Cleco®
Production Tools

Quick Installation Guide
P2402KA
2019-08

CellCore™

Data Transmission

CellCore Installation

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Apex Tool Group GmbH

Industriestraße 1
73463 Westhausen
Germany

Contents

1 About this description

The original language of this description is German.

This description is intended for anyone who sets up the cordless EC tool CCBA or CCBP on a mPro200GC-AP controller.

This Instruction Manual is the Original Instruction Manual and

- describes the basic installation of the components.
- provides tips for using and setting the components up in the manner intended.
- is not sufficient for planning complex network infrastructures.
- does not contain detailed information about the components. Detailed information can be found in the manuals concerned.

Other documents

No.	Type
P2398PM	Programming Manual Cordless EC Tool CellCore
P2403HW	Hardware description mPro200GC(-AP) CellCore
P2390BA	Instruction Manual cordless EC tool CellCore
P2372JH	Installation Guide LiveWire Utilities
P2280PM	Programming Manual S16813
	Documentation mProRemote Professional

Symbols in the text

Italic	identifies menu options (e.g., diagnostics), input fields, control boxes, options fields or dropdown menus.
>	Denotes the selection of a menu option from a menu, e.g., *File* > *Print*
<…>	Denotes switches, pushbuttons or the buttons of an external keyboard, e.g., <F5>
`Courier`	Denotes filenames and paths, e.g., **`setup.exe`**
•	Denotes lists, Level 1
-	Denotes lists, Level 2
a) b)	Denotes options
→	Denotes results
1. (...) 2. (...)	Denotes handling steps
▶	Denotes an individual handling step

2 System layout

The communication between the controller and the tool is possible via WLAN or Bluetooth.The access point is integrated in the mPro200GC-AP controller. To communicate with the controller, the tools must be in the mPro mode.

2.1 WLAN communication

The system layout described is based on communication via WLAN. The access point is integrated in the mPro200GC-AP controller. The tools can communicate according to the following standard:

Tool	Standard
CCBA, CCBP	WLAN dual band: 2.4 GHz/5 GHz Standard IEEE 802.11 a/b/g/n

Abb. 2-1: System layout with mPro200GC-AP

2.1.1 Data on the tool

Features	Data
Standard	IEEE 802.11a/b/g/n
Safety	• WEP 64/128 encryption • WPA/WPA2 TKIP/AES • 802.1x LEAP, PEAP[a]
Range	Typically up to 50 m
Channels	• 1 – 13 (2.412 – 2.472 GHz) • 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 149, 153, 157, 161, 165 (5.180 – 5.825 GHz)
Transmission power	20 dBm
Sensitivity	-95 dBm (typ. @ 1 Mbps DSSS, 2.4 GHz) -66.3 dBm (typ.@ 40 MHz MCS7 MM 4K) -92.5 dBm (typ. @ 6 Mbps OFDM, 5 GHz) -69.3 dBm (typ @ 40 MHz MCS7 MM 4K, 5 GHz)
Modulation	CCK/DSSS/OFDM

a.) PEAP (without client certificates)

2.1.2 Country-specific channel settings

The cordless CellCore tools work in the license-free 2.4 GHz/5 GHz ISM band:

Band	Channel	Frequency in GHz	World	Europe	USA/Canada
			World	CE	FCC
2.4 GHz IEEE802.11b/g	1	2.412	x	x	x
	2	2.417	x	x	x
	3	2.422	x	x	x
	4	2.427	x	x	x
	5	2.432	x	x	x
	6	2.437	x	x	x
	7	2.442	x	x	x
	8	2.447	x	x	x
	9	2.452	x	x	x
	10	2.457	x	x	x
	11	2.462	x	x	x
	12	2.467	-	x	-
	13	2.472	-	x	-
5 GHz IEEE802.11a U-NII-1	36	5.180	x	x	x
	40	5.200	x	x	x
	44	5.220	x	x	x
	48	5.240	x	x	x
5 GHz IEEE802.11a U-NII-2	52	5.260	-	x	x
	56	5.280	-	x	x
	60	5.300	-	x	x
	64	5.320	-	x	x
5 GHz IEEE802.11a U-NII-2 ext	100	5.500	-	x	x
	104	5.520	-	x	x
	108	5.540	-	x	x
	112	5.560	-	x	x
	116	5.580	-	x	x
	120	5.600	-	x	-
	124	5.620	-	x	-
	128	5.640	-	x	-
	132	5.660	-	x	-
	136	5.680	-	x	x
	140	5.700	-	x	x
Outdoor channels U-NII-3	149	5.745	-	o	x
	153	5.765	-	o	x
	157	5.785	-	o	x
	161	5.805	-	o	x
	165	5.825	-	o	x

