		
	(B) I OPP	
TFTP Boot Delay		
TFTP Boot Server		
Boot Filename	(F): <unspecified></unspecified>	
FEINE F2: AT+CREGT	F3: AT+COREG? F4: AT+CSQ F5: AT+CGME? H1: AT+CGMME F7: AT+CGM	482
COM7.38400-8-N-1	ALL AND OSR	DCD CTS []]

Note: Enable DHCP to acquire IP from DHCP server.

2.4.3 Assigning a Static IP address to the PC Host

When using a one-to-one connection between the IC-PCM and a PC, find the TCPIP properties in the control panel in the local network connections. Select 'Use the following IP address' and configure as below which requires a oneto-one connection a crossover cable needs to be used. If connecting to an existing local network, use values that are compatible with the network using a standard Ethernet cable.

Internet Protocol Version 4 (TCP/IPv	4) Properties
General	
You can get IP settings assigned autom this capability. Otherwise, you need to for the appropriate IP settings.	
O Obtain an IP address automatical	у
○ Use the following IP address: —	
IP address:	192.168.4.10
Subnet mask:	255.255.255.0
Default gateway:	192.168.4.1
C Obtain DNS server address autor	natically
□ Use the following DNS server add	
Preferred DNS server:	· · ·
Alternate DNS server:	· · ·
Validate settings upon exit	Advanced
	OK Cancel

2.4.4 Assigning a Static IP address to the IC-PCM

- Turn OFF the IC-PCM and set the RED DIP switch to ON for switch 2.
- Connect serial null-modem cable from IC-PCM to the PC.
- Launch HyperTerminal or other terminal emulation software such as Clear Terminal.
- Reboot the IC-PCM. Type 'NC' in the serial terminal to start serial activity.
- Type 'NC P off' to disable the DHCP and then Type 'NC S' to save the settings.
- Type 'NC I xxx.xxx.xxx.xxx' using serial terminal where xxx.xxx.xxx is the desired IP address.
- Set subnet if different Default Gateway should take on the form xxx.xxx.1. Where the x values match the IP Address. If using crossover cable, use IP :192.168.4.4.
- Type 'NC S' to save any changes made.
- Reboot the IC-PCM after 30 seconds for the changes to take place.

2.4.5 Assigning a Dynamic IP address to the PC Host

Find the TCP/IP properties in the control panel in the local network connections. Select 'Obtain an IP address automatically' as below.

Internet Protocol Version 4 (TCP/IPv4)) Propertie s	<u>?</u> ×
General Alternate Configuration		
You can get IP settings assigned automat this capability. Otherwise, you need to as for the appropriate IP settings.		
Obtain an IP address automatically		
C Use the following IP address:		
IP address:		
Subnet mask:		
Default gateway:		
C Obtain DNS server address automat	tically	
• Use the following DNS server address	sses:	
Preferred DNS server:		
Alternate DNS server:		
Validate settings upon exit	Advanced	
	ОК Са	ncel

2.4.6 Assigning a Dynamic IP address to the IC-PCM

Using the 'NC' command, configure as follows. Make sure that the IP Address, Gateway address and Net Mask match the network structure.

- Type 'NC P ON' and then type 'NC S' to save the settings.
- Type 'NC N xxx.xxx.xxx and then type 'NC S' to save the new Subnet address. The Subnet address should match the Subnet address of the host PC.
- Type 'NC G xxx.xxx.1' and then type 'NC S' to save the new Gateway address. The xxx.xxx should match the IP Address.
- Reboot the IC-PCM after 30 seconds for the changes to take place.

Section 3 – Programming a Tool

Use Setup Menu from ICS Main Menu Bar for programming a tool. This section explains how to program a tool.

3.1 Tool Setup

The Tool setup screen has two tabs: Tightening Configuration and General Setup, by default the Tightening Configuration tab is opened.

3.1.1 Tightening Configuration

The Tightening Configuration screen is used to program the QX series tool. Torque / Angle / Prevailing Torque strategies can be setup from this screen.

The Configuration sets that are created using this screen can be sent to a tool (in Network mode) or they can be stored locally.

Configuration sets can also be created and stored in the Local Database Mode. The locally stored Configuration Sets can then be sent to a tool using the Parameter Assignment screen.

The user can als	so view the archived	configuration data	stored in the arch	ived database.

ocation ID	•🛟 999:9	*	Confi <u>a</u> 1	*			
nfigSet <u>N</u> ame	×	<u>S</u> ource	Network	Date- <u>T</u> imeStam	р	*	
ightening Configu Common Settin Strategy Torque Displa Gang Count	gsA	ngle m	× ×	Direction © ⊆W Audible Alert	0 cc <u>w</u>	Tool Max Torq Reset to	ue: 12.00
⊆ycle Delay (: Auto Incre <u>m</u> e	,	.00		Socket Selectio	0 of <u>f</u>	Assembly Complete	
Joint Type	S	sft	~	Number	0 🗸	Reverse Spee <u>d</u> (%)	100
Joint Type		Jit.	•				
Angle Settings	ngle (deg)	22	2 Angle	High Limit (deg)	244	Angle L <u>o</u> w Limit (deg)	200
Angle Settings	;	22 ng Angle 0.	2 Angle			Angle L <u>o</u> w Limit (deg) Torque <u>L</u> ow Limit <u>A</u> cceleration (%)	200

Location ID Drop box	Location ID is used as a unique identifier for each tool on the network.
Config Drop box	Lets the selection of all available configurations, 1 through 8, for Programming and/or Viewing the Tightening settings.
Strategy	Lets selection of valid fastening strategies: Torque control, Angle control and Prevailing Torque. Torque control is the default Strategy.
Torque Display Units	Lets selection of all available Torque Units: Nm, Ft-lbs, In-lbs, and d-Nm. All the Torque values will be displayed with the selected units. Nm is the default unit.
Gang Count	Gang Count can be used if the assembly requires multiple bolts to be fastened in a group. The default value is 0 and the range is between 0 – 99.
Cycle Delay (Sec)	Time interval between each fastening cycle. The tool will be in a locked state until the time interval elapses. The default value is 0 and the range is $0 - 10$ seconds.

Auto increment can be used to move through a specified sequence of fastening configurations. After a Pass cycle or gang complete if gang count is set more than than 1, the tool will automatically increment to the Configuration programmed in this field. The default value is 0 and valid values are Config 1 through 8.
Lets selection of Joint Type. There are two options – Hard and Soft. Hard will be selected by default.
Sets the tool tightening direction to CW (Clockwise) or CCW (Counter-clockwise). CW is selected by default.
Turns 'ON' or 'OFF' the tool buzzer. The Audible Alarm will sound for any Failed cycle, when this feature is turned 'ON'.
Smart socket is intended as an interlock for the user. On selection of the configuration, the tool will be disabled and an LED will glow in socket tray, indicating which socket the user must select (the one programmed in this field). The tool will only be enabled when all other sockets are in place and the required socket removed from the tray. The default value is 0 and correct values are 1 through 8. This selection is only pertinent if the Smart Socket feature is enabled in the tool setup.
The maximum permitted Torque for the connected tool. This Field is not applicable in the Local Database Mode. This field is read-only.
The Reset to parameter is used to show which configuration the tool must be set to after the Configuration Reset Input is received by the IC-PCM 1:1.
When checked, the tool will send an Assembly Complete Event to the IC-PCM 1:1 which will then turn on a programmed External Output.
When checked, the tool will not run in the Reverse direction.
The percent of Max Speed at which the tool will run in the reverse direction. The default value is 100%.

There are three strategies as described below:

	Torque Settings						
Target Torque	Target Torque is the value of selected configuration. Must be \leq Tool Max Torque.						
Torque High Limit	The maximum acceptable torque value for a fastening. Must be \geq the Target Torque and cannot exceed 120% of the tool max torque value. Once the Target Torque value is entered, this value will be populated as 120% of the Target.						
Torque Low Limit	The minimum acceptable torque value for a fastening. Must be \leq the Target Torque. Once the Target Torque value is entered, this value will be populated as 80% of the Target.						
Angle high Limit (deg)	The maximum acceptable angle through which the fastener may turn. Maximum value cannot exceed 32000 degrees, which is the default value.						
Angle Low Limit (deg)	The minimum angle through which the fastener must turn. The default value is 0.						
Torque Threshold for Count Angle	The torque required to seat the fastener in the joint. This is the torque point at which angle begins to be measured. Must be <= the Target Torque. Once the Target Torque value is entered, this value will be populated as 50% of the Target.						
Torque Threshold for Shiftdown	The Torque point during tightening at which the tool shifts to a lower speed (to improve accuracy). Must be <= the Target Torque. Once the Target Torque value is entered, this value will be populated as 25% of the Target.						
Step Timeout (Sec)	Maximum allowable time for completing the step. The default value is 15 seconds and the range is 1- 65 seconds.						
Acceleration (%)	Tool motor acceleration at the start of a tightening. The default value is 90% and the range is 5% to 100%.						
Free Speed (%)	Speed at which tool will run before reaching Torque Threshold for Shiftdown. The default value is 100% and the range is 10% to 110%.						

	Speed at which tool will rup offer reaching Tergue Threshold for Shiftdown, Must be < Free						
Shiftdown Speed (%)	Speed at which tool will run after reaching Torque Threshold for Shiftdown. Must be \leq Free Speed. The default value is 10% and the range is 10% to 100%.						
	Angle Settings						
Target Angle (deg)	Target Angle value for the selected configuration in degrees.						
Angle high Limit (deg)The maximum acceptable angle through which the fastener may turn. Must be \geq the targ and cannot exceed more than 35200 degrees. When the Target Angle value is entered, the value will be populated as 120% of the Target.							
Angle Low Limit (deg)The minimum angle through which the fastener must turn. Must be \leq the target value. W Target Angle value is entered, this value will be populated as 80% of the Target.							
Torque High LimitThe maximum acceptable torque value for a fastening. Cannot exceed the Tool Max tor value. The default value is 0.							
Torque Low Limit	The minimum acceptable torque value for a fastening. Cannot exceed the Tool Max torque value. The default value is 0.						
Torque Threshold for Count Angle	The torque required to seat the fastener in the joint. This is the torque point at which angle begins to be measured. Must be <= Torque High Limit.						
Torque Threshold for Shiftdown	The Torque point during the tightening at which the tool shifts to a lower speed (to improve accuracy). Must be <= Torque High Limit.						
Step Timeout (Sec)	meout (Sec) Maximum allowable time for completing the step. The default value is 15 seconds and the range is 1-65 seconds.						
Acceleration (%)	*) Tool motor acceleration at the start of a tightening. The default value is 90% and the range 5% to 100%.						
Free Speed (%)	d (%) Speed at which tool will run before reaching Torque Threshold for Shiftdown. The default value is 100% and the range is 10% to 110%.						
Shiftdown Speed (%)	ftdown Speed (%)Speed at which tool will run after reaching Torque Threshold for Shiftdown. Must be \leq Free Speed. The default value is 20% and the range is 10% to 110%.						
	Prevailing Torque Settings						
Cut In Zone Settings							
Target Cut-In Angle (deg)	Target Angle value for the Cut-In Zone step in degrees.						
Torque High Limit	Maximum torque that is allowed during the Cut In Zone. If the measured torque is \geq this value the step is halted and a fault declared. Value must be \leq the Tool Max Torque.						
Snug Torque	The torque point at which angle begins to be measured. Must be \leq the Torque High Limit.						
Prevailing Zone Settin	gs						
Target Prevailing Angle (deg)	Target Angle value for the Prevailing Torque Zone step.						
Angle High Limit (deg)	Maximum angle of rotation allowed during the Prevailing Torque Zone. If the measured Angle is \geq this value the step is halted and a fault declared.						
Angle Low Limit (deg)	Minimum angle of rotation that must be turned during the Prevailing Torque Zone. When the Prevailing Torque Zone is exited the measured Prevailing Angle is checked to make sure it is greater than this limit. If it is not an Under Angle Fault is indicated.						
Torque High Limit	The maximum allowable torque during the Prevailing Torque Zone. If the measured torque equals or exceeds this limit the step is halted and a fault declared.						
Torque Low Limit	Minimum torque that should be achieved during the Prevailing Torque Zone. If the cycle is stopped during the Prevailing Torque Zone Step (trigger release or some other failure) and the measured torque value is below the Torque Low Limit, a failure will be indicated (Yellow LED). If Low Torque is the only fault, the tool will continue to the Torque Step.						

Common Settings	
Free Speed (%)	Speed at which tool will run during the Cut In and Prevailing Torque Zones. The default value is 80%.
Final Torque Settings	

Same as for a normal Torque Strategy.

Steps to program a configuration:

- 1. From the Setup menu, click Tool Setup, ICS opens the Tool Setup window with Tightening Configuration tab enabled.
- 2. Select the desired tool from the Location ID drop box.
- 3. Select the desired configuration from the Config drop box.
- 4. If the configuration is programmed, the data will display on the screen. Make any changes required, and then click the Send button on the toolbar to send the data.
- 5. If the configuration is not programmed, all the default values will be populated. Enter all parameters as required and click the Send button on the toolbar to send the data to the tool.
- 6. To save this Configuration locally click the Save icon on the toolbar. Select 'Yes'. Enter a Config Name when prompted and select 'OK'.

To save a configuration:

- 1. From the Setup menu, click Tool Setup, ICS opens the Tool Setup window with Tightening Configuration tab enabled.
- 2. Click the Database Mode button on the toolbar.
- 3. Program all parameters with desired values.
- 4. Enter a name for the configuration in the Config Set Name entry box.
- 5. Choose Save from the File menu to save the configuration into local database.
- 6. Once saved to the Local Database the user can send the Configuration to the tool using the Parameter Assignment screen.

3.1.2 General Setup Screen

The General Setup tab lets the user to retrieve, edit and send the general settings for the selected tool in Network Mode or retrieve and save settings in the Local Database Mode. When saved to the Local Database the user can send the saved General Settings to the tool using the Parameter Assignment screen. When saved to the Local Database the user can send the saved General Settings to the tool using the Parameter Assignment screen.

🗖 QX Tool Setup) - 1					
Location ID	348:7[10.200.82	2.254] 🔽 Config	×			
<u>P</u> aramset Name	~	<u>S</u> ource Netwo	rk Date- <u>T</u> imeStam;	•	a.	
Tightening Config	guration General Setup]				
- Tool Setup Location J		000:1		Int <u>e</u> rlock Active		
Configura	ation <u>M</u> ode	Internal	*	Keypad Lockout		
<u>H</u> eadLigh	t Timeout (sec)	5		Enable Headlight		
Sleep Tim	eout (sec)	300		Enable EOR Buffering		
EOR Buffi	er Count	1200		✓ Enable Wireless Retries ■ Enable Smart Socket		
Wireless S	etup		Passwo	rd Settings		
🗹 Eng	<u>a</u> ble wireless					
Local N	MAC Address					
<u>P</u> AN II	D [0		New Password (Hex)		
RF <u>C</u> h	annel	16	~	Confirm Password (Hex)		
Transm	nit Power	D	~			

General Setup tab has three sub sections as follows; 48619696_ed1

3.1.2.1 Tool Setup

Location ID	Used to set a Location ID for a particular tool. The Location ID is used as a unique identifier for each tool on the network. Location ID Number is a four-digit entry that represents a location on the assembly line. Each tool must have a unique Location ID.
	Sets how Configurations are selected. The options available from the dropdown box for this parameter are Internal, External and Any.
Configuration Mode	Internal: Tightening Configuration number can be selected using tool display only.
	External: Tightening Configuration number can be selected using external media such as IC-PCM 1:1 or ICS only.
	Any: Tightening Configuration number can be selected using Internal or External Modes.
Headlight Timeout	If the Headlight is Enabled, it will turn OFF after the specified duration set in the Headlight Timeout field.
Sleep Timeout	The tool will switch to 'Sleep Mode' if the trigger on the tool has not been pressed for the duration specified in this field. This is used to preserve battery life. Using the display keypad or ICS to communicate with the tool will not prevent the tool from entering 'Sleep Mode'.
EOR Buffer Count	If EOR Buffer is Enabled, once out of range of the PCM, the tool will run cycles until it reaches the specified EOR Buffer count. The tool will then become disabled and gives an Error Code F-01 on the display when the trigger is pulled.
	See section Enable EOR Buffer for more information.
Interlock Active	When checked, this function disables the tool after Pass cycle, after a Gang Complete, or after the last Configuration in a chain is complete. The tool will stay disabled until a new Configuration is selected.
Keypad Lockout	When checked, the keypad on the tool is locked so that the user is not able to enter the Password screen and change Configuration settings. The user will still have the ability to scroll through the tool settings.
Enable Headlight	When checked, the Tool Headlight is enabled.
	When checked, the EOR Buffer feature is enabled.
Enable EOR Buffer	The EOR Buffer feature is a EOR Data protection feature where the user sets a EOR Buffer count. Once out of range of the PCM, the tool will run cycles until it reaches the specified EOR Buffer count. The tool will become disabled and gives an Error Code F-01 on the display when the trigger is pulled. The tool will remain locked until it is within range of the PCM. The counter will then be reset.
Enable EOR Retries	When checked, EOR retries are enabled.
Enable Wireless Retries	When checked, communication retries for the RF Module connected to the tool are enabled.
Enable Smart Socket	When checked, the tool will be locked until the proper socket is selected.

3.1.2.2 Wireless Setup

Wireless parameters of the tool can be set only when tool is connected to USB.

Enable Wireless	Enables wireless functionality of the tool.
Enable Channel Hopping	Disables channel hopping functionality on tool. Channel hopping is enabled via the PCM settings only.
Local MAC Address	Displays the tool MAC address for the connected tool. User cannot modify the MAC address.
PAN ID	16 bit value which is used uniquely to identify one node from the collection of nodes on the physical channel.
RF Channel	Identifier for the radio frequency channel being used. As defined by the 802.15.4 specification.
Transmit Power	Used to control the db level of the radio transmitter

3.1.2.3 Password Settings

The Password Setup module is used to set the password for the connected tool. The password is defined as a four digit numeric value. The Password settings module of the tool can be set only when tool is connected to USB.

3.2 IC-PCM 1:1 General Setup

The IC-PCM 1:1 General Setup screen gives an option to setup the general settings for the selected IC-PCM 1:1 and lets to save the settings to the Local Database.

This screen also lets viewing of archived general settings of the IC-PCM 1:1 by retrieving the information from archived database.

ControllerID 🔶 10.20	00.82.66(8266)				
Paramset Name	Source	Network	Date-Time Stamp	~	
Setup Data		1			
Version Info		Vers	sion Info		
Version					
General Settings					
Tightening Control Settings				12 1	
IO Settings				IC-PCM 1:1 16.D.0.0.6.14	
Date Time Settings				L	
Protocol Settings					
Serial Port Settings					
Barcode Settings					
Serial EOR Settings					
Ethernet EOR Settings					
PFCS Settings					
PLUS Settings					
XML Settings					
Open Protocol Settings					
Label Printing					
FieldBus Settings Profibus Settings					
InterBus Settings					
DeviceNet Settings					
ModBus RTU Settings					
Ethernet IP/Modbus TCP					

Following are the settings which can be programmed/Viewed for the selected IC-PCM 1:1;

- Version Information
- General Settings
- Protocol Settings
- FieldBus Settings

3.2.1 Version Information

Version information selection displays the currently installed IC-PCM RISC version for the selected IC-PCM 1:1.

3.2.2 General Settings

Following are the settings which can be programmed from General settings tab for the selected IC-PCM 1:1;

- Tightening Control Settings
- IO Settings
- Local Settings
- Date Time Settings

3.2.2.1 Tightening Control Settings

Tightening control settings allows programming the type of "Configuration selection mode", "Remote Tool Enable/ Disable Mode" and Enable/Disable option for Smart Socket feature.

🗗 IC-PCM 1:1 Ger	neral Setup - 1				
ControllerID	10.200.82.66(8266) 🛛 💙			
Paramset Name		Source	Network	Date-TimeStamp	~
Setup Data			-		
Version Info			Tight	ening Control Settings	
Version					
General Settings			1	Enable Smart Socket	
Tightening Control Settings				Jenable Smart Societ	
IO Settings					
Date Time Set	tings		Re	emote Tool Enable/Disable Mode	None
Protocol Settings					None
Serial Port Settings					
Barcode Settings			Ca	onfiguration Selection Mode	External Discrete 💙
Serial EOR Settings					

	Lets the user t	o enable/disa	ble the tool tig	ghtening ope	ration remotely.					
Remote Tool	"1-Line" option: The "Enable" input pin of the IC-PCM 1:1 must be ON in order to start the tightening operation for the tool. To disable the tool, "Enable" input pin should be OFF.									
Enable/Disable Mode	"2-Line" option: The "Disable" input pin of the IC-PCM 1:1 must be ON in order to disable the tool from tightening operation. To enable the "Tightening operation", the "Disable" input pin should be OFF and "Enable Input pin" bit should be pulsed									
	"None": sets th	ne tool mappe	ed to the IC-PC	CM 1:1, always	in enabled mode for tightening operation					
	Configuration	Selection feat	ture sets the s	election meth	nod in the IC-PCM 1:1 of the mapped tool.					
		•			ion of the mapped tool by activating specific iour is assigned.					
	"External Binary" option lets to select the configuration numbers (1 to 8) for the mapped tool using the combination as shown below Assign Config 1, 2, 3 input behaviours to Input pin 1, 2, 3.									
	Config	Input 1	Input 2	Input 3]					
	1	0	0	0						
	2	1	0	0						
Configuration Selection	3	0	1	0						
Mode	4	1	1	0						
	5	0	0	1						
	6	1	0	1						
	7	0	1	1						
	8	1	1	1						
	"External Ethernet" option in the IC-PCM 1:1 allows selecting the configuration number of the mapped tool based on the configuration selection message which is received on its Ethernet port.									
	IC-PCM 1:1 wi	ll always be lis	ted on the Po	rt Number 61	000 for configuration selection message.					
	NOTE: This Po	ort number car	nnot be config	jured by the u	iser.					
Enable smart Socket		requires that t	he user remov	ve the assigne	ket tray selection feature on the IC-PCM 1:1. d socket from the tray in order for the tool to n settings.					

3.2.2.2 IO (Input/Output) Settings

Assign Input

The Assign Inputs tab gives a method of assigning input behaviours to physical input pin of the IC-PCM 1:1. The screen gives a list of input behaviours for programming the input pins. The screen also gives the flexibility of positioning the input behaviours and prevents duplicate assignments of same behaviours for different input pins of the IC-PCM 1:1.

ControllerID 🔶 🛣 10).200.82.66(8266)						
Paramset Name	Source	Network	Date-Time	Stamp	~		
Setup Data		TO Se	ttings				
Version Info		10.00	congs				
Version		As	sign Inputs Ass	gn Outputs			
General Settings							
Tightening Control Settings							
IO Settings						Behaviors	
Date Time Settings				1 BEFORE			
Protocol Settings			Inputs	Behaviors		Enable	1
Serial Port Settings			2-I-1	Config 1		Disable	
Barcode Settings			2-I-2	Config 2	- +	Gang Reset	
Serial EOR Settings			2-I-3	Config 3		Gang Advance Config Reset	
Ethernet EOR Settings			2-I-4	Config 4		Config Advance	
PFCS Settings			2-I-5	Config 5		Reset Outputs	
PLUS Settings			2-I-6	Config 6	- +	Socket Select 1	
XML Settings			2-I-7	Config 7		Socket Select 2	
Open Protocol Settings			2-I-8	Config 8		Socket Select 3	
Label Printing						Socket Select 4	
FieldBus Settings					=	Socket Select 5	-
Profibus Settings						Socket Select 6	
InterBus Settings						Socket Select 7	

This List displays the Current inputs behaviours versus input pins (2-I-1 to 2-I-8).

