

TRACK CYCLING



# PULSE DISTRIBUTOR

AIG051

User's Manual

**3493.501.02**

Version 1.2

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## Caution and safety precautions

- Never use any other charger than the supplied or a type approved by Swiss Timing. This could destroy the battery, cause damage to unit, and possibly cause personal injury due to fire or/and electrical shock.
- Never bypass a power cord ground lead by breaking off the ground pin, or by using inappropriate extension cords or adapters.
- Never plug a power cord into the AC power source until you have made sure that all installation, cabling and power levels, are proper, and that the applicable procedures in this manual have been followed.
- Protect the equipment against splashing, rain and excessive sun rays.
- Never use the device if it is damaged or insecure.
- Verify the selection of the power distribution.
- Verify that the voltage quoted on the rating plate is the same as your voltage. Connect the appliance only to power sockets with protective earth. The use of incorrect connection voids warranty.
- This program may be modified at any time without prior notification.
- Do not open the case; there is nothing that needs servicing inside it. Nevertheless, if the case must be opened, you must call for some qualified personnel. The power supply cable must be disconnected before opening the case.
- During the transport of all Swiss Timing equipment delivered with a reusable carry case, the said case should be used at all times. This is imperative to limit the damage, such as shocks or vibration that can be caused to the units during transport.
- The same cases should also be used when returning equipment to Swiss Timing for repair. Swiss Timing reserves the right to refuse all guarantees if this condition is not fulfilled.
- If the installation includes a horn, be sure to maintain a sufficient security distance from the public.

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## Environment



This symbol indicates that this product should not be disposed with household waste. It has to be returned to a local authorized collection system. By following this procedure you will contribute to the protection of the environment and human health. The recycling of the materials will help to conserve natural resources.

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# 1 INTRODUCTION

AIG051 is a pulse distributor used in track cycling with QUANTUM timing system. It received all pulses from the track and sends them to specific devices such as timing system (QUANTUM), photofinish system and transponders. It also transmits, for information, the READY signals from photofinish to QUANTUM.

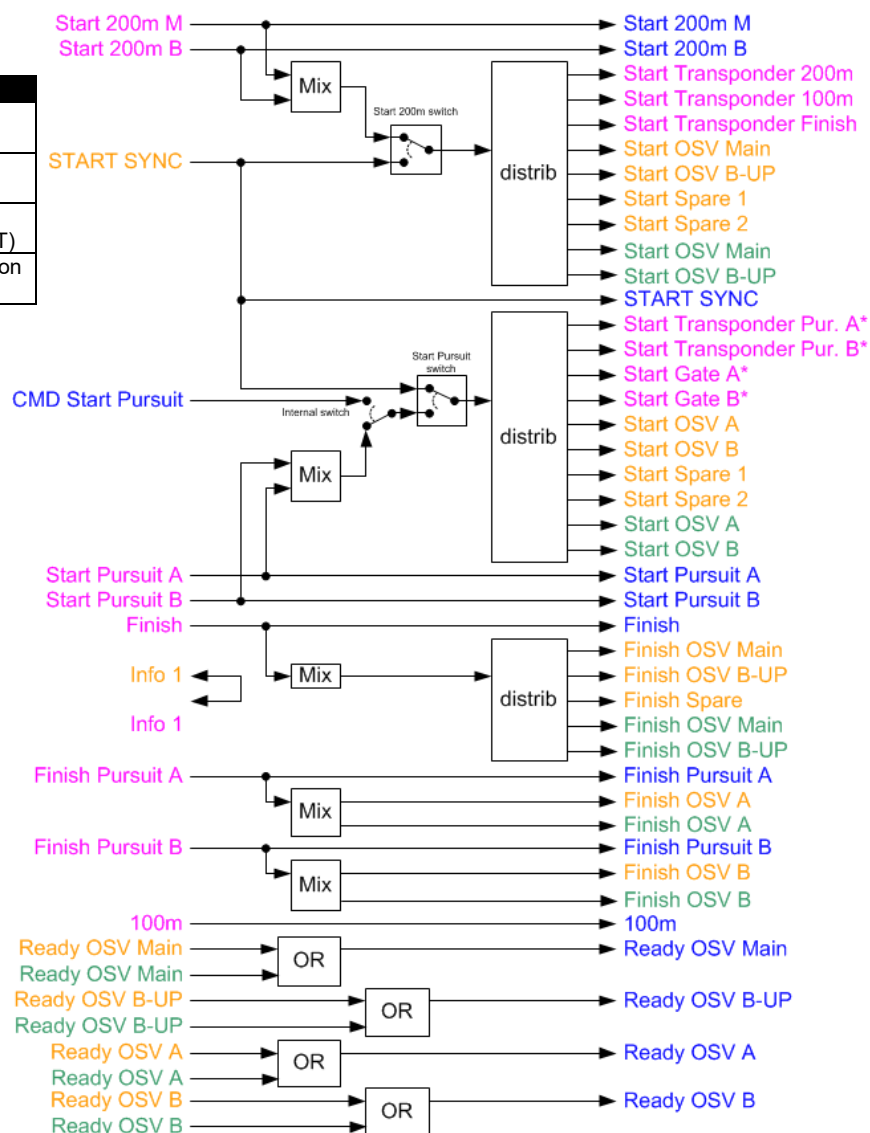
Even if the AIG051 is not powered or switched off, QUANTUM will receive track pulses.

