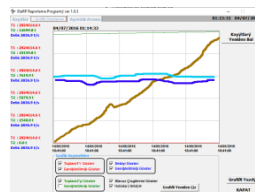
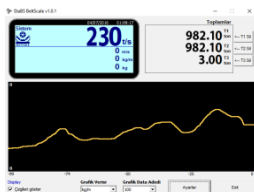
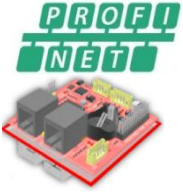


LPR-200

Bant Kantarı Teknik Manuel Belt Scale Technical Manual



Bant kantarları, bantlı konveyörlerdeki dökme malzemeleri sürekli olarak ölçmek için tasarlanmıştır. Anlık debi, transfer edilen toplam malzeme miktarı, hız ve yayılma yükü görüntülenebilir, kaydedilebilir ve kontrol altına alınabilir. Özellikle madencilik sektörü, yapı malzemeleri ve kimyasalları, gıda sektörü, enerji sektörleri ve tozlar, pelet ve granül bazlı dökme malzemelerde kullanılır.

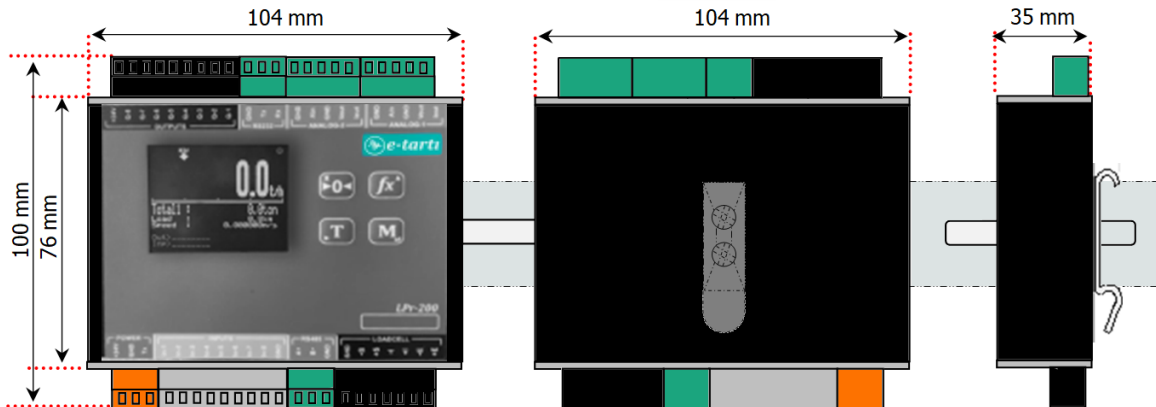
Beltscales are designed for measuring bulk materials on the belt conveyors continuously. Instant flow rate, total amount of transferred materials, speed and spreading load can be displayed, recorded and taken into control. Especially used on mining industry, building materials and chemicals, food industry, energy sectors and powders, pellets and granule based bulk materials

**TUŞLAR****KEYS**

Tuş KEY	ANA EKRANDA ON MAIN SCREEN	MENÜDE ON MENU
	Toplam Sıfırlama Zeroing Totals	Çıkış Exit
	Ekran Geçiş Switch Screen	Yukarı Geçiş Up Side
	X10 Modu Show Totalized value as x10	Aşağı/Sağa Down/Right
	Menü Giriş Menu Enter	Giriş/Onay Enter/Accept