Key

x	Approved and available
-	Not permissible, blocking necessary
o	Permissible with limited power to 20 dBm (SRD)

2.1.3 Cell planning for access point

Each channel operates with a frequency range of 22 MHz. To avoid overlapping the frequency ranges, the channels must be chosen so that they do not overlap. In other words, a maximum of 3 independent channels (e.g., 1, 6 and 11) are available in the 2.4 GHz frequency band.
The 5 GHz frequency band provides up to 21 independent channels.
To minimize interference between different radio cells that share the same RF channel, it is advisable to physically separate them. Note that for multistory buildings, it is necessary to consider both higher and lower floors.

The following overview shows the basic channel assignment.

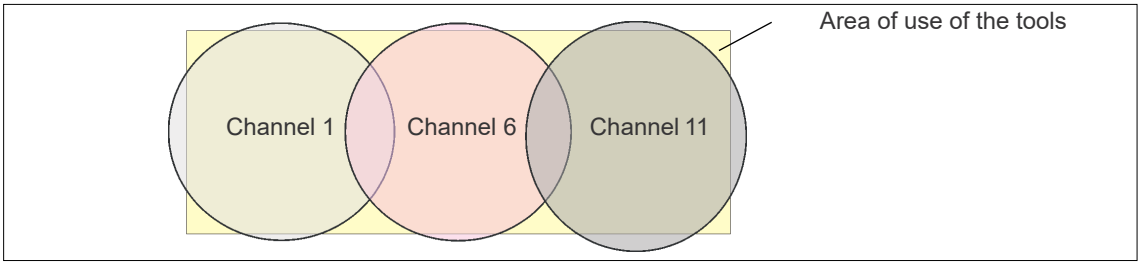

Abb. 2-2: Idealized radio cells

The physical circumference of a radio cell depends primarily on the access point used, the antennas and the type of construction in the surrounding area. The limit of a radio cell is reached when the signal-to-noise ratio (SNR) falls below 15 dB. If the ratio falls below this value, a new radio cell should be started. The typical circumference of a radio cell in a building is up to 50 m.
For the tool to be able to connect to different access points automatically (roaming), the SSID and encryption must be set identically at the corresponding access points.

If wide-area coverage with controlled emission from multiple access points is required, corresponding planning and evaluation must be carried out for the specific case.

Example installation 5 GHz

- Several overlapping radio cells are possible, even if only one free channel is used.
- Up to 200 tools are then possible within the radio range with a limited volume of data.
- The range of the radio cells is limited by the minimal transmission power.