For operation security, AIG051 can be powered by two different sources.

Bloc schematic:

Text color	Signification
Magenta	to/from UTG 35p connector (TRACK PULSE)
Green	to/from UTG 28p connector (OUT)
Blue	to/from QUANTUM (PULSE OUT & READY OUT)
Orange	to/from other connectors on rear face

**Mix**: Limit to 3 seconds the pulse duration and do an "OR" between the different inputs.



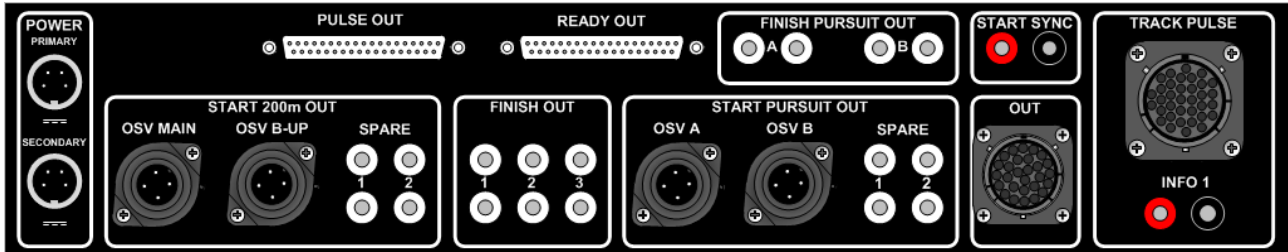
**All input and output contacts are normally open.**

\*Alternative functionality can be done, see chapter 2.3.

## 2 INSTALLATION

### 2.1 Cabling

Rear face:



The following connections have to be made before powering the installation (optional connections are indicated in **blue**):

