

PC User Interface

Instruction Manual

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1. PCFE Installation

Open PCFEInstaller.msi from the USB Storage Device supplied with the Torque Device.

This .msi file will guide you through the installation of the PCFE. It is recommended that a desktop shortcut is created when the installation is complete.

1.1. Communication with PCFE

1. Connect a USB Cable from PC to the Torque Device. The HID driver will self-install and prompt you when the process is complete (*See Figure 1*).

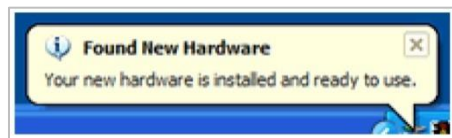


Figure 1: Desktop Notification for Driver Installation

2. When in the “Select Port” menu from the top left of the PCFE, there will be two options:
 - i. **Com Port 1** – Select this option if you require and have the capability of serial communication.
 - ii. **Torque Device** – This will allow you to connect your Torque Device via USB.

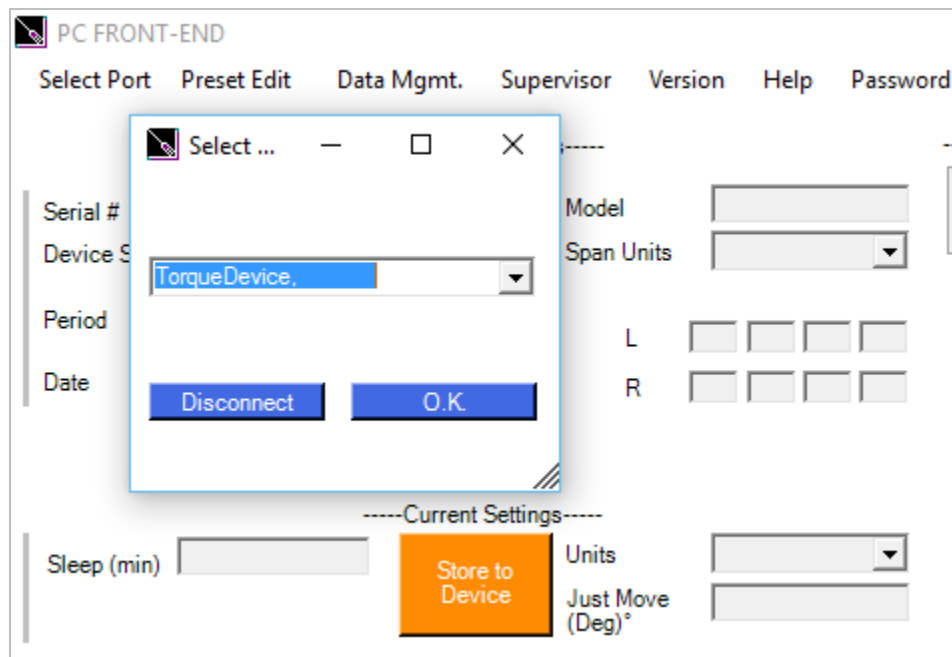


Figure 2: Selecting suitable COM port

2. PCFE User Instructions

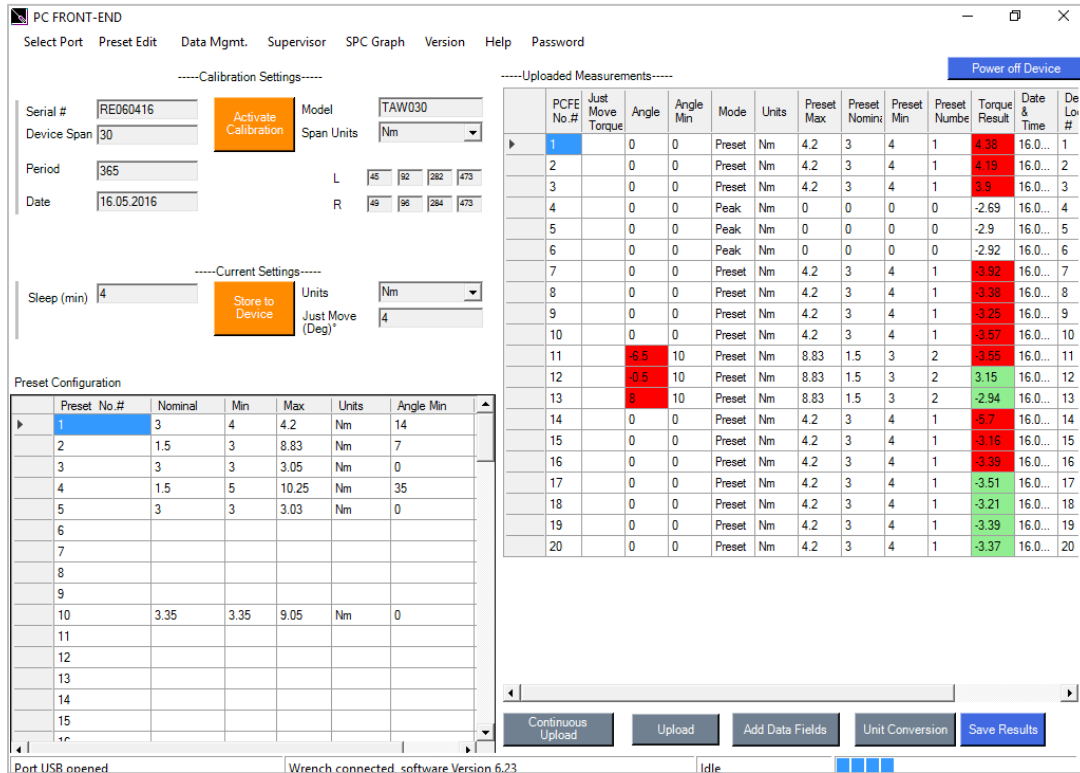


Figure 3: Main PCFE Screen

2.1. Menu Bar

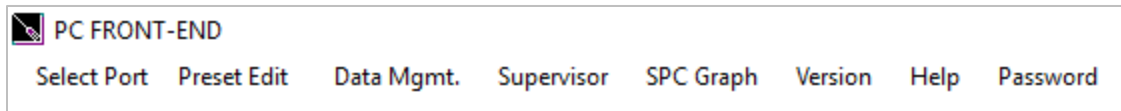


Figure 4: PCFE Menu Bar

1. **Select Port:** Allows the User to connect with the Torque Device (See Figure 2).
2. **Preset Edit:** A preset is a set of torque/torque and angle parameters.
 - i. **Clear all** – Delete existing presets from the table, use “Store to Device” save this update to device.
 - ii. **Load from File** – Load presets from a .csv file to the Torque Device.
 - iii. **Save to File** – Export the preset table to a .csv file.
3. **Data Mgmt:**
 - i. **Save Results** – Save measurement results to a .csv file.
 - ii. **Print Results** – Print measurement results.
 - iii. **Clear Results** – Delete all the results measurement from the table.
