

Konfiguracja źródeł Fronius z robotami Kawasaki

Zalecenia sprzętowe:

- Kontroler typu E0x, E4x,
- Wersja oprogramowania zalecana ASE_033300X4Q lub nowsza
- Źródło Fronius serii TPS lub TPSi,
- Komunikacja w protokole Ethernet IP.

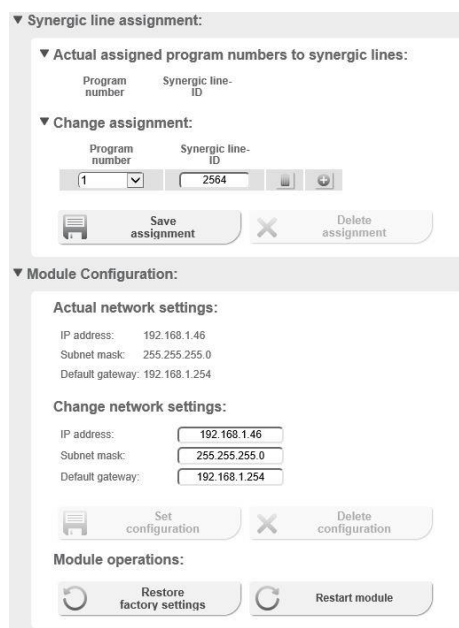
Przedstawiony przykład konfiguracji komunikacji obsługuje 32 wejścia/wyjścia fizyczne oraz ramkę 320 bit źródeł Fronius serii TPSi.

Konfiguracja źródła Fronius

1. Ustawić adres źródła spawalniczego
2. Uruchomić przeglądarkę Internet Explorer i wywołać stronę odwołując się do adresu IP z punktu 1.
3. Przejść do zakładki RI FB Inside.



4. W polu *Module Configuration-->Change network settings*: wprowadzić adres IP interfejsu komunikacyjnego oraz maskę podsieci.

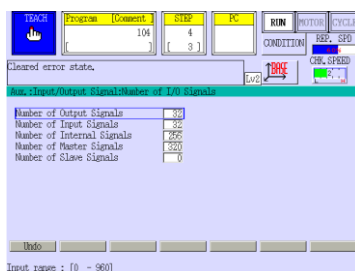


5. Zrestartować źródło spawalnicze.

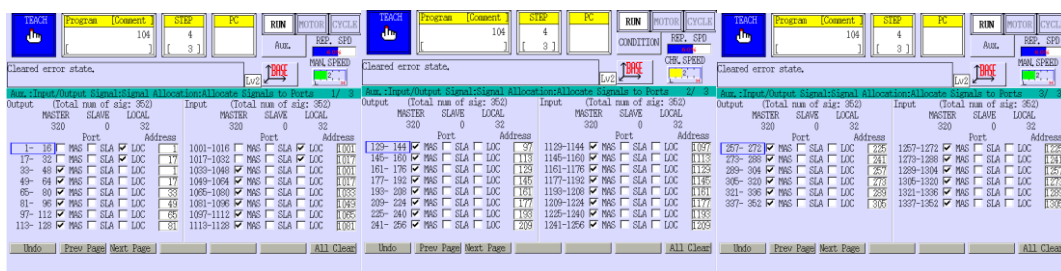
Konfiguracja robota Kawasaki

Komunikacja w protokole Ethernet IP

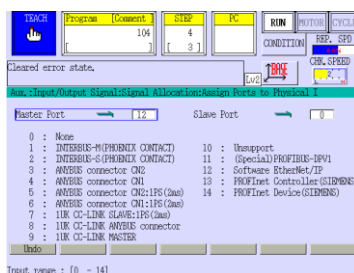
1. Wgrać plik konfiguracyjny *welding_opt.as*.
2. Zrestartować kontroler robota.
3. Przejść do zakładki *Aux function-->Input/Output Signal-->Number of I/O Signals*. Wprowadzić *Number of Master Signals – 320*.



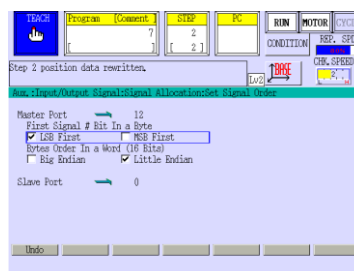
4. Przejdź do *Aux function-->Input/Output Signal-->Signal Allocation-->Allocate Signals to Ports*. Dokonać przypisania sygnałów do odpowiednich kanałów.



5. Przejdź do *Aux function-->Input/Output Signal-->Signal Allocation-->Assign Ports to Physical Interfaces*. Ustawić urządzenie *Master Software Ethernet IP - 12*.