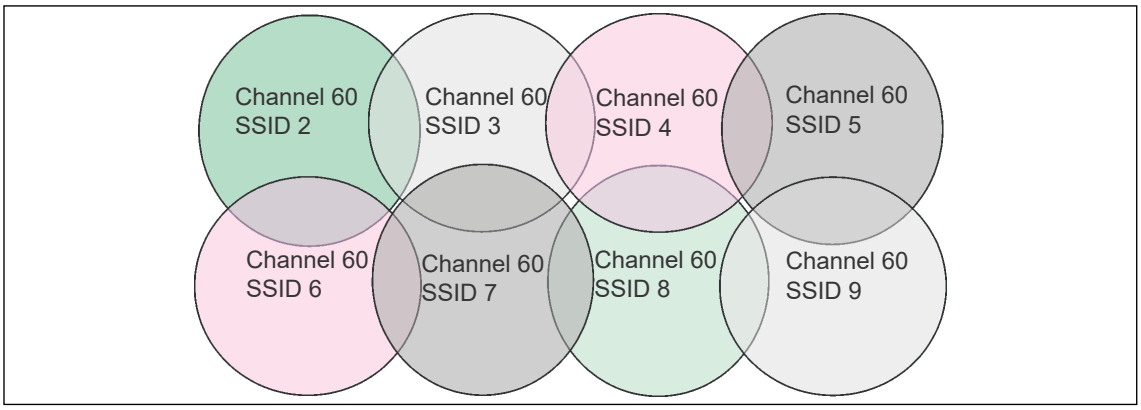

Abb. 2-3: Idealized radio cells = Range of use of the tools

2.2 Bluetooth connection

The controller can communicate via the Bluetooth connection with up to seven tools at a time. The tools can communicate according to the following standard:

Tool	Standard
CCBA, CCBP	Bluetooth 4.2

3 Setting up the mPro200GC-AP

3.1 Prior to Initial Startup

To set up the controller, the following items are required:

- PC
- Ethernet cable
- Software mProRemote Professional
- Software LiveWire Utilities
- Monitor with VGA connector, keyboard and mouse (optional)

1. Download the *mProRemote Professional* and *LiveWire Utilities* software from the following website: `http://software.apextoolgroup.com/current-software-packages/pc-software/`
2. Install the *mProRemote Professional* software on the PC, see Document *mProRemote Professional.*
3. Install the *LiveWire Utilities* software on the PC, see Document *P2372JH*.
4. Set network settings from laptop/PC to i. e. 192.168.100.201.

3.2 Configuring the access point

In the factory setting, the IP address and the subnet mask of the controller are specified with a default value (Ethernet 1):

Parameter	Default value
IP address	192.168.100.200
Subnet mask	255.255.255.0

Note

If installing more than one Series 200 Controller, each controller must have a unique IP address.

Connecting all controllers to the same network without changing the original IP address of 192.168.100.200 will create an IP conflict.

▶ Assign a new IP address to each controller.

To configure the access point:

1. Connect laptop/PC directly to a mPro200GC-AP using an Ethernet cable.
2. Start *mProRemote Professional* on the PC.
3. In the *Remote Control* tab in the *Target* input box, enter the IP address *192.168.100.200*.
4. Press *Remote (TCP/IP)*.
   → A connection to the controller is established.
   → The user interface for the controller opens on the PC.
5. Select *Navigator* > *Utility* > *System Settings* > *Radio Frequency (RF) Configuration LiveWire/CellCore*.
6. Open the *Wireless AP Configuration* tab.
7. Carry out the desired settings for the configuration of the access point.
8. Press <Apply> to save the changes.