 - iv. **Page Setup** – Set print layout for the “Print Results” option.

Supervisor:

- i. **Clear Product Results** – Permanently delete all measurement results from the Torque Device.
 - ii. **Enable/Disable** – Hides all Torque Device modes except for “Preset”. On next startup all mode except preset will be enabled/disabled.
 - iii. **Torque Counter** – Counter can be enabled/disabled on compatible products and the counter limits set.
 - iv. **Reset Product** – Perform factory reset on the Torque Device. **Note:** This deletes all information on the Torque Device including calibration information.
4. **SPC Graph:** Creates a visual representation of the chosen torque results. **Note:** This feature is only available when ten or more measurements using the same preset, have been uploaded to the PCFE.
 5. **Version:** Shows current version of the PCFE.
 6. **Help:** Leads to instruction manuals for PCFE operation.
 7. **Password:** Change existing password. **Note:** Only available when PCFE opened with “master” password.

2.2. Calibration Settings

-----Calibration Settings-----

Serial #	RE060416	Activate Calibration	Model	TAW030
Device Span	30		Span Units	Nm
Period	365		L	45 92 282 473
Date	16.05.2016		R	49 96 284 473

Figure 5: Calibration Settings Screen

1. **Serial #:** The serial number of the product which can be linked to a calibration certificate.
2. **Model:** The model number is the default value used but can be changed if required without effecting the calibration of the Torque Device.
3. **Device Span:** The upper limit of the torque range of the Torque Device is shown here.
4. **Span Units:** Shows what units the Torque Device was calibrated in.
5. **Period:** The number of days from the date of calibration until it is recommended that the Torque Device is re-calibrated.
6. **Date:** The date on which the Torque Device was last calibrated.