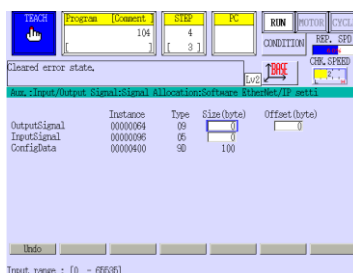
6. Przejdź do *Aux function-->Input/Output Signal-->Signal Allocation-->Set Signal Order*. Ustawić parametry ramki komunikacyjnej dla portu Master – *First Signal # Bit In a Byte – LSB First, Bytes Order in a Word (16 Bits) - Little Endian*.



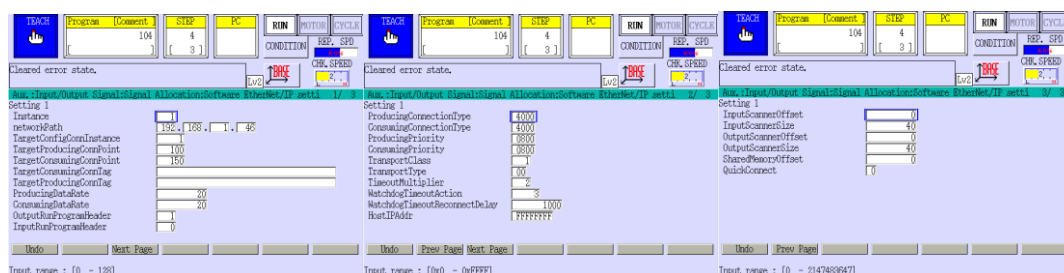
7. Przejdź do *Aux function-->Input/Output Signal-->Signal Allocation-->Software Ethernet IP setting -->Port setting*. Ustawić adres IP portu Master w robocie zgodny z adresem ustawionym na źródle Fronius.



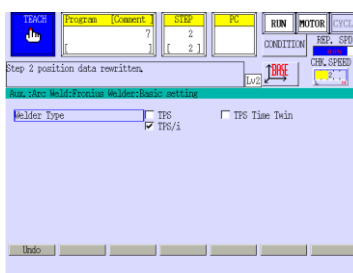
8. Przejdź do Aux function-->Input/Output Signal-->Signal Allocation-->Software Ethernet IP setting-->Assembly display and setting. Ustawić wielkość ramki na 0 dla Output Signal i Input Signal.



9. Przejdź do Aux function-->Input/Output Signal-->Signal Allocation-->Software Ethernet IP setting-->I/O communication Setting-->Setting 1. Wprowadzić parametry komunikacyjne zgodnie z wartościami odczytanymi z pliku *.eds.



10. Przejdź do Aux function-->Arc Weld-->Fronius Welder-->Basic setting. Wybrać używany model źródła spawalniczego Fronius.



11. Przejść do *Aux function-->Input/Output Signal-->Dedicated Input Signal*. Przypisać wejścia dedykowane zgodnie z ustawioną alokacją sygnałów i dokumentacją komunikacyjną Fronius.

Aux.:Input/Output Signal:Dedicated Input Signals 2/ 6				Aux.:Input/Output Signal:Dedicated Input Signals 3/ 6			
Signal Name	Set/Reset	Signal Number		Signal Name	Set/Reset	Signal Number	
First signal No. of RPS code Code (0:Binary 1:BCD)	<input checked="" type="checkbox"/> BINARY <input type="checkbox"/> BCD	0		I/F PANEL PAGE4 SELECT	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
EXT_IT	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-POLE STUCK	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
EXT. SLOW REPEAT MODE	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-TORCH INTERFERE	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	1041	
Wire inching signal	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-WIRE STICK SIGNAL	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
External weld signal	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-WIRE TOUCH	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	1002	
Wire retract signal	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-WCR	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	1038	
Positioner off signal	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC GAS-ON	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	1085	
EXT_HOLD RESET	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-Welder ready complete	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	1034	
I/F PANEL PAGE1 SELECT	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-Welder com. ready complete	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	1082	
I/F PANEL PAGE2 SELECT	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	2110		ARC WELD-Welder wire ready complete	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
I/F PANEL PAGE3 SELECT	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-Welding Process	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	0	
Undo Prev Page Next Page				NUM. OF SIG.		5	

Range : [1001-1352, 2001-2900] (0:Not Used)

Aux.:Input/Output Signal:Dedicated Input Signals 4/ 6				Aux.:Input/Output Signal:Dedicated Input Signals 5/ 6			
Signal Name	Set/Reset	Signal Number		Signal Name	Set/Reset	Signal Number	
NUM. OF START SIG.		1053		NUM. OF START SIG.		1193	
ARC WELD-Welder(1) error	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	2		ARC WELD-Wire Feed Speed(1)	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	16	
NUM. OF SIG.		1065		NUM. OF SIG.		1129	
ARC WELD-Weld voltage(1)	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	16		ARC WELDER ERROR 1	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	2100	
NUM. OF SIG.		1097		ARC WELDER ERROR 2	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
ARC WELD-Weld current(1)	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	16		ARC WELDER ERROR 3	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
NUM. OF SIG.		1113		AUTOSAVE COND. 1	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
ARC WELD-Motor current(1)	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	16		AUTOSAVE COND. 2	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
NUM. OF SIG.		16		AUTOSAVE COND. 3	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
Undo Prev Page Next Page				External PC Program1 start.	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
				External PC Program2 start.	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	

Range : [1001-1352, 2001-2900] (0:Not Used) Setting complete.