AIG051 connector	Cable #	Device/connector	Remarks
POWER PRIMARY	3330.614 <b>or</b> 3330.618 <b>or</b> 3418.700 or equivalent	ALlxxx POWER OUT PRY <b>or</b> Battery <b>or</b> AC/DC converter	
POWER SECONDARY	3330.614 <b>or</b> 3330.618 <b>or</b> 3418.700 or equivalent	ALlxxx POWER OUT SDY <b>or</b> Battery <b>or</b> AC/DC converter	
PULSE OUT	<b>XXX</b> (Sub-D 37p M-M)	QUANTUM, I/O B connector	Can also be connected to I/O A or I/O C with corresponding change in software setting.
READY OUT	<b>XXX</b> (Sub-D 37p M-M)	QUANTUM, I/O D connector	
TRACK PULSE	1920.010 (UTG 35p M-M)	ODB6-CT, TIMING PULSE connector	
INFO 1			<b>Spare pair to ODB6-CT.</b>
START SYNC		Push button, starting pistol or	Used to synchronize all devices with a single pulse or to give the start for special races (from any location).
OSV MAIN	1865.xxx (Tu 4p F-M)	Main photofinish, START con.	
OSV B-UP	1865.xxx (Tu 4p F-M)	Backup photofinish START con.	
FINISH OUT 1	1870.xxx (banana pair M-M/F)	Main photofinish, FINISH con.	
FINISH OUT 2	1870.xxx (banana pair M-M/F)	Backup photofinish, FINISH con.	
OSV A	1865.xxx (Tu 4p F-M)	Pursuit A photofinish, START con.	
OSV B	1865.xxx (Tu 4p F-M)	Pursuit B photofinish START con.	
FINISH OUT 1	1870.xxx (banana pair M-M/F)	Pursuit A photofinish, FINISH con.	
FINISH OUT 2	1870.xxx (banana pair M-M/F)	Pursuit B photofinish, FINISH con.	
START OUT & FINISH OUT		Group of photofinish (Main, Backup, Pursuit A & Pursuit B)	

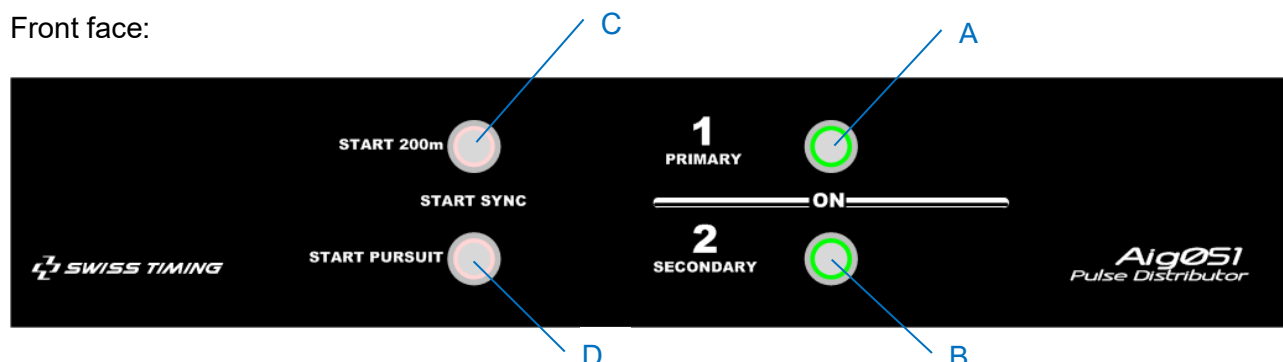
When photofinish are distant to the AIG051, a single cable can be connected on "OUT" instead of using 4 Tuchel cables and 4 banana cable.



## 2.2 Use

Switch on the AIG051 by pressing both ON/OFF switches (they must be green illuminated). The device is then ready to operate in normal mode. For specific use, you can enable the START 200m – START SYNC switch (it will be red illuminated) and/or the START PURSUIT – START SYNC switch (it will be red illuminated).