ÖZELLİKLER**SPECIFICATIONS**

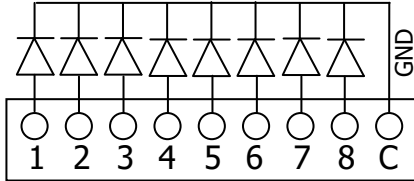
- 3 Farklı Toplam İzleyebilme (**Toplam1, 2, 3**)
3 different Totalisers (**Total1, Total2 and Total3**)
- +/- % 0.25 doğruluk (% 20 - 100 debi aralığında)
+/- % 0.25 accuracy (20% to 100% flowrate)
- 1kHz e kadar encoder uyumlu
Up to 1kHz encoder output compatible
- Hız [m/s], Debi [t/h], Yayılı Yük [kg/m] izleyebilme
Speed[m/s], Flowrate[t/h], Spreading Load [kg/m] monitoring
- Saniyede 3840 adet veri ölçümleyebilme
3840 measurements per second
- Modbus RTU/ASCII or ModbusTCP-PROFINET options
Modbus RTU/ASCII or ModbusTCP-PROFINET options
- Yığın Kontrol ile belirli miktarda ürün yükleyebilme
Batching with specified quantities of material
- Ayarlanabilir periyodik darbe çıkışı
Adjustable periodic pulse output
- 0-10V /4-20mA Analok Çıkış
0-10V /4-20mA Analogue Output
- Harici Gösterge Çıkışı
Remote Display Output
- PID Kontrol Çıkışı (Sadece Besleyici Bant kantarlarında)
PID Control Output (WF Only)

BOYUTLAR**DIMENSIONS****100 x104 x 35 mm Ray Tipi Kutu****100 x104 x 35 mm Din-Rail Case**

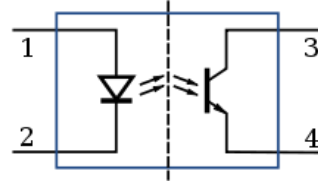
GİRİŞLER

DEVICE INPUTS

Nr	Tanım	Description
1	Enkoder Girişi	Encoder Input
2	Yığın Kontrol Başlat	Batching START
3	Yığın Kontrol Durdur	Batching STOP
4	Toplam Engelleme	Do not TOTALIZE weighings
5	Besleyici Çalıştırma	WF RUN (0:Manual Operation, 1:Automatic Control Mode)
6	Ön Rulo Patinaj İzleme	WF Front Roller Sensor for Skidding
7	Arka Rulo Patinaj İzleme	WF Back Roller Sensor for Skidding
8	Bant Kaydı İzleme	WF Belt Shift Input (Touching the Sides)



Girişler 5-24Vdc
Optically isolated
Inputs 5-24Vdc
Optically Isolated



ÇIKIŞLAR

DEVICE OUTPUTS

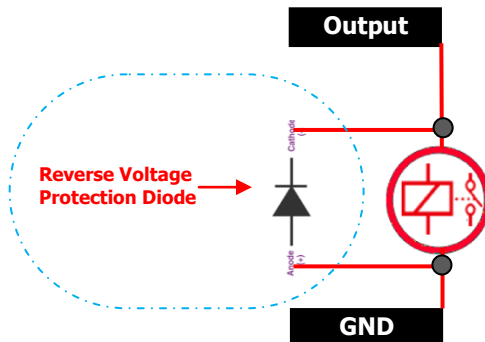
Nr	Tanım	Description
1	Mekanik Sayış Çıkışı (500ms)	Totalizing for Mechanical Counter Output (500ms ON)
2	Yığın Çıkışı Yığın Kontrol Çıkışı yada Hata Çıkışı Yığın başlatıldığında çeker Hata Çıkışı Yığın Kontrol değeri 0 (sıfır) seçilir ise "hata-yok" çıkışı olarak kullanılır. Q2 = 0 ADC hatası, ADC Module Hatası, kapasite aşıldı) Q2 = 1 Hata Yok, Cihaz sağlıklı.	Batching Output Bath Output or Error Statement Energizes after a Start of Batch Input Error Statement When BatchSet Value = 0, this output used for "No Error" state. (Q2 = 0 ADC overflow, ADC module error, Capacity over) Q2 = 1 No error, device is OK
3	Besleyici bant çalışıyor (sadece besleyici bantta geçerlidir) Besleyici bant girişi aktif iken ve Modbus StatusB hata yok iken aktiftir	WF is RUN state (Only WF) (When WF RUN input is exists and no Error flag on Modbus StatusB)
4	Besleyici Hata Durumu (Modbus StatusB hata bitleri aktif olduğunda çeker)	WF is in Error Condition (Error flags is 1 from the Modbus StatusB)
5	Besleyici Uyarı durumlarıdır (Patinaj, bant kayması, Analog çıkış aralık dışında ise)	Indicates WF is in Warning Condition (Skid, Shift, Analog out under min or max)
6	Kullanım dışı	Not Used
7	Kullanım dışı	Not Used
8	Kullanım dışı	Not Used

