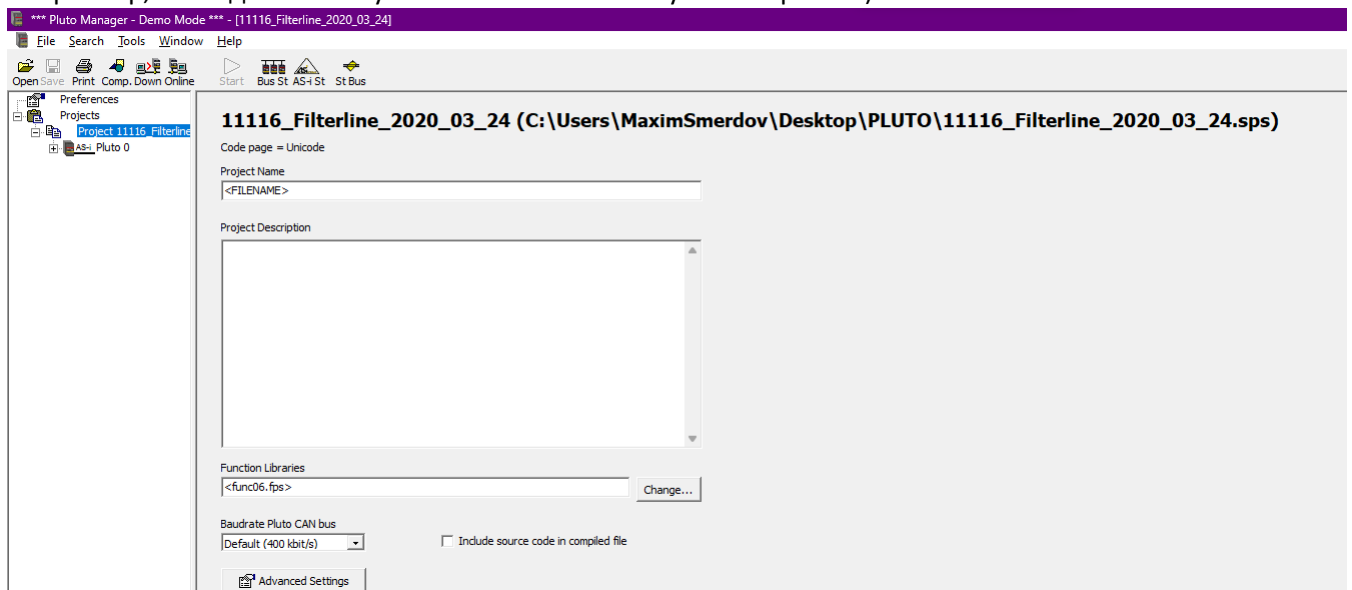
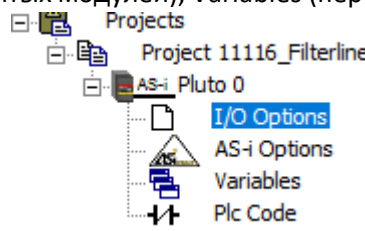


## Инструкция по программному обеспечению Pluto Manager

- 1) С помощью универсального шнура подключаемся к контроллеру безопасности PLUTO и заходим в ПО Pluto Manager
- 2) Далее нужно выбрать рабочий проект, который на данный момент записан в контроллер, для этого нажимаем Open и выбираем нужный проект (если открыть другую версию проекта, не записанную в контроллер, он выдаст ошибку и напишет название нужного проекта)



- 3) Теперь мы можем смотреть настройки программы, нам доступно I/O Options (настройка входов-выходов), AS-i Options (настройка желтых модулей), Variables (переменные), PLC Code (код программы).



- 4) Также нам теперь доступны функции Comp. (Сохранить и компилировать активный проект) это действие **нужно делать после каждого изменения программы**; Down (загрузить активный проект в Pluto) при использовании этой функции, контроллер попросит пароль, без которого загрузить ничего не получится (**пароль 11116**); Online (подключится к Pluto).