2.3. Current Settings


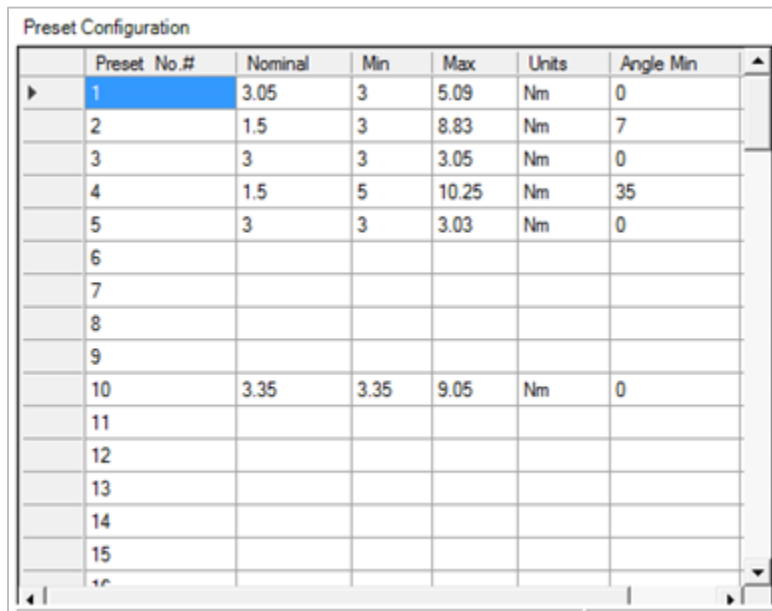


Figure 6: Current Settings

1. **Sleep:** The time in minutes before the Torque Device will enter sleep mode if left idle. If the operator applies torque or uses the torque device control buttons the sleep counter is reset. The Torque Device will not enter sleep while connected via USB to PC.
2. **Units:** Current units of measurement (Nm is the default setting).
3. **Just Move (Deg)°:** The default Just Move angle setting, which is the angle at which a snapshot of the torque is taken during the Just Move mode application.

2.4. Preset Configuration



Preset No.#	Nominal	Min	Max	Units	Angle Min
1	3.05	3	5.09	Nm	0
2	1.5	3	8.83	Nm	7
3	3	3	3.05	Nm	0
4	1.5	5	10.25	Nm	35
5	3	3	3.03	Nm	0
6					
7					
8					
9					
10	3.35	3.35	9.05	Nm	0
11					
12					
13					
14					
15					
16					

Figure 7: Preset Configuration Screen

The Preset Configuration Screen shows the presets that are stored on the Torque Device. Presets can be configured either in the PCFE or on the Torque Device.

For instructions on how to add a preset using the PCFE, please see the section “Set a Preset using the PCFE”.

2.5. Status Bar & Results Table Controls

This section of the PCFE allows the user to view stored results from the Torque Device. These results can then be saved as an Excel file for further analysis and to offer the user complete traceability of their torque measurements.

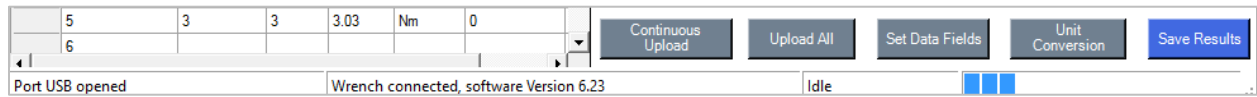


Figure 8: Status Bar & Results Table Controls

2.5.1. Status Bar

1. **Port status:** Displays which port is being used by the torque device.
2. **Connection Status:** Displays the current status of the PCFE's connection to a torque device.
3. **Software version:** The current firmware version on the Torque Device.
4. **PCFE Status:** Displays what actions are currently being processed by the PCFE.
5. **Progress Bar:** A visual progress bar, defaults to three bars when connected.

2.5.2. Results Table Controls

1. **Continuous Upload:** If this option is selected and the Torque Device is permanently connected to the PCFE via USB or RS232 cables, the results of the Torque Device will continuously upload to the PCFE as the measurements are taken with the Torque Device.
2. **Upload All:** Once the Torque Device is connected to the PCFE, selecting this option will upload all the Torque Device stored measurements.
3. **Set Data Fields:** Used to add columns to the PCFE results section. These columns contain comments that are applied to all subsequent results.
4. **Unit Conversion:** Converts the units of the existing results in the table to Nm, cNm, kgm, kgfcm, lbft, lbin or ozin.
5. **Save Results:** Save results to a .csv file.
6. **Power off Device:** Turn off and disconnect the Torque Device from the PCFE.