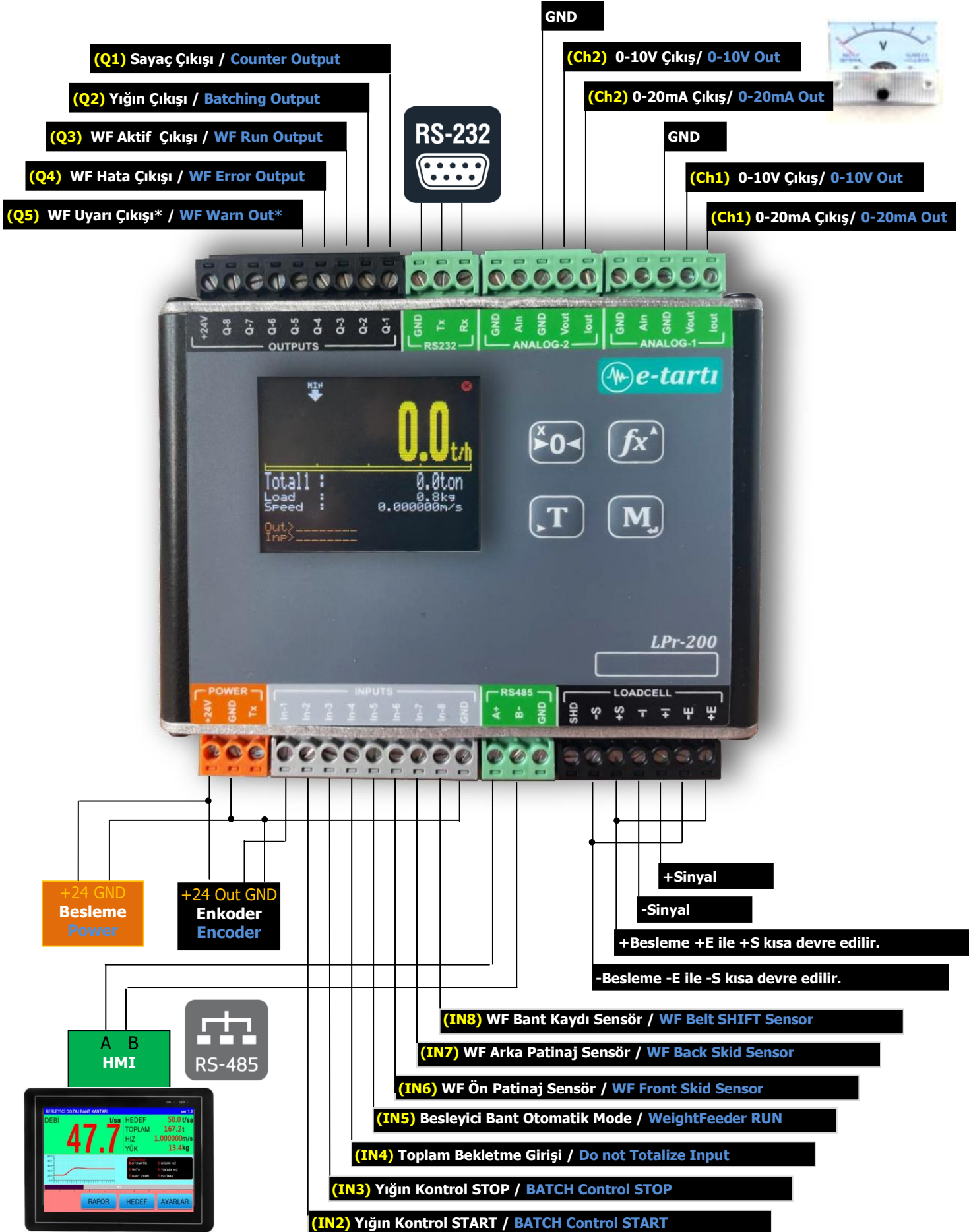
Çıkışlar 24V besleme sinyaline göre çalışır. Aktif olduğunda 24V besleme terminalindeki gerilim çıkışa iletilir. FET tipi yüksek hızlı çıkıştır. Bağlanan yükün diğer ucu GND terminaline bağlanır.