12. Przejść do *Aux function-->Input/Output Signal-->Dedicated Output Signal*. Przypisać wyjścia dedykowane zgodnie z ustawioną alokacją sygnałów i dokumentacją komunikacyjną Fronius.

Aux.:Input/Output Signal:Dedicated Output Signals 8/ 13				Aux.:Input/Output Signal:Dedicated Output Signals 9/ 13			
Signal Name	Set/Reset	Signal Number		Signal Name	Set/Reset	Signal Number	
Error code end number		0		ARC WELD-GAS ON	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	41	
ERROR #3	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-WIRE INCHING	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	1	
Type for start error(P:1 W:2 E:3 D:4)		0		NUM. OF SIG.		42	
Error code start number		0		ARC WELD-WIRE RETRACT	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	1	
Type for end error(P:1 W:2 E:3 D:4)		0		NUM. OF SIG.		43	
Error code end number		0		ARC WELD-ARC ON	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	33	
ROBOT_HOLD	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-Stick Detect/Touch sensing	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	0	
ROBOT_WAIT	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-WATCH DOG SIGNAL	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
ROBOT_ESTOP	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		ARC WELD-ENHANCED WATCH DOG SIGNAL	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	34	
ARC WELD-TOUCH SENSING	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	45		Panel switch in RUN	<input checked="" type="checkbox"/> SET <input type="checkbox"/> CANCEL		
ARC WELD-STICK DETECT	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0		Undo Prev Page Next Page			
ARC WELD-FEEDER ON	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0					

Range : [0-9999] (0:Not Used) Setting complete.

Aux.:Input/Output Signal:Dedicated Output Signals 10/ 13				Aux.:Input/Output Signal:Dedicated Output Signals 11/ 13			
Signal Name	Set/Reset	Signal Number		Signal Name	Set/Reset	Signal Number	
EXT_IT not set to hold.	<input checked="" type="checkbox"/> SET <input type="checkbox"/> CANCEL			ARC length corr.	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	16	
NO ERROR	<input checked="" type="checkbox"/> SET <input type="checkbox"/> CANCEL			NUM. OF SIG.		129	
MOTOR POWER ON	<input checked="" type="checkbox"/> SET <input type="checkbox"/> CANCEL			NUM. OF START SIG.		16	
ARC WELD-Working mode select	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	5		Pulse/Dynamic corr.	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	145	
NUM. OF SIG.		35		NUM. OF SIG.		16	
ARC Weld-Job/Welding characteristic No.	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	16		NUM. OF START SIG.		181	
NUM. OF SIG.		97		Wire retract corr.	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	0	
Wire Feed Speed	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	16		NUM. OF SIG.		0	
NUM. OF SIG.		113		TEACH LOCK ON	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
Undo Prev Page Next Page				AUTOSAVE WARNING	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
				SERVO_READY STATUS	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	

Aux.:Input/Output Signal:Dedicated Output Signals 13/ 13			
Signal Name	Set/Reset	Signal Number	
Cubic-S Safety Signature	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
Encoder Temperature Warning	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
Encoder Temperature Error	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
WCR Monitor Signal	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	
Error reset	<input checked="" type="checkbox"/> DEDICATED <input type="checkbox"/> CANCEL	44	
EtherNet/IP Error	<input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> CANCEL	0	

Zaleca się aby wyjście **ARC WELD-ENHANCED WATCH DOG SIGNAL** – sygnał gotowości robota do spawania - przyjmowało stan wysoki w momencie gdy TP jest w trybie RUN, EXT_IT jest w stanie wysokim, nie występują błędy oraz napędy są włączone.

13. Sprawdzić status komunikacji w Monitor 1-->Software Ethernet IP Status.
14. Napisać program interpretujący kody błędów źródła Fronius i uruchomić go na wybranym wątku.

.PROGRAM autostat5.pc

```

WHILE 1 DO
  r_err = BITS(1161,16)
  IF r_err>0 THEN
    SOUT 2100
  ELSE
    SOUT -2100
  END
  r_volt = (BITS(1097,16))/100
  r_curr = (BITS(1113,16))/10
  r_wfs = (BITS(1129,16))/100
  r_job = BITS(97,16)
  r_mode = BITS(35,3)
  rtpm_mon = BITS(1145,16)
END

```

.END

15. Ustawić uruchamianie programu *autostat5.pc* w *Aux function*-->*Advanced Setting*-->*System Switch*.