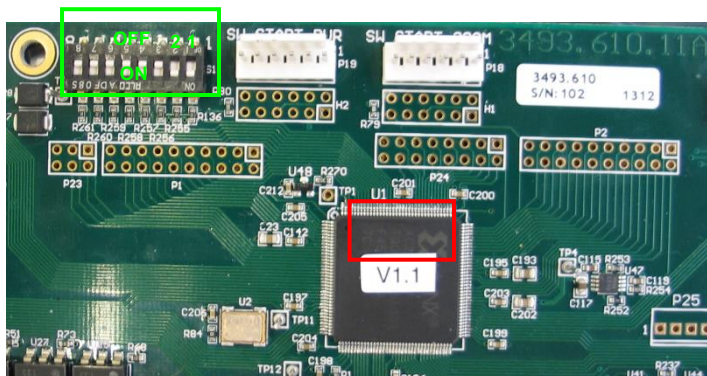
Front face:



#	Button	Signification
A	<b>1<sub>PRY</sub> ON/OFF</b>	Primary power supply enabled when button is pressed (green illumination ON).
B	<b>2<sub>SDY</sub> ON/OFF</b>	Secondary power supply enabled when button is pressed (green illumination ON).
C	<b>START 200m – START SYNC</b>	When button is not pressed, the red illumination is OFF and devices connected to START 200m will receive an impulse when the 200m Main or Backup tapes are activated (normal use). When button is pressed, the red illumination is ON and the devices connected to START 200m will receive an impulse when an impulse is given on the <b>START SYNC</b> input at the rear of the AIG051.
D	<b>START PURSUIT – START SYNC</b>	When button is not pressed, the red illumination is OFF and devices connected to START PURSUIT will receive an impulse when a start is given from the pursuit control device (normal use). When button is pressed, the red illumination is ON and the devices connected to START PURSUIT will receive an impulse when an impulse is given on the <b>START SYNC</b> input at the rear of the AIG051.

## 2.3 Internal configuration

If the sticker placed on the board shows version 1.1 ( **V 1.1** ) or higher, specific configuration can be done by **S1** internal switch:



Switch	Position	Functionality referring to bloc schematic of chapter Error! Reference source not found.
1	<b>OFF</b> [default]	Start Gate A and Start Gate B receive pulses from Start Pursuit A/B or <b>START SYNC</b> depends of the position of "START PURSUIT" switch.
	ON	Start Gate A and Start Gate B always receive pulses from Start Pursuit A/B. <b>Configuration to do for the transponder training system.</b>
2	<b>OFF</b> [default]	Start Transponder Pur. A and Start Transponder Pur. B receive pulses from Start Pursuit A/B or <b>START SYNC</b> depends of the position of "START PURSUIT" switch.
	ON	Start Transponder Pur. A and Start Transponder Pur. B always receive pulses from Start Pursuit A/B <b>AND START SYNC</b> . <b>Configuration to do for the transponder training system.</b>

### 3 PROPERTIES

#### 3.1 Standard Operating Conditions

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNIT
Power supply	$V_{dd}$	9	12	35	V
Power (per power supply when both are present)	P	0.5	0.8	3.5	W
Power (when only one power supply is present)	$P_1$	0.8	1.1	6.0	W
Operating temperature	$T_{op}$	-20	25	60	°C
Storage temperature	$T_{st}$	-30	25	80	°C
Relative humidity				95	%

#### 3.2 Electrical characteristics

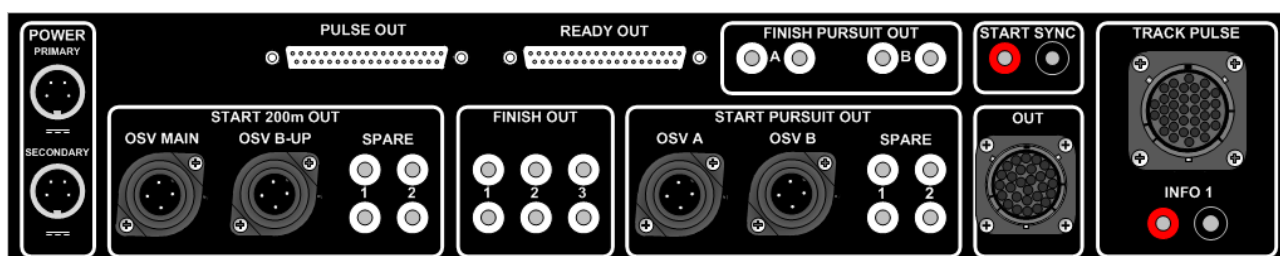
Conditions:  $T = 25^{\circ}\text{C}$ ,  $V_{dd} = 12\text{V}$  (unless otherwise specified)