Not: Bobin içeren valf yada röle gibi bağlantılarda ters diyot bağlanmalıdır!

Outputs operate according to 24V supply signal. When active, the voltage at the 24V supply terminal is transmitted to the output. It is FET type high speed output. The other end of the connected load is connected to the GND terminal.

Note: A reverse diode must be connected to connections such as valves or relays containing coils!





R/W	Address	Data	Tanim Description
R/W	0	Command	Komut Adresi Command Register
R/W	1	RegA	Yardımcı Adres1 Extension for command
R/W	2	RegB	Yardımcı Adres2 Extension for command
R/W	3	Device StatusA	Devices StatusA Information Bits 0: Device Type. 0: BeltScale, 1: WeighFeeder (In factory manufactured) 1: Angle Correction. 0: Correnction OFF, 1: Correnction ON 2-3: Password state. 0: Total erase password active (T1=1, T2=2, T3=3) 1: Total + Menu password is ON (Menu = 0009) 2: Menu password active 3: Password is OFF 4-5: Analog Input Mode. 0: Not Used, 1: 0/10V, 2: 4/20mA 6: DAC Forced. 0: Normal, 1: Forced mode 7: Relay Outputs forced control. 0: Normal, 1: Forced Output 8-9: Machine Type. 0: None: 1: BeltScale, 2: OliveMachine (In factory manufactured) 10-12: Not Used 13: Weight is under ZeroZone. 0: AboveZeroZone, 1: UnderZeroZone 14: Zero Zone is active. 0: Normal, 1: Values under ZeroZone (76) not totalized 15: FixedSpeed 1: Active, 0: Encoder (When set speed is not equal to Zero)
R/W	4	Device StatusB	Devices StatusB Information Bits 0: Run. 0: ManualMode, 1: PID mode 1: GeneralError. 0: Normal, 1: Error Seen (Caused by one of the error sources (Can be reset by writing Command Register0=31) 2: BeltShifted. 0: Normal, 1: Belt is in Shifted Confiton 3: FrontSkidding. 0: Normal, 1: Skidding more than 5 times 4: BackSkidding. 0: Normal, 1: Skidding more than 5 times 5: Not Used 6: Not Used 7: AnalogOutUnderLowLimit. 0: Normal, 1: Error 8: AnalogOutAboveHighLimit. 0: Normal, 1: Error 9: Load is under defined limits. 0: Normal, 1: Error 10: Load is over defined Limits. 0: Normal, 1: Error 11-15: Not Used
R/W	5	Device StatusC	Devices StatusC Information bits 0-11: Devices 12bit Analog Out Information (0/4095=0/11V) 12-15: Not Used
RO	6-7	Flowrate (t/h)	[t/h] Current flowrate data (32bits) Same as screen value (as ton/hour unit)
RO	8-9	Belt Speed (m/s)	[m/s] Current Speed data (32bits) 1m/s = 1.000000 6digits after decimal point (fixed)
RO	10-11	T1 (ton)	[ton] Total1 Totalized Load (32bits) Same as screen value (as ton unit)
RO	12-13	T2 (ton)	[ton] Total2 Totalized Load (32bits) Same as screen value (as ton unit)
RO	14-15	T3 (ton)	[ton] Total3 Totalized Load (32bits) Same as screen value (as ton unit)
RO	16-17	kg/m	[kg/m] Load on the Belt as kg per meter kg/m (32bits)
RO	18-19	kg	[kg] Load on the Belt in kg (32bits)
R/W	20-21	Set Flowrate (ton)	[t/h] Target Flowrate value for Analog output (32bits)
R/W	22	Analog Output Coefficient	Used for analog output correnctions. 0.000-9.999 (16Bits) Use 1.000 as default. When used from 1 to 0.5, the output will decreased ½
R/W	23	Alarm DelayTime	[s] 8bits value. Used on WF applications, alarm output waits before active. (+2seconds more always)
RO	24	Batch Value L-H	[kg] Current Batching value if Batching Started (32Bits)
R/W	26-27	Batch Set value L-H (Set=0 is special usage)	[kg] Batching Target Value (32Bits) When BatchSet Value = 0, Output2 used for "No Error" state. Q2 = 0 (ADC overflow, ADC module error, Capacity over), Q2 = 1 Device is OK
R/W	28-29	Angle Multiplier	*Angle corrected models only
R/W	30	Digital Outputs	Bits 0-7 outputs. (Bits 8-15 when forced out bit enabled)
RO	31	Digital Inputs	Digital Inputs Value. 8bits
R/W	32-33	Dead Load	*Angle corrected models only
R/W	34-35	Relay Alarm Min	When load on the belt is under this value, after a alarmRelayTime gives an error Relay Output
R/W	36-37	Relay Alarm Max	When load on the belt is above this value, after a alarmRelayTime gives an error Relay Output
R/W	38	DAC Out Analog From	0-11000 Analog start point Default 0
R/W	39	DAC Out Analog To	0-11000 Analog end point Default 10000 (10V=20mA)
R/W	40	Weight Capacity	Used on AutoZero operations
R/W	42	Flowrate Min	Used with Coefficient1
R/W	44	Flowrate Max	Used with Coefficient2 and Target flow calculations on WF
R/W	46	Analog Input Channel1 non-filt	0-4095 12bits analog input value
R/W	47	Analog Input Channel2 non-	0-4095 12bits analog input value

