

### 3. Description of autoISF / guidance by developers V.1.4

**Please note that with autoISF you are in an early-dev. environment,** where the user interface is **not optimized for safety** of users who stray away from intended ways to use. Good safety features exist, but these are only as good as the development-oriented user understands and implements them. This is not a medical product, refer to disclaimer in [section 0](#)



- 3.1 Overview
- 3.2 ISF modulation flowcharts
- 3.3 Exercise mode and dynamic iobTH
- 3.4 Automation options with autoISF parameters
- 3.5 Activity monitor
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- 3.7 AutoISF parameters overview table
- 3.8 Emulator for logfile analysis and tuning
- 3.9 Links to related case studies/detailed doc.s

#### [Related case studies:](#)

Links to more [case studies](#) or detailed docu on special topics: See [section 3.9](#)

#### 3.1 Overview

autoISF can be used to refine the workings of your **Hybrid Closed Loop**.

If you use autoISF for Hybrid Closed Loop, you exclusively can do so by studying the documents linked in this [section 3](#), all available from Github/ga-zelle (repo autoISF and repo APS-what-if).

Note that the **apk to build your autoISF variant** of AAPS (and the installation instructions for your looping app) is elsewhere: <https://github.com/T-o-b-i-a-s/AndroidAPS/>;  
For Trio see , and iAPS see: <https://github.com/mountrcg/iAPS>

autoISF allows also to build a top performing **Full Closed Loop**.

FCL is the sole topic in all other sections of this FCL e-book. <https://github.com/bernie4375/FCL-potential-autoISF-research>

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The **general workings of autoISF** are best characterized with the chart that is included in [section 4.1](#). . It sketches which of the autoISF parameters have a key role of managing your bg curve, in its characteristic different post-meal stages.

38 A comprehensive description of autoISF is the devloper's Quick Guide here:

- 39 • [https://github.com/ga-](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)  
40 [zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

41  
42 See screenshot below for current content.

43  
44 Always watch out to use the most up-to-date [?/ latest version \(branch in the Github repo\) /?](#)

https://github.com/ga-zelle/autoISF/tree/A3.2.0.4\_ai3.0.1

autoISF Public

A3.2.0.4\_ai3.0.1 12 Branches 0 Tags

This branch is 29 commits ahead of, 1 commit behind A3.2.0.2\_ai3.0 .

ga-zelle	final proof reading	abd8e
bernie's guide to FCL	Link to Github/bernie4375, and table of contents	
ExerciseMode.ods	For playing with half_basal_temp_target	
ExerciseMode.xlsx	For playing with half_basal_temp_target	
How-to-get-larger-SMBs.pdf	Added max_iob limit effect	
Libre_serpent.mp4	screen recording	
README.md	Update README.md	
To prebolus or not to prebolus.pdf	New document	
autoISF3.0.1_Kurzanleitung.pdf	final proof reading	
autoISF3.0.1_Quick_Guide.pdf	final proof reading	
smooth1x10m_S20FE.avi	place holder; better example to follow	

README

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46 Note: The developer provides some materials also in German language in (t)his Github repo.

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## 3.2 ISF adaptation flowcharts

autoISF calculates every 5 minutes (and more often if you use Libre3) an ISF (called sens) to use in place of your profile\_ISF (profile.sens, which remains an important anchor point).

autoISF 3.0.1 ff users on Android can see on the 1<sup>st</sup> page of their **SMB tab**, how these calculations (and how their individual settings re. profile, safety limits, but also set TT etc.) determine sens and SMB size.

Set of flowcharts describing calculation of sens (the concluded effective ISF to use, as in SMB tab:)

- **page 1 – 6 of the Quick Guide:** [https://github.com/ga-zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

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## 3.3 Exercise mode and dynamic iobTH

autoISF is geared towards aggressive treatment. However, in an exercise context, it is desirable to have built-in features that allow manage situations with much less typical insulin need.

autoISF has several special features to address this, which all are described here:

Exercise mode:

- on **page 7** of the **Quick Guide:** [https://github.com/ga-zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

Dynamic iobTH:

- is explained under the headline “internal automation for iobTH” on **page 9** of the **Quick Guide:** [https://github.com/ga-zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)
- Calculators to determine how half-basal exercise target, set TT influence sens and iobTH, (in .xls or odt format), here: [https://github.com/ga-zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/ExerciseMode.xlsx](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/ExerciseMode.xlsx) and [https://github.com/ga-zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/ExerciseMode.odt](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/ExerciseMode.odt)

Consult [Section 6](#) of this FCL e-book for more guidance to find appropriate exercise-related settings for your favorite types of exercise

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SMB delivery ratio:

- on **page 10** of the **Quick Guide**: [https://github.com/ga-zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

Even/odd target (for SMB on/off)

- see **page 11** of the **Quick Guide**: [https://github.com/ga-zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

Loop power level characterization in the SMB tab

- is explained see **page 12** of the **Quick Guide**: [https://github.com/ga-zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

The ai % indicator underneath the Autosens % on the AAPS screen

- is explained also on **page 12** of the **Quick Guide**: [https://github.com/ga-zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

### 3.4 Automation options with autoISF parameters

autoISF provides AAPS users an expanded set of Conditions and Actions to choose from, when setting up an Automation.

autoISF parameters available in Automations (as Condition, and/or Action) are described:

- on **page 11** of the **Quick Guide**: [https://github.com/ga-zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

Caution: In FCL with AutoISF, please do not rush into setting up lots of Automations to “fine tune” (this is discussed in detail in [section 4.6-4.7](#), and [section 5](#)). Rather, first try to do a good job following (in FCL) the sequence as laid out in the FCL e-book.

## 122 3.5 Activity Monitor

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125 autoISF also comes with an Activity Monitor. You can calibrate it to your personal sensitivity swings  
126 as they may relate to stepcount, or to periods of total in-activity.

127 Activity monitor description:

- 128 • see **page 8** of the **Quick Guide**: [https://github.com/ga-](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)  
129 [zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

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## 132 3.6 Using 1-minute CGM (Libre3)

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135 1 minute Libre3 data use in autoISF:

- 136 • go to **page 13** of the **Quick Guide**: [https://github.com/ga-](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)  
137 [zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

138 Especially if you go for FCL: The issue over-arching your hope for avg maybe 2 minutes earlier clues from the CGM  
139 must be: Solid non-jittery performance (see [section 1.4](#)).

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## 141 3.7 Additional parameters in autoISF (18), and recommended start settings

142 In an older version you may see (17), as iobTH% was missing in the list. Default setting for this should  
143 be around 50 (more see FCL e-book [section 2.4](#)).

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145 The table in Attachment 1 of the Quick Guide gives an overview of additional settings if you  
146 operate autoISF to its full potential.

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148 The default, and recommended start of tuning suggestions in this table are made for Hybrid Closed  
149 Loopers.

150 For FCL, please consult this FCL e-book

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152 Table showing all autoISF parameters w/ default settings see: all autoISF parameters see: ...

- 153 • on **page 14** of the **Quick Guide**: [https://github.com/ga-](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)  
154 [zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

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156 autoISF settings screen in AAPS/Preferences (inside the OpenAPS SMB menu), see:

- 157 • last page of the **Quick guide** = **page 15**: [https://github.com/ga-](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)  
158 [zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/autoISF3.0.1\\_Quick\\_Guide.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/autoISF3.0.1_Quick_Guide.pdf)

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## 160 3.8 Emulator for AAPS logfile analysis

161 The links given in section 3.8 are numbered for easier referencing in other text.

162 It can be impractical to real-time inspect the SMB tab (or take screenshots for later inspection).

163 To determine which of your settings should be changed for better performance, the autoISF

164 developer provides an extra tool, the Emulator. It is described in another repo:

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### 166 1).Emulator documentation

167 • [https://github.com/ga-zelle/APS-what-](https://github.com/ga-zelle/APS-what-if/tree/A3.2.0.4_ai3.0.1/Documentation%20in%20English)

168 [if/tree/A3.2.0.4\\_ai3.0.1/Documentation%20in%20English](https://github.com/ga-zelle/APS-what-if/tree/A3.2.0.4_ai3.0.1/Documentation%20in%20English) (watch for latest version branch)