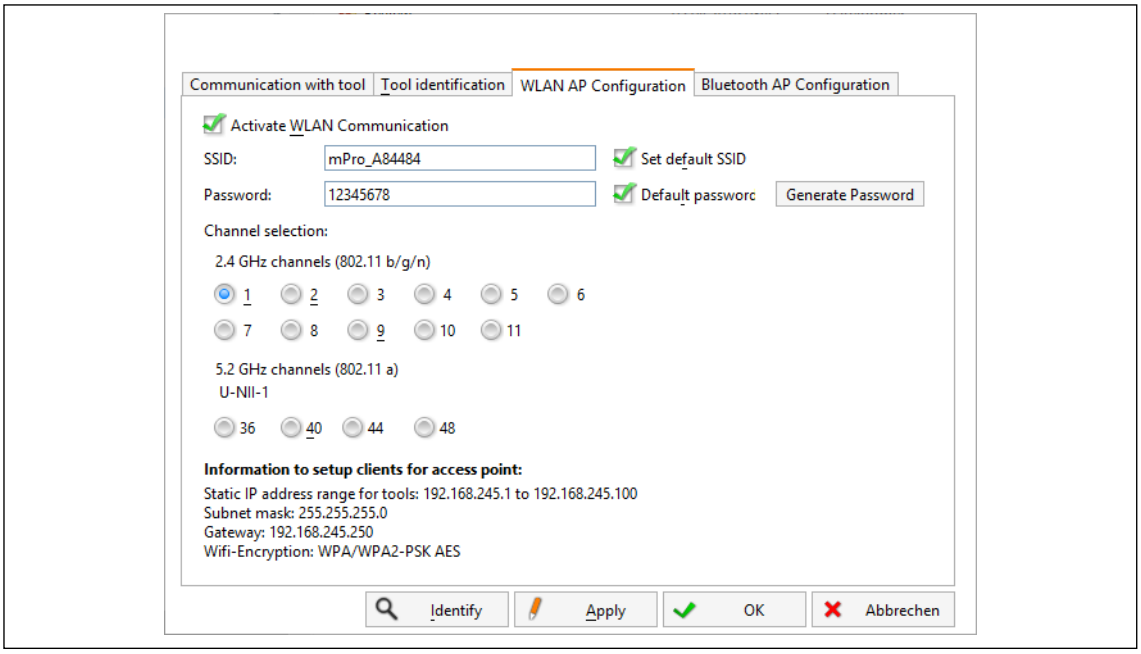

Abb. 3-1: WLAN AP Configuration

Parameter	Description
Activate WLAN Communication	If the checkbox is activated, WLAN is active on the controller. → The Bluetooth function is deactivated.
SSID	Enter the SSID for the WLAN name (access point) to which a connection is to be established.
Set default SSID	If the *Set default SSID* checkbox is activated, then a default value for the SSID is assigned.
Password	Enter the password for the access point. The default password is visible. As soon as a new password is assigned, asterisks * are displayed instead of numbers.
<Generate Password>	Press <Generate Password> to generate any eight-digit password.
Default Password	If the *Default Password* checkbox is activated, then the default password is displayed.
Channel bands	Select the frequency band. Only one channel can be selected. The following may be selected: • 2.4 GHz • 5.2 GHz
2.4 GHz channels (802.11 b/g/n)	Select channel. Only one channel can be selected. Only active if the 2.4 GHz frequency band has been selected.
5.2 GHz channels (802.11 a)	Select channel. Only one channel can be selected. Only active if the 5.2 GHz frequency band has been selected.
Information to setup clients for access point	Information to setup clients for access point: • IP address range for tools • Subnet mask • Gateway • WLAN-Encryption
<Identify>	Update the view of the WLAN settings.
<Apply>	Save the settings.
<OK>	Exit software, the settings are saved.
<Cancel>	Exit software, the settings are not saved.

For all other settings, default values are assigned, which can not be changed.

If the PC can not establish a connection to the controller, then the settings can be made via a monitor connected to the controller.

1. Connect a monitor via a VGA connection, as well as a keyboard and a mouse, to the controller.
   → The software user interface for the controller appears on the screen.
2. Select *Navigator > Utility > System Settings > Radio Frequency (RF) Configuration LiveWire/Cell-Core*.
3. Open the *Wireless AP Configuration* tab.
4. Carry out the desired settings for the configuration of the access point.
5. Press <Apply> to save the changes.