		filt	
R/W	48	Analog Input CH1 Percentage	100 for maximum
R/W	49	Analog Input CH2 Percentage	
R/W	50	Analog Input Channel1 filtered	0-4095 12bits analog input value
R/W	51	Analog Input Channel2 filtered	0-4095 12bits analog input value
R/W	52	Calculated Target value	*WF application Calculated Target from Analog Input1
R/W	54-55*	FixedSpeed	Default 0. Manual Speed value, when fixed speed is enabled by menu system
R/W	56-57*	Speed Max	When Analog Out Type is chosen as ratiometric to Speed then Maximum Speed Range for the analog output calculation.
R/W	58-59	mV/V Value	Sensor mV/V value as integer. "1.100000mV/V" is 1110000 (6digits after dot)
R/W	60-61	Coefficient-1	Used coefficient as integer. "1.250000" is 1250000 (6digits after dot)
R/W	62-63	Coefficient-2	Used coefficient as integer. "1.2500000" is 1250000 (6digits after dot)
R/W	64-65	WeightLength	WeightLength data
R/W	66-67	Pulse Distance	Distance per pulse value as 0.001mm precision (10000 = 10.000mm)
R/W	68-69	Pulse TimeOut	Pulse time out value as 0.001s precision (2000 = 2.000seconds)
R/W	70	Belt Revolution Time	Used on Load Calibration as belt rev time (in sec, 10 equals 10seconds)
R/W	71	PID Integral Sampling Time	Sampling time
R/W	72-73	Out-1 PulseOut Set Value	According to this value Out-1 energized for 500ms periodically
R/W	74-75	Out-1PulseOut Current	Totalisor for pulse out counter (Battery back-up value)
R/W	76-77	ZeroZone	The weight above this value is not totalized
R/W	78	DAC Out2 Analog From	0-11000 Analog Output-2 start point Default 0
R/W	79	DAC Out2 Analog To	0-11000 Analog Output-2 end point Default 10000 (10V=20mA)
R/W	80	DAC Out2 Value	As 12bits Output-2 actual value in operation (0/4095=0/11V)
R/W	81-87	NA	NA
R/W			
R/W	88	PN Blink State	0: 0:Normal,1:Blinks the LCD screen (When Profinet Module, PN activates, otherwise Serial Info blinks on screen) 1:Toogles the state of screen 2-15:Free
R/W			

*Version1.1.8 or later revisions only

1. CİHAZ KOMUTLARI

DEVICE COMMANDS

The Modbus commands are individual to the LPr devices. There is no relation between supported modbus functions (3,6-16 etc) and Device Commands!!