Г	
	The "Behaviours" List displays all the available behaviours which are not been assigned to any of the input pins. Following are the list of input behaviours -"Configurations 1-8" behaviours select the configuration number of the tool mapped tool
	to the IC-PCM 1:1
	-"Enable" behaviour Enables the tool to perform the tightening operation
	- "Disable" behaviour disables the tool from performing the tightening operation
	-"Gang Reset" behaviour resets the Current gang count to 0.
	-"Gang Advance" behaviour Advances the current Gang Count by one in case of Fail cycle.
Behaviour's list	-"Config Reset" behaviour resets back to the Configuration number of the mapped tool to configuration number which is programmed in the active configuration
	-"Reset Outputs" behaviour resets all output pins to non-active condition.
	- "Config Advance" behaviour advances to the next configuration number which is programmed in the active configuration.
	-"Socket Select 1-8" behaviour which is used in a socket tray setup to know which socket number is selected for the corresponding configuration.
	-"User Input 1-8" behaviours are used for receiving the Field bus device input commands to the IC-PCM 1:1.
	-"Reprint Label" behaviour is used to resend a label to the label printer connected to the IC-PCM 1:1.
	"PLUS Manual Reset" behaviour resets the PLUS communication in the IC-PCM 1:1.
Assign Input button	The "Assign" Input button is used to assign the selected input behaviour to the selected input pin of the IC-PCM 1:1.
	Select the input pin (2-I-1) from "Input Pin /Behaviours List" and the appropriate behaviours from "Behaviours" list and click on Assign button (left pointing arrow) for assigning the behaviour to the selected input pin.
Un-Assign Input button	The "Un-Assign" Input button is used to un-assign an input behaviour from the programmed input pin.
*	Select the input pin (2-I-x) from "Input Pint/Behaviours List" and click on the "Un-Assign" (right pointing arrow) button to un-assign the behaviour from the selected input pin.
"Un-Assign All" button	The "Un-Assign All" button is used for un-assigning all the input behaviours from the programmed input pins (2-I-1 to 2-I-8).

Output settings

The Assign Outputs tab gives a method of assigning output behaviours to physical output pins of the IC-PCM 1:1. The screen gives a list of output behaviours to select and assign to the desired output pins. The screen also gives the flexibility of positioning the output behaviours to the output pins of the IC-PCM 1:1. The Outputs will stay 'ON' (active) until the specified 'Time' interval has elapsed. The default 'Time' is 0. With this value the Outputs will remain 'ON' (active) until the next EOR data is received or the 'Reset Outputs' Input is turned 'ON'.

ControllerID	🚊 10.20	0.81.226(2	226) 💙							
<u>P</u> aramset Name	×	Source	Network							
Setup Data				~10) Settings					
/ersion Info					/ Doccings					
Controller Ver	sion				Assign Inputs	Assign Outputs				
General Settings										
Tightening Co	ntrol Settings									
IO Settings									Behaviors	
Local Settings					Outputs	Behaviors	Time		Accept	1
Date Time Set	tings				· · · ·			-	Reject	-
Protocol Settings					1-0-1	Config 1	0	- 4	Cycle Complete	
Serial Port Set	tings				1-0-2	Config 2	2		High Torque	
Barcode Settir	ngs				1-0-3	Config 3	0	_	Low Torque	
Serial EOR Sel	tings				1-0-4	Config 4	0		High Angle	
Ethernet EOR	Settings				1-0-5	Config 5	0	-	Low Angle	
PFCS Settings	-				1-0-6	Config 6	0	•	Reject Buzzer	
PLUS Settings					1-0-7	Config 7	0	_	Paint Marker	
XML Settings					1-0-8	Config 8	0		System Fault	
	Carlos and								Gang Complete	

BehavioursThis List displays the Current output behaviours versus output pins (1-O-1 to 1-O-8) on to the IC-PCM 1:1List	I		
List	I	Benaviours	This List displays the current output behaviours versus output pins (1-0-1 to 1-0-8) on to the IC-PCM 1:1
		List	

Behaviour's list	The "Output Behaviours" List displays all behaviours. Following are the list of output behaviours -"Accept" behaviour is HIGH when tightening sequence is "OK" for the tool mapped to the IC-PCM 1:1. -"Reject" behaviour is HIGH when tightening sequence is "NOT OK" for the tool mapped to the IC- PCM 1:1. -"Cycle Complete" behaviour is HIGH when the tightening sequence is completed irrespective to the Pass/Fail status of the tool mapped to the IC-PCM 1:1 -"High Torque" behaviour is HIGH when the final Torque result is greater than or equal to Torque High Limit programmed for the configuration. -"Low Torque" behaviour is HIGH when the Final torque result is below the Torque Low Limit programmed for the configuration. -"High Angle" behaviour is HIGH when the final Angle result is greater than or equal to the Angle High Limit programmed for the configuration -"Low Angle" behaviour is HIGH when the Final angle value of the tightening results is less than the angle Low Limit of the tool mapped to the IC-PCM 1:1. "Reject Buzzer" is HIGH when the tightening sequence is "NOT OK" "Paint Marker" is HIGH when the tightening sequence is "NOT OK" "System Fault" HIGH Indicates a problem with the IC-PCM 1:1. "Gang Complete" is HIGH when the particular Configuration is selected on the tool. "Socket Select 1-8" is HIGH when the particular Configuration is selected that has the particular Socket Selection Number assigned to it. User Output 1-8" is HIGH when turned 'On' by one of the Fieldbus Protocols.
Assign output button	The "Assign" output button is used for assigning the output behaviours to the selected output pin of the IC-PCM 1:1. Select the output pin (1-O-x) from "output Pin /Behaviours List" and the appropriate behaviour from "Behaviours" list. Click on Assign button (left pointing arrow) to assign the behaviour to the selected output pin.
Un-Assign Input button	The "Un-Assign" output button is used for un-assigning the output behaviours from the programmed output pin. Select the output pin (1-O-x) from "Output Pin /Behaviours List" and click on the "Un-Assign" (right pointing arrow) button to un-assign the behaviour from the selected output pin.
"Un-Assign All" button	The "Un-assign All" button is used for un-assigning all the output behaviours from the programmed output pins (1-O-1 to 1-O-8).
Set time	To set a time out period for the output pin, enter a time in seconds in the Time column. If output time is set to zero, the output pin will remain active until the next cycle is complete. Otherwise the output pin will go low after the time out period.

NOTE: For safety reasons, newly assigned Input or Output behaviours on the IC-PCM-1:1 will not take effect until the IC-PCM 1:1 is rebooted.

3.2.2.3 Socket Tray and Configuration Switch Connection and Setup using IC-PCM 1:1

- Map the QX Series wireless tool to the IC-PCM 1:1.
- Using ICS Application, Enable the Smart socket feature in the IC-PCM 1:1 from General setup screen.
- Program Behaviours of configuration number and socket numbers to Inputs/Outputs behaviours of the IC-PCM 1:1 from IC-PCM 1:1 General setup screen.

🗗 IC-PCM 1:1 General Setu	ıp - 1	7						
ControllerID	0.200.82.66(8266)				142			
Paramset Name	Source	Network	Da	te-TimeStamp		~		
Setup Data		10 9	Settings					
Version Info								
Version		A	Assign Input	S Assign Ou	tputs			
General Settings				Lancoura Transmos	in the second			
Tightening Control Setting	s							
IO Settings							Behaviors	
Date Time Settings							Denaviors	
Protocol Settings			Inputs		Behaviors		Enable	~
Serial Port Settings			2-I-1				Disable	
Barcode Settings			2-I-2			-	Gang Reset	
Serial EOR Settings			2-I-3				Gang Advance	
Ethernet EOR Settings			2-I-4				Config Reset	
PFCS Settings			2-I-5				Config Advance	
PLUS Settings			2-I-6			+	Reset Outputs	
Open Protocol Settings			2-I-7				Socket Select 1 Socket Select 2	
Label Printing			2-I-8				Socket Select 3	_
FieldBus Settings							Socket Select 4	
Profibus Settings						=	Socket Select 5	
InterBus Settings							Socket Select 6	
ControllerID	- 1 200.82.66(8266)		1					
Paramset Name	Source Ne	twork	Date-Tin	neStamp		~		
Setup Data	1	TO CHUR						
Version Info		IO Settin	igs					
Version		Assign	n Inputs As	ssign Outputs				
General Settings		1						-
Tightening Control Settings IO Settings							Behaviors	
Date Time Settings				Debasias	Time		Accept	~
Protocol Settings		and the second se	utputs	Behaviors			Reject	-
Serial Port Settings		and the second	0-1	Config 1	0	In the second se	Cycle Complete	
Barcode Settings			0-2	Config 2	0	*	High Torque	
Serial EOR Settings		the second se	0-3 0-4	Config 3 Config 4	0	100	Low Torque	
Ethernet EOR Settings		and the second se	0-4	Socket Select			High Angle	
PFCS Settings		and the second	0-5	Socket Select		ui)	Low Angle Reject Buzzer	
PLUS Settings			0-0	Socket Select			Paint Marker	
Open Protocol Settings			0-8	Socket Select			System Fault	
Label Printing		-				manand	Gang Complete	
FieldBus Settings Profibus Settings						= •	Config 1	
FIGHOUS SECONDS						Conception of the local division of the loca	C	

- Contraction of the Profibus Settings
- Enable the "Enable Smart Socket" check box from Tool general setup screen.
- For above assigned configuration numbers, program the Tightening configuration and its corresponding socket number from tightening configuration screen.
- Connect the Socket Tray Input lines/Output lines to the IC-PCM 1:1 terminal blocks and make sure all the pins are working correctly using the diagnostics View Input/ Output screen. To run the tool, select configuration number using the external input signal to the IC-PCM 1:1, ICS or Fieldbus, or from the tool display. The IC-PCM 1:1 then sends out the corresponding socket number output signal to the Socket tray. Lift the corresponding socket for the selected configuration. Tool will now be in unlocked condition to run its configuration.

NOTE: Tool will not run its configuration if more than one socket removed from the tray or wrong socket is removed.

3.2.2.4 Light Box Connection and Setup

- Locate the active wire colors for light boxes. .
- Connect the light box to the IC-PCM 1:1 terminal blocks with the appropriate accessory cable. .
- Ensure a QX Series wireless tool is mapped to the IC-PCM 1:1.
- From IC-PCM 1:1 General Setup screen, assign the output behaviours for the corresponding terminal blocks. .
- In a standard setup, the colored lamps indicate the following: •
 - Red : Torque/Angle High.
 - Green : Accept output.

Yellow : Torque/Angle Low.

3.2.2.5 Date Time Settings

The Date Time settings lets the user to set the Date and Time settings for IC-PCM 1:1.

ControllerID	10.200.82.66(8266)	*			
Paramset Name	Sourc	e Network	Date-TimeStamp	~	
Setup Data					
Version Info		Date	/Time Settings		
Version					
General Settings			and a france of	DDMMYY	
Tightening Control Setting	js		oate Format	EEMATT	
IO Settings					
Date Time Settings				GMT	
Protocol Settings		0	Offset		
Serial Port Settings					
Barcode Settings					
Serial EOR Settings			Daylight Saving Enable	In DST	
Ethernet EOR Settings					
PFCS Settings				USA	
PLUS Settings		R	legion		
XML Settings					
Open Protocol Settings				-	10000
Label Printing FieldBus Settings		Т	ïme Format	24 Hour	~

Date Format	Date Format drop box allows the user to set the date format for the IC-PCM 1:1 (MMDDYY and DDMMYY).
Offset	Offset drop box allows the user to set the current time zone for the IC-PCM 1:1. Following are the options for Offset time zone – GMT-12, GMT-11, GMT-10, GMT-9, GMT-8, GMT-7, GMT-6, GMT-5, GMT-4, GMT-3:30, GMT-3, GMT-2, GMT-1, GMT, GMT+1, GMT+2, GMT+3, GMT+3:30, GMT+4, GMT+5, GMT+5:30, GMT+5:45, GMT+6, GMT+6:30, GMT+7, GMT+8, GMT+9, GMT+9:30, GMT+10, GMT+11, GMT+12, GMT+13.
Daylight Saving Enable	Daylight Saving option is used for enabling or disabling automatic time adjustment for daylight savings of selected country
In DST	The time format which received from the IC-PCM 1:1 is in daylight savings format.
Time Format	Time Format allows setting the current time in 12/24 Hour format.

3.2.3 Protocol Settings

The Protocol Assignment settings tab gives options for assigning protocols and customizing them for the various communications ports. The following are the different protocols that can be assigned to each available port.

3.2.3.1 PCM Serial Port Settings

This setting allows to set the "serial Port settings" of the IC-PCM 1:1.

IC-PCM 1:1 General Setup - 1					
ControllerID 🔶 1	0.200.82.66(8266)				
Paramset Name	Source	Network	Date-Time Stamp	~	
Setup Data		Serial Po	rt Settings		
Version Info					
Version					
General Settings					
Tightening Control Setting	IS				
IO Settings				Para Para Para Para Para Para Para Para	~
Date Time Settings		Baud Rate		9600	
Protocol Settings					
Serial Port Settings				1 million and the second	
Barcode Settings		Parity		None	*
Serial EOR Settings					
Ethernet EOR Settings					
PFCS Settings			Stop Bits	1	~
PLUS Settings					
XML Settings Open Protocol Settings				8	~
			Bits Per Character	0	×
Label Printing					
FieldBus Settings				0	
Profibus Settings			MultiDrop Address		
InterBus Settings				10	
DeviceNet Settings			Protocol	None	
ModBus RTU Settings			Protocol		

Baud Rate	Baud Rate sets the speed for communications of serial port. Following are the baud rates which can be set from ICS 110, 1200. 2400, 4800, 9600. 14400, 19200, 28800, 38400, 57600, 76800, 115200.
Parity	Parity sets the parity for the serial connection to None, Odd, Even
Stop Bits	Stop Bits sets the number of Stop bits to 1 or 2
Bits Per Character	Bits Per Character sets the Bits Per Character parameter to 7 or 8
Multi Drop Address	Multi Drop Address sets the address number for use with Host Data Out protocol.
Protocol	Protocol indicates which protocol is set for the Serial port, such as "Serial Barcode", "Serial EOR", "PLUS Barcode" and "Label Printing"

3.2.3.2 Barcode/VIN Settings

Barcode/VIN settings allow the user to set the Barcode related settings such as length, criteria, From/To characters for criteria match. Barcode scanner input can be set for different types of Standard communications ports (Ethernet /Serial) of the IC-PCM 1:1.

Other protocols such as ProfiBus or DeviceNet can also input a Barcode or VIN number to the IC-PCM 1:1, but the barcodes are not subject to criteria checking.

IC-PCM 1:1 General Setup - 1							
ControllerID 🔶 10.200.82.66(8)	266) 🖌						
Paramset Name	Source Network	Date-Time	Stamp	~			
Setup Data							
Version Info	Barc	ode Settings					
Version				1		5	
General Settings		Mode	Active 💌		Length	5	
Tightening Control Settings			-	_			
IO Settings Date Time Settings		Source	Ethernet 💉		Port	41000	
Protocol Settings				-			
Serial Port Settings							
Barcode Settings	- Cvi	iteria					
Serial EOR Settings					1	-	
Ethernet EOR Settings		Iriteria Setting	Fr	om 1	То	5	
PFCS Settings					-	41	
PLUS Settings XML Settings		Configuration		Criteria			
Open Protocol Settings		1		12341			
Label Printing		2		12342			
FieldBus Settings		3		12343			
Profibus Settings		4		12344			
InterBus Settings		5 6		12345 12346			
DeviceNet Settings ModBus RTU Settings		7		12347			
Ethernet IP/Modbus TCP		8		12348			
Ethernet IP/Modbus TCP						1	
			Ignore Duplicate Scan	n Lengt	h Check	None	~
Ethernet IP/Modbus TCP Modes in the Barcode Passive mode: Attache	e settings allows to	o set Two Ty	pes of mode "P	assive" & "Ac	tive"	- L	
Modes in the Barcode	e settings allows to es the barcode str	o set Two Ty ing to the Er	pes of mode "P nd Of Run Data	assive" & "Ac	tive" om the too	ol withou	t any
Modes in the Barcode Passive mode: Attache criteria comparison. B	e settings allows to es the barcode str arcode informatic he functionality o configuration nur ode that should n	o set Two Ty ring to the Er on is stored I of Passive mo mber on the natch the cri	pes of mode "P nd Of Run Data ocally in the IC ode and the add tool Valid Bar teria set for cor	assive" & "Ac received fro -PCM 1:1 cy ditional func code/VINs a	tive" om the too cle log da tionality o re identifi	ol withou ta but no of allowin ed based	t any t in t g the on t
Modes in the Barcode Passive mode: Attache criteria comparison. B tool cycle log data. Active mode: Has all tl Barcode/VIN to select characters in the barco	e settings allows to es the barcode str arcode informatic he functionality o configuration nur ode that should n ches the Barcode ne barcode operate the barcode op	o set Two Ty ing to the Er on is stored I of Passive mo mber on the natch the cri string to the tion for the I peration in di	pes of mode "P nd Of Run Data ocally in the IC- ode and the add tool Valid Bar teria set for cor EOR data. C-PCM 1:1. "No sabled mode fo	assive" & "Ac received fro -PCM 1:1 cy ditional func code/VINs a rresponding BCode" will	tive" om the too cle log da tionality o re identifi configura be attach	ol withou ta but no of allowin ed based ation num	t any t in t on t ber.
Modes in the Barcode Passive mode: Attache criteria comparison. B tool cycle log data. Active mode: Has all th Barcode/VIN to select characters in the barco successful then it attac OFF mode: Disables th data. OFF mode will se	e settings allows to es the barcode str arcode informatic he functionality o configuration num ode that should m ches the Barcode he barcode operate et the barcode operate ening cycle receiv the Barcode strin	o set Two Ty ing to the Er on is stored I of Passive mo mber on the natch the cri string to the tion for the I beration in di red from the g (this is the	pes of mode "P nd Of Run Data ocally in the IC- ode and the add tool Valid Bar teria set for cor e EOR data. C-PCM 1:1. "No sabled mode for mapped tool. total number of	assive" & "Ac received fro -PCM 1:1 cy ditional func code/VINs a rresponding BCode" will or IC-PCM 1:	tive" om the too cle log da tionality o re identifi configura be attach 1. "No BCo	ol withou ta but no of allowin ed based ation num ed to the ode" will k	t any t in t on t ber. EOR
Modes in the Barcode Passive mode: Attache criteria comparison. B. tool cycle log data. Active mode: Has all th Barcode/VIN to select characters in the barco successful then it attached OFF mode: Disables th data. OFF mode will se attached for the tighted Set the max length of	e settings allows to es the barcode str arcode informatic he functionality o configuration nur ode that should n ches the Barcode ne barcode operate et the barcode operate et the barcode strin e string for the IC-	o set Two Ty ing to the Er on is stored I of Passive mo mber on the natch the cri string to the tion for the I beration in di red from the g (this is the PCM 1:1 is 4	pes of mode "P nd Of Run Data ocally in the IC- ode and the add tool Valid Bar teria set for cor EOR data. C-PCM 1:1. "No sabled mode for mapped tool. total number o 0.	assive" & "Ac received fro -PCM 1:1 cy ditional func code/VINs a rresponding BCode" will or IC-PCM 1:	tive" om the too cle log da tionality o re identifi configura be attach 1. "No BCo	ol withou ta but no of allowin ed based ation num ed to the ode" will k	t any t in t on t ber. EOR
Modes in the BarcodePassive mode: Attachecriteria comparison. Btool cycle log data.Active mode: Has all thBarcode/VIN to selectcharacters in the barcodesuccessful then it attachedOFF mode: Disables thdata. OFF mode will seattached for the tightedSet the max length oflength for the Barcode	e settings allows to es the barcode str arcode information he functionality of configuration num ode that should m ches the Barcode he barcode operate the barcode operate the barcode strin e string for the IC- berial/Ethernet of	o set Two Ty ing to the Er on is stored I of Passive mo mber on the natch the cri string to the tion for the I peration in di red from the g (this is the PCM 1:1 is 4 the IC-PCM	pes of mode "P nd Of Run Data ocally in the IC- ode and the add tool Valid Bar teria set for cor EOR data. C-PCM 1:1. "No sabled mode for mapped tool. total number of 0.	assive" & "Ac received fro -PCM 1:1 cy ditional func code/VINs a rresponding BCode" will or IC-PCM 1:	tive" om the too cle log da tionality o re identifi configura be attach 1. "No BCo	ol withou ta but no of allowin ed based ation num ed to the ode" will k	t any t in t on t ober. EOR

	Criteria settings displays all the criteria strings programmed for the configuration number (1-8).
	Double clicking on a row entry opens up the Criteria Editor dialog Box. Select the Configuration from the drop down list and then double click on the Config Criteria text entry box. Enter the character strings with length matching the From/To value to identify a valid Barcode/VIN. Click OK to save the settings in the criteria settings list.
	Criteria Editor
	Configuration 1
Criteria	Config Criteria All Criteria in Use
Settings	ABCD Double Click To Type Add Del QK Cancel
Ignore	Enable "Ignore duplicate scan" will ignore the scanned barcode from the IC-PCM 1:1 if it is identical to previously scanned barcode.
Duplicate Scan	"Invalid BC" is recorded as the scan data for passive mode. In the case of Active mode, the configuration selection will not be sent to the tool mapped to the IC-PCM 1:1.
	Length check allows the user to set the maximum allowable length of the barcode.
	"None" option: Will not restrict the scanned barcode length.
Length Check	"Restrict" option: Will validate the scanned Barcode length with the value set in the length input box. If it exceeds the set length value, "Invalid BC" is recorded as the scan data for passive mode. Configuration number will not be selected in the tool in active mode.
Check	"Truncate Left": Truncates the scanned barcode string from left hand side until it matches the value set in the length input box.
	"Truncate right": Truncates the scanned barcode string from right hand side until it matches the value set in the length input box.

NOTE: one serial protocol settings can be programmed on the IC-PCM 1:1 serial port at a time.

3.2.3.3 Barcode Connection and Setup using IC-PCM 1:1

- Connect ASCII barcode scanner to the serial port of the IC-PCM 1:1. For Ethernet Barcode scanner, connect the scanner to the Ethernet port of a serial to Ethernet device on the network.
- Using ICS application, program the IC-PCM 1:1 serial port settings to match settings on the bar code scanner.
- The barcode scanner must be configured to add a CR/LF at the end of each barcode.
- Using ICS application, enable the Serial Barcode Protocol for the IC-PCM 1:1
- The barcode function has two main operating modes, Passive and Active. The Barcode settings can be programmed using ICS software.
- Using Active mode, a particular configuration number can be selected using Barcode.
- Turn on Barcode scanner.
- When the barcode function is enabled for a IC-PCM 1:1 and when the cycle data is sent by the tool, the scanned bar code data is added to EOR data. If a cycle is run before a barcode is scanned then the bar code data is recorded as "No BCode". When a barcode is scanned and is of valid length, then the scan data is recorded to all subsequent cycles until a new scan is initiated. If an invalid barcode is scanned, "Invalid BC" is recorded as the scan data.

3.2.3.4 Serial EOR Settings

Serial EOR Settings enables sending of EOR data for every tightening cycle of the mapped tool to the Serial port.