2.6. Results Table

Version Help

-----Uploaded Measurements-----

Power off Device

	PCFE No #	Device Location #	Date & Time	Preset Number	Preset Min	Preset Max	Torque Result	Preset Nominal	Angle Min	Units	Angle	Mode	Just Move Torque	Preset Max
17	616	17.06 11:33	1	3	5.09	9.28	3.05	0	Nm	0	Preset		0	
18	617	17.06 11:33	1	3	5.09	-4.65	3.05	0	Nm	0	Preset		0	
19	618	17.06 11:33	1	3	5.09	-7.25	3.05	0	Nm	0	Preset		0	
20	619	17.06 11:33	1	3	5.09	-3.88	3.05	0	Nm	0	Preset		0	
21	620	17.06 11:33	1	3	5.09	-7.64	3.05	0	Nm	0	Preset		0	
22	621	23.06 11:09	1	3	5.09	-4.65	3.05	0	Nm	0	Preset		0	
23	622	23.06 11:11	1	3	5.09	-3.91	3.05	0	Nm	0	Preset		0	
24	623	23.06 15:43	1	3	5.09	3.63	3.05	0	Nm	0	Preset		0	
25	624	23.06 15:43	2	3	8.83	4.35	1.5	7	Nm	9	Preset		30	
26	625	23.06 15:44	3	3	3.05	3.04	3	0	Nm	0	Preset		0	
27	626	23.06 15:44	1	3	5.09	3.41	3.05	0	Nm	0	Preset		0	
28	627	23.06 15:48	1	3	5.09	3.4	3.05	0	Nm	0	Preset		0	
29	628	23.06 15:48	2	3	8.83	3.69	1.5	7	Nm	8	Preset		30	
30	629	23.06 15:48	3	3	3.05	3.27	3	0	Nm	0	Preset		0	
31	630	23.06 15:49	3	3	3.05	3.01	3	0	Nm	0	Preset		0	
32	631	23.06 15:49	1	3	5.09	3.34	3.05	0	Nm	0	Preset		0	
33	632	23.06 15:49	2	3	8.83	3.63	1.5	7	Nm	8.5	Preset		30	
34	633	23.06 16:00	1	3	5.09	3.41	3.05	0	Nm	0	Preset		0	
35	634	23.06 16:01	2	3	8.83	4.43	1.5	7	Nm	9.5	Preset		30	
36	635	23.06 16:01	3	3	3.05	3.1	3	0	Nm	0	Preset		0	
37	636	23.06 16:01	3	3	3.05	3.12	3	0	Nm	0	Preset		0	
38	637	23.06 16:01	3	3	3.05	3.05	3	0	Nm	0	Preset		0	
39	638	23.06 16:02	4	5	10.25	11.04	1.5	55	Nm	68	Preset		65	
40	639	23.06 16:09	1	3	5.09	3.13	3.05	0	Nm	0	Preset		0	
41	640	23.06 16:10	4	5	10.25	7.47	1.5	35	Nm	42.5	Preset		65	
42	641	23.06 16:10	1	3	5.09	3.71	3.05	0	Nm	0	Preset		0	
43	642	23.06 16:10	4	5	10.25	6.11	1.5	35	Nm	26.6	Preset		65	

Figure 9: Results Table

The results table is only populated when torque results are uploaded to the PCFE. Results that are highlighted **green** indicate that the torque or angle measurement was “good”, i.e. the torque or angle applied was within the pre-configured tolerances. Conversely, results highlighted **red** indicate that the torque or angle measurement was “bad”, i.e. the torque or angle applied fell outside the pre-configured tolerances.

2.7. SPC Graph

To access SPC graphic functionality there must be at least ten results uploaded to the PCFE. Figure 10 shows the control panel of the SPC Graph feature.

Date range :

Calendar-Min: 17/05/2016 Calendar-max: 04/07/2016

Preset Select: [Dropdown]

Maximum number of Readings: [Input]

Print Graph

Graph

Figure 10: SPC Graph Control Screen

1. **Date Range:** This setting is used to select the range of results that are to be graphed. The minimum and maximum values default to the oldest and latest results respectively. To change

these dates, press the button above the appropriate date. These select the desired date from the calendar.