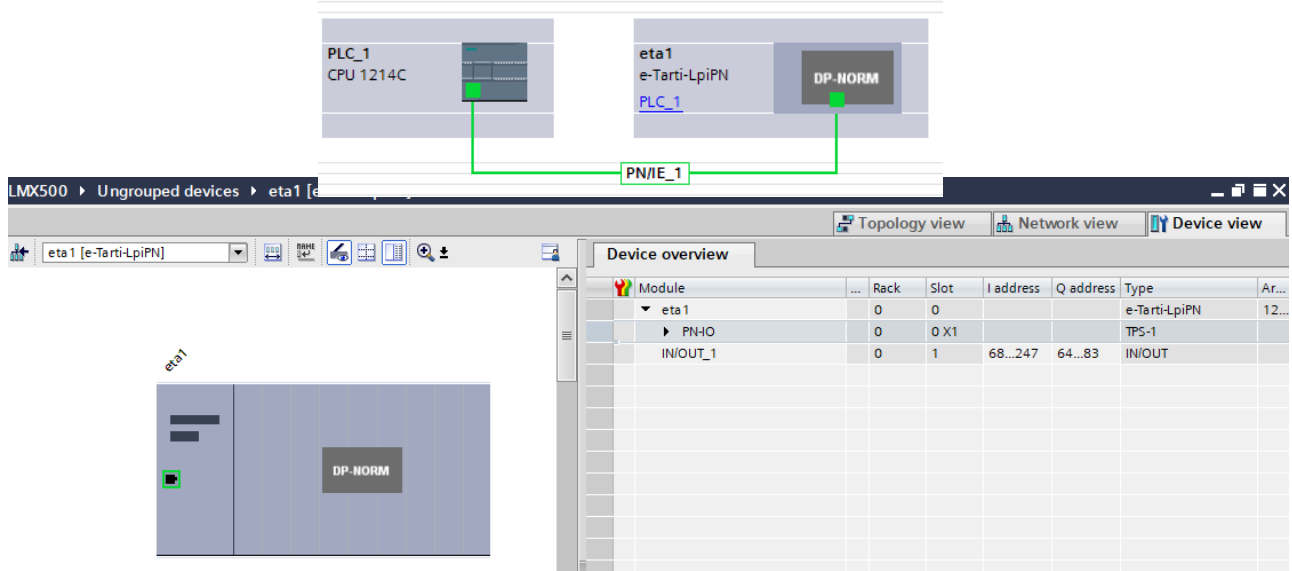
To use the Device Commands, the following registers are used;

Cmd Register: Address 0 [Command register], RegA Register: Address 1 [Auxiliary register], RegB Register: Address 2 [Auxiliary register]

For single write operations (modbus func 6) please set RegA and RegB before the Command register, for multi write operations (modbus func 16) please write CMD, RegA and RegB at the same query.

(Modbus Addr: 0) Command Register	(Modbus Addr: 1) RegA	(Modbus Addr: 2) RegB	Description
0x0000	-	-	Ready to execute new commands or the last command is OK
0xFFFF	-	-	The operation result is in Error
0xFFFE	-	-	The operation result is in Error
1	-	-	N/A
2	Address	Data	Eeprom write operation: Put RegA = Address, RegB = Data to be written and finally write the Cmd register 2. Eeprom unlock cmd 102 needs to be done to write, otherwise 0xFFFF returned
3	Address	Data	Eeprom read operation: Put RegA = Address to be read and write the Cmd register 3. The result value will be updated to RegB.
4	-	-	"Device Restart" command.
5-7	-	-	N/A
8	Device Type	-	By using this cmd the Device Type can be read as RegA da register. LPr family code is 47601.
9	Version	-	Device version number is seen on RegA register. 107 = v1.0.7
10	-	-	All parameters are refreshed from EEprom to RAM (Eeprom unlock resetted to original locked state)
11	Total1L	Total1H	Total1 is changed according to the RegA and RegB
12	Total2L	Total2H	Total2 is changed according to the RegA and RegB
13	Total3L	Total3H	Total3 is changed according to the RegA and RegB
21	-	-	Batch start
22	-	-	Batch Stop
33	-	-	Relay Forced activated
34	-	-	Relay Forced de-activated
35	-	-	DAC Forced activated
36	-	-	DAC Forced de-activated
99			Device calculates zero shift according to angle change