🖬 PCM General Setup	-1		
ControllerID	10.200.81.226(226)		
Paramset Name	Source Network		
Setup Data			
Version Info		Serial EOR Settings	
Controller Version			
General Settings Tightening Control S	Settings	Enable Serial EOR	
IO Settings	becongs		
Local Settings		Output Positions	
Date Time Settings		Parameter	Yes/No 🔼 🔺
Protocol Settings		Cycle No	
Serial Port Settings		Powerhead Cycle No	
Barcode Settings Serial EOR Settings		Spindle No	
Ethernet EOR Setti	ngs	Config No	
PFCS Settings	-	Step No	
PLUS Settings		Date	
XML Settings		Time ID	
Open Protocol Setti Label Printing	ngs	Cycle Result	
FieldBus Settings			
Profibus Settings		Peak Torque	
InterBus Settings		Torque Result	
DeviceNet Settings		Torque Units	
ModBus RTU Setting ModBus TCP/IP Set		Peak Angle	
Ethernet IP Setting		Angle Result	
		Shutdown Code	
		Default Filter Select All Filters	Delimiter Comma 🔽
1	1		
Enable Serial EOR	Enables "Serial EOR Dat	a out" to IC-PCM 1:1.	
Output Positions List View	-	ew, displays all EOR fields and curren appears in Serial port separated by c	t status (Yes/No) and also the order in Ielimiter.
Yes/No Check Box	Select the Checkbox ne	xt to the EOR field to include it as th	e part of the EOR Data Out.
Up/Down Arrow		fields appear can be changed by cli de of "Output Positions" List.	cking on a parameter and using up/
		IC-PCM 1:1 to use only the default se default EOR fields and order in which	et of EOR fields for EOR Data Out to seri it appears in Serial port –
	1. Cycle No	8. Torque Units	15. Torque Low Limit
	2. Config No	9. Peak Angle	16. Angle High Limit
Default Filter	5	5	
Delault Filler	3. Date	10. Angle Result	17. Angle Low Limit
	4. Time ID	11. Peak Current	18. Control Point
	5. Cycle Result	12. Cycle Time	19. Barcode
		•	19. Balcoac
	6. Peak Torque	13. Strategy Type	

14. Torque High Limit

7. Torque Result

		CM 1:1 to use all EOR fields for EO Order in which it appears in Serial	R Data Out to serial port. Following port –			
	1. Cycle No	20. Job ID	40. Peak Cut-In Torque			
	2. Config No	21. Powerhead Cycle No	41. Peak Prevailing Torque			
	3. Date	23. Spindle No	42. Avg Prevailing Torque			
	4. Time ID	24. Step No	43. Peak Drag torque			
	5. Cycle Result	25. Downshift Speed	44. Avg Drag Torque			
	6. Peak Torque	26. Free Speed	45. Total Gang Count			
	7. Torque Result	27. TR	46. Current Gang count			
	8. Torque Units	28. Dual Slope A High	47. Tool Serial Number			
	9. Peak Angle	29. Dual Slope A Low	48. Shutdown Code			
elect All Filter	10. Angle Result	30. Dual Slope B High	49. CP Result			
	11. Peak Current	31. Dual Slope B Low	50. Gradient Result			
	12. Cycle Time	32. Gradient High	51. Dual Slope A Result			
	13. Strategy Type	33. Gradient Low	52. Dual Slope B Result			
	14. Torque High Limit	34. Final Slope	53. Unusual Fault			
	15. Torque Low Limit	35. Torque At Seat	54. Motor Torque Constant Test			
	16. Angle High Limit	36. Angle At Seat	55. Free Speed test			
	17. Angle Low Limit	37. Min Drag Torque	56. Max Tool Speed			
	18. Control Point	38. Peak Slope	57. Total Angle			
	19. Barcode	39. Prevailing Torque Slope				
	NOTE: Some of the above EOR fields are not part of EOR cycle generated by QX Series Tool. For those fields, the default values will be generated.					
	Delimiter criteria to separate each EOR field in the serial EOR Data out message that appears in Serial Port of the IC-PCM 1:1.					
Delimiter	Following are the Delimite "Semi Colon", "Colon".	r criteria available for Serial EOR D	ata out protocol – "Comma", "Space",			

NOTE: Only one Protocol (Barcode/VIN, Serial EOR Data Out, PFCS, PLUS, Label Printing) can be enabled on the serial port at a time.

3.2.3.4 Ethernet EOR Settings Serial EOR Settings:

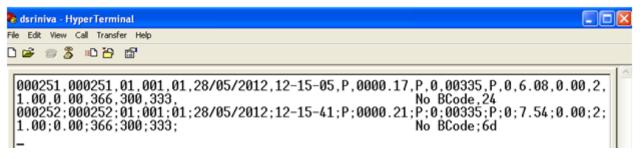
Serial EOR Settings

Serial EOR Settings enables sending of EOR data for every cycle over the Serial port.

Turn OFF IC-PCM 1:1 and set the RED DIP switch 2 to OFF. Connect a serial null-modem cable from IC-PCM 1:1 to the PC. Launch HyperTerminal or other terminal emulation software such as Clear Terminal. Reboot the IC-PCM 1:1. The Generated EOR will be displayed in the serial terminal emulation software.

Example: If the user selects the default settings as shown below from IC-PCM 1:1 General Setup screen, the corresponding EOR will be sent to serial Port. It can then be viewed in HyperTerminal or other terminal emulation software such as Clear Terminal.

Output Positions	
Parameter	Yes/No 🛛 🔺
Cycle No	
Powerhead Cycle No	
Spindle No	
Config No	
Step No	
Date	
Time ID	
Cycle Result	
Peak Torque	
Torque Result	
Torque Units	
Peak Angle	
Angle Result	
Shutdown Code	



Ethernet EOR Settings enables sending of EOR data for each tightening cycle of the tool mapped to selected IC-PCM 1:1 on to the Ethernet standard communication port.

ControllerID 🔶 🛣 10.200.81.226(226) 💙		
Paramset Name Source Network		
etup Data		
rsion Info	Ethernet EOR Settings	
Controller Version		
eneral Settings	Enable Ethernet EOR Port Number	1069 Enable Handsha
Tightening Control Settings		
IO Settings	Coutput Positions	
Local Settings		
Date Time Settings	Parameter	Yes/No 🛛 🔼 🖌
otocol Settings	Cycle No	
Serial Port Settings	Powerhead Cycle No	
Barcode Settings Serial EOR Settings	·	
Ethernet EOR Settings	Spindle No	
PFCS Settings	Config No	
PLUS Settings	Step No	
XML Settings	Date	
Open Protocol Settings	Time ID	 Image: A start of the start of
Label Printing	Cycle Result	
eldBus Settings	Peak Torgue	
Profibus Settings	Torque Result	
InterBus Settings		
DeviceNet Settings	Torque Units	
ModBus RTU Settings	Peak Angle	
ModBus TCP/IP Settings	Angle Result	
Ethernet IP Settings	Shutdown Code	
	Deall Comment	

Enable Ethernet EOR	Ethernet EOR Enables the "Ethernet EOR Data out" protocol for the IC-PCM 1:1 Ethernet port.						
Output Positions List View	Output Positions list view displays all the EOR fields with current status (Yes/No) and order in which EOR Data appears in Ethernet port.						
Yes/No Check Box	Select the Checkbox next to the EOR field to include as the part of the EOR Data Out protocol message on to the Ethernet communication port of the IC-PCM 1:1.						

_

Port No	The Port which is used to output the EOR. By Default ICS sets the Port number to "1069"								
Up/Down Arrow	Order in which EOR fields appear can be changed by clicking on a parameter and using the up/down arrows to right of scroll box.								
	Select All Filter will set the IC-PCM 1:1 to use all EOR fields for EOR Data Out to serial port. Following are the EOR fields and the Order of arrangement.								
	1. Cycle No	8. Torque Units	15. Torque Low Limit						
	2. Config No	9. Peak Angle	16. Angle High Limit						
Default Filter	3. Date	10. Angle Result	17. Angle Low Limit						
	4. Time ID	11. Peak Current	18. Control Point						
	5. Cycle Result	12. Cycle Time	19. Barcode						
	6. Peak Torque	13. Strategy Type							
	7. Torque Result	14. Torque High Limit							
		IC-PCM 1:1 to use all EOR fields for Ids and Order of arrangement whi							
	1. Cycle No	20. Job ID	39. Peak Cut-In Torque						
	2. Config No	21. Powerhead Cycle No	40. Peak Prevailing Torque						
	3. Date	22. Spindle No	41. Avg Prevailing Torque						
	4. Time ID	23. Step No	42. Peak Drag torque						
	5. Cycle Result	24. Downshift Speed	43. Avg Drag Torque						
	6. Peak Torque	25. Free Speed	44. Total Gang Count						
	7. Torque Result	26. TR	45. Current Gang count						
	8. Torque Units	27. Dual Slope A High	46. Tool Serial Number						
	9. Peak Angle	28. Dual Slope A Low	47. Shutdown Code						
Select All Filter	10. Angle Result	29. Dual Slope B High	48. CP Result						
	11. Peak Current	30. Dual Slope B Low	49. Gradient Result						
	12. Cycle Time	31. Gradient High	50. Dual Slope A Result						
	13. Strategy Type	32. Gradient Low	51. Dual Slope B Result						
	14. Torque High Limit	33. Final Slope	52. Unusual Fault						
	15. Torque Low Limit	34. Torque At Seat	53. Motor Torque Constant Te						
	16. Angle High Limit	35. Angle At Seat	54. Free Speed test						
	17. Angle Low Limit	36. Min Drag Torque	55. Max Tool Speed						
	18. Control Point	37. Peak Slope	56. Total Angle						
	19. Barcode	38. Prevailing Torque Slope							
	NOTE: Some of the above EOR fields are not part of EOR cycle generated by QX Series Tool. For those fields, the default values will be generated.								
Delimiter	Delimiter criteria to separate each EOR field in Ethernet EOR Data out message that appears in Ethernet Port of IC-PCM 1:1.								
Deminiter	Following are Delimiter criteria available for Ethernet EOR Data out protocol – "Comma", "Space", "Semi Colon", "Colon".								
	Option provided for Enable	e/Disable Handshaking.							
Enable Handshaking	Enable Handshaking requin Cycles.	Enable Handshaking requires acknowledgement to be sent to IC-PCM 1:1 for each of the EOR Cycles.							
nanusnaking	In case of Disable handshaking, IC-PCM 1:1 will not expect the acknowledgement for every EOR cycles.								

NOTE: IC-PCM 1:1 requires Reboot for any of the Ethernet protocol settings.

3.2.3.5 Ethernet EOR Setup

Ethernet EOR Settings enables sending of EOR data for every EOR over Ethernet port. IC-PCM 1:1 sends EOR to programmed Ethernet port. This can be verified using Ethernet EOR Test Tool.

Ethernet EOR Test Tool Setup:

Click on Option Button. Enter IC-PCM 1:1 IP Address. Click on OK button

• Click on Connect button to IC-PCM 1:1 establishes the communication. Click on Login PREAD and then click on "Standard EOR Act" to view the default EOR Field format.

EthernetEORTestToo	ol (Closed)		
Options		Received Messages	Sent Messages
Connect			
Disconnect		Coptions	
Login PREAD		Options	
Login PWRITE		Set IP Address of Insight IC to Connect To Set Host Name	•
Login Invalid PWord		10.200.80.253	CS USER
Standard EOR Act.		10.200.00.203	US USEN
Standard EOR Deact.			
Custom EOR Act.		Set PREAD and PWRITE Passwords	
Custom EOR Deact.		PREAD Password INSIG	GHTREAD
Send Custom Cmd.	SES02A180	PWRITEPassword	GHTWRITE
Responses	Messages To		
Delay (In Secs) 0	ACKs	Other Items	
O No Response	T NACKs	Idle Timeout 10	
Respond with ACKs	🔲 Keep Alive	Set Log File C:\Documents and Sett	tings\dsrinivasan\De:
Respond with NACKs	🔲 Log Messa		
Disconnected			OK Cancel 5/9/2012 11:14 AM

 IC-PCM 1:1 sends Received EOR data to programmed Ethernet port in Standard EOR Format which can be viewed in the Ethernet EOR test tool.

а,	EthernetEORTestToo	l (Connected)	
	Options	Received Messages	Sent Messages
	Connect	SES02U1500000000	SES02A170000000
ſ	Disconnect	SES020130000000	SES02A160000000
	Login PREAD	SES02U130000000 SES02U120000000 SES02U110000000	SES02A150000000 SES02A140000000 SES02A130000000
	Login PWRITE	SES02U100000000	SES02A120000000
	Login Invalid PWord	SES02U9900000000 EOR04U0800000282000205,001,09/05/2012,11-05-52,P,0 000.25,P,0.00113,P,8.78,0.00,2,1.00,0.00,122,100,1	SES02A1100000000 SES02A1000000000 SES02A0900000000
ſ	Standard EOR Act.	11, No BCode,1050,0	EOR04A080000000
	Standard EOR Deact.	00205,01,01,0.00,0.00,0.00,0.00,0.00,0.00,0	SES01A0900000000 EOR02Q01000000011 SES01A0900000000
	Custom EOR Act.	E0R02A010000000	SES01Q090000027ICS,ICS USER,INSIG
	Custom EOR Deact.	SES01R090000027DM,RO,Insight DM Controller SES03A080000000	HTREAD,10 EOR03A0700000000
	Send Custom Cmd.	SES02A170000000	Current Options (Read Only)
- F	Responses		IP Address 10.200.80.253
		Messages To Filter (Do not display)	Host Name ICS USER
1)elay (In Secs) 0	🗖 ACKs 🦷 Login Response	Idle Timeout 10
(🔿 No Response	MACKs	PRead Password INSIGHTREAD
(Respond with ACKs	☐ Keep Alives	PWrite Password INSIGHTWRITE
(C Respond with NACKs	Log Messages To File Split The Log File	Exit
Dis	connected	EOR State : Custom EOR	5/9/2012 11:13 AM

To view the Customized EOR fields, click on "Customer EOR Act". IC-PCM 1:1 sends EOR data to programmed Ethernet port in Customized EOR Format which can be viewed in the Ethernet EOR test tool.

NOTE: If standard EOR act is activated then deactivate by clicking on "Deactivate Standard EOR Act" button and Click on "Customer EOR Act".

3.2.3.6 PFCS Settings

PFCS Settings gives ability to program the settings to communicate between Plant Floor Communication System (PFCS) and IC-PCM 1:1. The PFCS interface acquires EOR Cycle Data and sends it to their system for acquisition, archiving and analysis purposes.

🖬 PCM General Setup - 1				
ControllerID 🚊 10.200.81.226(226) 💌				
Paramset Name Source Network				
Setup Data				
Version Info				
Controller Version				
General Settings				
Tightening Control Settings	Enable PFCS			
IO Settings				
Local Settings				
Date Time Settings	Maximum Retries	3		
Protocol Settings	Maximum Retries			
Serial Port Settings				
Barcode Settings	KeepAlive Timeout	120		
Serial EOR Settings Ethernet EOR Settings				
PFCS Settings		5		
PLUS Settings	Ack Timeout			
XML Settings				
Open Protocol Settings	Turco	Solicited Ethernet 🛛 🗸		
Label Printing	Туре			
FieldBus Settings		0.0.0.0		
Profibus Settings	IP Address	0.0.0.0		
InterBus Settings				
DeviceNet Settings		16101		
ModBus RTU Settings	Port			

Enable PFCS	Enables "PFCS" protocol on to the IC-PCM 1:1 Ethernet port.					
Maximum Retries	Maximum Retries Maximum number of retries for each message.					
Keep Alive timeout	imeout Keep alive timeout (0-9999) is the timeout value for the Keep alive message to the PFCS Serve					
ACK Timeout	Timeout value for receiving the reply from PFCS server.					
Туре	IC-PCM 1:1 can communicate with PFCS server using Serial/Ethernet.					
IP Address	IP address of PFCS Server					
Port	Port number to communicate with PFCS Server.					

3.2.3.7 Communication via Serial:

- 1. Enable PFCS and select Type as Serial for IC-PCM 1:1 using ICS Application (Refer ICS Manual).
- 2. Connect Serial port cable from the IC-PCM 1:1 to the machine where PFCS in running.
- 3. Select appropriate serial Port number and establish a connection from PFCS Server to the IC-PCM 1:1.

NOTE: Make sure serial port cable is connected between IC-PCM 1:1 and system where PFCS protocol is running.

3.2.3.8 Communication via Ethernet:

- 1. Enable PFCS and select Type as Ethernet for IC-PCM 1:1 using ICS Application (Refer ICS Manual).
- 2. Reboot the IC-PCM 1:1 after 30 seconds.
- 3. Establish a connection from PFCS Server to IC-PCM 1:1.

NOTE: Make sure Ethernet port (RJ45) is connected.

3.2.3.9 PLUS Settings

Plus Settings gives ability to program the settings to communicate between PLUS server and IC-PCM 1:1 The PLUS interface is used to control and acquire EOR Cycle Data and send it to their system for acquisition, archiving and analysis purposes.

🖻 PCM General Setup - 🕯	1										
Controller ID	10.200.82.33(1)										
Paramset Name	Source	Netv	vork	Date	e-TimeStamp		~				
Setup Data			PLUS Se	ettinas —							
Version Info Controller Version			🔽 Enab				🔄 Fail Gro	ID.			
General Settings Tightening Control Setl	tings							-1-			
IO Settings	tings			P Address	127 .	0.0.1	Port			5002	
Local Settings Date Time Settings				-l- T it	120		System ID				
Protocol Settings Serial Port Settings			EUR Cy	cle Timeout			System 15				
Barcode Settings Serial EOR Settings			Retry C	ount	3		Retry Interv	/al		15	
Ethernet EOR Settings			CheckPa	viet ID	0000		Technical Att	ribute Tim	neout	15	
PFCS Settings PLUS Settings			CHECK	500 C 125							
XML Settings Open Protocol Settings	;										
Label Printing FieldBus Settings				Mode							
Profibus Settings											
InterBus Settings DeviceNet Settings					Bolt D	escription	Technic	al Attribu	ite		
ModBus RTU Settings ModBus TCP/IP Setting	js				Identifi	ation Type	Corfe	- Setting			
Ethernet IP Settings					Literion	ation Type	Conn	g Settings	·]		
	Enables the "PLUS" p	orot	tocol	on to th	ne IC-PCM	1:1 Ethernet	port.				
Enable PLUS	NOTE: PLUS also use	s tł	ne Ser	ial Port	settinas fo	or reading Bar	code infor	matior	n. An	v other serial	
			the Serial Port settings for reading Barcode information. Any other serial rogrammed for serial port settings will not allow enabling the PLUS Protoc								
Server IP Address	IP address of PLUS S				•						
Port	Port number to com	mu	unicat	te with	PLUS Serv	er.					
EOR Cycle Time Out	The timeout value for	or a	all bol	ts to be	complete	ed for the par	t before th	ie asse	embl	y is aborted a	and
-	the results sent to th			-							
System ID	The user specified sy										
Retry Count		ber of times to retry a message before resetting communications.									
Retry Interval		e to wait between message retries. checkpoint identification.									
Check Point ID Technical Attribute	The user specified ci	nec	кроп	nt ident	incation.						
Timeout	Technical Attribute	Гim	eout	sets tin	neout bet	ween a Reque	est/Replay	for Te	chnie	cal Attributes	5
VBA Mode	Setting this value pu	ıts	the P	LUS into	o an asvno	hronous mo	de.				
	Bolt Description allo							loccrin	otion	for each hol	tno
	Done Description and		•	-	-		g the bolt o				110
		Bo	olt Des	cription				×			
			Jo	b Number	Bolt Number	Bolt Description	Safety Bolt	~			
Bolt Description											
								~			
				elete Row			⊆ancel				
	1		_								

	Technical Attrik	oute allows	openin	g the Di	alog box fo	or entering	all the techn	ical Attri	bute		
	Job Lookup										
Technical Attribute		Job Num	ber	Techni	nnical Attribute						
		Delete	Row	(<u>0</u> K		<u>C</u> ancel				
	Identification T			g the Dia	alog box fo	or selecting	three fixed lo	lentificat	ion Type		
	to determine th	ne message Identificatio						X			
		Select	Ident T		Туре	Trim Right	Trim Left				
		Boloce	Ident	DAL .	Type	miningit	mintere	-			
								_			
Identification Type								_			
								_			
								-			
		<					<u> </u>				
	Config Settings			<u>D</u> elete	hov for S				nd		
	entering next C count which is	Configuratio	on numl	ber in th	e auto inc	rement chai	n and corres				
			Settings		.ca comg						
		Co	nfig Numbe	er N	lext Config No	Gang Co	unt				
		_									
Config Settings		_									
		De	lete Row			<u>o</u> k	Cancel				

3.2.3.10 XML Settings

XML Settings enable's the IC-PCM 1:1 to communicate with the SPS/PC Master server and sends the EOR results in the XML format.

Controller ID 🧟 1	0.200.82.66(8266)					
Paramset Name	Source	Network	Date-Time Stamp	*		
Setup Data]				
Version Info		XML S	Settings			
Version						
General Settings			Enable XML Settings			
Tightening Control Setting:	5					
IO Settings						
Date Time Settings						
Protocol Settings			XML Server IP Address	192 . 168 . 4 . 10		
Serial Port Settings						
Barcode Settings			Server Port	4700		
Serial EOR Settings			Server Ford	1700		
Ethernet EOR Settings						
PFCS Settings			Client Port	4710		
PLUS Settings XML Settings						
Open Protocol Settings		Maximum Number of Retries 3				
Label Printing						
FieldBus Settings				Law .		
Profibus Settings			Retry Interval	7		
InterBus Settings						
DeviceNet Settings				7		
ModBus RTU Settings			Keep Alive Interval			
Ethernet IP/Modbus TCP						

Enable XML	Enables "XML" protocol on to IC-PCM 1:1 Ethernet port.			
Server IP Address	IP address of the SPS/PC Master XML Server			
Server Port	Server Port number to communicate with SPS/PC Master.			
Client Port	Client Port number for IC-PCM 1:1 to communicate with SPS/PC Master.			
Maximum Number Of Retries	Maximum number of retries for each message.			
Retry Interval	Time interval between each retries.			
Keep Alive Timeout	Keep alive out (0-9999) is timeout value for Keep Alive message and SPS/PC Master Server.			

3.2.3.11 XML setup using IC-PCM 1:1

The XML protocol communicates with an XML master control system, (SPS), as described in the VW XML Interface. doc. The communication between master (PC I SPS) and Slave (PCM) is done based on TCP/IP-Protocol family via TCP-Sockets.

- Two communication channels exist with their own Ports A and B that can be set by ICS software. The master acts as the Client for checking the IC-PCM 1:1 (Port A) and sends corresponding commands to a server process of the IC-PCM 1:1. The IC-PCM 1:1 sends event- controlled messages and process data (Port B) to a server process of the master. The preset standard values for the port numbers are 4700 for Port A and 4710 for Port B. Enable XML protocol in the XML settings screen
- Set Configuration Selection Mode to External Ethernet in the Tightening Control Settings screen
- Using Aton software, connect the master to the network
- Select subscribe to EOR from the master
- View EOR data from the IC-PCM 1:1

3.2.3.12 Open Protocol Settings

Open Protocol Settings provides the ability to communicate between Open Protocol server and IC-PCM 1:1 to acquire EOR or Cycle Data and send it to their system for acquisition, archiving and analysis purposes.

The Open Protocol is defined in detail in the OpenProtocol_W7_7.0 specification.

PCM General Setup - 1										
ControllerID	ControllerID 🔶 10.200.81.226(226) 💌				~					
Paramset Name		~	Source	Network]				
Setup Data										
Version Info						Open Protocol Settings	;			
Controller Ver:	sion									
General Settings					-11					
Tightening Co	ntrol Settings				-11	Enable Open Protocol Settings				
IO Settings				-11						
Local Settings Date Time Settings				-11						
Protocol Settings	ungo					Server IP Address 192 . 168 . 4 . 10				
Serial Port Settings										
Barcode Settings										
Serial EOR Set					-11	Listening Port 4545				
Ethernet EOR					-11					
PFCS Settings					-11					
PLUS Settings XML Settings				-11	Maximum N	lumber of Retries	3			
Open Protocol Settings										
Label Printing										
raldo a cassa a								5		

Enable Open Protocol Settings	Enables the "Open" protocol on to IC-PCM 1:1 Ethernet port.	
Server IP Address	IP address of Open Protocol Server.	
Listening Port	Port number to communicate with Open Protocol Server.	
Maximum Number Of Retries	Maximum number of retry if Request is failed	
Retry Interval	Time interval between each retries.	

NOTE: Option should be set to External Ethernet for IC-PCM 1:1 to communicate with Open Protocol Server.

3.2.3.13 Open Protocol Setup

- 1. Setup the open protocol connection for the IC-PCM 1:1 from ICS.
- 2. Assign Protocol Online output to any of outputs using Assign I/O configuration in ICS.
- 3. Make sure Open protocol client is running at the port setup in the configuration.
- 4. Protocol Online Output should be set if connection is successful with the client.

NOTE: Make sure Ethernet port (RJ45) is connected.

3.2.3.14 Label Printing Settings

The Label Printing Feature enables IC-PCM 1:1 to print the EOR data. Once EOR data received from tool, it is then formatted and sent to serial port of IC-PCM 1:1 to which printer connected.

🗖 PCM General Set	up - 1						
ControllerID	Controller ID 🚖 10.200.81.226 (226) 💌						
Paramset Name	~	Source	Network				
Setup Data							
Version Info				 Label Printing 			
Controller Versio	n						
General Settings	1				nable La	Label Printing	
Tightening Contr	ol Settings						
	IO Settings						
Date Time Settin	Local Settings						
Protocol Settings	ys						
Serial Port Settin	ins.						
Barcode Settings							
Serial EOR Settin							
Ethernet EOR Se							
PFCS Settings	-						
PLUS Settings							
XML Settings	XML Settings						
Open Protocol Se	ettings						
Label Printing							
FieldBus Settings							

The IC-PCM 1:1 will have settings for Header, Data and Footer information that will be printed on the label. There are two things that must be present in the IC-PCM 1:1 in order to use the label printer feature.