3.3 Configuring tool RF settings with the PC

1. Connect the tool to the PC via a Micro B USB cable.

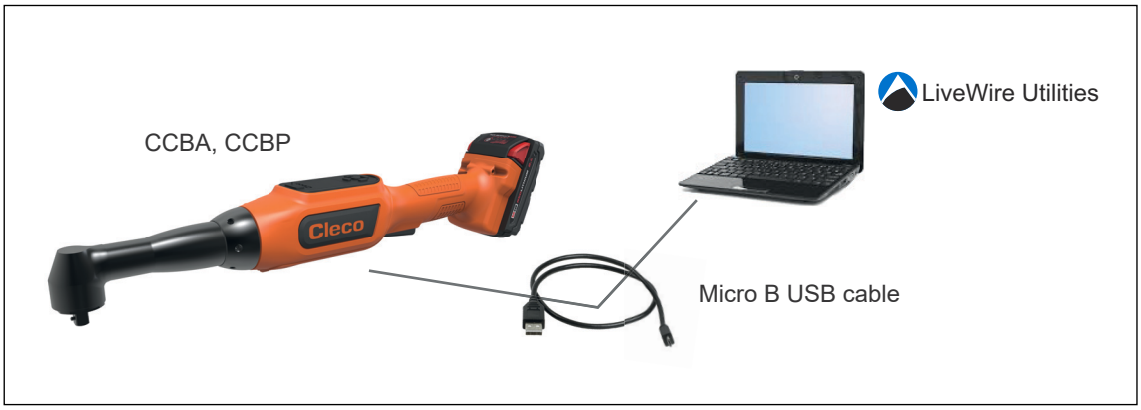

Abb. 3-2: LiveWire Utilities

2. Switch on the tool.
3. Determine the serial interface (COM port) for the driver in the device manager for the PC.

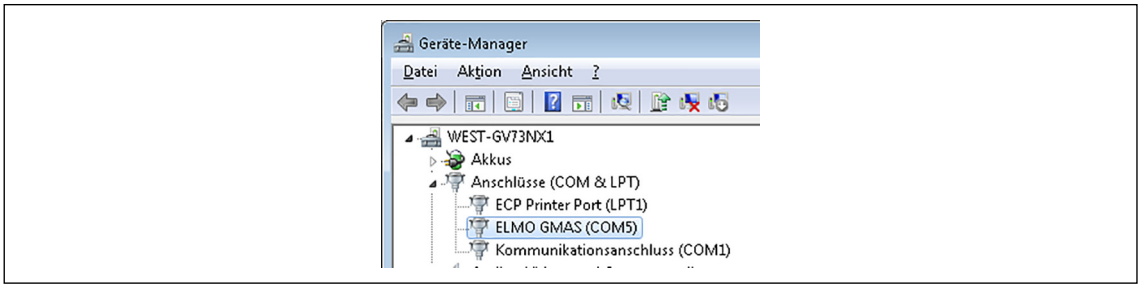

Abb. 3-3: Device manager

4. Starting the *LiveWire RF Configuration* program under the Apex Tool Group.

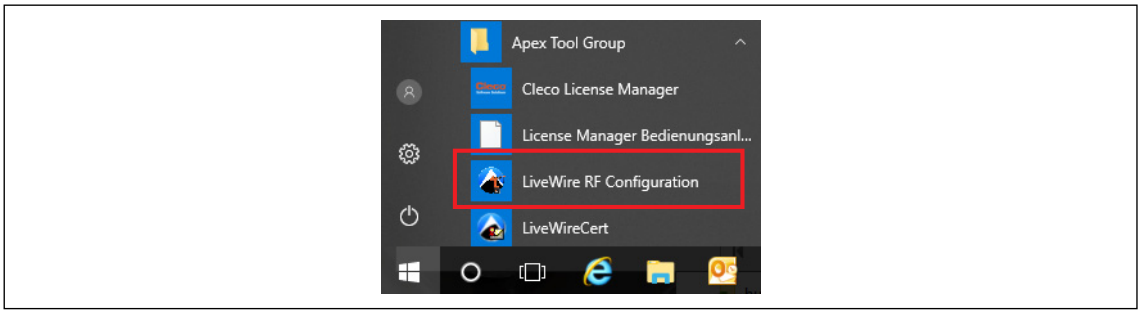

Abb. 3-4: Starting the LiveWire RF Configuration program

5. For an *IRDA Connection*, select the serial interface (COM port) for the driver.
6. Select <Identify> to read out the specific data of the WLAN module.