			(Correction state must be OFF and at least 5 to 10degree angle has to be applied)
102	-	-	Eeprom unlock. Cmd 2 (eeWrite) needs to be unlocked to prevent accidental usages
122 ('z')	-	-	Zero calibration is done. Belt Revolution time is starts after this command.
108 ('I')	Calib Low	Calib High	Calibration command. RegA and RegB holds calibration value
111	-	-	Save parameters. Saved parameters are as followed; *Coefficient-1, Coefficient2, WeightLength, PulseDistance, FixedSpeed value, Set Flowrate (WF), PID sampling time, PulseOutCounter Set Value, Batch Set Value
112	-	-	Keypad Lock
113	-	-	Keypad Unlock
10102	-	-	Factory settings command



Profinet haberleşmesini hızlı bir şekilde sıfırdan devreye almak için aşağıdaki linkteki youtube adresini ziyaret edebilirsiniz

<https://www.youtube.com/watch?v=uURPIYQkDoU>

Profinet **gsd** dosyası www.etarti.com LPR200 ürün sayfasından indirilebilir.

Modbus map 0-9 nolu WORD adresler PLC de 0-19 byte (x2) olarak yerleşirler.

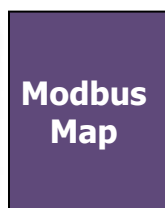
QW olarak belirlenen ilk adres komut olup sadece değiştiği anda cihaza 1 kez yazılır, Cihaz ise komutu uyguladığında bu komutu siler (dolayısı ile IW adresindeki komut 0 olarak okunur)

To quickly commission Profinet communication from scratch, you can visit the YouTube link below.

<https://www.youtube.com/watch?v=uURPIYQkDoU> Profinet gsd file can be downloaded from www.etarti.com LPR200 product page.

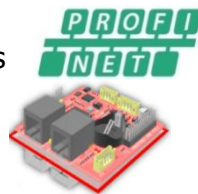
WORD addresses 0-9 in the Modbus map are located in the PLC as 0-19 bytes (x2). The first address specified as QW is the command and is written to the device once only when it changes. The device deletes this command when it executes the command (therefore, the command at the IW address is read as 0)

Address	Data	Description
IW68	Command	Command Register (read only, zeroed by device itself when issued)
IW70	Reg 1	Extension for command
IW72	Reg 2	Extension for command
IW74	StatusA	
IW76	StatusB	
IW78	StatusC	
IW80	Flowrate Low Word	
IW82	Flowrate High Word	
IW84	Speed Low Word	
IW86	Speed High Word	
IW88-247		*Please refer table above for details IW68-87 10words (20bytes) are high refresh rate, 80words lower rate
Address	Data	Description
QW64	Command	When this value changed (change only) below values are written to Modbus registers. Example: Changing from 0 to 122 makes Zero calibration once
QW66	Reg 1	Extension for command
QW68	Reg 2	Extension for command
QW70	Addr extension	Used as index address for Modbus MultiWrite operations
QW72	Nof Data extension	Activated Multi-Write operation by writing 200 command to QW64
QW74-83	Data to write	Advanced operation (refer manufacturer for detailed usage)



IW68-247
180bytes/90Words

QW64-83
20bytes/10Words



PROFINET ADDRESS BASED WRITE

Due to the PROFINET operating infrastructure, some data is constantly read by Profinet while some data is also written. Reading and writing to the same address will cause confusion. Therefore, there is a 20word write data for data exchange purposes and writing can be done to a specially requested address with an address (indexed). Data transfer is continuously carried out from PROFINET to the addresses 0-1-2 of the device. The LPR200 device performs this operation once when the data at address 0 changes. For example, if 5 is desired to be written to address 0 as the Screen RESET command, since this data will continue to be written to the device from PROFINET many times, it is only performed once to prevent unintentional errors (multiple reset commands). Again, since there is a data structure of up to 500 items in the device data map, taking all of them to the PROFINET address writing map or making a special configuration according to the situation will cause unnecessary memory usage. For this reason, when the addressed (indexed writing process is developed) command 200 is written to address 0 (this command is an addressed writing command), the relevant data is written into the LPR200 device starting from the specified offset (again, since it is written to the ModbusAddress->0, it is executed once like other commands. To execute it again, another command (may be zero) can be written and 200 can be written again.

Do not forget that the command 200 data must be written en zon! It is assumed that it is located on the PLC map as QW64-83 (20bytes/10Words). The starting address may change depending on the application or PLC model, so you should write it by shifting

Example 1

To write SetFlowrate (20-21) address 500

As followed datas are written to Profinet area (Each value 1 word).