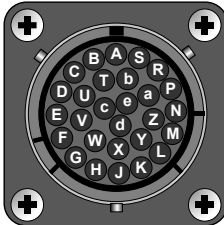
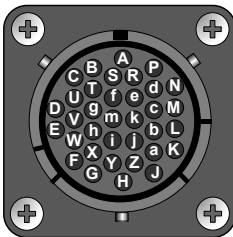
PARAMETERS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Power consumption (Primary + Secondary)	$I_{dd\_1+2}$		$V_{dd} = 9\text{V}$	0.12	0.6	A
			$V_{dd} = 12\text{V}$	0.09	0.5	
			$V_{dd} = 35\text{V}$	0.04	0.2	
Power consumption Primary	$I_{dd\_1PR}$	Power supply on Primary only	$V_{dd} = 9\text{V}$	0.09	0.6	A
			$V_{dd} = 12\text{V}$	0.07	0.5	
			$V_{dd} = 35\text{V}$	0.03	0.2	
Output delay for QUANTUM		On PULSE OUT connector			1	$\mu\text{s}$
Output delay for other devices		On READY OUT, Tuchel, banana and UTG connectors			30	$\mu\text{s}$
Number of timing input				9		
Number of Ready input				8		
Number of output		Without the direct timing output		33		

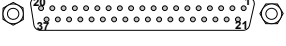
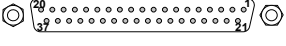
#### 3.3 Mechanical characteristics

PARAMETERS	SYMBOL	Desktop version	Rack mounting version	UNIT
Width	L	448	482	mm
Height	H	96	89	mm
Deep	D	324	324	mm
Weight	W	3.6	3.6	kg

#### 3.4 Connectors



Name	Use	Connector	Pinning
POWER PRIMARY	Primary power input	DIN 4pMT 	1: DC power input+ (9-35VDC) 2: DC power input- (GND) 3: not used 4: not used
POWER SECONDARY	Secondary power input		
START 200m OUT OSV MAIN	Start for main photofinish on finish line	Tuchel 4pMT 	1: Ready input- 2: Start output+ 3: Start output- E: Ready input+
START 200m OUT OSV B-UP	Start for backup photofinish on finish line		
START 200m OUT SPARE 1 & 2	Start for additional devices	2x white Banana 4mm	Non polarized start pulse output
FINISH OUT 1 – 3	Finish tape output for photofinish main, backup and spare	2x white Banana 4mm	Non polarized finish pulse output
START PURSUIT OUT OSV A	Start for Pursuit A photofinish	Tuchel 4pMT 	1: Ready input- 2: Start output+ 3: Start output- E: Ready input+
START PURSUIT OUT OSV B	Start for Pursuit B photofinish		
START PURSUIT OUT SPARE 1 & 2	Pursuit start for additional devices	2x white Banana 4mm	Non polarized start pulse output
OUT	Start and finish connection for distant photofinish	UTG 28pFT 	A: Ready OSV Main input- B: Start OSV Main output+ C: Start OSV Main output- D: Ready OSV Main input+ E: Finish OSV Main output+ F: Finish OSV Main output- G: Ready OSV Backup input- H: Start OSV Backup output+ J: Start OSV Backup output- K: Ready OSV Backup input+ L: Finish OSV Backup output+ M: Finish OSV Backup output- N: Ready OSV Pursuit A input- P: Start OSV Pursuit A output+ R: Start OSV Pursuit A output- S: Ready OSV Pursuit A input+ T: Finish OSV Pursuit A output+ U: Finish OSV Pursuit A output- V: Ready OSV Pursuit B input- W: Start OSV Pursuit B output+ X: Start OSV Pursuit B output- Y: Ready OSV Pursuit B input+ Z: Finish OSV Pursuit B output+ a: Finish OSV Pursuit B output- b-e: not used
INFO 1	Spare line going to the ODB6-CT box	Banana 4mm	Red: Info 1+ Black: Info 1-
TRACK PULSE	Connection to ODB6-CT box	UTG 35pFT 	A: Start Pursuit Tracker A input- B: Start Pursuit Tracker A input+ C: Start Pursuit Tracker B input- D: Start Pursuit Tracker B input+ E: Tape 200m Main input- F: Tape 200m Main input+ G: Tape 200m Backup input- H: Tape 200m Backup input+ J: Tape 100m input- K: Tape 100m input+ L: Tape Pursuit A input- M: Tape Pursuit A input+ N: Tape Pursuit A input- P: Tape Pursuit A input+