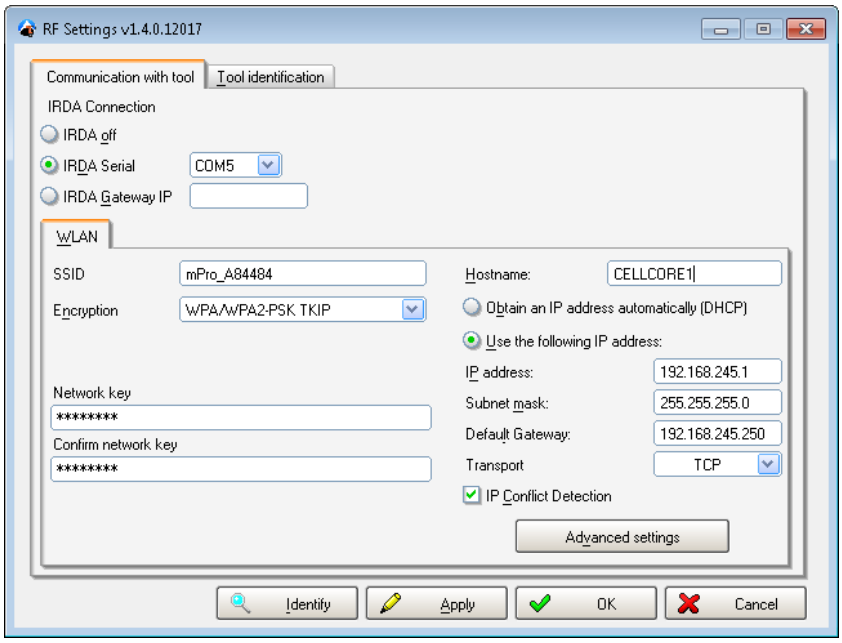

Abb. 3-5: RF Settings

Parameter	Description
SSID	Enter SSID. SSID must be identical to the access point.
Encryption	Select *WPA/WPA2-PSK TKIP* or *WPA/WPA2-PSK AES*.
Network key	Enter the network key. The network key must be identical to the access point.
Confirm network key	Confirm the network key.
Hostname	Optionally, a hostname can be entered.
Obtain an IP address automatically (DHCP)	Do not select this option. The IP address is automatically assigned.
Use the following IP address	Enter the IP address manually.
IP address	Enter the IP address. For the mPro200GC-AP, the first three blocks of the IP address are fixed and must not be changed: 192.168.245.xxx In the last block, numbers between 1 and 49 can be assigned as a static address.
Subnet mask	Enter the subnet mask.
Default Gateway	IP address that is assigned by the access point. The default value is: 192.168.245.250
Transport	Select TCP.
IP conflict detection	– Setting not programmed –

7. Select <Advanced settings>.
   → The *WLAN Advanced Settings* window opens to set the wireless channel.

Parameter	Description
Wireless mode	Select the WLAN mode: • Select 802.11b/g/n if a frequency band of 2.4 GHz is used. • Select 802.11a if a frequency band of 5 GHz is used.
5.2 GHz radio band (802.11a)	Select frequency band. This setting is only possible if the 5 GHz frequency band has been selected.

Parameter	Description
Wireless channel	There are two setting options: • Select *Auto* after the corresponding channel is automatically searched for. • Assign the channel selected during the WLAN configuration.
<Scan channels>	Scan wireless channels. The button is not active if a channel is selected for *Wireless channel*. When using the mPro200GC-AP, this function is not needed because only one channel can be selected.
Transmit power	Set transmission power.
Roaming Aggressiveness	Setting option, from which signal strength the tool connects with another access point. Select *Low* because the access point is integrated in the controller for the mPro200GC-AP.
<OK>	Exit input window; the settings are saved.
<Cancel>	Exit input window; the settings are not saved.

8. Confirm settings with <OK>.
9. Press <Apply>.
   → Settings are written onto the tool.
10. Confirm the following message with <Yes>:
    Toolserial: xxxxxxx
    Builddate: xx.xx.xx
    Configure Tool?
11. Confirm the following message with <OK>:
    Configuration done!
12. Installing the tool on the controller.

3.4 Configuring tool Bluetooth settings with mPro200GC-AP

Perform the following steps only when Bluetooth communication is to be established. For WLAN communication see chapter 3.3 Configuring tool RF settings with the PC, page 10.