Address	Data	Description
QW64	200	Command
QW66	xx	Extension 1
QW68	xx	Extension 2
QW70	20	Set Flowrate Modbus Address
QW72	2	Number of words to write
QW74	500	Flowrate Low
QW76	0	Flowrate High
QW78	xx	Data3
QW80	xx	Data4
QW82	xx	Data5

Example 2

To write DAC Start (38) address 500

DAC End (39) address 3000

As followed datas are written to Profinet area (Each value 1 word)

Address	Data	Description
QW64	200	Command
QW66	xx	Extension 1
QW68	xx	Extension 2
QW70	38	DAC Start Modbus Address
QW72	2	Number of words to write
QW74	500	DAC Start
QW76	3000	DAC End
QW78	xx	Data3
QW80	xx	Data4
QW82	xx	Data5

PROFINET ADRESE DAYALI YAZMA

PROFINET çalışma altyapısı gereği sürekli olarak bir kısım veri Profinet tarafından okunurken bir kısım veri de yazılmaktadır. Aynı adrese okuma yazma yapılması ise karışıklığa neden olacaktır. Bu nedenle veri alışverişi amaçlı 20word olarak yazma verisi vardır ile özel olarak istenen adrese adresli (indeksli) olarak yazma yapılabilir. Cihazın 0-1-2 adreslerine sürekli olarak PROFINET ten veri aktarımı gerçekleşmektedir. LPR200 cihaz ise 0 nolu adresteki veri değiştiğinde bir kez olarak bu operasyonu icra eder.

Örneğin Ekran SIFIRLAMA komutu olarak 0 adresine 5 yazılmak istenirse, bu veri bir çok kez PROFINET ten cihaza yazılmaya devam edeceğinden, istemsiz hataları (birden çok sıfırlama komutunu) engellemek için yalnızca bir kez icra edilir.

Yine cihaz veri haritasında 500adetlere varan bir veri yapısı olduğu için hepsinin PROFINET adres yazma haritasına alınması ya da duruma göre özel konfigürasyon yapılması gereksiz hafıza kullanımı olmaktadır. Bu nedenle adresli (indeksli yazma işlemi geliştirilmiştir)

0 nolu adrese 200 komutu yazıldığında (bu komut adresli yazma komutudur) belirlenen ofsetten başlanarak ilgili veriler LPR200 cihaz içerisine yazılır (yine ModbusAdres->0 'a yazıldığı için diğer komutlar gibi 1 kez icra edilir. Yeniden icra etmek için başka bir komut (sıfır olabilir) yazılıp tekrar 200 yazılabilir.

Komut 200 verisinin en zon yazılması gerektiğini unutmayınız!

QW64-83 olarak PLC haritada yerleştiği varsayılmıştır

(20bytes/10Words). Uygulama ya da PLC modeline göre

başlangıç adresi değişebilir, dolayısı ile kaydırarak yazmalısınız

Örnek 1

Set debi (20) adresine 500 yazmak için, (her iki değer de 1 word tür) yazmak için aşağıdaki şekilde veriler yazılır.

Address	Data	Tanım
QW64	200	Komut
QW66	xx	Yardımcı Yazmaç1
QW68	xx	Yardımcı Yazmaç2
QW70	20	Set Debi Modbus Adresi
QW72	2	Yazılacak word data adedi
QW74	500	Set Debi Low
QW76	0	Set Debi High
QW78	xx	Data3
QW80	xx	Data4
QW82	xx	Data5

Örnek 2

DAC Başlangıç (38) adresine 500

DAC Bitiş (39) adresine 3000 yazmak için;

(her iki değer de 1 word tür) yazmak için aşağıdaki şekilde veriler yazılır.

Address	Data	Tanım
QW64	200	Komut
QW66	xx	Yardımcı Yazmaç1
QW68	xx	Yardımcı Yazmaç2
QW70	38	DAC Basla Modbus Adresi
QW72	2	Yazılacak word data adedi
QW74	500	DAC Başla
QW76	3000	DAC Bitiş
QW78	xx	Data3
QW80	xx	Data4
QW82	xx	Data5