- status.txt (printer communications is defined in this text)
- body.txt (The label format is defined in this text)

NOTE: At a time only one Protocol (Barcode/VIN, Serial EOR Data Out, PFCS, PLUS, Label Printing) can be enabled on the serial port.

3.2.3.15 Printer Connections and Setup for IC-PCM 1:1

- The IC-PCM 1:1 supports serial printers for printing EOR (End of Run) data.
- Connect the printer via a standard 9-pin serial cable to a serial port of the IC-PCM 1:1.
- Using ICS application, program the IC-PCM 1:1 serial port settings to match settings on the serial printer.
- Enable the Label Printing Protocol for the IC-PCM 1:1
- Make sure the necessary files are saved in the IC-PCM 1:1 for printing Header/ Data/ Footer sections. For more information, refer IC-PCM 1:1 General Setup manual.
- Turn on the printer.
- Run a tightening cycle and verify that tightening result is being printed.

3.2.4 FieldBus Settings

3.2.4.1 ProfiBus Settings

Profibus is an industrial fieldbus used primarily for I/O and controls. The IC-PCM 1:1 can come equipped with this slave card. The IC-PCM 1:1 can be controlled via this device as well as provide end of run status and torgue and angle results.

🗖 PCM General Set	up - 1		
ControllerID	20.200.81.226(226)		
Paramset Name	Source Network		
Setup Data			
Version Info		Profibus Settings	
Controller Versio	n		
General Settings			
Tightening Contr	rol Settings	FieldBus Enabled	FieldBus Control
IO Settings			Theidbas Condion
Local Settings			
Date Time Settin	igs	Node Address	0
Protocol Settings		Node Address	
Serial Port Settin			
Barcode Settings Serial EOR Settin			
Ethernet EOR Securi			
PFCS Settings	scongs		
PLUS Settings			
XML Settings			
Open Protocol Se	ettings		
Label Printing	-		
FieldBus Settings			
Profibus Settings			
InterBus Setting	s		
	This enables fieldbus opera	itions for IC-PCM 1:1.	
eld Bus Enabled	Output signals will be sent		
eld Bus Control		IC-PCM 1:1 by allowing the field	dbus master to set I/O

Node Address Each IC-PCM 1:1 on the fieldbus network needs to have a unique address.

3.2.4.2 InterBus Settings

InterBus is an industrial fieldbus used primarily for I/O and controls. The IC-PCM 1:1 can come equipped with this slave card. The IC-PCM 1:1 can be controlled via this device as well as provide end of run status and torque and angle results.

🖬 PCM General Setup	- 1			
ControllerID	🚊 10.200	.81.226(2	26) 🔽	
Paramset Name	~	Source	Network	
Setup Data			[
Version Info				Interbus Settings
Controller Version				
General Settings				
Tightening Control S	Settings			
IO Settings				FieldBus Enabled FieldBus Control
Local Settings				
Date Time Settings				
Protocol Settings				
Serial Port Settings				
Barcode Settings				
Serial EOR Settings Ethernet EOR Settin				
PFCS Settings	iys			
PLUS Settings				
XML Settings				
Open Protocol Settin	nas			
Label Printing	.95			
FieldBus Settings				
Profibus Settings	-			
InterBus Settings				
DeviceNet Settings				
	This ena	ables th	e fieldbus	s operations for IC-PCM 1:1
Field Bus Enabled	Output	signals	will be se	nt to the fieldbus master

Field Bus Control This enables control of the IC-PCM 1:1 by allowing the fieldbus master to set I/O.

3.2.4.3 Devicenet Settings

DeviceNet is an industrial fieldbus used primarily for I/O and controls. The IC-PCM 1:1 can come equipped with this slave card. The IC-PCM 1:1 can be controlled via this device as well as provide end of run status and torque and angle results.

ControllerID	200.8	32.66(8266) 🛛 🎽				
Paramset Name		Source	Network	Date-TimeStamp	~	
Setup Data		Í				
Version Info			Devic	eNet Settings		
Version						
General Settings						
Tightening	Control Settings			FieldBus Enabled	FieldBus Control	
IO Settings	1					
Date Time 1	Settings				12	
Protocol Settings				Node Address	21	
Serial Port	5ettings			Node Address		
Barcode Se	ttings					
Serial EOR	Settings			Baud Rate	500	
Ethernet E	OR Settings			bauu kate		
PFCS Settir	igs					
PLUS Settin	gs					
XML Setting	IS					
Open Proto	col Settings					
Label Printi	ng					
FieldBus Settings						
Profibus Se						
InterBus Se						
DeviceNet						
ModBus RT						
Ethernet IF	/Modbus TCP					
Bus Enabled	This enables the	e fieldbus operat	ions for IC-I	PCM 1:1.		
	Output signals	will be sent to th	ne fieldbus i	master		
Bus Control	This enables co	ntrol of the IC-PC	CM 1:1 by al	lowing the fieldbus mas	ster to set I/O.	

Node Address	Each IC-PCM 1:1 on Fieldbus network needs to have a unique address.
Baud Rate	This is the DeviceNet communication speed. Following are baud rate which can be used - 110, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 76800, 115200.

3.2.4.4 Modbus RTU Settings

ModBus RTU is an industrial fieldbus used primarily for I/O and controls. The IC-PCM 1:1 can come equipped with this slave card. The IC-PCM 1:1 can be controlled via this device as well as provide end of run status and torque and angle results.

ControllerII) 🔶 10.20	0.82.66(8266) 🔽			
Paramset Nam	э	~	Source	Network	Date-TimeStamp	~
Setup Data]		
Version Info				Ethern	et IP/Modbus TCP	
Version						
General Settings						
Tightenin	g Control Settings				FieldBus Enabled	FieldBus Control
IO Settin						
Date Time	A solution of the solution of					
Protocol Settings					IP Address	127 . 0 . 0 . 1
Serial Por						
Barcode S						
	R Settings			SubNet Mask	255 . 255 . 255 . 0	
Ethernet EOR Settings						
PFCS Set PLUS Set						255 . 255 . 255 . 1
XML Setti					Gateway	
	tocol Settings					
Label Prin						
FieldBus Settings						
Profibus S						
InterBus						
DeviceNe						
ModBus R	TU Settings					
Ethernet	IP/Modbus TCP					
Bus Enabled	This enables th Output signals					

Node Address	Each IC-PCM 1:1 on the fieldbus network needs to have a unique address.
Baud Rate	This is the ModBus RTU communication speed. Following are the baud rate which can be used- 110, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 76800, and 115200.
Parity	Select the Parity for the serial connection to None, Odd, or Even from the drop box list.

3.2.4.5 Modbus TCP/IP/Ethernet IP Settings

ModBus TCP/IP and Ethernet IP are industrial fieldbus used primarily for I/O and controls. The IC-PCM 1:1 can come equipped with this slave card. The IC-PCM 1:1 can be controlled via this device as well as provide end of run status and torque and angle results.

🖬 PCM General Setup - 1			
Controller ID 🚖 10.200.81.226(226) 💌			
Paramset Name Source Network			
Setup Data			
Version Info	ModBus RTU Settings		
Controller Version			
General Settings			
Tightening Control Settings	FieldBus Enab	led FieldBus Control	
IO Settings			
Local Settings			
Date Time Settings	Node Address 0	0	
Protocol Settings			
Serial Port Settings			
Barcode Settings	Baud Rate	110 💙	
Serial EOR Settings			
Ethernet EOR Settings		None	
PFCS Settings	Parity	None	
PLUS Settings			
XML Settings Open Protocol Settings			
Label Printing			
FieldBus Settings			
Profibus Settings			
InterBus Settings			
DeviceNet Settings			
ModBus RTU Settings			
ModPus TCD/ID Softings			

Field Bus Enabled	This enables the fieldbus for IC-PCM 1:1		
riela dus Enablea	Output signals will be sent to the fieldbus master.		
Field Bus ControlThis enables control of the IC-PCM 1:1 by allowing the fieldbus master to set I/O.			
IP Address Enter the IP Address of the ModeBus TCP/IP fieldbus device in a computer network.			
Subnet Mask A range of logical addresses within the address space that is assigned to an organizat			
Gateway	Gateway is a node on a computer network that serves as an access point to another network		

3.3 Parameter Assignment

The Parameter Assignment Screen allows the user to assign any saved Configuration and/or General Parameter set to the tool connected to USB and IC-PCM.

This screen also allows the user to edit the General Parameter settings of the IC-PCM 1:1 or Send a saved General Parameter Set to the IC-PCM 1:1.

This screen works in the network mode only. The left side of the screen shows all the devices (IC-PCM 10:1 and assigned (mapped) tools, IC-PCM 1:1 and mapped tools, and tools connected to USB) connected to the network.

Expanding a IC-PCM 1:1 node will display the "General Params" node and a node for the mapped tool. Expanding the tool, Location ID node will display the "General Params" node and the "Configs" node for the mapped tool. Expanding the "Config" node will display a node for each of the 8 allowable Configurations.

Expanding a IC-PCM 10:1 node will display all the tools mapped to the IC-PCM 10:1. Expanding each tool, Location ID node will display the "General Params" node and the "Configs" node. Expanding the "Config" node will display a node for each of the 8 allowable Configurations.

Expanding the USB Direct Tool will display the "General Params" node and the "Configs" node. Expanding the "Config" node will display a node for each of the 8 allowable Configurations.

The upper right half of the screen displays a list of General Parameter Sets for IC-PCM 1:1 stored in the Local Database that can be sent to a IC-PCM 1:1. The lower right half shows the available General Parameter Sets stored in the Local Database that can be sent a tool.

The middle section of the screen displays the Configuration Sets stored in the Local Database that can be sent to a tool.

Image: Weight of the second		Configurations	General Setup For IC-PCM 1:1
	arams	sdf	dfdsf
			General Setup for QX
*1	Button used to send Configuration	s to a tool that is connected to L	ISB or IC-PCM.
わ	Button used to send General Param	neters to a IC-PCM 1:1 or to a too	l.
Ģ	Button used to refresh the screen.		
Source Network	Field indicates type of mode, which	is always Network for this scree	n.

The stored General Parameters can be assigned to the "General Params" node of any IC-PCM 1:1 or tool by a simple drag-and-drop operation. Similarly, Configuration Sets can be assigned to any "Configuration number" node of a tool by drag-and-drop operation.

The color conventions for "General Params" nodes and "Configuration Number" nodes are as follows:

Green indicates that General Parameters and Configuration Parameters are already programmed and have not been modified.

Yellow indicates that the General Parameters or Configuration Sets are currently programmed, but have been updated, either by a Drag-and-Drop operation or by double clicking on the set and making changes.

Red indicates that the Configuration Set was initially not programmed, but a Configuration Set has been assigned by a Drag-and-Drop operation.

White indicates that the Configuration Set is not programmed.

General Parameters or Configuration Sets can be viewed by double clicking on the corresponding node.

Double clicking on the "Configuration Number" node opens the Tightening Configuration Setup screen which can then be viewed and/or edited. Double clicking on the "General Params" node of a tool opens the Tool General Setup screen which can then be viewed and/or edited. Double clicking on an IC-PCM 1:1 General Setup node opens the IC-PCM 1:1 General Setup screen which can then be viewed and/or edited.

From the Parameter Assignment screen, Configurations can also be unassigned from any tool. For any programmed Configuration, right click on the "Configuration Number" node. A float box with an "Unassign Config" option will be created. Selecting this option removes the Configuration from the tool.

3.4 Wireless Tool Settings

This screen gives the ability to view all the IC-PCMs available in the network and also gives the connection status of the tools mapped to each IC-PCM.

If a tool logs in successfully, this screen displays the current versions of display, MCE, and radio firmware as well as device type icons changed to represent the tool type.

All connected IC-PCMs will have a row entry in this screen which displays Job id, IP address, Ethernet MAC address, RISC Version, Radio versions of the two primary and secondary radio modules, and Primary and Secondary radio MAC addresses.

;											
Device Type	Job ID	IP Address	Ethernet Mac	RISC Version	Primary Radio Version	Secondary Radio Version	Primary Radio MAC	Secondary Radio MAC	Location ID	Display Version	MCE Versi
÷.	1111	10.200.82.33	00:02:31:FF:FF:04	16.D.1.0.0.0	0.0.101.00	0.0.101.00	00:00:00:09:00:00:00:01	00:00:00:09:00:00:00:02			
÷									010:0	0.0.0.0	0.0.0.0
-									010:1	0.0.0.0	0.0.0.0
-									010:2	0.0.0.0	0.0.0.0
									010:3	0.0.0.0	0.0.0.0
									010:4	0.0.0.0	0.0.0.0
									010:5	0.0.0.0	0.0.0.0
									010:6	0.0.0.0	0.0.0.0
*									010:7	0.0.0.0	0.0.0.0
1									010:8	2.0.4.72	1.0.4.80
									010:9	0.0.0.0	0.0.0.0

Following table gives brief description of each field available in screen.

Device Type	This field indicates type of tool.				
Job IDJob ID of the IC-PCM. Job ID is a four-digit entry that represents location identifi assembly line. Each IC-PCM must have a unique number for identification on ne					
IP Address	IP Address of the IC-PCM				
Ethernet Mac	Mac Address of the IC-PCM				
RISC Version	Displays current IC-PCM RISC version				
Primary Radio Version	Displays the current version of the primary radio firmware.				
Secondary Radio Version Displays the current version of the secondary radio firmware.					
Primary Radio MAC Displays the MAC address of the primary radio module.					
Secondary Radio MAC	Displays the MAC address of the secondary radio module.				
Location ID	Location ID of the tool. Each tool must have a unique number for identification.				
Display Version	Current Tool Display version				
MCE Version	Current Motor control version				
Wireless version	Current Tool Radio version				

3.4.1 IC-PCM Settings

User can edit the IC-PCM network settings. To change/view the settings double click on respective IC-PCM on Wireless settings.

Sync Time button is used to set the current system Date and Time to IC-PCM.

Ethernet Settings		Radio Settings	SNTP Settings
Ethernet MAC Address	00:02:32:00:00:01	Pan ID 2345 RF Channel 1	16 SNTP Enabled
IP Address	10 , 200 , 82 , 254	Transmit Power 4 💙 RF Channel 2	24 Server IP 192 , 168 , 4 , 1
Default Gateway	10 . 200 . 80 . 1	Local Settings	Port No 123
Subnet Mask	255 . 255 . 252 . 0	System Name Viper PCM	Update Interval 24
DHCP Enabled		Job ID 2254	
Mapped Tool Settings Location ID 999:9	Location ID Update Delete	Enable Channel Hopping Av. Secondary Channel Settings Cr. Scan Interval 5 Noise Threshold 10 Scan Time/Channel 1	actable Radio Channels ailable Channels an 11 an 12 an 13 an 14 an 15 an 16 an 17 an 18 an 19 an 20 extend Channels >> selected Channels >> extend Channels >> extend Channels extend Channels

This IC-PCM Settings dialog box has the following Settings.

- 1. Ethernet Settings
- 2. Radio Settings
- 3. SNTP Settings (Applicable only for IC-PCM 1:1)
- 4. Channel Hopping Settings
- 5. Mapped Tool Settings
- 6. Selectable Radio Channels
- 7. Local settings

3.4.1.1 Ethernet Settings

This section has the Network Settings. User can edit/view the following controls under Ethernet Setting group.

Ethernet MAC Address Network Mac ID of IC-PCM, which is read only.			
IP Address	IP Address of the IC-PCM. If DHCP is disabled then the user can set the IP Address.		
Default Gateway	Gateway is a node on a computer network that serves as an access point to another network.		
Subnet Mask	A range of logical addresses within the address space that is assigned to an organization.		

DHCP (Dynamic	If DHCP is enabled the IC-PCM acquires the IP Address dynamically from the Network.
	If DHCP is disabled then the user has to enter the IP Address manually. It must be unique across
Protocol)	the system.

NOTE: The changes of Ethernet settings require reboot of IC-PCM and changes take place only after the reboot has completed .

3.4.2 Radio Settings

The Radio setting is used to set the settings of the Radio Module for establishing the wireless communication between IC-PCM and the mapped tool.

Pan ID	The 5 digit number which is used to uniquely define a PAN (Personal Area Network) number. Based on PAN ID, devices choose the radio network for communication.				
RF Channel 1	Primary Radio channel is responsible for all communication. The set of available channels are from 11 to 25.				
RF Channel 2	Secondary Radio channel scans energy levels of the available channels. This is to keep track of the best available channels for communication with the tool.				
	If channel hopping is enabled, communication switches to the best available channel.				
Transmit Power	Lets to select the transmit power level up to 4 dBm based on radio environment.				
	NOTE: For Channels 11 and 12, only transmit power levels of 0 and 1 are available.				

NOTE: The IC-PCM Radio settings must match with the Tool Radio Settings to establish the communication with the tool.

3.4.3 SNTP Settings

The SNTP settings are applicable only for IC-PCM 1:1.

Enabled	Lets the time to be set via an SNTP server.	
Server IP	SNTP Server IP Address.	
Port No	SNTP Server port number	
Update Interval	Time interval to update the local time from the SNTP server.	

NOTE: The changes of SNTP settings require reboot of IC-PCM 1:1 and changes takes place only after the IC-PCM 1:1 reboots.

3.4.4. Channel Hopping Settings

The Radio settings allow establishing the wireless communication between IC-PCM and the mapped tool.

3.4.4.1 Secondary Channel Settings

These settings are specific to secondary radio channel.

Noise ThresholdThreshold Noise %, where secondary channel will switch.Scan Time per channelTime to scan each channel	
Noise Threehold	Threehold Naise 0/, where exceedence down above all will switch
Scan Interval	The secondary channels starts scanning of the energy levels of the channel. This interval is in minutes.

3.4.4.2 Selectable Radio Channels

User can select set of channels from the Available Channels list. User can select one channel or all channels from Available Channel list.

3.4.4.3 Mapped Tool Settings

User can Add, Edit or Delete the tool location id to the tool map of the IC-PCM.

The tool must be mapped to the IC-PCM 1:1 in order for any communications to take place. Only one tool can be mapped to IC-PCM 1:1. Only one tool can be mapped to IC-PCM 1:1.

Any change in the IC-PCM 1:1 tool map requires clearing the cycle log of the IC-PCM 1:1 for data consistency. If the tool map is modified the IC-PCM 1:1 prompts the user with the Clear Cycle Log request. The tool map change request will be sent only upon clearing the IC-PCM 1:1 cycle log data.

For the IC-PCM 10:1, a maximum of 10 tools can be mapped.

3.4.4.4 Local Settings

This lets the user to assign/view the system name and location id to the IC-PCM.

3.5 Download Software

The Download Software screen allows the user to download "Display", "MCE", and "Wireless Radio" firmware to the tool connected via USB. This screen can also be used to download PCM "RISC" software and PCM "Wireless Radio" firmware to a selected IC-PCM.

Controllers	2		×	
Device Type		Firmware Type		
	USB Tool	MCE		
	PCM	O Display		
		Radio	Tables and the call	
			Tool/Controller Sele	ction List
Files to Download				
		Browse	_ Selected File List	

Device Type Drop Box	Select the type of device for the download operation such as USB/ IC-PCM. The device of the selected type presently on the network is displayed in the Tool/ IC-PCM Selection List below.				
Tool/Controller Selection List	Select the Tool/IC-PCM for download operation by checking in the associated check box.				
Browse Button	Opens a file browser dialog to select the file to be downloaded. Choose the RISC/Radio firmware for IC-PCM or MCE/Display/Radio firmware files for the tool connected to USB.				
Files to Download	File selected from File Browser Dialog is displayed.				
Selected File List	File selected to be downloaded is displayed.				
Start Button	Starts downloading on user confirmation.				
Close Button	Closes the Download Software screen.				
Clear IC-PCM Data	Clears the setup and data files on the selected IC-PCM. The IC-PCM must be rebooted after this operation.				

3.5.1 Download firmware Procedure for the Tool Connected to USB

3.5.1.1 MCE Firmware

This Firmware runs on the Motor Controller Electronics (MCE) module of the tool.

- 1. Select the device type as "USB Tool" from the dropdown list and select the Firmware Type as "MCE".
- 2. Select the tool location ID check box.

Controllers Device Type	USB Tool 1	Firmware Type MCE Display Radio
✓105:0		
Files to Download		
		Browse

3. Browse the file "qx_mce.out" to download the MCE firmware.

NOTE: By default all the Firmware files can be found in the ICS install path\Others folder. An Error Message will prompt the user in case of an Invalid File selection.

	Download Software		- <u>i</u> -
Select Files	Controllers.	Annan Tan	x
Look in:	Motor_Controller	- 🕝 🌶 📂 🖽 -	
Am	Name	Date modified	Туре
Recent Places	dx_mce.out	4/10/2012 12:30 AM	OUT File
Desktop Libraries Computer			
	•		•
Network	File name: qx_mce.out		Select
Network	Files of type: Download MCE File		Cancel

- 4. Click start button to start the MCE firmware downloading process to the tool. A message will prompt the user for confirmation.
- 5. Click Yes button of the message box.

	USB Tool	~	MCE Display Radio
✓ 105:0			(<u>.</u>
ICS			X
	QX. The normal oper	ration of I	vnload. Do You Want to
	Yes		0

6. At the end of the download process, ICS prompts with "Tool Wake up" Message.

	Download Software
_	Controllers Device Type USB Tool Firmware Type MCE
Do	wnloading
d	Download progress
	File Location ID Progress
	C:\PCM_LOAD\TOOL 105:0 Downloading
2	ICS Wake up MCE (Pull the Trigger) then Click OK OK
	Clear IC-PCM Data Start Close

7. Wake up the tool (pull the trigger) and then click OK button of the message box to complete the download process. **NOTE:** Waking up the tool is essential because the MCE can go into sleep mode during the firmware download, it is required that the MCE be in an active state to complete the download process.

	Controllers Device Type	USB Tool 💌	Firmware Type	
ownlo	ading		⊙ MCE	
	oad progress			
File C:\P	CM_LOAD\TOOL	Location ID 105:0	Progress Completed	
				lose

- The tool reboots immediately after sending the "Wake up" message.
 The Display will show the Ingersoll Rand logo and the LEDs will blink for 2 3 minutes until it has completed the internal loading process.
- 9. Restart the tool after the tool reboots successfully. The uploaded MCE version can be viewed on the wireless setting screen once ICS has successfully logged into the tool.

3.5.1.2 Display Firmware

This Firmware runs on the display module of the tool

1. Select the device type as "USB Tool" from the dropdown list and select the Firmware Type as "Display".

🗌 Download Softwa	re				X
Controllers	USB Tool	~	Firmware MCE Displa		
105:0					
Files to Download -				Browse	
Clear IC-PCM I	Data	St	art	Close]

2. Select the tool location ID check box.

🗖 Do	ownload Softwa	are			D
	Controllers Device Type	USB Tool	~	Firmware 1 O MCE O Display Radio	
	✓ 105:0				
	Files to Download]		Browse
			_		
	Clear IC-PCM	Data	St	art	Close

Browse to the file "qx_display.hex" to download the Display firmware.
 NOTE: By default all the Firmware files can be found in the ICS install path\Others folder.
 An Error Message will prompt the user in case of an Invalid File selection.

	Download Soft	ware				- -
Select Files						? 🗙
Look in:	C ST_Micro_E)isplay	~	3 🕫 🖻	•	
My Recent Documents	ax_display.he	ex				
My Computer	File name: Files of type:	QX2_STM32F10 Download Displa ✓ Open as read		~		Select Cancel
					,	_ _

- 4. Click start button to start the Display firmware downloading process to the tool. A message will prompt the user for confirmation.
- 5. Click Yes button of the message box.

Download Softw Controllers Device Type	USB Tool	Firmware Type MCE O Display Radio
F 🕹 QX	u are about to download ne . The normal operation of t suspended during the dow ntinue(Y/N)? Yes N	nload. Do You Want to
Clear IC-PCN	1 Data S	tart Close

6. The tool display will automatically reboot after the downloading process is completed.

The Display will then show the Ingersoll Rand logo until it has completed the internal loading process. Once the
internal loading process is complete for the display, the display will again reset automatically.