2. **Preset Select:** Select the preset you wish to graph. **Note:** To graph a preset, at least 10 measurements for the individual preset must be reset.
3. **Maximum number of Readings:** A maximum number of results to be graphed for a given preset and date range. If there are 50 results for that particular parameter and 10 readings are selected, the earliest results will be graphed.
4. **Print Graph:** Print the current graph.
5. **Graph:** Creates the graph as per the parameters entered in the data fields.

Note: To produce a line graph the results table must be ordered by the “PCFE #” column. If not, the time axis of the graph will be affected and a standard scatter chart will be shown.

Upon graphing of a set of results (Figure 12), the $C_p k$ and standard deviation are automatically calculated, and displayed in the bottom right of the screen (Figure 11).

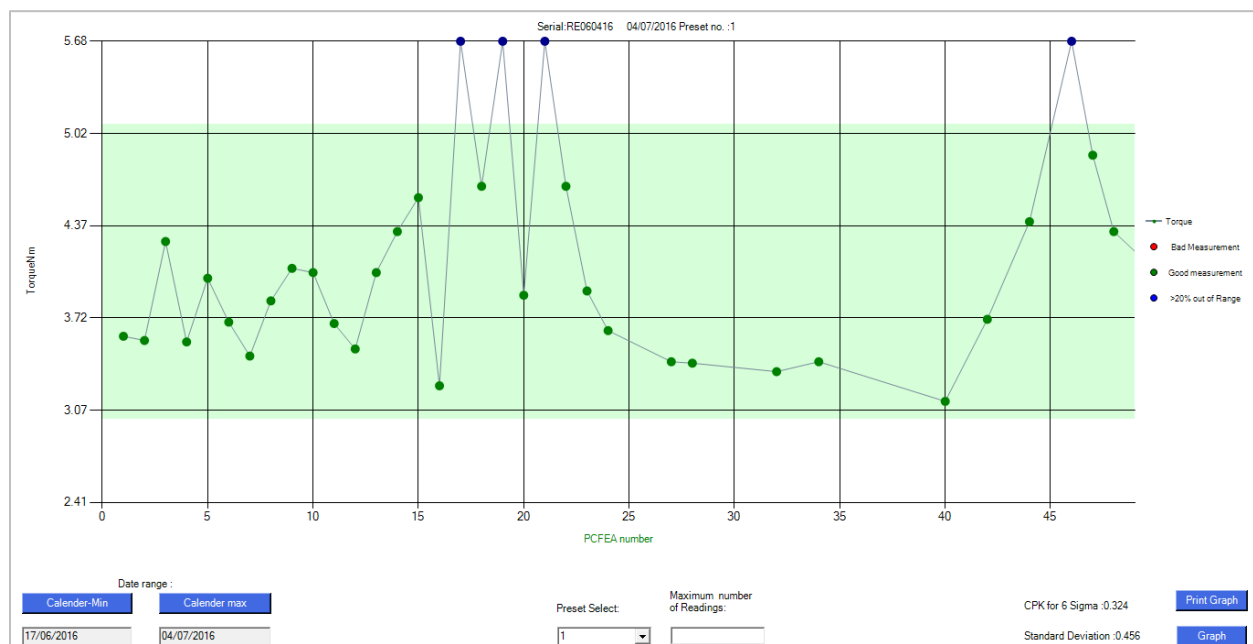
CPK for 6 Sigma :0.324

Print Graph

Standard Deviation :0.456

Graph

Figure 11: $C_p k$ and Standard Deviation Values

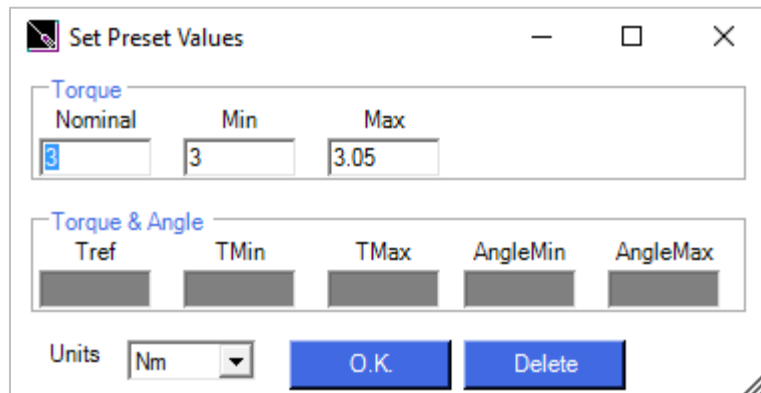


2.8. Set a Preset using the PCFE

1. Ensure the Torque Device is connected to the PCFE software selected using “Select Port” (Figure 2).
2. Select the preset number or location from 1 to 99 you wish to set.
3. When the pop up window appears fill in required fields and press “O.K.”.
4. Select ‘Store to Torque Device’. The data is then written to the Torque Device.