1. Switch on the tool.
2. Using *mProRemote Professional* to access the controller and select *Navigator* > *Utility* > *System-Settings* > *Radio Frequency (RF) Configuration LiveWire/CellCore*.
3. Open the *Bluetooth AP Configuration* tab.
4. Select the *Activate Bluetooth Communication* check box.
5. Press <Start pairing...>.
6. Activate Bluetooth on the tool: Select > > > .
7. Use the tool to scan for Bluetooth devices: Select > > .
8. Select the desired controller and confirm with the -button.
   → When the Bluetooth connection is established, the field is highlighted in green.
9. Set the node number: Select > > .
10. Installing the tool on the controller.

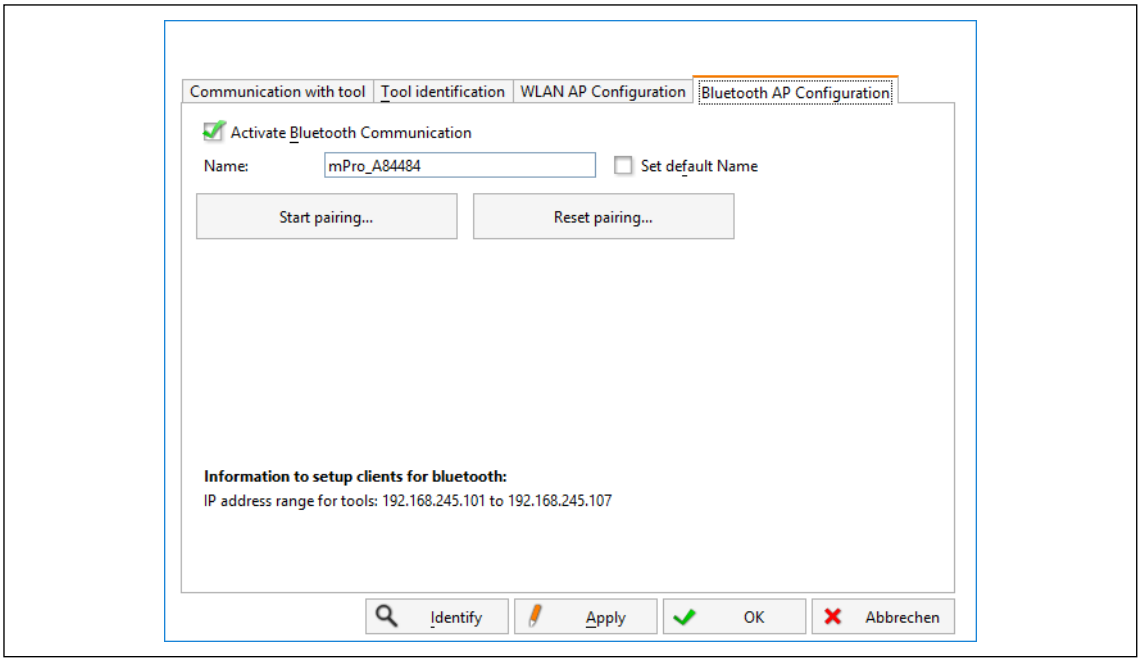

Abb. 3-6: Bluetooth AP Configuration

The *Bluetooth AP Configuration* tab contains the following setting options:

Parameter	Description
Activate Bluetooth Communication	If the check box is activated, Bluetooth is active on the controller. → The WLAN function is deactivated.
Name	Enter the name used to display the control on the tool.
Set default Name	If the *Set default Name* check box is activated, a default value is assigned to the name.
Start pairing...	Press to make the controller visible to the tool for a Bluetooth connection. → The following message indicates whether the operation was successful.
Reset pairing...	Press to disconnect the Bluetooth connection between the controller and the tool. → The following message indicates whether the operation was successful.
Information to setup clients for bluetooth	Information about possible IP addresses for tools. To establish a Bluetooth connection, the IP address of the tool must be in the specified range.
<Identify>	Update the view of the WLAN settings.
<Apply>	Save the settings.
<OK>	Exit software, the settings are saved.
<Cancel>	Exit software, the settings are not saved.

3.5 Installing the tool on the controller

Up to ten tools can be connected to one controller via WLAN.
Up to seven tools can be connected to one controller via Bluetooth.