			R: Tape Finish input- S: Tape Finish input+ T: Start Transponder Pursuit A output- U: Start Transponder Pursuit A output+ V: Start Transponder Pursuit B output- W: Start Transponder Pursuit B output+ X: Starting Gate A output- Y: Starting Gate A output+ Z: Starting Gate B output- a: Starting Gate B output+ b: Start Transponder 200m output- c: Start Transponder 200m output+ d: Start Transponder 100m output- e: Start Transponder 100m output+ f: Start Transponder Finish output- g: Start Transponder Finish output+ h: Info 1- i: Info 1+ j-k: not used m: ground (cable shield if shielded)
START SYNC	Pulse input for synchronisation or specific start	Banana 4mm	Red: START SYNC input+ Black: START SYNC input-
FIN. PUR. OUT A	Finish tape pursuit A output for photofinish pursuit A	Banana 4mm	Non polarized finish pulse output
FIN. PUR. OUT B	Finish tape pursuit A output for photofinish pursuit B		
READY OUT	Ready and START SYNC outputs for QUANTUM	Sub-D 37pFT 	1: Ready OSV A+ 2: Ready OSV B+ 3: Ready OSV Main+ 4: Ready OSV Backup+ 5: START SYNC+ 20: Ready OSV A- 21: Ready OSV B- 22: Ready OSV Main- 23: Ready OSV Backup- 24: START SYNC - 6-19, 25-37: not used
PULSE OUT	Pulse outputs for QUANTUM	Sub-D 37pFT 	1: Start Pursuit A+ 2: Start Pursuit B+ 3: Start 200m Main+ 4: Start 200m Backup+ 5: 100m+ 6: Finish Pursuit A+ 7: Finish Pursuit B+ 8: Finish+ 14: CMD Start Pursuit+ (reserved for future use) 20: Start Pursuit A- 21: Start Pursuit B- 22: Start 200m Main- 23: Start 200m Backup- 24: 100m- 25: Finish Pursuit A- 26: Finish Pursuit B- 27: Finish- 33: CMD Start Pursuit- (reserved for future use) 9-13, 15-19, 28-32, 34-37: not used

## 4 MAINTENANCE AND PROTECTION

### 4.1 FAQ

Frequently Asked Question	Answer
I press the ON/OFF button but the green indicator is not lighted.	Verify that the corresponding power input is correctly powered. PRY switch corresponds to PRY power input; SDY switch corresponds to SDY power input.
Why the same contact is display as closed on the QUANTUM and open on the photofinish?	The contact is probably a defect tape switch which is short circuited (contact always close). The QUANTUM “see” the real contact (so a closed contact) but the signal sent to photofinish is limited at 3 seconds in closed mode in order to not record permanently images when it is connected to the FINISH input.

## 5 APPENDIX

### 5.1 Version history

Version	Date	Modifications since last version
1.0	02/03/12	Initial version
1.1	25/04/13	Front/rear plate updated & connectors
1.2	29/04/13	Add chapter 2.3

## NOTES