Notes:

- Some series of torque device only have the capability for one preset to be configured.
- Torque or torque and angle parameters can be set product dependent.



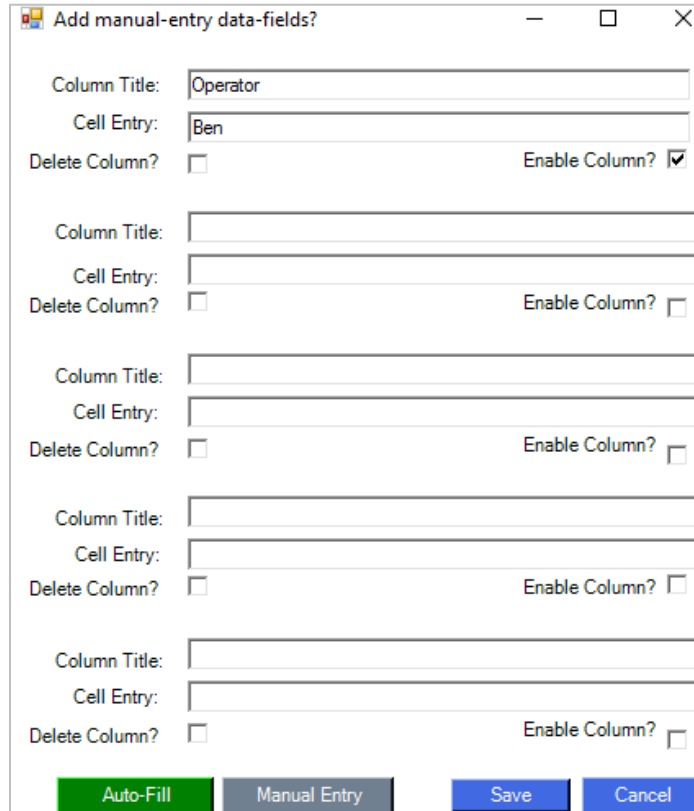
The screenshot shows a window titled "Set Preset Values". It contains two main sections. The first section, labeled "Torque", has three input fields: "Nominal" (with the value 3), "Min" (with the value 3), and "Max" (with the value 3.05). The second section, labeled "Torque & Angle", has five input fields: "Tref", "TMin", "TMax", "AngleMin", and "AngleMax", all of which are currently empty. At the bottom of the window, there is a "Units" dropdown menu set to "Nm", and two buttons: "O.K." and "Delete".

Figure 13: Setting Presets via the PCFE

2.9. Add a Data Field

1. Select the “Add Data Fields” button on the bottom right of the main PCFE window.
2. Enter column title and select either “Auto-Fill” or “Manual Entry” button. If “Auto-Fill” button is selected then the value entered in “Cell Entry” will be set as default.
3. Hit the save button and the column will be added to the results table on the far right.

Note: If enable column is not selected the column will not appear at all in the PCFE.



Dialog box titled "Add manual-entry data-fields?".

Fields and options:

- Column Title: Operator
- Cell Entry: Ben
- Delete Column?: ☐
- Enable Column?: ☒

Additional empty rows for adding more fields:

- Column Title: [Empty]
- Cell Entry: [Empty]
- Delete Column?: ☐
- Enable Column?: ☐

- Column Title: [Empty]
- Cell Entry: [Empty]
- Delete Column?: ☐
- Enable Column?: ☐

- Column Title: [Empty]
- Cell Entry: [Empty]
- Delete Column?: ☐
- Enable Column?: ☐

- Column Title: [Empty]
- Cell Entry: [Empty]
- Delete Column?: ☐
- Enable Column?: ☐

Buttons at the bottom:

- Auto-Fill (Green)
- Manual Entry (Grey)
- Save (Blue)
- Cancel (Blue)

Figure 14: Adding a default Data field