The screenshot shows the GitHub interface for the repository 'ga-zelle / APS-what-if'. The browser address bar displays the URL: [https://github.com/ga-zelle/APS-what-if/tree/A3.2.0.4\\_ai3.0.1/Documentation%20in%20English](https://github.com/ga-zelle/APS-what-if/tree/A3.2.0.4_ai3.0.1/Documentation%20in%20English). The repository is currently on the 'A3.2.0.4\_ai3.0.1' branch. The left sidebar shows the file tree with the following structure:

- Documentation in English
  - A README.md
  - DRAFT - Guide to VDF Files for the...
  - DRAFT - autoISF2.2\_How\_to\_start\_...
  - Example Emulator study - Negativ...
  - How-to-create-the-autoISF-factor...
  - How-to-preview-autoISF-impact.pdf
  - Installation Guide.pdf
  - The AAPS Logfile System.pdf
- Dokumentation auf Deutsch
- software
  - Anleitung determine\_basal emulator...
  - Das System der AAPS Logfiles.pdf
  - Demo\_Sports\_Adaptations.vdf
  - Instructions determine\_basal emulat...
  - README.md
  - change.log

The main content area shows the 'Installation Guide.pdf' file selected. The file list on the right includes:

- A README.md
- DRAFT - Guide to VDF Files for the AAPS Emulator.pdf
- DRAFT - autoISF2.2\_How\_to\_start\_tuning.pdf
- Example Emulator study - Negative IOB Problem or else.pdf
- How-to-create-the-autoISF-factor-plot.pdf
- How-to-preview-autoISF-impact.pdf
- Installation Guide.pdf
- The AAPS Logfile System.pdf

Two pink arrows point from the left towards the 'Installation Guide.pdf' file in the main content area.

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173 2).Emulator installation guide see:

- 174 • [https://github.com/ga-zelle/APS-what-](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/Installation%20Guide.pdf)  
175 [if/blob/A3.2.0.4\\_ai3.0.1/Documentation%20in%20English/Installation%20Guide.pdf](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/Installation%20Guide.pdf)

176 FCL e-book sections 10 (PC) and 11 (phone) offer additional installation guidance.

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178 3) How to run the emulator on the phone

- 179 • [https://github.com/ga-zelle/APS-what-](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/How-to-run-the-emulator-on-the-phone.pdf)  
180 [if/blob/A3.2.0.4\\_ai3.0.1/Documentation%20in%20English/How-to-run-the-emulator-](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/How-to-run-the-emulator-on-the-phone.pdf)  
181 [on-the-phone.pdf](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/How-to-run-the-emulator-on-the-phone.pdf)

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183 4).How to start tuning guide for HCL – (consult this FCL e-book additionally if you go FCL), see:

- 184 • [https://github.com/ga-zelle/APS-what-](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/DRAFT%20-%20autoISF2.2_How_to_start_tuning.pdf)  
185 [if/blob/A3.2.0.4\\_ai3.0.1/Documentation%20in%20English/DRAFT%20-%20autoISF2.2\\_H](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/DRAFT%20-%20autoISF2.2_How_to_start_tuning.pdf)  
186 [ow\\_to\\_start\\_tuning.pdf](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/DRAFT%20-%20autoISF2.2_How_to_start_tuning.pdf)

187

188 FCL e-book sections 10 (PC) and 11 (phone), plus associated case studies, offer additional guidance for  
189 interpretation and tuning, with focus on application in Full Closed Loop.

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192 This “emulator” tool does not require building an apk.

193 Go to “software” and download the needed (mostly python) files. Then follow installation guide(s).

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195 5).Software download for PC and Android phone here:

- 196 • [https://github.com/ga-zelle/APS-what-if/tree/A3.2.0.4\\_ai3.0.1/software](https://github.com/ga-zelle/APS-what-if/tree/A3.2.0.4_ai3.0.1/software)

197 Specifically, there are these examples of .vdf files for what-if investigations offered to download (for  
198 use, or for customization):

199 6).

200 7).[https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4\\_ai3.0.1/Demo\\_Sports\\_Adaptations.vdf](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Demo_Sports_Adaptations.vdf)

201 8).

202 How to write vdf files see also [section 10.3.1](#).

203 How to load vdf files into your phone see also [section 11.4.1](#)

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205 Note that tuning your settings for Full Closed Loop is a very difficult project in which you should follow the  
206 sequence of [sections 1 -6](#) of this e-book.