- 5) В меню I/O Options (настройка входов/выходов) можно задать тип сигнала.

| Failsafe inputs |                |             |   |
|-----------------|----------------|-------------|---|
| Signal          | Type of signal | Shape/Level | Options   |
| I0.0            | Input          | Static      | <input type="checkbox"/> Non_inv <input type="checkbox"/> No_filt |
| I0.1            | Input          | Static      | <input type="checkbox"/> Non_inv <input type="checkbox"/> No_filt |
| I0.2            | Input          | Static      | <input type="checkbox"/> Non_inv <input type="checkbox"/> No_filt |
| I0.3            | Input          | A_Pulse     | <input type="checkbox"/> Non_inv <input type="checkbox"/> No_filt |

| Failsafe inputs / Non failsafe outputs |                |             |   |
|--|----------------|-------------|---|
| Signal                                 | Type of signal | Shape/Level | Options   |
| IQ0.10                                 | Output         | A_Pulse     | <input type="checkbox"/> Non_inv <input type="checkbox"/> No_filt |
| IQ0.11                                 | Light button   | A_Pulse     | <input type="checkbox"/> Non_inv <input type="checkbox"/> No_filt |
| IQ0.12                                 | Light button   | A_Pulse     | <input type="checkbox"/> Non_inv <input type="checkbox"/> No_filt |
| IQ0.13                                 | Undefined      |             | <input type="checkbox"/> Non_inv <input type="checkbox"/> No_filt |

6) В меню AS-i Options (настройка желтых модулей) можно настраивать каждый модуль отдельно, а именно задать нужный тип, модель.

**AS-i general options**

AS-i bus working mode

☒ Bus Master

☐ Monitor only

☐ Monitor / Slave

☐ Monitor / Slave with 3 extra virtual slaves

☐ AS-i bus not used

ASi Slave Address

Optimize for

☒ Short stop time  
(worst case, when error)

☐ Disturbance immunity  
(Not recommended when fewer than 20 slaves are used)

Configuration tools

Read AS-i slaves












Read slave types online from the AS-i bus. The configuration is stored in the table below. Compile and download afterwards.

Teach safety codes

Read the safety codes online from the AS-i bus. The codes are stored in Plutos flash memory and (if available) in the IDFIX-DATA.

**AS-i slaves**

\*) Debounce filter monitoring is only valid for OS ver 3.0+

| Slave No  | Type of Slave | Model     | Param | Profile/ID1   | Channel Monitoring | Time limit |
|---|---------------|-----------|-------|---------------|--------------------|------------|
|  ASI0.1    | Safe Input    | General   | F     | S-7.B.0 ID1=0 | Channel monitoring | 1...5      |
|  ASI0.2    | Safe Input    | Eden AS-i | F     | S-7.B.E ID1=F |                    |            |
|  ASI0.3    | Safe Input    | Urax D1R  | 4     | S-7.B.E ID1=F |                    |            |
|  ASI0.4    | Safe Input    | Urax D1R  | 4     | S-7.B.E ID1=F |                    |            |
|  ASI0.5    | Safe Input    | Urax B1R  | 1     | S-7.B.E ID1=F |                    |            |
|  ASI0.6    | Safe Input    | Urax B1R  | 1     | S-7.B.E ID1=F |                    |            |
|  ASI0.7    | Safe Input    | General   | F     | S-7.B.0 ID1=0 | Channel monitoring | 1...5      |
|  ASI0.8    | Safe Input    | Eden AS-i | F     | S-7.B.E ID1=F |                    |            |
|  ASI0.9  | Safe Input    | Urax D1R  | 4     | S-7.B.E ID1=F |                    |            |
|  ASI0.10 | Safe Input    | Urax B1R  | 1     | S-7.B.E ID1=F |                    |            |
|  ASI0.11 | Safe Input    | Urax D1R  | 4     | S-7.B.E ID1=F |                    |            |

- 7) Меню Variables (переменные) можно смотреть в режиме онлайн, какие действия на данный момент делает контроллер безопасности (на скриншоте представлено в режиме онлайн). Также в этом меню есть подменю Safety Inputs (входа безопасности) в котором можно отслеживать работу желтых модулей и что приходит на вход контроллера.

Pluto 0: No error

Variable attributes: [G] Global variable. Variable is visible to other Plutos and gateways on the bus.  
[E] Exported variable. Variable is visible to other Plutos on the bus via extra telegrams.