	Controllers Device Type	USB Tool	Firmware Type	
Downloa	ding			
Downloa	ad progress]
File		Location ID	Progress	;
C:\PC	M_LOAD\TOOL	105:0	Complete	a
	Clear IC-PCM D	pata Star	t Close	Close

7. Restart the tool after it resets successfully. The uploaded Display version can be viewed on the wireless setting screen once ICS has successfully logged into the tool.

3.5.1.3 Radio Firmware

This Firmware runs on the Wireless Radio Board of the tool.

1. Select the device type as "USB Tool" from the dropdown list and select the Firmware Type as "Radio".

Controllers Device Type	USB Tool	~	Firmware Type MCE Display Radio
105:0			
Files to Download			Browse
Hies to Download			Browse
			Browse

2. Select the tool location ID check box.

🗋 Download Softwa	re		
Controllers Device Type	USB Tool	~	Firmware Type MCE Display Radio
105:0			
Files to Download -			
			Browse
Clear IC-PCM I	Data	Sta	art Close

Browse to the file "qx_wireless.hex" to download the Radio firmware.
 NOTE: By default all the Firmware files can be found in the ICS install path\Others folder.
 An Error Message will prompt the user in case of an Invalid File selection.

	Controllers	are				-'-
Select Files						? 🔀
Look in:	🚞 RF_Module		~	3 🦻	ب	
My Recent Documents Desktop My Documents	ax_wireless.he	K				
My Computer	File name:	qx_wireless.hex			~	Select
My Network	Files of type:	Download Radio Files (*.hex) Open as read-only			~	Cancel

4. Click on start button to start the Radio firmware downloading process to tool. A message will prompt the user for confirmation.

5. Click on the Yes button of message box.

Controllers Device Type	USB Tool	Firmware Type MCE Display Radio
ICS		
QX. be s	are about to download ne The normal operation of t suspended during the dow tinue(Y/N)? Yes No	the controller shall Inload. Do You Want to
C:\PCM_Load\T(ool Version\1.0.4.72\RF_N	/odule\qx_wireless.hex
C:\PCM_Load\To	ool Version\1.0.4.72\RF_M	/odule\qx_wireless.hex
C:\PCM_Load\To	ool Version\1.0.4.72\RF_N	/odule\qx_wireless.hex

6. Once downloading is completed, tool reboots automatically.

The Display will go blank and the LEDs will blink. This process will happen for approximately 3 - 5 minutes until it has completed the internal loading process. Once the internal loading process is complete for the radio board, the display will again reboot automatically.

	Controllers Device Type	USB Tool	irmware Type
Downloa	ding		
Downloa	ad progress		
File		Location ID	Progress
	M_LOAD\TOOL	105:0	Completed
	Clear IC-PCM [Data	Close

7. Restart the tool after it reboots. The uploaded Radio Firmware version can be viewed on the wireless setting screen once ICS has successfully logged into the tool.

3.5.2 Download firmware procedure for a IC-PCM on the Network

3.5.2.1 RISC Firmware

This Firmware runs on the RISC Board of the IC-PCM.

- 1. Select the device type as "IC-PCM" from dropdown list and select Firmware Type as "RISC".
- 2. Select the IP check box.

NOTE: User can also select multiple IP Addresses for RISC software download.

Device Type	IC-PCM 🗸	Firmware Type RISC Display Radio
10.200.82.254	F	
		Browse

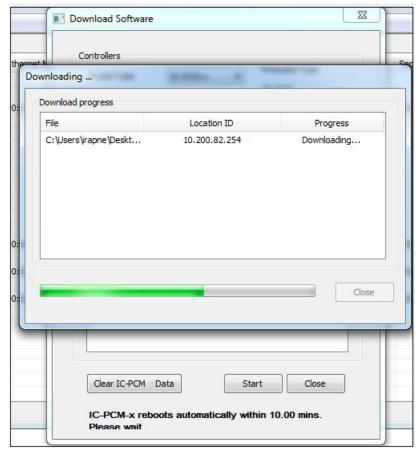
 Browse to file "qx_risc.irb" to download the RISC firmware.
 NOTE: By default all the Firmware files can be found in the ICS install path\Others folder. An Error Message will prompt the user in case of an Invalid File selection.

	Concernance of the	Firmware Type
Device Type	IC-PCM	✓ ORISC
		O Display
		ORadio
10.200.82.2	54	
10.200.82.3		
10.200.83.3	7	
Files to Download		
	0.6.14	
D:\PCM 16.D.0	.0.5.14	Browse
D:\PCM 16.D.0.	0.6.14\qx_risc.irb	
1.		
10		

- 4. Click on the start button to start the RISC firmware downloading process to the controller. A message will prompt the user for confirmation.
- 5. Click on the Yes button of the message box.

	ORadio
↓10.200.82.254 ↓10.200.82.33 ↓10.200.83.37	
ICS You are about to downlow IC-PCM. The normal oper	ad new software(s) to the ration of the controller
shall be suspended during Want to Continue(Y/N)?	g the download. Do You

After download, the IC-PCM automatically reboots.
 NOTE: If the IC-PCM does not reboot automatically after 10-15 minutes, reboot manually.



7. Once IC-PCM successfully reboots and is logged into ICS, the version of RISC firmware can be viewed on wireless setting screen.

3.5.2.2 Radio Firmware

This Firmware runs on the Wireless Radio Board of the IC-PCM 1:1.

1. Select device type as "PCM" from the dropdown list and select Firmware Type as "Radio".

Download Softwa	re			×
Controllers Device Type	IC-PCM	•	Firmware Type RISC Display Radio	
Image: Construction of the second			Brows	
Clear IC-PCM	Data	St	art Close	

2. Select the PCM IP check box.

NOTE: User can also select multiple PCM IP Addresses for Radio software download.Browse to the file "qx_wireless.bin" to download Radio firmware.

NOTE: By default all the Firmware files can be found in ICS install path\Others folder. An Error Message will prompt the user in case of an Invalid File selection.

Controllers Device Type IC-PCM Firmware Type RISC Display Radio	Controllers Device Type IC-PCM IC-PCM RISC Display ORISC
ID.200.82.254 10.200.82.33 10.200.82.66 10.200.82.81	IO.200.82.254 IO.200.82.33 IO.200.82.66 IO.200.82.81 Files to Download D:\1.0.4.72\RF_Module Browse D:\1.0.4.72\RF_Module\qx_wireless.bin
Clear IC-PCM Data Start Close	Clear IC-PCM Data Start Close

- 4. Click on start button to start Radio firmware downloading process to the tool. A message will prompt user for confirmation.
- 5. Click on Yes button of message box.

Device Type	IC-PCM 💌	Pirmware Type
		 Display Radio
■ 10.200.82.2 ■ 10.200.82.3 ■ 10.200.82.6	33	·
CS .		M 🗹
IC-PC shall t	re about to download ne (M. The normal operation be suspended during the to Continue(Y/N)? Yes No	of the controller

6. After download, IC-PCM automatically reboots.

NOTE: Reboot IC-PCM manually if it does not reboot automatically.

3.5.2.3 Clear Data

Clears the selected IC-PCM data.

1. Select the device type as IC-PCM from the dropdown and select one or multiple IC-PCM.

Device Type	IC-PCM	Firmware Type ORISC	
		O Display O Radio	
✓10.200.82.3 10.200.82.8		1	^
	7		
You are ab	out to clear the IC-P	°CM data.Do you want to co	ntinu
<u> </u>			
	Yes	No	
			1

2. Click Clear Controller Data button. A message will prompt user for confirmation.

3. Click Yes button of message box.

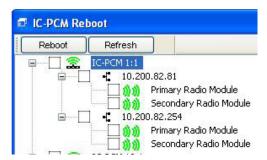
NOTE: This clears all data including cycle logs, PCM settings, and tool map information.

- 4. ICS prompts with a message "Please Reboot PCM after 30 secs: xxx.xxx.xxx, where xxx.xxx.xxx is PCM IP Address.
- 5. Click OK button of the message box and reboot PCM after 30 seconds.

Controllers Device Type	IC-PCM	~	Firmware T	уре
✓ 10.200.82.83 ○ 10.200.82.83 ○ 10.200.82.83 ICS F ▲ Plea			cs : 10.200.	€2.33
Clear IC-PCM	Data	Sta	rt	Close

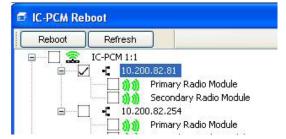
3.6 Reboot

The Reboot screen lets user to reboot the selected IC-PCM currently on network. Also, primary and secondary radio modules of the IC-PCM can be rebooted.



3.6.1 Reboot IC-PCM

- 1. Expand the IC-PCM.
- 2. Select required IP addresses that needs to be rebooted and then click on 'Reboot' button.

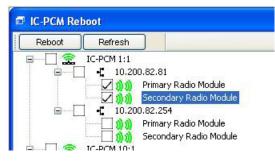


- 3. A reboot message is sent to the selected IP addressed which reboots the device(s).
- 4. The controller(s) reboot(s).

3.6.2 Reboot Radio Modules

- 1. Expand required IP addresses for which reboot radio command need to be sent.
- 2. Select primary or secondary or the two (primary and secondary) radio modules and click on reboot button.
- 3. A reboot message is sent to reboot the radio modules.

NOTE: This does not reboot entire system and wireless transaction will happen only after successful reboot of radio module.



IC-PCM 1:1	Displays list of IC-PCM 1:1 present on the network.
IC-PCM 10:1	Displays list of IC-PCM 10:1 present on network.
Reboot	Reboots the selected IC-PCM or radio modules that are checked in the associated check box.
Refresh	Refreshes and updates the list with latest IC-PCMs present on the network.

3.7 PCM Wireless Energy Detector

This screen can be used to view energy level in each RF channel. The energy level for each channel is displayed against their respective channel number starting from 11 to 25.

ireless Energy Detector					
RF Channel					
Channel	Value	Channel	Value	Channel	Yalue
11	0	16	0	21	0
12	0	17	0	22	0
13	0	18	0	23	0
14	0	19	0	24	0
15	0	20	0	25	0
Scan Controls					

Initially when IC-PCM is selected from drop box last stored data will be displayed. To receive the current level of wireless energy click on "Start Scan" button with specific time required to scan each channel.

The drop box "Scan Duration per Channel (Seconds)" is the set to scan each channel. For example if the time is selected as 0.9984 then time required to complete the scan is given below.

0.9984 * 15 = 14.976 seconds.

NOTE: Scanned energy value for a particular channel is proportional to the amount data being transferred in the channel.

Section 4 – Monitoring Cycle log and Event Log of IC-PCM 1:1/Tool

4.1 Run Main Cycle Log

The Run Main Cycle Log window has two tabs, Run Main View and View Cycle Log.

4.1.1 Run Main View Tab

The Run Main View tab Displays EOR of the latest cycle for a selected tool.

🗗 QX2 RunMainCycleL	.og1				_
Location ID	•🛟 888:8 💌 🤇	Config No. 1	▼ <u>S</u> end		
Source Network	<				
Run Main View View	Indicators	OK	OK	(00)	Faults Battery Invalid Hall State
	Pass/Fail	Torque	Angle	Gang Complete	I2T Motor Stall
		single control	Angle Target	888	Motor Stall Over Current Over Temperature Current Offset Shunt Calibration
			Low Angle Limit	799	O Torque Offset
	3	3.05 ₪	High Angle Limit	976	Transducer Step Timeout Config Timeout Over Torque Over Angle
					 Current Plausibility High
	EOR Field Name		EOR Value		O Under Torque
	Cycle Count Cycle Status		224 Pass		 Under Angle
	Final Torque Final Angle Date/Time Of Cycle		3.05 891 06/06/2011 11:28:32		Current Plausibility Low Early Trigger Release

The values shown on this screen include:

Location ID	This drop box is used to select the tool connected to USB / IC-PCM.
Config No	Displays configuration number of the latest cycle and also allows user to select the desired configuration number of the tool connected to USB.
Send Button	This button allows user to set desired configuration of tool connected to USB.
Pass / Fail Indicator	Displays an overall status (PASS/FAIL) of the tightening operation. An "OK" image is displayed, if the operation passes, otherwise, displays failure (FAIL) image.
	PASS OK FAIL 🔀
Torque status indicator	Displays the status of torque. The downward arrow (YELLOW) indicates that the torque is less than the torque low limit and the upward arrow (RED) indicates that the torque is greater than or equal to torque high limit. If the torque is between low torque and high torque limit, then an OK image is displayed.
	Within Limits OK High Limit 👍 Low Limit
Angle status indicator	Displays the status of angle. The downward arrow (YELLOW) indicates that the angle is less than the angle low limit and the upward arrow (RED) indicates that the angle is greater than or equal to the angle high limit. If the angle is between low angle and high angle limit, then an OK image is displayed.
	Within Limits OK High Limit I Low Limit

Gang complete indicator	The OK image is shown when 'Gang Complete' occurs. If the total gang count is 3 then for each pass cycle the screen shows (1/3, 2/3 and OK) as shown below. If the cycle fails, the gang count value in the screen remains same.
	1/3 1/3 2/3 2/3 Complete (3/3)
Faults	Displays the Faults description of the tightening data. NOTE: Green indicates that the particular fault did not occur, where as Red indicates the fault has occurred.
	Fault No Fault If Location ID is not selected
EOR Field/ Value table	Displays the EOR fields and values at the end of fastening. Clicking the up/down arrow below the main window, allows the user to hide/ show the EOR List.

4.1.2 View Cycle Log Tab

The View Cycle Log tab allows the user to retrieve the latest 1200 tightening records that are stored on the tool which are connected to USB/ IC-PCM 10:1. It also allows to retrieve the latest 1200 latest tool tightening records that are stored on IC-PCM 1:1.

User can view data stored in archive DB and local DB.

ocation ID	- ↔ 88	66	S & ~	2 🖪							
)ate- <u>T</u> ime Stamp	2			etwork	From Date	D6/06/2011 12:00 AM	🕑 То	Dale 06,06,/201	1 11:59 PM	4	Fetch Results
n Main View 🕔	lew Cycle Lo	a									
Cycle Log										Faults	
LifeTim	Cyde	Configurati	Date/Time Of Cycle	Cycle Result	Peak Toro	que Torque Result	Peak Ang	e Angle Result	Cut 🐴		Battery
Z773	ZZB	1	06/06/2011 12:20:48	Pass	Z.63	Pass	891	Pass		0	Invalid Hall State
2772	225	1	06/06/2011 12:20:41	Pass	2.66	Pass	891	Pass			
2771	224	1	06/06/2011 11:28:32		3.05	Pass	891	Pass		•	I2T
2770	223	1	06/06/2011 11:28:16	Fail	2.76	Pass	163	Low		0	Motor Stall
2769	222	1	06/06/2011 11:28:09	Pass	2.73	Pass	891	Pass			Over Current
2768	221	1	06/06/2011 11:27:58	Fal	2.80	Pass	129	LOW			
2767	220	1	06/06/2011 11:27:37	Pass	2.92	Pass	891	Pass		•	Over Temperature
2766	219	1	06/02/2011 16:45:12		2.04	Pass	891	Pass		-	Current Offset
2765	218	1	06/02/2011 16:45:08	Pass	2.04	Pass	891	Pass		•	Current Onsec
2764	217	1	06/02/2011 16:44:54	Pass	2.07	Pass	891	Pass		•	Shunt Calibration
2763	216	1	06/02/2011 16:44:43	Pass	2.03	Pass	891	Pass		0	Torque Offset
2762	215	1	06/02/2011 16:44:25	Pass	2.04	Pass	890	Pass		-	
2761	214	1	06/02/2011 16:44:17	Fail	2.05	Pass	261	Low		0	Transducer
2760	213	1	06/02/2011 16:43:55	Pass	2.09	Pass	890	Pass	*	•	Step Timeout
٤									3		
										0	Config Timeout
										•	Over Torque
				(<<)	>>	Salast	Columns			-	Over Angle
					60	- <u>De</u> loce	Coldrin B			-	
										•	Current Plausibility High
-Filter Criteria										•	Under Torque
Configuration	_									-	
Cg ingo acion			Overal status		*	Reset Filter		Filter		•	Under Angle
										•	Current Plausibility Low
Torque status	Г	v	Angle status		*					•	Early Trigger Release
	L										Watchdog

Fault group displays the fault code indicators for each of the selected cycle.

Cycle log data can be filtered using below mentioned criteria:

- Configuration Number (1 to 8)
- Overall status (Pass or Fail)
- Torque status (Pass, High or Low)
- Angle status (Pass, High or Low).

"Reset Filter" clears the filter applied to the data.

By default, the cycle log screen displays all columns. The number of columns displayed on the screen can be adjusted by clicking on "Select Columns" button.

Activate the check box next to the column (where you want it to be displayed). When finished, click on OK button.

EOR Coloumn Select	Yes/No	
LifeTime CycleCount		
Cycle Count		
Configuration No		
Date/Time Of Cycle	$\mathbf{\nabla}$	
Cycle Result		
Peak Torque	$\mathbf{\nabla}$	
Torque Result	$\mathbf{\nabla}$	
Peak Angle	$\mathbf{\nabla}$	
Angle Result	$\mathbf{\nabla}$	
Current Gang Count		
Total Gang Count		

value. bunt. es, Low if peak torque is high limit.
es, Low if peak torque is
values, Low if Maximum r equal to high limit.
is incremented only for is count is reported as
nfiguration.
no fault has occurred or

Following table shows the additional fields that are present in IC-PCM 1:1 tightening records

Barcode	Displays Barcode information.
Tool Serial Number	Displays factory provided identification number of the tool.
Free Speed	Displays programmed Free Speed for the configuration.
Downshift Speed	Displays programmed tool speed during shift down phase.
Max Tool Speed	Displays maximum speed of the tool.
TR	Displays Transducer Range value.

At any instance, click 📙 button to save the currently displayed data to local database with current time stamp. Click

on button to delete locally stored data with particular time stamp, confirmation message is displayed before deleting the data.

To view the latest cycle on this screen, click on 🔿 Refresh button in communication tool bar.

Clear Cycle log button - clears the cycle log present in the tool or IC-PCM 1:1.

2 Reset Cycle Counter button - resets the cycle count of tool.

Aunch Statistical Parameter button will open the Statistics Screen for selected set of cycles entered in the filter criteria.

4.1.2.1 Data Saved/Retrieved from PC Local Database

Once data has been retrieved from a IC-PCM 1:1/tool, it can be saved to the PC local database for later viewing and analysis.

To save cycle log data to the PC, select Save from File menu.

To retrieve an already saved cycle log, first click on Database button in main tool bar and then select the Location ID. The Date-Time Stamp drop box will then be populated with all saved cycle logs.

Select one from this list to view it.

Once this data is displayed; it can be filtered and statistics can be calculated.

ocati	on ID	100:	:5	✓ Q	ະ 🔝 🚅 🚯							
)ate-1	Fime Stamp	03/23/2012	210:54:37 P	M 🔽 Sour	ce Local DB	From Date	02/26/2012 12:00	AM 🔽	To Date	03/24/20)12 11:59 PM	👻 🛛 Fetch P
n Mair	n View 🛛 Vi	ew Cycle Log	,									
	Cycle Log									Faul	Battery	
	Loca	LifeTim	Cycle	Configurati	Date/Time Of Cycle	Cycle Result	Peak Torque	Torque Resu	lt Peal	-		
	1005	2584	13	2	03/15/2012 14:24:42	Pass	0.29	Pass	3	0	Invalid Hall Stat	.e
	1005	2583	12	2	03/15/2012 14:24:18	Pass	0.18	Pass	3	0	12T	
	1005	2582	11	1	03/15/2012 14:06:39	Pass	0.23	Pass				
	1005	2581	10	1	03/15/2012 14:06:38	Pass	0.36	Pass	3	•	Motor Stall	
	1005 1005	2580 2579	9	1	03/15/2012 14:06:36	Pass Pass	0.30 0.35	Pass Pass	3	•	Over Current	
	1005	2579	7	1	03/15/2012 14:06:35 03/15/2012 13:55:56	Pass	0.35	Pass		•	over current	
	1005	2576	6	1	03/15/2012 13:55:54	Pass	0.30	Pass	-	0	Over Temperat	ure
	1005	2576	5	1	03/15/2012 13:55:53	Pass	0.23	Pass			Current Offset	
	1005	2575	4	1	03/15/2012 13:56:52	Pass	0.38	Pass	6	•	Current Orrset	
	1005	2574	3	1	03/15/2012 13:55:12	Pass	0.39	Pass	3	0	Shunt Calibratio	n
										•	Torque Offset	
	10										Transducer	
	<								>		Step Timeout	
											Config Timeout	
						<< >>		Select Column	IS		-	
							_			•	Over Torque	
F	Filter Criter	ia									Over Angle	
(Configurati	on		Ove	rall status	*	Reset Filte	r 🗌	Filter	•	Under Torque	
		L								•	Under Angle	
Т	orque stat	us		V Angle	status	*				•	Early Trigger Re	

4.1.2.2 Data retrieved from the Archived Database

Once the tool is set to archive EOR data from archival setting screen, user has an option to view the archived EOR data by clicking archival button in main tool bar.

Select desired Location ID from Location ID drop box.

Select required range from From Date and To Date and click on Fetch cycles.

Cycles archived during the specified range will be displayed.

ain View			Sour	ce Archive DB	From Date	00/05/0010 10:00					
-Cycle L	View Cycle Log	_				02/26/2012 12:00	АМ 🔽	To Date	03/24/20)12 11:59 PM	💙 Feti
-Cycle L	View Cycle Log										
	00								Fault	ts	
		Cycle	Configurati	Date/Time Of Cycle	Cycle Result	Peak Torque	Torque Resu	lt F 🦰	0	Battery	
5151		588	1	03/22/2012 15:35:14	Pass	0.19	Pass		0	Invalid Hall Sta	te
5151		587	1	03/22/2012 15:35:13	Pass	0.21	Pass				
5151	2969	586	1	03/22/2012 15:32:00	Pass	0.23	Pass		0	I2T	
5151	2968	585	1	03/22/2012 15:31:59	Pass	0.17	Pass		0	Motor Stall	
5151	2967	584	1	03/22/2012 15:25:41	Pass	0.22	Pass		-	riocor bean	
5151	2966	583	1	03/22/2012 15:25:40	Pass	0.25	Pass		0	Over Current	
5151	2965	582	1	03/22/2012 15:25:39	Pass	0.18	Pass			o	
5151	2964	581	1	03/22/2012 15:25:39	Pass	0.21	Pass		•	Over Tempera	cure
5151		580	1	03/22/2012 15:25:38	Pass	0.25	Pass		0	Current Offsel	
5151		579	1	03/22/2012 15:25:37	Pass	0.17	Pass		-		
5151		578	1	03/22/2012 15:25:37	Pass	0.19	Pass		0	Shunt Calibrat	on
5151		577	1	03/22/2012 15:25:36	Pass	0.21	Pass		-		
5151		576	1	03/22/2012 15:25:35	Pass	0.22	Pass		•	Torque Offset	
5151	2958	575	1	03/22/2012 15:25:35	Pass	0.22	Pass	×	•	Transducer	
<								>	-		
										Step Timeout	
						_			•	Config Timeou	t
					<< >>		Select Column	s	•	Over Torque	
-Filter C	riteria								0	Over Angle	
Config			Ove	rall status	*	Reset Filte	r 🔽	Filter	•	Under Torque	
									•	Under Angle	

To print (default printer) or export (.csv (Comma separated value), .pdf and .rtf (rich text format)) cycle log data, select the appropriate option from the File menu.

4.2 Run Main View All

Displays the latest EOR data of all tools connected to USB / IC-PCM that are in network.