207 Especially in your “section 4 phase”, the Emulator is a great tool to use (refer to [sections 10](#) and [11](#)),

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209 9). Investigating concurrently more than one “what-if” on the phone

210 You can check the data of your currently running loop (decisions of the last 15\*5 minutes)  
211 also for two or three “what-if I changed such and such parameter setting” scenarios, by just  
212 switching between the related vdf files.

213 Details see [https://github.com/ga-zelle/APS-what-](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/How-to-run-the-emulator-on-the-phone.pdf)  
214 [if/blob/A3.2.0.4\\_ai3.0.1/Documentation%20in%20English/How-to-run-the-emulator-on-the-](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/How-to-run-the-emulator-on-the-phone.pdf)  
215 [phone.pdf](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/How-to-run-the-emulator-on-the-phone.pdf) and there [p.5](#), under above sub-headline “.Stop the emulator, or switch...”

216 How to write vdf files see [section 10.3.1](#).

217 How to load vdf files into your phone see also [section 11.4.1](#)

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219 The emulator can also be used for AAPS SMB+UAM without (or with only a few) autoISF features  
220 utilized

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## 222 3.9 Links to related case studies or other detailed documents

223 The links given in section 3.9 are numbered for easier referencing in other text.

224

225 1).reserved for [=case study 3.1:](#)

226 (link)#

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228 2).To pre-bolus or not to pre-bolus = [case study 3.2:](#)

229 [https://github.com/ga-](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/To%20prebolus%20or%20not%20to%20prebolus.pdf)

230 [zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/To%20prebolus%20or%20not%20to%20prebolus.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/To%20prebolus%20or%20not%20to%20prebolus.pdf)

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232 3).Analyzing a negIOB situation with the emulator = [case study 3.3](#)

233 [https://github.com/ga-zelle/APS-what-](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/Example%20Emulator%20study%20-%20Negative%20IOB%20Problem%20or%20else.pdf)

234 [if/blob/A3.2.0.4\\_ai3.0.1/Documentation%20in%20English/Example%20Emulator%20study%20-%](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/Example%20Emulator%20study%20-%20Negative%20IOB%20Problem%20or%20else.pdf)

235 [20Negative%20IOB%20Problem%20or%20else.pdf](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/Example%20Emulator%20study%20-%20Negative%20IOB%20Problem%20or%20else.pdf)

236 4).reserved for [=case study 3.4:](#)

237 (link)#

238

239 5).reserved for [=case study 3.5:](#)

240 (link)#

241

242 6).How to get larger SMBs

243 [https://github.com/ga-zelle/autoISF/blob/A3.2.0.4\\_ai3.0.1/How-to-get-larger-SMBs.pdf](https://github.com/ga-zelle/autoISF/blob/A3.2.0.4_ai3.0.1/How-to-get-larger-SMBs.pdf)



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245 7).How to pre-view autoISF impact

246 <https://github.com/ga-zelle/APS-what->

247 [if/blob/A3.2.0.4\\_ai3.0.1/Documentation%20in%20English/How-to-preview-autoISF-impact.pdf](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/How-to-preview-autoISF-impact.pdf)

248

249 8).How to create the autoISF factors plot

250 <https://github.com/ga-zelle/APS-what->

251 [if/blob/A3.2.0.4\\_ai3.0.1/Documentation%20in%20English/How-to-create-the-autoISF-factor-](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/How-to-create-the-autoISF-factor-plot.pdf)

252 [plot.pdf](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/How-to-create-the-autoISF-factor-plot.pdf)

253

254 9).Guide to vdf files for emulator - see also [section 3.8](#) 6)-8) and [section 10.3.1](#)

255 <https://github.com/ga-zelle/APS-what->

256 [if/blob/A3.2.0.4\\_ai3.0.1/Documentation%20in%20English/DRAFT%20-%20Guide%20to%20VDF](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/DRAFT%20-%20Guide%20to%20VDF%20Files%20for%20the%20AAPS%20Emulator.pdf)

257 [%20Files%20for%20the%20AAPS%20Emulator.pdf](https://github.com/ga-zelle/APS-what-if/blob/A3.2.0.4_ai3.0.1/Documentation%20in%20English/DRAFT%20-%20Guide%20to%20VDF%20Files%20for%20the%20AAPS%20Emulator.pdf)