1. Select *Navigator* > *Tool Setup* on the user interface of the controller.
2. Press <Install> to add a tool to the tool list.
3. Carry out the following settings:

Parameter	Description
Group Name	Select Tool Group.
Name	Enter Tool Name.
Type	Select LiveWire/CellCore w/WLAN.
IP address/Hostname	Enter the IP address that has been assigned to the tool using the *LiveWire Utilities* software.

4. Press <OK> and save the settings.
   → The Tool List is displayed.
   → Status of tool is now *Needs User Acceptance*.
5. Select <Tool Settings>.
6. Check the *Model Number* and *Serial Number* and confirm that the tool displayed corresponds to the tool connected.
7. Save the settings with <Accept>.
   → The Tool List is displayed. Status of tool is now *online*.
8. Select <Navigator>.
   → The settings are saved.
9. For additional programming for tightening (e.g., PG), see Document P2280PM.

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DETROIT, MICHIGAN
Apex Tool Group
2630 Superior Court
Auburn Hills, MI 48236
Phone: +1 (248) 393-5644
Fax: +1 (248) 391-6295

LEXINGTON, SOUTH CAROLINA
Apex Tool Group
670 Industrial Drive
Lexington, SC 29072
Phone: +1 (800) 845-5629
Phone: +1 (919) 387-0099
Fax: +1 (803) 358-7681

MEXICO
Apex Tool Group
Vialidad El Pueblito #103
Parque Industrial Querétaro
Querétaro, QRO 76220
Mexico
Phone: +52 (442) 211 3800
Fax: +52 (800) 685 5560

BRAZIL
Apex Tool Group
Av. Liberdade, 4055
Zona Industrial Iporanga
Sorocaba, São Paulo
CEP# 18087-170
Brazil
Phone: +55 15 3238 3870
Fax: +55 15 3238 3938

EUROPE | MIDDLE EAST | AFRICA

ENGLAND
Apex Tool Group GmbH
C/O Spline Gauges
Piccadilly, Tamworth
Staffordshire B78 2ER
United Kingdom
Phone: +44 1827 8727 71
Fax: +44 1827 8741 28

FRANCE
Apex Tool Group SAS
25 Avenue Maurice Chevalier - ZI
77330 Ozoir-La-Ferrière
France
Phone: +33 1 64 43 22 00
Fax: +33 1 64 43 17 17

GERMANY
Apex Tool Group GmbH
Industriestraße 1
73463 Westhausen
Germany
Phone: +49 (0) 73 63 81 0
Fax: +49 (0) 73 63 81 222

HUNGARY
Apex Tool Group
Hungária Kft.
Platánfa u. 2
9027 Györ
Hungary
Phone: +36 96 66 1383
Fax: +36 96 66 1135

ASIA PACIFIC

AUSTRALIA
Apex Tool Group
519 Nurigong Street, Albury
NSW 2640
Australia
Phone: +61 2 6058 0300

CHINA
Apex Power Tool Trading (Shanghai) Co., Ltd.
2nd Floor, Area C
177 Bi Bo Road
Pu Dong New Area, Shanghai
China 201203 P.R.C.
Phone: +86 21 60880320
Fax: +86 21 60880298

INDIA
Apex Power Tool India Private Limited
Gala No. 1, Plot No. 5
S. No. 234, 235 & 245
Indialand Global Industrial Park
Taluka-Mulsi, Phase I
Hinjawadi, Pune 411057
Maharashtra, India
Phone: +91 020 66761111

JAPAN
Apex Tool Group Japan
Korin-Kaikan 5F,
3-6-23 Shibakoen, Minato-Ku,
Tokyo 105-0011, JAPAN
Phone: +81-3-6450-1840
Fax: +81-3-6450-1841

KOREA
Apex Tool Group Korea
#1503, Hibrand Living Bldg.,
215 Yangjae-dong,
Seocho-gu, Seoul 137-924,
Korea
Phone: +82-2-2155-0250
Fax: +82-2-2155-0252

Cleco®
Production Tools

Apex Tool Group, LLC
Phone: +1 (800) 845-5629
Phone: +1 (919) 387-0099
Fax: +1 (803) 358-7681
www.ClecoTools.com
www.ClecoTools.de