Filter	Select Co	olumn	S	ource Network						
or Data		LifeTi	Cycle	Date/Time Of Cycle	Configurati	Cycle Result	Peak Torque	Torque Result	Per	Battery Invalid Hall State
* !! !! !! !! !! !!	107.8 108.0 108.1 108.3 109.3 109.4 109.6 600.5 10.200.83.37 010.0 010.1 010.2 010.3	71905 50197 160955	59099 50197 103310	06/29/2012 09:31:02 06/29/2012 09:30:43 06/29/2012 09:31:11	1 1 1	Fail Fail Fail	0.00	Low Low		 I2T Motor Stall Over Current Over Temperature Current Offset Shunt Calibration Torque Offset Transducer Step Timeout Cortig Timeout Over Torque
	010:5 010:6 010:7 010:8	535040 413699	82992 82489	06/29/2012 10:31:21 06/29/2012 10:31:46	1 1	Fail Fail	0.00 0.00	Pass Low	~	 Over Angle Under Torque Under Angle Early Trigger Releas Watchdog

To view only a subset of available tools on the Run Main View All screen:

1. Click the Filter button to display the Select Controllers Dialog screen shown in the following Figure.

ct Controller s	
Controllers On Network	Selected Controllers
10.200.80.253 10.200.81.184 10.200.82.12 10.200.82.33	>
	>>
<u> </u>	Cancel

- 2. On the Select IC-PCM Dialog, choose IC-PCM from 'IC-PCM On Network' list box on the left side of the dialog. Click the right arrow (>) button to move them to the Selected IC-PCM box. Use double right arrow (>>) button to select all IC-PCM. All Tools mapped to selected IC-PCM are displayed on the screen.
- 3. To deselect IC-PCM from the Selected IC-PCM dialog, choose IC-PCM to be removed and click the left arrow (<) button. Use the double left arrow (<<) button to deselect all.
- 4. Once the selection is made, click OK button to view the tools mapped to the selected IC-PCM in Run Main View All screen.

NOTE:

- Select Columns is same as cycle log screen.
- All columns are selected by default.

4.3 IC-PCM 1:1/Tool Event Log

This screen allows user to view the event log that is recorded on the tool/ IC-PCM 1:1.

4.3.1 IC-PCM 1:1 Event Log

Select required tool mapped to IC-PCM 1:1 to view the IC-PCM 1:1 event log. The recorded event log is displayed with date, time, event code and description of the event. Following Figure displays the IC-PCM 1:1 event log:

Location ID	🚊 999:9[10.200	.82.66] 🛛 💙 🕞
Date/Time	Event Code	Description
07/11/2012 05:41:08 PM	6	General Setup Change
07/11/2012 07:56:22 PM	6	General Setup Change
07/11/2012 08:23:49 PM	6	General Setup Change
07/11/2012 08:29:35 PM	6	General Setup Change
07/11/2012 08:29:53 PM	6	General Setup Change
07/12/2012 08:20:17 PM	6	General Setup Change
07/12/2012 10:18:07 PM	6	General Setup Chang
07/13/2012 12:08:23 AM	6	General Setup Change
07/13/2012 12:08:30 AM	6	General Setup Change
07/13/2012 12:08:37 AM	2	Tool Enabled
07/13/2012 12:08:37 AM	6	General Setup Change
07/13/2012 12:08:46 AM	6	General Setup Change
07/13/2012 12:08:54 AM	6	General Setup Change
07/13/2012 02:09:12 AM	6	General Setup Chang
07/13/2012 02:13:33 AM	6	General Setup Chang
07/13/2012 03:04:12 PM	6	General Setup Change
07/13/2012 03:04:17 PM	6	General Setup Change
07/13/2012 09:29:09 PM	6	General Setup Change

Event Code	Event Description
0	Undefined
1	Tool Disabled
2	Tool Enabled
3	Start Diagnostic Mode
4	Stop Diagnostic Mode
5	Date-Time Set
6	General Setup Change
7	PLUS Server Connected
8	PLUS Server Disconnected
9	Unknown Server Attempted Connection
10	An incoming message contained a non-numeric first character
11	Invalid block counter
12	Unexpected message
13	Invalid message length
14	Receive Buffer is full
15	Too many messages in the receive buffer
16	Plus terminal has stopped
17	Plus is not ready to send
18	The incoming message is from a backup node
19	An unknown error string was encountered
20	An NNEG Error was received
21	An NTMU Error was received
22	An NSCR Error was received
23	An NSTR Error was received
24	The PLUS assembly timeout occurred
25	Manual reset was pressed
26	IC-PCM 1:1 received NAK-A from PFCS
27	IC-PCM 1:1 received NAK-B from PFCS
28	IC-PCM 1:1 received NAK-E from PFCS
29	IC-PCM 1:1 received NAK-H from PFCS
30	IC-PCM 1:1 received NAK-J from PFCS
31	IC-PCM 1:1 received NAK-I from PFCS
32	IC-PCM 1:1 received NAK-D from PFCS
33	IC-PCM 1:1 sending a retry
34	Printer not responding to the status request
35	Printer not responding state cleared
36	Printer Jam
37	Printer jam state cleared
38	Printer out of paper
39	Printer out of paper state cleared
40	Printer ink error
41	Printer ink error state cleared
42	Printer off line
43	Printer off line state cleared
44	Printer mechanical error
L	

Below is the list of events that are recorded in IC-PCM 1:1 with their respective event codes:

45	Printer mechanical error state cleared
46	Printer communication error
47	Printer communication error state cleared
48	Printer buffer empty
49	Printer buffer empty state cleared
50	Printer buffer overflow error
51	Printer buffer overflow error state clear
52	General Setup File Reset

4.3.2 Tool Event Log

Select the Tool connected to USB or mapped to IC-PCM 10:1 to view the tool's event log. The tool records the Fault Codes and Descriptions with date/time stamps along with motor fault codes (Status Mask).

Location ID	🚭 777:7	✓ Q		
Date/Time	Fault Code	Description	Status Mask	^
07/13/2012 05:01:19 PM	A-10	Motor controller communication timeout	0×0000000	
07/13/2012 05:01:13 PM	B-80	RF Network Detected after 20 seconds	0×00000000	
07/13/2012 05:00:65 PM	A-10	Motor controller communication timeout	0×00000000	
07/13/2012 05:00:52 PM	B-80	RF Network Detected after 20 seconds	0×00000000	
07/13/2012 05:00:37 PM	A-10	Motor controller communication timeout	0×00000000	
07/13/2012 05:00:31 PM	B-80	RF Network Detected after 20 seconds	0×00000000	
07/13/2012 05:00:13 PM	A-10	Motor controller communication timeout	0×0000000	
07/13/2012 05:00:10 PM	B-80	RF Network Detected after 20 seconds	0×00000000	
07/13/2012 05:00:00 PM	A-10	Motor controller communication timeout	0×00000000	
07/13/2012 04:59:57 PM	10-AA	Time updated	0×00000000	
07/13/2012 04:59:54 PM	B-80	RF Network Detected after 20 seconds	0×00000000	
07/13/2012 04:59:36 PM	A-10	Motor controller communication timeout	0×00000000	
07/13/2012 04:59:33 PM	B-80	RF Network Detected after 20 seconds	0×00000000	
07/13/2012 04:59:18 PM	A-10	Motor controller communication timeout	0×00000000	
07/13/2012 04:59:12 PM	B-80	RF Network Detected after 20 seconds	0×0000000	
07/13/2012 04:58:54 PM	A-10	Motor controller communication timeout	0×0000000	
07/13/2012 04:58:51 PM	B-80	RF Network Detected after 20 seconds	0×0000000	
07/13/2012 04:58:36 PM	A-10	Motor controller communication timeout	0×0000000	
07/13/2012 04:58:30 PM	B-80	RF Network Detected after 20 seconds	0×0000000	
07/13/2012 04:58:12 PM	A-10	Motor controller communication timeout	0×0000000	
07/13/2012 04:58:09 PM	B-80	RF Network Detected after 20 seconds	0×0000000	
07/13/2012 04:57:54 PM	A-10	Motor controller communication timeout	0×0000000	>

Following are the Fault Codes and their description:

Fault Code	Description
F-01	Tool Disabled (by external control)
F-02	Cycle Delay fault trigger was pulled before cycle delay timer expired
F-03	Tool Locked by Smart Socket Function user needs to select the correct socket at the PCM
1-FF	USB enumeration fault
2- <alarm id=""></alarm>	PM Alarm Time Fault for corresponding Alarm ID normally configured by the user
3- <alarm id=""></alarm>	PM Alarm Cycle Fault for corresponding Alarm ID normally configured by the user
A-10	Motor controller communication timeout
A-55	A display software version update was detected
A-AA	The display memory was re-initialized to factory defaults
B-01	Failure to update Motor Controller Software
B-50	Duplicate Tool Location ID detected
B-85	RF ACK Timeout
B-E1	RF Transmit NAK – "Channel Access Failure"
B-E5	RF Transmit NAK – "Frame Too Long"

DEO	
B-E9	RF Transmit NAK – "No ACK Received"
C-01	Configuration ID value is 0 or greater than 8
C-02	Number of configuration steps is greater than 8
C-03	Current Step ID is greater than the current number of steps
C-04	Total Gang is greater than 8
C-05	Current Gang count is greater than Total Gang
C-06	Current Torque High Limit is greater than Tool's maximum Torque value (Tool's max torque value is configured in the Factory Set Points) OR Current Torque High Limit is less than 0
C-07	Current Torque Low Limit is greater than Tool's maximum Torque value OR Current Torque Low Limit is less than 0
C-08	Current Torque High Limit is less than Current Torque Low Limit
C-09	Current Torque Low Limit is greater than Current Torque High Limit (Fault code to be removed)
C-0A	Current Angle High Limit is greater than Tool's maximum Angle value (to be set to 9999)
C-0B	Current Angle Low Limit is greater than Tool's maximum Angle value (to be set to 9999)
C-0C	Current Angle High Limit is less than Current Angle Low Limit
C-0D	Current Angle Low Limit is greater than Current Angle High Limit (Fault code to be removed)
C-0E	Tool configuration step is a Torque target and target value is outside torque high and low limits
C-0F	Tool configuration step is an Angle target and target value is outside angle high and low limits
C-10	Tool configuration step is not set for either Angle or Torque
C-11	Current Threshold value is greater than maximum tool torque OR Current Threshold value is less than 0
C-12	Current Free Speed is greater than maximum motor speed
C-13	Current Shiftdown Speed is greater than maximum motor speed
C-14	Current display unit value is unsupported
C-15	Current Shiftdown Point if above target or above Target (for torque strategy) or above tool's torque limit (for angle strategy).
C-16	Number of configuration steps is set to 0
E-00	Using MC Software 1.0.1.2, Battery Fault
E-01	Using MC Software 1.0.1.2, Invalid Hall State
E-02	Using MC Software 1.0.1.2, I2T Fault
E-03	Using MC Software 1.0.1.2, Motor Stall
E-04	Using MC Software 1.0.1.2, Over Current
E-05	Using MC Software 1.0.1.2, Over Temperature
E-06	Using MC Software 1.0.1.2, Current Offset
E-07	Using MC Software 1.0.1.2, Shunt Cal
E-08	Using MC Software 1.0.1.2, Torque Offset Fault
E-09	Using MC Software 1.0.1.2, Transducer Fault
E-0A	Using MC Software 1.0.1.2, Step Execution Timeout
E-0B	Using MC Software 1.0.1.2, Configuration Execution Timeout
E-0C	Using MC Software 1.0.1.2, Over Torque Limit
E-0D	Using MC Software 1.0.1.2, Over Angle Limit
E-0E	Using MC Software 1.0.1.2, Current Plausibility High
E-0F	Using MC Software 1.0.1.2, Under Torque
E-10	Using MC Software 1.0.1.2, Under Angle
E-11	Using MC Software 1.0.1.2, Current Plausibility Low
E-12	Using MC Software 1.0.1.2, Early trigger Release
E-12 E-13	Using MC Software 1.0.1.2, Motor Controller Watchdog Reset
E-14	Using MC Software 1.0.1.2, Motor Controller Stop Timeout

E-15	Using MC Software 1.0.1.2, Motor Controller to Display EOR message failure
E-18	Using MC Software 1.0.4.2, Motor Controller did not run all steps (mainly affects Prevailing Torque)
E-1B	Using MC Software 1.0.1.2, Battery Cell Fault (detected by Motor Controller)
E-1C	Using MC Software 1.0.1.2, Low Battery Fault (detected by Motor Controller)
E-1D	Using MC Software 1.0.1.2, Critical Battery Fault (detected by Motor Controller)
E-1E	Using MC Software 1.0.1.2, Motor Controller is shutting down
E-1F	Using MC Software 1.0.1.2, Wakeup Code received (but not expected)
E-81	The configuration ID in the Motor controller's EOR did not match the currently selected configuration
10-01	Configuration Page Update from Communication interface (USB or Wireless)
10-02	Tool Locked by Communication Interface (USB or Wireless)
10-03	Tool disabled by Communication Interface (USB or Wireless)
10-04	Configuration Selected by Communication Interface (USB or Wireless)
10-05	Gang Advanced by Communication Interface (USB or Wireless)
10-06	Gang reset by Communication Interface (USB or Wireless)
10-07	Configuration advanced by Communication Interface (USB or Wireless)
10-08	Configuration Reset by Communication Interface (USB or Wireless)
10-09	SPI Memory erased by Communication Interface (USB or Wireless)
10-0A	Tool Reset by Communication Interface (USB or Wireless)
10-0B	Factory calibrations restored by Communication Interface (USB or Wireless)
10-0C	Cycle log cleared by Communication Interface (USB or Wireless)
10-0D	Event log cleared by Communication Interface (USB or Wireless)
10-AA	Time updated by Communication Interface (USB or Wireless)
20-01	Complete Tool memory reset to defaults
20-02	Tool reset configuration to Defaults
EE-E0	RF Protocol Error - RF Message Packet too small
EE-E1	RF Protocol Error - RF Packet too long

Motor Status Code description;

Bit Position	Fault Description
1	Battery
2	Invalid Hall State
3	I2T
4	Motor Stall
5	Over Current
6	Over Temperature
7	Current Offset Fault
8	Shunt Cal
9	Torque Offset Fault
10	Transducer Fault
11	Step Time Out
12	Configuration Timeout
13	Over Torque
14	Over Angle
16	Under Torque
17	Under Angle
19	Early Trigger Release
20	Watchdog
25	Missed Run Steps

4.4 Status/View Network

The Status->View Network Screen is a read only screen which provides a clear overview of all USB Tools / IC-PCM connected to the network. Information is displayed in a tree view structure.

QX2 ViewNetwork		
Source Network		
💮 🛣 Wireless Process Control & Data PCM Gateway	Parameter	Value
🚽 👘 Wireless Data PCM Gateway	Angle step parameters	
□ 10.52.5.10	Torque Display Units	Nm
· · · · · · · · · · · · · · · · · · ·	Gang Count	0
······································	Cycle Delay (sec)	0.00
······································	Assembly Complete	Disabled
	Auto Increment	0
USB Direct Tool Connection [121:2]	Disable Reverse	Disabled
=+	Reverse Speed (%)	100
🖃 🚰 Configs	Direction	CW
≡ + ⊚ 1	Audible Alert	On
=+ ◎ 2	Step Timeout (sec)	15
	Torque Threshold for Counting Angle	0.00
=+ ◎ 4	Torque Threshold for Shift down	0.00
=+◎ 5	Free Speed (%)	100
	Shiftdown Speed (%)	20
	Target Angle (deg)	222
≡+© 7	Torque High Limit	2.00
=+◎ 8	Torque Low Limit	0.00
	Angle High Limit (deg)	244
	Angle Low Limit (deg)	200
	Acceleration (%)	90.00

This screen contains:

4.4.1 IC-PCM 1:1

Expanding this node will list all the IC-PCM 1:1 available on the network.

Expanding on a IC-PCM 1:1 node will display the IC-PCM 1:1 "General Params" node and a node for the tool that is mapped to the IC-PCM 1:1.

Double clicking on the "General Params" node of the IC-PCM 1:1 will display the IC-PCM 1:1 General Parameters on the right hand side of the screen.

Expanding the mapped "Tool Location ID" node will display the "General Params" node and the "Configs" node for tool.

Expanding the "Configs" node will display a node for each of the 8 allowable Configurations.

Double clicking on a particular "Configuration Number" node will display the Configuration Parameters of the tool on the right hand side of the screen, if the Configuration is programmed (Green icon).

Double clicking on the tool's "General Params" node will display the General Parameters of the tool on the right hand side of the screen.

4.4.2 IC-PCM 10:1

Expanding this node will list all IC-PCM 10:1 available on network.

Expanding a IC-PCM 10:1 node will display all Location IDs of the tools that are mapped to IC-PCM 10:1.

Expanding a mapped "Tool Location ID" node will display the "General Params" node and the "Configs" node for tool.

Expanding the "Configs" node will display a node for each of 8 allowable Configurations.

Double clicking on a particular "Configuration Number" node will display the Configuration Parameters of tool on the right hand side of the screen, if the Configuration is programmed (Green icon).

Double clicking on a tool's "General Params" node will display the General Parameters of tool on right hand side of the screen.

4.4.3 USB Direct Tool Connection

Expanding this node will display the "General Params" node and "Configs" node for a tool connected with a USB cable.

Double clicking on the tool's "General Params" node will display General Parameters of tool on right hand side of the screen.

Expanding the "Config" node will display a node for each of 8 allowable Configurations.

Double clicking on a particular "Configuration Number" node will display the Configuration Parameters of tool on the right hand side of the screen, if Configuration is programmed (Green icon).

4.5 Create Report

To create a specific type of report, this screen can be used. The same can be exported to a file or printed to the default printer.

Create report screen contains three tabs.

- 1. Tool Report.
- 2. VIN Report.
- 3. Report Generator.

Tool Report and VIN Report tabs will generate reports for only EORs that are from IC-PCM 1:1. Using Report Generator tab will generate reports for both tools mapped IC-PCM.

4.5.1 Tool Report

This report is generated based on the tool serial number as primary criteria.

Tool Re	sport VIN Report Rep	ort Generator								
		From	m Døte	6/29/2012		To Date	6/29/201	2 🗊 -	Select Loc	ation ID
	Tool Serial No.	From	n Time	12:00:00 AM	1	To Time	11:59:59	м 🔹		
	SP12E30008	Ove	erall Tightening Re	Pass		Angle Result	Pass	*	Sear	dh 🔤
		Tors	que Result	Pass	•	VIIN				
-				~	>>				-	
					22				Select O	oumns
Location	LifeTime CycleCount	Cycle Count	Configuratio	Date/Time Of Cycle	Cycle Result	Peak Torque	Torque Result	Peak Angle	Angle Result	Current (
	LifeTime CycleCount 107690	Cycle Count 95	Configuratio			Peak Torque 0.18	Torque Result Paso	Peak Angle	Read of the local data	
7777			Configuratio 1 1	Date/Time Of Cycle	Cycle Result	a state of the second			Angle Result	Current (
7777 7777	107690	96	Configuratio 1 1 1	Date/Time Of Cycle 06/29/2012 12:26:20	Cycle Result Pass	0.18	Pasa	102	Angle Result Pass	Current 0
7777 7777 7777	107690 107689	96 94	Configuratio 1 1 1 1	Date/Time Of Cycle 06/29/2012 12:25:20 06/29/2012 12:25:19	Cycle Result Pass Pass	0.18	Pasa Pasa	102 102	Angle Result Pass Pass	Current C 0 0
7777 7777 7777 7777	107690 107689 107688	96 94 93	Configuratio 1 1 1 1 1 1 1	Date/Time Of Cycle 06/29/2012 12:26:20 06/29/2012 12:26:19 06/29/2012 12:26:19	Cycle Result Pass Pass Pass	0.18 0.26 0.23	Pasa Pasa Pasa	102 102 102	Argie Result Pass Pass Pass	Current C 0 0 0
7777 7777 7777 7777 7777	107690 107689 107688 107688	96 94 93 92	Configuratio 1 1 1 1 1 1 1	Date/Time Of Cycle 06/29/2012 12:26:20 06/29/2012 12:26:19 06/29/2012 12:26:19 06/29/2012 12:26:18	Cycle Result Pass Pass Pass Pass	0.18 0.25 0.23 0.19	Pasa Pasa Pasa Pasa	102 102 102 102	Angle Result Pass Pass Pass Pass	Current C 0 0 0
7777 7777 7777 7777 7777	107690 107689 107688 107688 107687 107686	96 94 93 92 91	Configuratio 1 1 1 1 1 1 1 1	Date/Time Of Cycle 06/29/2012 12:26:20 06/29/2012 12:26:19 06/29/2012 12:26:19 06/29/2012 12:26:18 06/29/2012 12:26:18	Cycle Result Pass Pass Pass Pass Pass	0.18 0.25 0.23 0.19 0.23	Pasa Pasa Pasa Pasa Pasa	102 102 102 102 102 102	Angle Result Pass Pass Pass Pass Pass Pass	Current 0 0 0 0 0
Location 7777 7777 7777 7777 7777 7777 777	107690 107659 107658 107657 107656 107655	96 94 93 92 91 90	Configuratio 1 1 1 1 1 1 1 1 1 1	Date/Time Of Cycle 06/29/2012 12:26:20 06/29/2012 12:26:19 06/29/2012 12:26:19 06/29/2012 12:26:18 06/29/2012 12:26:18 06/29/2012 12:26:17	Cycle Result Pass Pass Pass Pass Pass Pass	0.18 0.25 0.23 0.19 0.23 0.25	Pasa Pasa Pasa Pasa Pasa Pasa Pasa	102 102 102 102 102 102 102	Angle Result Pass Pass Pass Pass Pass Pass Pass	Current 0 0 0 0 0 0
7777 7777 7777 7777 7777 7777 7777	107690 107659 107658 107687 107686 107685 107685	96 94 93 92 91 90 89	1 1 1 1 1 1 1	Date/Time Of Cycle 06/29/2012 12.26.20 06/29/2012 12.26.19 06/29/2012 12.26.19 06/29/2012 12.26.18 06/29/2012 12.26.18 06/29/2012 12.26.17	Cycle Result Pass Pass Pass Pass Pass Pass Pass Pas	0.18 0.25 0.23 0.19 0.23 0.25 0.25 0.17	Pese Pese Pese Pese Pese Pese Pese	102 102 102 102 102 102 102 102 102	Angle Result Pass Pass Pass Pass Pass Pass Pass Pas	Current 0 0 0 0 0 0 0 0 0
7777 7777 7777 7777 7777 7777 7777 7777	107690 107689 107688 107687 107685 107685 107684 107683	96 94 93 92 91 90 89 89 88	1 1 1 1 1 1 1	Date/Time Of Cycle 06/29/2012 12:25:20 06/29/2012 12:25:19 06/29/2012 12:25:19 06/29/2012 12:25:18 06/29/2012 12:25:17 06/29/2012 12:25:17 06/29/2012 12:25:17	Cycle Result Pass Pass Pass Pass Pass Pass Pass Pas	0.18 0.25 0.23 0.19 0.23 0.25 0.17 0.22	Pasa Pasa Pasa Pasa Pasa Pasa Pasa Pasa	102 102 102 102 102 102 102 102 102 102	Angle Result Pass Pass Pass Pass Pass Pass Pass Pas	Current 0 0 0 0 0 0 0 0 0 0 0

Filter criteria can be provided for Tightening Result (Pass or Fail), Angle Result (Pass, High or Low), Torque Result (Pass, High or Low) and VIN code (Vehicle Identification Number/Code, also called as Barcode). Date and Time Criteria should be provided, and records within the From/To Date and Time will be displayed.

4.5.2 VIN Report

This report is generated based on the VIN (Vehicle Identification Number).

Tool Re	port VIN Report Report	Generator							1	
1		From D	late	6/29/2012	. ,	'o Date	6/29/2012		Select Locatio	nID
	VIN	From Time Overall Tightening Result		12:00:00 AM		'o Time	11:59:59 PM			
	123456789q			Pass		ingle Result	Pass	•	Search	
		Torque Result		Pass	•	sol Serial No.				
					im/					
Location ID	LifeTime CycleCount	Cycle Count	Configuratio	Date/Time Of Cycle	Cycle Result	Peak Torque	Torque Result	Peak Angle	Angle Result	Curre
7777	107686	91	1	06/29/2012 12:25:18	Pass	0.23	Pass	102	Pass	0
7777	107685	90	1	06/29/2012 12:25:17	Pass	0.25	Pass	102	Pass	0
7777	107684	89	1	06/29/2012 12:25:17	Pass	0,17	Pass.	102	Pasa	0
7777	107683	88	1	06/29/2012 12:25:17	Pass	0.22	Pass	102	Pass	0
7777	107682	87	1	06/29/2012 12:25:12	Pess	0.22	Paos.	102	Pass	0
7777	107681	86	1	06/29/2012 12:25:11	Pass	0.18	Pass	102	Pass	0
7777	107680	85	1	06/29/2012 12:25:11	Pass	0.19	Pass	102	Pass	0
7777	107679	84	1	06/29/2012 12:25:10	Pass	0.25	Pass	102	Pass	0
	107678	83		06/29/2012 12:25:10	Pass	0.21	Pass	102	Pass	0
	107677	82		06/29/2012 12:25:09	Pass	0.23	Pass	102	Pass	0
7777										
7777 7777 7777 7777	107676	81		06/29/2012 12:25:09	Pass	0.19	Pass	102	Pass	0

Filter criteria can be provided for Tightening Result (Pass or Fail), Angle Result (Pass, High or Low), Torque Result (Pass, High or Low) and Tool serial number. Date and Time Criteria should be provided, and records within the From/To Date and Time will be displayed.