Safety Inputs | Nonsafety Inputs | Safety Outputs | NonSafety Outputs | Global Memories | Memories | Registers | Double Registers | System Memories | System Registers

| Status | Variable | Symbolic Name                                  | Description |
|--------|----------|--|-------------|
|        | I0.0     | [G] Feedback_Unit2_400VAC                      |             |
|        | I0.1     | Feedback_Unit2_24VDC                           |             |
|        | I0.2     | Feedback_MRJ3                                  |             |
|        | I0.3     | Emergency_Main_Panel                           |             |
|        | I0.10    |  |             |
|        | I0.11    | Reset_Emergency_Button                         |             |
|        | I0.12    | Reset_Servicestop_Button                       |             |
|        | I0.13    |  |             |
|        | ASi0.1   | [G] Emergency_FilterHouseLoading               |             |
|        | ASi0.2   | [G] Safetydoor_FilterHouseLoading              |             |
|        | ASi0.3   | [G] LightCurtain_Horizontal_FilterHouseLoading |             |
|        | ASi0.4   | [G] LightCurtain_Vertical_FilterHouseLoading   |             |
|        | ASi0.5   | [G] Servicedoor_DustFilterWelding              |             |
|        | ASi0.6   | [G] Servicedoor_CharcoalFillCompaction         |             |
|        | ASi0.7   | [G] Emergency_GridCoverLoading                 |             |
|        | ASi0.8   | [G] PressUpperPos_GridCoverLoading             |             |
|        | ASi0.9   | [G] LightCurtain_GridCoverLoading              |             |
|        | ASi0.10  | [G] Servicedoor_GridCoverLoading               |             |
|        | ASi0.11  | [G] SafetyPlate_LH_GridCoverLoading            |             |
|        | ASi0.12  | [G] SafetyPlate_RH_GridCoverLoading            |             |
|        | ASi0.13  | [G] Emergency_GridCoverWelding                 |             |
|        | ASi0.14  | [G] Servicedoor_GridCoverWelding               |             |
|        | ASi0.15  | [G] Feedback_Venting_Channel1                  |             |
|        | ASi0.16  | Feedback_Venting_Channel2                      |             |
|        | ASi0.17  | Feedback_Unit1_400VAC                          |             |
|        | ASi0.18  | Feedback_Unit1_24VDC                           |             |
|        | ASi0.19  | Emergency_PnPConveyerPick                      |             |
|        | ASi0.20  | Emergency_PnPConveyerLeave                     |             |
|        | ASi0.21  | Servicedoor_LH_PnPConveyerPick                 |             |
|        | ASi0.22  | Servicedoor_RH_PnPConveyerPick                 |             |
|        | ASi0.23  | Servicedoor_LH_PnPConveyerLeave                |             |

Safety Outputs (выхода безопасности).

Pluto 0: No error

Variable attributes: [G] Global variable. Variable is visible to other Plutos and gateways on the bus.  
[E] Exported variable. Variable is visible to other Plutos on the bus via extra telegrams.

Safety Inputs | Nonsafety Inputs | Safety Outputs | NonSafety Outputs | Global Memories | Memories | Registers | Double Registers | System Memories | System Registers

| Status | Variable | Symbolic Name                             | Description                |
|--------|----------|---|----------------------------|
|        | Q0.0     | [G] Emergency_Voltage                     | 902 - 24VDC Supply voltage |
|        | Q0.1     | [G] Emergency_Service_Voltage             | 903 - 24VDC Supply voltage |
|        | Q0.2     | [G] Emergency_Service_Voltage_GridCoverLo | 904 - 24VDC Supply voltage |
|        | Q0.3     | [G] Emergency_Service_Voltage_Weiss       | 905 - 24VDC Supply voltage |

Nonsafety Output (небезопасные выходы)

Pluto 0: No error

Variable attributes: [G] Global variable. Variable is visible to other Plutos and gateways on the bus.  
[E] Exported variable. Variable is visible to other Plutos on the bus via extra telegrams.

Safety Inputs | Nonsafety Inputs | Safety Outputs | NonSafety Outputs | Global Memories | Memories | Registers | Double Registers | System Memories | System Registers

| Status | Variable | Symbolic Name                      | Description |
|--------|----------|------------------------------------|-------------|
|        | Q0.10    | PULSE_A                            |             |
|        | Q0.11    | Reset_Emergency_Lamp               |             |
|        | Q0.12    | Reset_Servicestop_Lamp             |             |
|        | Q0.13    |                                    |             |
|        | ASq0.1.1 | Emergency_FilterHouseLoading_Red   |             |
|        | ASq0.1.2 | Emergency_FilterHouseLoading_Green |             |
|        | ASq0.1.3 |                                    |             |

Global memories (глобальная память)

**Pluto 0: No error**

Preferences  
Projects  
Project 11116\_Filterline  
AS- Pluto 0  
I/O Options  
AS- Options  
**Variables**  
Plc Code

Variable attributes: **[G]** Global variable. Variable is visible to other Plutos and gateways on the bus.  
**[E]** Exported variable. Variable is visible to other Plutos on the bus via extra telegrams.

Safety Inputs | Nonsafety Inputs | Safety Outputs | NonSafety Outputs | Global Memories | **Memories** | Registers | Double Registers | System Memories | System Registers

| Status | Variable | Symbolic Name                  | Description |
|--------|----------|--------------------------------|-------------|
|        | GM0.0    | [G] GM_Emergency_OK            |             |
|        | GM0.1    | [G] GM_Servicestop_OK          |             |
|        | GM0.2    | [G] GM_Feedback_Emergency_OK   |             |
|        | GM0.3    | [G] GM_Feedback_Servicestop_OK |             |
|        | GM0.4    | [G]                            |             |
|        | GM0.5    | [G]                            |             |
|        | GM0.6    | [G]                            |             |
|        | GM0.7    | [G]                            |             |
|        | GM0.8    | [G]                            |             |
|        | GM0.9    | [G]                            |             |
|        | GM0.10   | [G]                            |             |
|        | GM0.11   | [G]                            |             |

## Memories (память)

**Pluto 0: No error**

Preferences  
Projects  
Project 11116\_Filterline  
AS- Pluto 0  
I/O Options  
AS- Options  
**Variables**  
Plc Code

Variable attributes: **[G]** Global variable. Variable is visible to other Plutos and gateways on the bus.  
**[E]** Exported variable. Variable is visible to other Plutos on the bus via extra telegrams.

Safety Inputs | Nonsafety Inputs | Safety Outputs | NonSafety Outputs | Global Memories | **Memories** | Registers | Double Registers | System Memories | System Registers

| Status | Variable | Symbolic Name                                 | Description |
|--------|----------|---|-------------|
|        | M0.0     | Emergency_Main_Panel_OK                       |             |
|        | M0.1     | Emergency_FilterHouseLoading_OK               |             |
|        | M0.2     | Safetydoor_FilterHouseLoading_OK              |             |
|        | M0.3     | LightCurtain_Horizontal_FilterHouseLoading_OK |             |
|        | M0.4     | LightCurtain_Vertical_FilterHouseLoading_OK   |             |
|        | M0.5     | Servicedoor_DustFilterWelding_OK              |             |
|        | M0.6     | Servicedoor_CharcoalFillCompaction_OK         |             |
|        | M0.7     | Emergency_GridCoverLoading_OK                 |             |
|        | M0.8     | PressUpperPos_GridCoverLoading_OK             |             |
|        | M0.9     | LightCurtain_GridCoverLoading_OK              |             |
|        | M0.10    | Servicedoor_GridCoverLoading_OK               |             |
|        | M0.11    | SafetyPlate_LH_GridCoverLoading_OK            |             |
|        | M0.12    | SafetyPlate_RH_GridCoverLoading_OK            |             |
|        | M0.13    | Emergency_GridCoverWelding_OK                 |             |
|        | M0.14    | Servicedoor_GridCoverWelding_OK               |             |
|        | M0.15    | Emergency_PnPConveyerPick_OK                  |             |
|        | M0.16    | Emergency_PnPConveyerLeave_OK                 |             |
|        | M0.17    | Servicedoor_LH_PnPConveyerPick_OK             |             |
|        | M0.18    | Servicedoor_RH_PnPConveyerPick_OK             |             |
|        | M0.19    | Servicedoor_LH_PnPConveyerLeave_OK            |             |
|        | M0.20    | Servicedoor_RH_PnPConveyerLeave_OK            |             |

## System memories (системная память)

**Pluto 0: No error**

Preferences  
Projects  
Project 11116\_Filterline  
AS- Pluto 0  
I/O Options  
AS- Options  
Variables  
Plc Code

Variable attributes: **[G]** Global variable. Variable is visible to other Plutos and gateways on the bus.  
**[E]** Exported variable. Variable is visible to other Plutos on the bus via extra telegrams.