4.5.3 Report Generator

Report generator can be used to have multiple criteria for report generation. Provide Filter criteria in "From" and "To" column and check "Enable Filter" check box to enable particular filter.

L QX2 C	reate Report - 1									
		1.5								
Tool R	eport VIN Report Rep	oort Generator							7	
	EOR Field	From		То		Enable Filter		^		
	Peak Torgue								Select Location	ID
	Torque Result								Delect Location	
	Peak Angle	200		300						
	Angle Result									
	Current Gang Count									
	Total Gang Count								Search	
	Torque Units									
	Target Value									
	Tightening Mode									
	Joint Type							~		
			<<	>>						
Location II										
) Life Lime CycleCou	Int Cvcle Count	Date/Time Of Cvcle	Configuration No	Cvcle Result	Peak Torque	Torque Result	Peak Angle	Angle Result	Currer
3333			Date/Time Of Cycle 03/22/2012 04:58:25	Configuration No	Cycle Result	Peak Torque	Torque Result Pass	Peak Angle	Angle Result	
3333 3333	2 Life Time Cycle Cou 18176 18173	Int Cycle Count 300 297	Date/Time Of Cycle 03/22/2012 04:58:25 03/22/2012 04:58:24	Configuration No 1 1	Cycle Result Fail Fail	Peak Torque 0.26 0.35	Torque Result Pass Pass	Peak Angle 233 245	Angle Result Low Low	Currer 🔨 0 0
	18176	300	03/22/2012 04:58:25	1	Fail	0.26	Pass	233	Low	0
3333	18176 18173	300 297	03/22/2012 04:58:25 03/22/2012 04:58:24	1	Fail Fail	0.26	Pass Pass	233 245	Low	0
3333 3333	18176 18173 18154	300 297 278	03/22/2012 04:58:25 03/22/2012 04:58:24 03/22/2012 04:54:46	1 1 1	Fail Fail Fail	0.26 0.35 0.40	Pass Pass Pass	233 245 276	Low Low Low	0 0 0
3333 3333 6161	18176 18173 18154 2774	300 297 278 391	03/22/2012 04:58:25 03/22/2012 04:58:24 03/22/2012 04:54:46 03/21/2012 17:35:02	1 1 1 1	Fail Fail Fail Fail	0.26 0.35 0.40 0.18	Pass Pass Pass Pass	233 245 276 300	Low Low Low Low	0 0 0 0
3333 3333 5151 5151	18176 18173 18154 2774 2773	300 297 278 391 390	03/22/2012 04:58:25 03/22/2012 04:58:24 03/22/2012 04:54:46 03/21/2012 17:35:02 03/21/2012 17:35:01	1 1 1 1 1 1	Fail Fail Fail Fail Fail	0.26 0.35 0.40 0.18 0.18	Pass Pass Pass Pass Pass Pass	233 245 276 300 298	Low Low Low Low Low	0 0 0 0 0
3333 3333 6161 6161 6161	18176 18173 18154 2774 2773 2771	300 297 278 391 390 388 389 389 387	03/22/2012 04:58:25 03/22/2012 04:58:24 03/22/2012 04:54:46 03/21/2012 17:36:02 03/21/2012 17:36:01 03/21/2012 17:36:00	1 1 1 1 1 1 1	Fail Fail Fail Fail Fail Fail	0.26 0.35 0.40 0.18 0.18 0.29	Pass Pass Pass Pass Pass Pass Pass	233 245 276 300 298 236 293 259	Low Low Low Low Low Low Low	0 0 0 0 0 0
3333 3333 5151 5151 5151 5151 5151 5151	18176 18173 18164 2773 2773 2771 2772 2770 2766	300 297 278 391 390 388 389 389 387 383	03/22/2012 04:58:25 03/22/2012 04:58:24 03/22/2012 04:54:46 03/21/2012 17:35:02 03/21/2012 17:35:01 03/21/2012 17:35:00 03/21/2012 17:35:00	1 1 1 1 1 1 1 1	Fail Fail Fail Fail Fail Fail Fail Fail	0.26 0.35 0.40 0.18 0.29 0.18 0.19 0.23	Pass Pass Pass Pass Pass Pass Pass	233 245 276 300 298 236 293 269 277	Low Low Low Low Low Low Low Low	0 0 0 0 0 0 0 0
3333 5151 5151 5151 5151 5151 5151 5151	18176 18173 18164 2774 2773 2771 2772 2770 2766 2766	300 297 278 391 390 388 389 389 389 383 383 383	03/22/2012 04:58:25 03/22/2012 04:58:24 03/22/2012 04:54:46 03/21/2012 17:35:00 03/21/2012 17:35:00 03/21/2012 17:35:50 03/21/2012 17:34:54 03/21/2012 17:34:33	1 1 1 1 1 1 1 1 1 1 1 1	Fail Fail Fail Fail Fail Fail Fail Fail	0.26 0.35 0.40 0.18 0.18 0.18 0.19 0.23 0.22	Pass Pass Pass Pass Pass Pass Pass Pass	233 245 276 300 298 236 293 259 277 238	Low Low Low Low Low Low Low Low Low Low	0 0 0 0 0 0 0 0 0 0 0
3333 5151 5151 5151 5151 5151 5151 5151	18176 18173 18154 2774 2773 2771 2772 2770 2766 2767 2749	300 297 278 391 390 388 389 387 383 383 384 366	03/22/2012 04:58:25 03/22/2012 04:58:24 03/22/2012 04:54:46 03/21/2012 17:36:02 03/21/2012 17:36:00 03/21/2012 17:36:00 03/21/2012 17:34:00 03/21/2012 17:34:33 03/21/2012 17:34:33	1 1 1 1 1 1 1 1 1 1 1 1 1 1	Fail Fail Fail Fail Fail Fail Fail Fail	0.26 0.35 0.40 0.18 0.29 0.18 0.19 0.23	Pass Pass Pass Pass Pass Pass Pass Pass	233 245 276 300 298 236 293 269 277 238 274	Low Low Low Low Low Low Low Low Low Low	0 0 0 0 0 0 0 0 0 0 0 0
3333 5161 5161 5161 5161 5161 5161 5161	18176 18173 18154 2774 2773 2771 2772 2770 2766 2767 2767 2749 2749 2748	300 297 278 391 390 388 389 387 383 383 384 366 366	03/22/2012 04:58:25 03/22/2012 04:58:24 03/22/2012 04:54:46 03/21/2012 17:35:00 03/21/2012 17:35:00 03/21/2012 17:36:00 03/21/2012 17:34:54 03/21/2012 17:34:33 03/21/2012 17:34:33	1 1 1 1 1 1 1 1 1 1 1 1 1 1	Fail Fail Fail Fail Fail Fail Fail Fail	0.26 0.35 0.40 0.18 0.18 0.29 0.18 0.29 0.18 0.19 0.23 0.22 0.23 0.25	Pass Pass Pass Pass Pass Pass Pass Pass	233 245 276 300 298 236 293 259 277 238 277 238 274 221	Low Low Low Low Low Low Low Low Low Low	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3333 5161 5161 5161 5161 5161 5161 5161	18176 18173 18164 2773 2771 2772 2770 2766 2766 2767 2749 2748 2748 2742	300 297 278 391 390 388 389 387 383 384 386 386 386 386 385	03/22/2012 04:58:25 03/22/2012 04:58:46 03/21/2012 17:35:01 03/21/2012 17:35:00 03/21/2012 17:35:00 03/21/2012 17:35:00 03/21/2012 17:34:50 03/21/2012 17:34:33 03/21/2012 17:34:33 03/21/2012 17:33:29	1 1 1 1 1 1 1 1 1 1 1 1 1 1	Fail Fail Fail Fail Fail Fail Fail Fail	0.26 0.35 0.40 0.18 0.18 0.29 0.18 0.29 0.18 0.29 0.19 0.23 0.22 0.23 0.25 0.21	Pass Pass Pass Pass Pass Pass Pass Pass	233 245 276 300 298 236 293 259 277 238 277 238 277 238 274 221 226	Low Low Low Low Low Low Low Low Low Low	
3333 3333 5151 5151 5151 5151 5151 5151	18176 18173 18164 2774 2773 2771 2772 2770 2766 2766 2767 2749 2748 2748 2748 2742 2737	300 297 278 391 388 389 389 387 383 384 386 366 366 369 359	03/22/2012 04:58:25 03/22/2012 04:58:24 03/22/2012 04:54:46 03/21/2012 17:35:00 03/21/2012 17:35:00 03/21/2012 17:34:54 03/21/2012 17:34:54 03/21/2012 17:34:33 03/21/2012 17:34:33 03/21/2012 17:33:26	1 1 1 1 1 1 1 1 1 1 1 1 1 1	Fail Fail Fail Fail Fail Fail Fail Fail	0.26 0.35 0.40 0.18 0.29 0.18 0.29 0.19 0.23 0.22 0.23 0.22 0.23 0.25 0.21 0.26	Pass Pass Pass Pass Pass Pass Pass Pass	233 245 276 298 238 238 239 259 277 238 277 238 274 221 225	Low Low Low Low Low Low Low Low Low Low	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3333 5161 5161 5161 5161 5161 5161 5161	18176 18173 18164 2774 2773 2771 2770 2766 2767 2749 2748 2748 2748 2748 2748 2748 2748	300 297 278 391 390 388 389 387 383 384 386 366 366 366 365 365 364 354	03/22/2012 04:58:25 03/22/2012 04:58:24 03/22/2012 04:54:46 03/21/2012 17:35:00 03/21/2012 17:35:00 03/21/2012 17:35:00 03/21/2012 17:34:54 03/21/2012 17:34:33 03/21/2012 17:34:33 03/21/2012 17:33:22 03/21/2012 17:33:29 03/21/2012 17:33:22	1 1 1 1 1 1 1 1 1 1 1 1 1 1	Fail Fail Fail Fail Fail Fail Fail Fail	0.26 0.36 0.40 0.18 0.18 0.19 0.29 0.23 0.23 0.23 0.25 0.21 0.23	Pass Pass Pass Pass Pass Pass Pass Pass	233 245 276 298 298 293 293 259 277 238 274 274 221 226 225 225 229	Low Low Low Low Low Low Low Low Low Low	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3333 3333 5151 5151 5151 5151 5151 5151	18176 18173 18164 2774 2773 2771 2772 2770 2766 2766 2767 2749 2748 2748 2748 2742 2737	300 297 278 391 388 389 389 387 383 384 386 366 366 369 359	03/22/2012 04:58:25 03/22/2012 04:58:24 03/22/2012 04:54:46 03/21/2012 17:35:00 03/21/2012 17:35:00 03/21/2012 17:34:54 03/21/2012 17:34:54 03/21/2012 17:34:33 03/21/2012 17:34:33 03/21/2012 17:33:26	1 1 1 1 1 1 1 1 1 1 1 1 1 1	Fail Fail Fail Fail Fail Fail Fail Fail	0.26 0.35 0.40 0.18 0.29 0.18 0.29 0.19 0.23 0.22 0.23 0.22 0.23 0.25 0.21 0.26	Pass Pass Pass Pass Pass Pass Pass Pass	233 245 276 298 238 238 239 259 277 238 277 238 274 221 225	Low Low Low Low Low Low Low Low Low Low	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Section 5 – Archiving Data

5.1 Archival Settings Screen

The Archiving feature allows the storing EOR, configurations and general settings of tools that are mapped to IC-PCM and also archives IC-PCM 1:1 General Settings.

Archiving is only available for MultiSync and Enterprise versions of ICS software installed with SQL database option. A master license can be used to set and view the archival setting, and is needed to archive data. A slave license can be used to view Archival settings and view archived data.

The Archival Settings screen is enabled only when ICS is installed with SQL server as the Database option.

Data	Location ID	Time/Freq	
	¥	×	•
	Add	odate	
rchived			
Data	Location ID	Time/Freq	^
EOR Data	231:2	Every cycle	
EOR Data	557:3	Every cycle	
EOR Data	856:5	Every cycle	
EOR Data	823:0	Every cycle	
EOR Data	823:1	Every cycle	
EOR Data	823:2	Every cycle	
EOR Data	823:3	Every cycle	
EOR Data	823:4	Every cycle	
EOR Data	109:4	Every cycle	
EOR Data	823:5	Every cycle	
EOR Data	823:6	Every cycle	
EOR Data	600:5	Every cycle	
EOR Data	823:7	Every cycle	
EOR Data	823:8	Every cycle	
EOR Data	823:9	Every cycle	
EOR Data	010:0	Every cycle	
EOR Data	010:1	Every cycle	
EOR Data	010:2	Every cycle	
EOR Data	010:3	Every cycle	-
FOD Data	010-4	Fuero cucla	
<			>
	Delete	Delete All	

	The Data Dropdown list has three items as mentioned below:
	EOR Data – EOR Data can be archived for a tool connected to a IC-PCM
Data	Parameters (IC-PCM 1:1 General Setup) – Parameters of IC-PCM 1:1 General Setup can be archived for each IC-PCM 1:1 on Network.
	Parameters (Config and General) – Configurations and General Parameter settings of a tool connected to a IC-PCM can be archived.
Location ID	Location ID Dropdown list will display all tools connected to IC-PCM.
Time/Freq	Time/Freq dropdown list displays options for how often the data will be archived.
Add	Add button is used to add the location ID and Data that is to be archived to list.
Update	Update button is used to modify Archival settings and update changes for selected Location ID.
Delete	Delete button is used to delete the selected Location ID from the Archival list.
Delete All	Delete All button is used to delete all the existing Location IDs from the Archival list.
OK/Cancel	OK button is used to save the changes and Cancel button is used to exit without saving the changes.

Section 6 – Quality Control

6.1 Statistics

The Statistics Summary screen displays the statistics computed from the cycle log data for the selected tool and Configuration. The screen displays Population and Sample Statistical data for both torque and angle results.

The statistical data can be saved to the local database by selecting Save from the File menu.

Location ID	777:2[10.52.5.10] 💙 <u>C</u> onfi	g 8 🗸 Refresh			
Source	Network Date/Time	Stamp			
Population Statistics			Sample Statistics		
Parameter	Torque	Angle	Parameter	Torque	Angle
Strategy	Torque Control		Strategy	Torque Control	
Target	0.00		Target	0.00	
X-Bar	0.00	0.00	X-Bar	0.00	0.00
Range	0.00	0.00	Range	0.00	0.00
Meanshift	0.00	0.00	Meanshift	0.00	0.00
Capability	0.00	0.00	Capability	0.00	0.00
CAM	0.00	0.00	CAM	0.00	0.00
Sigma	0.00	0.00	Sigma	0.00	0.00
# for Sigma	0	0	# for Sigma	0	0
PP	0.00	0.00	PP	0.00	0.00
PPK	0.00	0.00	PPK	0.00	0.00

The Statistics Summary screen allows the user to select the tool Location ID and Configuration number. Internally, ICS fetches the cycle log data, calculates, and displays both Population and Sample Statistics for the selected configuration number.

The Statistics Summary screen displays the following parameters and their values for Population & Sample Statistics for both Torque and Angle results:

Strategy - Selected Strategy

Target - Target Torque/Angle

X-Bar - Mean

Range - Max Value - Min Value

Mean Shift - Mean - Target

Capability - This is calculated as (6 * sigma / Mean) * 100

CAM - (Upper Limit - Lower Limit)/ (6*(W/dS))

Where W - Average dispersion, dS = 1.746

Sigma - Standard Deviation

PP - Capability Statistics parameter calculated as (Upper set limit – Lower set limit)/(6*sigma)

PPK - Capability Statistics parameters calculated as Min ((mean- Lower set limit)/(3*sigma) or (Upper set limit – mean)/ (3*sigma))

The size of the Sample Statistics size can be set by clicking the Set Parameters button on the Tool Bar. This displays the Set Statistics Parameters box. This box has a Sample Size entry field for setting the number of readings to be used for computing Sample Statistics. The Sample Size is 25 by default.

Set Statistics Paramet	ters		×
Set Statistics Parameter	s		
Sample Size		25	
	<u>0</u> K	<u>C</u> ancel	

The Statistics Summary screen can also be launched from the RunMain Cycle Log screen. After selecting a Configuration and highlighting the desired Cycle Log results, click the Launch Statistical Parameters button. The Statistics Summary screen will be launched with only the Population Statistics displayed.

NOTE: A minimum of three cycle log records have to be selected to calculate the statistics.

6.1.1 Statistical Data Saved/Retrieved from Local Database

Statistical data can be saved to the PC's Local Database for later viewing and analysis. To save the Statistical data to the PC, select Save from the File menu or use the Save icon from the main tool bar. To retrieve an already saved Statistical data set, first click on the Database Mode button in the main tool bar. Next, select the tool Location ID and corresponding Config number. Select the desired set from the Date/Time Stamp drop box.

Section 7 – System Diagnostics

The System Diagnostics screen allows you to check the overall system status of the tool Connected to USB. This functionality also assists in diagnosing tool problems, calibrating the tool and also sets the Preventive Maintenance Alarms.

The PM alarm and tool status functionalities are also applicable for the tools connected to IC-PCM

- 1. Tool Test
- 2. Tool Status
- 3. Keypad Status (contains LED and Speaker diagnostics)
- 4. Tool Calibration
- 5. PM Alarm (Preventive Maintenance).

7.1 Tool Test

The Tool Test tab allows the user to view the tool readings for the selected Location ID. Proceeding with this shall put the tool in diagnostic mode. The tool is put into Diagnostic mode, but normal operation is not suspended. It is recommended that user does not perform normal operations (tightening) when tool is in diagnostic mode. When the too trigger is pulled the currently selected configuration will be run. The user can read the following values on the screen while the tool is running:

Location ID	· · · · · · · · · · · · · · · · · · ·	Refresh
ool Test Tool S	tatus Keypad status Tool Cali	bration PM Alarm
-Tool Readings -		
	Angle (deg)	0
	Current (amps)	0.00
	Speed (rpm)	0.00
	Temperature (deg C)	0.00
	Torque (Nm)	0.00
	Battery Voltage (volts)	0.00

Angle	Degrees of Rotation
Current	Current drawn in amps
Speed	Rotational speed in RPM
Temperature	Measured temperature of the tool in degree Celsius
Torque	Dynamic Torque achieved
Battery Voltage	Current Battery Voltage of the tool

7.2 Tool Status

Tool Status tab displays system data for diagnostics purpose.

Location ID 515:1	Refresh	
Tool Test Tool Status Keypad status Tool Cal	ibration PM Alarm	
Tool Status	Tool Status	
	Enabled State	V
Trigger Status	Current Phase U Offset	2043
	Current Phase W Offset	2035
	Torque Signal Zero Offset	2045
Direction Status	Signal Strength	0.00
	Motor Temperature (deg C)	25.02
Headlight Status	Battery Voltage (volts)	18.60
	Shunt Calibration	2.65

Tool Status Tab displays the following Tool Status;

Trigger State	Displays Pulled/Released status of trigger switch. (Pulled • Released •)
Direction State	Displays CW/CCW status of direction switch.
Headlight Status	Displays ON/OFF Status of Headlight LED. (On • Off •)
Enabled state	Displays whether tool can perform the tightening operation. The checked tool can perform the tightening operation, if configuration selected is valid.
Current Phase U offset	Displays Current Phase U offset status of motor.
Current Phase W offset	Displays Current Phase W offset status of motor.
Torque Signal Zero Offset	Displays status of Torque Signal Zero Offset.
Signal Strength	Displays Wireless signal strength.
Motor Temperature	Displays motor temperature of the tool.
Battery Voltage	Displays Current Battery Voltage in Volts.
Shunt Calibration	Displays value of Shunt Calibration.

7.3 Keypad, LED and Audio Diagnostics

This screen can be used to diagnose status of Keypad, Led and Speaker of the tool.

📑 QX2 Diag	nostics - 1					
Location	id 💽	105:0	•	Refresh		
Tool Test	Tool Status	Keypad status	Tool Cal	libration PM 4	Alarm	
	_ Keypad st	atus —	×			
	LED Test			ON	• • • •	
	Audio Dia	gnostics	AUDIO	ON		

7.3.1 Keypad Status

Displays the current status of the keys.

Sl no.	Key	Pressed	Released
1	Up		
2	Down		
3	Right		
4	Left		
5	Esc	8	۲
6	Enter		

7.3.2 LED Test

Displays the current status of the LEDs and also can switch on or off particular LED by clicking on the particular LED button.



7.3.3 Audio Diagnostics

Click on "AUDIO ON" button to turn ON the beep sound to test the speaker in the tool. This sound will remain for 5 seconds.

7.4 Tool Calibration

The tool calibration screen allows user to calibrate teh selected tool's TR. It allows to SET/RESET the values for TR, ASC and KT. Also it allows to send Gearbox Loss percentage value to the tool.

ocation ID	• 777:7	3	Refre	esh	1	
ol Test T	ool Status 🛛 Keypa	id status 🛛 Tool Calit	pration PM Ala	arm		
-						
	Manual Data Ent	Factory Value	Current	Value	New Value	
	TR	26.60	26.86		0.00	Set Reset
	ASC	0.75	0.75		0.00	Set Reset
	Gearbox Loss Gearbox Loss (w)	0.97		Send	
			0.27		J	
	Calibration Setti	ngs				Auto
	Status					
	Calibration Resu	lt		i .		
	Cycle #	From Tool	From ETA	Current T	R	26.86
				Cycle cou	nter	
						1
				Re	ject reading	Start
				Measured	Reading (Nm)	
	Resultant TR					
	Resultant	TD value			Send	4

Manual Data Entry

User can Set/Reset TR, ASC, KT values to the tool, it also displays Factory & Current values for TR, ASC and KT. User can enter TR & ASC value \pm 20 % of the factory value of TR and ASC.

By default, User TR & User ASC is set to Factory setting value of ASC and TR.

User can enter the KT sensitivity value between 0.01 and 1.00 (by default, it is set to 1.00).

Gearbox Loss %

The user can enter a value of \pm 40% in the Gearbox Loss data box. When this value is sent to the tool, the TR value of the tool will change according to the following: User_TR = Factory_TR - [Gear_box_Percentage * Factory_TR / 100]

Calibration Settings

There are two types of calibration modes: Auto and Manual.

This screen allows Auto calibration to run, which can calibrate the Transducer Range (TR) for the tool using an Ingersoll Rand ETA5 series Torque Analyzer or an Ingersoll Rand EXT Series Torque Analyzer.

Upon receiving the EOR record from the tool, the torque value is displayed in the list. The ICS software then reads the ETA5/EXT torque value measured for the active cycle number and displays the received value in the ETA5 Torque column.

Click the Reject Reading button to reject any individual run throughout the calibration procedure.

The new TR value is calculated when the STOP is pressed. The new TR value is displayed as Resultant TR Value. The Resultant TR Value can be set to the tool using send button.

New TRs are calculated after each tightening. Rejecting any reading results in recalculation of the resultant TR.

In case of manual mode calibration, click Auto button to change to manual mode. In manual mode, user should enter the measured value read from some external torque monitoring device.

User can Print or Save an Auto calibration report via the File menu.

7.5 **PM Alarms**

PM Alarms are reminders for regular tool preventative maintenance. The PM Alarms section helps user keep track of the preventative maintenance schedule for tool. Up to five different alarms can be set with duration as "number of cycles" or "Number of Days".

The Preventive Maintenance (PM) Alarm screen displays all PM alarms set on tool and allows editing settings. In addition, this screen allows resetting any PM alarm.

The screen shows Alarm, the Duration, the Start Count/Set Date, and Expiration Count/Date for each alarm. Use the Reset button to reset start and expiration count/date.

Disable Tool checkbox feature allows to disable tool when the alarm is triggered.

ocation ID	348:7[10.200.82.3		Alarm			
	I Alarm Settings					
	Alarms	Duration	Disable Tool		Start Count/Date	Expiration Count/Date
	Grease Gear Case 🛛 🗸	1 Day 💙		Reset	NA	9/27/2012
	Grease Angle Head 💌	7 Days 💌		Reset	NA	10/3/2012
	Grease Offset Head 💌	270 Days 💌		Reset	NA	6/23/2013
	Grease Tubenut Hea 🐱	50000 💌		Reset	9260	59260
	Check Tool Calibratic 💌	1000000 🗸		Reset	9260	1009260
					Send	Default

Th

- Grease Angle head
- Grease Offset head
- Grease Tube nut head
- Check Tool calibration

Following are the duration (cycles) for setting up the alarm:

If Wireless is enabled in the tool, following are the additional option available for duration: Days

NOTE: In case duration is set to "Number of days", upon refreshing screen, ICS will only display end date not "number of days" and "Start Date" as NA.

🔲 QX2 Diagnosti	cs - 1									
Location ID	🛶 111:1 💊	Refresh								
Tool Test Tool S	Tool Test Tool Status Keypad status Tool Calibration PM Alarm									
-PM Al	larm Settings									
	Alarms	Duration	Disable Tool		Start Count/Date	Expiration Count/Date				
	Grease Gear Case 🛛 👻	5000 🗸		Reset	159884	164884				
	Grease Gear Case 🛛 👻	~		Reset	NA	5/9/2013				
ſ	None 💌	*		Reset	0	0				
ſ	None 💌	~		Reset	0	0				
ſ	None	~		Reset	0	0				
					Send	Default				

7.6 System Diagnostics – View Inputs

View Inputs screen displays dynamic status of all input pins for selected IC-PCM 1:1. This screen is useful for troubleshooting an I/O problem.

Controller ID	10.200.82.66	<u>×</u> 0	
Indicator	Input Point Name	Behaviors	
•	2-I-1	Config 1	
•	2-I-2	Config 2	
•	2-I-3	Config 3	
•	2-I-4	Config 4	
•	2-I-5	Config 5	
•	2-I-6	Config 6	
•	2-I-7	Config 7	
•	2-I-8	Config 8	

View input screen displays the selected IC-PCM 1:1 8 input pins and respective behaviours assigned to each pin.

To change the current behaviors assigned to each input pin, user has to click on the button. PCM General Setup dialog box opens up for changing the current behaviors by navigating to Assign Inputs tab of the PCM General Setup.

NOTE: The modified behaviors will be applicable only after IC-PCM 1:1 reboots.

The status of Active input pin is indicated via a virtual Green LED **o**.

The status of inactive input pin is indicated via LED .

7.7 System Diagnostics – View/Set Output

7.7.1 View Outputs Mode (Normal Mode)

Set/View Output screen displays the dynamic status of all Output pins for the selected IC-PCM 1:1. This screen lets user manually activate an output signal for system diagnosis purpose.

Controller ID	2 10.200.82.66 🛛 👻	0 **	
Indicator	Output Point Name	Behaviors	T
•	1-0-1	Accept	
•	1-0-2	Reject	
•	1-0-3	Cycle Complete	
•	1-0-4	Gang Complete	
•	1-0-5	System Fault	
•	1-0-6	Low Torque	
•	1-0-7	Low Angle	
•	1-0-8	High Torque	

To change the current behaviors assigned to each output pin, user has to click on button.

PCM General Setup dialog box opens and user can change the behaviors by navigating to Assign Outputs tab of the PCM General Setup. The modified behaviors will be applicable after PCM reboots.

The status of Active input pin is indicated via a virtual Green LED **o**.

The status of inactive input pin is indicated via 🌒 LED.

Use this button ***** to change from Normal mode to Diagnostic mode. This will put the IC-PCM 1:1 in diagnostic mode.

7.7.2 Set Outputs Mode (Diagnostic Mode)

Set Outputs mode, screen displays dynamic status of all output pins and provides a means to set manually status of the outputs for selected IC-PCM 1:1 by sending 24v output signal to the respective pins.

The status of each output is indicated by virtual LEDs.

Controller I	D	2 10.200.82.66	• 68		
Indicator	s.,	Output Point Name	Behaviors	Period	
•		1-0-1	Accept	0	
•		1-0-2	Reject	0	
•		1-0-3	Cycle Complete	0	
•		1-0-4	Gang Complete	0	
•		1-0-5	System Fault	0	
•		1-0-6	Low Torque	0	
•		1-0-7	Low Angle	0	
•		1-0-8	High Torque	0	

In Diagnostic mode, an output can be forced by sending output. When an output signal is forced, normal operation of the system is interrupted. When the user leaves "Set Outputs" screen, the forced signals on to the respective output pins will be reset to normal.

The status of Active output pin when "output signal is forced" is shown via Virtual green LED **O**.

User can switch to Normal Mode (View Mode) by clicking on

NOTE: Forcing outputs will disable and enable normal tool operation.

Care should be taken to ensure the work area is safe prior to manually activating outputs. Ensure that devices attached to the IC-PCM 1:1's outputs will not create a hazardous condition if outputs are manually activated.

7.8 Direct Controller Discovery

This screen is used for direct discovery of the IC-PCM. If the user wants to discover only certain IC-PCM, check the "Disable Discovery" check box.

Enter the IP Address for the selected device of interest.

irect discovery controller l	t	
IP Address 10.200.80.20	Disable Discov	/ery
10.200.80.20		
	IP Address	
	10 . 200 .	. 80 . 20
	Add	Edit Delete

NOTE: If disable discovery check box is not checked, ICS discovers all the IC-PCM available in the network.

Section 8 – Wireless Diagnostics

Displays wireless statistics of tool connected to USB or IC-PCM, also displays wireless statistics of IC-PCM for diagnostic purpose.

8.1 Wireless statistics of USB Connected Tool

Refresh	Location ID	Tx	Rx	Signal Strength	Signal Quality	Communication Stat
ID 10.200.82.66 ID 10.200.80.253 ID 10.200.82.81 ID 10.200.82.254	777:7	175	0	0		
- 秦 IC-PCM 10:1 ■ 10.200.82.33 ■ 10.200.83.37						

Displays the Location ID, Transmitted Packet Count, Received Packet Count and Signal Strength.

8.2 Wireless Statistics of the IC-PCM

Refresh						
⊒ 🔶 IC-PCM1:1	Location ID	Tx	Rx	Signal Strength	Signal Quality	Communication Statu
	777:7	175	0	0		
→ ◆ IC-PCM10:1 → ↓ 10.200.82.33 → ↓ 10.200.83.37						

Displays the following functions;

Location ID

Number of packets received and transmitted Signal Strength,

Signal Quality

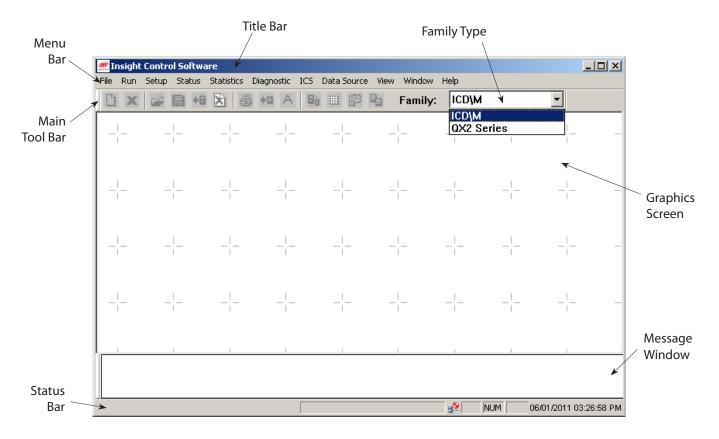
Communication Status of IC-PCM with wireless module.

Section 9 – General Screen Layout

9.1 ICS Screen Components

The ICS software Interface has following components:

- Title Bar
- Menu Bar
- Main Tool Bar
- Work Space
- Message Window
- Communication Tool Bar
- Status Bar



9.1.1 Title Bar

The title bar contains ICS icon and ICS name. In addition, there are standard Windows Close, Minimize, and Restore buttons. You can move the program window by clicking and dragging title bar.

9.1.2 Selection of Family Type

ICS is designed to provide a programming interface and archiving function to extend the functionality of family type IC12D/M controllers and QX Series of tools.

NOTE: Based on family type selection, functions under menus will change.

9.1.3 Menu Bar

The Menu Bar contains the following menus;

9.1.3.1 File Menu

Insight Control Softw	vare						
<u>File R</u> un <u>S</u> etup St <u>a</u> tus		Diagnostic ICS	Data So <u>u</u> rce	<u>V</u> iew <u>W</u> indow	Help		
<u>N</u> ew ICS Event Log,	Ctrl+N		# ₽	🖢 Family:	QX2	Series	•
<u>S</u> ave Send Delete Database Record	Ctrl+S Ctrl+E		_		- - 	_	-
P <u>r</u> inter Setup <u>P</u> rint Expor <u>t</u>	Ctrl+P Ctrl+O	-1-	- <u> </u> -	- - 	_ _	_	_
⊆lose Log off Exit	Ctrl+Alt+X	-1-	- <mark> </mark> -	- - -	-¦-	-l_	_

The **File Menu** is similar to the menus found on many Windows programs. It has the following functions:

New	Opens a new instance of currently active window. This button will be greyed out for all single instance windows.					
ICS Event Log	Provides an option to open a previously saved ICS Event Log. Note: It is only active when View Event Log screen is opened.					
Save Saves data of the current active window to local Database.						
Send Sends parameters in current active window to selected tool or controller.						
Delete Database Record	Deletes selected local database record.					
Printer Setup	Opens a dialog box, allowing user to set printer options.					
Print	Prints the data from current active window.					
Export	Exports data from current active window to a ".pdf" or ".csv" file.					
Close	Closes current active window.					
Log Off	Logs off current user and prompts with login window.					
Exit	Closes ICS program.					

9.1.3.2 Run Menu

🕮 I	nsight Control Soft	ware						
File	Run Setup Status	Statistics D	iagnostic ICS	Data Source	View Window	Help		
	RunMainCycleLog Runmain View All	6	• a A [6 # P -	🖢 Family:	QX Se	ries	×
-	IC-PCM/QX Event Lo Create Report	og	_ _	_ _	_ _	- $ $ $-$	_ _	- $ $ $-$
_	_	_ _	_ _	_	- ¹ -	_ _ 	_ _	-¦-

The **Run Menu** gives you access to the ICS control screen, providing the following options:

Runmain Cycle Log Contains Run Main View and View Cycle Log			
Run Main View	Displays EOR data for last cycle, for a single tool connected to USB/IC-PCM.		
View Cycle LogDisplays set of tightening results that are stored in tool/IC-PCM.			
Runmain View All	Displays last EOR data for all tools, that are connected via USB, IC-PCM.		
IC-PCM/QX Event log	Displays event log of IC-PCM and QX tool		
Create Report	Creates a report of EOR's based upon various criteria.		

9.1.3.3 Setup Menu

🕮 Insigh	t Control Software				
File Run	Setup Status Statistics Diagnostic	ICS Data Source V	iew Window	Help	
	Tool Setup IC-PCM 1:1 General Setup	16: # # -	Family:	QX Series	*
- <u> </u> -	Parameter Assignment Wireless Tool Setup	-!	_ _	_ _	_ _
	Download Software Reboot IC-PCM Wireless Energy Detector				
!		J _L_	_1_		_1_

The **Setup Menu** contains all ICS settings. It contains the following options:

Tool Setup	Contains Tightening Configuration and General Setup
Tightening Configuration	Provides options to set up Torque/Angle/Prevailing Torque Strategy.
General Setup	Provides options to set up general fastening settings. (Tool Setup, Wireless Setup and Password settings)
IC-PCM 1:1 General Setup	Provides you with ability to load, view, edit, create, and save general settings for specified IC-PCM 1:1.
Parameter Assignment	Provides options to assign any saved configuration and/or general parameter set to any QX tool connected to USB or IC-PCM, and can also assign general parameter set to IC-PCM 1:1.
Wireless Tool Setup	Provides options to view, setup and adjust all Location and Ethernet parameters for all IC-PCM. Also, provides options to view, setup and modify wireless settings.
Download Software	Provides options to download MCE/Display/Wireless Radio Firmware for tool connected to USB, and RISC/Wireless radio firmware to selected IC-PCM which are currently on the network.
Reboot	Provides options to reboot selected IC-PCMs and individual radio modules present in an IC-PCM
IC-PCM Wireless energy detector	Provides options to scan the energy level of all channels (11-25)

9.1.3.4 Status Menu

🕮 Insight Control Software													
File Run Setup S	Status Statistics	Diagnostic (ICS	Data Source View	Window	Help							
D x 🖻 _	View Network	•a A		# P 4	Family:	QX2 Series	-						

The **Status Menu** allows you to access the **View Network** screen.

View NetworkThe View Network screen provides a clear overview of all QX tools connected to USB/ IC-PCM
available on the network.

9.1.3.5 Statistics Menu

🥂 Insight Control Software														
File	Run	Setup	Status	Statistics	Diagnostic	ICS	Data Source	View	Window	Help				
D	X	Ê	日	Summai	y A		• # P	92	Family:	QX2 Series				

The Statistics Menu allows you to access the Summary screen.

Summary Provides the ability to view the calculated statistics	s of tool cycle log data connected to USB/ IC-PCM
---	---

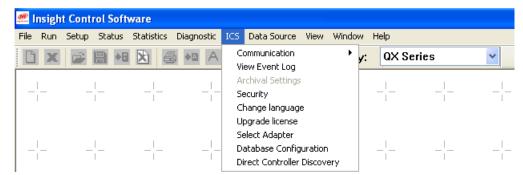
9.1.3.6 Diagnostic Menu

🗶 Ir	nsight	Contro	Right Control Software														
Eile	<u>R</u> un	<u>S</u> etup	St <u>a</u> tus	S <u>t</u> atistics	Diagnostic	ĪCS	Data So <u>u</u>	rce <u>V</u> iev	w <u>W</u> indow	<u>H</u> elp							
D	Х	Ê	₿ +6		System I View Inp	-	ostics		Family:	QX2	Series	-					
-	-	-		_	Set/View Wireless) Outp				_ _	_ _	- -					

The **Diagnostic Menu** contains options for diagnostics and troubleshooting.

System Diagnostics	Tool Diagnostics is the dynamic test of tool functions for the tool connected to USB.
Tool Test	Displays diagnostics data by streaming live motor data.
Tool Status	Displays status of trigger switch, direction switch, head light and current system status.
Keypad Status	Displays current status of Keypad and LED, and perform LED test.
Tool Calibration	Allows to run calibration, which can calibrate Transducer Range (TR).
PM Alarms	Allows to get/set PM alarm settings of tool.
View Inputs	Allows viewing of input pin status of the IC-PCM 1:1
Set/View Outputs	Allows to Set and view output pin status of IC-PCM.
Wireless Diagnostics	Provides status used to diagnose the system based on different statistical values (TX, RX etc)

9.1.3.7 ICS Menu



The ICS Menu provides access to eight different options, most of which allow you to perform administrative functions such as security and general system settings:

Communication	Allows setting Serial Settings & Protocol Assignments.
View Event Log	Opens ICS Event Log, which displays a log of ICS activity.
Archival Settings	Opens Archival Settings screen, which allows user to set up tools and specific data (EOR or Parameters) that require archiving.
Security	Opens Password Setup screen, which allows, with Supervisor access, user to set password and group permissions.
Change Language	Opens Select Language screen, which allows language being used in ICS to be changed. Available languages: Chinese, Czech, English, French, German, Italian, Polish, Portuguese, Russian, and Spanish.
Upgrade License	Opens Upgrade License screen, which allows user to upgrade License file.
Select Adapter	Opens Select Adapter screen, which allows selection of Network Connection type being used by ICS for connection with IC-PCM.
Database Configuration	Opens Database Configuration screen, which allows user to modify Archive Database configuration.
Direct Controller Discovery	Opens Direct Controller Discovery screen, which allows user to enter IC-PCM IP Addresses for direct discovery by ICS.

9.1.3.8 Data Source Menu

<u>@</u> I	🥂 Insight Control Software																	
<u>F</u> ile	<u>R</u> u	n	<u>S</u> etup	Sta	atus	S <u>t</u> atistics	Di	jagnost	ic <u>I</u>	<u>i</u> cs	Data So <u>u</u> rce	⊻iew	<u>W</u> indo	w	<u>H</u> elp			
D		C	Ê	H	+8		3	•8	A		Database	Ctrl+D Ctrl+W	UI	y:		Series		
											Archive	Section						I
_	1		_	1				_									-	

The Data Source Menu allows you to choose the ICS mode of operation: Database, Network, or Archive.

Database	When checked, indicates user is operating in Local Database Mode.							
Network When checked, indicates user is operating in Network Mode.								
ArchiveWhen checked, indicates user is operating in Archive Database Mode.								

9.1.3.9 View Menu

<u>@</u> In	Pinsight Control Software														
<u>F</u> ile	<u>R</u> un	<u>S</u> etup	St <u>a</u> tus	S <u>t</u> atistics	<u>D</u> iagnostic	<u>I</u> CS	Data S	ource	⊻iew	<u>W</u> indow	<u>H</u> elp				
B	X	6	8		A Be					n Toolbar sage Win		Series	•		
_	_	_	1_		_ _		_1_	_	_1	_	_ _	.	_		

The View Menu allows you to toggle on and off the display of the Main Toolbar and the Message Window.

Main Toolbar	When checked, Main Toolbar will be active. When unchecked, Main Toolbar will be hidden.
Message window	When checked, Message Window will be active. When unchecked, Message Window will be hidden.

9.1.3.10 Window Menu

I	🗶 Ir	🥮 Insight Control Software															
	Eile	<u>R</u> un	<u>S</u> etup	St <u>a</u>	tus	S <u>t</u> atist	ics	<u>D</u> iagno	ostic	<u>I</u> CS	Data :	Source	e <u>V</u> iew	Window	<u>H</u> elp		
	D	X	Ê	H	•8		6	•8	Α			P	92	New V Casca	Vindow de	eries	•
	_		-			_			_ _		_	_	_	Tile Close		- -	

The Window Menu functions either to open a new window or arrange the windows displayed.

New window	When selected, a new instance of the active window is opened.						
Cascade	en selected, all active windows will be arranged in a cascaded manner.						
Tile	When selected, all active windows will be arranged in a tiled manner.						
Close All	When selected, all active windows will be closed.						

9.1.3.11 Help Menu

🗶 Ir	nsight	Contro	ol So	ftwa	re												
Eile	<u>R</u> un	Setup	Sta	tus	Statis	tics	Diagno	stic	ĪCS	Data	Source	e <u>V</u> iew	<u>W</u> indow	<u>H</u> elp			
D	Х	Ê	H	+8	×		•	Α			P	92	Family:	Ab	out ICS		-
Ĺ	1		I					1			1		1	1		1	1

The **Help Menu** provides access to the version and license information.

About ICS When selected, opens a window containing the software version number, copyright information and license information.

9.1.4 Main Tool Bar

The Main Toolbar is located at top of screen below menu bar.

🗋 🗙 🖻 🖥	3 +8 🗙) 🚳 📲 A 📑 🌐 🛱 🔁 Family: QX Series 🕑							
New		Opens a new instance of currently active window. This button will be greyed out for all single instance windows.							
Close	×	Closes current active window.							
Load		This button is active only when viewing the ICS event log screen, It opens a window which allows loading a previously saved ICS Event Logs.							
Save		Saves data of current active window to local Database.							
Send	•=	Sends the parameters in current active window to selected tool or controller.							
Delete	×	Deletes selected local database record.							
Print	8	Prints data of current active window.							
Export	*	Exports the data of current active window to a ".pdf" or ".csv"							
Archive Settings	A	Opens Archival Settings screen.							
Network Mode	B à	This button allows switching current active window to Network mode. In this mode data can be sent and received directly to/from a selected tool or a controller.							
Local DB Mode		This button allows switching current active window to Local DB mode. In this mode the data can be saved to local database.							
Archive Mode	8	This button allows switching current active window to Archive DB mode. In this mode the data which is stored in the Archived database can be viewed.							
Family	·	There are two ICS families: ICD/M and QX Series.							

9.1.5 Communication Tool Bar

The **Communication Toolbar** is primarily used to select a controller, when working in Network mode. It is located at the top of the graphics screen (window). Few of the controls may not be present depending on the screen type.

QX2 RunMainCycle	Log1					
Location ID		_	<u>C</u> onfig No.		Send	×
Locatorno	Indicators		<u>C</u> oning No.		2010	

This tool bar contains the following elements:

Location Id	This drop box displays all tools connected to USB/ IC-PCM by the ICS software. Select the
	desired tool from this drop box.

9.1.6 Database Tool Bar

The Database Tool Bar is primarily used to perform the DB operations, such as saving and fetching the stored data.

Paramset Name Select New... 🗸 Source Local DB

9.1.7 Work Space

The Work Space function has a desktop for all graphics screens. All graphics screen open within the working area.

9.1.8 Graphics Screens

The graphics screens contains data and setup parameters for one or more controllers. Each screen can be individually minimized, maximized or closed. The title bar of each screen contains the screen name. The example below shows the **Tool Setup** screen open in the Work Area.

x 🕞 🗐 🌆 🕅			w Window Help	Series	~		
			Family: QX 9	series			
(Tool Setup - 1							
ocation ID	•	Config	~				
nfigSet Name	Source	Network	Date-TimeStamp		~		
ghtening Configuration Ger	eral Setup						
	ierai secup						
Common Settings Strategy	Torque	~	Direction				
Torque Display Units	Nm			CCW			
Gang Count	0		- Audible Alert		Reset to		
Cycle Delay (sec)	0.0			Off	Assembly Complete Disable Reverse Reverse Speed (%) 100		
Auto Increment	0		Socket Selection				
	Soft		Number 0	~			
Joint Type							
Torque Settings							
					1		
Target Torque		0.00 A	ngle High Limit (deg)	32000	Angle Low Limit (deg)	0	
Torque Threshold for Counting Angle		0.00 Te	orque High Limit	0.00	Torque Low Limit	0.00	
Torque Threshold for Shift down		0.00 SI	ep Timeout (sec)	15	Acceleration (%)	90	
		0.00		4.0			
Free Speed (%)		100 5	hiftdown Speed (%)	20			

9.1.9 Status and Progress Bar

When tools are connected, the Status bar will show a small icon for wireless tools, which will have a Green Tick mark. Double clicking on this icon displays the Wireless Tool Settings screen.

9.1.10 Icons

There are different lcons used to represent tools connected to USB, IC-PCM.

lcons	Descriptions
•	Tool Connected to USB
2	IC-PCM 1:1
<u></u>	IC-PCM 10:1
T.	Pistol type Tool connected to IC-PCM
\sim	Tool Mapped but not connected to IC-PCM 1:1
() ()	Tool Mapped but not connected to IC-PCM 10:1

Contact Information

Fastening Solutions

Joining components in today's industrial environment is much more than putting wrench to bolt. It's about finding a solution that links the operator and the joint and delivers unparalleled accuracy and repeatability. **Ingersoll Rand** has a superior knowledge of the threaded fastening process, acquired through years of application work with the world's leading manufacturers in the motor vehicle, aerospace, appliance, and electronics industries. We understand the interface of the tool and operator - and know how to leverage the power of ergonomically-designed equipment to maximize productivity.

Beyond just product, **Ingersoll Rand**'s extensive Consulting, Integration, and Service capabilities help you before, during, and after your line or work area is configured for production. Contact **Ingersoll Rand** at the website, telephone numbers, or addresses below for a solution that will meet your needs and exceed your expectations.

Global Contact Information

Worldwide

www.ingersollrandproducts.com

North America

Ingersoll Rand North American Solutions Center 1872 Enterprise Drive Rochester Hills, MI 48309 Telephone: 866-284-5509

Europe

Ingersoll Rand Swan Lane, Hindley Green Wigan WN2 4EZ UK Telephone: +44 (0)1942 25 7171 Ingersoll Rand Zone du Chene Sorcier BP 62 78346 Les Clayes sous Bois Cedex France Telephone: +33 (0) 1 30 07 69 00

China

Ingersoll Rand 11F Xu Huiyuan Building, 1089 Zhong Shan Nan Er Rd. Shanghai 200030, PRC

Telephone: +86 (0)21-54529898

India

Ingersoll Rand Wadco Tools, Ltd. 37A, Site 4 Sahibabad Industrial Area Ghaziabad 201 010 (UP) India Telephone: +91 (0)120-4389200

Notes:

Notes:

Notes:

www.ingersollrandproducts.com © **2012 Ingersoll-Rand, plc**