Safety Inputs | Nonsafety Inputs | Safety Outputs | NonSafety Outputs | Global Memories | Memories | Registers | Double Registers | System Memories | System Registers

| Status | Variable | Symbolic Name  | Description                                 |
|--------|----------|----------------|---|
|        | SM0.0    | SM_StepNew     | ON at first PLC execution cycle of step     |
|        | SM0.1    | SM_Ditto       | Result of last logic operation              |
|        | SM0.2    | SM_Flash       | Flash 0.4s/0.6s (on/off)                    |
|        | SM0.3    | SM_1Hz         | 1Hz pulses, On during one cycle             |
|        | SM0.4    | SM_10Hz        | 10Hz pulses, On during one cycle            |
|        | SM0.5    | SM_FastFlash   | Flash 0.17s/0.33s (on/off)                  |
|        | SM0.6    | SM_DoubleFlash | Flash 0.11/0.2/0.11/0.67ms (on/off/on/off)  |
|        | SM0.7    |                |   |
|        | SM0.8    |                |   |
|        | SM0.9    | SM_SysInit     | ON at first PLC execution cycle at start up |
|        | SM0.10   |                |   |
|        | SM0.11   | SM_Overflow    | Overflow in arithmetic                      |
|        | SM0.12   | SM_DivByZero   | Divide by zero                              |
|        | SM0.13   |                |   |
|        | SM0.14   |                |   |
|        | SM0.15   | SM_PlutoB      | This is Pluto B processor                   |

## System Registers (системные регистры)

**Pluto 0: No error**

Preferences  
Projects  
Project 11116\_Filterline  
AS- Pluto 0  
I/O Options  
AS- Options  
Variables  
Plc Code

Variable attributes: **[G]** Global variable. Variable is visible to other Plutos and gateways on the bus.  
**[E]** Exported variable. Variable is visible to other Plutos on the bus via extra telegrams.

Safety Inputs | Nonsafety Inputs | Safety Outputs | NonSafety Outputs | Global Memories | Memories | Registers | Double Registers | System Memories | System Registers

| Status | Variable | Symbolic Name        | Description  |
|--------|----------|----------------------|--|
| 0      | SR0.0    |                      |  |
| 0      | SR0.1    |                      |  |
| 0      | SR0.2    | SR_Remain            | Remain part after division                               |
| 0      | SR0.3    |                      |  |
| 0      | SR0.4    |                      |  |
| 0      | SR0.5    |                      |  |
| 8635   | SR0.6    | SR_appCRC            | PLC application CRC                                      |
| 211    | SR0.7    |                      |  |
| 6108   | SR0.8    | SR_ExecFreeTime      | PLC cycle time left to be used (us)                      |
| 2483   | SR0.9    | SR_ExecTime          | PLC execution time in us                                 |
| 1001   | SR0.10   | SR_PlutoDisplay      | Pluto display figure. For user error: 200+no             |
| 0      | SR0.11   | SR_ErrorCode         | Error code   |
| 0      | SR0.12   | SR_ErrorLog1         | Last error code  |
| 0      | SR0.13   | SR_ErrorLog2         | 2:nd last error code                                     |
| 0      | SR0.14   | SR_ErrorLog3         | 3:rd last error code                                     |
| 0      | SR0.15   | SR_ASi_Slave_Missing | First AS-i slave missing. B slave encoded as no+32       |
| 0      | SR0.16   | SR_ASi_Slave_Chanf   | First AS-i slave channel fault. B slave encoded as no+32 |
| 0      | SR0.17   |                      |  |
| 0      | SR0.18   |                      |  |
| 0      | SR0.19   |                      |  |
| 0      | SR0.20   | SR_Seq1Step          | Step no in sequence 1                                    |
| -32768 | SR0.21   |                      |  |

Так же можно посмотреть Register (регистры) и Double Registers (двойные регистры).

- 8) В меню PLC Code написана сама программа, цепи, которые выполняет контроллер, условия срабатывания блокировки. Её также можно смотреть в режиме онлайн.



- 9) В меню Help (помощь) можно найти инструкции и описание блоков на английском языке

